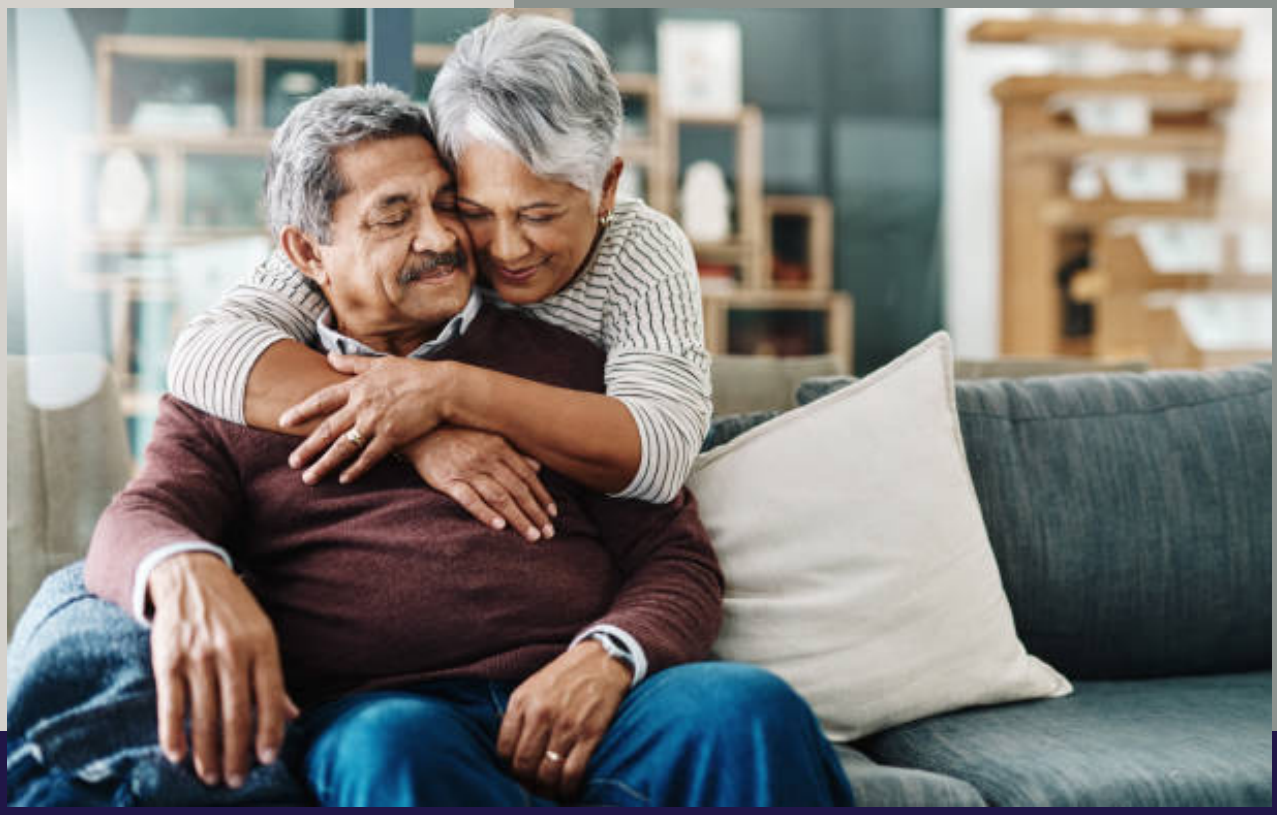
MAY 15-16, 2023

ADDRESSING THE RISING MENTAL HEALTH NEEDS OF AN AGING POPULATION



PRESENTED BY

The Forum on Mental Health and Substance Use Disorders

The Forum on Aging, Disability, and Independence

NATIONAL ACADEMIES Sciences Engineering Medicine

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Addressing the Rising Mental Health Needs of an Aging Population
A Workshop

May 15, 2023 | 12:00 PM—5:00PM ET
May 16, 2023 | 9:00 AM—3:00PM ET

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NATIONAL ACADEMIES Sciences Engineering Medicine

May 15, 2023

Dear Colleagues:

Welcome to the workshop on *Addressing the Rising Mental Health Needs of an Aging Population* hosted by the Forum on Mental Health and Substance Use Disorders, in collaboration with the Forum on Aging, Disability, and Independence, at the National Academies of Sciences, Engineering, and Medicine.

This workshop will explore the current state of mental health care for older adults and discuss potential strategies to address the mental health needs and challenges for our aging population across nine sessions. On Day 1, we will hear from persons with histories of mental illness and gain the caregivers perspective. Invited experts will provide clinical context and pertinent background information to frame the issue. Health disparities and other social determinants of health will be discussed along with policy and research implications. Speakers will also discuss the impact of mental health care integration into public health systems.

On Day 2, speakers will highlight the importance of retaining older adults in the workforce and the challenges they face. Speakers will also provide strategies to promote positive mental health and supportive communities. The workshop will also discuss challenges such as stigma and the growing use of technology as well as a discussion on opportunities to enhance the quality of life. The workshop will close with representatives from different advocacy groups discussing their focus on older adults, how to improve access to quality care, and promising innovations.

The workshop sessions include a mix of presentations, panel discussions, and audience Q&A with public attendees, in-person and online. A summary of this workshop will be published by the National Academies Press.

The workshop presentation materials as well as a video of the workshop will be archived at: https://www.nationalacademies.org/event/05-15-2023/addressing-the-rising-mental-health-needs-of-an-aging-population-a-workshop

We hope that you will find the workshop presentations informative, thought-provoking, and inspiring, and that the suggestions made by the workshop participants will ultimately contribute to addressing the mental health needs and challenges of our aging population.

Sincerely,

Charles F. Reynolds III, MD
Distinguished Professor of Psychiatry
UPMC Endowed Professor in Geriatric Psychiatry, emeritus
University of Pittsburgh School of Medicine
Planning Committee Co-Chair

Jie Chen, PhD
Professor, Health Policy and Management
Director, The Hospital And Public health interdisciPlinarY Research (HAPPY) Lab
University of Maryland School of Public Health
Planning Committee Co-Chair

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WEBINAR LOGISTICS

May 15, 2023
12:00—5:00 PM ET

May 16, 2023
9:00 AM—3:00 PM ET

- Join the webcast via this link: https://www.nationalacademies.org/event/05-15-2023/addressing-the-rising-mental-health-needs-of-an-aging-population-a-workshop

- An archive of the video webcast and presentation slides will be available at: https://www.nationalacademies.org/event/05-15-2023/addressing-the-rising-mental-health-needs-of-an-aging-population-a-workshop

- Proceedings-in-Brief of the workshop will be published following National Academies procedures. Rapporteurs will compose the proceedings from the workshop transcript and external reviewers will examine the proceedings to make sure it accurately reflects workshop discussions and conforms to institutional policies.

- Interested in receiving updates from the Forum on Mental Health and Substance Use Disorders or the National Academies of Sciences, Engineering, and Medicine's Health and Medicine Division?

  Sign up for the **Forum** listserv at: https://nationalacademies.us8.list-manage.com/subscribe?u=ab74d126b7d2db12591de5c2c&id=211686812e

  Like **NASEM Health and Medicine Division** on Facebook: www.facebook.com/NASEMhealth

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ADDRESSING THE RISING MENTAL HEALTH NEEDS OF AN AGING POPULATION

DAY 1 MAY 15, 2023 12:00PM—5:00 PM ET	
12:00 PM	**WELCOME (5-MINS)**

Rosalie Liccardo Pacula, PhD
Professor
Elizabeth Garrett Endowed Chair in Health Policy, Economics, and Law
University of Southern California
Co-chair, Forum on Mental Health and Substance Use Disorders

12:05 PM	**LIVED EXPERIENCE PANEL (30-MINS)**

Moderator:
Michael B. Friedman, LMSW
Co-founder & Honorary Chair, The Geriatric Mental Health Alliance of NY
Adjunct Associate Professor, Columbia University School of Social Work
Planning Committee Member

Panelists:
Charita Cole Brown
Author
National Alliance on Mental Illness (NAMI)

Sandra Cohen
Caregiver spouse (now widowed)
Former Asst. Attorney General Maryland
Adjunct Professor, University of Maryland School of Law (Retired)
Portrait Painter

Nicole Jorwic
Chief of Campaigns and Advocacy
Caring Across Generations

Harvey Rosenthal
Executive Director
New York Association of Psychiatric Rehabilitation Services, Inc. (NYAPRS)

12:35 PM	SESSION 1: CLINICAL CONTEXT (100-MINS)

12:35 | DEMOGRAPHICS AND EPIDEMIOLOGY: MENTAL ILLNESS IN OLD AGE

Jovier Evans, PhD
Branch Chief
Geriatrics and Aging Processes Research Branch
National Institute of Mental Health (NIMH)

1:00 PM | PSYCHOTIC DISORDERS

Carl I. Cohen, MD
SUNY Distinguished Service Professor
Division of Geriatric Psychiatry
Director, Fellowship Program

1:15 PM | DEPRESSION/MOOD DISORDERS

Charles F. Reynolds III, MD
Distinguished Professor of Psychiatry and
UPMC Endowed Professor in Geriatric Psychiatry, emeritus
University of Pittsburgh School of Medicine
Planning Committee Co-chair

1:30 PM | SUBSTANCE-USE DISORDERS

Daniel Blazer, PhD, MD
JP Gibbons Professor Emeritus of Psychiatry and Behavioral Sciences
Duke University School of Medicine

1:45 PM | NEURO-PHYSIOLOGICAL VIEW OF MENTAL HEALTH AND SUBSTANCE-USE DISORDERS

Gwenn S. Smith, PhD
Director, Division of Geriatric Psychiatry and Neuropsychiatry
Richman Family Professor for Alzheimer's and Related Diseases
Departments of Psychiatry and Behavioral Sciences and Radiology and Radiological Sciences
Johns Hopkins University School of Medicine

2:00 PM | CO-OCCURENCE OF DEMENTIA AND MENTAL ISSUES/BRAIN HEALTH AND COGNITIVE FITNESS

Perminder S. Sachdev, AM, MBBS, MD, PhD, FRANZCP, FAAHMS
Professor of Neuropsychiatry
Co-Director, Centre for Healthy Brain Ageing
University of New South Wales Sydney
Clinical Director, Neuropsychiatric Institute
Prince of Wales Hospital, Sydney Australia

2:15 PM	**BREAK (15-MINS)**
2:30 PM	**SESSION 2: HEALTH DISPARITIES AND SOCIAL DETERMINANTS OF HEALTH (60-MINS)**

2:30 PM | OVERVIEW: AT-RISK COMMUNITIES

Narda Ipakchi, MBA
Vice President, Policy
The SCAN Foundation
Planning Committee Member

2:35 PM | RACIAL AND ETHNIC DISPARITIES IN AGING POPULATIONS

Kellee White, MPH, PhD
Associate Professor, Health Policy Management
University of Maryland School of Public Health

Arturo Vargas Bustamante, PhD, MPP
Professor of Health Policy and Management
Faculty Research Director
Latino Policy and Politics Institute
University of California, Los Angeles Fielding School of Public Health

Spero M. Manson, PhD
Distinguished Professor of Public Health and Psychiatry
Director, Centers for American Indian and Alaska Native Health
Colorado Trust Chair in American Indian Health

3:05 PM | OLDER LGBTQIA+ ADULTS & AGING

Aaron Tax
Managing Director of Government Affairs and Policy Advocacy
Services and Advocacy for Gay, Lesbian, Bisexual, and Transgender Elders (SAGE)

3:15 PM | ECONOMIC INSECURITY

Joseph Benitez, PhD
Assistant Professor

College of Public Health
University of Kentucky

3:30 PM	SESSION 3: INTEGRATION, ACCESS, QUALITY, COST, AND EQUITY (60-MINS)

3:30 PM | INTEGRATING BEHEAVIORAL HEALTH SERVICES AND PRIMARY CARE

Jürgen Unützer, MD, MPH, MA
Professor and Chair, Psychiatry & Behavioral Sciences
Founder, AIMS Center
University of Washington

3:45 PM | PUBLIC HEALTH INTEGRATION INTO ACCOUNTABLE CARE ORGANIZATIONS

Jie Chen, PhD
Professor, Health Policy and Management
Director, The Hospital And Public health interdisciPlinarY Research (HAPPY) Lab
University of Maryland School of Public Health
Planning Committee Co-chair

4:00 PM | CERTIFIED COMMUNITY BEHAVIORAL HEALTH CLINICS

David de Voursney, MPP
Director, Division of Service and Systems Improvement
Center for Mental Health Services
Substance Abuse and Mental Health Services Administration (SAMHSA)

Eric Weakly, MSW, MBA
Western Branch Chief
SAMHSA

4:15 PM | MEDICARE

Douglas Jacobs, MD, MPH
Chief Transformation Officer
Centers for Medicare and Medicaid Services (CMS)

4:30 PM	AUDIENCE Q&A (25-MINUTES) **Moderator:** **Charles F. Reynolds III, MD** Distinguished Professor of Psychiatry and UPMC Endowed Professor in Geriatric Psychiatry, emeritus

	University of Pittsburgh School of Medicine *Planning Committee Co-chair*
CLOSING REMARKS	
4:55 PM	**Kirsten Beronio, JD** Senior Policy Advisor Center for Medicaid and CHIP Services (CMCS) *Planning Committee Member* *Member, Forum on Mental Health and Substance Use Disorders*
5:00 PM	**WORKSHOP ADJOURNS**

DAY 2 MAY 16, 2023 9:00 AM—3:00 PM ET	
9:00 AM	**WELCOME (10-MINS)**
Rosalie Liccardo Pacula, PhD Professor Elizabeth Garrett Endowed Chair in Health Policy, Economics, and Law University of Southern California *Co-chair, Forum on Mental Health and Substance Use Disorders*	
9:10 AM	**SESSION 4: WORKFORCE (60-MINS)**
9:10 AM | OVERVIEW: WORKFORCE NEEDS TO SUPPORT THE WELL-BEING OF OLDER ADULTS WITH MENTAL HEALTH CONDITIONS **Stephen Bartels, MD, MS** Director, The Mongan Institute Director, Health Policy Research Center	
9:20 AM | CLINICAL PHARMACIST PRACTITIONERS **Tera Moore, PharmD, BCACP, BCPS** National Clinical Pharmacy Practice Program Manager Clinical Practice Integration and Model Advancement Veterans Affairs Central Office	
9:30 AM | PARAPROFESSIONALS **Jin Hui Joo, MA, MD** Assistant Professor	

BrightFocus Foundation
Johns Hopkins Bloomberg School of Public Health

Vikram Patel, PhD, MB
The Pershing Square Professor of Global Health
Harvard Medical School

9:50 AM | INTERPROFESSIONAL CONSULT

Donna Fick, PhD, RN, GCNS-BC, FGSA, FAAN
Elouise Ross Eberly Endowed Professor
Ross and Carol Nese College of Nursing, Penn State
Director, Tressa Nese and Helen Diskevich Center of Geriatric Nursing Excellence
Member, Forum on Aging, Disability, and Independence

10:00 AM | AUDIENCE Q&A

Moderators:
Jennifer Bean, PharmD
Clinical Pharmacist Practitioner, Geriatric Mental Health
Pharmacy Service
VISN 9 Clinical Resource Hub
Planning Committee Member

Charles F. Reynolds III, MD
Distinguished Professor of Psychiatry and
UPMC Endowed Professor in Geriatric Psychiatry, emeritus
University of Pittsburgh School of Medicine
Planning Committee Co-chair

10:10 AM	SESSION 5: RISK REDUCTION & PROTECTIVE PREVENTION AND EFFECTIVE INTERVENTIONS (60-MINS)

10:10 AM | WELLNESS THROUGH MEANINGFUL ACTIVITIES

Elizabeth R. Skidmore, PhD
Professor, Department of Occupational Therapy
Associate Dean for Research
School of Health and Rehabilitation Sciences
University of Pittsburgh

**10:25 AM | UNIVERSAL, SELECTIVE,
AND INDICATED DEPRESSION PREVENTION**

Olivia Okereke, MD, MS
Terry and Jean de Gunzburg MGH Research Scholar 2021-2026

Associate Professor of Psychiatry
Harvard Medical School
Associate Professor in the Department of Epidemiology,
Harvard T.H. Chan School of Public Health

Director, Geriatric Psychiatry
Director, MGH Psychiatry Center for Racial Equity and Justice
Department of Psychiatry,
Massachusetts General Hospital
Harvard Medical School

10:40 AM | PROMOTING RESILIENCE AND POSITIVE MENTAL HEALTH IN OLDER ADULTS

Dilip Jeste, MD
Director
Global Research Network on Social Determinants of Mental Health and Exposomics
President-Elect, World Federation for Psychotherapy

10:55 AM | AUDIENCE Q&A

Moderators:
Vincent Mor, PhD
Florence Pirce Grant Professor
Department of Health Services, Policy & Practice,
Brown University School of Public Health
Planning Committee Member

Jie Chen, PhD
Professor, Health Policy and Management
Director, The Hospital And Public health interdisciPlinarY Research (HAPPY) Lab
University of Maryland School of Public Health
Planning Committee Co-chair

11:10 AM	SESSION 6: SUPPORTIVE COMMUNITIES (60-MINS)

11:10 AM | SOCIAL DISCONNECTION

Thomas Cudjoe, MD, MPH
Robert and Jane Meyerhoff Endowed Professor
Assistant Professor of Medicine
Division of Geriatric Medicine and Gerontology
Johns Hopkins University School of Medicine

11:25 AM | VICTIMS OF TRAUMA

Nancy Kusmaul, PhD, MSW
Associate Professor, Department of Social Work
University of Maryland, Baltimore County

11:40 AM | BUILDING COMMUNITY-BASED PARTNERSHIPS

Gary J. Kennedy, MD
Professor and Vice Chair for Education
Director, Division of Geriatric Psychiatry and Fellowship Program
Department of Psychiatry and Behavioral Sciences
Montefiore Medical Center
Albert Einstein College of Medicine

11:55 AM | AUDIENCE Q&A

Moderators:
Jennifer Bean, PharmD
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Michael B. Friedman, LMSW
Co-founder & Honorary Chair, The Geriatric Mental Health Alliance of NY
Adjunct Associate Professor, Columbia University School of Social Work
Planning Committee Member

12:10 PM	**LUNCH/BREAK (60-MINUTES)**
1:15 PM	**SESSION 7: CHALLENGES AND FUTURE DIRECTION (60-MINS)**

1:15 PM | TELEHEALTH

CAPT Heather Dimeris, MS, RD, RDN
Director, Office for the Advancement of Telehealth
Health Resources and Services Administration (HRSA)

1:30 PM | RURAL CHALLENGES

Erin E. Emery-Tiburcio, PhD, ABPP
Associate Professor, Geriatric and Rehabilitation Psychology; Geriatric Medicine
Co-Director, Rush Center for Excellence in Aging
Rush University Medical Center

1:45 PM | TECHNOLOGY DEVELOPMENT, IMPLEMENTATION, AND DISSEMINATION

Sara J. Czaja, PhD
Gladys and Roland Harriman Professor of Medicine

Director, Center on Aging and Behavioral Research
Division of Geriatrics and Palliative Medicine
Weill Cornell Medicine

Philip Harvey, PhD
Professor of Psychiatry and Behavioral Sciences
Chief Director, Division of Psychology
Vice Chair for Research
University of Miami Miller School of Medicine

2:00 PM | AUDIENCE Q&A

Moderator:
Emma Nye, MPA
Public Health Analyst
US Department of Health and Human Affairs
Office of the Assistant Secretary for Planning and Evaluation (ASPE)
Planning Committee Member

2:15 PM	**ADVOCACY GROUP PANEL (30-MINS)**

Moderator:
Michael B. Friedman, LMSW
Co-founder & Honorary Chair, The Geriatric Mental Health Alliance of NY
Adjunct Associate Professor, Columbia University School of Social Work
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Panelists:
Kathleen Cameron, MPH
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National Council on Aging (NCOA)

Sarah Lenz Lock, JD
Senior Vice President, Policy & Brain Health
Policy, Research, and International
American Association of Retired Persons (AARP)
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New York Association of Psychiatric Rehabilitation Services, Inc. (NYAPRS)

Jennifer Snow
National Director, Government Relations, Policy & Advocacy
National Alliance on Mental Illness (NAMI)

CLOSING REMARKS

2:45 PM	**Charles F. Reynolds III, MD** Distinguished Professor of Psychiatry and UPMC Endowed Professor in Geriatric Psychiatry, emeritus University of Pittsburgh School of Medicine *Planning Committee Co-chair*
3:00 PM	**WORKSHOP ADJOURNS**

Speaker and Moderator Roster

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Director, The Mongan Institute
Director, Health Policy Research Center

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National Clinical Pharmacy Practice Program Manager
Clinical Practice Integration and Model Advancement
Veterans Affairs Central Office

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Florence Pirce Grant Professor
Department of Health Services, Policy & Practice,
Brown University School of Public Health

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Founder, AIMS Center
University of Washington

Eric Weakly, MSW, MBA
Western Branch Chief
SAMHSA

Kellee White, MPH, PhD
Associate Professor, Health Policy Management
University of Maryland School of Public Health

* National Academy of Medicine (NAM) Member

Speaker Bios

Stephen Bartels MD, MS is the inaugural James J. and Jean H. Mongan Chair in Health Policy and Community Health, Director of the Mongan Institute at Massachusetts General Hospital, and Professor of Medicine at Harvard Medical School. The Mongan Institute serves as the academic home for 12 research centers and over 145 research faculty and research fellows at MGH dedicated to training and research in population and health care delivery team science aimed at achieving health equity and improving the lives of people with complex health needs. The Mongan Institute bridges research spanning data science to delivery science, and evaluative science to implementation science including a variety of disciplines and methods such as epidemiology, predictive analytics, cost-effectiveness, health policy, decision science, health disparities, health intervention and implementation research. Over the academic 2021-2022 year, Mongan Institute faculty published over 1600 peer reviewed articles and as principal investigators were responsible for over $108M in research funding. (https://www.monganinstitute.org/) Before coming to MGH from Dartmouth in 2018, he was the Herman O West Professor of Geriatrics, Professor of Psychiatry, Professor of Community & Family Medicine at the Geisel School of Medicine at Dartmouth, and Professor of Health Policy at the Dartmouth Institute for Health Policy and Clinical Practice. At Dartmouth he established and directed the Dartmouth Centers for Health and Aging and served as Co-Principal Investigator for Dartmouth's SYNERGY Clinical Translational Science Institute, Principal Investigator for Dartmouth's CDC Health Promotion Research Center, and Principal Investigator for two T32 post-doctoral research training programs. Dr. Bartels has authored over 365 publications and has mentored over 50 early career investigators. Over the past several decades he has led productive research developing, testing, and implementing interventions focused on complex health conditions and health disparities, co-occurring physical and mental disorders, health care management, health coaching, health promotion interventions for obesity and smoking, aging and geriatrics, automated telehealth and mobile technology, population health science, applied health care delivery science, and implementation science. As a national expert on implementation research he previously served as Chair for the National Institute of Health Dissemination and Implementation Research in Health (DIRH) Study Section and currently oversees the implementation research and training program at the Mongan Institute and serves as Co-PI for the Methods Unit for a NCI P50 "Implementation Science Center for Cancer Control Equity".

Jennifer Bean, PharmD received her Bachelor of Science from the University of Tennessee Martin and Doctor of Pharmacy from the University of Tennessee Health Science Center in Memphis, Tennessee. She completed a PGY1 Pharmacy Residency with VA Tennessee Valley Healthcare System. She became board certified in pharmacotherapy in 2007 and psychiatry in 2012. She has had experience in long-term care, medication use evaluation, Home-Based Primary Care, mental health services, Academic Detailing, pharmacy administration and as a PGY1 and PGY2 Psychiatry Residency Program Directors. In 2019, she was named the TSHP Health-systems Pharmacist of the year. is an active member of the College of Psychiatric and Neurologic Pharmacists and American College of Clinical Pharmacy. Currently, she is a clinical pharmacist practitioner practicing in on an interprofessional team within the VISN 9 Clinical Resource Hub.

Joseph Benitez, PhD is an assistant professor and health economist in University of Kentucky's (UK) College of Public Health in the Department of Health Management and Policy. He is also a courtesy faculty member in the Department of Economics and UK's Martin School of Public Policy and Administration. Dr. Benitez studies the role of public policy in shaping access to care for

medically underserved population with an emphasis on Medicaid policy and Medicaid program design. His current projects focus on the utility of Medicaid coverage as a safety net during unemployment spells and how variation in network characteristics influence access to care within Medicaid managed care (MMC) programs. He has been previously funded by the Robert Wood Johnson Foundation to study how households use Medicaid during transitional poverty spells and unanticipated periods of joblessness. Additionally, Dr. Benitez has ongoing projects to understand the interactive effects between Medicaid eligibility and payment guidelines on health care access. His work has been published in Health Affairs, JAMA Health Forum, Medical Care, Health Services Research, and Medical Care Research and Review. At present, he is working as a non-residential fellow with KFF's, formerly known as the Kaiser Family Foundation, Program on Medicaid and the Uninsured team for the 2022-2023 academic year.

Kirsten Beronio, JD has over 20 years of experience developing federal policies aimed at improving access to and quality of mental health and substance use disorder treatment. Her experience includes leadership positions at federal agencies, advocacy organizations, and the United States Senate. She recently returned to the Center for Medicaid and Children's Health Insurance Program (CHIP) Services (CMCS) at the Centers for Medicare and Medicaid Services as a Senior Policy Advisor in the Office of the Center Director. She was previously the Director of Policy and Regulatory Affairs for the National Association for Behavioral Healthcare (NABH). Before joining NABH, she had served as a Senior Advisor on Behavioral Health Care for CMCS. From 2012 to 2016, she was the Director of the Behavioral Healthcare Division within the Office of the Assistant Secretary for Planning and Evaluation at the U.S. Department of Health and Human Services (HHS). Prior to working for HHS, Kirsten was Vice President for Federal Policy Development and Advocacy at Mental Health America. She served as Medicaid and CHIP Counsel for the Senate Finance Committee and held other positions in the Senate in the late 1990s to 2001.

Daniel Blazer, PhD, MD [NAM] is the J.P. Gibbons Professor of Psychiatry Emeritus at Duke University School of Medicine. Blazer joined Duke in 1976 as an assistant professor of psychiatry, where he became an associate professor in 1980 and a full professor in 1985. He became an adjunct professor of epidemiology at the UNC Gillings School of Global Public Health in 1986, and a professor of community and family medicine there in 1988. He became the J.P. Gibbons Professor of Psychiatry at Duke University School of Medicine in 1990. He has served on three Institute of Medicine boards, and was the chair of two of them. He has also been a member and the chair of the Institute of Medicine's Membership Committee. Blazer is known for researching the epidemiology of depression, substance use disorders, and the occurrence of suicide among the elderly. He has also researched the differences in the rate of substance use disorders among races. Blazer was elected into the Institute of Medicine in 1995, and received their Distinguished Service Medal in 2014. He has also received the Distinguished Alumni Award at the University of North Carolina School of Public Health in 1989, the Rema LaPouse Award from the American Public Health Association in 2001, the First Annual Geriatric Psychiatry Research Award from the American College of Psychiatrists in 2004, the Kleemeier Award from the Gerontological Society of America, the Distinguished Faculty Award from Duke Medical School in 2005, and the Oskar Pfister Award for the integration of religion and psychiatry from the American Psychiatric Association in 2008.

Charita Cole Brown was diagnosed with a severe form of bipolar disorder while finishing her final semester as an English major at Wesleyan University. Doctors predicted she would never

lead a "normal" life. Despite that prognosis and because she sought treatment, Charita went on to marry, raise a family, earn a master's degree in teaching and enjoy a fulfilling career in education. Her powerful story is chronicled in her debut book, Defying the Verdict: My Bipolar Life (Curbside Splendor Publishing, June 2018).

Dr. Arturo Vargas Bustamante is a Professor in the Department of Health Policy and Management at the UCLA Fielding School of Public Health and the Faculty Research Director at the UCLA Latino Policy and Politics Institute. He has a broad background in health policy, with specific training and expertise in health care disparities research and secondary data analysis, health care cost analysis, and program design, implementation and evaluation. His research investigates unexplored or underexplored topics on access to and use of health care, predominantly among Latinos/Hispanics and immigrants in the United States. He also specializes in the comparative analyses of health care delivery systems in Latin American countries. His research has been published in reputable health policy journals such as Health Affairs, Health Services Research, Social Science and Medicine, Medical Care, among others. The outcomes of his research have had direct policy applications, particularly since they estimate the share of disparities that can be attributed to socioeconomic and demographic factors and the corresponding part associated to health system variables, such as usual source of care and insurance status.

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Kathleen A. Cameron, MPH has over 30 years of experience in the health care and gerontology fields as a pharmacist, researcher, and program director focusing on health promotion and disease prevention, geriatric pharmacotherapy, mental health, long-term services and supports, and caregiving. Ms. Cameron is Senior Director at the National Council on Aging (NCOA) where she serves as subject matter expert on a variety of health-related topics, including mental health and aging, and oversees the U.S. Administration on Aging-funded National Falls Prevention and Chronic Disease Self-Management Resource Centers, and the National Institute of Senior Centers. Her work supports policy and advocacy efforts at NCOA to promote systems change and improve health care and social service delivery for older adults. Ms. Cameron is currently the Chair of the National Coalition on Mental Health and Aging. Ms. Cameron was previously with JBS International as director of a SAMHSA-funded technical assistance center aimed at educating the aging network, mental health providers, and policy makers about behavioral health challenges and solutions older adults. She has also held positions at the American Society of Consultant Pharmacists Foundation in the 2000s and the National Council on Aging in the late

1990s. Ms. Cameron received her BS degree in pharmacy from the University of Connecticut and her Master of Public Health degree from Yale University.

Jie Chen, PhD, is a Professor in the Department of Health Policy and Management in the School of Public Health at the University of Maryland at College Park. She earned her Ph.D. in health economics from Stony Brook University. Her research fields include mental health care disparities, health care delivery system and policy, aging health, and dementia care. Dr. Chen's primary interest is to break down silos between healthcare delivery systems and identify best practices to promote and sustain health care-community-public health integration. She is the director of the Hospital And Public health interdisciPlinarY research (HAPPY) Lab, which adopts a multidisciplinary approach and collaborates with clinical leaders, community partners, and organizational decision-makers. Dr. Chen has 20 years of research experience working with large secondary data sets and claims data and developing, refining, and applying analytical methods. She has authored over 150 scholarly articles and book chapters. She has served as a principal investigator on several projects funded by the National Institute on Aging, the National Institute of Mental Health, the National Institute on Minority Health and Health Disparities, and the Agency for Healthcare Research and Quality. Dr. Chen has also worked closely with local health departments, hospitals, and community partners to design, develop, and evaluate community interventions.

Carl I. Cohen, MD is SUNY Distinguished Service Professor & Co-Director, Division of Geriatric Psychiatry, Co-Director of the Center of Excellence for Alzheimer's Disease, and Co-Director, Brooklyn Initiative to Develop Geriatrics Education at SUNY Downstate Health Sciences University. He is also the founding director of the Geriatric Psychiatry Fellowship Program. He is a graduate of SUNY Buffalo School of Medicine and completed his residency at NYU /Bellevue medical centers. He has authored over 220 scholarly articles chapters and book chapters, 4 books, and a training manual on topics affecting older adults including schizophrenia, depression, anxiety, social network analysis, homelessness, and social and cultural psychiatry. He has been the recipient of over 60 research, training, and service grants. He has received numerous awards and honors including Educator of the Year (American Association of Geriatric Psychiatry), Psychiatrist of the Year (American Association of Community Psychiatry), the Exemplary Psychiatrist Award (NAMI), "Best Doctors in America," "Best Doctors in New York," "Who's Who in the World," and "Who's Who in America." He was a recipient of a "Geriatric Mental Health Academic Award" from the National Institute of Mental Health.

Sandra J. Cohen retired from a legal career as Assistant Attorney General for the State of Maryland where she handled a diverse portfolio and served as Principal Counsel to a state agency. She taught an advanced seminar on analysis and drafting of negotiated agreements as Adjunct Professor at the University of Maryland School of Law. Ms. Cohen is an award-winning portrait painter and published poet, who has been an artist in residence and managed studios for figure study and portraiture. Her husband for more than half a century was a professor and scholar who developed Alzheimer's Disease toward the end of his life. Ms. Cohen has been asked to speak publicly about her personal experience as a care-giver spouse during her husband's illness. She has focused on the difficulty of obtaining diagnosis, that it was pivotal and restorative to know, her husband's capacity to learn despite Alzheimer's, and their sweet quality of life despite his disease. (2018 Alzheimer's Disease International conference, Chicago ; 2019 keynote speaker Mayo Clinic/Alzheimer's Association Conference, Minnesota.)

Thomas K.M. Cudjoe, MD, MPH is the Robert and Jane Meyerhoff Endowed Professor, Assistant Professor of Geriatric Medicine and Gerontology at the Johns Hopkins School of Medicine. He is a board certified physician in internal medicine and geriatric medicine. He leverages community-based strategies, mixed-methods and human centered design to understand and address social isolation. Additionally, he has led studies that examined the prevalence of social isolation among older adults and associations between social isolation and health outcomes. Dr. Cudjoe also serves on the Scientific Advisory Council for the Foundation for Social Connection. His work has been featured in the New York Times, Wall Street Journal, NPR, and on Good Morning America.

Sara J. Czaja, PhD is the Gladys and Roland Harriman Professor of Medicine, Professor of Gerontology and the Director of the Center on Aging and Behavioral Research at Weill Cornell College of Medicine. She is also the Director of the Center on Research and Education for Aging and Technology Enhancement (CREATE), which focuses on the interface between older adults and technology systems. CREATE is funded by the National Institute on Aging involves collaboration with Florida State University, the University of Illinois at Urbana Champaign, the University of Miami, Cornell University and Cornell Tech. She is also the Co-Director of the ENHANCE (Enhancing Neurocognitive Health, Abilities, Networks, & Community Engagement) Center, funded by the National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR), with a focus on how technology can support older adults living with cognitive impairment, including mild cognitive impairment (MCI)and traumatic brain injury(TBI). Dr. Czaja's research interests include aging and cognition, family caregiving, aging and technology, training, and functional assessment. She has received continuous funding from the National Institutes of Health as well as NIOSH, Retirement Research Foundation, Administration on Community Living to support her research. She has written numerous books, book chapters, and over 180 scientific articles. She is a Fellow of the American Psychological Association, the Human Factors and Ergonomics Society and the Gerontological Society of America. She is also Past President of Division 20 (Adult Development and Aging) of the American Psychological Association. She served as a member of National Academies of Science Engineering and Medicine (NASEM) Board on Human Systems Integration, a member of the NASEM Committee on the Public Health Dimensions of Cognitive Aging and as a member of the NASEM Committee on Family Caregiving for Older Adults. She is currently a member of the Advisory Committee of Governor Hochul's Master Plan for Aging for New York. Dr. Czaja is the recipient of the 2015 M. Powell Lawton Distinguished Contribution Award for Applied Gerontology, of the American Psychological Association (APA), the 2013 Social Impact Award for the Association of Computing Machinery (ACM) and the 2013 Jack A. Kraft Award for Innovation from the Human Factors and Ergonomics Society, The Franklin V. Taylor Award, Division 21, APA), and the M. Powell Lawton Award of the Gerontological Society of America (2020).

David de Voursney, MPP is the director of the Division of Service and Systems Improvement within the Center for Mental Health Services at SAMHSA. His work has included research, implementation, evaluation, and policy development related to supports for adults with serious mental illness, primary and behavioral health care integration, child and youth services, criminal justice, and other topics related to mental health and substance use disorders. Over the past decade and a half David has also worked as a consultant, branch chief, policy analyst, and government project officer within SAMHSA and as a policy analyst within the Office of the Assistant Secretary for Planning and Evaluation in the Office of the Secretary of Health and Human Services. David started his career at a community mental health center in rural Indiana working with children, youth, and families and a group home serving justice-involved youth in

central Virginia. He has a bachelor's degree in psychology from Earlham College and a master's degree in public policy from the University of Michigan.

CAPT Heather Dimeris, MS, RD, RDN serves as the Director for the Office for the Advancement of Telehealth (OAT), Health Resources and Services Administration (HRSA) at U.S. Department of Health and Human Services. She is a Captain (CAPT) in the United States Public Health Service (USPHS). The Office promotes telehealth as a way to deliver health care, and supports the Department of Health & Human Services' (HHS) telehealth efforts to expand access and improve health outcomes.Throughout her career, CAPT Dimeris has been committed to expanding health care access to advance the public's health, particularly in the area of telehealth. Her work included the creation of multiple telehealth grant programs including the Substance Abuse Telehealth Network Grant Program, the Tele-Behavioral Health Network Grant Program, the Telehealth Broadband Pilot Program, the Telehealth Center of Excellence Grant Program, and the Telehealth Technology-Enabled Learning Program. In response to the unprecedented Public Health Emergency, CAPT Dimeris led the rapid creation of the HHS Telehealth Website in partnership with the White House Office of Science and Technology Policy, Immediate Office of the Secretary and the Assistant Secretary for Preparedness Response. The HHS Telehealth Website, receiving over one million page views in its first year, serves as a resource for patients and providers to obtain or deliver health care services via telehealth. CAPT Dimeris also created and leads the HRSA Telehealth Workgroup that serves as a resource for rural and underserved communities and provides telehealth-related recommendations to federal and state governments. CAPT Dimeris led the HRSA Telehealth Strategic Plan that allowed HRSA to be an agency-wide leader in the field of telehealth, resulting in over 1,300 HRSA grants that include telehealth. In 2021, CAPT Dimeris received the HHS Award for Distinguished Service for exemplary leadership and innovation in expanding telehealth in response to the COVID-19 pandemic. Prior to her role in OAT, CAPT Dimeris served as the Deputy Associate Administrator for the Federal Office of Rural Health Policy (FORHP), for five years. In that role, she managed a broad range of rural health issues with an emphasis on telehealth policy and programs as well as rural health policy and research. CAPT Dimeris joined HRSA in 2003 as a HRSA Scholar. In her early years at HRSA, CAPT Dimeris served as a project officer and policy analyst for FORHP and in 2007, she became the Associate Director and Senior Advisor for FORHP to manage the office operations and assist with overall management of FORHP. CAPT Dimeris was dietitian for Malden Hospital in Massachusetts prior to working at HRSA. She holds a Master of Science degree in public health nutrition from Case Western Reserve University and a Bachelor of Science degree in dietetics from Indiana University of Pennsylvania.

Erin E. Emery-Tiburcio, PhD, ABPP is an Associate Professor of Geriatric & Rehabilitation Psychology and Geriatric Medicine at Rush University Medical Center, as well as Co-Director of the Rush Center for Excellence in Aging (aging.rush.edu), co-director of CATCH-ON, the HRSA-funded Geriatric Workforce Enhancement Program based at Rush University Medical Center (www.catch-on.org), and co-director of the E4 Center: Engage, Educate, and Empower for Equity, The Center of Excellence for Behavioral Health Disparities in Aging (www.e4center.org). She is past-Chair of the American Psychological Association Committee on Aging, past-President of the Society for Clinical Geropsychology, and currently co-chairs the APA taskforce to revise the APA Guidelines for Working with Older Adults.

Jovier Evans, PhD is currently Branch Chief of the Geriatrics and Aging Processes Research Branch, and Associate Director, Aging and Life Course Research in the Division of Translational

Research at the National Institute of Mental Health. The Geriatrics and Aging Processes Research Branch supports programs of research, research mid-career development, and resource development in the etiology, pathophysiology and course of mental disorders of late life, the relationships between aging and mental disorders, the treatment and recovery of persons with aging-related disorders, and the prevention of these disorders and their consequences. In addition to studies focused on older adults and their particular mental health issues and needs, the branch supports neurodevelopmental investigations of potential risk and resilience factors pertinent to mental disorders and longer-range trajectories of change that may involve examining individuals during earlier phases of the life span, as well.
Dr. Evans oversees the Branch's Psychosocial Intervention and Aging, and Pharmacological and Somatic Intervention and Aging programs. Both the Psychosocial and Pharmacological and Somatic Intervention programs support experimental and observational studies aimed at developing and testing behavioral, psychosocial, pharmacologic and somatic interventions for the treatment, prevention, or rehabilitation of the mental disorders of late life. Dr. Evans received his PhD in clinical health psychology from the University of Miami in 1995, completed a clinical internship at the New Orleans VAMC and did postdoctoral research in geriatric mental health and clinical neuropsychology at the University of California, San Diego. Prior to working at NIMH, Dr. Evans was an Assistant Professor in the psychology department at Indiana University Purdue University in Indianapolis.

Donna Marie Fick, PhD, RN, GCNS-BC, FGSA, FAAN is the Elouise Ross Eberly Endowed Professor of the Ross & Carol Nese College of Nursing at The Pennsylvania State University, and Director of the Tressa Nese and Helen Diskevich Center of Geriatric Nursing Excellence. Dr. Fick is best known for her NIH funded work on mentation, delirium superimposed on dementia (DSD) and ultra-brief delirium detection at the bedside. Along with Dr Marcantonio and their team, she has transformed the way clinicians approach delirium and DSD. Their tools, the UB-2 and UB-CAM, are used in health systems across the world and the UB-CAM is available as a free app here https://apps.apple.com/us/app/ub-cam-delirium-screen/id1591656740. She serves on the American Geriatrics Society Board as President beginning in May 2023, and has been a member or co-chair of the interdisciplinary panel for the American Geriatrics Society Beers Criteria for inappropriate medication use in older adults since 2002. Dr. Fick co-leads Age-Friendly Care-PA working with an FQHC, Primary Health Network, and interprofessional teams to spread age-friendly care to rural older adults in PA. She is a member of the National Academy of Science Forum on Aging, Disability, and Independence and she serves as a faculty and advisory member on Creating an Age Friendly Health System Initiative with the John A. Hartford Foundation and the Institute for Healthcare Improvement. She is also a site lead with the Revisiting the Teaching Nursing Home Project. She is board-certified in geriatrics and her goal in her research and service is to improve the care of older adults, persons with disabilities, and their care partners.

Over the course of his 55-year career as a social worker, Michael Friedman has served as a direct service provider, an administrator, a government official, an educator, and a social advocate. He retired in 2010 from his position as Director of The Center for Policy, Advocacy, and Education of The Mental Health Association of New York City, which he founded in 2003. He also retired as Chair of the Geriatric Mental Health Alliance of New York, which he co-founded in 2004, and as the Facilitator of the Veterans' Mental Health Coalition in NYC, which he co-founded in 2009.

Michael B. Friedman, LMSW has served on numerous advisory and advocacy groups at the federal, state, and local levels. After retirement, Mr. Friedman continued teaching health policy and mental health policy at the Columbia School of Social Work until 2019, when he moved to Baltimore to be closer to his grandchildren. He now teaches mental health policy there via Zoom. Currently, he serves as Chair of the AARP of Maryland Cognitive and Behavioral Health Advocacy Team and as Co-Chair of The Ad Hoc Group of Experts on Geriatric Cognitive and Behavioral Health. Mr. Friedman has published over 250 essays, articles, lectures, and book chapters. Many are on his website, www.michaelbfriedman.com.

Philip D. Harvey, PhD is Leonard M. Miller Professor of Psychiatry, vice chair for research, and director of the Division of Psychology at the University of Miami Miller School of Medicine. He is the author of over 1,000 scientific papers and abstracts and he has written over 70 book chapters. He has been designated as the being in the top 1% of all researchers in mental health in citations each year since 2010. His research has focused on cognition and everyday functioning, in healthy aging, schizophrenia, and interactions with serious mental illness, aging and technology. He also been studying the effects of cognitive enhancing agents and cognitive and functional skills training in various conditions, including healthy aging, mild cognitive impairment, schizophrenia, dementia, bipolar disorders, and traumatic brain injury. His most recent work has focused on technology-based momentary assessments, with a focus on everyday activities in aging, MCI, and in schizophrenia and bipolar disorder.

He has received continuous funding from the US National Institute of Health since 1984. He has served on several National Academies Panels, including a joint blue-ribbon panel launched by the Social Security Administration and the National Institute of Mental Health to streamline the process of award of disability compensation to people with serious mental illness. He has received a number of awards, including the Inaugural SIRS Distinguished Contributions award (2012), the 2014 Alexander Gralnick Schizophrenia Research award, the 2014 John Blair Barnwell award from the US Department of Veterans affairs, and 2021 Stanley Dean Schizophrenia Research award from the American College of Psychiatrists.

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Narda Ipakchi, MBA is Vice President of Policy for The SCAN Foundation, and is an experienced health and aging policy professional with deep expertise in policies and programs that support older adults, including Medicare, Medicare-Medicaid integrated programs, and long-term services and supports. Prior to joining the Foundation, she served as the Medicare & Medicaid Policy Director for the United States Senate Aging Committee, under the leadership of Chairman Bob Casey of Pennsylvania. In this role, she advised the Chairman on key issues impacting older adults and people with disabilities, including nursing home policy changes, expansions in home and community-based services, Medicare prescription drug policy reforms, and Medicare-Medicaid integration. Prior to the Senate, Narda spent approximately 15 years in the private sector, primarily in Medicare and Medicaid policy consulting at Avalere Health, Manatt Health, and Health Management Associates, where she provided quantitative and qualitative policy research and analysis, project implementation support, and other advisory services to a wide array of health care stakeholders including foundations, providers, health plans, states, and other organizations. Narda earned her Master of Business Administration and Bachelor of Arts degrees from the University of Maryland, College Park.

Douglas Jacobs, MD, MPH is the Chief Transformation Officer in the Center for Medicare at the Centers for Medicare and Medicaid Services (CMS). At CMS he is helping lead Medicare's efforts to promote value-based care, advance health equity, and encourage delivery system transformation. This has included overseeing of the largest changes to the Medicare Shared Savings Program in the history of the program, development of the Universal Foundation of Quality Measures across CMS programs, finalization of new policies to promote access to Behavioral Health, and creation of policies and operational changes to promote health equity in Medicare. Prior to this role, he most recently served as the Chief Medical Officer and Chief Innovation Officer for the Pennsylvania Department of Human Services, helping to oversee the state Medicaid and human services programs amidst the pandemic for the 16,000 person state agency. He was tapped by Governor Wolf to lead the state's Whole Person Health Reform initiative, which included expanding value-based care, promoting health equity, and addressing the social determinants of health. Under his leadership, the Department of Human Services created Pennsylvania's first equity incentive program in Medicaid, established new rules incorporate community-based organizations to address the social determinants of health, and oversaw Medicaid's increasing movement towards value-based care. He also helped lead the COVID-19 response for the agency, creating programs to protect long-term care facilities and roll out the COVID-19 vaccine to vulnerable populations. Dr. Jacobs is a practicing board-certified internal medicine physician and is an Assistant Professor of Clinical Medicine at the Penn State Hershey Medical Center. He is also an avid writer, having published pieces in the New England Journal of Medicine, Journal of the American Medical Association, New York Times, and Washington Post. He trained in Internal Medicine Primary Care at the Brigham and Women's Hospital and served as Chief Resident at the West Roxbury VA hospital, received his MD at the University of California San Francisco School of Medicine, his MPH at the Harvard T.H. Chan School of Public Health, and his Bachelor's in Sciences from Brown University.

Dilip V. Jeste, MD, is former Senior Associate Dean for Healthy Aging and Senior Care and Distinguished Professor of Psychiatry and Neurosciences at University of California, San Diego; President-Elect of the World Federation for Psychotherapy; and Editor-in-Chief of International Psychogeriatrics. He is a member of the National Academy of Medicine, and Past President of the American Psychiatric Association.

Jin Hui Joo, MA, MD is a geriatric psychiatrist and faculty member in the Department of Psychiatry at Massachusetts General Hospital, Harvard Medical School. She was Associate Professor on the faculty at Johns Hopkins Hospital where she was a clinician and researcher for 10 years before joining MGH. She received her undergraduate degree from the University of Chicago, has a medical degree from the University of Pittsburgh and completed her psychiatry training and research fellowship at the University of Pennsylvania. Prior to embarking on her medical training, Dr. Joo received a Master's degree in international affairs from the Fletcher School of Law and Diplomacy where she focused on U.S.- East Asian relations. Dr. Joo has received funding from the National Institute of Mental Health to conduct health services research. She focuses her work on understanding the experience of depression and developing psychosocial interventions to increase access to depression care among underserved older adults who are ethnic minority and low income. Her goal is to develop non-traditional, community-based depression care services that use paraprofessionals such as peer mentors to engage a population that experience persistent barriers to access. She also provides clinical care to older adults, specializing in depression and dementia with an interest in cultural issues in psychiatric care, and she teaches and mentors medical and psychiatric trainees in geriatric and cultural psychiatry and health services research.

Nicole Jorwic is the Chief of Advocacy and Campaigns at Caring Across Generations. Before joining Caring Across, Nicole was Senior Director of Public Policy and Senior Executive Officer of State Advocacy at The Arc of the United States. Before coming to DC to work on Federal Advocacy and Organizing, Nicole served as Senior Policy Advisor and Manager of the Employment First Initiative in Illinois. Prior to that appointment, Nicole was the CEO/President of the Institute on Public Policy for People with Disabilities. Nicole is also an accomplished special education attorney. Nicole leads and supports many coalitions to advance the priorities of care across generations, including the Care Can't Wait Coalition, the Disability and Aging Collaborative and the Consortium for Constituents with Disabilities LTSS Taskforce. Nicole also chairs the Board for the Quality Trust for People with DIsabilities is a proud board member of the National Association of Direct Support Professionals (NADSP) and a member of the Presidents Committee on People with Intellectual and Developmental Disabilities. Nicole is most importantly a sibling to her brother Chris who is 33 and has autism and on the care team for her 90 year old grandma who has Parkinson's.

Gary J. Kennedy, MD, born in Dallas, is an alumnus of the University of Texas in Austin and the University of Texas Health Science Center in San Antonio. He is a Fellow of the Brookdale Center on Aging of Hunter College, The American Psychiatric Association, and The New York Academy of Medicine. He was the 2002 President of the American Association for Geriatric Psychiatry. He is a member of the National Institute on Aging Special Emphasis Panel for Beeson awards and Vice President of the Scientific Council of the American Foundation for Suicide Prevention. His books (Suicide and Depression in Late Life, Geriatric Mental Health Care, Geriatric Depression) and scientific publications have focused on the behavioral health of older adults. His teaching and research have also been supported by the New York State Department of Health, National Health Research Institute of Taiwan, NIA, NIMH, NHLBI, NEI, The Atlantic Philanthropies, the Robert Wood Johnson Foundation, the United Hospital Fund & New York Community Trust, Irving Weinstein Foundation, The Leslie and Rosalyn Goldstein Foundation, Daniel and Cristina Rackow, The New York Foundation for Elder Care and United Jewish Appeal-Federation of New York.

Nancy Kusmaul, PhD, MSW is an Associate Professor in the Baccalaureate Social Work program at the University of Maryland, Baltimore County. She received her PhD from the University at Buffalo and her Master's in Social Work from the University of Michigan. She was a nursing home social worker for more than a decade. Her research focuses on organizational culture, trauma informed care, and the impact of trauma experiences on workers and care recipients. She is co-chair of the NASW-Maryland Committee on Aging and is a fellow of the Gerontological Society of America. Dr. Kusmaul was a 2019-2020 Health and Aging Policy Fellow. She has done several podcasts on aging, trauma, and nursing homes on various platforms.

Sarah Lenz Lock, JD is Senior Vice President for Policy and Brain Health in AARP's Policy, Research and International (PRI). Ms. Lock leads AARP's policy initiatives on brain health and care for people living with dementia, including serving as the Executive Director of the Global Council on Brain Health, an independent collaborative of scientists, doctors, and policy experts convened by AARP to provide trusted information on brain health. Previously, Ms. Lock was Senior Attorney/Manager at AARP Foundation Litigation conducting health care impact litigation on behalf of older persons. Ms. Lock has been a Trial Attorney for the U.S. Department of Justice, a Legislative Assistant in the U.S. House of Representatives to Congressman Michael D. Barnes working with the Federal Government Service Task Force, and also worked at the law firm of Arent, Fox, Kintner, Plotkin & Kahn.

Spero M. Manson, PhD (Little Shell Chippewa) is Distinguished Professor of Public Health and Psychiatry, directs the Centers for American Indian and Alaska Native Health, and occupies the Colorado Trust Chair in American Indian Health within the Colorado School of Public Health at the University of Colorado Denver's Anschutz Medical Center. His programs include 10 national centers, which pursue research, program development, training, and collaboration with 225 Native communities, spanning rural, reservation, urban, and village settings across the country. A medical anthropologist, Dr. Manson has acquired $268 million in sponsored research to support this work and published 280+ articles on the assessment, epidemiology, treatment, and prevention of physical, alcohol, drug, as well as mental health problems over the developmental life span of Native people. He has served on the National Advisory Councils of 3 institutes at the National Institutes of Health (NIH), and recently completed a 4-year term as a member of its Advisory Committee to the Director. Dr. Manson sits on the Health Equity Advisory Committee of Health Affairs, and the search committee for Editor-in-Chief of the Journal of the American Medical Association. Over the course of his 45-year career, Dr. Manson has mentored more than 150 young scientists, most American Indian or Alaska Native, many of whom now occupy major positions of scientific leadership. His numerous awards include the American Public Health Association's Rema Lapouse Mental Health Epidemiology Award (1998) and Award for Lifetime Contribution to the Field of Mental Health (2019), 4 special recognition awards from the Indian Health Service (1985, 1996, 2004, 2011), election to the National Academy of Medicine (2002); 2 Distinguished Mentor Awards from the Gerontological Society of America (2006; 2007), Association of American Colleges of Medicine's Nickens Award (2006); George Foster Award for Excellence (2006) and Distinguished Career Achievement Award (2020) from the Society for Medical Anthropology, NIH Health Disparities Award for Excellence (2008), Bronislaw Malinowski Award from the Society for Applied Anthropology (2019); Centers for Disease Control Foundation's Elizabeth Fries Health Education Award (2021), and the Rhoda and Bernard Sarnat International Prize in Mental Health from the National Academy of Medicine. He is widely acknowledged as one of the nation's leading authorities in regard to Indian and Native health.

Tera Moore, PharmD, BCACP, BCPS has served the Department of Veteran Affairs for over 19 years and is the National Program Manager for Clinical Practice Integration and Model Advancement with the Department of Veterans Affairs Pharmacy Benefits Management Services, Clinical Pharmacy Practice Office (CPPO). In this role, Dr. Moore develops and manages initiatives that aid in demonstrating the value and criticality of advancing clinical pharmacy practice across VA facilities. She has a particular emphasis on program development, implementation and outcomes assessments designed to evaluate the impact of clinical pharmacy services impact on the quadruple aim of health care including better care, reduced health care costs, improved patient experience and provider well-being in Mental Health, Suicide Prevention, Substance Use Disorders and Neurology. As a component of support for clinical pharmacist practitioners and clinical pharmacy leaders, she leads the innovative mentorship and coaching efforts. These programs provide clinical pharmacy practitioners and clinical pharmacy leaders the skills and support to transform clinical pharmacy practice to the changing needs of patients as part of a high reliability organization.

Vincent Mor, PhD, is the Florence Pirce Grant Professor of Community Health in the Brown University School of Public Health and a senior health scientist in the health services research service at the Providence Veterans Affairs Medical Center. Dr. Mor has been Principal Investigator of over 40 NIH funded grants focusing on the use of health services and the outcomes frail and chronically ill persons experience. He has published over 450 peer reviewed articles was recipient of a Robert Wood Johnson Foundation health policy investigator award and a MERIT award from the National Institute on Aging. In 2011, Dr. Mor was given the Distinguished Investigator Award from AcademyHealth and was elected to the National Academy of Engineering, Science and Medicine. He was one of the authors of the Congressionally mandated Minimum Data Set (MDS) for Nursing Home Resident Assessment and the architect of an integrated Medicare claims and clinical assessment data base used for policy analysis, pharmaco-epidemiology and population outcome measurement. This data resource supports an NIA funded Program Project Grant, "Changing Long Term Care in America", now in its third renewal cycle and makes possible a series of large, pragmatic cluster randomized trials of novel nursing home based interventions. Building upon this work, most recently, he and colleagues around the country were awarded a large grant from the National Institute on Aging to solicit, fund and support multi-site pilot non-pharmacologic intervention projects embedded in health care systems designed to improve the lives of persons living with dementia and their caregivers. This program is expected to test whether interventions found to be effective when implemented by researchers are still effective when embedded in a functioning health care system.

Emma Nye, MPA is a Public Health Analyst in the Division of Disability and Aging of the Office of Behavioral Health, Disability, and Aging Policy, in the Department of Health and Human Services' Office of the Assistant Secretary for Planning and Evaluation. Ms. Nye is the lead for behavioral health and aging, including suicide prevention, the prevalence of behavioral health conditions, and the utilization and cost of behavioral healthcare among older adults. She leads research on the impact of Medicare Improvement for Patients and Providers Act on mental health service use by older adults, and the unique needs of caregivers for people with behavioral health conditions. Ms. Nye also provides expertise on homelessness, elder abuse and neglect, and Alzheimer's disease and related dementias. Emma holds a Master of Public Affairs from the Lyndon B. Johnson School of Public Affairs at the University of Texas, Austin.

Olivia Okereke, MD, MS is a Board-certified geriatric psychiatrist, Director of Geriatric Psychiatry at Massachusetts General Hospital (MGH), Director of the MGH Psychiatry Center for Racial Equity and Justice, Associate Professor of Psychiatry at Harvard Medical School, and Associate Professor in Epidemiology at the Harvard T.H. Chan School of Public Health. Her research focuses on modifiable risk factors and prevention of adverse mental aging and reduction of health disparities in aging. Since 2008 she has been Principal Investigator of a K08, multiple R01-level grants, and numerous other awards in late-life mental health, dementia and disparities. Her commitment to training the next generation of scholars is illustrated by current mentoring roles on 2 T32 and 2 R25 grants. Her expertise in aging has been recognized with invitations as a NIA Geroscience Summit panelist and standing member (2013-2019 term) of an NIH study section. Dr. Okereke has been extensively involved in organizational leadership, community volunteering and education over the past 15 years including: past membership on the Board of Directors of the Alzheimer's Association MA/NH Chapter (6-year term limit) and Chair of the Chapter's Medical and Scientific Advisory Committee; election to the Board of Directors of the American Association for Geriatric Psychiatry (AAGP); current service on the AAGP Board as Chair of the Research Committee; two 3-year terms on the American Psychiatric Association (APA) Council on Geriatric Psychiatry. She has been recognized with the Distinguished Fellow honor from both the AAGP and the APA and the Outstanding Psychiatrist Award for Research from the Massachusetts Psychiatric Society.

Rosalie Liccardo Pacula, PhD holds the Elizabeth Garrett Chair in Health Policy, Economics & Law at the Sol Price School of Public Policy, University of Southern California and is a Senior Fellow with the Leonard D. Schaeffer Center for Health Policy & Economics, where she co-directs the RAND-USC Schaeffer Opioid Policy Tools & Information Center of Excellence (OPTIC) in addition to leading numerous National Institute of Health funded studies examining the impact of federal, state and local laws on the supply, demand and access to treatment for intoxicating substances. Previously she spent 21 years at the RAND Corporation, serving as co-director of RAND's Drug Policy Research Center for 15 of those years, working on drug policy studies for the U.S. Office of National Drug Control Policy, U.S. Centers for Disease Control and Prevention, European Commission, and the U.K. Home Office. She served on NIDA's National Advisory Council Cannabis Policy Workgroup (2017), the Substance Abuse and Mental Health Services Administration (SAMHSA's) technical advisory committee on preventing cannabis use among youth (2020-present), the World Health Organization's Technical Expert Committee on Cannabis Use and Cannabis Policy (December 2019-2020), the National Academy of Sciences, Engineering and Medicine Committee on the Review of Specific Programs in the Comprehensive Addiction and Recovery Act (2021 – present), the CDC's National Injury Prevention's Board of Scholarly Counsellors (2021- present), and is currently President of the International Society for the Study of Drug Policy (2019- present). Dr. Pacula is a graduate from the Santa Clara University and received her doctorate in economics from Duke University.

Vikram Patel, PhD, MB is The Pershing Square Professor of Global Health at the Harvard Medical School where he leads the Mental Health for All Lab. His work has focused on the burden of mental health problems, their association with social disadvantage, and the use of community resources for their prevention and treatment. He is a co-founder of the Centre for Global Mental Health (at the London School of Hygiene & Tropical Medicine) and Sangath, an Indian NGO which won the MacArthur Foundation's International Prize and the WHO Public Health Champion

of India prize. He is a Fellow of the UK's Academy of Medical Sciences and member of the US National Academy of Medicine. He served on the Committee which drafted India's first National Mental Health Policy and the WHO High Level Independent Commission for Non-Communicable Diseases. He co-led the Lancet Commission on Global Mental Health & Sustainable Development and the Lancet-World Psychiatric Association Commission on Depression; he serves as co-chair of the Lancet Citizens Commission on Reimagining India's Health System. He has been awarded the Chalmers Medal (Royal Society of Tropical Medicine and Hygiene); the Sarnat Prize (National Academy of Medicine); the Pardes Humanitarian Prize (the Brain and Behaviour Research Foundation); the Klerman Senior Investigator Prize (the Depression and Bipolar Disorder Alliance); an Honorary OBE (UK Government); and the John Dirk Canada Gairdner Award in Global Health. He has been awarded Honorary Doctorates from Georgetown University, York University, Stellenbosch University and the University of Amsterdam. He was listed in TIME Magazine's 100 most influential persons of the year in 2015.

Charles F. Reynolds III, MD is a Distinguished Professor of Psychiatry, UPMC Endowed Professor in Geriatric Psychiatry (emeritus) at the University of Pittsburgh School of Medicine, and Editor-in-Chief of the American Journal of Geriatric Psychiatry (AJGP). Reynolds' research interests focus on mood, grief, and sleep disorders of later life, addressing mental health services in primary care, improving strategies for the care of treatment-resistant depression in later life, depression prevention, and promotion of brain health and cognitive fitness in later life. He was the 2016 co-recipient (with Vikram Patel) of the Pardes Humanitarian Prize in Mental Health, awarded by the Brain &Behavior Research Foundation for his "transformative work in geriatric psychiatry and the prevention and treatment of late-life depression." He was also the 2022 recipient of the Donald Klein Lifetime Achievement award (American Society of Clinical Psychopharmacology) and of the Julius Axelrod for Excellence in Mentoring (American College of Neuropsychopharmacology). In addition to his duties as Editor-in-Chief of the AJGP, Reynolds serves on the editorial board of JAMA Psychiatry. He and his team have published research in the New England Journal of Medicine, JAMA, the Lancet, the British Medical Journal, the American Journal of Psychiatry, and JAMA Psychiatry. Reynolds has mentored approximately 25 NIH K awardees. He is past recipient of an NIMH Research Scientist Award (K05; 1990-2000) and MERIT Award (R37; 1989-1999) for randomized clinical trials of maintenance pharmacotherapy and psychotherapy in late-life depression. He has served on three IOM (NAM) committees, addressing suicide prevention, sleep disorders, and the nation's eldercare workforce (Greying of America). He has also served on the National Mental Health Advisory Council (NIMH) and as President of the American Association for Geriatric Psychiatry, the American College of Psychiatrists, and the American Foundation for Suicide Prevention. He chaired the DSM-5 workgroup on sleep-wake disorders and has chaired multiple DSMB's for NIH-sponsored intervention research. Reynolds graduated magna cum laude from U.Va. (1969 , majoring in epistemology, moral philosophy, and theology [Paul Tillich and Victor Frankl] and from Yale Medical School (1973). He completed a straight medical internship at McGill (Royal Victoria Hospital and Montreal Neurological Hospital; 1973-1974) and psychiatry residency at Pittsburgh (1974-1977). He served on the Pitt Faculty of Medicine from 1977 to 2017 and now lives with his spouse of 50 years, Ellen Detlefsen, on the coast of Maine (where he is pretending to be "retired"). His older son (Tom)is a child neurologist and his younger son (David) heads Foundation

relations at the Chan U. Mass School of Medicine (with previous appointments at the ADL and at MIT).

Harvey Rosenthal has over 45 years of experience working to promote public mental health policies and practices that advance the recovery, rehabilitation, rights, and full community inclusion of individuals with psychiatric disabilities and/or diagnoses. He has provided service in NYS inpatient and outpatient treatment settings, served as director for a clubhouse program for 10 years in Albany New York and as CEO of the New York Association of Psychiatric Rehabilitation Services (NYAPRS) since 1993. Under his leadership, NYAPRS' advocacy has helped to transform state and national mental health policy and service systems, increase access to community-based housing, employment and peer support services, and advance numerous recovery and criminal justice related mental health reforms. Harvey has helped to create several nationally acclaimed and replicated peer support and transformational training innovations, including the NYAPRS Peer Bridger Model™, the NYAPRS Training Collective and Project Inset, a peer led outreach and engagement and support initiative for people with repeat experiences with homelessness, incarceration and hospitalization. He has also worked to fight stigma, discrimination, and human rights violations and to advance informed choice protections, self-directed care and racial equity. Harvey currently serves on the boards of the Bazelon Center for Mental Health Law and the College for Behavioral Health Leadership and as a member of New York's Most Integrated Setting Coordinating Council, Value Based Payment Work Group and the Advisory Council for the New York Justice Center for the Protection of People with Special Needs. His work has been recognized with the highest honors from Mental Health America, the College for Behavioral Health Leadership, the U.S. Psychiatric Rehabilitation Association, the National Coalition for Mental Health Recovery, Alternatives, the National Association of Peer Supporters and the Bazelon Center for Mental Health Law and the NYS Assembly and the National Association of Social Workers-NYS. He was named as one of New York's Health Care Power 100 and the Mental Health Power 50 by City and State Magazine in 2022 and 2033.Harvey's work and commitment to our community is personal, dating back to a psychiatric hospitalization at age 19.

Perminder Sachdev AM MBBS MD FRANZCP PhD FAHMS is Scientia Professor of Neuropsychiatry, Co-Director of the Centre for Healthy Brain Ageing (CHeBA) in the School of Psychiatry, UNSW Sydney, and Clinical Director of the Neuropsychiatric Institute (NPI) at the Prince of Wales Hospital, Sydney, Australia. He is co-chair of the Australian Dementia Network (ADNeT) and Director of the Centre of Research Excellence in Vascular Contributions to Dementia. His major areas of research are drug-induced movement disorders, brain imaging, cognitive ageing and dementia. He has published over 800 peer-reviewed journal papers and 6 books, including one for lay readers (The Yipping Tiger and other tales from the neuropsychiatric clinic) and a book of poems (A migrant's musings). He was named NSW Scientist of the year for Biomedical Sciences in 2010. In 2011, he was appointed Member of the Order of Australia (AM) for services to medical research. In 2018, he won the DARF-Yulgilbar Innovation Award for dementia research. In 2022, he was awarded the Ryman Prize for his contributions to ageing and dementia research.

Elizabeth Skidmore, PhD, OTR/L is an occupational therapist and rehabilitation scientist with expertise in neurological rehabilitation. Dr. Skidmore's research studies examine rehabilitation

intervention elements that promote long-term independence, community participation, and health among older adults with cognitive impairments and depressed mood. Her studies have refined the design, effectiveness, and implementation of meta-cognitive strategy training and behavioral activation approaches in inpatient, outpatient and community rehabilitation settings. Dr. Skidmore consults with practitioners, health systems and scientists representing a breadth of disciplines and serving various clinical populations; She provides guidance on intervention design, specification, and fidelity. In addition to being a professor in the Department of Occupational Therapy, Dr. Skidmore is associate dean for research for the School of Health and Rehabilitation Sciences.

Gwenn S. Smith, PhD is the Richman Professor of Psychiatry and Behavioral Sciences and Radiology and Radiological Sciences, Johns Hopkins University School of Medicine. She is Director of the Division of Geriatric Psychiatry and Neuropsychiatry. She completed her undergraduate training (B.A.) in Psychology at the University of Pennsylvania and her graduate training (Ph.D.) in Neuropsychology at the City University of New York. She completed post-doctoral training at the Aging and Dementia Research Center, Department of Psychiatry, New York University (NYU) and the Positron Emission Tomography (PET) Program, Brookhaven National Laboratory. She served as Assistant Professor at NYU and the University of Pittsburgh and then, as Associate Professor at the Albert Einstein College of Medicine. She was promoted to Professor at the Albert Einstein College of Medicine in 2004 and, appointed as Professor at the Johns Hopkins School of Medicine in 2008. Her research has focused on developing and applying in vivo brain imaging methods to understand the neurochemical mechanisms underlying mood and cognitive symptoms in late life and the response to drug and brain stimulation treatments. This work has focused on geriatric depression, mild cognitive impairment, Alzheimer's and Parkinson's disease. She has been supported by independent grant funding from the National Institute of Health since 1993, including an Independent Scientist Award (K02) from the National Institute of Mental Health (1998-2010). She is an Associate Editor of the American Journal of Geriatric Psychiatry and was an Associate Editor of Neuropsychopharmacology (Neuropsychopharmacology Reviews). She has been a chartered member of two National Institute of Health study sections and the Board of Scientific Counselors for the National Institute on Drug Abuse, Intramural Research Program. She is a member of the Collegium Internationale Neuropsychopharmacologicum (CINP) and the American Association for Geriatric Psychiatry, a fellow of the American College of Neuropsychopharmacology (ACNP), and a founding member and past-president of the International College of Geriatric Psychoneuropharmacology (ICGP).

Jennifer Snow is National Director of Government Relations and Policy for the National Alliance on Mental Illness (NAMI), the nation's largest grassroots mental health organization. Jennifer is responsible for overseeing the development and implementation of NAMI's overall federal agenda to advance public policies that support people with mental health conditions. She works with the team to ensure an integrated federal strategy, overseeing the analysis of and strategic response to Congressional and Administrative activities. Jennifer joined NAMI in 2018 with nearly two decades of experience in health policy. She served at the U.S. Department of Health and Human Service (HHS) as a policy advisor in the Secretary's office and as a legislative director for the Centers for Medicare & Medicaid Services (CMS). She started her career as a Presidential Management Fellow. Jennifer grew up in New Jersey and earned a Master of Public Administration and a Bachelor of Science in Public Health, both from the University of North Carolina at Chapel Hill.

Aaron Tax is the Managing Director of Government Affairs and Policy Advocacy at SAGE, the nation's largest and oldest organization dedicated improving the lives of LGBTQ+ older people, where he leads a team advocating for LGBTQ+ and HIV-inclusive federal, state, and local aging policies that account for the unique needs of LGBTQ+ and HIV+ older people.Until June 2011, Aaron served as the Legal Director at Servicemembers Legal Defense Network (SLDN), the leading organization challenging "Don't Ask, Don't Tell" (DADT) in Congress and in the courts. He started there as a staff attorney in 2006, and for nearly five years at SLDN, he took part in a multifaceted approach to advancing the civil rights of LGBT service members through law, policy, outreach, and education. As the Legal Director, Aaron was responsible for running the legal services program at SLDN, the only organization providing free legal services to service members impacted by DADT and related forms of discrimination, including those who are HIV positive and/or transgender. Prior to joining SLDN, Aaron spent three years working for the Department of the Army in the Office of EEO and Civil Rights, the first two years as a Presidential Management Fellow (PMF). As a PMF, he worked for the Office of the Staff Judge Advocate, V Corps, Heidelberg, Germany, and served as a Special Assistant United States Attorney in the US Attorney's Office for the District of Columbia, where he tried more than two dozen cases. A graduate of Cornell University with honors and distinction and the George Washington University Law School with honors, he currently resides in Washington, DC.

Jürgen Unützer, MD, MPH, MA is an internationally recognized psychiatrist and health services researcher. His work focuses on innovative models of care that integrate mental health and general medical services and on translating research on evidence-based mental health care into effective clinical and public health practice. He has more than 300 scholarly publications and is the recipient of numerous federal and foundation grants and awards for his research to improve the health and mental health of populations through patient-centered integrated mental health services. Dr. Unützer is Professor and Chair in the Department of Psychiatry and Behavioral Sciences at the University of Washington. He also directs the Garvey Institute for Brain Health Solutions at UW Medicine and he holds adjunct appointments as Professor in the School of Public Health (in the departments of Health Systems & Population Health and Global Health). Dr. Unützer founded the AIMS Center (http://aims.uw.edu) which is dedicated to 'Advancing Integrated Mental Health Solutions.' He led the development and testing of IMPACT, an evidence-based model of depression care that has been implemented in more than 1,000 primary care clinics in the United States and abroad. IMPACT has been shown in randomized controlled trials to double the effectiveness of usual care for depression while lowering long-term health care costs. In recent years, Dr. Unützer's work has focused on developing local, regional, national, and global partnerships that support workforce development and capacity building in primary and behavioral health care. Dr. Unützer has served as Senior Scientific Advisor to the World Health Organization and as an advisor to the President's New Freedom Commission on Mental Health and he currently serves as a member of the board of the Archstone Foundation. He works with national and international organizations to improve behavioral health care for diverse populations. His awards include the Beeson Physician Faculty Scholars Award from the American Foundation for Aging Research, the Klerman Junior and Senior Investigator Awards from the Depression and Bipolar Support Alliance, the Distinguished Scientist Award from the American Association of Geriatric Psychiatry, the Research Award from the Academy of Psychosomatic Medicine, the Senior Health Services Scholar Award from the American Psychiatric Association,

and a Lifetime Achievement Award from the Association of Medicine and Psychiatry. In 2020, he was named one of '50 Changemakers in Public Health' by UW's School of Public Health. Dr. Unützer trained in Medicine (MD, Vanderbilt University), Public Policy (MA, University of Chicago), and Public Health / Health Services (MPH, University of Washington). He completed fellowships in Geriatric Psychiatry at UCLA and in Primary Care Psychiatry at the University of Washington.

Eric Weakly, MSW, MBA is the Western Branch Chief in the Division of State and Community Systems Development, Center for Mental Health Services at the Substance Abuse and Mental Health Services Administration (SAMHSA). The Division manages the Community Mental Health Services Block Grant (MHBG), which provides funds and technical assistance to all 50 states, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and 6 Pacific Jurisdictions. Grantees use the funds to provide comprehensive, community-based mental health services to adults with serious mental illnesses and to children with serious emotional disturbances and to monitor progress in implementing a comprehensive, community-based mental health system. The Division also administers the Projects for Assistance in Transitions from Homelessness (PATH), the Protection and Advocacy for Individuals with Mental Illness (PAIMI) programs, the Community Mental Health Centers Grant (CMHC), the Minority Fellowship Program (MFP), the Historically Black Colleges and Universities Center for Excellence (HBCU-CFE), and the Center of Excellence for Behavioral Health Disparities in Older Adults (COE-BH-OA). Prior to working at SAMHSA, Eric was a project officer at the Administration for Community Living and the Administration on Aging working with the No Wrong Door/Aging and Disability Resource Centers, Inclusive Transportation, and Supported Decision-Making projects. Eric also led programs at the local level in Illinois on mental health, long-term services and support, and protective services. Prior to work in administration, Eric worked as a social worker with older adults and their families and in-patient behavioral health.

Kellee White, MPH, PhD is an Associate Professor of Health Policy and Management, Program Director of the Health Equity Concentration, and Assistant Director of the Maryland Center for Health Equity. Her work elucidates and seeks to address mechanisms that produce racial/ethnic health inequalities. More specifically, research has focused on: 1) racism and population health; 2) structural and contextual factors influencing multimorbidity development and progression; and 3) aging health inequalities in Alzheimer's Disease. Her research has been published in leading public health and medical journals and has been supported by the National Institutes of Health and the Alzheimer's Association. She is committed to using her empirical research to partner with communities and stakeholders to design, implement and evaluate polices that advance health equity.

Planning Committee Member Roster

Jie Chen, PhD (Co-Chair)
Professor, Health Policy and Management
Director, The Hospital And Public health interdisciPlinarY Research (HAPPY) Lab
University of Maryland School of Public Health

Charles F. Reynolds III, MD (Co-Chair)
Distinguished Professor of Psychiatry and
UPMC Endowed Professor in Geriatric Psychiatry, emeritus
University of Pittsburgh School of Medicine

Jennifer Bean, PharmD
Clinical Pharmacist Practitioner, Geriatric Mental Health
Pharmacy Service
VISN 9 Clinical Resource Hub

Kirsten Beronio, JD
Senior Policy Advisor
Center for Medicaid and CHIP Services (CMCS)

Michael B. Friedman, LMSW
Co-founder & Honorary Chair, The Geriatric Mental Health Alliance of NY
Adjunct Associate Professor, Columbia University School of Social Work

Narda Ipakchi, MBA
Vice President, Policy
The SCAN Foundation

*__Vincent Mor, PhD__
Florence Pirce Grant Professor
Department of Health Services, Policy & Practice,
Brown University School of Public Health

Emma Nye, MPA
Public Health Analyst
US Department of Health and Human Affairs
Office of the Assistant Secretary for Planning and Evaluation (ASPE)

* National Academy of Medicine (NAM) Member

Planning Committee Member Bios

Jie Chen, PhD (Co-Chair), is a Professor in the Department of Health Policy and Management in the School of Public Health at the University of Maryland at College Park. She earned her Ph.D. in health economics from Stony Brook University. Her research fields include mental health care disparities, health care delivery system and policy, aging health, and dementia care. Dr. Chen's primary interest is to break down silos between healthcare delivery systems and identify best practices to promote and sustain health care-community-public health integration. She is the director of the Hospital And Public health interdisciPlinarY research (HAPPY) Lab, which adopts a multidisciplinary approach and collaborates with clinical leaders, community partners, and organizational decision-makers. Dr. Chen has 20 years of research experience working with large secondary data sets and claims data and developing, refining, and applying analytical methods. She has authored over 150 scholarly articles and book chapters. She has served as a principal investigator on several projects funded by the National Institute on Aging, the National Institute of Mental Health, the National Institute on Minority Health and Health Disparities, and the Agency for Healthcare Research and Quality. Dr. Chen has also worked closely with local health departments, hospitals, and community partners to design, develop, and evaluate community interventions.

Charles F. Reynolds III, MD (Co-Chair) is Distinguished Professor of Psychiatry, UPMC Endowed Professor in Geriatric Psychiatry (emeritus) at the University of Pittsburgh School of Medicine, and Editor-in-Chief of the American Journal of Geriatric Psychiatry (AJGP). Reynolds' research interests focus on mood, grief, and sleep disorders of later life, addressing mental health services in primary care, improving strategies for the care of treatment-resistant depression in later life, depression prevention, and promotion of brain health and cognitive fitness in later life. He was the 2016 co-recipient (with Vikram Patel) of the Pardes Humanitarian Prize in Mental Health, awarded by the Brain &Behavior Research Foundation for his "transformative work in geriatric psychiatry and the prevention and treatment of late-life depression." He was also the 2022 recipient of the Donald Klein Lifetime Achievement award (American Society of Clinical Psychopharmacology) and of the Julius Axelrod for Excellence in Mentoring (American College of Neuropsychopharmacology). In addition to his duties as Editor-in-Chief of the AJGP, Reynolds serves on the editorial board of JAMA Psychiatry. He and his team have published research in the New England Journal of Medicine, JAMA, the Lancet, the British Medical Journal, the American Journal of Psychiatry, and JAMA Psychiatry. Reynolds has mentored approximately 25 NIH K awardees. He is past recipient of an NIMH Research Scientist Award (K05; 1990-2000) and MERIT Award (R37; 1989-1999) for randomized clinical trials of maintenance pharmacotherapy and psychotherapy in late-life depression. He has served on three IOM (NAM) committees, addressing suicide prevention, sleep disorders, and the nation's eldercare workforce (Greying of America). He has also served on the National Mental Health Advisory Council (NIMH) and as President of the American Association for Geriatric Psychiatry, the American College of Psychiatrists, and the American Foundation for Suicide Prevention. He chaired the DSM-5 workgroup on sleep-wake disorders and has chaired multiple DSMB's for NIH-sponsored intervention research. Reynolds graduated magna cum laude from U.Va. (1969), majoring in epistemology, moral philosophy, and theology [Paul Tillich and Victor Frankl] and from Yale Medical School (1973). He completed a straight medical internship at McGill (Royal Victoria Hospital and Montreal Neurological Hospital; 1973-1974) and psychiatry residency at Pittsburgh

(1974-1977). He served on the Pitt Faculty of Medicine from 1977 to 2017 and now lives with his spouse of 50 years, Ellen Detlefsen, on the coast of Maine (where he is pretending to be "retired"). His older son (Tom) is a child neurologist and his younger son (David) heads Foundation relations at the Chan U. Mass School of Medicine (with previous appointments at the ADL and at MIT).

Jennifer Bean, PharmD received her Bachelor of Science from the University of Tennessee Martin and Doctor of Pharmacy from the University of Tennessee Health Science Center in Memphis, Tennessee. She completed a PGY1 Pharmacy Residency with VA Tennessee Valley Healthcare System. She became board certified in pharmacotherapy in 2007 and psychiatry in 2012. She has had experience in long-term care, medication use evaluation, Home-Based Primary Care, mental health services, Academic Detailing, pharmacy administration and as a PGY1 and PGY2 Psychiatry Residency Program Directors. In 2019, she was named the TSHP Health-systems Pharmacist of the year. is an active member of the College of Psychiatric and Neurologic Pharmacists and American College of Clinical Pharmacy. Currently, she is a clinical pharmacist practitioner practicing in on an interprofessional team within the VISN 9 Clinical Resource Hub.

Kirsten Beronio, JD has over 20 years of experience developing federal policies aimed at improving access to and quality of mental health and substance use disorder treatment. Her experience includes leadership positions at federal agencies, advocacy organizations, and the United States Senate. She recently returned to the Center for Medicaid and Children's Health Insurance Program (CHIP) Services (CMCS) at the Centers for Medicare and Medicaid Services as a Senior Policy Advisor in the Office of the Center Director. She was previously the Director of Policy and Regulatory Affairs for the National Association for Behavioral Healthcare (NABH). Before joining NABH, she had served as a Senior Advisor on Behavioral Health Care for CMCS. From 2012 to 2016, she was the Director of the Behavioral Healthcare Division within the Office of the Assistant Secretary for Planning and Evaluation at the U.S. Department of Health and Human Services (HHS). Prior to working for HHS, Kirsten was Vice President for Federal Policy Development and Advocacy at Mental Health America. She served as Medicaid and CHIP Counsel for the Senate Finance Committee and held other positions in the Senate in the late 1990s to 2001.

Michael B. Friedman, LMSW has served on numerous advisory and advocacy groups at the federal, state, and local levels. After retirement, Mr. Friedman continued teaching health policy and mental health policy at the Columbia School of Social Work until 2019, when he moved to Baltimore to be closer to his grandchildren. He now teaches mental health policy there via Zoom. Currently, he serves as Chair of the AARP of Maryland Cognitive and Behavioral Health Advocacy Team and as Co-Chair of The Ad Hoc Group of Experts on Geriatric Cognitive and Behavioral Health. Mr. Friedman has published over 250 essays, articles, lectures, and book chapters. Many are on his website, www.michaelbfriedman.com.
Philip D. Harvey, PhD is Leonard M. Miller Professor of Psychiatry, vice chair for research, and director of the Division of Psychology at the University of Miami Miller School of Medicine. He is the author of over 1,000 scientific papers and abstracts and he has written over 70 book chapters. He has been designated as the being in the top 1% of all researchers in mental health in citations each year since 2010. His research has focused on cognition and everyday functioning, in healthy aging, schizophrenia, and interactions with serious mental illness, aging and technology. He also been studying the effects of cognitive enhancing agents and cognitive and functional skills training in various conditions, including healthy aging, mild cognitive impairment,

schizophrenia, dementia, bipolar disorders, and traumatic brain injury. His most recent work has focused on technology-based momentary assessments, with a focus on everyday activities in aging, MCI, and in schizophrenia and bipolar disorder.
He has received continuous funding from the US National Institute of Health since 1984. He has served on several National Academies Panels, including a joint blue-ribbon panel launched by the Social Security Administration and the National Institute of Mental Health to streamline the process of award of disability compensation to people with serious mental illness. He has received a number of awards, including the Inaugural SIRS Distinguished Contributions award (2012), the 2014 Alexander Gralnick Schizophrenia Research award, the 2014 John Blair Barnwell award from the US Department of Veterans affairs, and 2021 Stanley Dean Schizophrenia Research award from the American College of Psychiatrists.

Narda Ipakchi, MBA is Vice President of Policy for The SCAN Foundation, and is an experienced health and aging policy professional with deep expertise in policies and programs that support older adults, including Medicare, Medicare-Medicaid integrated programs, and long-term services and supports. Prior to joining the Foundation, she served as the Medicare & Medicaid Policy Director for the United States Senate Aging Committee, under the leadership of Chairman Bob Casey of Pennsylvania. In this role, she advised the Chairman on key issues impacting older adults and people with disabilities, including nursing home policy changes, expansions in home and community-based services, Medicare prescription drug policy reforms, and Medicare-Medicaid integration. Prior to the Senate, Narda spent approximately 15 years in the private sector, primarily in Medicare and Medicaid policy consulting at Avalere Health, Manatt Health, and Health Management Associates, where she provided quantitative and qualitative policy research and analysis, project implementation support, and other advisory services to a wide array of health care stakeholders including foundations, providers, health plans, states, and other organizations. Narda earned her Master of Business Administration and Bachelor of Arts degrees from the University of Maryland, College Park.

Vincent Mor, PhD, is the Florence Pirce Grant Professor of Community Health in the Brown University School of Public Health and a senior health scientist in the health services research service at the Providence Veterans Affairs Medical Center. Dr. Mor has been Principal Investigator of over 40 NIH funded grants focusing on the use of health services and the outcomes frail and chronically ill persons experience. He has published over 450 peer reviewed articles was recipient of a Robert Wood Johnson Foundation health policy investigator award and a MERIT award from the National Institute on Aging. In 2011, Dr. Mor was given the Distinguished Investigator Award from AcademyHealth and was elected to the National Academy of Engineering, Science and Medicine. He was one of the authors of the Congressionally mandated Minimum Data Set (MDS) for Nursing Home Resident Assessment and the architect of an integrated Medicare claims and clinical assessment data base used for policy analysis, pharmaco-epidemiology and population outcome measurement. This data resource supports an NIA funded Program Project Grant, "Changing Long Term Care in America", now in its third renewal cycle and makes possible a series of large, pragmatic cluster randomized trials of novel nursing home based interventions. Building upon this work, most recently, he and colleagues around the country were awarded a large grant from the National Institute on Aging to solicit, fund and support multi-site pilot non-pharmacologic intervention projects embedded in health care systems designed to improve the lives of persons living with dementia and their caregivers. This

program is expected to test whether interventions found to be effective when implemented by researchers are still effective when embedded in a functioning health care system.

Emma Nye, MPA is a Public Health Analyst in the Division of Disability and Aging of the Office of Behavioral Health, Disability, and Aging Policy, in the Department of Health and Human Services' Office of the Assistant Secretary for Planning and Evaluation. Ms. Nye is the lead for behavioral health and aging, including suicide prevention, the prevalence of behavioral health conditions, and the utilization and cost of behavioral healthcare among older adults. She leads research on the impact of Medicare Improvement for Patients and Providers Act on mental health service use by older adults, and the unique needs of caregivers for people with behavioral health conditions. Ms. Nye also provides expertise on homelessness, elder abuse and neglect, and Alzheimer's disease and related dementias. Emma holds a Master of Public Affairs from the Lyndon B. Johnson School of Public Affairs at the University of Texas, Austin.

NATIONAL ACADEMIES Sciences Engineering Medicine

FORUM ON MENTAL HEALTH AND SUBSTANCE USE DISORDERS

Behavioral health and substance-related disorders affect approximately 20 percent of Americans. Of those with a substance use disorder, approximately 60 percent also have a mental health disorder. These disorders account for a substantial burden of disability, have been associated with an increased risk of morbidity and mortality from other chronic illnesses, and can be risk factors for death by suicide, incarceration, and homelessness. They can compromise a person's ability to seek out and afford health care, and to adhere to care recommendations.

Those with mental health conditions, particularly serious disorders, and their advocates face numerous barriers to receiving quality care. Studies suggest that one-third to one-half or more of people with serious mental health disorders do not receive treatment. The most common reason for not seeking care is inability to pay. Also, fear of discrimination in housing, employment, military service, and other arenas can deter people from seeking or continuing care.

The goal of reducing reliance on long-term inpatient care in separate institutions has been more fully realized than the goal of providing adequate treatment and services in the community. Nearly 90 million Americans live in areas with a shortage of mental health professionals.

Another barrier to care is adequate training and other support for primary care providers in recognizing mental health and substance use disorders and appropriately managing patient care through direct services, referral, and collaboration. Often evidence-based psychosocial interventions are not even available as part of routine clinical care, due to issues of access to quality care, training, insurance coverage, and fragmentation of care.

The Health and Medicine Division of the National Academies of Sciences, Engineering, and Medicine's **Forum on Mental Health and Substance Use Disorders** provides a structured environment and neutral venue to discuss data, policies, practices, and systems that affect the diagnosis and provision of care for mental and substance use disorders, including for substance-related and addictive conditions. Its activities, which will focus on adults, will facilitate sustained attention to these conditions throughout the Academies.

PUBLIC WORKSHOPS

Addressing the Rising Mental Health Needs of an Aging Population: A Workshop
May 15-16, 2023
A National Academies of Sciences, Engineering, and Medicine planning committee will organize and host a public workshop to explore the current state of mental health care for older adults in the United States and potential strategies to address the mental health needs and challenges of our aging population.
https://www.nationalacademies.org/event/05-15-2023/addressing-the-rising-mental-health-needs-of-an-aging-population-a-workshop

Improving Access to High-Quality Mental Health Care for Veterans: A Workshop
April 20-21, 2023
A planning committee of the National Academies of Sciences, Engineering, and Medicine will organize and conduct a public workshop to explore the current landscape for veterans' access to mental health care services in the United States, including the use of telehealth services. The

workshop will consider ways to improve veterans' timely access to high-quality care for mental health conditions.
https://www.nationalacademies.org/our-work/improving-access-to-high-quality-mental-health-care-for-veterans-a-workshop

Early Interventions for Psychosis: First Episodes and High-Risk Populations: A Workshop
July 11, 2022
The term 'psychosis' is used to describe conditions that affect the mind, in which there has been some loss of contact with reality (also called a psychotic episode). Symptoms may include delusions, hallucinations, memory problems, and behavior that is inappropriate for the situation. There is no one specific cause of psychosis and onset can be experienced at any age. Studies have shown that it is common for a person to have psychotic symptoms for more than a year before receiving treatment. Reducing this duration of untreated psychosis is critical because early treatment is associated with a better recovery.

This workshop explored the deficiencies in the behavioral health system with a focus on early intervention for psychosis and featured experts examining the data on the epidemiology and outcomes for people at high risk for psychosis and those who have experienced a first episode of psychosis, and considered ways to improve the care and outcomes for these individuals.

https://www.nationalacademies.org/event/07-11-2022/early-interventions-for-psychosis-first-episodes-and-high-risk-populations

Innovative Data Science Approaches to Assess Suicide Risk in Individuals, Populations & Communities: Current Practices, Opportunities, and Risks: A Workshop
April 28, May 12, June 30, 2022
Select social media platforms have proactively deployed sophisticated artificial intelligence (AI)/machine learning (ML) algorithms to identify individual platform users at high risk for suicide, and in some cases may inform local law enforcement, if needed, to prevent imminent death by suicide. Emerging real-time data sources, together with innovative data science techniques and methods including AI/ML algorithms, can help inform upstream suicide prevention efforts at the individual, community, and population level. Innovative, real-time data sources, including social media data, and suicide and nonfatal suicide prediction algorithms, can potentially enhance state and local capacity to track, monitor, and intervene "upstream," but these innovations may also be associated with unintended consequences and risks.

This virtual workshop featured national experts examining data science techniques and real-time data sources to identify, predict, support, and refer individuals to appropriate care and services. Presentations explored risks and unintended consequences of leveraging AI/ML algorithms, privacy, and confidentiality; and evidence, research, and program evaluation gaps to measure effectiveness of data science techniques in upstream suicide interventions.
https://www.nationalacademies.org/our-work/using-innovative-data-science-approaches-to-identify-individuals-populations-and-communities-at-high-risk-for-suicide-a-workshop

Suicide Prevention in Indigenous Communities: A Workshop
April 22, May 13, June 10, 2022
This virtual workshop featured subject matter experts examining risk and protective factors in Indigenous populations; effective suicide prevention policies and programs; culturally appropriate

and sensitive approaches to prevention strategies; existing data systems and how these data can be used for tracking suicide rates; and gaps and challenges in providing continuum of substance use and mental health services in multiple health care settings.
https://www.nationalacademies.org/our-work/suicide-prevention-in-indigenous-communities-a-workshop

An interactive overview can be found here:
https://nap.nationalacademies.org/resource/26745/interactive/

Strategies and Interventions to Reduce Suicide: A Workshop
June 22, July 28, 2021
Reducing suicide-related mortality is a global imperative declared by The World Health Organization. The suicide prevention movement has been gaining momentum as organizations, advocates, and others have increasingly collaborated on effective strategies. Health care settings provide an important opportunity for suicide intervention and prevention but cannot yet fully manage suicide risk due to a lack of training, knowledge gaps, and reimbursement challenges. School, workplace, and community-based interventions can help reduce the incidence of suicidal behavior, as can better access to care and reduced access to lethal means of suicide.
The persistent trends in suicide necessitate action among mental health care providers and payers, researchers, and community leaders. This virtual workshop featured national subject matter experts discussing strategies to improve access to effective interventions to prevent suicide.
https://www.nationalacademies.org/our-work/strategies-and-interventions-to-reduce-suicide-a-workshop

Mental Health and Substance Use Disorders in the Era of COVID-19: With a Special Focus on the Impact of the Pandemic on Communities of Color: A Workshop
November 23, December 3, and December 14, 2020
The COVID-19 pandemic has created both short-term and long-term negative consequences for behavioral health outcomes. The National Academies of Sciences, Engineering, and Medicine's Forum on Mental Health and Substance Use Disorders hosted a virtual public workshop with a special focus on the impact of the pandemic on communities of color that examined how COVID-19 has revealed and exacerbated mental health and substance use disorders, the impact of COVID-19 on access to mental health care and service delivery, and the behavioral health impact of COVID-19 on the health care workforce.
https://www.nationalacademies.org/our-work/mental-health-and-substance-use-disorders-in-the-era-of-covid-19-exploring-the-impact-of-the-pandemic-on-communities-of-color-a-workshop

Caring for People with Mental Health and Substance Use Disorders in Primary Care Settings: A Virtual Workshop
June 3, July 29, August 26, 2020
The Forum hosted a virtual public workshop that examined approaches to facilitate the delivery of essential components of care for people with mental health and substance use disorders in primary care settings using three illustrative conditions (depression, alcohol use disorders, and substance use disorders). Workshop sessions explored the landscape of evolving models of care, barriers and potential solutions to the implementation of the essential components of care, improving the workforce, and addressing financing and policy incentives to support the provision of the essential components of care.

https://www.nationalacademies.org/our-work/care-models-and-payment-strategies-to-facilitate-the-delivery-of-essential-components-of-care-for-people-with-mental-health-and-substance-use-disorders-a-workshop

Key Policy Challenges and Opportunities to Improve Care for People with Mental Health and Substance Use Disorders: A Workshop
October 15-16, 2019
Individuals with mental health and substance use disorders, particularly those with the most serious conditions, face substantial obstacles to receiving effective, evidence-based care. The Forum's initial workshop took a broad approach to examine several related overarching topics, including the importance of shared decision-making, the essential components of care for people with mental health and substance use disorders, translating knowledge into practice, using data to improve care delivery, and developing the workforce to provide high-quality care.
https://www.nationalacademies.org/event/10-15-2019/exploring-key-policy-challenges-and-opportunities-to-improve-care-for-people-with-mental-health-and-substance-use-disorders-a-workshop

WEBINARS

988: It is NOT just a number Webinar Series: Providing a Consistent, Systemic Framework for Crisis Response Services
January 20, 23, 2023
The National Academies of Sciences, Engineering, and Medicine's Forum on Mental Health and Substance Use Disorders convened two virtual webinars focusing on challenges and opportunities to support state and local implementation of 9-8-8.

The first webinar presented an overview of the 9-8-8 implementation landscape, how mental health and crisis services need to be viewed as a utility and public good for counties to adopt and implement. https://www.nationalacademies.org/event/01-20-2023/988-it-is-not-just-a-number-webinar-1

The second webinar featured 9-8-8 implementation examples at the state and local level sharing challenges, best practices, and gaps. Other topics included state insurance coverage, learning from 911 and working with law enforcement, rural and urban challenges, how children and youth can use 988, and developing a workforce to create a robust continuum of care.
https://www.nationalacademies.org/event/01-23-2023/988-it-is-not-just-a-number-webinar-2

COLLABORATIVE WORKSHOPS

Methadone Treatment for Opioid Use Disorder: Examining Federal Regulations and Laws: A Workshop
March 3-4, 2022
Opioid use disorder (OUD)—a chronic brain disease caused by prolonged use of prescription opioids, heroin, or other illicit opioids—imposes heavy costs on individuals, their families, and society. Methadone is one of three safe and highly effective medications that are already approved by the U.S. Food and Drug Administration to treat OUD; however, stringent laws and regulatory policies pose substantial barriers to provision of and access to treatment. This two-day

public workshop will bring together experts and key stakeholders to examine the current federal regulatory and legal landscape regarding provision of and access to methadone for the treatment of OUD.
https://www.nationalacademies.org/our-work/methadone-treatment-for-opioid-use-disorder-examining-federal-regulations-and-laws---a-workshop

Community Interventions to Prevent Veteran Suicide: The Role of Social Determinants: A Workshop
March 28-29, 2022
The National Academies of Sciences, Engineering, and Medicine will appoint a planning committee to organize an open, three-day virtual workshop to gain a better understanding of social determinants influencing the recent increase in suicide risk and how currently available practice guidelines can inform community-level preventive interventions, particularly those targeting veteran populations. The workshop will address: (1) the relevant social, cultural, and economic factors driving changes in suicide risk among veterans and (2) ways that current best practices for suicide prevention and treatment can be applied at the community level.
https://www.nationalacademies.org/our-work/community-interventions-to-prevent-veteran-suicide-the-role-of-social-determinants-a-workshop

The Interplay Between Environmental Exposures and Mental Health Outcomes: A Workshop
February 2-3, 2021
There is growing evidence that the environment can play an important role in mental health—yet research into the effects of environmental stressors rarely focuses on behavioral and mental health outcomes. This virtual workshop brought together experts in mental health and environmental health research to explore emerging research on the relationship, harmful or beneficial, between environmental factors and mental health. This workshop is a collaboration between the National Academies' Standing Committee on the Use of Emerging Science on Environmental Health Decisions in collaboration with the Forum on Mental Health and Substance Use Disorders, the Forum on Neuroscience and Nervous System Disorders, and the Board on Behavioral, Cognitive, and Sensory Sciences.
https://www.nationalacademies.org/our-work/the-interplay-between-environmental-exposures-and-mental-health-outcomes-a-workshop

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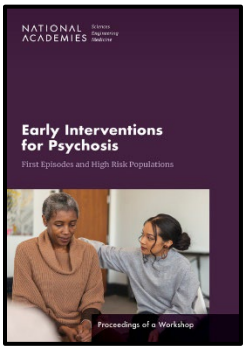
FORUM PUBLICATIONS



Early Interventions for Psychosis- First Episodes and High Risk Populations Proceedings of a Workshop
https://nap.nationalacademies.org/read/26832/chapter/1
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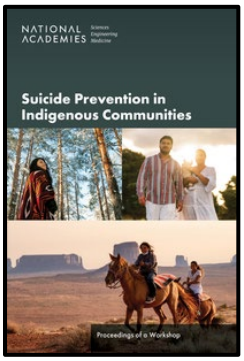

Suicide Prevention in Indigenous Communities: Proceedings of a Workshop
https://nap.nationalacademies.org/read/26745/chapter/1
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Innovative Data Science Approaches to Identify Individuals, Populations and Communities at High Risk for Suicide: Proceedings of a Workshop
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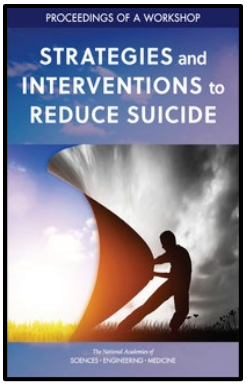

Strategies and Interventions to Reduce Suicide: Proceedings of a Workshop
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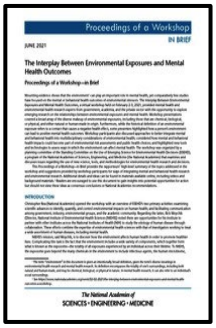

The Interplay Between Environmental Exposures and Mental Health Outcomes
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Mental Health and Substance Use Disorders in the Era of COVID-19 The Impact of the Pandemic on Communities of Color Proceedings of a Workshop
https://www.nap.edu/read/26102
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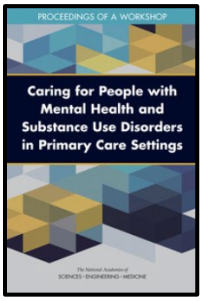

Caring for People with Mental Health and Substance Use Disorders in Primary Care Settings: Proceedings of a Workshop
https://www.nap.edu/read/25927
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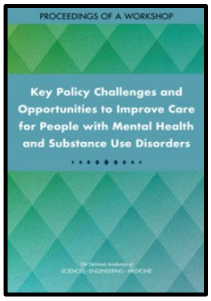

Key Policy Challenges and Opportunities to Improve Care for People with Mental Health and Substance Use Disorders: Proceedings of a Workshop
https://www.nap.edu/read/25690
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NAM PERSPECTIVES PAPERS

Components of the Next Generation of Integrated Care
https://nam.edu/components-of-the-next-generation-of-integrated-care/
Integrated care, or when behavioral health and primary care providers work as a team to address patient concerns, allows for easier access to care, the potential for more effective care coordination, the use of an integrated medical record, and the inclusion of a range of other care providers. This approach to comprehensive care has existed since the 1990s, and the authors envision what needs to be improved or added to carry integrated care into its "next generation."

Improving Behavioral Health Services in the Time of COVID-19 and Racial Inequities
https://nam.edu/improving-behavioral-health-services-in-the-time-of-covid-19-and-racial-inequities/
The emergence of coronavirus disease 2019 (COVID-19), coupled with the increasing awareness of racial inequity in the United States, as sparked by the killing of George Floyd at the hands of police officers, has led to a moment of reckoning regarding health inequities in the United States.

FORUM MEMBERSHIP

MARGARITA ALEGRÍA (Co-*Chair*), Harvard Medical School
ROSALIE LICCARDO PACULA *(Co-Chair)*, University of Southern California
KIRSTEN BERONIO, Center for Medicaid and CHIP Services, (CMS)
CARLOS BLANCO, National Institute on Drug Abuse, National Institutes of Health (NIH)
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ANNIE PETERS, National Association of Addiction Treatment Providers (NAATP)
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GLORINDA SEGAY, Indian Health Services (IHS)
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RUTH SHIM, University of California, Davis
MATTHEW TIERNEY, University of California, San Francisco School of Nursing, (*Representing the American Psychiatric Nurses Association*)

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National Institute of Mental Health (NIMH)
The Office of the Assistant Secretary for Planning and Evaluation (ASPE)
Think Bigger Do Good Policy Series (a partnership of the Scattergood Foundation, Peg's Foundation, Patrick P. Lee Foundation, and Peter and Elizabeth Tower Foundation)
Well Being Trust

FORUM STAFF

Alexandra Andrada, Director, Forum on Mental Health and Substance Use Disorders
Isaac Suh, Research Associate
Anesia Wilks, Senior Program Assistant
Sharyl Nass, Senior Board Director, Board on Health Care Services

Forum website: https://www.nationalacademies.org/our-work/forum-on-mental-health-and-substance-use-disorders

Information as of April 26, 2023

ABOUT THE FORUM

Forum on Aging, Disability, and Independence

The National Academies of Sciences, Engineering, and Medicine have formed the Forum on Aging, Disability, and Independence to foster dialogue and address issues of interest and concern related to aging and disability. This includes aging and the related disabling conditions that can occur, as well as aging with an existing disability. The Forum seeks to promote bridging of the research, policy, and practice interests of the aging and disability communities to accelerate the transfer of research to practice and identify levers that will effect change for the benefit of all. Of particular concern is promoting healthy aging, independence, and community living for older adults and people with disabilities.

PERSON-CENTERED/PARTICIPANT-DIRECTED MODEL

Underpinning all aspects of achieving health and community living goals is a holistic, well-coordinated, person-centered, and participant-directed planning and implementation process. As depicted in the model below, this process should be directed by the individual in need, or by someone who either the individual has chosen or has been appropriately designated to direct and coordinate the process. The main factors that need to be coordinated include home and community settings; services and support; workforce; and financing. All of these factors exist within an environment that includes several key elements: quality; technology; research and evaluation; and policy. The Forum is focused on improving the understanding of the relationships that exist among all of these factors and examining ways to improve policies and environments that will ultimately promote independence and quality of life for older adults and people who have disabling conditions.

COORDINATION

Many systems need to work together successfully to support healthy aging, independence, and community living for people with disabilities and older adults. While both medical and social services are key to keeping older adults and individuals with disabilities in the setting of their choice in the community, these two systems are not always well connected. Similarly, in many communities there is a divide between service systems for those who are under age 65 and those who are over age 65. A goal of the Forum is to improve system integration and access to person-centered supports and services that can improve quality of life for both populations. For some individuals, this could be in the form of a designated care coordinator, whereas for others it may mean ensuring that they have information about all available resources because they choose to be their own care coordinator.

HOME AND COMMUNITY SETTINGS

Being an active member of a community is a priority for many people. A primary goal of the Forum is to foster access to services and supports that allow people with disabilities and older adults to live safely in the setting of their choosing and have the supports they need in the workplace if they would like to continue working.

SERVICES AND SUPPORT

Having access to services and supports can be critical to improving quality of life, maximizing independence, and preventing hospital re-admission. Services and supports can include assistance with dressing or cooking, social engagement,

Model for Promoting Healthy Aging, Independence, and Community Living for People with Disabilities and Older Adults

or provision of medical care. It is important to ensure that potential beneficiaries are aware of available resources and take advantage of them as appropriate.

WORKFORCE

The nation faces a growing imbalance between the supply of and demand for its health care system as the number of older adults with complex health needs increasingly outpaces the number of workers with the knowledge and skills to adequately care for them. Similarly, health care professionals are often not well-informed about proper care for people with disabilities or the problems these individuals face as they age. Fundamental reforms are needed in the ways these populations receive care, including changes to workforce education and training so that the workforce can be utilized efficiently and effectively while also providing high-quality care.

FINANCING

Although there are various sources of financing to support healthy aging and independent living services, they can be insufficient and difficult to access. Financing sources range from federal and state programs to non-profit foundations and philanthropic organizations. In addition, the private sector offers insurance (medical and long-term), and many commercial companies provide programs that can offset costs for assistive products under specified conditions. However, the individual (or family members) often finances some or, in some cases, all services that are received. Innovations in financing are needed. Preventive services are underdeveloped and "under-offered," resulting in greater expense in the long run, even though some services have found ways to cut costs while maintaining or even improving quality. The Forum examines ways to increase use of prevention strategies and provide financing that is more transparent and usable by people desiring these services.

TECHNOLOGY

Technology products have improved functioning and quality of life for people with disabilities of all ages. They can range in complexity from a calendar to coordinate which days of the week different services will be provided to devices that facilitate mobility and beyond. This is an area with many possibilities to connect the needs of consumers, regulators, businesses, and product developers. It also involves assistance in a myriad of settings, such as home, transport vehicles, medical facilities, workplaces, and community venues.

POLICY

Numerous social inequities and other barriers prevent older adults and people with disabilities, particularly those with multiple chronic conditions, from realizing their full potential for social and economic participation. The Affordable Care Act offers new opportunities, both to improve the service delivery system and to provide coverage for workers who become disabled. Yet the need for policy improvements involving equitable financing for health care, access to affordable, person-centered long-term supports and services, and workplace accommodation still remains.

RESEARCH AND EVALUATION

As policy changes are made, new technologies are developed, and the workforce adapts, evaluation and research are needed to determine whether these changes are beneficial and to validate best practices and inform future directions. Given that there are limited resources, wise use of existing data and effective coordination of research by all sectors of the nation are essential.

QUALITY

Quality is a key characteristic that encompasses all elements of the Forum's model. It is needed in any system supporting healthy aging, independence, and community living. If the systems in place are not of good quality, then they could break down, coordination could be lost, or individuals may lose trust in the people, research, and devices that are intended to help them achieve personal goals.

FORUM GOVERNANCE AND ACTIVITIES

The Forum is self-governing. Thus, the Forum membership identifies the topics it wishes to address, and with assistance from staff, develops meeting agendas and identifies workshop topics. The Forum meets 2-3 times annually and also has working groups that plan workshops and other activities. Products include workshop proceedings; cooperative projects initiated by Forum members; independently authored articles concerning Forum topics; and derivative consensus studies.

SPONSORS

AARP
Administration for Community Living
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Consumer Technology Association Foundation
Leading Age
National Institute on Aging
National Institute on Disability, Independent Living, and Rehabilitation Research
PHI
The Gerontological Society of America
The John A. Hartford Foundation
The SCAN Foundation

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Mental Health Disorders

Blazer, D. G. 2003. Depression in late life: review and commentary. J Gerontol A Biol Sci Med Sci 58(3):249-265.

Blazer, D. G. 2005. The age of melancholy:" major depression" and its social origins. Taylor & Francis.

Blazer, D. G., & S. Schultz. Geriatric Psychiatry, An Issue of Psychiatric Clinics of North America. Psychiatric Clinics of North America.

Friedman, M.B. 2022. Cognitive and Behavioral Health in Later Life: National Demographic and Epidemiological Information. http://michaelbfriedman.com/mbf/images/National_DataBook__8-3-22.pdf

Friedman, M. B. 2022. Meeting the Mental Health Challenges of the Elder Boom. https://www.michaelbfriedman.com/mbf/images/Meeting_the_MH_Challenges_of_the_Elder_Boom_for_NAMI_10-15-22.pdf

Kennedy, G. J. 2012. Geriatric Mental Health Care: A Treatment Guide for Health Professionals. Guilford Press.

Kennedy, G. J. 1996. Suicide and depression in late life: Critical issues in treatment, research, and public policy. John Wiley & Sons.

Miller, M. D., & C. F. Reynolds. 2012. Depression and anxiety in later life: What everyone needs to know. JHU Press.

Sachdev, P. S. 2014. The Ageing Brain: The Neurobiology and Neuropsychiatry of Aging. CRC Press.

Wilkins, J. M., J. J. Locascio, J. M. Gunther, L. Yap, T. Gomez-Isla, B. T. Hyman, D. Blacker, B. P. Forester, & O. I. Okereke. 2022. Predictors of the importance of everyday preferences for older adults with cognitive impairment. International Psychogeriatrics 34(3), 287-294.

Health Disparities, Vulnerable Populations, and other Social Determinants of Health

Bustamante, A. V., J. Chen, L. Félix Beltrán, & A. N. Ortega. 2021. Health Policy Challenges Posed By Shifting Demographics And Health Trends Among US Immigrants. Health Affairs 40(7):1028-1037.

Bustamante, A. V., M. Vilar-Compte, & A. Ochoa Lagunas. 2019. Social Support and Chronic Disease Management Among Older Adults of Mexican Descent: A U.S.-Mexico Perspective. Social Science and Medicine 216(1):107-113.

Chen, J., M. R. T. Spencer, & P. Buchongo. 2022. Strengthening the Public Health Partnership and Telehealth Infrastructure to Reduce Health Care Disparities. Popul Health Manag 25(6), 814-821.

Evans, J. D., D. Juliano-Bult, & S. Y. Lee. Health Disparities Research in Geriatric Mental Health: Commentary from the National Institute of Mental Health. Am J Geriatr Psychiatry. 23(7):655-657.

Fashaw, S., L. Chisholm, V. Mor, D. J. Meyers, X. Liu, D. Gammonley, & K. Thomas. 2020. Inappropriate antipsychotic use: The impact of nursing home socioeconomic and racial composition. Journal of the American Geriatrics Society, 68(3), 630-636.

Fung, V., M. Price, A. McDowell, A. A. Nierenberg, J. Hsu, J. P. Newhouse, & Cook, B. L. 2023. Coverage Parity And Racial And Ethnic Disparities In Mental Health And Substance Use Care Among Medicare Beneficiaries. *Health Affairs*, *42*(1), 83-93.

Jimenez, D. E., M. Park, D. Rosen, J. H. Joo, D. M. Garza, E. R. Weinstein, K. Conner, C. Silva & O. I. Okereke. 2022. Centering Culture in Mental Health: Differences in Diagnosis, Treatment, and Access to Care Among Older People of Color. The American Journal of Geriatric Psychiatry 30(11), 1234-1251.

Konetzka, R. T., E. M. White, A. Pralea, D. C. Grabowski, & V. Mor. 2021. A systematic review of long-term care facility characteristics associated with COVID-19 outcomes. Journal of the American Geriatrics Society, 69(10), 2766-2777.

Manson, S. M., & D. S. Buchwald. 2021. Aging and Health of American Indians and Alaska Natives: Contributions from the Native Investigator Development Program. Journal of Aging and Health, 33(7-8_suppl), 3S-9S.

Vyas, C. M., C. F. Reynolds III, M. Donneyong, D. Mischoulon, G. Chang, N. R. Cook, J. E. Manson, & O. I. Okereke. 2022). Geographic Region, Racial/Ethnic Disparities, and Late-Life Depression: Results From a Large US Cohort of Older Adults. The American Journal of Geriatric Psychiatry, 30(6), 703-716.

White, K., B. A. Bell, S. J. Huang, & D. R. Williams. 2020. Perceived discrimination trajectories and depressive symptoms among middle-aged and older Black adults. Innovation in Aging 4(5), igaa041.

On Mental Health Care Access, Quality, and Integration

2019 American Geriatrics Society Beers Criteria Update Expert Panel, Fick, D. M., T. P. Semla, M. Steinman, J. Beizer, N. Brandt, R. Dombrowski, C. E. DuBeau, L. Pezzullo, J. J. Flanagan, & Sandhu, S. (2019). American Geriatrics Society 2019 updated AGS Beers Criteria® for potentially inappropriate medication use in older adults. Journal of the American Geriatrics Society, 67(4), 674-694.

Workforce

Flaherty, E., & S. J. Bartels. 2019. Addressing the Community-Based Geriatric Healthcare Workforce Shortage by Leveraging the Potential of Interprofessional Teams. J Am Geriatr Soc 67(S2):S400-S408.

Joo, J. H., L. Bone, J. Forte, E. Kirley, T. Lynch, & H. Aboumatar. 2022. The benefits and challenges of established peer support programmes for patients, informal caregivers, and healthcare providers. Family Practice 39(5), 903-912.

Kim, K., J. S. Choi, E. Choi, C. L. Nieman, J. H. Joo, F. R. Lin, L. N. Gitlin, & H. R. Han. 2016. Effects of community-based health worker interventions to improve chronic disease management and care among vulnerable populations: a systematic review. American Journal of Public Health 106(4), e3-e28.

Patel, V. 2003. Where There Is No Psychiatrist. Royal College of Psychiatrists.

Promoting Positive Mental Health

Jeste, D. V. (2022). Caring for older adults with disabilities. International Psychogeriatrics, 34(11), 941-942.

Jeste, D. V. (2018). Positive psychiatry comes of age. International psychogeriatrics, 30(12), 1735-1738.

Social Disconnection and Loneliness

Lutz J, Van Orden KA, Bruce ML, Conwell Y; Members of the NIMH Workshop on Social Disconnection in Late Life Suicide. 2021. Social Disconnection in Late Life Suicide: An NIMH Workshop on State of the Research in Identifying Mechanisms, Treatment Targets, and Interventions. *Am J Geriatr Psychiatry* 29(8):731-744.

Lutz J. 2022. Addressing Social Disconnection in Late Life: From Outcomes Research and Calls-To-Action to Effective Intervention Science. *Am J Geriatr Psychiatry* 30(3):311-313.

NASEM. 2020. Social Isolation and Loneliness in Older Adults. Washington, DC: National Academies Press. https://nap.nationalacademies.org/resource/25663/Social%20Isolation%20and%20Loneliness%20in%20Older%20Adults_Recommendations%20Insert.pdf

Necka, E. A., L. M. Rowland, & J. D. Evans. 2021. Social Disconnection in Late Life Mental Illness – Commentary From the National Institute of Mental Health. Am J Geriatr Psychiatry 29(8):727-730.

Office of the US Surgeon General. 2023. Our Epidemic of Loneliness and Isolation: Key takeaways from the U.S. Surgeon General's Advisory on the Healing Effects of Social Connection and Community.

Simons K.V., E. S. Bower, S. M. Gillespie, W. L. Mills. 2021. Care Transitions to the Community from Veterans Affairs Nursing Homes: Experiences of Social Connection and Disconnection. *J Am Med Dir Assoc* 22(3):682-688.

Future Direction, Promising Innovations, and Policy Implications

Bartels, S. J., P. R. DiMilia, K. L. Fortuna, & J. A. Naslund. 2020. Integrated Care for Older Adults with Serious Mental Illness and Medical Comorbidity: Evidence-Based Models and Future Research Directions. Clin Geriatr Med. 2020 May;36(2):341-352.

Baumbusch, J., E. P. Blakey, A. M. Carapellotti, M. Dohmen, D. M. Fick, S. H. Kagan, G. J. Melendez-Torres, B. E. Morgan, E. Munsterman, B. Resnick, & H. M. Young. 2022. Nurses and the decade of healthy ageing: An unprecedented opportunity. Geriatr Nurs 47:A1-A3.

Cohen, C. I., & P. D. Meesters (Eds.). 2019. Schizophrenia and Psychoses in Later Life: New Perspectives on Treatment, Research, and Policy. Cambridge University Press.

Fick, D. M., S. H. Kagan, B. Resnick, & H. M. Young. 2022. Making Care for Older People the Choice of Nurses Today, Tomorrow, and Forever. Journal of Gerontological Nursing 48(9), 2-4.

Friedman, M. B. 2022. Meeting the Cognitive and Behavioral Health Challenges of Later Life. https://www.michaelbfriedman.com/mbf/images/9_Geriatric_MH_Policy_8-18-22.pdf

Friedman, M. B. 2022. For One Mind, Too Many Silos. Behavioral Health News.

https://behavioralhealthnews.org/for-one-mind-too-many-silos/

Friedman, M. B. 2023. Overcoming the Stigma of Mental Illness: Changing Minds and Creating Opportunities. Behavioral Health News. https://behavioralhealthnews.org/overcoming-the-stigma-of-mental-illness-changing-minds-and-creating-opportunities/

Institute of Medicine. 2015. Cognitive Aging: Progress in Understanding and Opportunities for Action. Washington, DC: The National Academies Press. https://nap.nationalacademies.org/catalog/21693/cognitive-aging-progress-in-understanding-and-opportunities-for-action

Lee, E. E., M. Balasubramaniam, J. H. Joo, K. Manning, G. M. Pontone, & J. Kirkham. 2019. Innovations and Challenges of Training in Geriatric Mental Health. The American Journal of Geriatric Psychiatry 27(7), 655-659.

Nkimbeng, M., H. R. Han, S. L. Szanton, K. A. Alexander, M. Davey-Rothwell, J. T. Giger, L. N. Gitlin, J. H. Joo, S. Koeuth, K. A. Marx, C. A. Mingo, L. J. Samuel, J. L. Taylor, J. Wenzel, & J. M. Parisi. 2022. Exploring challenges and strategies in partnering with community-based organizations to advance intervention development and implementation with older adults. The Gerontologist 62(8), 1104-1111.

Poo, A. J., & A. Conrad. 2009. The age of dignity: Preparing for the elder boom in a changing America. The New Press.

Reynolds III, C. F., D. V. Jeste, P. S. Sachdev, & D. G. Blazer. 2022. Mental health care for older adults: recent advances and new directions in clinical practice and research. *World Psychiatry*, *21*(3), 336-363.

Narratives, Commentaries, and Other Insights to the Lived Experience

Brown, C. C. 2018. Defying the Verdict: My Bipolar Life. Curbside Splendor Publishing.

Friedman, M. B. 2023. Confronting the Cognitive and Behavioral Health Challenges of an Aging America. https://www.michaelbfriedman.com/mbf/images/Cognitive_and_Behavioral_Health_Challenges_of_Older_Adults.pdf

Owens, O. L., J. M. Beer, A. A. Revels, & White, K. 2021. The lived experiences of older low-income African Americans living alone: Implications for aging in place in the United States. *Journal of Aging and Environment*, *35*(1), 42-61.

Ritchie, C. S., D. L. Roth, & R. M. Allman. 2011. Living with an aging parent: "it was a beautiful invitation". *Jama*, *306*(7), 746-753.

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Mental health care for older adults: recent advances and new directions in clinical practice and research

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The world's population is aging, bringing about an ever-greater burden of mental disorders in older adults. Given multimorbidities, the mental health care of these people and their family caregivers is labor-intensive. At the same time, ageism is a big problem for older people, with and without mental disorders. Positive elements of aging, such as resilience, wisdom and prosocial behaviors, need to be highlighted and promoted, both to combat stigma and to help protect and improve mental health in older adults. The positive psychiatry of aging is not an oxymoron, but a scientific construct strongly informed by research evidence. We champion a broader concept of geriatric psychiatry – one that encompasses health as well as illness. In the present paper, we address these issues in the context of four disorders that are the greatest source of years lived with disability: neurocognitive disorders, major depression, schizophrenia, and substance use disorders. We emphasize the need for implementation of multidisciplinary team care, with comprehensive assessment, clinical management, intensive outreach, and coordination of mental, physical and social health services. We also underscore the need for further research into moderators and mediators of treatment response variability. Because optimal care of older adults with mental disorders is both patient-focused and family-centered, we call for further research into enhancing the well-being of family caregivers. To optimize both the safety and efficacy of pharmacotherapy, further attention to metabolic, cardiovascular and neurological tolerability is much needed, together with further development and testing of medications that reduce the risk for suicide. At the same time, we also address positive aging and normal cognitive aging, both as an antidote to ageism and as a catalyst for change in the way we think about aging per se and late-life mental disorders more specifically. It is in this context that we provide directions for future clinical care and research.

Key words: Positive psychiatry of aging, cognitive aging, neurocognitive disorders, major depression, schizophrenia, substance use disorders, comorbidities, collaborative care, measurement-based care, caregivers

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By the year 2050, according to the United Nations (UN), one in six persons will be 65+ years of age[1]. Given this increasing number of people entering the worldwide aging community, coupled with lower birth rates – especially in high-income and some middle-income countries – there is concern about the old-age dependency ratio, that is, the number of people 65+ years of age per 100 persons in the working age group (ages 15-64). That ratio is increasing significantly, especially in countries such as China[2].

A common misconception is that elders are mostly a burden to society. The fact is, instead, that many of them keep on contributing in many ways, such as continued work, childcare, maintenance of the household, and meal preparation. Most live independently. Many contribute several hours a week to volunteer activities or serve in leadership roles in community organizations. Yet, as these elders continue to age, they often face increasing disabilities, perhaps minor initially but gradually leading to significant impairments.

Mental disorders are major contributors to these disabilities. They often coexist with each other, e.g. comorbid depression and cognitive impairment, or with physical diseases, e.g. hearing impairment and paranoid thoughts[3]. In many cases, comorbidity spans multiple mental and physical disorders.

Despite the "aging tsunami" we are currently witnessing, the rise of special care for older adults has been slow to develop. Psychiatry has lagged behind medicine, yet it is increasing its knowledge base as well as recruiting sub-specialists, unfortunately not at a rate which can serve the unique needs of older adults with mental disorders, even in high-income countries. The International Psychogeriatric Association, founded in 1982, has been instrumental in encouraging meetings and programs in many low- and middle-income countries, as well as providing a forum for geriatric psychiatrists from throughout the world. In both clinical practice and research within geriatric psychiatry, interdisciplinary collaboration has been foundational and essential, given the complexity of the problems faced by older adults experiencing mental illness.

Both basic and applied research have appreciably increased the evidence base for the diagnosis, treatment and prevention of late-life mental disorders. For example, although we have no pharmacological agent yet proven to prevent or retard the progression of Alzheimer's disease, evidence has accumulated to support the importance of preventive measures, such as education, physical activity and control of vascular risk factors[4]. In depression of older adults, treatment with a combination of pharmacotherapy and psychotherapy, especially learning-based forms such as cognitive behavioral therapies (CBT), has been shown to be effective[5,6]. Alcohol use disorders among older adults are more common than often realized by clinicians, especially in men, so that careful screening for these disorders is now regarded as essential[7].

While negative views of aging continue to permeate the beliefs of many, more positive views have emerged in recent years, as exemplified in the MacArthur Research Network on Successful Aging[8]. They have defined successful aging, in contrast to usual aging, as low probability of disease, high cognitive and physical function, and active engagement with life. Others have also included wisdom as a characteristic of positive aging[9,10].

In this paper, we provide an overview of the burden of mental

health problems in older adults, with a focus on neurocognitive disorders, major depressive disorder, schizophrenia, and substance use disorders. For each of these disorders – which can be better understood as groups of disorders – we cover the epidemiology, prevention, recent treatment advances, and emerging models of service delivery. Further, for each group of disorders, we touch briefly upon heterogeneity at several levels: etiology, clinical presentation, and variability in response to intervention. In so doing, we describe directions for the future of clinical practice and research.

We begin the overview by contextualizing considerations of neurocognitive disorders, major depression, schizophrenia, and substance use disorders within the sciences of positive aging and cognitive aging, including a summary of the social determinants of well-being in older adults. Our view is that the positive elements of aging need to be highlighted, not only to reduce the triple jeopardies of ageism, mentalism and ableism (i.e., discrimination against people on the basis of their age, mental health problems, and disability), but also to provide hope to patients and family caregivers.

SOCIAL DETERMINANTS OF MENTAL HEALTH IN OLDER ADULTS

Social determinants of health are non-medical factors that influence health outcomes and have a significant effect on health inequalities[11]. Prominent examples of these social determinants include nutrition, education, employment and living environment, and these apply to the entire population.

Older adults with mental disorders are impacted by several types of these determinants[12]: a) social determinants that affect overall health, b) unique social determinants of mental health, such as stigma against mental illnesses, mental health care disparity, flawed criminal justice system, and homelessness[13], and c) aging-related social determinants, such as ageism, workforce shortage, and social isolation/loneliness. There are, however, also some positive social determinants of health relevant to old age, such as wisdom, resilience, meaning in life, and community engagement. Evaluating and addressing these determinants at individual and community levels is critical for prevention of mental disorders and enhancement of well-being in older adults in general[9-11,13-15].

Ageism and stigma

Ageism is defined by stereotypes, prejudice and discrimination directed toward people on the basis of their age[16]. Called "an insidious scourge on society"[17], it can be institutional, interpersonal and/or self-directed. Aging and older adults are often discussed by the general public and the media using negative stereotypes, such as a decline in mental and cognitive function. Unfortunately, this type of pejorative view of later life may be internalized by older individuals themselves and enacted, creating a vicious circle resulting in poor mental health.

Ageism causes inequalities and has detrimental effects on the individual, community and society[17]. Combating ageism is one of the four action areas of the Decade of Healthy Ageing (2021-2030) declared by the UN and the World Health Organization (WHO)[16].

The stigma against mental disorders is even greater in later life. An example is the stigma against agitation in dementia patients, many of whom spend days or weeks in emergency rooms because long-term care facilities would no longer admit them, and the society has not provided alternatives. Equally sadly, there are more people with severe mental disorders (excluding dementia) and substance use disorders who are aging in prisons and jails than in hospitals in the US[11,12].

Workforce shortage

The geriatric mental health workforce is slim, even in the most developed countries[18]. Despite the increased number of older adults, the number of psychiatrists trained in geriatric psychiatry has not increased. We know what to do, but how to recruit professionals across multiple disciplines to improve geriatric care in various cultural contexts is an abiding question that needs to be addressed for the future of clinical care and research in this field.

Also as a consequence of this workforce shortage, with the increase of physical and functional challenges in older patients, the need for a caregiver usually arises. The primary caregiver is often a spouse or adult child of the older patient. The role of the caregiver is wrought with physical, psychological and emotional challenges when caring for someone with dementia and/or serious physical illness. The caregivers themselves often suffer from significant morbidity[19].

Loneliness and social isolation

A recent report from the National Academies of Science, Engineering, and Medicine[20] highlighted the public health significance of loneliness (i.e., subjective distress arising from an imbalance between desired and perceived social relationships) and objectively measurable social isolation. Older adults are at a particularly high risk for both loneliness and social isolation[21]. Aging-related risk factors include widowhood, physical disability, poor health, and caregiving responsibilities.

Loneliness and social isolation are associated with adverse mental and physical health outcomes – including alcohol and drug abuse, suicidality, poor nutrition, sedentary lifestyle, inadequate sleep, and worsening physical functioning[22]. Loneliness and social isolation are as dangerous to health as smoking and obesity[23], and are an important risk factor for Alzheimer's disease, major depression, and generalized anxiety disorder, as well as for cardiovascular and metabolic diseases[24-26]. More Americans die from loneliness- and social isolation-related conditions than from stroke or lung cancer[27].

Loneliness is more common in people with severe mental disorders such as schizophrenia than in the general population[28]. The evidence base for social isolation regarding adverse outcomes is much greater than for loneliness, yet the evidence for adverse effects of loneliness is increasing[21].

The National Academies report[20] urges further research to establish the strength of the predictive association of loneliness and social isolation with mortality, and to clarify how these two entities interact with other facets of social relationships, including social support.

Wisdom

Wisdom is a personality trait comprised of several components: prosocial attitudes and behaviors (empathy and compassion), self-reflection, emotional regulation, acceptance of uncertainty and diversity of perspectives, social decision-making and, possibly, spirituality[29,30]. Commonly used self-report-based scales for assessing wisdom with good psychometric properties include the San Diego Wisdom Scale or Jeste-Thomas Wisdom Index[31], the Three-Dimensional Wisdom Scale[32], and the Self-Assessed Wisdom Scale[33].

Across the lifespan, wisdom is associated with positive outcomes, including better overall physical and mental health, happiness, and lower levels of depression and loneliness[34,35]. Amongst older adults, numerous investigations have demonstrated that wisdom is associated with life satisfaction, subjective well-being, and greater resilience[29,30]. These studies have reported that older adults score higher than younger adults on several components of wisdom, especially prosocial behaviors, self-reflection, and emotional regulation[36]. Some empirical evidence indicates that wisdom has a curvilinear relationship with age, peaking in the 70s or early 80s[34].

Neurobiological investigations show that prefrontal cortex (especially dorsolateral, ventromedial, and anterior cingulate), insula, and limbic striatum (especially amygdala) are involved in the various components of wisdom[29]. Intergenerational activities, such as grandparents' help in raising grandchildren, have been found to benefit both the generations biologically, cognitively and psychosocially[37].

A number of recent clinical and biological studies have reported a strong inverse relationship between loneliness and wisdom, especially its compassion component[38-40]. This evidence suggests potential use of individual- and societal-level interventions to enhance compassion and other components of wisdom in older adults, so as to reduce loneliness and improve well-being[40]. There are indeed reports of psychosocial group interventions in older people producing a significant improvement in wisdom[41].

Resilience

Resilience is a trait or outcome that describes recovery or bounce-back from adverse situations or a process of adapting well in the face of adversity, trauma, threats or other sources of major stress[21]. Commonly used measures of resilience include self-report scales such as the Connor-Davidson Resilience Scale[42] and the Grit Scale[43]. Resilience is highly relevant to healthy aging and well-being, and should be viewed as a public health concept[44]. A framework for resilience to the challenges associated with aging is required to complement ongoing risk reduction policies, programs and interventions[45].

Men experience greater feelings of loneliness and have increased difficulty in adjusting to widowhood compared to women, with the exception of veterans. Male veterans exposed to death while serving in the military show greater resilience and report less loneliness than civilian widowers[23]. Resilience has been shown to be associated with better health and functioning as well as greater longevity in all age groups, but especially in the very old adults[46]. Resilience interventions in older adults include mindfulness training, CBT, well-being therapy, social support, lifestyle and mind-body interventions, and phone coaching. Studies applying valid and reliable measures of resilience have reported positive outcomes with small to medium effect sizes using some of these interventions[47].

The COVID-19 pandemic has been particularly isolating to older adult populations, given their lower familiarity with technologies to facilitate social interactions or virtual visits by family, friends, or even health professionals. However, despite these obstacles, preliminary evidence indicates that older adults have been more resilient, experiencing fewer negative mental health outcomes compared to other age groups. In a recent study of over 5,000 American adults, adverse mental or behavioral health symptoms were much more prevalent among adults aged 18-25 compared to those aged 65 years or older[48].

Meaning in life

Meaning or purpose in life is the value and importance attributed to one's own life and activities, and the core significance of one's personal existence[49]. There are a number of validated instruments to assess meaning in life, such as the Meaning in Life Questionnaire[50].

Multiple research studies have demonstrated a strong link between purpose in life and better physical, psychosocial and overall health outcomes, including social engagement, in older adult populations[51,52]. Meaning in life may also be a protective factor against suicide[53]. A recent study reported that the presence of meaning showed an inverted U-shaped pattern across the life span, peaking around the age of 60 and decreasing subsequently as physical health declines[50].

Life review therapy is an individual or group story-telling intervention with a focus on integrating life stories through different phases in life. A randomized controlled trial found that life review therapy significantly improved the quality of life of older participants[54]. A meta-analysis of randomized controlled trials showed that life review therapy has moderate effects on depressive symptoms in older adults[55].

Community engagement

Community engagement is a key beneficial social determinant of mental health in older adults. There are many communities across the world, including those which are formally part of the WHO's Age-Friendly Communities (AFC) Network, in which older adults are actively involved, valued and supported, with a focus on affordable housing, built environments conducive to active living, inexpensive and convenient transportation options, opportunities for social participation and leadership, intergenerational programs, and accessible health and wellness services[56].

The Compassionate Communities and Cities (CCC) movement seeks to promote the motivation of communities and cities to take greater responsibility for the care of people near the end of life. A systematic review of the studies of CCC programs reported that the evidence for their implementation is still limited[57]. A global model for the development and evaluation of CCC in palliative care is warranted.

POSITIVE PSYCHIATRY AND SUCCESSFUL AGING

Positive psychiatry is the science and practice of psychiatry that seeks to understand and promote well-being through assessment and interventions involving positive psychosocial factors in people with or without mental or physical illnesses[58]. A critical construct in positive psychiatry that relates to older adults is "successful aging".

The definition of successful aging and its determinants remains variable. The original model by Rowe and Kahn[8], derived from the MacArthur Research Network, included three domains: absence of disease and disability, high cognitive and physical functioning, and active engagement with life. This model has been criticized for its overemphasis on physical health, which fails to account for many older individuals with physical morbidity who subjectively rate themselves as aging successfully and report a high degree of satisfaction in later life stages[59], and for ignoring a dynamic lifespan perspective[60].

Qualitative studies of successful aging indicate that older adults consider the ability to adapt to circumstances and the positive attitude toward the future as being more important to their sense of well-being than an absence of physical disease and disability[59]. Investigations have also revealed a paradox of aging: even as physical health declines, self-rated successful aging and other indicators of psychosocial functioning improve in later life[61]. Largely similar findings have also been reported in Eastern cultures[62].

A broad definition of successful aging should have the following components: a) subjective well-being, with low level of perceived stress (the extent to which an individual perceives that current demands or challenges exceed his/her ability to cope with them); b) flourishing, which involves eudemonic well-being, including meaning in life and close social relationships[63]; c) post-traumatic growth; d) sustained remission or recovery in people with severe mental disorders, that typically includes an absence or a marked reduction of symptoms along with functional independence.

Neuroscience research during the past three decades has demonstrated a neurobiological basis for successful aging, despite age-associated degenerative changes. There is strong evidence for neuroplasticity in active older adults – i.e., if there is optimal physical, cognitive and social activity, the development of new synapses, dendrites, blood vessels, and even neurons in specific subcortical regions, such as the dentate gyrus of hippocampus, can and does take place[64,65].

Clinical research supports a model in which positive psychological traits such as wisdom, resilience and social engagement interact with and feed into each individual's evaluation of the degree of well-being and are stronger predictors of outcomes such as self-rated successful aging than physical health. We must add that aging is characterized by notable heterogeneity and, therefore, the proposed model would not apply to all the older adults.

COGNITIVE AGING

Cognitive aging is a process that is ubiquitous with humans and occurs gradually throughout adult life[66]. Clinicians caring for older adults should be aware of this process because it does impact social functioning.

Episodic memory and executive function are crucial domains affected by the aging process, and exhibit on average a gradual decline over many years, accelerating in later life[67]. Even normal changes in cognition, however, are quite variable, within and between individuals[61]. Some functions may improve over time, such as wisdom, altruism, prosocial behaviors and reasoning ability in social conflicts[68,69].

The evaluation of the person with potential cognitive aging cannot be limited to the use of typical screening tools such as the Mini-Mental State Examination (MMSE)[70] or the Montreal Cognitive Assessment (MoCA)[71]. The family is perhaps the best source of information. Queries which can be informative include: "Is __ as sharp as he/she was before?"; "Does __ have greater difficulty managing finances and other business matters than in the past?"; "Has __ become lost for brief periods in familiar places?"; "Does ___ have more difficulty recalling the names of acquaintances of long standing but which he/she has not encountered recently?"; and "Does __ have more problems with cooking and have to refer to recipes more frequently than in the past?". Individuals with cognitive aging may also be more reluctant to participate in social gatherings. Each of these changes in behavior may be barely noticeable, yet close friends and family typically do notice.

These age-related problems do not derive simply from a milder form of neuronal loss or plaque formation which is less extensive than in Alzheimer's disease. Brain changes do occur, however, such as changes in astrocyte and microglial function and synaptic plasticity[72]. Genetic predisposition, traumatic brain injury, adverse environmental childhood exposures, and poor educational and cognitive enrichment experiences may also

contribute[73]. In other words, many external experiences which potentially can be ameliorated render prevention of greater cognitive decline with aging important across the life cycle, though some causative factors are inherent to the aging brain.

Many comorbid conditions can cause or exacerbate cognitive aging, including diabetes mellitus, vascular conditions of the brain and heart, chronic lung and liver conditions, renal failure, sepsis, delirium, chronic obstructive pulmonary disease, multiple sclerosis, vision and hearing loss, and sleep disorders[74]. Successful treatment of these conditions can often mitigate the cognitive dysfunction[74]. Additionally, many mental disorders have been associated with cognitive decrements, such as major depression (especially treatment-resistant forms), bipolar disorder, schizophrenia, various types of substance abuse, and anxiety disorders[75].

A number of non-pharmacological interventions may be effective on cognitive aging. These include exercise, which is perhaps the most important preventive tool. Physical activity has been found in several studies to assist individuals in maintaining both their physical and cognitive function throughout life, as well as preventing some important chronic conditions[76]. The evidence derives from both observational and intervention studies[77,78].

In addition, reduction of cardiovascular and related metabolic risk factors, such as treating hypertension and diabetes as well as cessation of smoking and losing weight, have been demonstrated effective[79]. The mantra "What is good for the heart is good for the brain" appears to hold true[66]. For example, evidence is mounting that diets, such as the Dietary Approaches to Stop Hypertension (DASH) or the Mediterranean Diet, may be useful[80,81].

Many medications, especially diphenhydramine and benzodiazepines, can produce cognitive decline, and clinicians must take care in their prescription to older adults. Long-term effects, namely a persistence of cognitive dysfunction secondary to the drugs, are less substantiated by the literature. Sleep problems, such as chronic insomnia or sleep-related breathing disorder such as obstructive sleep apnea, may also contribute[74]. Lack of education and little cognitive stimulation may also be involved, yet the evidence for these risk factors is not as strong as for those listed above[82].

A number of somatic interventions have been suggested[66]. Yet, none of these has held up under strict empirical clinical trials. These include stimulant drugs, such as caffeinated beverages, brain stimulating computer-based games, and electrical brain stimulation procedures, such as transcranial direct current stimulation[83-85].

Given the lack of clearly effective interventions and the apparent minor impairment secondary to cognitive aging, clinicians may be hesitant to devote time to helping affected people and their families. Yet, cognitive aging can benefit from discussions by these clinicians with older adults and their relatives, as attention to risk and protective factors can have a significant positive impact.

One area where intervention can clearly be important is alerting the family of the potential for fraud perpetrated upon older adults[86]. The frequency of fraud has increased dramatically in high-income countries, and perhaps in low- and middle-income countries as well. When disturbing messages are delivered to these elders coupled with a demand for immediate response, the potential for fraud that can be very harmful is high. For example, in the US, elders may be telephoned with fraudulent alerts that they owe taxes and may be jailed if these are not paid immediately, coupled with a demand for their social security number. Warnings to older adults and their families can be most helpful in mitigating these threats[86].

NEUROCOGNITIVE DISORDERS

The DSM-5[87] has introduced the term "neurocognitive disorders" to describe the group of disorders with cognitive impairment as the salient feature, encompassing major (or dementia) and mild neurocognitive disorders, and delirium[88]. The term dementia, however, remains the most frequently used, and mild neurocognitive disorder is used interchangeably with the expression "mild cognitive impairment".

The DSM-5 has tried to bring coherence to the criteria for the various subtypes of these disorders under one framework, but its widespread adoption has been limited largely to psychiatry and psychology. The National Institute of Aging-Alzheimer's Association (NIA-AA) Criteria for dementia[89] and mild cognitive impairment[90] are widely used in the neurology literature. The DSM-IV criteria for dementia[91] are still in use, with the major distinction from the DSM-5 being that significant impairment in one cognitive domain is sufficient as long as the functional criteria are met.

The distinction between dementia and mild cognitive impairment is based on the severity of the cognitive deficits and, more importantly, on their functional consequences. For mild cognitive impairment, the International Working Group criteria are commonly applied[92]. With the increasing interest in preclinical syndromes, the concept of "subjective cognitive decline" (i.e., subjective report of decline in cognitive abilities from a previous level, unrelated to an acute event, with normal performance on standard cognitive tests, accounting for age, gender and education) has also received much attention in recent years[93].

The DSM-5 describes cognitive dysfunction by delineating six domains: complex attention, executive function, learning and memory, language, perceptual-motor and social cognition. It recognizes that varying degrees of cognitive impairment are present in several mental disorders, but cognitive dysfunction must be the salient and defining feature for a diagnosis of neurocognitive disorder[88]. The formal acknowledgement of social cognition as a specific cognitive domain in the DSM-5 has spurred much research and clinical interest[94].

Dementia and mild neurocognitive disorder

Dementia and mild neurocognitive disorder are discussed together for several reasons. They are syndromes with shared

etiology, with the main difference being the severity of cognitive impairment and its functional consequences[92]. Cognitive impairment should, in fact, be considered to be on a continuum, with mild cognitive impairment and dementia being categorical constructs imposed on that continuum. This is consistent with the understanding that the pathology underlying dementia, in particular that due to Alzheimer's disease[95], can take several decades to build up in the brain, and cognitive impairment is similarly slow to develop and progress[95].

Epidemiology

While there are many challenges in "counting" cases of dementia, party related to the purpose for which this is being done[96], several systematic efforts have been made. The latest global estimate from the Global Burden of Disease Study 2019 is 57.4 million (95% CI: 50.4-65.1) cases worldwide in 2019, projected to increase to 152.8 million (95% CI: 130.8-175.6) in 2050. This rise in prevalence is attributable to the increase in the elderly population, with the age-standardized prevalence remaining stable[97]. There is much regional variation, with the smallest increases projected for Western Europe and high-income Asia-Pacific, and the largest increases for North Africa, Middle East, and Eastern sub-Saharan Africa.

The incidence of dementia is showing a different trend, with several studies from high-income countries, and one from Nigeria, showing a decline, especially in the last three decades[98,99]. No specific cause for this decline has been found, but changes in education, living conditions and health care are thought to have contributed.

The epidemiology of mild cognitive impairment has been less well studied. The published prevalence estimates vary by the diagnostic criteria being used[92]. Applying uniform criteria in the Cohort Studies of Memory in an International Consortium (COSMIC), the crude prevalence in those over 60 years was 5.9% (95% CI: 5.5-6.3) overall, increasing from 4.5% at age 60-69 to 5.8% at 70-79, and to 7.1% at 80-89 years. This was unaffected by gender and did not differ between White Caucasian and Chinese groups[100].

Risk and protective factors

Twelve potentially modifiable risk/protective factors for dementia have been recently identified, as listed in Table 1[101]. To the previously documented nine risk factors with good supporting evidence (less education, hypertension, hearing impairment, smoking, obesity, depression, physical inactivity, diabetes, and low social contact), three new ones have been added (excessive alcohol consumption, traumatic brain injury, and air pollution).

Together, these factors account for about 40% of dementia risk worldwide, which can theoretically be prevented[102]. The potential is greater in low-income countries, in which the prevalence of some of the risk factors is higher. An ambitious prevention program in terms of both policies and individual action has been therefore proposed, while recognizing that individual behavioral change, on which much of this depends, is difficult to achieve[102]. There has also been an international consensus on enlarging the vista of dementia to include cerebrovascular disease, with the Berlin manifesto of "preventing dementia by preventing stroke"[103].

Table 1 Modifiable risk factors of all-cause dementia (adapted from Livingston et al[101])

	Relative risk for dementia (95% CI)	Weighted population attributable fraction (%)
Less education	1.6 (1.3-2.0)	7.1
Hearing impairment	1.9 (1.4-2.7)	8.2
Traumatic brain injury	1.8 (1.5-2.2)	3.4
Hypertension	1.6 (1.2-2.2)	1.9
Excessive alcohol consumption (>21 units/week)	1.2 (1.1-1.3)	0.8
Obesity (body mass index ≥30)	1.6 (1.3-1.9)	0.7
Smoking	1.6 (1.2-2.2)	5.2
Depression	1.9 (1.6-2.3)	3.9
Social isolation	1.6 (1.3-1.9)	3.5
Physical inactivity	1.4 (1.2-1.7)	1.6
Diabetes	1.5 (1.3-1.8)	1.1
Air pollution	1.1 (1.1-1.1)	2.3
Total		39.7

Prevention

The evidence that the modification of lifestyle and other risk factors can slow cognitive decline and potentially delay the onset of dementia, or prevent it, is gradually accumulating[102].

For most risk factors, the evidence comes largely from observational studies, although some controlled trials are also available[101]. While individual factors – such as education, physical activity, and control of vascular risk factors – are important to address, it is the lifelong cumulation of risk that appears to be most potent. Multimodal interventions over long periods have therefore been investigated.

The best-known investigation is the Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability (FINGER Trial)[104], a 2-year multi-domain randomized controlled trial in which the active arm included dietary counseling, physical exercise, cognitive training, and vascular and metabolic risk monitoring. Over 24 months, the improvement in global cognition was 25% higher in the intervention group compared to the general health advice control group. The improvement was observed regardless of demographic and socioeconomic factors, and was also seen in people with genetic susceptibility (*APOE*4* positive) to Alzheimer's disease[105]. Long-term data from this trial, to explore whether the intervention did indeed prevent de-

mentia, are not yet available.

While the FINGER trial generated much enthusiasm, two other large multi-domain trials, the Multi-domain Alzheimer Preventive Trial (MAPT)[106] from France and the Dementia by Intensive Vascular Care (PreDIVA)[107] from the Netherlands, were negative on their primary outcomes (respectively, cognitive decline and all-cause dementia). Sub-analyses of these trials, however, revealed that there was benefit in people with increased risk of dementia.

This highlighted the need for further research and resulted in the development of an international network of trials called the World-Wide FINGERS (WW-FINGERS)[108], which encompasses 25 countries, including some low- and middle-income countries. Some of the trials, such as the Maintain Your Brain Trial in Australia[109], are completely online. This network, with the stated objective of data sharing and joint analyses, has the potential to provide the evidence base to develop prevention of dementia policies across communities and jurisdictions.

While policy change will need to await such evidence, it is reasonable, at an individual level, to advise older people at risk of cognitive decline to implement the measures of controlling vascular risk factors, optimizing their physical, mental and social activities, reducing stress, treating depression if present, and following a balanced Mediterranean-like diet[110]. Indeed, it would be reasonable to argue that dementia prevention is a life-long endeavor, the seeds of which are sown in childhood with good education and a nurturing environment.

Neuropsychiatric symptoms of dementia

Neuropsychiatric symptoms are a common reason for referral of a dementia patient to a psychiatric service. They also lead to much distress, both for the patient and his/her caregivers, and contribute to hospitalization and early admission to residential care[111].

Several approaches have been used for the categorization of these symptoms, with none being completely satisfactory. They include agitation and aggression, psychotic symptoms (delusions, hallucinations), mood symptoms (depression, anxiety, elation, apathy), sleep and appetite disturbances, and ruminative, repetitive and somatoform behaviors[112]. Apathy has been reported to be the most common symptom, followed by depression and agitation/aggression[113].

The Neuropsychiatric Inventory (NPI)[114] is the most commonly used instrument for the assessment of these symptoms in clinical trials, but it does not include all of them and is based on informant report. Other commonly used measures are the Behavioral Pathology in Alzheimer's Disease Rating Scale (BEHAVE-AD)[115] and the Cohen-Mansfield Agitation Inventory[116].

Recent work has shown that neuropsychiatric symptoms may occur early in the course of dementia, at the stage of mild cognitive impairment or even before that. This has resulted in the concept of "mild behavioral impairment"[117]. There is some evidence that individuals with mild cognitive impairment who also have neuropsychiatric symptoms are at risk of faster progression to dementia[118].

The treatment of neuropsychiatric symptoms remains a challenge. The current evidence suggests that the role of drug treatment is limited, and non-pharmacological strategies are first line[119], in particular some behavioral management techniques, especially those involving caregiver- and staff-oriented interventions[120]. However, drug treatment is still common, with frequent adverse effects. Antipsychotics such as risperidone, aripiprazole and quetiapine have evidence supporting short-term use for agitation or psychotic symptoms, but with increased risk of stroke and confusion or cognitive decline, along with extrapyramidal and metabolic adverse effects[121]. Other drugs used in some patients include antidepressants (e.g., citalopram, sertraline, mirtazapine), cholinesterase inhibitors, memantine, benzodiazepines and analgesics, all with limited evidence[112].

A number of small drug trials have also been conducted to treat neuropsychiatric symptoms in frontotemporal dementia[122] and dementia with Lewy bodies[123], but with limited evidence of success. A narrative review[124] and a Delphi consensus group[125] supported the use of donepezil and rivastigmine for neuropsychiatric symptoms of dementia with Lewy bodies, although a network meta-analysis found that these drugs improved neuropsychiatric symptoms in Parkinson's disease dementia, but not in dementia with Lewy bodies[123]. Among antipsychotics, aripiprazole was reported in a small study to be effective and well tolerated for the treatment of psychotic symptoms in patients with dementia with Lewy bodies[126].

There is an ongoing attempt to better understand the neurobiology of neuropsychiatric symptoms of dementia, so that rational therapeutics can be developed[112].

Organization of services

The journey of a person with dementia is long and arduous, and often begins with a delay in diagnosis or its lack altogether. A pooled analysis reported that rates of undiagnosed dementia are as high as 70.7% in Canada, 43.1% in UK, 58.2% in Europe, and 61.7% worldwide[127]. The WHO Global Dementia Action Plan[128] aims to reduce this to 50% in 50% of countries by the year 2025.

The communication of the diagnosis to the patient and/or his/her family, once it is made, is often poor, with only 34% of primary care physicians and 48% of specialists routinely informing the individual about the diagnosis[129]. A negative reaction to the diagnosis is common, which is understandable considering the prevalent anti-dementia stigma in society[130,131].

The diagnosis of dementia should be followed by a management plan for the short and long term, to maintain optimal function and quality of life as long as possible. Too often, the diagnosis is followed instead by advice for disengagement from society[132], which may set up the path to more rapid decline.

There are several worldwide challenges to providing high-quality care to persons with dementia and their families. Both the direct and indirect costs of care are high, and public investment in

this area has been inadequate, even in high-income countries, although dementia was declared a public health priority by the WHO in 2015[133].

The capacity to provide care at home is often insufficient, and systems to ensure the safety and quality of care are not commonly implemented. Institutional care is frequently of poor quality, because of lack of resources and adequately trained staff. People with young-onset dementia and those from ethnic or other cultural minorities are often poorly catered for.

As the world faces a growing dementia population, the health services, and society in general, need a concerted and coordinated response underpinned by high quality. Several international examples of good practices are available for adoption in diverse settings[134,135]. The Global Dementia Observatory of the WHO monitors the public response to dementia in all countries on 35 key indicators, with the objective of achieving the global targets of the Global Dementia Action Plan by 2025[136].

Directions for future clinical practice and research in dementia are provided in Table 2.

Specific dementias

There have been major advances in the last two decades in our understanding of the pathophysiology and biomarkers of specific dementias, in particular Alzheimer's disease. There have also been significant developments in the knowledge about pathology of dementia, including the description of a potentially new form, limbic-predominant age-related TDP-43 encephalopathy (LATE).

Table 2 Directions for future clinical practice and research in dementia

1.	Neurocognitive disorders should remain categorized as mental disorders in the DSM and ICD, and psychiatry should play a major role in comprehensively assessing and treating these conditions.
2.	A global effort should be made to better understand the origins and disease mechanisms of the various dementia subtypes.
3.	An international effort should be promoted to improve epidemiology research on dementia in low- and middle-income countries and to develop global platforms for data sharing.
4.	A global effort should be made to develop prevention strategies which are tailored to different populations based on differential risk factor profiles and behavioral repertoires.
5.	Clinical services and diagnostic pathways should be improved, so that patients with dementia and mild cognitive impairment can receive an early and accurate diagnosis.
6.	Better models of collaborative care for dementia should be developed that are accessible to all, both in the immediate period after a diagnosis and in the longer term.
7.	The neuropsychiatric symptoms of dementia should be better understood, so that neurobiologically informed treatments can be developed.
8.	The newly developed biomarkers of Alzheimer's disease should be made affordable and clinically available, and biomarkers should be developed for the other dementia subtypes.
9.	Drug development for dementia should become a global effort, with the objective that new treatments are tested in all populations, and when brought to the market are affordable and accessible to all.
10.	All societies should develop policies and procedures to address ageism and stigma against dementia.

Alzheimer's disease

While the hallmark features of plaques and tangles in Alzheimer's disease have been known for over a century, the understanding of the detailed pathologies involved is more recent. The pathogenesis of the protein abnormalities, the β-amyloid (Aβ) peptides that aggregate to form the amyloid fibrils of the neuritic plaque, and the hyperphosphorylated tau that forms the neurofibrillary tangles, is now much better understood[137].

This is associated with other processes such as neuroinflammation, oxidative stress, autophagy, dysfunction of the glymphatic system, alteration in blood vessels, leakage of the blood-brain barrier, and abnormality in the gut microbiome, all contributing to the cellular pathology underlying Alzheimer's disease[138].

There has long been a controversy on the relative importance of amyloid and tau in the pathogenesis of Alzheimer's disease. The most popular model is the "amyloid hypothesis", which posits that Aβ, most likely in its soluble oligomeric form, initiates a pathophysiological cascade which leads to the hyperphosphorylation and misfolding of tau[139]. The misfolded tau is then propagated through the cortex in a prion-like fashion, leading to cellular failure and the development of cognitive deficits[140]. The complex Aβ-tau interactions are incompletely understood, and it seems likely that both pathologies are important and have a synergistic effect[139].

Diagnosis and biomarkers

Alzheimer's disease accounts for 55-60% of all cases of dementia. The clinical features are well described, with salience of disturbance of episodic memory in the early stages. The clinical criteria used most commonly are the NIA-AA criteria for dementia[89] and mild cognitive impairment[90] due to Alzheimer's disease.

With the recent development of biomarkers for amyloid (A), tau (T) and neurodegeneration (N), Alzheimer's disease has also been described using the AT(N) framework, with a diagnosis requiring the presence of both A and T[141]. This approach distinguishes the pathological process of the disease from the clinical syndrome, recognizing that pathology precedes the development of neurodegeneration and clinical features by several years, if not decades.

A hypothetical model of dynamic biomarkers has been proposed to explain the pathophysiological process of Alzheimer's disease[142], in which Aβ deposition occurs independently and accelerates tauopathy, which then leads to neurodegeneration detectable on magnetic resonance imaging (MRI) and positron

emission tomography (PET) before cognitive symptoms become manifest.

There have been updates of the AT(N) classification to accommodate vascular pathology[143] and other pathologies such as neuroimmune dysregulation, synaptic disruption and blood-brain barrier breakdown[144].

One of the most significant recent advances in Alzheimer's disease has been the development of biomarkers, as listed in Table 3. PET imaging was first established for amyloid[145] and later for tau[146], and both are now in clinical use. It is now possible to assess amyloid and tau status with high specificity and sensitivity by the cerebrospinal fluid measurement of Aβ42 level, Aβ42/Aβ40 ratio and phospho-tau (pTau) levels, for which standardized procedures have been developed[144].

More recently, the development of blood biomarkers for Alzheimer's disease has raised the prospect of affordable and readily accessible tests. While Aβ42/Aβ40 ratio shows promise, more work is needed to standardize its measurement before clinical use[147]. Some pTau fragments (pTau181, pTau217 and pTau231) in the blood have been shown to accurately reflect brain pathology and are rapidly emerging as biomarkers[148]. Blood levels of neurofilament light chain (NfL) and glial fibrillary acidic protein (GFAP) may accurately reflect neurodegeneration and neuroinflammation, respectively[148].

Genetics

The genetics of Alzheimer's disease has seen major advances in recent years. The fully penetrant mutations in three genes (amyloid precursor protein, presenilin 1 and presenilin 2), that cause disease of early onset, have been known for some time[149]. The main risk gene for sporadic disease is the ε4 allele of the apolipoprotein E gene (*APOE*4*), which increases risk by 2-3 fold in the heterozygous state and 10-12 fold in the homozygous condition.

Genome-wide association studies and next generation sequencing have led to the discovery of an additional >40 genes with small effect (odds ratios of 1.05 to 1.20). Collectively, the polygenic risk score for Alzheimer's disease can distinguish patients from controls with 75-85% accuracy[150].

Treatment

The recent approval by the US Federal Drug Administration (FDA) of a disease-modifying drug, aducanumab[151], has been seen as a major milestone[152]. This is a human monoclonal antibody that targets the amyloid protein and is administered by monthly intravenous infusions.

However, its approval has generated considerable controversy. Phase 3 studies were initially terminated after a futility analysis, but a *post-hoc* analysis led to "accelerated" approval by the FDA because it showed reduction of brain amyloid as a surrogate marker, even though the clinical benefit criterion was not met[153], and the drug showed significant adverse effects in the form of cerebral edema and hemorrhage. This approval occurred despite the advice of the independent advisory committee of the FDA, and came with a price tag of US$ 56,000 per year for the drug.

The validity of reduced amyloid in the brain as a surrogate marker for clinical benefit has been questioned[154]. Nevertheless, many clinicians are preparing for the rollout of the drug in the US, and approval in other countries is being sought. The manufacturers of aducanumab have been given 6-year approval by the FDA to provide evidence of clinical benefit. Guidelines for its appropriate use are beginning to be published[155]. Aducanumab may be the first of several disease-modifying drugs coming to the clinic, and has generated renewed interest in drug treatment of Alzheimer's disease and other dementias.

Other dementias

Advances in other dementias – such as vascular dementia, dementia with Lewy bodies, and frontotemporal dementia – have

Table 3 Biomarkers in the diagnosis of common dementing disorders

	Biomarker class	Imaging	Cerebrospinal fluid	Blood
Alzheimer's disease	Amyloid (A)	PET (Pittsburgh compound-B, ^{18}F ligands)	Aβ42 level; Aβ42/Aβ40 ratio	Aβ42 level; Aβ42/Aβ40 ratio
	Tau (T)	PET	pTau	pTau181; pTau217; pTau231
	Neurodegeneration (N)	MRI; FDG PET	tTau; NfL	NfL
	Synaptic loss	FDG PET	Neurogranin	
	Neuroinflammation	TSPO PET	GFAP; TREM2	GFAP
Dementia with Lewy bodies	Neurodegeneration	MRI, FDG PET		
	Parkinsonism	DAT imaging, MIBG heart scintigraphy		
Frontotemporal dementia	Neurodegeneration	MRI, FDG PET	NfL	NfL

PET – positron emission tomography, FDG – fluorodeoxyglucose, MRI – magnetic resonance imaging, Aβ – amyloid beta, pTau – phosphorylated tau, tTau – total tau, NfL – neurofilament light chain, GFAP – glial fibrillary acidic protein, TREM2 – triggering receptor expressed on myeloid cells-2, TSPO – translocator protein (18 kDa), DAT – dopamine transporter, MIBG – ^{123}I-metaiodobenzylguanidine

been significant, but not as striking as those in Alzheimer's disease.

Vascular cognitive impairment and dementia

Vascular dementia has seen a broadening of the concept to vascular cognitive impairment and dementia[156], and new diagnostic criteria[157,158] have been proposed.

Vascular dementia is the second most common form of dementia, accounting for about 15-20% of all cases[159]. Vascular contributions to dementia are, however, much more common in autopsy studies, with up to 75% having some vascular pathology[160] and about one-third having significant vascular pathology[161].

Recently, international collaborations, such as the Stroke and Cognition Consortium (STROKOG)[162] and the METACOHORTS Consortium[163], have been formed to expedite the development of new treatments and prevention efforts. A framework for research priorities in the cerebrovascular biology of cognitive decline has been proposed[164]. The priorities include the development and validation of imaging and biospecimen-based biomarkers, better experimental models, and increased understanding of the underlying molecular and physiological mechanisms – white matter disease, infarction, microhemorrhage, vascular autoregulation, glymphatic flow, metabolic processes – and the interaction between vascular and Alzheimer pathologies[164].

Dementia with Lewy bodies

Dementia with Lewy bodies has seen the publication of the fourth consensus report on its diagnosis and management[165], which has clearly distinguished between clinical features and diagnostic biomarkers. The report gave more weighting to rapid eye movement (REM) sleep disorder, that involves recurrent dream enactment behavior, in the clinical criteria. The disproportionate deficits in the cognitive domains of attention, executive function and visual processing relative to memory and naming were highlighted.

While there are still no direct biomarkers to establish dementia with Lewy bodies, indicative biomarkers include reduced dopamine transporter (DAT) uptake in the basal ganglia on single photon emission computerized tomography (SPECT) or PET imaging[165,166], reduced iodine-metaiodobenzylguanidine (MIBG) myocardial scintigraphy uptake[165], and polysomnographic confirmation of REM sleep without atonia[167].

While the genetic architecture of this form of dementia is poorly understood, genome sequencing has identified new loci, and genetic risk scores suggest that it shares risk profiles with Alzheimer's and Parkinson's diseases[168].

There is evidence for the beneficial effects of cholinesterase inhibitors, but not memantine, on cognition[169], but parkinsonism is less likely to respond to dopaminergic drugs compared to Parkinson's disease, with an increased risk of psychosis[170].

Frontotemporal dementia

Frontotemporal dementia is an umbrella term for a diverse group of neurodegenerative disorders characterized by atrophy in the frontal and temporal lobes, with a clinical picture dominated by a behavioral-executive dysfunction (behavioral variant) or a language disturbance (semantic and progressive non-fluent aphasia variants)[171].

Because of the psychiatric features of the behavioral variant, psychiatrists are often the first professionals to see such patients[172], and the condition may be misdiagnosed as obsessive-compulsive disorder, schizophrenia, bipolar disorder or depression, because of some shared features[172]. Personality change is often an early feature of this behavioral variant; there may be features of borderline, antisocial, schizoid or schizotypal personality. Substance abuse may be present[172]. About 50% of patients with frontotemporal dementia initially receive one of the abovementioned psychiatric diagnoses, leading to a delay in the correct diagnosis of up to 5-6 years[171].

Frontotemporal dementia is usually a young-onset disorder, being the second or third most common cause of dementia of young onset, accounting for 3-26% of such cases in various studies[173]. About a third of cases are familial, with three autosomal dominant genes commonly implicated: progranulin (GRN), chromosome 9 open reading frame 72 (C9orf72), and microtubule-associated protein tau (MAPT). However, several other genes have been involved. Rare mutations include TAR DNA-binding protein 43 (TDP-43), fused-in sarcoma (FUS), valosin-containing protein (VCP), and the CHMP2B genes. The C9orf72 mutations are the most common genetic form and may initially present as a late-onset psychosis. These mutations have also been rarely reported in patients with schizophrenia and bipolar disorder[174,175].

The inclusions in frontotemporal dementia contain tau, TDP-43 or FUS proteins. There is increasing research in developing fluid biomarkers for this form of dementia, with NfL showing promise as marker of neurodegeneration[176], but without specificity.

Differential diagnosis from psychiatric disorders and other neurodegenerative diseases is often aided by neuroimaging, using MRI and PET. There is predominant atrophy of frontal and temporal lobes, which is asymmetrical in the early stages, and this is associated with hypometabolism and hypoperfusion in these regions. Differential diagnosis from the frontal variant of Alzheimer's disease is assisted by amyloid imaging[177].

There is currently no approved drug treatment for frontotemporal dementia. The focus of treatment is on the management of neuropsychiatric symptoms. The symptoms targeted have been apathy, disinhibition, obsessive-compulsive and hoarding behaviors, loss of empathy and prosocial behavior, loss of insight, and psychosis, but results thus far have not been conclusive for the various interventions investigated[122]. Drugs to modulate the serotonergic and dopaminergic systems are used off-label to treat these symptoms, but with modest success[122].

Limbic-predominant age-related TDP-43 encephalopathy (LATE)

LATE is a recently described entity which affects older people and presents with an amnestic picture resembling Alzheimer's disease[178]. Its pathology – which typically involves the amygdala, hippocampus and middle frontal gyrus – is common in older brains, seen in nearly 25% of brains at autopsy in a community cohort[179].

The pathogenesis and clinical picture of this condition, and its status in relation to Alzheimer's disease and frontotemporal dementia, are only beginning to be understood.

Delirium

The DSM-5 recognizes delirium as a cognitive disorder with a disturbance of attention (i.e., reduced ability to direct, focus, sustain and shift attention) and awareness (i.e., reduced orientation to the environment). This often leads to what has been referred to as a confusional state or reduced level of consciousness[180].

The presentation is multifaceted, with several cognitive domains being affected, along with altered sleep-wake cycle, emotional lability, delusions, agitation, and other motor and behavioral disturbances. Two forms of delirium – hyperactive and hypoactive – have been described, with the hypoactive form being more common in older people and having a worse prognosis[181].

Delirium remains a clinical diagnosis, with no validated biomarkers. Various inflammatory, metabolic and neurotransmitter-based markers have been investigated, but their clinical application is limited[182]. The electroencephalogram (EEG) may be used as a supportive test, but it has low specificity and sensitivity, and its application is mainly to distinguish delirium from a primary mental disorder or a non-convulsive status epilepticus[183].

The lack of biomarkers and the diverse and sometimes subtle clinical features of delirium often result in its under-recognition. In one study[184], conducted in the context of palliative care, 60% of patients with delirium had not been diagnosed by the treating physician. A high index of suspicion, especially in older individuals in settings where delirium is most likely, is important, preferably complemented by a delirium screening tool[185]. One of the most widely used is the Confusion Assessment Method (CAM)[186], which can alert the clinician to the likelihood of delirium in an individual case.

The pathophysiology of delirium is incompletely understood. Older age is an independent risk factor, and this has been attributed to several changes associated with brain aging, which include reduced blood flow and vascular density, neuronal loss, and changes in neurotransmitters and intracellular signal transduction systems[187]. Numerous predisposing and precipitating factors for delirium have been identified, resulting in its characterization as a state of acute brain failure through multiple pathways. Several hypotheses for its development have been proposed, such as the oxidative stress hypothesis[188], the neuroinflammatory hypothesis[189], the neuroendocrine hypothesis including the role of aberrant stress[190], and the circadian rhythm dysregulation hypothesis[190].

Since the various pathways do not occur in isolation, and do not lead to distinct consequences, delirium is best understood as a large-scale neural network disruption[182], with several processes (i.e., neuroinflammation, neurotransmitter dysregulation, oxidative stress, neuroendocrine disturbance, and circadian rhythm dysregulation) contributing to varying degrees in different situations.

Several clinical management guidelines for delirium have been published[191], which include those from the UK National Institute for Health and Care Excellence (NICE)[192] and the American Geriatrics Society[193]. The emphasis is on prevention, with the use of multicomponent non-pharmacological approaches. The various components are attention to the environment, encouraging ambulation and exercise, early mobilization following surgery, maintaining a fluid balance, attention to adequate nutrition, improving vision and hearing, sleep enhancement, infection prevention, pain management, hypoxia control, and optimization of medications[180]. A non-pharmacologic approach based on the above-mentioned components is also the mainstay of treatment. Drug treatment is generally avoided, except for benzodiazepines in delirium from alcohol or benzodiazepine withdrawal.

While antipsychotics such as risperidone, haloperidol, ziprasidone and olanzapine are sometimes used to manage agitation or psychotic symptoms in delirium, there is a lack of strong evidence to support their use[194].

LATE-LIFE MAJOR DEPRESSION

The recognition of major depression is of great clinical importance across the life cycle, and no less so in older adults[195]. This condition presents increasing public health challenges to both high-income and low- and middle-income countries, reflecting demographic shifts to older populations and scarcity of treatment resources[195,196]. It is the second leading cause of disability worldwide, up from the third as of 1990[197].

The hallmark of major depression in old age is its co-occurrence with physical disorders and frailty, mild cognitive impairment, social determinants of health (e.g., major role transitions, bereavement, loneliness and social isolation), exposure to polypharmacy, and heightened risk for suicide. Late-life major depression is also a significant source of caregiver burden for family members.

Approximately 6.7% to 7.5% of older adults report an episode of major depression within one year, among those attending primary care clinics[195]. Rates are still higher among medical inpatients and residents in long-term care, rising with increasing disability and frailty. Women experience 1.7 times the risk as men. Prevalence rates are likely to be higher in marginalized groups, such as those of lower socioeconomic status. The life-

time suicide rate is 25 times greater in major depression than in the general population, with highest rates amongst older adults[196-198].

Major depressive disorder and depressive symptoms not only bring suffering to those afflicted, but also produce amplification of disability from co-occurring physical disorders, poor adherence to co-prescribed treatments, failure to make healthy lifestyle choices, and increased risk for frailty, dementia, and early death. On the other hand, evidence-based treatments work, if delivered appropriately, and may both prolong life and enhance its quality[199].

In essence, the global public health and clinical burden of depression in old age has three dimensions: it is a mirror of brain aging, a mediator of bad outcomes, and a murderer that leads to dementia and to suicide. It is also an unwanted co-traveler with the ills of aging: cancer, cardiovascular disease, and neurodegenerative disorders[195-197].

Major depression in older adults is characterized by variability at multiple levels: etiopathogenesis, clinical presentation, and response to prevention and treatment. A staging-model perspective, analogous to oncology, is useful[200,201]. Some older adults may present with mild or subsyndromal symptoms; some with new-onset major depression; some with recurrent episodes which began earlier in life and show in later years shortening inter-episode intervals and increasing treatment resistance; and still others are ravaged by chronic depression and its sequelae.

Staging has implications for differential diagnosis, intervention and prognosis[202]. Subsyndromal pictures represent opportunities for the indicated prevention of major depression. First episodes, while treatable, may also be prodromal expressions of dementia. Recurrent depressive episodes and chronic depression pose challenges of increasing treatment resistance and heightened risk for dementia. As in oncology, early intervention to prevent the transition to incident episodes and to recurrence may be life-saving and life-enhancing, by taking advantage of neuroprotective mechanisms early in the course of illness, while reversibility may still be attainable[200,201].

In this context, the relationship of insomnia disorder to depression is clinically relevant, because insomnia is not only a symptomatic manifestation of major depression, but also a risk factor for incident and recurrent depressive episodes. Persistent insomnia (insomnia disorder) heightens the risk for a chronic relapsing course and thus warrants independent clinical attention to optimize outcomes[203].

Insomnia may partially mediate depression risk for Alzheimer's and related dementias via beta-amyloid accumulation, tau protein aggregation, inflammation and blood-brain-barrier disruption[204-206]. It is also a driver of suicidal ideation and behavior, and may be a modifiable risk factor for suicide[203,207].

A long-term view of late-life depression is necessary clinically: getting well is not enough, it is staying well that counts, given the propensity of depression to relapse, recurrence, chronicity, and treatment resistance, not to mention heightened risk for dementia and suicide.

Prevention

Major depression can be prevented across the life cycle[196,208]. The case for its prevention in the later years of life is important from both public health and clinical perspectives. Major depression is prevalent, persistent and burdensome in respect to both morbidity and mortality. Treatment is only partially effective in reducing years lived with disability. There is, moreover, limited access to treatment, related to both mental health workforce issues and barriers confronting socially disadvantaged older adults and those from racial/ethnic minorities. The social inequalities of risk widen with age, generating disparities of access, utilization and response. This treatment gap reinforces the need for the development and implementation of pragmatic prevention programs[208].

A meta-analysis[209] estimated a reduction of about 20% in the incidence of major depressive episodes over 1-2 years, compared with care as usual or waitlist, through the use of brief behavioral or learning-based psychotherapies (such as CBT, interpersonal psychotherapy, problem-solving therapy, and behavioral activation). The 38 randomized controlled trials included in the meta-analysis enrolled mixed aged (adult and geriatric) participants, receiving care in high-income countries. Studies investigated either indicated prevention (in persons already living with mild or subsyndromal symptoms) or selective prevention (in those with physical or psychosocial risk factors for depression, such as stroke or age-dependent macular degeneration).

Only one randomized controlled trial of depression prevention specifically focused on older adults with mild symptoms (indicated prevention) has been conducted in a low- or middle-income country[210]. The "DIL" intervention (meaning "Depression in Later Life" and also representing the local Konkani word for "heart") was delivered by lay counselors to older adults at rural and urban primary care clinics in Goa, India. The intervention model was multi-pronged, grounded in the strategies of behavioral activation[211], but also including brief behavioral treatment for insomnia[212], education in better self-care for common physical disorders such as diabetes and osteoarthritis, and assistance in accessing medical and social services.

Over one year, DIL led to a reduction in the incidence of major depressive episodes compared to care as usual (4.4% versus 14.4%, log rank p=0.04) and in the burden of depressive and anxiety symptoms (group x time interaction: p<0.001). Participants randomly assigned to DIL reported to more frequently engage in pleasurable social and physical activities – a countermeasure to the "tension" and worry that plagued their daily lives. They took a more active hand in managing their health, coming to feel more in control and less helpless[210]. If these findings are replicated, the DIL intervention may be scalable to other low- or middle-income countries.

More recently, the VITAL-DEP randomized clinical trials examined the efficacy of two nutraceuticals, vitamin D and fish oils, in preventing incident and recurrent major depressive episodes in over 23,000 older adults, with an over-sampling of African Americans[213,214]. The scope of the trials was wide, examining

universal, selective and indicated prevention of depression. The trials did not, however, detect evidence for efficacy, relative to placebo, with either nutraceutical, despite a cogent neurobiological rationale for positing the prophylactic effect of each, singly and in combination. For example, vitamin D and/or fish oils could lower depression risk via reduction in inflammation and oxidative stress, and improvement in vascular/metabolic health and neuroprotection. These processes represent senescence-associated secretory phenotypes (SASPs), i.e., molecular signatures of aging[215].

Studies such as DIL and VITAL-DEP highlight the importance of addressing the interplay between behavioral and biological factors involved in aging processes. Moreover, attention to workforce issues (via the use of task sharing or shifting to lay counsellors) and to the streamlining of evidence-based behavioral interventions and psychotherapies, with sensitivity to differing cultural contexts, may help to optimize cost-utility of prevention interventions. Identifying biomarkers of risk that may mediate or moderate response to preventive interventions remains a vital part of the research agenda in late-life depression.

Treatment

Treatment goals for major depressive disorder in older adults should include not only symptomatic remission, but also functional recovery; reduction of risk for relapse, recurrence and chronicity; and protection and maintenance of brain health and cognitive fitness[216]. Combined treatment (antidepressant medication plus depression-specific psychotherapy) may be more effective than either alone in some populations, but side effect risks and patient demands/burdens may be greater[5,6,195,217].

Psychotherapies may have a greater impact than antidepressant medication in the long run[216,217]. Moderators of outcome include individual patient-level differences such as those concerning gender, ethnicity, disability status, neurocognitive performance, and physical comorbidity. Therapist competence (including ability to tailor treatment to the individual), therapeutic alliance, and patient preferences all influence the strength of response to treatment[6].

The limitations of the available evidence include little comparative research, together with a need for greater attention to long-term effects, comorbidity, and diverse populations. With respect to antidepressant pharmacotherapy, response rates in older adults are greater in trials lasting 10-12 weeks than in those lasting 6-8 weeks. Antidepressants are moderately effective in bringing about remission relative to pill placebo, with numbers needed to treat in the range of 8-13[218]. Learning-based psychotherapies (CBT, interpersonal psychotherapy, problem-solving therapy, behavioral activation) are also moderately effective in bringing about remission[216].

Continuing antidepressant medication in those who have initially done well appears to be effective in preventing relapse during 6-12 months of continuation therapy, and in preventing recurrence for up to three years during longer-term maintenance treatment, with reported numbers needed to treat of about 4[219]. Going forward, pharmacogenomics-informed clinical decision making is likely to continue emerging as a useful strategy in probing treatment response variability (both efficacy and tolerability/safety) and contributing to better outcomes[220,221].

Failure to achieve symptomatic remission after two or more trials of antidepressant pharmacotherapy is common in older adults with major depression. The largest published randomized controlled trial to date amongst older adults ("IRL GREY") – a multi-site, double-blind, placebo-controlled trial of aripiprazole augmentation of primary pharmacotherapy with venlafaxine – demonstrated efficacy for augmentation, yielding a 44% remission rate versus 29% with placebo (number needed to treat: 6.6)[222]. Aripiprazole was well tolerated in analyses of both cardiometabolic and neurological outcomes, and led to a reduction in the prevalence and severity of suicidal ideation.

A randomized pragmatic trial comparing augmentation versus switching class of antidepressant medications for treatment-resistant late-life major depression has recently been completed[223]. Preliminary analyses suggest that pharmacotherapy augmentation strategies (e.g., with bupropion or aripiprazole) are superior to switching strategies (to another monotherapy) in bringing about remission, and are no less safe with respect to such adverse events as falls.

A psychotherapy called ENGAGE, rooted in a neurobiological framework addressing the reward system network, and streamlined for effective administration by community-based psychotherapists, has been shown to be non-inferior to problem-solving therapy in late-life depression[224].

Prolonged grief disorder (PGD) is an important but often unrecognized factor in late-life treatment-resistant depression. The ICD-11 and the DSM-5-TR have provided clinical guidelines and diagnostic criteria, respectively, for its diagnosis[225]. In PGD, acute grief becomes chronic, with intense yearning for the deceased, and accompanying symptoms of anguish, loneliness, suicidal ideation and pervasive functional impairment. PGD represents a failure to adapt to loss and to restore meaning in life without the lost loved one. This condition, which frequently coexists with major depression in older adults, responds well to grief-specific psychotherapy, but not to antidepressant pharmacotherapy or to interpersonal psychotherapy for depression[226].

We do not know if treating depression in older adults reduces the risk for dementia[101]. However, slowing cognitive decline in elderly with treatment-resistant depression is now recognized as an important front in the fight against dementia, and a vital aspect in the staging of late-life major depression[101,201].

Progression of late-life depression to Alzheimer's and related dementias is likely to be a multi-mechanism process. Data-driven proteomic analyses have revealed several biological pathways and molecular functions associated with cognitive impairment in late-life major depression, related to neuro-inflammatory control, neurotrophic support, cell survival/apoptosis, endothelial function, and lipid/protein metabolism[204-206]. Experimental studies of dementia prevention in late-life major depression will need to monitor accumulation of tau and beta amyloid, and

white matter disease, provide measures of cognitive and brain health, and document course of depressive illness.

The central question, as yet unanswered, is whether the modulation of biologic cascades related to the pathogenesis of cognitive impairment in late-life major depression can also retard cognitive decline and reduce dementia incidence, particularly in more treatment-resistant depression.

Organization of services

What do we know about the integration of primary care and behavioral health care for the treatment and prevention of major depression in older adults? How do we translate intervention science to real-world care and management of suicide risk?

Collaborative care models integrate behavioral health care and primary care[227,228]. They are the best-known real-world enactments of measurement-based care in older adults. Measurement-based care includes standardized assessment of depressive symptoms, medication side effects, and patient adherence. It uses a multi-step decision tree (algorithm) in treatment planning and patient follow-up. While it provides feedback to assist in the management of patients, it is not a substitute for clinical judgment.

A Cochrane database systematic review has shown that collaborative care models (in mixed-age samples) yield significant improvement in depression and anxiety outcomes compared with usual care. Improvement is evident over the short, medium and long term, with standardized mean differences of 0.25-0.35[227]. Examples of successful models of collaborative care for midlife and older adults in high-, middle-, and low-income countries include Improving Mood Promoting Access to Collaborative Care Treatment (IMPACT)[228], Prevention of Suicide in Primary Care Elderly: Collaborative Trial (PROSPECT)[229], Friendship Bench in Zimbabwe[230], and MANAS[231] and DIL[210] in India.

IMPACT and PROSPECT addressed population- and patient-centered care in older adults with major depression. These studies, showcasing the principal characteristics of collaborative care, embodied evidence-, team-, measurement-, and algorithmic-based strategies to achieve and sustain remission in older adults attending rural and urban primary care clinics. These models facilitate a personalized approach to treating depression in older adults, starting with interventions requiring fewer specialized resources and moving to more elaborate interventions as needed.

In IMPACT[228], over half of the participants in collaborative care reported at least a 50% reduction in depressive symptoms at 12 months, as compared with only 19% of participants in usual care. The benefits persisted for at least one year, when IMPACT resources were no longer available. IMPACT participants experienced more than 100 additional depression-free days over a two-year period.

In PROSPECT[229], resolution of suicidal ideation was faster among intervention participants as compared with usual care; differences peaked at 8 months (70.7% vs. 43.9%). In addition, follow-up after a median interval of 98 months found a 24% reduction in all-cause mortality relative to care-as-usual participants[198]. *Post-hoc* analysis showed that the decline in mortality reflected fewer deaths from cancer. The mechanism of this protective effect could involve an interplay between behavioral factors (e.g., better self-care) and cellular or molecular processes of aging. Thus, a key question for research going forward is whether treating depression effectively modifies the risk architecture for cancer at either or both behavioral and molecular levels.

Further enhancements of collaborative care occur through the use of lay counsellors or community health workers, especially to reach under-served racial/ethnic minorities. The MANAS[231] and the DIL[210] trials, deploying lay counsellors for the treatment and prevention of depression, respectively, in primary care patients (adults and older adults), provide compelling examples of task sharing/shifting to confront workforce issues that impede access to care in under-resourced areas of the world.

Similarly, Chibanda et al[230] have shown that the use of lay health workers for delivering problem-solving therapy ("Friendship Bench") in a resource-poor setting such as Zimbabwe may be effective in the primary care of common mental disorders. Community health workers and lay counselors perform a number of tasks, including screening for depression, relaying results to supervising clinicians, educating persons with depression and their caregivers about the illness and its treatment, facilitating identification of local resources for social and economic support, encouraging self-care and cooperation with primary care for co-occurring physical problems, and delivering depression-specific psychotherapies, such as interpersonal therapy, behavioral activation, and problem-solving therapy, in one-on-one or group formats.

Collaborative care models also facilitate re-engineering care delivery to improve management of suicidal risk in depressed patients. In most countries, suicide rates are highest among older adults, and suicide attempts by older adults are frequently serious, with high lethality potential. Collaborative care promotes an explicit focus on factors that contribute to distress and to suicidal urges versus those that contribute to constraint and resistance[232]. It also integrates counseling with patients and family caregivers to reduce access to lethal means for suicide, together with safety planning and attention to family discord, victimization, and the need for social support. These and other elements of re-engineering practice have been shown in the UK to yield suicide reductions of 22-29%[233].

Going forward, the use of machine learning to identify relevant data in electronic health records[234] and the use of adaptive screening tools[235] may improve our ability to match the intensity of services to level of suicide risk – thereby enacting a fundamental principle of collaborative, stepped-based care. In addition, more research into both the short-term and long-term (maintenance) efficacy and safety of ketamine for the rapid reduction of suicidal ideation in older adults with major depression is warranted[236]. Finally, addressing depression-related reductions in top-down cognitive control should be a goal of psychotherapy in suicide attempters. Deficits in cognitive control result in disadvantageous decision-making and limited problem-solving, contributing to feelings of entrapment and hopelessness[237].

Access to mental health services by older adults with major depression is driven by a shortage and skewed geographical distribution of providers. User-facing apps coupled with assistance from coaches, and other telepsychiatry tools, can help address the treatment gap, but barriers related to culture, policy and funding issues remain[195,238]. Collaborative care models of service delivery should invest in supporting telepsychiatry.

In summary, the scalability of collaborative care is promising, not only because of its demonstrated effectiveness and, increasingly, the use of community health workers and lay counselors, but also because of its potential for cost-offsetting impact. The evidence for cost-effectiveness remains inconclusive, but certain policies do promote its implementation and uptake. For example, the Center for Medicare and Medicaid Services in the US now allows the use of current procedural terminology codes (so-called CPT codes) to facilitate reimbursement of mental health specialists for work in primary care settings, including consultation on clinical management even when the psychiatrists may not have personally examined the patient.

Directions for future clinical practice and research in late-life major depression are provided in Table 4.

Table 4 Directions for future clinical practice and research in late-life depression

1.	Pragmatic intervention programs (e.g., collaborative, stepped-care models) should be further developed and implemented, using both pharmacotherapy and depression-specific psychotherapies (e.g., problem-solving therapy, cognitive behavioral therapy, and interpersonal psychotherapy), amenable for use also in low- and middle-income countries.
2.	Further comparative effectiveness/safety/tolerability research should be conducted to develop staged algorithms of care for use in both primary and specialty mental health settings, that will match needs of patients with intensity of intervention.
3.	Measurement-based care should be promoted to optimize efficacy, tolerability, safety, and treatment adherence.
4.	The implications of staging models of depression for assessment, prevention and treatment should be further investigated.
5.	Indirect, less-stigmatized approaches to depression prevention in older adults, such as treatment of insomnia disorder, should be further investigated.
6.	The use of lay counsellors, community health workers, and peer-support specialists should be expanded through task sharing/shifting, to address the dearth of mental health specialists in low-, middle- and high-income countries.
7.	The use of telepsychiatry, especially to better reach under-served and rural older adults, should be further integrated.
8.	There should be a focus on health-span, not only on lifespan, in clinical care and in cost-benefit analyses.
9.	A focus of research should be whether preventing and treating depression effectively modifies the risk for the major scourges of old age: cardiovascular disease, dementia and cancer.
10.	Further research should be conducted into suicide prevention in older adults, especially addressing high-risk periods such as transitions from more to less intensive care settings.
11.	Research on ketamine should be expanded to include older adults, in order to further address the clinical care of those with treatment-resistant depression, suicidal ideation, and cognitive impairment.
12.	Research in psychedelic-assisted psychotherapy (e.g., psilocybin) for treatment-resistant depression in older adults should be expanded.
13.	Pharmacogenomically-informed clinical decision-making for the care to older adults with major depression should be further explored.

SCHIZOPHRENIA

The disorders that feature prominently in the differential diagnosis of an older adult with psychotic symptoms include schizophrenia, delusional disorder, substance/medication-induced psychotic disorder, psychotic disorder due to another medical condition, and major or minor neurocognitive disorder with behavioral disturbance in the form of psychotic symptoms. Here we focus mainly on schizophrenia, as the prototypical psychotic disorder which has generated more research than most other mental disorders over the past 150 years.

A number of studies of schizophrenia in older adults have challenged the Kraepelinian concept of dementia praecox. While Eugen Bleuler also believed in worsening of this mental illness with age, his son Manfred disagreed, as he found that the course was highly heterogeneous. Half of the patients had an undulating course with remissions, and 12-15% recovered fully[239]. Manfred Bleuler also reported that schizophrenia could have its onset in later life.

Although the Epidemiologic Catchment Area study found prevalence rates of schizophrenia of only 0.3% among persons aged 65 and over, it seemed to under-sample in areas where persons with mental illness may be concentrated[240]. The actual prevalence rate is probably around 1%, and about 85% are living in the community[241]. A systematic review of literature published between 1960 and 2016 found that the pooled incidence of schizophrenia in those over 65 was 7.5 per 100,000 person-years at risk, with an increased risk in women (OR=1.6, 95% CI: 1.0-2.5)[242].

Schizophrenia is associated with accelerated biological aging. Yet, it does not follow the course of known neurodegenerative disorders such as Alzheimer's disease, dementia with Lewy bodies, vascular dementia, and frontotemporal dementia, which are all accompanied by major atrophic changes in specific regions of the brain. There are no specific and observable degenerative changes that can be seen on an MRI or in neuropathological examinations of the brains of people with schizophrenia who die at older age[243].

While there is aging-associated cognitive decline, studies have found no significant difference in the rate of change in cognition in adults with versus without chronic schizophrenia[244]. However, cognitive trajectories differ significantly between institutionalized patients and outpatients with schizophrenia. The deterioration observed in the former patients seems to be related to greater illness severity, heavier medication load, vascular risk factors, and lack of stimulation[245].

Several longitudinal investigations have shown that the clinical course of schizophrenia in late stages is often relatively stable

and non-deteriorating[246-248]. With aging, there is frequently an improvement in psychotic symptoms[246]. Most hospitalizations in older persons with schizophrenia are due to physical rather than psychological problems.

Studies have found that, relative to their younger counterparts, middle-aged and older adults with schizophrenia tend to have better psychosocial functioning, including better adherence to medications and self-rated mental health, and lower prevalence of substance use and psychotic relapse. A common explanation offered for this observation is the so-called survivor bias – i.e., the sickest people died young from serious psychopathology, including suicide or drug use-related events, so those who survive into older age are less sick. However, longitudinal studies show that, when people with schizophrenia are followed for many years, a sizable proportion do show progressive improvement in their functioning with age[248]. This improvement may reflect better ability to handle stress and engage in healthful behavior.

Both schizophrenia and aging are characterized by heterogeneity. It is not surprising, therefore, that the course of schizophrenia in later life is highly variable, ranging from complete remission to a dementia-like state[241]. Reported predictors of sustained remission include greater social support, being (or having been) married, higher level of cognitive/personality reserve, and early initiation of treatment. Patients with very chronic illness, severe symptoms including disorganized thinking and behavior, resistance to treatment, and brain abnormalities are at higher risk of poor prognosis[247,248].

It is important to recognize that some people with schizophrenia can and do have positive traits and states such as resilience and happiness. One study using a validated scale of happiness found that, although the mean level was lower in patients with schizophrenia than in healthy comparison subjects, 38% of the patients had happiness ratings in the highest range, despite worse physical health and objectively more stressors[249]. Associations of greater happiness include higher levels of resilience, optimism, and personal mastery, and healthier levels of biomarkers of stress[250].

There are possible neurobiological explanations for improvement in mental function with aging in general, including in patients with schizophrenia. These include aging-associated reductions in dopaminergic, noradrenergic and serotonergic activity leading to decreased severity of positive symptoms and decreased impulsivity; reduced stimulation of reward circuitry resulting in decreased illicit substance use; and reduced amygdala activation with negative emotional stimuli contributing to decreased emotional negativity. Several studies have reported posterior-to-anterior shift with aging (PASA), resulting in better executive functioning[251]. Obviously, these are largely speculative hypotheses in terms of inferring causality.

Compared to the general population, persons with schizophrenia have an 8.5-fold greater risk of suicide. However, much less is known regarding suicidal behavior in older patients with schizophrenia[252]. The literature mostly consists of mixed samples of middle-aged and older individuals. It suggests that depressive symptoms, hopelessness, previous attempts, low quality of life, and history of trauma are likely risk factors[252-254]. While depression is a well-known risk factor for suicide in schizophrenia, a qualitative study found that delusions and hallucinations were central to suicidal behavior in some patients[255].

Patients with schizophrenia require thorough assessment for the presence and nature of suicidal ideation or behavior, suicide risk, and factors contributing to suicidality. An integrated approach incorporating different psychosocial modalities relevant to the individual is recommended. CBT helps persons with schizophrenia having suicidal ideation or behavior[256]. Second-generation antipsychotics may be more effective than first-generation ones in reducing suicide risk, although few studies have examined their impact on suicidality in older patients with schizophrenia[257]. While clozapine has been reported to be particularly effective in reducing suicidal behavior, its use in older patients is restricted due to its strong anticholinergic side effects as well as granulocytopenia. While there is some evidence for a possible antisuicidal role of selective serotonin reuptake inhibitors in patients with schizophrenia, there is a dearth of such studies in older patients[258].

Late-onset schizophrenia and very late-onset schizophrenia-like psychosis

The term "late-onset schizophrenia" was coined by Manfred Bleuler in 1943 to describe a form of schizophrenia with an onset between the ages of 40 and 60[259]. He found that 15% of his patients with schizophrenia met this definition, with only a small number of cases presenting later. These patients' symptoms were fundamentally similar to those in persons with earlier onset, and there were no cognitive or physical signs suggesting a degenerative brain disease.

Roth and Kay[260] described "late paraphrenia", characterized by a well-organized system of paranoid delusions with onset after age 45, with or without hallucinations, in the setting of a well-preserved personality and affective response. They did not consider this to be a subtype of schizophrenia.

The DSM has changed its stance on distinguishing late-onset from earlier-onset schizophrenia over the past four editions. The DSM-III did not allow a diagnosis of schizophrenia if symptoms emerged after the age of 45[261]. The DSM-III-R removed this restriction and introduced a "late-onset" specifier for onset after age 44 years[262]. That specifier was removed in the DSM-IV[91].

In 2000, the International Late-Onset Schizophrenia Group proposed the term "late-onset schizophrenia" for cases with onset between 40 and 60 years, and "very late-onset schizophrenia-like psychosis" for those presenting first after age 60[263]. This distinction was supported by empirical evidence, although the threshold of 40 years for the diagnosis of the former condition was somewhat arbitrary. The group felt that both conditions had clinical usefulness and that their identification could promote research in the field. Late-onset schizophrenia appeared to be as stable a diagnosis as early-onset schizophrenia; both diagnoses remained unchanged in up to 93% of cases in a follow-up, and only rarely were they reclassified as mood disorders[263,264]. How-

ever, few studies have focused on the diagnosis of very late-onset schizophrenia-like psychosis. The DSM-5[88] does not use an age cutoff in the diagnostic criteria for schizophrenia, nor does the ICD-11[265].

Studies have shown similarity between late-onset and early-onset schizophrenia in terms of family history of the illness, presence of minor physical anomalies, brain abnormalities such as slightly enlarged ventricles on MRI, nature of psychopathology, and type of cognitive impairment[266]. However, there are also differences between the two conditions. A noteworthy difference is related to gender. Early-onset schizophrenia is more common in men, whereas late-onset schizophrenia is much more common in post-menopausal women than in age-comparable men, suggesting a possible protective effect of estrogen in pre-menopausal women. The finding does not seem to arise from gender differences in care-seeking and societal role expectations or in delay between symptom emergence and service contact[263].

The higher frequency of late-onset schizophrenia in women has led to trials of estrogen therapy. In a recent 8-week, double-blind, randomized, placebo-controlled parallel-group study of 200 women with schizophrenia randomized to a 200 μg estradiol patch or placebo added to antipsychotics, participants receiving estradiol had significant improvement in positive and negative symptoms as well as general psychopathology[267]. Obviously, further clinical trials of this type are needed to establish the value of estrogen in women with late-onset schizophrenia.

The severity of psychopathology as well as that of cognitive impairment tends to be lower in late-onset than early-onset schizophrenia[263], and patients with the former condition may require lower dosages of antipsychotics than age-comparable persons with the latter[259]. Thus, late-onset schizophrenia may be a distinct subtype of the illness.

Aging-associated psychosocial factors such as retirement, financial difficulties, bereavement, deaths of peers, or physical disability may contribute to the precipitation of the symptoms of schizophrenia in later life[263]. However, the role of these factors has not been studied systematically. Sensory deficits, especially long-standing conductive deafness, are common in the late-onset form[264], but may primarily reflect the patients' reluctance to seek corrective measures or their inability to get correction of these deficits because of poor access to quality health care. Premorbid educational, occupational and psychosocial functioning is less impaired in the late-onset than in the early-onset form[268]. The relatives of patients with very late-onset schizophrenic-like psychosis have a lower morbid risk for schizophrenia than the relatives of those with the early-onset form[266].

Late-onset schizophrenia does not appear to be a prodrome of Alzheimer's disease, as patients do not demonstrate faster decline in memory beyond age-associated loss[244,266]. Individuals with schizophrenia are known to have reduced cognitive reserve that puts them at increased risk of a dementia diagnosis as they age. However, there is no evidence of higher rates of Alzheimer's disease in patients with schizophrenia[268]. A post-mortem study found that Alzheimer's disease pathology was rare among cognitively impaired persons with very chronic psychosis[243].

Treatment: pharmacotherapy

Antipsychotics constitute the backbone of treatment of schizophrenia at all ages, including older patients. During the last three decades, first-generation antipsychotics have been largely replaced in older persons by second-generation ones, because of the side effects of the former, such as tardive dyskinesia. However, the newer drugs have proven to be far from optimal in terms of both efficacy and safety. While they control the positive symptoms and prevent relapses similarly to first-generation medications, they are no more efficacious than the older drugs.

One study compared the longer-term safety and effectiveness of the four most commonly used second-generation antipsychotics (aripiprazole, olanzapine, quetiapine and risperidone) in 332 patients, aged >40 years, having psychosis associated with schizophrenia, mood disorders, post-traumatic stress disorder, or dementia[269]. The overall results suggested a high discontinuation rate (median duration 26 weeks prior to discontinuation), lack of significant improvement in psychopathology, and high cumulative incidence of metabolic syndrome (37% in one year) and of serious (24%) and non-serious (51%) adverse events with all the four antipsychotics[269].

Pharmacokinetic and pharmacodynamic changes that occur with age lead to an increased sensitivity to antipsychotics in older individuals, and increase the risk of side effects, especially parkinsonism, tardive dyskinesia, sedation, hypotension and falls[270]. Given the improvement in psychotic symptoms with age in a number of patients with schizophrenia, a progressive reduction in daily dose over a period of weeks or months may be attempted. A watchful eye should be kept on signs of early relapse, so that the dose can be increased as and when needed. In a minority of aging patients with schizophrenia, eventual discontinuation of antipsychotics is feasible, but the patients should be followed carefully[271].

Modifiable risk factors for tardive dyskinesia should be identified, to minimize its incidence and severity. These include diabetes mellitus, smoking, substance abuse including alcohol and cocaine, and anticholinergic co-treatment[272]. Two novel vesicular monoamine transporter type 2 (VMAT2) function inhibitors, valbenazine and deutetrabenazine, have been approved in the US as add-on therapy for persons with tardive dyskinesia[273]. VMAT2 inhibitors may be used to address tardive dyskinesia-associated impairments and impact on psychosocial functioning[274].

Treatment: psychosocial interventions

Clinicians should combine pharmacotherapy with appropriate psychosocial interventions in older patients with schizophrenia. There are three skills training programs specifically designed for older adults with severe mental illness and shown to be effective in randomized clinical trials: cognitive-behavioral social skills training (CBSST), functional adaptation skills training (FAST), and Helping Older People Experience Success (HOPES).

They are all group-based; provide accommodations for persons with physical or cognitive disabilities; help develop skills in incremental steps; and use age-appropriate psychosocial training techniques to meet the needs of older persons[275].

The CBSST[276,277] is a manualized group intervention, within the framework of the biopsychosocial stress-vulnerability model of schizophrenia, consisting of three modules, each with four weekly sessions, to be repeated, for a total of 24 sessions. The modules focus on thought challenging, seeking social support, and solving problems, with homework assignment after each session. Skills include promoting cognitive behavioral strategies, recognition of early warning signs of relapse, improved communication with health care professionals and social interactions in everyday activities, treatment adherence, and behavioral strategies for coping with psychiatric symptoms.

Randomized controlled trials of CBSST in older adults with schizophrenia have shown a high rate of adherence and low dropout rates[276]. While there was no significant change in psychopathology in pharmacologically stabilized patients, there was significant improvement in social activities, cognitive insight and mastery of problem-solving skills, as well as a reduction in defeatist attitudes, at the end of the intervention. Some improvement was sustained 6 months post-treatment[277].

The FAST[278] focuses on communication, transportation, medication management, social skills, organization and planning, and financial management in 24 semi-weekly two-hour group sessions. Active learning approaches include in-session skills practice, behavioral modeling, role-playing and reinforcement, and homework practice assignments.

A randomized controlled trial including 240 older adults with schizophrenia showed that FAST participants, compared to a time-equivalent attention-control group, had significant improvement in everyday functional skills as well as social and communication skills at the end of treatment and three months later[278]. A pilot study of an adapted version of the FAST program showed improved functioning and well-being in middle-aged and older Latinos with severe mental illness[279].

The HOPES[280] integrates psychosocial skills training and preventive health care management. The skills training component includes classes, role-play exercises, and community-based homework assignments in social skills, community living skills, and healthy living. The weekly skills class curriculum provided over 12 months consists of seven modules: communicating effectively, making and keeping friends, making the most of leisure time, healthy living, using medications effectively, and making the most of a health care visit.

A randomized controlled trial of HOPES including 183 older adults with severe mental illness showed significantly greater improvement in skills performance, psychosocial functioning, self-efficacy, and psychopathology at one-year and three-year follow-up compared to usual care[281]. A greater proportion of HOPES participants received flu shots, hearing tests, eye exams, mammograms, PAP smears, and completed advanced directives than the usual care recipients.

Randomized controlled trials have also shown significant improvement with other manualized psychosocial interventions in older patients with schizophrenia, such as supported employment without and with compensatory cognitive training to help them obtain and retain paid jobs[282,283].

Recent advances in technology along with the COVID-19-associated social distancing have hastened a rapid growth of psychosocial interventions administered remotely. For example, computer-initiated text messaging three times per day for 12 weeks, or live telephone interaction two times per week, can be used to promote self-management in people with severe mental illness. Following initial training in the use of the necessary technology, people with schizophrenia have minimal dropout rates, few broken devices, and high patient satisfaction[284]. There is a need for more research in this area among older adults with schizophrenia.

Organization of services

In the past few decades, there has been a dramatic decline in the number of persons with schizophrenia living in mental institutions, and an increase in the number of older outpatients[241]. Thus, there is an increasing pressure for community programs to provide services to older persons. As mentioned above, older persons with schizophrenia have higher frequency and severity of physical diseases than people without severe mental illness, and yet receive much less than adequate health care. Also, for schizophrenia patients of all ages, the Epidemiologic Catchment Area Study reported a lifetime prevalence of 33% and 28% for alcoholism and drug abuse disorders, respectively[285].

Structural barriers in the health care system as well as physician attitudes create impediments to care. A Scottish study reported that primary care doctors were less willing to have persons with schizophrenia on their practice list, and more likely to believe that such persons were apt to be violent[286]. In the US, there are considerable racial inequalities in health status due to diminished access to health care, poorer health practices, and lower socioeconomic status among marginalized ethnic groups compared to non-Latino Whites[287].

The excess risk of early mortality, physical comorbidity, early institutionalization, and high costs among older adults with schizophrenia require the development and dissemination of effective and sustainable integrated care models that simultaneously address both mental and physical health care needs. Current evidence-based integrated care models primarily adopt three approaches: psychosocial skills training, integrated illness self-management, and collaborative care and behavioral health homes. The next step should be the development of innovative models that build on these approaches by incorporating novel uses of telehealth, mobile health technology, and peer support, and strategies implemented successfully in developing economies[275].

An optimal mental health care system for older persons with schizophrenia should have a full multidisciplinary range of clinical, rehabilitative, preventive and supportive services[288]. These

include comprehensive assessment; case management; intensive outreach; smooth coordination of mental health, physical health, and social services; appropriate community and inpatient mix; and provisions for maintenance of family caregivers' mental and physical health. Unfortunately, such a system does not exist, and services remain fragmented and under-utilized by this highly disenfranchised population[289].

Successful aging with schizophrenia

Despite the above-mentioned biological and societal issues, successful aging is not an oxymoron even among aging adults with schizophrenia. The clinical practice of positive psychiatry discussed above applies to these people too. The strategies necessary for seeking this goal include appropriate pharmacotherapy and psychosocial interventions, along with healthful diet, physical exercise, non-toxic environment (e.g., cessation of smoking), and positive attitude on everyone's part. It is never too early nor too late to start on this path.

Positive psychiatric care of people with schizophrenia should include assessment not just of psychopathology but also of well-being, strengths, perceived stressors, and lifestyle. This can be done by completing validated brief questionnaires in waiting room or online at home. Using these data, the clinician can identify treatment targets such as lifestyle (e.g., sedentary behavior) or social network, and implement appropriate interventions[290].

A prescription given to a person with schizophrenia must go beyond an antipsychotic drug. It must include enhancement of personal psychosocial strengths, appropriately individualized behavioral interventions, and healthy lifestyle strategies such as physical, cognitive and social activities, adequate sleep, and nutritious diet. In the coming years, there will be an increasing use of digital technologies to disseminate evidence-based interventions to large numbers of patients. Directions for future clinical practice and research in older adults with schizophrenia are provided in Table 5.

All this must be accompanied by community support. Just as it takes a village to raise a child, it takes a community, which does not carry stigma against mental illnesses and their treatments, to provide optimal care to older people with schizophrenia.

Table 5 Directions for future clinical practice and research in older people with schizophrenia

1.	A full multidisciplinary range of clinical, rehabilitative, preventive and supportive services – including comprehensive assessment, case management, intensive outreach, and smooth coordination of mental health, physical health, social services and peer support – should be implemented.
2.	Efficacious antipsychotics without metabolic side effects should be investigated.
3.	Well-designed randomized controlled trials of psychotherapeutic interventions incorporating principles of cognitive behavioral therapy and socialization training should be conducted.
4.	Individual or group interventions, such as cognitive training, to promote brain fitness in older patients should be used.
5.	Treatment targets such as lifestyle (e.g., sedentary behavior) should be identified, and appropriate interventions (e.g., regular physical activities) should be implemented.
6.	"Wellness within illness" should be assessed and promoted: well-being, resilience, optimism, personal mastery, wisdom, social engagement, and social support.
7.	Social determinants of mental health in aging, such as loneliness and social isolation, should be evaluated, and interventions targeting these features in individual patients – e.g., psychosocial skills training – should be used.
8.	Mobile interventions, including use of smartphones to deliver psychosocial interventions, should be implemented to promote self-management of illness, using user-friendly technologies.
9.	Collaborative care and behavioral health homes should be further established and evaluated.
10.	Medications and non-pharmacological treatments for cognitive impairment in older patients with schizophrenia should be investigated.
11.	Pragmatic trials of hormone therapies such as estrogen derivatives in post-menopausal women with schizophrenia should be conducted.
12.	Anti-suicidal medications useful for older patients with schizophrenia should be investigated.
13.	Effectiveness and safety of anti-inflammatory and other medications to slow down accelerated aging in schizophrenia should be explored.
14.	Digital phenotyping at the level of sensors, data science and health care should be investigated, to help in relapse prediction and prevention in old age schizophrenia, possibly using machine learning and other relevant technologies.
15.	Further research on caregivers of older people with schizophrenia should be conducted, and further appropriate interventions should be developed.

SUBSTANCE USE DISORDERS

Substance use disorders are often overlooked worldwide as causes of problems for older adults, overshadowed by emergencies such as the opioid crisis among young and middle-aged adults in high-income countries. The extant literature reflects this deficit. Empirical studies of substance use among older adults are sparse to non-existent from virtually all low- and middle-income countries, and infrequent even in high-income countries. Yet, these disorders are more frequent than many mental health workers believe, and their adverse consequences can be highly impairing.

In addition, interventions directed to these disorders in the elderly have been sparsely studied. Usually, however, diagnoses and interventions for younger adults can be applied to these elders, with judicious implementation which considers the biological, psychological and social factors unique to the elderly[291,292].

Among the older adults, there are many challenges which may be exacerbated by alcohol and drug misuse, including functional and cognitive decline, compromised immune function, falls, other household injuries and depression. This reinforces the need for psychiatrists and all physicians to be more alert to and screen for substance use disorders, despite the many competing

health concerns with which older adults present to them[293].

Epidemiological studies from the US and many parts of Europe have found that the number of older persons in treatment for drug use problems has increased in recent years, most likely due to the aging of the baby-boom generation who were born between 1946 and 1964. As birth rates in high-income countries have now declined, the baby boomers have contributed to the "squaring of the age pyramid" leading to major increases in persons 65+ years who bring with them higher levels of illicit drug use and prescription drug misuse than previous age cohorts[294,295].

In the US, nearly 1 million adults aged 65 and older live with a substance use disorder, as reported in 2018 data[296]. While the total number of admissions due to substance use disorders between 2000 and 2012 differed slightly, the proportion of admissions of older adults increased from 3.4% to 7.0% during this time[297]. In a study from Germany among subjects aged 60-79 years, 69% consumed alcohol regularly and 17% consumed it at some risk[295]. From 2007 to 2016, prevalence rates of drug use among those in the 50-59 and 60 and older age groups in Australia increased by 60-70%[295].

Yet another factor requires physicians, especially those who treat many older adults, to be more vigilant. Older adults in high-income countries take a plethora of prescribed and over- the-counter medications[298]. Over a seven-year period, non-medical use or misuse of pain relievers doubled (from 0.8% in 2012 to 1.7% in 2019) among people aged 65 or older in the US, while among the total population there was a slight decrease (from 4.8% in 2012 to 3.5% in 2019)[296]. In over 10,000 subjects from a US sample, 1.4% reported non-prescription use of pain relievers during the previous year. Combinations of acetaminophen and hydrocodone or propoxyphene were the most commonly used drugs[299].

Social factors are the most important risks for substance use in older adults. For example, being divorced, separated or single is associated with increased or unhealthy drinking in late life in the US, though this may differ across genders[300,301]. Another factor is having drugs available in the house or from friends. Risk factors for drug use in late life further include physical problems, especially uncontrolled pain following surgery. Pain from back or shoulder strain may also be involved.

Mental health problems also contribute to increased drug use, especially depression and anxiety. Men are more like to have a long history of alcohol intake which extends into late life, and they tend to drink greater quantities. Overall decline in physical health may contribute as well[292].

Screening and diagnosis

The first step by the clinician in addressing potential drug use is screening. Many tools have been demonstrated effective in eliciting the problem among older adults. These include the Alcohol Use Disorders Identification Test-Concise (AUDIT-C)[302] and the CAGE Questionnaire Adapted to Include Drugs (CAGE-AID)[303]. The AUDIT-C questions specific amounts of alcohol a person consumes[302]. The CAGE-AID focuses upon the symptoms that derive from substance use disorder. Both the AUDIT and CAGE screening scales are used internationally.

The CAGE-AID tool contains the following four questions, which can be used for both alcohol and other substance use[303]: 1. Have you ever felt that you should *Cut* down on your drinking or drug use?; 2. Have people *Annoyed* you by criticizing your drinking or drug use?; 3. Have you ever felt bad or *Guilty* about your drinking or drug use?; 4. Have you ever had a drink or used drugs first thing in the morning to steady your nerves or to get rid of a hangover (*Eye-opener*).

This screening should be part of the usual evaluation of the older adult, for all too often the clinician may wrongly assume that the elder has no problem with substances. Substance use may be overlooked by family members or not considered important. Clinicians may also believe that problems from substance use are not critical or that little can be done to decrease use[292].

The DSM-5 criteria capture a wider proportion of older adults with substance use disorders compared to DSM-IV ones. Even so, many elders will likely remain unidentified[304]. Age-associated physiological changes that increase the effects of alcohol and other substances cause older adults to experience a reduction of tolerance to these substances, thus interfering with one of the hallmarks of substance use disorder, namely increased tolerance[291]. Furthermore, interruption in social and vocational activities or other social consequences of drinking or drug use may be less likely to occur or less noticeable in old age.

Using item response theory with the 2009 National Survey on Drug Use and Health data, one study explored whether there were age-related biases among the DSM-5 criteria for alcohol use disorder[304]. The findings revealed that there were differential responses among older versus middle-aged adults, such that older adults were half as likely to endorse the criteria related to tolerance, activities to obtain alcohol, social/interpersonal problems, and physically hazardous situations. The criteria that were most effective in identifying alcohol use disorder among older adults were unsuccessful efforts to cut back, withdrawal, and social and interpersonal problems.

Treatment and organization of services

Some assume that older adults who abuse substances experience such a chronic condition that they will not respond to treatment. On the contrary, they have demonstrated treatment outcomes that are as good, or even better, than those seen in younger groups[291].

Nevertheless, access to specialized services tailored for older adults is limited[305]. Brief interventions by health care professionals are the first and one of the most important steps in a treatment plan. The older adult who is gently alerted about the problems with substances may take heed when the health care professional warns of the danger, yet otherwise ignoring warnings coming from friends and family.

A common thread of most brief interventions is the use of elements of motivational interviewing[306]. Such interventions provide education about the substance and how it might be harmful, thereby enhancing motivation for change. One approach is "normative feedback", in which a patient's drinking is compared with his/her peers. This feedback is then combined with brief advice about how to cut down or eliminate substance use[306].

This approach on the surface is appealing to clinicians working with older adults and the elders themselves[306]. Unfortunately, little high-quality evidence of the effectiveness of standardized brief interventions, such as motivational interviewing, is available, although naturalistic studies are promising[292]. Older persons are more likely to complete treatment than younger persons.

Medication use is essential for withdrawal from alcohol and other substances. Symptoms associated with alcohol withdrawal include increased pulse rate, blood pressure and temperature, as well as restlessness, disturbed sleep, anxiety and, when severe, delirium, seizures and hallucinations[292]. Medications used to alleviate alcohol withdrawal syndromes are usually benzodiazepines, which are tapered over a few days, primarily to prevent delirium and seizures. They should only be used on a short-term basis.

Only two medications have been used extensively for the treatment of alcohol use disorder in older adults. Disulfiram was the first, yet the data on its use in preventing alcohol abuse among older adults are unclear. Furthermore, clinicians have been reluctant to use the medication, given its side effects if alcohol is ingested. Nevertheless, at a usual dose of 250 mg daily, the drug is considered safe for older adults who are otherwise in good health[307]. Of interest, limited data indicate some efficacy for naltrexone in the treatment of alcohol use disorder among older adults[308].

Buprenorphine is the preferred treatment for opioid dependence, and appears to be safer than methadone. Nevertheless, to prescribe buprenorphine in the US requires special training. Drugs approved by the US FDA for the treatment of opioid dependence include sublingual buprenorphine and buprenorphine/naloxone tablets or strips. Because of safety issues, buprenorphine/naloxone is the preferred formulation[309,310]. Treatment with buprenorphine is safe and effective. Many patients can manage the induction period on their own at home.

Naltrexone is the most well-studied medication used for substance use disorder treatment among older adults, and it has demonstrated effectiveness with this population. Naltrexone is an opioid receptor antagonist and is thought to reduce craving for opioids as well as alcohol by blocking dopamine release in the brain. Its major limitation in older adult people, many of whom have chronic pain, is that it blocks the effect of opiate-based pain medications, often used following surgery. It can also potentiate the symptoms of a preexisting major depression. Patients with histories of comorbid depression should therefore be closely monitored[311]. Naltrexone is usually accepted by older adults, and its effectiveness is about equivalent of what is found in younger adults[308].

Overall, group support for abuse and addiction is the most valuable long-term intervention. Groups such as Alcoholics or Narcotics Anonymous (AA) can help older adults with a substance use disorder by reducing isolation, shame and stigma, though there have been no systematic studies on their effects. Elders use AA frequently worldwide in over 180 countries[312]. Yet they may face the same barriers to participation in self-help groups as they do with formal treatment: stigma and shame of needing to attend to these issues in late life. If their primary substance use problem is alcohol, they often experience discomfort in attending meetings that include younger poly-substance users. Such discomfort may not be as acute for baby boomers.

Traditional self-help groups can be modified for older adults. For example, slowing the pace of the meeting to reflect cognitive changes in aging, and devoting attention to handling losses and extending social support, could be critical for recovery[291,313].

Despite decades of research and clinical trials, the treatment and prevention of substance use disorders in older adults has been of marginal success. This is frustrating to patients as well as clinicians. The need for improved treatments tailored for older adults is critical (see Table 6).

Table 6 Directions for future clinical practice and research in late-life substance use disorders

1.	Clinicians and lay persons should be educated about the importance of substance use disorders in older adults, including their medical sequelae such as falls, cognitive decline, and worsening of co-occurring physical and mental disorders.
2.	Screening for substance use disorders should be integrated in both primary care and specialty mental health services for older adults.
3.	The most important risk factors for substance use disorders in older adults – particularly social isolation, loneliness, bereavement, and felt loss of purpose and meaning in life – should be better known, evaluated and addressed.
4.	Self-help groups should be adapted for older adults, e.g., by slowing the pace to accommodate cognitive impairment, and/or by addressing issues related to social support.
5.	The silos of mental health and substance abuse services should be broken down.
6.	Possible adaptations of diagnostic criteria/guidelines for substance use disorders should be considered to improve their performance in older adults.
7.	Further research should be conducted into the effectiveness of standardized brief interventions, such as motivational interviewing, in older adults.
8.	Further research should be carried out into the effectiveness and safety of using medications such as buprenorphine and naltrexone in older adults with substance use disorders.
9.	Factors in midlife which predispose to the development of substance use disorders in late life should be explored.
10.	Differences in substance use disorders by ethnicity, gender and geography should be investigated, and risks associated with disruptions in the lives of older adults that might lead to these disorders should be explored.

CONCLUSIONS

Mental disorders in older adults are a leading cause of suffering and disability in the world, much of it avoidable. These disorders are common, impairing social functioning and economic productivity, undermining adherence to co-prescribed medical treatments, and increasing the risk for loss of independence and early mortality from suicide and physical illness. Prevention, timely recognition and treatment are global public health and moral priorities.

Within the broader context of a positive psychiatry of aging, and as a countermeasure to ageism and stigma, it is essential to champion the assessment and promotion of wellness within illness, in order to enhance well-being, resilience, optimism, and self-efficacy/personal mastery. Moreover, it is important to evaluate the social determinants of mental illness in older adults, particularly loneliness and social isolation, and to use interventions that target these issues in individual patients and the family caregivers.

Because older adults with mental illness often engage in unhealthy lifestyles, particularly lack of physical activity, it is important to identify and implement appropriate interventions that will repay both mental and physical health benefits. Interventions to promote brain and cognitive fitness may be offered in individual and in group formats that provide rewards and reinforcement for adopting healthier behaviors in physical activity, diet and sleep.

Recent technological developments now allow the use of mobile interventions, including "just-in-time" interventions such as the use of smartphones for computer-initiated text-messaging or live telephone interactions to promote and enhance self-management of illness. In addition, further use and investigation of digital phenotyping at the levels of sensors, data science and health care may prove useful in relapse prevention – given the frequently relapsing and chronic course of mental disorders in old age.

Future practice and research need to combat the fragmentation of clinical care through the establishment and evaluation of collaborative care and behavioral health homes. Such models should build on comprehensive approaches incorporating novel use of telehealth, mobile health technology, and peer support, capitalizing on strategies implemented successfully in low- and middle-income countries. Team-based care needs to become increasingly measurement-based and interdisciplinary, incorporating and enacting a range of clinical, rehabilitative, preventive and supportive services. These services should include comprehensive assessment, clinical management, intensive outreach, and coordination of mental health, physical health and social services.

We also underscore the importance of care that is not only patient-focused but also family-centered. The caregivers of older persons with mental disorders are themselves burdened and in need of information and support. Including them as informal members of the caregiving team repays benefits to the identified patient and to caregivers alike and facilitates accurate clinical assessment and targeted interventions to promote wellness and to prevent serious adverse events (including suicide).

Cutting across all of the diagnostic entities considered in this paper is the need for further investigations of medications that can ameliorate cognitive impairment and slow down its progression. Medications that may reduce risk for suicide are also sorely needed, together with research on how best to use them within clinical care and systems of care. Further development and evaluation of medications without metabolic, cardiovascular and neurological side effects is needed to optimize safety and tolerability as well as efficacy and effectiveness.

Mental disorders of old age are heterogeneous at multiple levels: etiopathogenesis, clinical presentation, and response to intervention. They reflect genetic, environmental, social and developmental vulnerabilities as well as resilience. Taking these dimensions into account is critical to implementing personalized and effective treatment approaches and to doing meaningful research.

Because response variability to medications and other psychosocial and psychotherapeutic interventions is great among older adults, further investigation of moderators and mediators of response variability during acute, continuation and maintenance treatment is needed. This may allow clinicians to better personalize treatment, by understanding what works for whom, when and how. Finally, in the translational and clinical neuroscience space, further investigation of anti-inflammatory medications to slow down accelerated aging is highly relevant to advances in clinical care.

Fortunately, science in the service of promoting healthy brain aging and cognitive fitness in the later years of life has become increasingly compelling. We believe that strategies for health promotion and care for older adults living with mental disorders are deeply linked.

Drawing upon the lessons learned in cardiovascular medicine and oncology, we suggest that detecting and diagnosing later-life mental disorders early in their course is crucial to preventing their complications (such as treatment resistance, cognitive impairment, and mortality). Early detection and diagnosis facilitate care that is both evidence-based and proportionate to the needs of the individual patient and family caregivers. Staging approaches that take into account where a patient is in the trajectory of his/her illness have clear clinical relevance, power and utility across the life cycle into old age.

Given the complexity of mental disorders in older adults, team-based collaborative care models provide an evidence-based and scalable way for health systems to implement prevention and personalized care. Furthermore, the use of telemedicine and the integration of peer-support specialists, lay counselors and community health workers are helping to bridge the gap created by the worldwide paucity of geriatric mental health clinicians. They are also powerful antidotes to the barriers posed by fear and stigma.

In essence, addressing the rights and needs of older people and their families living with mental disorders remains a global public health and – no less – a moral imperative born of progress in discovery and applied sciences.

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REFERENCES

1. United Nations Department of Economic and Social Affairs. World population ageing 2019. New York: United Nations, 2020.
2. Statista. Children and old-age dependency ratio in China from 1950 to 2010 with forecasts until 2100. www.statista.com.
3. van der Werf M, van Boxtel M, Verhey F et al. Mild hearing impairment and psychotic experiences in a normal aging population. Schizophr Res 2007;94:180-6.
4. Norton S, Matthews FE, Barnes DE et al. Potential for primary prevention of Alzheimer's disease: an analysis of population-based data. Lancet Neurol 2014;13:788-94.
5. Sheline YI, Disabato BM, Hranilovich J et al. Treatment course with antidepressant therapy in late-life depression. Am J Psychiatry 2012;169:1185-93.
6. Kok RM, Reynolds CF 3rd. Management of depression in older adults: a review. JAMA 2017;317:2114-22.
7. Wu LT, Blazer DG. Substance use disorders and psychiatric comorbidity in mid and later life: a review. Int J Epidemiol 2014;43:304-17.
8. Rowe JW, Kahn RL. Successful aging. Gerontologist 1997;37:433-40.
9. Jeste DV, Savla GN, Thompson WK et al. Association between older age and more successful aging: critical role of resilience and depression. Am J Psychiatry 2013;170:188-96.
10. Baltes PB, Staudinger UM. Wisdom. A metaheuristic (pragmatic) to orchestrate mind and virtue toward excellence. Am Psychol 2000;55:122-36.
11. Wilkinson RG, Marmot MG (eds). Social determinants of health: the solid facts, 2nd ed. Copenhagen: World Health Organization Regional Office for Europe, 2003.
12. Jeste DV, Koh S, Pender VB. Perspective: social determinants of mental health for the new decade of healthy aging. Am J Geriatr Psychiatry 2022;30:733-6.
13. Jeste DV, Pender VB. Social determinants of mental health: recommendations for research, training, practice, and policy. JAMA Psychiatry 2022;79:283-4.
14. Lee EE, Bangen KJ, Avanzino JA et al. Outcomes of randomized clinical trials of interventions to enhance social, emotional, and spiritual components of wisdom: a systematic review and meta-analysis. JAMA Psychiatry 2020;77:925-35.
15. Al-Rousan T, Rubenstein L, Sieleni B et al. Inside the nation's largest mental health institution: a prevalence study in a state prison system. BMC Public Health 2017;17:342.
16. Mikton C, de la Fuente-Núñez V, Officer A et al. Ageism: a social determinant of health that has come of age. Lancet 2021;397:1333-4.
17. Nguyen TT, Jeste DV. Ageism: the brain strikes back! Cerebrum, July 15, 2021.
18. US Institute of Medicine. The mental health and substance use workforce for older adults: in whose hands? Washington: National Academies Press, 2012.
19. National Academies of Sciences, Engineering, and Medicine. Families caring for an aging America. Washington: National Academies Press, 2016.
20. National Academies of Sciences, Engineering, and Medicine. Social isolation and loneliness in older adults: opportunities for the health care system. Washington: National Academies Press, 2020.
21. Donovan NJ, Blazer D. Social isolation and loneliness in older adults: review and commentary of a National Academies Report. Am J Geriatr Psychiatry 2020;28:1233-44.
22. Perissinotto CM, Cenzer IS, Covinsky KE. Loneliness in older persons: a predictor of functional decline and death. Arch Intern Med 2021;172:1078-83.
23. Holt-Lunstad J, Smith TB, Baker M et al. Loneliness and social isolation as risk factors for mortality: a meta-analytic review. Perspect Psychol Sci 2015;10:227-37.
24. Kuiper JS, Zuidersma M, Oude Voshaar RC et al. Social relationships and risk of dementia: a systematic review and meta-analysis of longitudinal cohort studies. Ageing Res Rev 2015;22:39-57.
25. Valtorta NK, Kanaan M, Gilbody S et al. Loneliness and social isolation as risk factors for coronary heart disease and stroke: systematic review and meta-analysis of longitudinal observational studies. Heart 2016;102:1009-16.
26. Domènech-Abella J, Mundó J, Haro JM et al. Anxiety, depression, loneliness and social network in the elderly: longitudinal associations from The Irish Longitudinal Study on Ageing (TILDA). J Affect Disord 2019;246:82-8.
27. Veazie S, Gilbert J, Winchell K et al. Addressing social isolation to improve the health of older adults: a rapid review. Rockville: Agency for Healthcare Research and Quality, 2019.
28. Eglit GML, Palmer BW, Martin AS et al. Loneliness in schizophrenia: construct clarification, measurement, and clinical relevance. PLoS One 2018;13:e0194021.
29. Jeste DV, Lee EE, Palmer BW et al. Moving from humanities to sciences: a new model of wisdom fortified by sciences of neurobiology, medicine, and evolution. Psychol Inq 2020;31:134-43.
30. Jeste DV, Thomas ML, Liu J et al. Is spirituality a component of wisdom? Study of 1,786 adults using expanded San Diego Wisdom Scale (Jeste-Thomas Wisdom Index). J Psychiatr Res 2021;132:174-81.
31. Thomas ML, Palmer BW, Lee EE et al. Abbreviated San Diego Wisdom Scale (SD-WISE-7) and Jeste-Thomas Wisdom Index (JTWI). Int Psychogeriatr 2021; doi: 10.1017/S1041610221002684.
32. Ardelt M. Empirical assessment of a three-dimensional wisdom scale. Res Aging 2003;25:275-324.
33. Webster JD. An exploratory analysis of a self-assessed wisdom scale. J Adult Dev 2003;10:13-22.
34. Ardelt M. Antecedents and effects of wisdom in old age: a longitudinal perspective on aging well. Res Aging 2000;22:360-94.
35. Sternberg RJ (ed). Wisdom: its nature, origins, and development. Cambridge: Cambridge University Press, 1990.
36. Carstensen LL. Socioemotional selectivity theory: the role of perceived endings in human motivation. Gerontologist 2021;61:1188-96.
37. Attar-Schwartz S, Tan JP, Buchanan A et al. Grandparenting and adolescent adjustment in two-parent biological, lone-parent, and step-families. J Fam Psychol 2009;23:67-75.
38. Lee EE, Depp C, Palmer BW et al. High prevalence and adverse health effects of loneliness in community-dwelling adults across the lifespan: role of wisdom as a protective factor. Int Psychogeriatr 2019;31:1447-62.
39. Jeste DV, Di Somma S, Lee EE et al. Study of loneliness and wisdom in 482 middle-aged and oldest-old adults: a comparison between people in Cilento, Italy and San Diego, USA. Aging Ment Health 2021;25:2149-59.
40. Grennan G, Balasubramani PP, Alim F et al. Cognitive and neural correlates of loneliness and wisdom during emotional bias. Cereb Cortex 2021;31:3311-22.
41. Chow EOW, Fung SF. Narrative group intervention to rediscover life wisdom among Hong Kong Chinese older adults: a single-blind randomized waitlist-controlled trial. Innov Aging 2021;5:igab027.
42. Connor KM, Davidson JRT. Development of a new resilience scale: the Connor-Davidson Resilience Scale (CD-RISC). Depress Anxiety 2003;18:76-82.
43. Duckworth AL, Quinn PD. Development and validation of the Short Grit Scale (Grit–S). J Pers Assess 2009;91:166-74.
44. Cosco TD, Howse K, Brayne C. Healthy ageing, resilience and wellbeing. Epidemiol Psychiatr Sci 2017;26:579-83.
45. Klasa K, Galaitsi S, Wister A et al. System models for resilience in gerontology: application to the COVID-19 pandemic. BMC Geriatr 2021;21:51.
46. Zeng Y, Shen K. Resilience significantly contributes to exceptional longevity. Curr Gerontol Geriatr Res 2010;2010:e525693.
47. Treichler EBH, Glorioso D, Lee EE et al. A pragmatic trial of a group intervention in senior housing communities to increase resilience. Int Psychogeriatr 2020;32:173-82.
48. Czeisler MÉ, Lane RI, Wiley JF et al. Follow-up survey of US adult reports of mental health, substance use, and suicidal ideation during the COVID-19 pandemic, September 2020. JAMA Netw Open 2021;4:e2037665.
49. Dezutter J, Casalin S, Wachholtz A et al. Meaning in life: an important factor for the psychological well-being of chronically ill patients? Rehabil Psychol 2013;58:334-41.
50. Aftab A, Lee EE, Klaus F et al. Meaning in life and its relationship with physical, mental, and cognitive functioning: a study of 1,042 community-dwelling adults across the lifespan. J Clin Psychiatry 2019;81:19m13064.
51. Musich S, Wang SS, Kraemer S et al. Purpose in life and positive health outcomes among older adults. Popul Health Manag 2018;21:139-47.
52. Steptoe A, Fancourt D. Leading a meaningful life at older ages and its relationship with social engagement, prosperity, health, biology, and time use. Proc Natl Acad Sci USA 2019;116:1207-12.
53. Lutzman M, Sommerfeld E. The role of meaning in life as a protective factor in suicidal ideation among elderly men with physical illnesses. Curr Psychol 2021; doi: 10.1007/s12144-021-02332-z
54. Sharif F, Jahanbin I, Amirsadat A et al. Effectiveness of life review therapy on quality of life in the late life at day care centers of Shiraz, Iran: a randomized controlled trial. Int J Community Based Nurs Midwifery 2018;6:136-45.

55. Westerhof GJ, Slatman S. In search of the best evidence for life review therapy to reduce depressive symptoms in older adults: a meta-analysis of randomized controlled trials. Clin Psychol Sci Pract 2019;26:e12301.
56. Levasseur M, Dubois MF, Généreux M et al. Capturing how age-friendly communities foster positive health, social participation and health equity: a study protocol of key components and processes that promote population health in aging Canadians. BMC Public Health 2017;17:502.
57. Librada-Flores S, Nabal-Vicuña M, Forero-Vega D et al. Implementation models of compassionate communities and compassionate cities at the end of life: a systematic review. Int J Environ Res Public Health 2020;17:6271.
58. Jeste DV, Palmer B (eds). Positive psychiatry: a clinical handbook. Washington: American Psychiatric Publishing, 2015.
59. Depp CA, Jeste DV. Definitions and predictors of successful aging: a comprehensive review of larger quantitative studies. Am J Geriatr Psychiatry 2006;14:6-20.
60. Stowe JD, Cooney TM. Examining Rowe and Kahn's concept of successful aging: importance of taking a life course perspective. Gerontologist 2015;55:43-50.
61. Thomas ML, Kaufmann CN, Palmer BW et al. Paradoxical trend for improvement in mental health with aging: a community-based study of 1,546 adults aged 21-100 years. J Clin Psychiatry 2016;77:e1019-25.
62. Li C, Wu W, Jin H et al. Successful aging in Shanghai, China: definition, distribution and related factors. Int Psychogeriatr 2006;18:551-63.
63. VanderWeele TJ. On the promotion of human flourishing. Proc Natl Acad Sci USA 2017;114:8148-56.
64. Kempermann G, Gast D, Gage FH. Neuroplasticity in old age: sustained fivefold induction of hippocampal neurogenesis by long-term environmental enrichment. Ann Neurol 2002;52:135-43.
65. Erickson KI, Leckie RL, Weinstein AM. Physical activity, fitness, and gray matter volume. Neurobiol Aging 2014;35:S20-8.
66. Blazer DG, Wallace RB. Cognitive aging: what every geriatric psychiatrist should know. Am J Geriatr Psychiatry 2016;24:776-81.
67. Lachman ME, Agrigoroaei S, Tun PA et al. Monitoring cognitive functioning: psychometric properties of the brief test of adult cognition by telephone. Assessment 2014;21:404-17.
68. Krendl AC, Kensinger EA. Does older adults' cognitive function disrupt the malleability of their attitudes toward outgroup members? An fMRI investigation. PLoS One 2016;11:e0152698.
69. Grossmann I, Na J, Varnum MEW et al. Reasoning about social conflicts improves into old age. Proc Natl Acad Sci USA 2010;107:7246-50.
70. Folstein MF, Folstein SE, McHugh PR. "Mini-Mental State". A practical method for grading the cognitive state of patients for the clinician. J Psychiatr Res 1975;12:189-98.
71. Nasreddine ZS, Phillips NA, Bédirian V et al. The Montreal Cognitive Assessment, MoCA: a brief screening tool for mild cognitive impairment. J Am Geriatr Soc 2005;53:695-9.
72. Morrison JH, Baxter MG. The ageing cortical synapse: hallmarks and implications for cognitive decline. Nat Rev Neurosci 2012;13:240-50.
73. Teissier T, Boulanger E, Deramecourt V. Normal ageing of the brain: histological and biological aspects. Rev Neurol 2020;176:649-60.
74. US Institute of Medicine. Cognitive aging: progress in understanding and opportunities for action. Mil Med 2015;180:1111-3.
75. Tuulio-Henriksson A, Perälä J, Saarni SI et al. Cognitive functioning in severe psychiatric disorders: a general population study. Eur Arch Psychiatry Clin Neurosci 2011;261:447-56.
76. Lee IM, Shiroma EJ, Lobelo F et al. Effect of physical inactivity on major noncommunicable diseases worldwide: an analysis of burden of disease and life expectancy. Lancet 2012;380:219-29.
77. Erickson KI, Hillman C, Stillman CM et al. Physical activity, cognition, and brain outcomes: a review of the 2018 physical activity guidelines. Med Sci Sports Exerc 2019;51:1242-51.
78. Eckstrom E, Neukam S, Kalin L et al. Physical activity and healthy aging. Clin Geriatr Med 2020;36:671-83.
79. Firth J, Solmi M, Wootton RE et al. A meta-review of "lifestyle psychiatry": the role of exercise, smoking, diet and sleep in the prevention and treatment of mental disorders. World Psychiatry 2020;19:360-80.
80. van den Brink AC, Brouwer-Brolsma EM, Berendsen AAM et al. The Mediterranean, Dietary Approaches to Stop Hypertension (DASH), and Mediterranean-DASH Intervention for Neurodegenerative Delay (MIND) diets are associated with less cognitive decline and a lower risk of Alzheimer's disease – a review. Adv Nutr 2019;10:1040-65.
81. Valls-Pedret C, Sala-Vila A, Serra-Mir M et al. Mediterranean diet and age-related cognitive decline: a randomized clinical trial. JAMA Intern Med 2015; 175:1094-103.
82. Arango C, Dragioti E, Solmi M et al. Risk and protective factors for mental disorders beyond genetics: an evidence-based atlas. World Psychiatry 2021; 20:417-36.
83. Sokolov AA, Collignon A, Bieler-Aeschlimann M. Serious video games and virtual reality for prevention and neurorehabilitation of cognitive decline because of aging and neurodegeneration. Curr Opin Neurol 2020;33:239-48.
84. Sanches C, Stengel C, Godard J et al. Past, present, and future of non-invasive brain stimulation approaches to treat cognitive impairment in neurodegenerative diseases: time for a comprehensive critical review. Front Aging Neurosci 2021;12:578339.
85. Martin DM, Mohan A, Alonzo A et al. A pilot double-blind randomized controlled trial of cognitive training combined with transcranial direct current stimulation for amnestic mild cognitive impairment. J Alzheimers Dis 2019;71: 503-12.
86. DeLiema M. Elder fraud and financial exploitation: application of routine activity theory. Gerontologist 2018;58:706-18.
87. American Psychiatric Association. Diagnostic and statistical manual of mental disorders, 5th ed. Arlington: American Psychiatric Association, 2013.
88. Sachdev PS, Blacker D, Blazer DG et al. Classifying neurocognitive disorders: the DSM-5 approach. Nat Rev Neurol 2014;10:634-42.
89. McKhann GM, Knopman DS, Chertkow H et al. The diagnosis of dementia due to Alzheimer's disease: recommendations from the National Institute on Aging-Alzheimer's Association workgroups on diagnostic guidelines for Alzheimer's disease. Alzheimers Dement 2011;7:263-9.
90. Albert MS, DeKosky ST, Dickson D et al. The diagnosis of mild cognitive impairment due to Alzheimer's disease: recommendations from the National Institute on Aging-Alzheimer's Association workgroups on diagnostic guidelines for Alzheimer's Disease. Alzheimers Dement 2011;7:270-9.
91. American Psychiatric Association. Diagnostic and statistical manual of mental disorders, 4th ed. Washington: American Psychiatric Association, 1994.
92. Winblad B, Palmer K, Kivipelto M et al. Mild cognitive impairment – beyond controversies, towards a consensus: report of the International Working Group on Mild Cognitive Impairment. J Intern Med 2004;256:240-6.
93. Jessen F, Amariglio RE, van Boxtel M et al. A conceptual framework for research on subjective cognitive decline in preclinical Alzheimer's disease. Alzheimers Dement 2014;10:844-52.
94. Henry JD, von Hippel W, Molenberghs P et al. Clinical assessment of social cognitive function in neurological disorders. Nat Rev Neurol 2016;12:28-39.
95. Villemagne VL, Burnham S, Bourgeat P et al. Amyloid β deposition, neurodegeneration, and cognitive decline in sporadic Alzheimer's disease: a prospective cohort study. Lancet Neurol 2013;12:357-67.
96. Launer LJ. Counting dementia: there is no one "best" way. Alzheimers Dement 2011;7:10-4.
97. Nichols E, Vos T. The estimation of the global prevalence of dementia from 1990-2019 and forecasted prevalence through 2050: an analysis for the Global Burden of Disease (GBD) study 2019. Alzheimers Dement 2021;17:e051496.
98. Wu YT, Beiser AS, Breteler MMB et al. The changing prevalence and incidence of dementia over time – current evidence. Nat Rev Neurol 2017;13:327-39.
99. Gao S, Burney HN, Callahan CM et al. Incidence of dementia and Alzheimer disease over time: a meta-analysis. J Am Geriatr Soc 2019;67:1361-9.
100. Sachdev PS, Lipnicki DM, Kochan NA et al. The prevalence of mild cognitive impairment in diverse geographical and ethnocultural regions: the COSMIC Collaboration. PLoS One 2015;10:e0142388.
101. Livingston G, Huntley J, Sommerlad A et al. Dementia prevention, intervention, and care: 2020 report of the Lancet Commission. Lancet 2020;396:413-46.
102. Grande G, Qiu C, Fratiglioni L. Prevention of dementia in an ageing world: evidence and biological rationale. Ageing Res Rev 2020;64:101045.
103. Hachinski V, Ganten D, Lackland D et al. Implementing the Proclamation of Stroke and Potentially Preventable Dementias. Int J Stroke 2018;13:780-6.
104. Kivipelto M, Solomon A, Ahtiluoto S et al. The Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability (FINGER): study design and progress. Alzheimers Dement 2013;9:657-65.
105. Solomon A, Turunen H, Ngandu T et al. Effect of the apolipoprotein E genotype on cognitive change during a multidomain lifestyle intervention: a subgroup analysis of a randomized clinical trial. JAMA Neurol 2018;75:462-70.
106. Andrieu S, Guyonnet S, Coley N et al. Effect of long-term omega 3 polyunsaturated fatty acid supplementation with or without multidomain intervention on cognitive function in elderly adults with memory complaints (MAPT): a randomised, placebo-controlled trial. Lancet Neurol 2017;16:377-89.

107. van Charante EPM, Richard E, Eurelings LS et al. Effectiveness of a 6-year multidomain vascular care intervention to prevent dementia (preDIVA): a cluster-randomised controlled trial. Lancet 2016;388:797-805.
108. Kivipelto M, Mangialasche F, Snyder HM et al. World-Wide FINGERS Network: a global approach to risk reduction and prevention of dementia. Alzheimers Dement 2020;16:1078-94.
109. Heffernan M, Andrews G, Fiatarone Singh MA et al. Maintain your brain: protocol of a 3-year randomized controlled trial of a personalized multimodal digital health intervention to prevent cognitive decline among community dwelling 55 to 77 year olds. J Alzheimers Dis 2019;70:S221-37.
110. Kivipelto M, Mangialasche F, Ngandu T. Lifestyle interventions to prevent cognitive impairment, dementia and Alzheimer disease. Nat Rev Neurol 2018;14:653-66.
111. Alexopoulos GS, Jeste DV, Chung H et al. The expert consensus guideline series. Treatment of dementia and its behavioral disturbances. Introduction: methods, commentary, and summary. Postgrad Med 2005;Spec No:6-22.
112. Lanctôt KL, Amatniek J, Ancoli-Israel S et al. Neuropsychiatric signs and symptoms of Alzheimer's disease: new treatment paradigms. Alzheimers Dement 2017;3:440-9.
113. Zhao QF, Tan L, Wang HF et al. The prevalence of neuropsychiatric symptoms in Alzheimer's disease: systematic review and meta-analysis. J Affect Disord 2016;190:264-71.
114. Cummings JL. The Neuropsychiatric Inventory. Assessing psychopathology in dementia patients. Neurology 1997;48(Suppl. 6):10S-16S.
115. Monteiro IM, Boksay I, Auer SR et al. Addition of a frequency-weighted score to the Behavioral Pathology in Alzheimer's Disease Rating Scale: the BEHAVE-AD-FW: methodology and reliability. Eur Psychiatry 2001;16:5s-24s.
116. Cohen-Mansfield J, Marx MS, Rosenthal AS. A description of agitation in a nursing home. J Gerontol 1989;44:M77-84.
117. Ismail Z, Smith EE, Geda Y et al. Neuropsychiatric symptoms as early manifestations of emergent dementia: provisional diagnostic criteria for mild behavioral impairment. Alzheimers Dement 2016;12:195-202.
118. Peters ME, Schwartz S, Han D et al. Neuropsychiatric symptoms as predictors of progression to severe Alzheimer's dementia and death: the Cache County Dementia Progression Study. Am J Psychiatry 2015;172:460-5.
119. Brodaty H, Arasaratnam C. Meta-analysis of nonpharmacological interventions for neuropsychiatric symptoms of dementia. Am J Psychiatry 2012; 169:946-53.
120. Abraha I, Rimland JM, Trotta FM et al. Systematic review of systematic reviews of non-pharmacological interventions to treat behavioural disturbances in older patients with dementia. The SENATOR-OnTop series. BMJ Open 2017;7:e012759.
121. Yunusa I, Rashid N, Abler V et al. Comparative efficacy, safety, tolerability, and effectiveness of antipsychotics in the treatment of Dementia-Related Psychosis (DRP): a systematic literature review. J Prev Alzheimers Dis 2021;8:520-33.
122. Le C, Finger E. Pharmacotherapy for neuropsychiatric symptoms in frontotemporal dementia. CNS Drugs 2021;35:1081-96.
123. Chu CS, Yang FC, Tseng PT et al. Treatment efficacy and acceptability of pharmacotherapies for dementia with Lewy bodies: a systematic review and network meta-analysis. Arch Gerontol Geriatr 2021;96:104474.
124. Chin KS, Teodorczuk A, Watson R. Dementia with Lewy bodies: challenges in the diagnosis and management. Aust N Z J Psychiatry 2019;53:291-303.
125. Taylor JP, McKeith IG, Burn DJ et al. New evidence on the management of Lewy body dementia. Lancet Neurol 2020;19:157-69.
126. Sugawara Kikuchi Y, Shimizu T. Aripiprazole for the treatment of psychotic symptoms in patients with dementia with Lewy bodies: a case series. Neuropsychiatr Dis Treat 2019;15:543-7.
127. Lang L, Clifford A, Wei L et al. Prevalence and determinants of undetected dementia in the community: a systematic literature review and a meta-analysis. BMJ Open 2017;7:e011146.
128. World Health Organization. Global action plan on the public health response to dementia 2017-2025. Geneva: World Health Organization, 2017.
129. Low LF, McGrath M, Swaffer K et al. Communicating a diagnosis of dementia: a systematic mixed studies review of attitudes and practices of health practitioners. Dementia 2019;18:2856-905.
130. Norman AL, Woodard JL, Calamari JE et al. The fear of Alzheimer's disease: mediating effects of anxiety on subjective memory complaints. Aging Ment Health 2020;24:308-14.
131. Rewerska-Juśko M, Rejdak K. Social stigma of people with dementia. J Alzheimers Dis 2020;78:1339-43.
132. Swaffer K. Dementia and prescribed dis-engagement. Dementia 2015;14:3-6.
133. World Health Organization. Global status report on the public health response to dementia. www.who.int.
134. Barbarino P, Lynch C, Bliss A et al. From plan to impact III: Maintaining dementia as a priority in unprecedented times. London: Alzheimer's Disease International, 2020.
135. U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation (ASPE). Examining models of dementia care: final report. August 31, 2016. https://aspe.hhs.gov.
136. World Health Organization. The global dementia observatory reference guide. Geneva: World Health Organization, 2018.
137. Huang Y, Mucke L. Alzheimer mechanisms and therapeutic strategies. Cell 2012;148:1204-22.
138. Scheltens P, De Strooper B, Kivipelto M et al. Alzheimer's disease. Lancet 2021;397:1577-90.
139. Busche MA, Hyman BT. Synergy between amyloid-β and tau in Alzheimer's disease. Nat Neurosci 2020;23:1183-93.
140. Peng C, Trojanowski JQ, Lee VMY. Protein transmission in neurodegenerative disease. Nat Rev Neurol 2020;16:199-212.
141. Jack CR Jr, Bennett DA, Blennow K et al. NIA-AA Research Framework: Toward a biological definition of Alzheimer's disease. Alzheimers Dement 2018;14:535-62.
142. Jack CR Jr, Knopman DS, Jagust WJ et al. Tracking pathophysiological processes in Alzheimer's disease: an updated hypothetical model of dynamic biomarkers. Lancet Neurol 2013;12:207-16.
143. Sachdev PS. Developing robust biomarkers for vascular cognitive disorders: adding "V" to the AT(N) research framework. Curr Opin Psychiatry 2020;33:148-55.
144. Hampel H, Shaw LM, Aisen P et al. State-of-the-art of lumbar puncture and its place in the journey of patients with Alzheimer's disease. Alzheimers Dement 2022;18:159-77.
145. Klunk WE, Engler H, Nordberg A et al. Imaging brain amyloid in Alzheimer's disease with Pittsburgh Compound-B. Ann Neurol 2004;55:306-19.
146. Harada R, Okamura N, Furumoto S et al. 18F-THK5351: a novel PET radiotracer for imaging neurofibrillary pathology in Alzheimer Disease. J Nucl Med 2016;57:208-14.
147. Janelidze S, Teunissen CE, Zetterberg H et al. Head-to-head comparison of 8 plasma amyloid-β 42/40 assays in Alzheimer Disease. JAMA Neurol 2021;78:1375-82.
148. Blennow K. Phenotyping Alzheimer's disease with blood tests. Science 2021;373:626-8.
149. Van Cauwenberghe C, Van Broeckhoven C, Sleegers K. The genetic landscape of Alzheimer disease: clinical implications and perspectives. Genet Med 2016;18:421-30.
150. de Rojas I, Moreno-Grau S, Tesi N et al. Common variants in Alzheimer's disease and risk stratification by polygenic risk scores. Nat Commun 2021; 12:3417.
151. Budd Haeberlain S, Aisen PS, Barkhof F et al. Two randomized phase 3 studies of aducanumab in early Alzheimer's Disease. J Prev Alzheimers Dis 2022;9:197-210.
152. Selkoe DJ. Treatments for Alzheimer's disease emerge. Science 2021;373:624-6.
153. Cavazzoni P. FDA's decision to approve new treatment for Alzheimer's disease. www.fda.gov.
154. Planche V, Villain N. US Food and Drug Administration approval of aducanumab – is amyloid load a valid surrogate end point for Alzheimer Disease clinical trials? JAMA Neurol 2021;78:1307-8.
155. Cummings J, Salloway S. Aducanumab: appropriate use recommendations. Alzheimers Dement 2022;18:531-3.
156. Gorelick PB, Scuteri A, Black SE et al. Vascular contributions to cognitive impairment and dementia: a statement for healthcare professionals from the American Heart Association/American Stroke Association. Stroke 2011;42:2672-713.
157. Sachdev P, Kalaria R, O'Brien J et al. Diagnostic criteria for vascular cognitive disorders: a VASCOG statement. Alzheimer Assoc Disord 2014;28:206-18.
158. Skrobot OA, Black SE, Chen C et al. Progress toward standardized diagnosis of vascular cognitive impairment: guidelines from the Vascular Impairment of Cognition Classification Consensus Study. Alzheimers Dement 2018;14:280-92.
159. Lobo A, Launer LJ, Fratiglioni L et al. Prevalence of dementia and major subtypes in Europe: a collaborative study of population-based cohorts. Neurologic Diseases in the Elderly Research Group. Neurology 2000;54:S4-9.
160. Neuropathology Group, Medical Research Council Cognitive Function and Aging Study. Pathological correlates of late-onset dementia in a multicentre,

community-based population in England and Wales. Lancet 2001;357:169-75.
161. Jellinger KA. Pathology and pathogenesis of vascular cognitive impairment – a critical update. Front Aging Neurosci 2013;5:17.
162. Sachdev PS, Lo JW, Crawford JD et al. STROKOG (stroke and cognition consortium): an international consortium to examine the epidemiology, diagnosis, and treatment of neurocognitive disorders in relation to cerebrovascular disease. Alzheimers Dement 2017;7:11-23.
163. METACOHORTS Consortium. METACOHORTS for the study of vascular disease and its contribution to cognitive decline and neurodegeneration: an initiative of the Joint Programme for Neurodegenerative Disease Research. Alzheimers Dement 2016;12:1235-49.
164. Corriveau RA, Bosetti F, Emr M et al. The Science of Vascular Contributions to Cognitive Impairment and Dementia (VCID): a framework for advancing research priorities in the cerebrovascular biology of cognitive decline. Cell Mol Neurobiol 2016;36:281-8.
165. McKeith IG, Boeve BF, Dickson DW et al. Diagnosis and management of dementia with Lewy bodies: fourth consensus report of the DLB Consortium. Neurology 2017;89:88-100.
166. McKeith I, O'Brien J, Walker Z et al. Sensitivity and specificity of dopamine transporter imaging with 123I-FP-CIT SPECT in dementia with Lewy bodies: a phase III, multicentre study. Lancet Neurol 2007;6:305-13.
167. Boeve BF, Silber MH, Ferman TJ et al. Clinicopathologic correlations in 172 cases of rapid eye movement sleep behavior disorder with or without a coexisting neurologic disorder. Sleep Med 2013;14:754-62.
168. Chia R, Sabir MS, Bandres-Ciga S et al. Genome sequencing analysis identifies new loci associated with Lewy body dementia and provides insights into its genetic architecture. Nat Genet 2021;53:294-303.
169. Stinton C, McKeith I, Taylor JP et al. Pharmacological management of Lewy body dementia: a systematic review and meta-analysis. Am J Psychiatry 2015;172:731-42.
170. Goldman JG, Goetz CG, Brandabur M et al. Effects of dopaminergic medications on psychosis and motor function in dementia with Lewy bodies. Mov Disord 2008;23:2248-50.
171. Bang J, Spina S, Miller BL. Frontotemporal dementia. Lancet 2015;386:1672-82.
172. Ducharme S, Dols A, Laforce R et al. Recommendations to distinguish behavioural variant frontotemporal dementia from psychiatric disorders. Brain 2020;143:1632-50.
173. Vieira RT, Caixeta L, Machado S et al. Epidemiology of early-onset dementia: a review of the literature. Clin Pract Epidemiol Ment Health 2013;9:88-95.
174. Galimberti D, Reif A, Dell'Osso B et al. C9ORF72 hexanucleotide repeat expansion is a rare cause of schizophrenia. Neurobiol Aging 2014;35:1214.e7-1214.e10.
175. Galimberti D, Reif A, Dell'Osso B et al. C9ORF72 hexanucleotide repeat expansion as a rare cause of bipolar disorder. Bipolar Disord 2014;16:448-9.
176. Swift IJ, Sogorb-Esteve A, Heller C et al. Fluid biomarkers in frontotemporal dementia: past, present and future. J Neurol Neurosurg Psychiatry 2021;92:204-15.
177. Ossenkoppele R, Pijnenburg YAL, Perry DC et al. The behavioural/dysexecutive variant of Alzheimer's disease: clinical, neuroimaging and pathological features. Brain J Neurol 2015;138:2732-49.
178. Nelson PT, Dickson DW, Trojanowski JQ et al. Limbic-predominant age-related TDP-43 encephalopathy (LATE): consensus working group report. Brain 2019;142:1503-27.
179. Boyle PA, Yang J, Yu L et al. Varied effects of age-related neuropathologies on the trajectory of late life cognitive decline. Brain 2017;140:804-12.
180. Oh ES, Fong TG, Hshieh TT et al. Delirium in older persons: advances in diagnosis and treatment. JAMA 2017;318:1161-74.
181. Robinson TN, Raeburn CD, Tran ZV et al. Motor subtypes of postoperative delirium in older adults. Arch Surg 2011;146:295-300.
182. Maldonado JR. Delirium pathophysiology: an updated hypothesis of the etiology of acute brain failure. Int J Geriatr Psychiatry 2018;33:1428-57.
183. Jenssen S. Electroencephalogram in the dementia workup. Am J Alzheimers Dis Other Demen 2005;20:159-66.
184. de la Cruz M, Fan J, Yennu S et al. The frequency of missed delirium in patients referred to palliative care in a comprehensive cancer center. Support Care Cancer 2015;23:2427-33.
185. De J, Wand APF. Delirium screening: a systematic review of delirium screening tools in hospitalized patients. Gerontologist 2015;55:1079-99.
186. Inouye SK, van Dyck CH, Alessi CA et al. Clarifying confusion: the confusion assessment method. A new method for detection of delirium. Ann Intern Med 1990;113:941-8.
187. Maldonado J. Neuropathogenesis of delirium: review of current etiologic theories and common pathways. Am J Geriatr Psychiatry 2013;21:1190-222.
188. Karlidag R, Unal S, Sezer OH et al. The role of oxidative stress in postoperative delirium. Gen Hosp Psychiatry 2006;28:418-23.
189. Cunningham C. Systemic inflammation and delirium: important co-factors in the progression of dementia. Biochem Soc Trans 2011;39:945-53.
190. Smolensky MH, Hermida RC, Reinberg A et al. Circadian disruption: new clinical perspective of disease pathology and basis for chronotherapeutic intervention. Chronobiol Int 2016;33:1101-19.
191. Bush SH, Marchington KL, Agar M et al. Quality of clinical practice guidelines in delirium: a systematic appraisal. BMJ Open 2017;7:e013809.
192. National Clinical Guideline Centre. Delirium: diagnosis, prevention and management. www.nice.org.uk.
193. American Geriatrics Society Expert Panel on Postoperative Delirium in Older Adults. American Geriatrics Society abstracted clinical practice guideline for postoperative delirium in older adults. J Am Geriatr Soc 2015;63:142-50.
194. Neufeld KJ, Yue J, Robinson TN et al. Antipsychotic medication for prevention and treatment of delirium in hospitalized adults: a systematic review and meta-analysis. J Am Geriatr Soc 2016;64:705-14.
195. Herrman H, Patel V, Kieling C et al. Time for united action on depression: a Lancet – World Psychiatric Association Commission. Lancet 2022;399:957-1022.
196. Reynolds CF, Cuijpers P, Patel V et al. Early intervention to reduce the global health and economic burden of major depression in older adults. Annu Rev Public Health 2012;33:123-35.
197. Global Burden of Disease Study 2013 Collaborators. Global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. Lancet 2015;386:743-800.
198. Gallo JJ, Morales KH, Bogner HR et al. Long term effect of depression care management on mortality in older adults: follow-up of cluster randomized clinical trial in primary care. BMJ 2013;346:f2570.
199. Diniz BS, Machado-Vieira R, Forlenza OV. Lithium and neuroprotection: translational evidence and implications for the treatment of neuropsychiatric disorders. Neuropsychiatr Treat 2013;9:493-500.
200. Verduijn J, Milaneschi Y, van Hemert AM et al. Clinical staging of major depressive disorder: an empirical exploration. J Clin Psychiatry 2015;76:1200-8.
201. Ruhé HG, van Rooijen G, Spijker J et al. Staging methods for treatment resistant depression. A systematic review. J Affect Disord 2012;137:35-45.
202. Maj M, Stein DJ, Parker G et al. The clinical characterization of the adult patient with depression aimed at personalization of management. World Psychiatry 2020;19:269-93.
203. Lustberg L, Reynolds CF. Depression and insomnia: questions of cause and effect. Sleep Med Rev 2000;4:253-62.
204. Diniz BS, Sibille E, Ding Y et al. Plasma biosignature and brain pathology related to persistent cognitive impairment in late-life depression. Mol Psychiatry 2015;20:594-601.
205. Diniz BS, Butters MA, Albert SM et al. Late-life depression and risk of vascular dementia and Alzheimer's disease: systematic review and meta-analysis of community-based cohort studies. Br J Psychiatry 2013;202:329-35.
206. Nedergaard M, Goldman SA. Glymphatic failure as a final common pathway to dementia. Science 2020;370:50-6.
207. McCall WV, Black CG. The link between suicide and insomnia: theoretical mechanisms. Curr Psychiatry Rep 2013;15:389.
208. Cuijpers P, Beekman ATF, Reynolds CF. Preventing depression: a global priority. JAMA 2012;307:1033-4.
209. van Zoonen K, Buntrock C, Ebert DD et al. Preventing the onset of major depressive disorder: a meta-analytic review of psychological interventions. Int J Epidemiol 2014;43:318-29.
210. Dias A, Azariah F, Anderson SJ et al. Effect of a lay counselor intervention on prevention of major depression in older adults living in low- and middle-income countries: a randomized clinical trial. JAMA Psychiatry 2019;76:13-20.
211. Orgeta V, Brede J, Livingston G. Behavioural activation for depression in older people: systematic review and meta-analysis. Br J Psychiatry 2017;211:274-9.
212. Buysse DJ, Germain A, Moul DE et al. Efficacy of brief behavioral treatment for chronic insomnia in older adults. Arch Intern Med 2011;171:887-95.
213. Okereke OI, Vyas CM, Mischoulon D et al. Effect of long-term supplementation with marine omega-3 fatty acids vs placebo on risk of depression or clinically relevant depressive symptoms and on change in mood scores: a randomized clinical trial. JAMA 2021;326:2385-94.

214. Okereke OI, Reynolds CF 3rd, Mischoulon D et al. Effect of long-term vitamin D3 supplementation vs placebo on risk of depression or clinically relevant depressive symptoms and on change in mood scores: a randomized clinical trial. JAMA 2020;324:471-80.
215. Lopes-Paciencia S, Saint-Germain E, Rowell MC et al. The senescence-associated secretory phenotype and its regulation. Cytokine 2019;117:15-22.
216. American Psychological Association. Clinical practice guideline for the treatment of depression across three age cohorts, 2019. www.apa.org.
217. Cuijpers P, Karyotaki E, Pot AM et al. Managing depression in older age: psychological interventions. Maturitas 2014;79:160-9.
218. Nelson JC, Craig Nelson J, Delucchi K et al. Efficacy of second generation antidepressants in late-life depression: a meta-analysis of the evidence. Am J Geriatr Psychiatry 2008;16:558-67.
219. Reynolds CF, Dew MA, Pollock BG et al. Maintenance treatment of major depression in old age. N Engl J Med 2006;354:1130-8.
220. Marshe VS, Maciukiewicz M, Rej S et al. Norepinephrine transporter gene variants and remission from depression with venlafaxine treatment in older adults. Am J Psychiatry 2017;174:468-75.
221. Chang DD, Eyreeuro HA, Abbott R et al. Pharmacogenetic guidelines and decision support tools for depression treatment: application to late-life. Pharmacogenomics 2018;19:1269-84.
222. Lenze EJ, Mulsant BH, Blumberger DM et al. Efficacy, safety, and tolerability of augmentation pharmacotherapy with aripiprazole for treatment-resistant depression in late life: a randomised, double-blind, placebo-controlled trial. Lancet 2015;386:2404-12.
223. Cristancho P, Lenard E, Lenze EJ et al. Optimizing Outcomes of Treatment-Resistant Depression in Older Adults (OPTIMUM): study design and treatment characteristics of the first 396 participants randomized. Am J Geriatr Psychiatry 2019;27:1138-52.
224. Alexopoulos GS, Raue PJ, Banerjee S et al. Comparing the streamlined psychotherapy "Engage" with problem-solving therapy in late-life major depression. A randomized clinical trial. Mol Psychiatry 2021;26:5180-9.
225. Prigerson HG, Boelen PA, Xu J et al. Validation of the new DSM-5-TR criteria for prolonged grief disorder and the PG-13-Revised (PG-13-R) scale. World Psychiatry 2021;20:96-106.
226. Shear MK, Reynolds CF 3rd, Simon NM et al. Optimizing treatment of complicated grief. JAMA Psychiatry 2016;73:685-94.
227. Archer J, Bower P, Gilbody S et al. Collaborative care for depression and anxiety problems. Cochrane Database Syst Rev 2012;10:CD006525.
228. Unützer J, Katon W, Callahan CM et al. Collaborative care management of late-life depression in the primary care setting: a randomized controlled trial. JAMA 2002;288:2836-45.
229. Bruce ML, Ten Have TR, Reynolds CF 3rd et al. Reducing suicidal ideation and depressive symptoms in depressed older primary care patients. JAMA 2004;291:1081-91.
230. Chibanda D, Weiss HA, Verhey R et al. Effect of a primary care-based psychological intervention on symptoms of common mental disorders in Zimbabwe. JAMA 2016;316:2618-26.
231. Patel V, Weiss HA, Chowdhary N et al. Effectiveness of an intervention led by lay health counsellors for depressive and anxiety disorders in primary care in Goa, India (MANAS): a cluster randomised controlled trial. Lancet 2010;376:2086-95.
232. Turecki G, Brent DA. Suicide and suicidal behaviour. Lancet 2016;387:1227-39.
233. Kapur N, Ibrahim S, While D et al. Mental health service changes, organisational factors, and patient suicide in England in 1997-2012: a before-and-after study. Lancet Psychiatry 2016;3:526-34.
234. Simon GE, Johnson E, Lawrence JM et al. Predicting suicide attempts and suicide deaths following outpatient visits using electronic health records. Am J Psychiatry 2018;175:951-60.
235. Gibbons RD, Kupfer D, Frank E et al. Development of a computerized adaptive test suicide scale – the CAT-SS. J Clin Psychiatry 2017;78:1376-82.
236. Grunebaum MF, Galfalvy HC, Choo TH et al. Ketamine for rapid reduction of suicidal thoughts in major depression: a midazolam-controlled randomized clinical trial. Am J Psychiatry 2018;175:327-35.
237. Szanto K, Galfalvy H, Keilp J et al. Pathways to late-life suicidal behavior: cluster analysis and predictive validation. Biol Psychiatry 2017;81:S353.
238. Torous J, Bucci S, Bell IH et al. The growing field of digital psychiatry: current evidence and the future of apps, social media, chatbots, and virtual reality. World Psychiatry 2021;20:318-35.
239. Bleuler M. A 23-year longitudinal study of 208 schizophrenics and impressions in regard to the nature of schizophrenia. J Psychiatr Res 1968;6:3-12.
240. Rabins PV, Black B, German P et al. The prevalence of psychiatric disorders in elderly residents of public housing. J Gerontol Biol Sci Med Sci 1996;51:M319-24.
241. Cohen CI, Cohen GD, Blank K et al. Schizophrenia and older adults. An overview: directions for research and policy. Am J Geriatr Psychiatry 2000;8:19-28.
242. Stafford J, Howard R, Kirkbride JB. The incidence of very late-onset psychotic disorders: a systematic review and meta-analysis, 1960-2016. Psychol Med 2018;48:1775-86.
243. Purohit DP, Perl DP, Haroutunian V et al. Alzheimer disease and related neurodegenerative diseases in elderly patients with schizophrenia: a postmortem neuropathologic study of 100 cases. Arch Gen Psychiatry 1998;55:205-11.
244. Heaton RK, Gladsjo JA, Palmer BW et al. Stability and course of neuropsychological deficits in schizophrenia. Arch Gen Psychiatry 2001;58:24-32.
245. Maltais JR, Gagnon G, Garant MP et al. Correlation between age and MMSE in schizophrenia. Int Psychogeriatr 2015;27:1769-75.
246. Jeste DV, Twamley EW, Eyler Zorrilla LT et al. Aging and outcome in schizophrenia. Acta Psychiatr Scand 2003;107:336-43.
247. Meesters PD, Comijs HC, de Haan L et al. Symptomatic remission and associated factors in a catchment area based population of older patients with schizophrenia. Schizophr Res 2011;126:237-44.
248. Auslander LA, Jeste DV. Sustained remission of schizophrenia among community-dwelling older outpatients. Am J Psychiatry 2004;161:1490-3.
249. Palmer BW, Martin AS, Depp CA et al. Wellness within illness: happiness in schizophrenia. Schizophr Res 2014;159:151-6.
250. Edmonds EC, Martin AS, Palmer BW et al. Positive mental health in schizophrenia and healthy comparison groups: relationships with overall health and biomarkers. Aging Ment Health 2018;22:354-62.
251. McCarthy P, Benuskova L, Franz E. The age-related posterior-anterior shift as revealed by voxelwise analysis of functional brain networks. Front Aging Neurosci 2014;6:301.
252. Kasckow J, Montross L, Golshan S et al. Suicidality in middle aged and older patients with schizophrenia and depressive symptoms: relationship to functioning and quality of life. Int J Geriatr Psychiatry 2007;22:1223-8.
253. Cohen CI, Abdallah CG, Diwan S. Suicide attempts and associated factors in older adults with schizophrenia. Schizophr Res 2010;119:253-7.
254. Montross LP, Kasckow J, Golshan S et al. Suicidal ideation and suicide attempts among middle-aged and older patients with schizophrenia spectrum disorders and concurrent subsyndromal depression. J Nerv Ment Dis 2008;196:884-90.
255. Harris K, Gooding P, Peters S et al. Investigating the perceived impact of psychosis on suicidal thoughts and behaviors. Schizophr Bull Open 2020;1:sgaa038.
256. Tarrier N, Taylor K, Gooding P. Cognitive-behavioral interventions to reduce suicide behavior: a systematic review and meta-analysis. Behav Modif 2008;32:77-108.
257. Pompili M, Baldessarini RJ, Forte A et al. Do atypical antipsychotics have antisuicidal effects? A hypothesis-generating overview. Int J Mol Sci 2016;17:1700.
258. Zisook S, Kasckow JW, Lanouette NM et al. Augmentation with citalopram for suicidal ideation in middle-aged and older outpatients with schizophrenia and schizoaffective disorder who have subthreshold depressive symptoms: a randomized controlled trial. J Clin Psychiatry 2010;71:915-22.
259. Riecher-Rossler A, Rossler W, Forstl H et al. Late-onset schizophrenia and late paraphrenia. Schizophr Bull 1995;21:345-54.
260. Roth M, Kay DW. Late paraphrenia: a variant of schizophrenia manifest in late life or an organic clinical syndrome? A review of recent evidence. Int J Geriatr Psychiatry 1998;13:775-84.
261. American Psychiatric Association. Diagnostic and statistical manual of mental disorders, 3rd ed. Washington: American Psychiatric Association, 1981.
262. Spitzer RL, Gibbon M, Skodol AE et al. DSM-III-R case book. Washington: American Psychiatric Press, 1989.
263. Howard R. Late-onset schizophrenia and very-late-onset schizophrenia-like psychosis: an international consensus. Am J Psychiatry 2000;157:172-8.
264. Vahia IV, Palmer BW, Depp C et al. Is late-onset schizophrenia a subtype of schizophrenia? Acta Psychiatr Scand 2010;122:414-26.
265. World Health Organization. ICD-11: International Classification of Diseases 11th revision. Geneva: World Health Organization, 2022.
266. Jeste DV, Symonds LL, Harris MJ et al. Nondementia nonpraecox dementia praecox? Late-onset schizophrenia. Am J Geriatr Psychiatry 1997;5:302-17.
267. Weiser M, Levi L, Zamora D et al. Effect of adjunctive estradiol on schizophrenia among women of childbearing age: a randomized clinical trial. JAMA Psychiatry 2019;76:1009-17.
268. Stroup TS, Olfson M, Huang C et al. Age-specific prevalence and incidence of

dementia diagnoses among older US adults with schizophrenia. JAMA Psychiatry 2021;78:632-41.
269. Jin H, Shih PAB, Golshan S et al. Comparison of longer-term safety and effectiveness of 4 atypical antipsychotics in patients over age 40. J Clin Psychiatry 2013;74:10-8.
270. Uchida H, Mamo DC, Mulsant BH et al. Increased antipsychotic sensitivity in elderly patients: evidence and mechanisms. J Clin Psychiatry 2009;70:397-405.
271. Sable JA, Jeste DV. Antipsychotic treatment for late-life schizophrenia. Curr Psychiatry Rep 2002;4:299-306.
272. Jeste DV. Tardive dyskinesia in older patients. J Clin Psychiatry 2000;61:27-32.
273. Blanchet PJ. A focused update on tardive dyskinesia. Can J Neurol Sci 2020; 47:747-55.
274. American Psychiatric Association. The American Psychiatric Association practice guideline for the treatment of patients with schizophrenia, 3rd ed. Arlington: American Psychiatric Publishing, 2020.
275. Bartels SJ, DiMilia PR, Fortuna KL et al. Integrated care for older adults with serious mental illness and medical comorbidity: evidence-based models and future research directions. Clin Geriatr Med 2020;36:341-52.
276. Granholm E, McQuaid JR, McClure FS et al. Randomized controlled trial of cognitive behavioral social skills training for older people with schizophrenia: 12-month follow-up. J Clin Psychiatry 2007;68:730-7.
277. Granholm E, Holden J, Link PC et al. Randomized controlled trial of cognitive behavioral social skills training for older consumers with schizophrenia: defeatist performance attitudes and functional outcome. Am J Geriatr Psychiatry 2013;21:251-62.
278. Patterson TL, Mausbach BT, McKibbin C et al. Functional adaptation skills training (FAST): a randomized trial of a psychosocial intervention for middle-aged and older patients with chronic psychotic disorders. Schizophr Res 2006;86:291-9.
279. Patterson TL, Bucardo J, McKibbin CL et al. Development and pilot testing of a new psychosocial intervention for older Latinos with chronic psychosis. Schizophr Bull 2005;31:922-30.
280. Pratt SI, Bartels SJ, Mueser KT et al. Helping older people experience success: an integrated model of psychosocial rehabilitation and health care management for older adults with serious mental illness. Am J Psychiatr Rehabil 2008;11:41-60.
281. Bartels SJ, Pratt SI, Mueser KT et al. Long-term outcomes of a randomized trial of integrated skills training and preventive health care for older adults with serious mental illness. Am J Geriatr Psychiatry 2014;22:1251-61.
282. Twamley EW, Vella L, Burton CZ et al. The efficacy of supported employment for middle-aged and older people with schizophrenia. Schizophr Res 2012;135:100-4.
283. Twamley EW, Thomas KR, Burton CZ et al. Compensatory cognitive training for people with severe mental illnesses in supported employment: a randomized controlled trial. Schizophr Res 2019;203:41-8.
284. Depp CA, Mausbach B, Granholm E et al. Mobile interventions for severe mental illness. J Nerv Ment Dis 2010;198:715-21.
285. Regier DA, Farmer ME, Rae DS et al. Comorbidity of mental disorders with alcohol and other drug abuse. Results from the Epidemiologic Catchment Area (ECA) Study. JAMA 1990;264:2511-8.
286. Lawrie SM, Parsons C, Patrick J et al. A controlled trial of general practitioners' attitudes to patients with schizophrenia. Health Bull Edinb 1996;54:201-3.
287. Coleman KJ, Stewart C, Waitzfelder BE et al. Racial-ethnic differences in psychiatric diagnoses and treatment across 11 health care systems in the Mental Health Research Network. Psychiatr Serv 2016;67:749-57.
288. Palinkas LA, Criado V, Fuentes D et al. Unmet needs for services for older adults with mental illness: comparison of views of different stakeholder groups. Am J Geriatr Psychiatry 2007;15:530-40.
289. Maddox GL, Atchley RC, Evans JG et al (eds). The encyclopedia of aging: a comprehensive resource in gerontology and geriatrics, 3rd ed. New York: Springer, 2013.
290. Kapelner A, Bleich J, Levine A et al. Evaluating the effectiveness of personalized medicine with software. Front Big Data 2021;4:572532.
291. Kuerbis A, Sacco P, Blazer DG et al. Substance abuse among older adults. Clin Geriatr Med 2014;30:629-54.
292. Mavamdadi S, Oslin DW. Substance related and addictive disorders. In: Steffens DC, Blazer DG, Thakur ME (eds). The American Psychiatric Publishing textbook of geriatric psychiatry. Arlington: American Psychiatric Publishing, 2015:459-90.
293. Widlitz M, Marin DB. Substance abuse in older adults. An overview. Geriatrics 2002;57:29-34.
294. United Nations Office on Drugs and Crime. INCB annual report 2020. www.unodc.org.
295. United Nations Office on Drugs and Crime. World drug report 2018. www.unodc.org.
296. US Substance Abuse and Mental Health Services Administration. Results from the 2018 National Survey on Drug Use and Health. www.samhsa.gov.
297. Chhatre S, Cook R, Mallik E et al. Trends in substance use admissions among older adults. BMC Health Serv Res 2017;17:584.
298. Fick DM, Cooper JW, Wade WE et al. Updating the Beers criteria for potentially inappropriate medication use in older adults: results of a US consensus panel of experts. Arch Intern Med 2003;163:2716-24.
299. Blazer DG, Wu LT. Nonprescription use of pain relievers by middle-aged and elderly community-living adults: National Survey on Drug Use and Health. J Am Geriatr Soc 2009;57:1252-7.
300. Merrick EL, Horgan CM, Hodgkin D et al. Unhealthy drinking patterns in older adults: prevalence and associated characteristics. J Am Geriatr Soc 2008;56:214-23.
301. Moore AA, Karno MP, Grella CE et al. Alcohol, tobacco, and nonmedical drug use in older U.S. adults: data from the 2001/02 national epidemiologic survey of alcohol and related conditions. J Am Geriatr Soc 2009;57:2275-81.
302. Bush K, Kivlahan DR, McDonell MB et al. The AUDIT alcohol consumption questions (AUDIT-C): an effective brief screening test for problem drinking. Ambulatory Care Quality Improvement Project (ACQUIP). Alcohol Use Disorders Identification Test. Arch Intern Med 1998;158:1789-95.
303. Brown RL, Rounds LA. Conjoint screening questionnaires for alcohol and other drug abuse: criterion validity in a primary care practice. Wis Med J 1995; 94:135-40.
304. Kuerbis AN, Hagman BT, Sacco P. Functioning of alcohol use disorders criteria among middle-aged and older adults: implications for DSM-5. Subst Use Misuse 2013;48:309-22.
305. Fleming MF. Brief physician advice for problem alcohol drinkers. A randomized controlled trial in community-based primary care practices. JAMA 1997;277:1039-45.
306. Miller W, Rollnick S. Motivational interviewing: preparing people for change, 2nd ed. J Healthc Qual 2003;25:46.
307. Barrick C, Connors GJ. Relapse prevention and maintaining abstinence in older adults with alcohol-use disorders. Drugs Aging 2002;19:583-94.
308. Oslin D, Liberto JG, O'Brien J et al. Naltrexone as an adjunctive treatment for older patients with alcohol dependence. Am J Geriatr Psychiatry 1997;5:324-32.
309. Ling W, Wesson DR. Clinical efficacy of buprenorphine: comparisons to methadone and placebo. Drug Alcohol Depend 2003;70:S49-57.
310. US Department of Health and Human Services. Clinical guidelines for the use of buprenorphine in the treatment of opioid addiction. Rockville: US Department of Health and Human Services, 2013.
311. Kuerbis A, Sacco P. A review of existing treatments for substance abuse among the elderly and recommendations for future directions. Subst Abuse 2013;7:13-37.
312. Alcoholics Anonymous. A.A. around the world. www.aa.org.
313. Schonfeld L, Dupree LW. Treatment alternatives for older adults. In: Gurnack AM (ed). Older adults' misuse of alcohol, medicine, and other drugs. New York: Springer, 1997:113-31.

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Our Epidemic of Loneliness and Isolation

Key takeaways from the U.S. Surgeon General's Advisory on the Healing Effects of Social Connection and Community

Humans are wired for social connection, but we've become more isolated over time

Social connection is as essential to our long-term survival as food and water. But today, loneliness is more widespread than other major health issues in the U.S. Our epidemic of loneliness and isolation is a major public health concern.

Social connection significantly improves the health and well-being of all individuals

Social connection reduces the risk of premature mortality. It can predict better physical and mental health outcomes and ease stress. Higher levels of connection can influence health-related behaviors. Educational and economic achievement are even impacted by connection.

Social connection is vital to community health and success

Socially connected communities enjoy better population-level health. They are more prepared for — and resilient in the face — of disaster situations. They also experience greater economic prosperity and reduced levels of crime and violence.

Together, we can advance social connection and improve our nation's public health

Fostering social connection requires that we each commit to our relationships and communities. Our actions today can create sustainable changes to society and bring better health to all.

We all have a role to play in supporting social connection.
Learn how you can take action by reading the advisory at:
surgeongeneral.gov/connection

Office *of the*
U.S. Surgeon General

GOAL 1: DEVELOP A MORE ROBUST EVIDENCE BASE

Recommendation 2-1: Major funders of health research, including the government (e.g., the National Institutes of Health (NIH), the Center for Medicare and Medicaid Innovation (CMMI), and the Patient-Centered Outcomes Research Institute (PCORI)), foundations, and large health plans should fund research on social isolation and loneliness at levels that reflect their associations with mortality.

Recommendation 3-1: Major funders of health research, including the government (e.g., NIH, CMMI, PCORI), foundations, and large health plans should fund research to improve the basic scientific understanding of the links between social connection and health, including the study of risk factors and mechanisms.

Recommendation 9-3: Funders should prioritize research that builds a scientific foundation for clinical and public health interventions that reduce the health and medical impacts of social isolation and loneliness based on standard theoretical frameworks.

Recommendation 9-4: Major funders of health research, including the government (e.g., NIH, CMMI, PCORI), foundations, and large health plans should fund research on interventions in clinical settings to identify, prevent, and mitigate the effects of social isolation and loneliness in older adults.

Recommendation 9-5: Those who fund, develop, and operate programs to assess, prevent, and intervene in social isolation and loneliness should prioritize research on the following major gaps in the evidence base:

- Tailored interventions based on a public health framework of primary, secondary, and tertiary prevention. In particular, researchers should examine improved measures to identify individuals who may be at high risk for social isolation or loneliness and primary interventions in order to target such individuals.
- Trends among current younger adults as they age (e.g., use of technology, economic trends) to gain knowledge that informs future approaches to addressing social isolation and loneliness.
- Flexibility in funding to allow for the pilot testing and evaluation of innovative funding mechanisms for interventions
- Approaches for assessments of and interventions among understudied groups of older adults (e.g., low income, LGBT) and those who face unique barriers to health

Recommendation 9-6: System designers as well as those who are developing and deploying technology in interventions should ensure that technological innovations related to social isolation and loneliness are properly assessed and tested so as to understand their full range of benefits and potential adverse consequences in order to prevent harm, and they should work to understand and take into account contextual issues, such as broadband access and having sufficient knowledge and support for using the technology.

GOAL 2: TRANSLATE CURRENT RESEARCH INTO HEALTH CARE PRACTICES

Recommendation 7-1: Health care providers and practices should periodically perform an assessment using one or more validated tools to identify older adults experiencing social isolation and loneliness in order to initiate potential preventive interventions after having identified individuals who are at an elevated risk due to life events (e.g., loss of a significant relationship, geographic move, relevant health conditions).

- In the case of older adults who are currently socially isolated or lonely (or at an elevated risk for social isolation or loneliness), health care providers should discuss the adverse health outcomes associated with social isolation and loneliness with these older adults and their legally appointed representatives. Providers should make appropriate efforts to connect isolated or lonely older adults with needed social care.
- For older adults who are currently socially isolated or lonely, health care providers should attempt to determine the underlying causes and use evidence-based practices tailored to appropriately address those causes (e.g., hearing loss, mobility limitations).

Recommendation 7-2: Health care systems should create opportunities for clinicians to partner with researchers to evaluate the application of currently available evidence-based tools to assess social isolation and loneliness in clinical settings, including testing and applications for specific populations.

Recommendation 7-3: The committee endorses the recommendation of previous National Academies reports that social isolation should be included in the electronic health record or medical record.

GOAL 3: IMPROVE AWARENESS

Recommendation 8-1: The U.S. Department of Health and Human Services should advocate for including measures of social isolation and loneliness in major large-scale health strategies (e.g., Healthy People) and surveys (e.g., National Health Interview Survey).

Recommendation 8-2: Health and aging organizations, relevant government agencies, and consumer-facing organizations should create public awareness and education campaigns that highlight the health impacts of social isolation and loneliness in adults.

- Health care systems, associations representing all types of health care workers (e.g., American Medical Association, American Nurses Association, American Psychological Association, National Association of Social Workers, American Geriatrics Society, American Association for Geriatric Psychiatry, organizations representing direct care workers), health-related organizations (e.g., American Heart Association), consumer-facing health-related organizations (e.g., AARP), aging professional associations (e.g., American Society on Aging, Gerontological Society of America), aging services organizations (e.g., area agencies on aging, state departments on aging), and organizations working with at-risk older adults (e.g., National Hispanic Council on Aging) should actively communicate information about the health impacts of social isolation and loneliness through print and digital media.
- Organizations representing health plans and providers should include consumer-friendly information about the health impacts of social isolation and loneliness in their repository of patient resources (e.g., where the organization provide information about the self-management of various chronic diseases).

GOAL 4: STRENGTHEN ONGOING EDUCATION AND TRAINING

Recommendation 8-3: Health professions schools and colleges as well as direct care worker training programs should include education and training related to social isolation and loneliness in their curricula, optimally as interprofessional team-based learning experiences.

- Health education and training programs should include information on clinical approaches to assessing and intervening when an older adult is at risk for social isolation and loneliness.
- As evidence on effective interventions develops, health education and training programs should provide education on integrating care related to social isolation and loneliness into clinical practice and as part of discharge planning, care coordination, and transitional care planning with community organizations.

Recommendation 8-4: Health professional associations should incorporate information about the health and medical impacts of social isolation and loneliness on older adults in their advocacy, practice, and education initiatives.

- Health professional associations should include social isolation and loneliness in conference programming, webinars, toolkits, clinical guidelines, and advocacy priorities.

Recommendation 8-5: Health professional associations, membership organizations, academic institutions, health insurers, researchers, developers of education and training programs, and other actors in the public and private sectors should support, develop, and test different educational and training approaches related to the health and medical impacts of social isolation and loneliness in older adults across different segments of the healthcare workforce (including health care professionals and direct care workers) in order to determine the most effective ways to enhance competencies. In addition to initial clinical education, these approaches should apply to professional education, continuing education modules, online learning, and other forms of lifelong learning.

GOAL 5: STRENGTHEN TIES BETWEEN THE HEALTH CARE SYSTEM AND COMMUNITY-BASED NETWORKS AND RESOURCES

Recommendation 9-1: Health care providers, organizations, and systems should partner with social service providers, including those serving vulnerable communities, in order to create effective team-based care (which includes services such as transportation and housing support) and to promote the use of tailored community-based services to address social isolation and loneliness in older adults.

Recommendation 9-2: Given the public health impact of social isolation and loneliness, the U.S. Department of Health and Human Services should establish and fund a national resource center to centralize evidence, resources, training, and best practices on social isolation and loneliness, including those for older adults and for diverse and at-risk populations.

To read the full report, please visit
nationalacademies.org/isolationandloneliness

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COGNITIVE AND BEHAVIORAL HEALTH IN LATER LIFE

National Demographic and Epidemiological Information

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FOREWORD: MEETING THE COGNITIVE AND BEHAVIORAL HEALTH CHALLENGES OF THE ELDER BOOM IN THE U.S.

- This document provides demographic and epidemiological background information for policymakers, advocates, journalists, and others who are concerned about the mental well-being of older adults during the “elder boom”.
- Unfortunately, people with dementia, mental illnesses, and/or substance use problems and their families often do not get the services they need due to service shortages, limited access to services that exist, uneven quality of care, limited integration of services, limited continuity of care, workforce shortages, and more.
- Unmet cognitive and behavioral health needs can result in avoidable individual and family suffering as well as in premature death and disability, excessive institutionalization, and very high health care costs.
- To meet the cognitive and behavioral health needs of older adults it will be necessary to
  - Expand current services to keep pace with population growth
  - Take bold steps to improve services to overcome current service shortfalls.
- Keeping pace and improving care will depend on the availability of data to inform the planning and policy development. This document is a small step towards gathering the needed data.

We are grateful to AARP Maryland and AARP National for the resources and assistance they have provided to assemble this information book.

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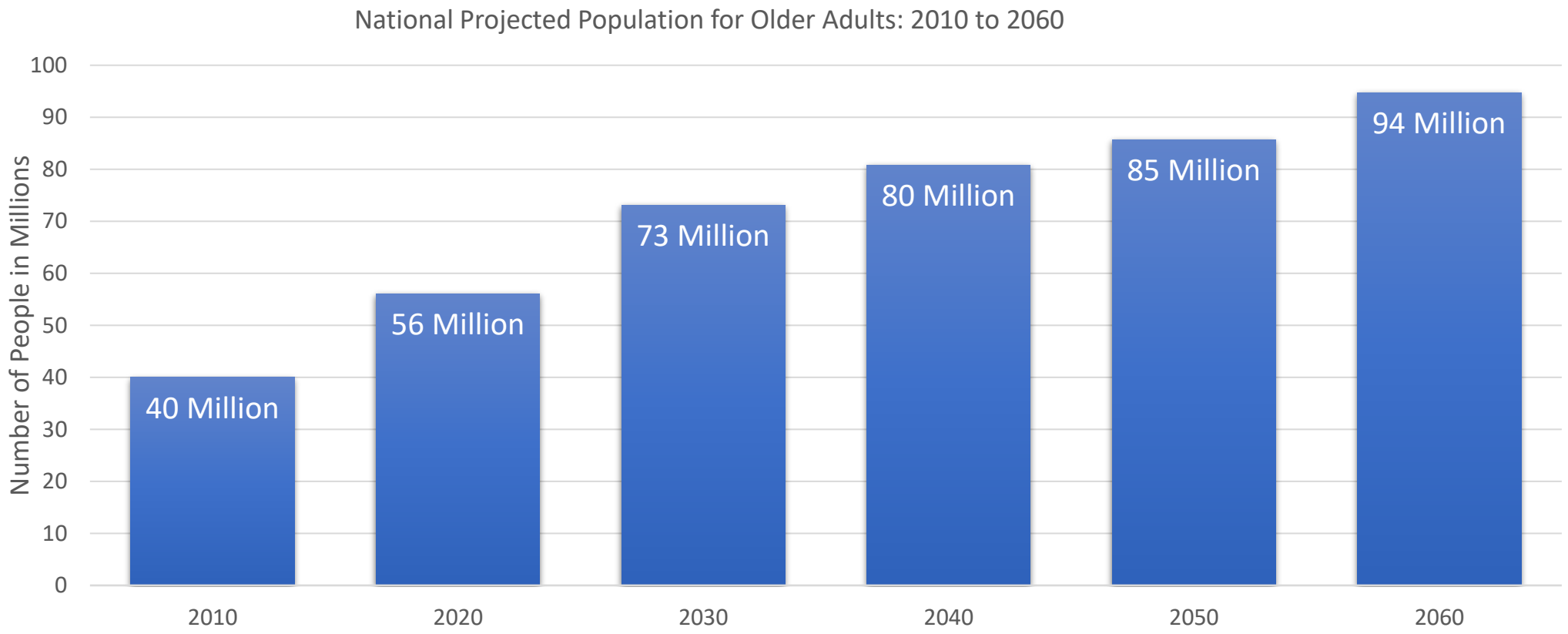
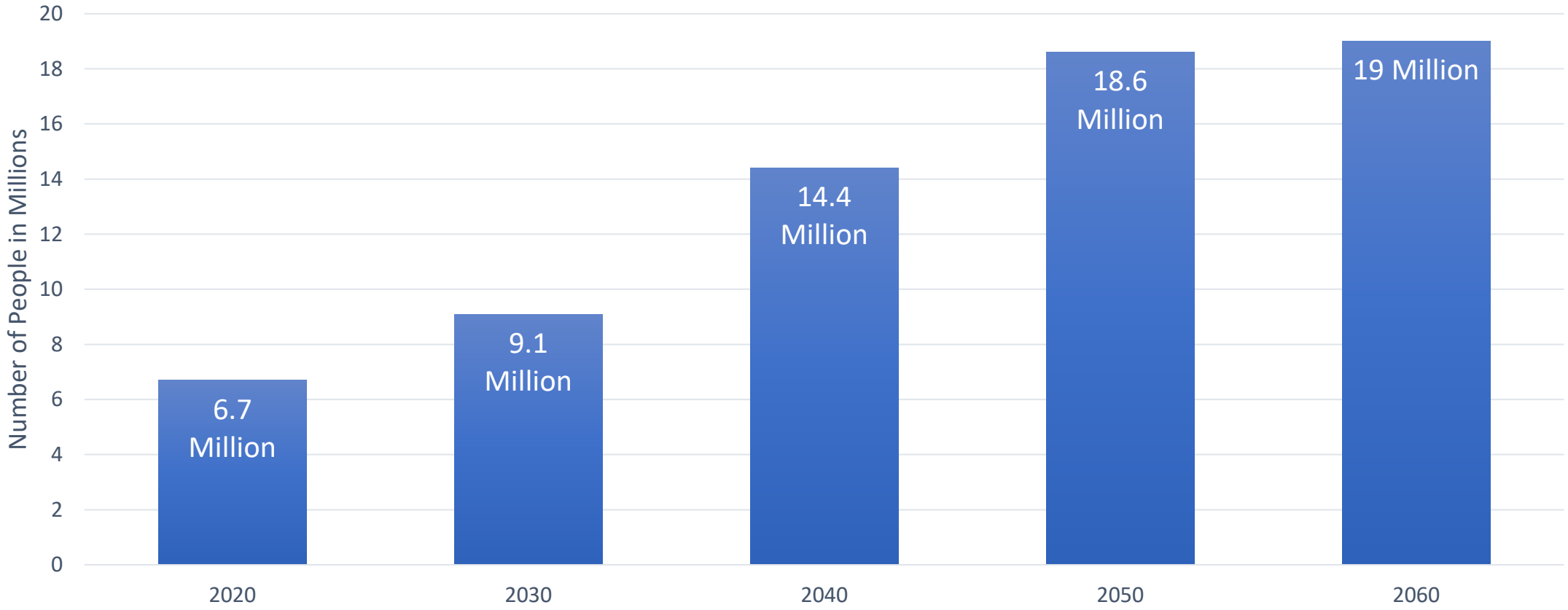
From The Beginning Of The Elder Boom in 2011 To 2040 The Population Of Adults Ages 65+ In The U.S. Will Double



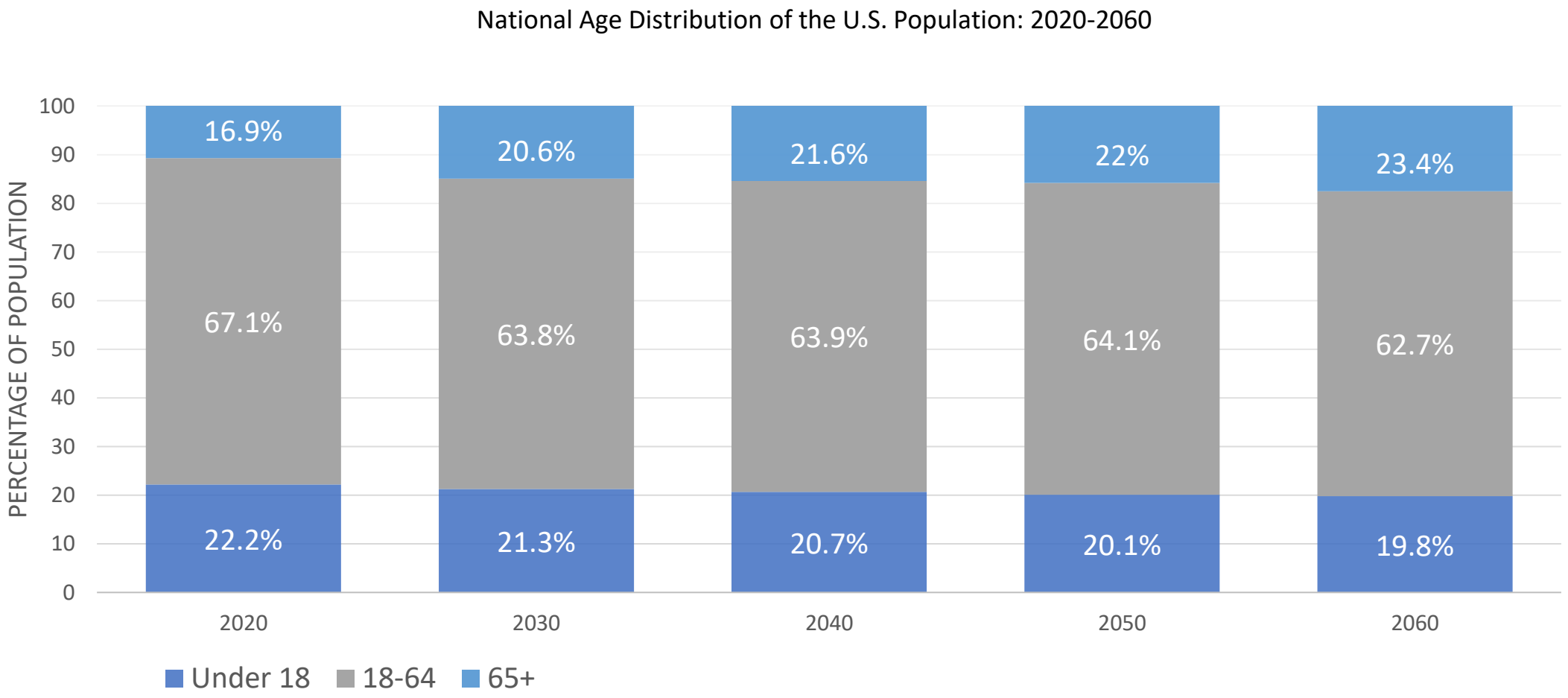
US Census Bureau (2017) National Population Projections Datasets. https://www.census.gov/data/datasets/2017/demo/popproj/2017-popproj.html

The Population Of Adults 85+ Will Nearly Triple In The Next 30 Years



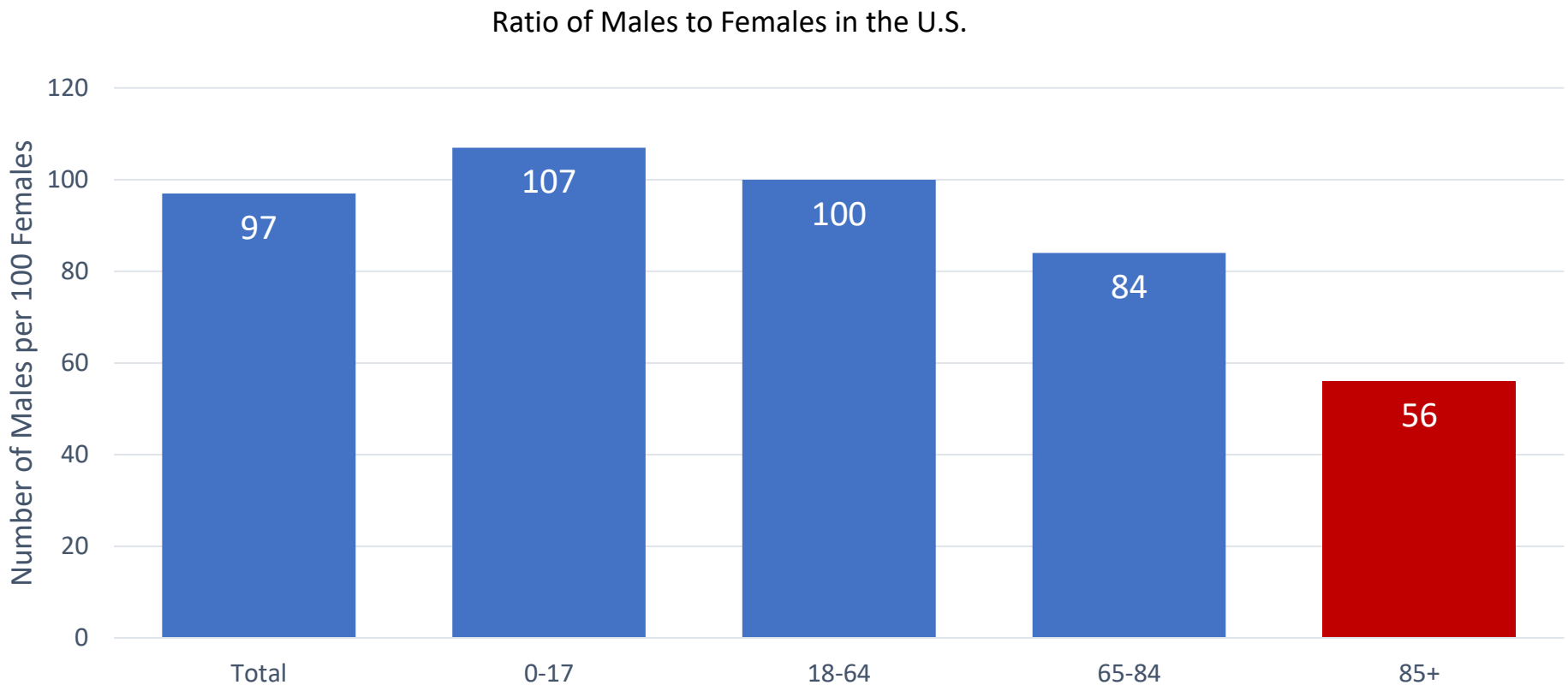
US Census Bureau (2017) Projected Population by Single Year of Age, Sex, Race, and Hispanic Origin for the United States: 2016 to 2060, National Population Projections Datasets, https://www.census.gov/data/datasets/2017/demo/popproj/2017-popproj.html

Over The Next 40 Years, The Proportion Of Adults 65+ To Over 23% Exceeding The Proportion Of Children. Working Age Adults Will Decline 4.4%



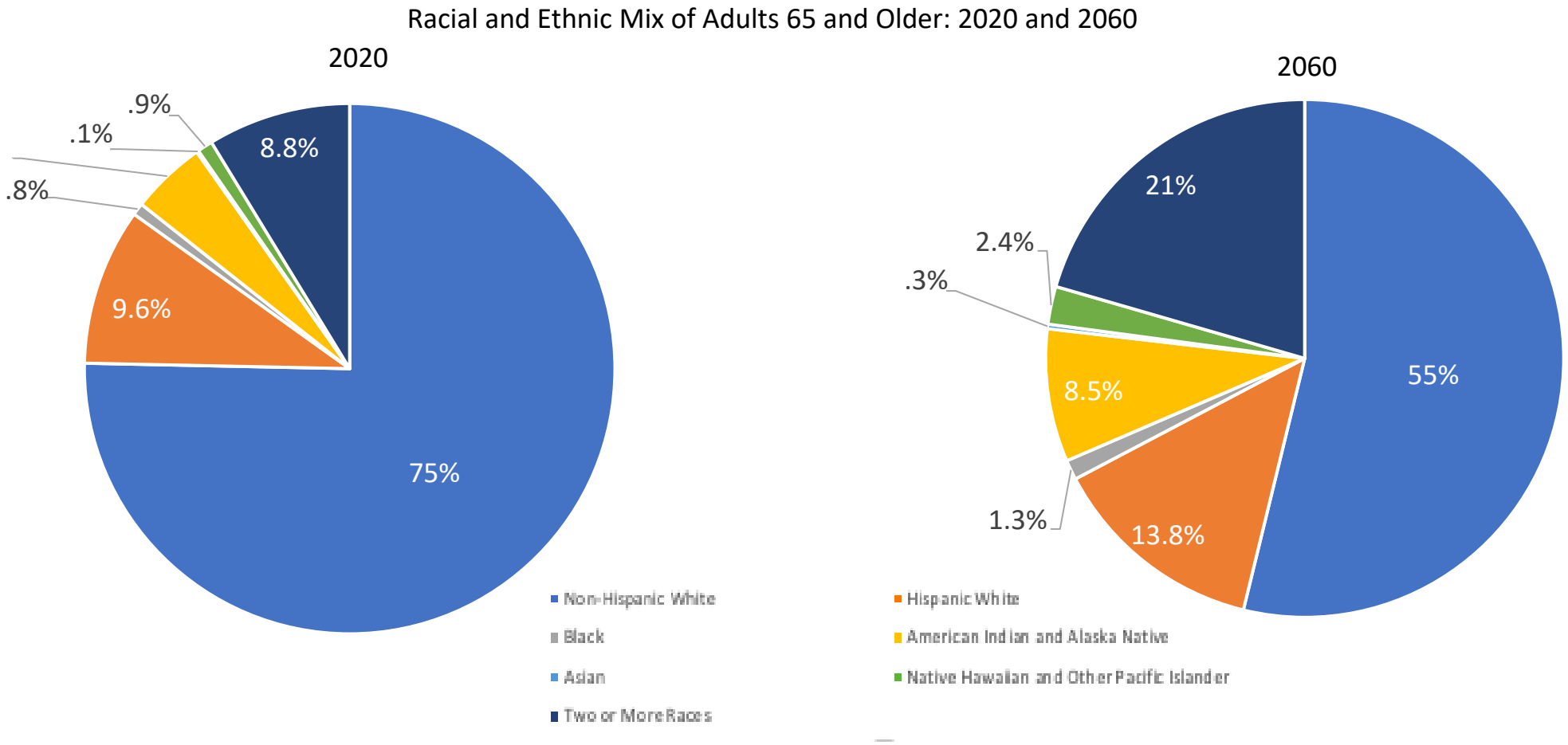
US Census Bureau (2017) National Population Projections Datasets. https://www.census.gov/data/datasets/2017/demo/popproj/2017-popproj.html

The Number of Males per 100 Females Declines Sharply at Older Ages. For Those 85+ There Are Almost 2 Females Per Male



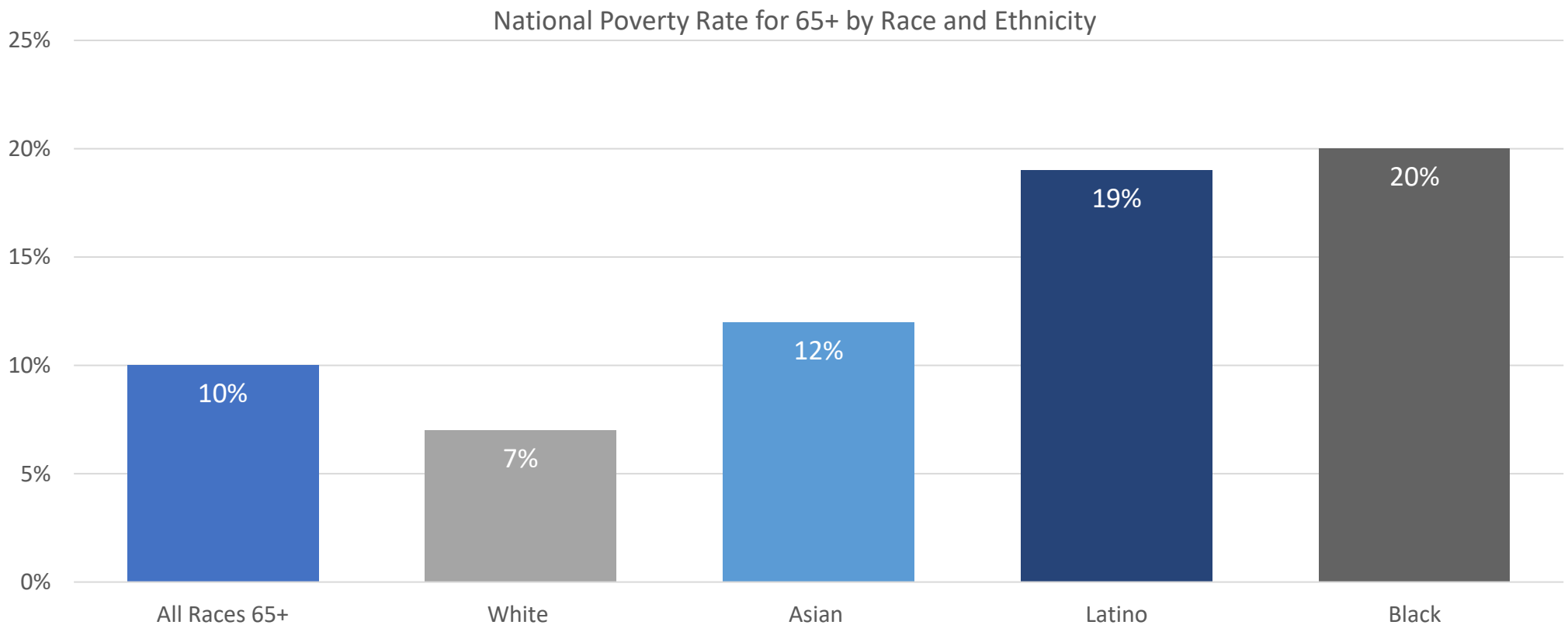
The U.S. population is growing older, and the gender gap in life expectancy is narrowing. PRB. (n.d.). Retrieved February 27, 2022.

People Of Color Will Increase Over The Next 40 Years From About 24% To About 45% Of The 65+ Population



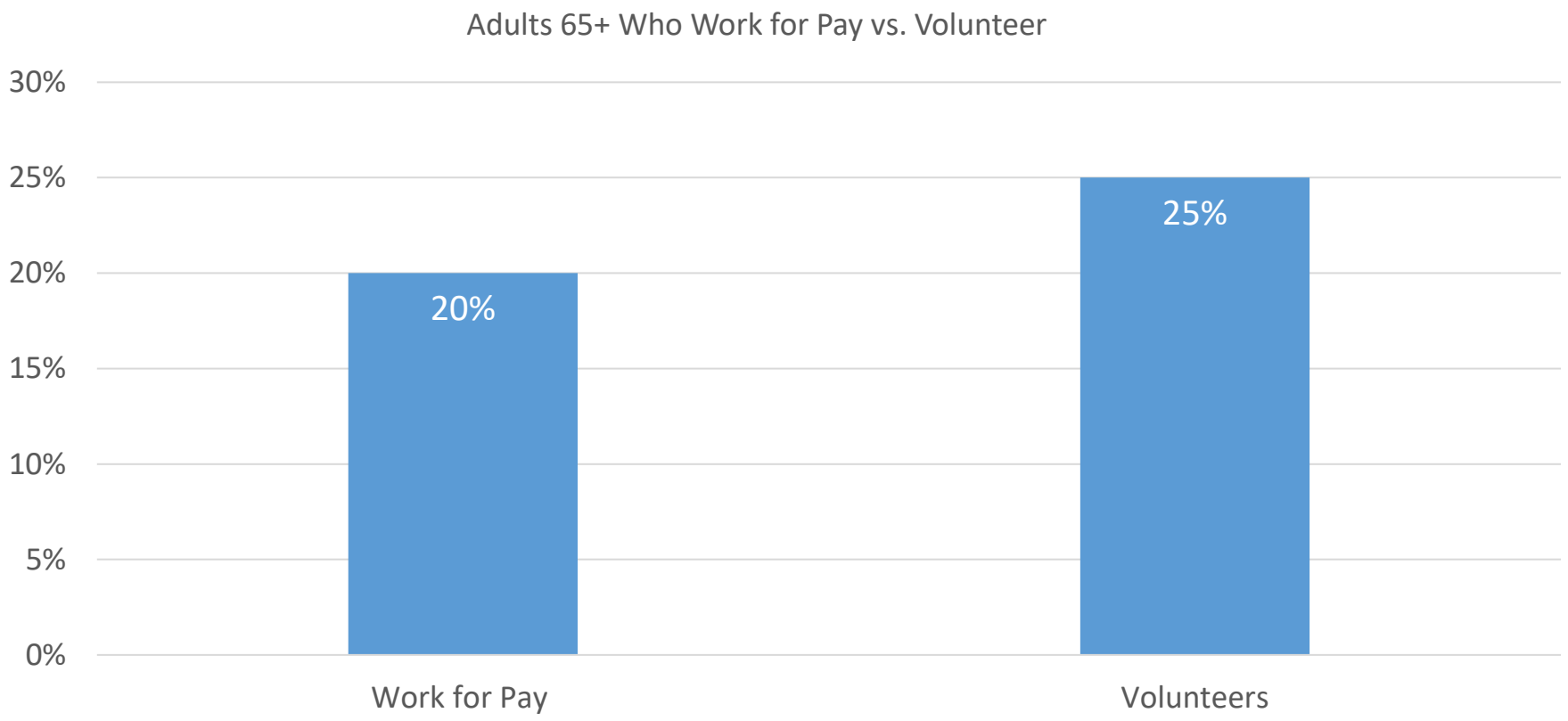
US Census Bureau (2017) 2017 National Population Projections Tables: Main Series. https://www.census.gov/data/tables/2017/demo/popproj/2017-summary-tables.html

Approximately 10% Of Older Adults Live In Poverty, Varying From 7% For White Older Adults To 20% For Black Older Adults



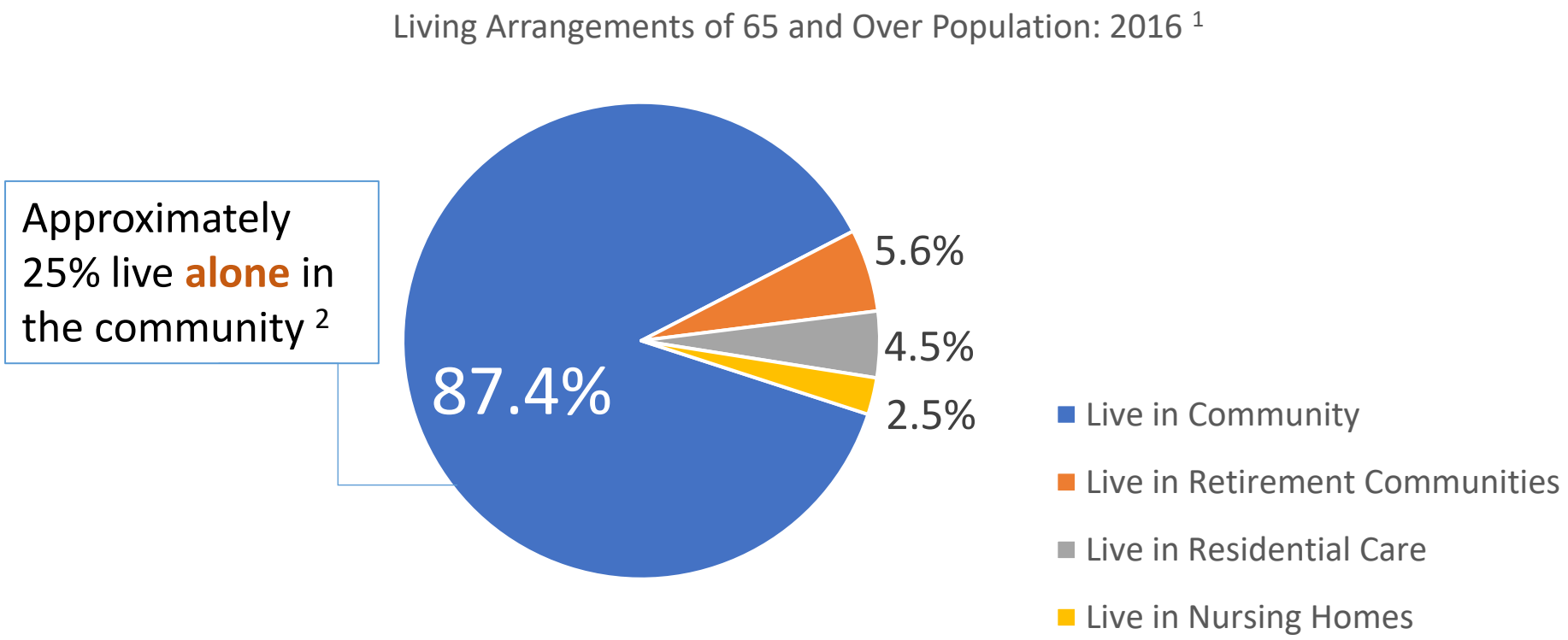
Federal Interagency Forum on Aging-Related Statistics (2020), 2020 Older Americans Key Indicators of Well-Being.
https://www.agingstats.gov/docs/LatestReport/OA20_508_10142020.pdf

20% Of Older Adults Work For Pay [1]
25% Work As Volunteers,[2] With Numbers Growing



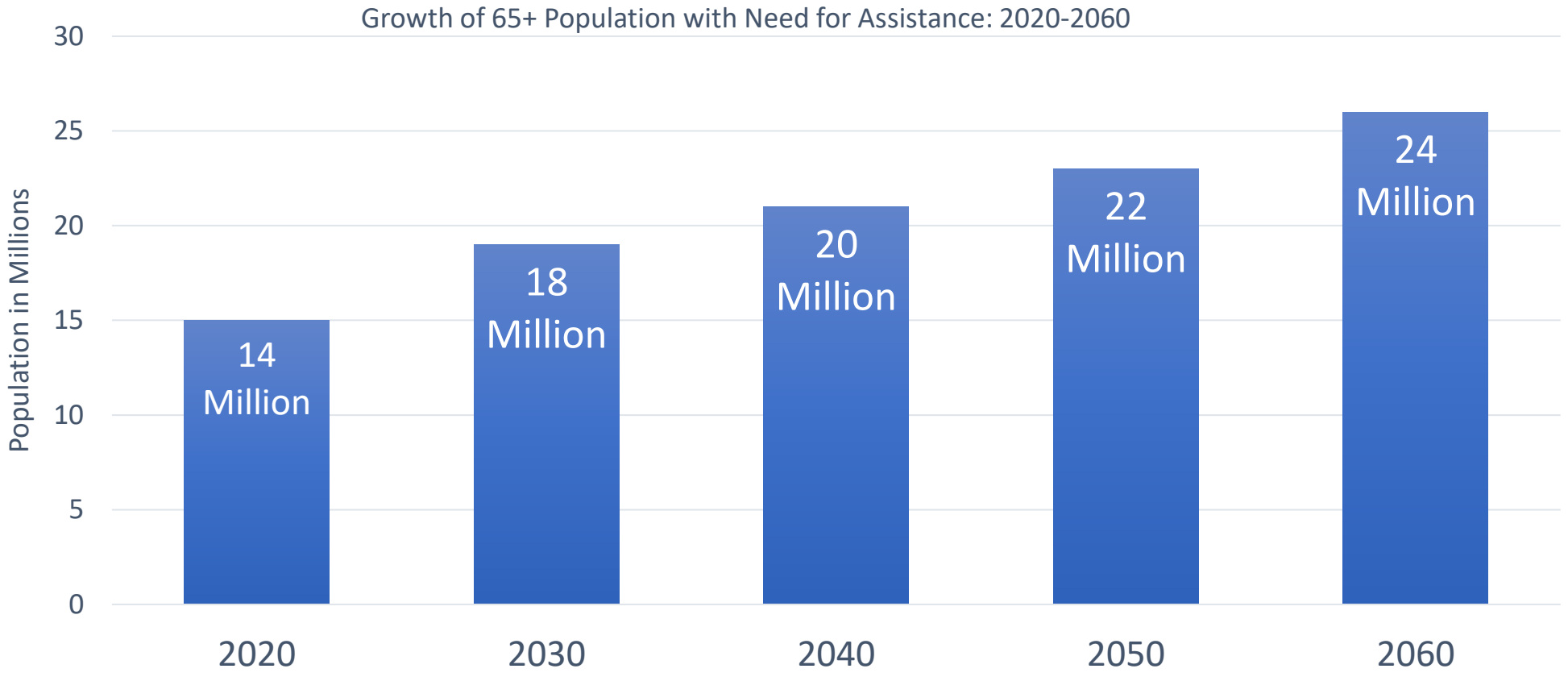
1. Edelson, H. (2019). "More Americans Past 65". AARP. April 22, 2019. More Americans Working or Looking for Work After 65 (aarp.org)
2. BLS Monthly Labor Review (July 2020) "Making Volunteer Work Visible: Supplementary Measures of Work in Labor Force Statistics" https://www.bls.gov/opub/mlr/2020/article/making-volunteer-work-visible-supplementary-measures-of-work-in-labor-force-statistics.htm

The Vast Majority Of Older Adults Live In the Community



1. Freedman Vicki A., and Spillman, Brenda C. (2016). Making National Estimates with the National Health and Aging Trends Study. NHATS Technical Paper #17. Johns Hopkins University School of Public Health. https://www.nhats.org/scripts/documents/Making_National_Population_Estimates_in_NHATS_Technical_Paper.pdf
2. U.S. Department of Health and Human Services. (2014, June). 65+ in the United States: 2010. https://www.census.gov/content/dam/Census/library/publications/2014/demo/p23-212.pdf

About 25% Of Older Adults (50%+ of those 85+) Need Assistance With Daily Activities. They Will Increase By 10 Million (70%) Between 2020 And 2060



1. Freedman, V. and Spillman, B. (2014). "Disability and Care Needs Among Older Adults" in *Milbank Quarterly,* September 2014. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4221755/
2. US Census Bureau (2017) National Population Projections Datasets. https://www.census.gov/data/datasets/2017/demo/popproj/2017-popproj.html

Family Caregivers Provide Most Care For Older Adults With Disabilities

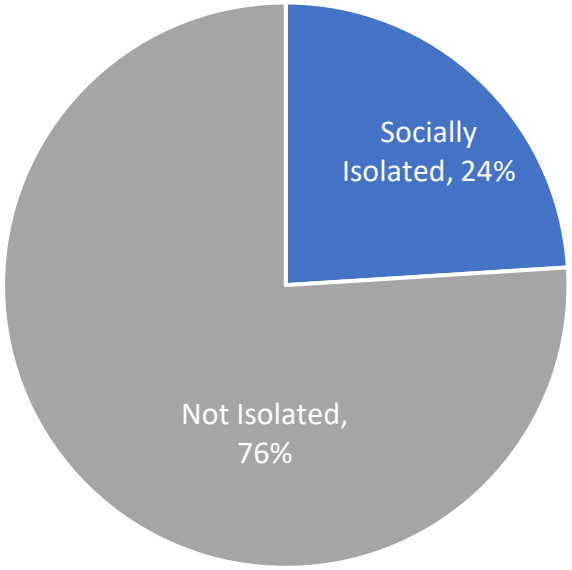
80% of older adults in the community with long-term care support service needs receive care from unpaid (informal) caregivers.[1]

- In 2017, the national economic value of informal caregiving for older adults was estimated to be over $470 billion annually. [2]
- In 2019, the average out-of-pocket spending for family caregivers was $7,200 per year. [2]
- The estimated total cost of lost earnings was about $67 billion in 2013. Due to population growth, these costs would roughly double by 2050 . [3]
- Family caregivers are at high risk for mental and physical disorders. (See slide 47).

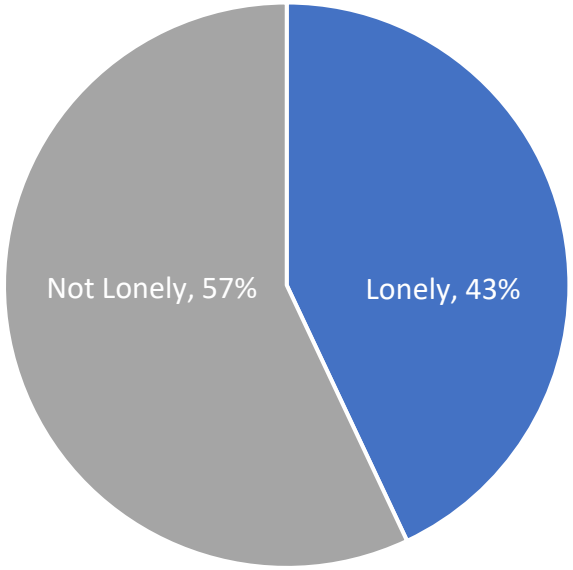
1. Assistant Secretary for Planning and Evaluation. (2020, January). *Economic Impacts of Programs to Support Caregivers*. Retrieved 11 13, 2021, from U.S. Department of Health and Human Services: https://aspe.hhs.gov/sites/default/files/migrated_legacy_files//194136/EconImpact.pdf
2. AARP and National Alliance for Caregiving. (2021, June). *Cargiving Out-of-Pocket Costs Study*. Retrieved 11 13, 2021, from AARP: https://www.aarp.org/content/dam/aarp/research/surveys_statistics/ltc/2021/family-caregivers-cost-survey-2021.doi.10.26419-2Fres.00473.001.pdf
3. Mudrazija, S. (2019).“Work-Related Opportunity Costs Of Providing Unpaid Family Care In 2013 and 2050.” *Health Affairs,* June 2019. https://www.healthaffairs.org/doi/10.1377/hlthaff.2019.00008

About 1/4 Of Older Adults Are Socially Isolated More than 1/3 Are Lonely

Socially Isolated Population 65+



Loneliness in Population 60+

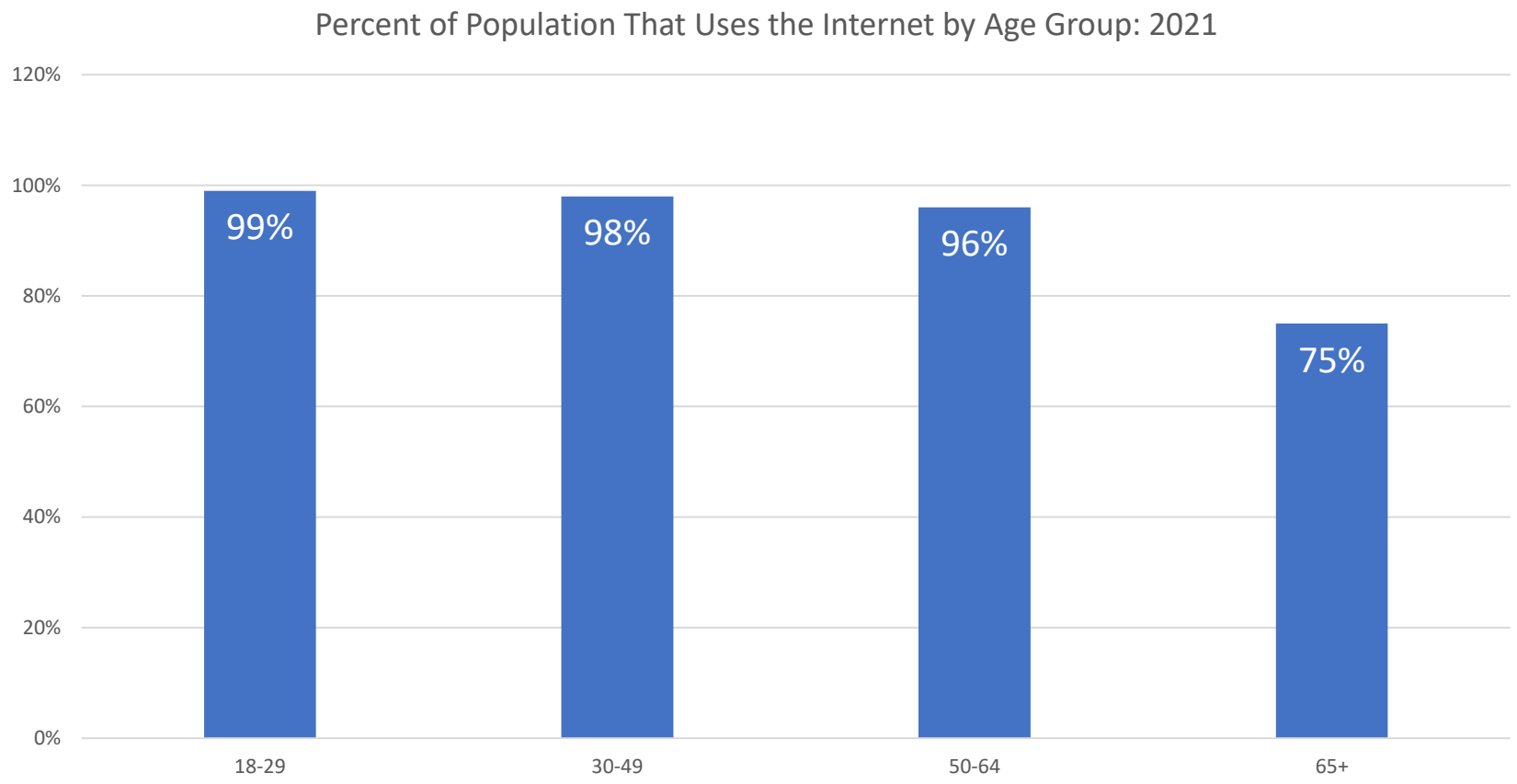


Social isolation – a lack of social connections. **Loneliness** – the feeling of being alone, regardless of the amount of social contact a person has. Social isolation can lead to loneliness in some people, but not in others.

Both contribute to physical and mental disorders, disability, and premature mortality. (see slide 46)

National Academies of Sciences, Engineering, and Medicine. (2020). *Social isolation and loneliness in older adults: Opportunities for the health care system.* Washington, DC: The National Academies Press.

Use Of The Internet, Which Is Widely Seen As An Antidote To Social Isolation, Decreases With Age



Pew Research (2019). Internet/Broadband Fact Sheet. Retrieved from https://www.pewresearch.org/internet/fact-sheet/internet-broadband/

10-15% Of Older Adults In The U.S. Are Victims Of Mistreatment [1, 2] And At Elevated Risk For Psychological And Physical Conditions [1, 2, 3]

- Elder abuse, by definition, is committed by a person with caregiving responsibilities, including family members, home health aides, and long-term residential care staff. [1]

- Estimates of the amount of elder abuse vary. CDC estimates about 10%. WHO estimates over 15%.

- Elder abuse "can lead to early death, harm to physical and psychological health, substance misuse, ruptured social and family ties, social isolation, and/or devastating financial loss…." [3]

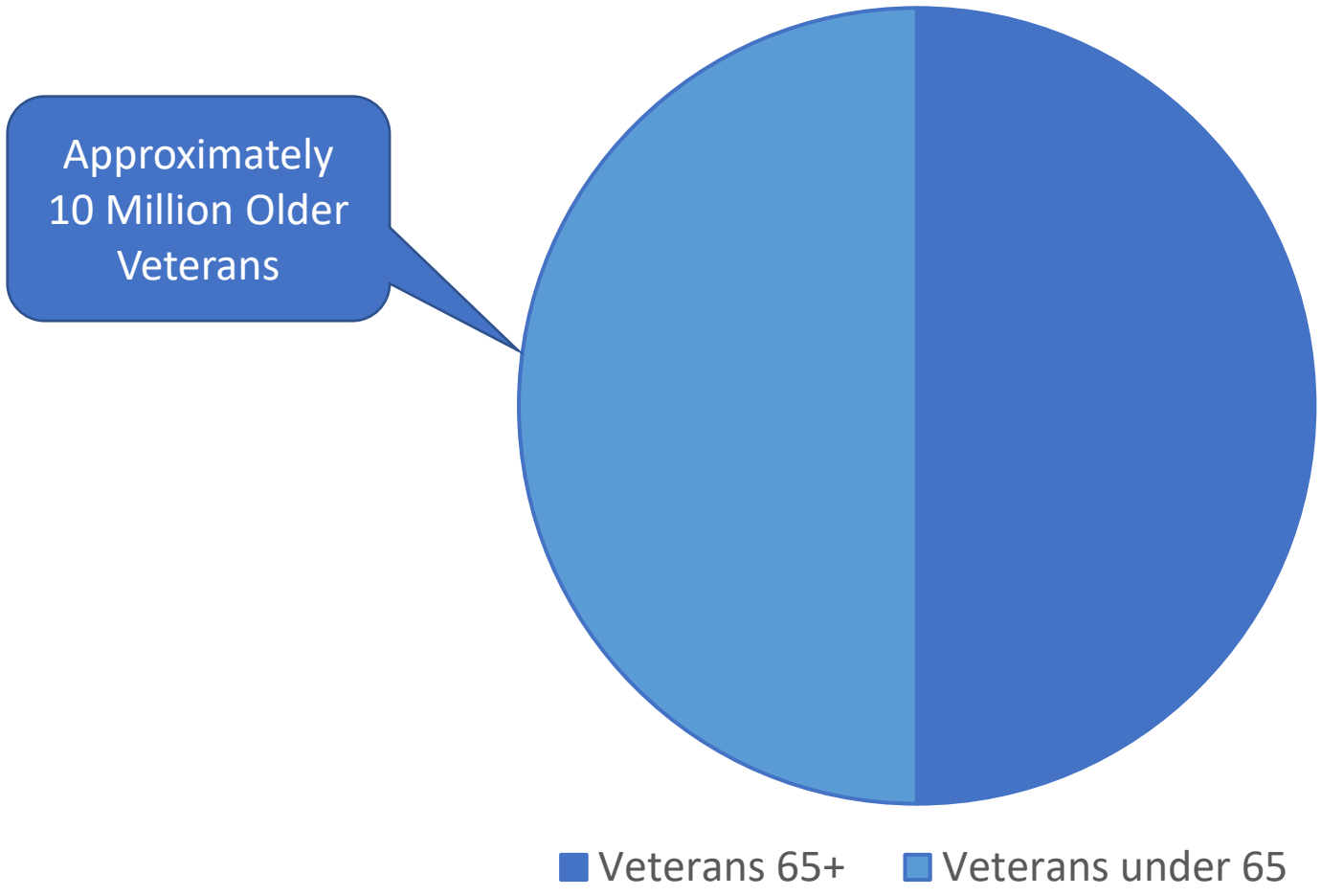
WHO Rates of Elder Mistreatment [2]

Overall Mistreatment	Psychological Abuse	Financial Exploitation	Neglect	Physical Abuse	Sexual Abuse
15.7%	11.6%	6.8%	4.2%	2.6%	.9%

Some older adults experience multiple forms of mistreatment.

1. Center For Disease Control (2021). "Elder Abuse Fast Fact Sheet." https://www.cdc.gov/violenceprevention/elderabuse/fastfact.html
2. World Health Organization (2021). "Elder Abuse Key Facts." https://www.who.int/news-room/fact-sheets/detail/elder-abuse
3. National Institute On Aging (2021). "Elder Abuse." *U.S. Department Of Health & Human Services* https://www.nia.nih.gov/health/elder-abuse

About 50% Of Veterans In The U.S. Are 65+



Department Of Veterans Affairs (2018). "National Survey Of Veterans." *National Center For Veteran Analysis And Statistics*. https://www.va.gov/vetdata/

COGNITIVE AND BEHAVIORAL HEALTH PROBLEMS OF LATER LIFE

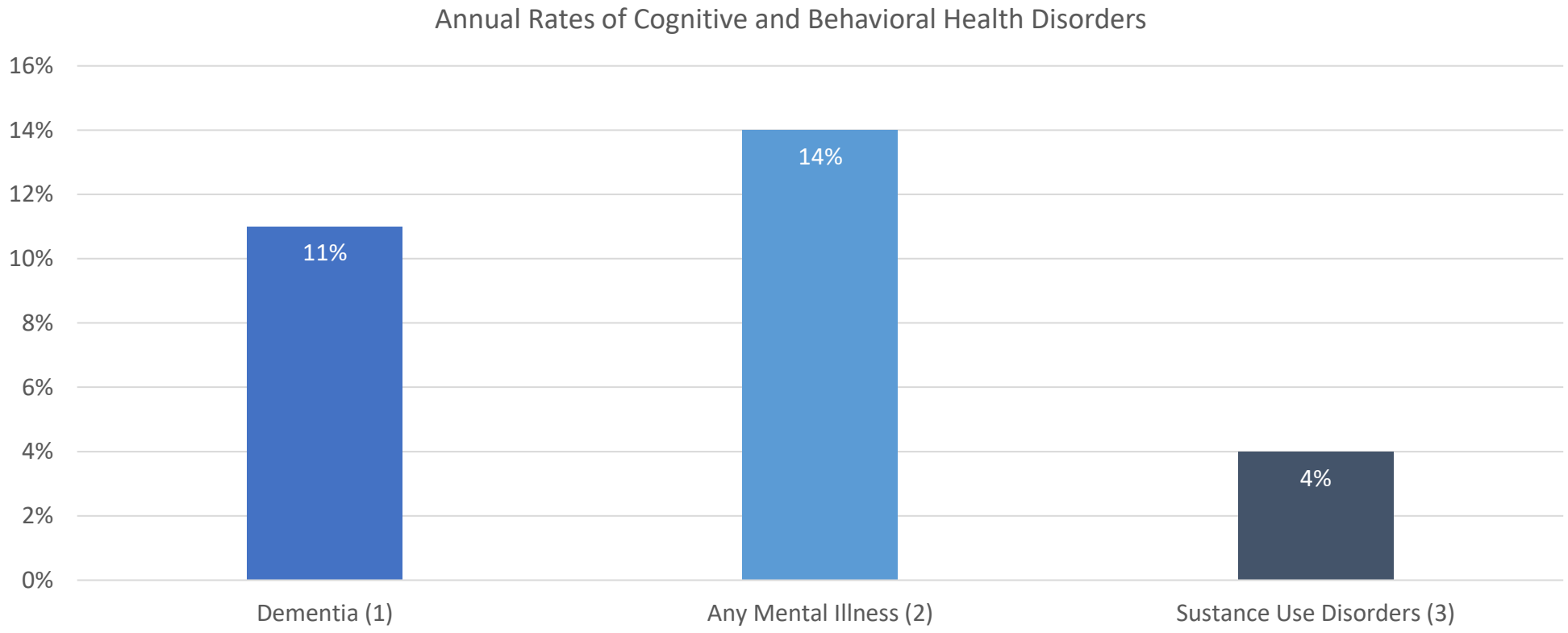
There Are Various Types Of Cognitive and Behavioral Health Conditions

- Alzheimer's Disease and Other Dementias
- Severe and Persistent Mental Illness
- Late-life Psychotic Conditions
- Severe Anxiety and Depression
- Mild or Moderate Anxiety and Mood Disorders
- Substance Misuse
  - Misuse of alcohol, prescription drugs, and over-the-counter medication
  - Misuse of illegal substances
  - Addictions, including gambling
- Autism and Other Developmental Disabilities
- Lingering cognitive and psychological effects of illnesses, such as COVID, and injuries, such as traumatic brain injuries (TBI)
- Neuro-psychiatric Symptoms Associated with Neurodegenerative Disorders Such As Parkinson's Disease

Types Of Cognitive And Behavioral Health Conditions (Continued)

- Co-Occurring Disorders
  - Behavioral Health With Acute and/or Chronic Physical Health Conditions
  - Dementia With Behavioral Health Disorders
  - Mental With Substance Use Disorders
  - Developmental Disabilities With Dementia and/or Behavioral Health Disorders
  - Other Neurodegenerative Conditions (such as ALS) With Behavioral Disorders
- Emotional Distress In Reaction to Adverse Life Events Such As The Pandemic
- Developmental Challenges of Old Age

Cognitive And Behavioral Health Disorders Are Highly Prevalent Among Older Adults



1. Alzheimer's Association. (2021). *2021 ALZHEIMER'S DISEASE FACTS AND FIGURES.* Retrieved 11 01, 2021, from Alzheimer's Association: https://www.alz.org/media/documents/alzheimers-facts-and-figures.pdf
2. *Mental Health Information, Prevalence of Any Mental Illness.* (2019). Retrieved 11 01, 2021, from National Institute of Mental Health: https://www.nimh.nih.gov/health/statistics/mental-illness#:~:text=Mental%20illnesses%20are%20common%20in,mild%20to%20moderate%20to%20severe
3. Reynolds, K., Pietrzak, R. H., El-Gabalawy, R., Mackenzie, C. S., & Sareen, J. (2015). *Prevalence of psychiatric disorders in U.S. older adults: findings from a nationally representative survey.* Retrieved 11 01, 2021, from National Center for Biotechnology Information: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4329900/

COGNITIVE IMPAIRMENT AND DEMENTIA

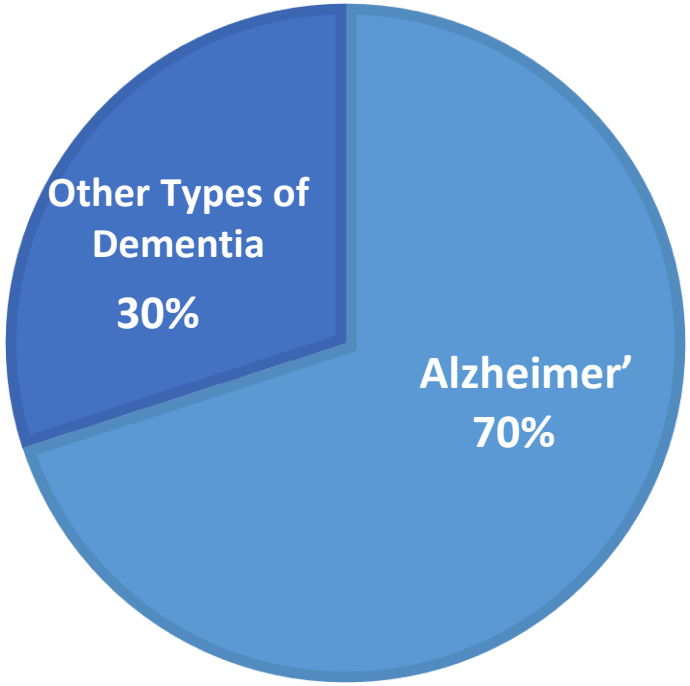
Alzheimer's Disease And Other Dementias Are Characterized By Progressive Loss Of Memory And Other Cognitive Functions

- Mild cognitive impairment with little dysfunction
- Early stage with some dysfunction
- Mid-stage with considerable dysfunction
- Late-stage with severe impairment of memory and cognition

Alzheimer's Association (2020). "Alzheimer's Disease Facts and Figures." https://alz-journals.onlinelibrary.wiley.com/doi/full/10.1002/alz.12068

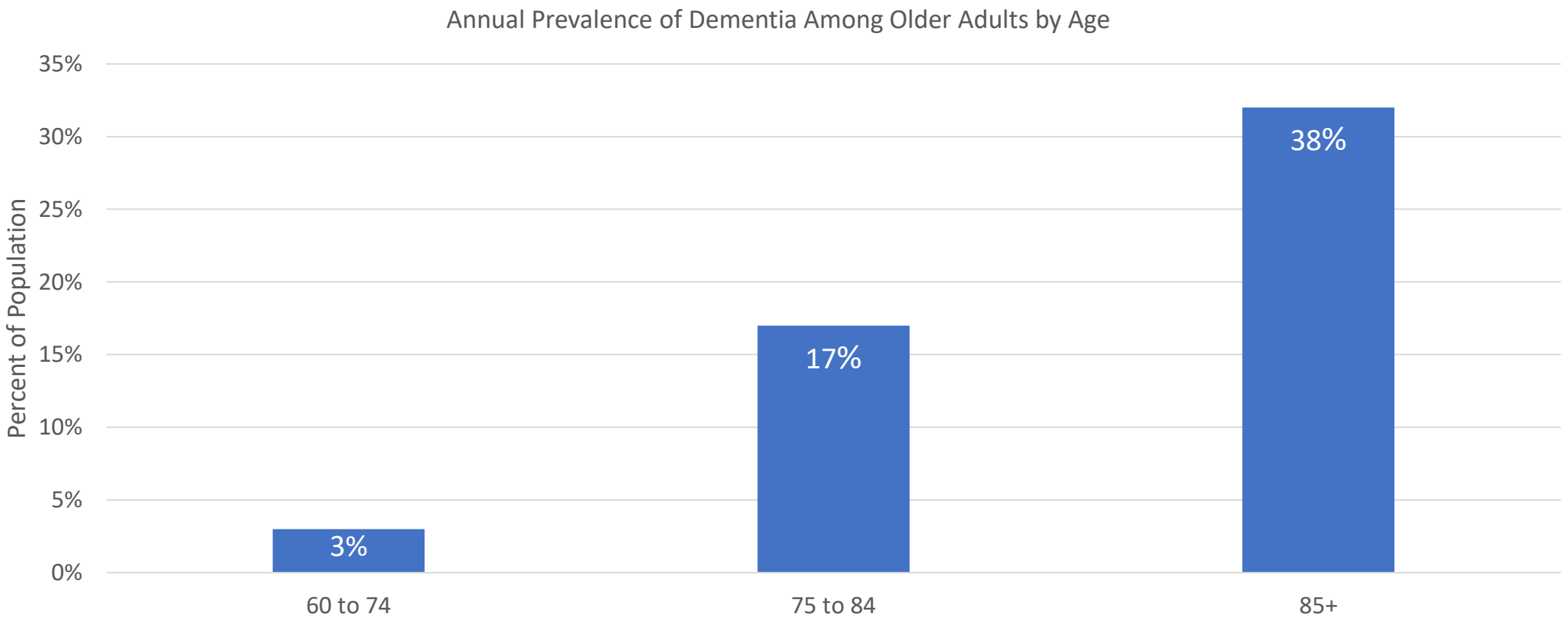
There Are Several Types Of Dementia: Alzheimer's Disease Is The Most Common

- 5 most common types of dementia:
  - Mixed dementia (a combination of two or more types of dementia)
  - Alzheimer's disease
  - Frontotemporal dementia
  - Lewy body dementia
  - Vascular dementia
- Other conditions known to cause dementia/dementia-like symptoms:
  - Argyrophilic brain disease
  - Creutzfeldt-Jakob disease
  - Huntington's disease
  - Chronic traumatic encephalopathy (CTE)
  - HIV-associated dementia
  - Parkinson's disease



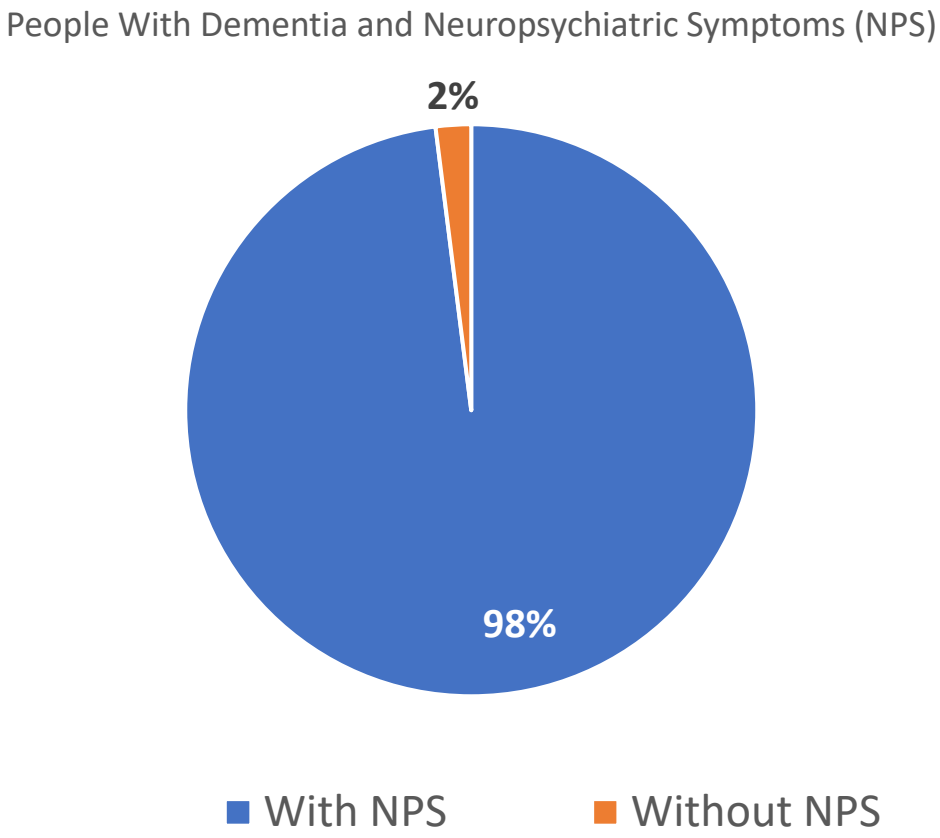
Alzheimer's Association (2020). "Alzheimer's Disease Facts and Figures." https://alz-journals.onlinelibrary.wiley.com/doi/full/10.1002/alz.12068

The Prevalence Of Dementia Increases With Age



Plassman, B.L. et al. (2007). "Prevalence of Dementia in the United States: The Aging, Demographics, and Memory Study" *Neuroepidemiology.* https://pubmed.ncbi.nlm.nih.gov/17975326/

98% of People With Dementia Have Co-Occurring Symptoms of Behavioral Health Conditions



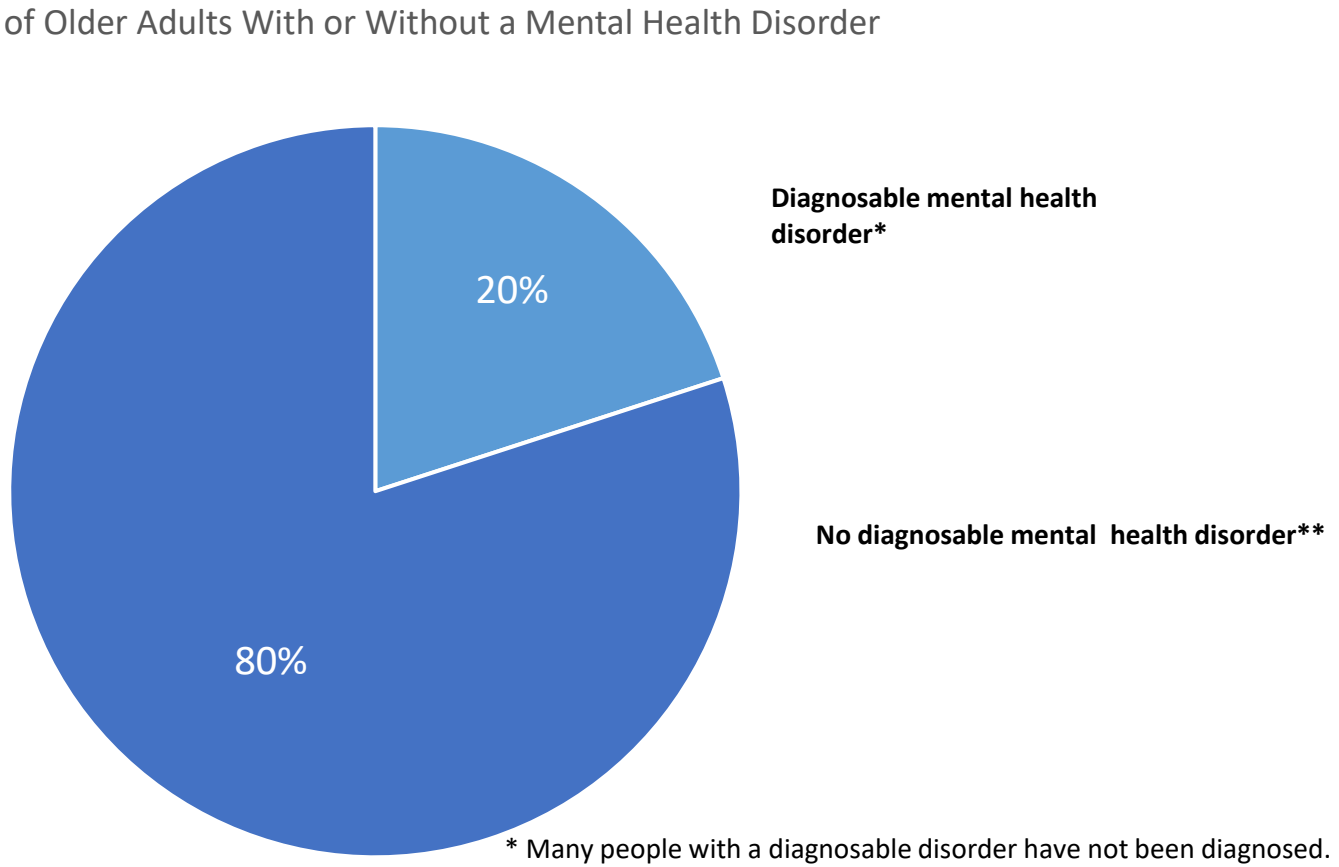
Phan, S. V., Osae, S., Morgan, J. C., Inyang, M., & Fagan, S. C. (2019, June). *Neuropsychiatric Symptoms in Dementia: Considerations for Pharmacotherapy in the USA.* Retrieved 11 02, 2021, from National Center for Biotechnology Information: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6544588/

BEHAVIORAL HEALTH CONDITIONS

There Are Various Types of Behavioral Health Disorders

- Anxiety Disorders
- Depression and other mood disorders
- Psychoses
- Substance misuse and other addictions
  - Alcohol Overuse and Dependence
  - Medication Misuse
  - Misuse of illegal substances
  - Gambling

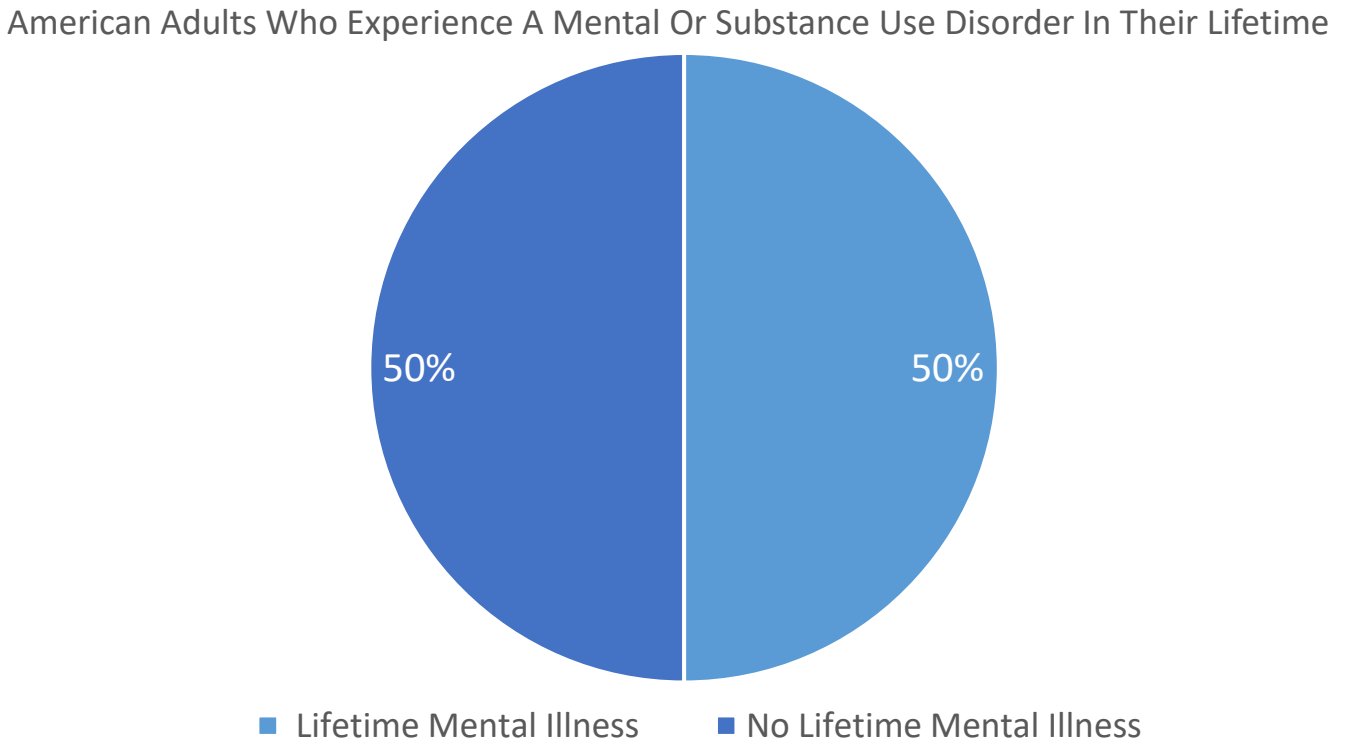
Annually, Approximately 20% Of Older Adults 55+ Have A Mental Disorder



* Many people with a diagnosable disorder have not been diagnosed.
**Many people without a diagnosable disorder suffer from emotional distress.

Centers For Disease Control (2006). "The State of Mental Health and Aging in America." *U.S. Gov.* https://www.cdc.gov/aging/pdf/mental_health.pdf

50% Of American Adults Experience A Mental Or Substance Use Disorder In Their Lifetime



Kessler et al (2005). "Lifetime Prevalence and Age-of-Onset Distributions of DSM-IV Disorders in the National Comorbidity Survey Replication." *Archives of General Psychiatry.* June 2005. https://pubmed.ncbi.nlm.nih.gov/15939837/

There Are Various Types Of Mood & Anxiety Disorders

MOOD DISORDERS

- Major Depressive Disorder
- Psychotic Depression
- Bipolar Disorder
- Persistent Depressive Disorder ("Dysthymia")
- Minor/Subsyndromal Depression
- Seasonal Affective Disorder
- Prolonged Grief

ANXIETY DISORDERS

- Generalized Anxiety Disorder
- Panic disorder
- Phobias
- Post Traumatic Stress Disorder
- Social Anxiety Disorder

1. *Older Adults and Depression*. (n.d.). Retrieved 11 05, 2021, from National Institute of Mental Health: https://www.nimh.nih.gov/health/publications/older-adults-and-depression?platform=hootsuite
2. Depression. (2018, February). Retrieved 11 05, 2021, from National Institute of Mental Health: https://www.nimh.nih.gov/health/topics/depression
3. *Anxiety Disorders*. (2018, July). Retrieved 11 05, 2021, from National Institute of Mental Health: https://www.nimh.nih.gov/health/topics/anxiety-disorders

Anxiety Disorders And Depression Are Highly Prevalent Among Older Adults

Anxiety Disorders [1, 2]	11.4%
Minor "Subsyndromal" Depression [3,4]	15%
Major Depressive Disorder Average [1,2]	4-5.6%

1. Byers, A. L., Yaffe, K., Covinsky, K. E., Friedman, M. B., & Bruce, M. L. (2010, May). *High occurrence of mood and anxiety disorders among older adults: The National Comorbidity Survey Replication*. Retrieved 11 02, 2021, from National Center for Biotechnology Information: https://pubmed.ncbi.nlm.nih.gov/20439830/
2. Reynolds, K., Pietrzak, R. H., El-Gabalawy, R., Mackenzie, C. S., & Sareen, J. (2015). *Prevalence of psychiatric disorders in U.S. older adults: findings from a nationally representative survey.* Retrieved 11 02, 2021, from National Center for Biotechnology Information: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4329900/
3. Vanltallie, T. B. (2005, May). *Subsyndromal depression in the elderly: underdiagnosed and undertreated*. Retrieved 11 02, 2021, from National Center for Biotechnology Information: https://pubmed.ncbi.nlm.nih.gov/15877312/
4. Grabovich, A., Lu, N., Tang, W., Tu, X., & Lyness, J. M. (2010). *Outcomes of subsyndromal depression in older primary care patients*. Retrieved 11 02, 2021, from National Center for Biotechnology Information: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2827819/

Depression Is *Not* Normal In Old Age

- Contrary to common belief, major depressive disorder (MDD) is less common in older adults than in younger adults.[1]
- However, older adults are more likely to experience symptoms of depression, and minor or subsyndromal depression may have as great impact on functioning as major depression.[2]
- Risk of depression is higher for older adults with chronic medical conditions or who are residents of long-term care facilities.[3]
- People with depression and a physical disorder are twice as likely to experience preventable hospitalization and to experience premature disability and/or mortality. [4]

1. Byers, A. L., Yaffe, K., Covinsky, K. E., Friedman, M. B., & Bruce, M. L. (2010). High Occurrence of Mood and Anxiety Disorders among Older Adults: The National Comorbidity Survey Replication. Archives of General Psychiatry.
2. Blazer, DG (2003). Depression in late life: review and commentary. *Journals of Gerontology. Series A, Biological Sciences and Medical Sciences*.
3. Himelhoch, S., Weller, W. E., Wu, A. W., Anderson, G. F., & Cooper, L. A. (2004). Chronic Medical Illness, Depression, and Use of Acute Medical Services Among Medicare Beneficiaries. Medical Care.
4. Fiske, A., Wetherell, J. L., & Gatz, M. (2009). Depression in Older Adults. *Annual Review of Clinical Psychology*.

Major Anxiety And Depressive Disorders Can Have Serious Consequences

- Increased risk of dementia [1]
- Increased risk of disability and premature death due to physical illnesses [2]
- High rates of suicide [2]
- Problems in relationships, loneliness, and isolation [2,3]
- Reduced productivity [2,3]
- Reduced engagement in pleasurable and/or meaningful activities [2, 3]
- High rates of substance use disorders [5,6]
- Higher rates of nursing home admissions than those with dementia alone [4]

1. Byers, A. L., & Yaffe, K. (2011, May 3). *Depression and Risk of Developing Dementia.* Retrieved 11 06, 2021, from National Institutes of Health: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3327554/pdf/nihms-352655.pdf
2. Substance Abuse and Mental Health Services Administration. (2011). *The Treatment of Depression in Older Adults: Depression and Older Adults: Key Issues.* Retrieved 11 06, 2021, from Center for Mental Health Services, Substance Abuse and Mental Health Services Administration: https://store.samhsa.gov/sites/default/files/d7/priv/sma11-4631-keyissues.pdf
3. Friedman, M. B., Furst, L., Gellis, Z. D., & Williams, K. (2012). *Identifying and Treating Anxiety Disorders.* Retrieved 11 06, 2021, from Today's Geriatric Medicine: https://www.todaysgeriatricmedicine.com/archive/050712p14.shtml
4. Fullerton, C. A., McGuire, T. G., Feng, Z., Mor, V., & Grabowski, D. C. (2009, July). *Trends in mental health admissions to nursing homes: 1999–2005.* Retrieved 11 06, 2021, from National Institutes of Health: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2759604/pdf/nihms-148155.pdf
5. Goodwin, R. D., Stayner, D. A., Chinman, M. J., Wu, P., Kraemer Tebes, J., & Davidson, L. (2002, August). *The relationship between anxiety and substance use disorders among individuals with severe affective disorders*. Retrieved 11 13, 2021, from National Center for Biotechnology Information: https://pubmed.ncbi.nlm.nih.gov/12107861/
6. Quello, S. B., Brady, K. T., & Sonne, S. (2005, December). *Mood Disorders and Substance Use Disorder: A Complex Comorbidity*. Retrieved 11 13, 2021, from National Center for Biotechnology Information: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2851027/

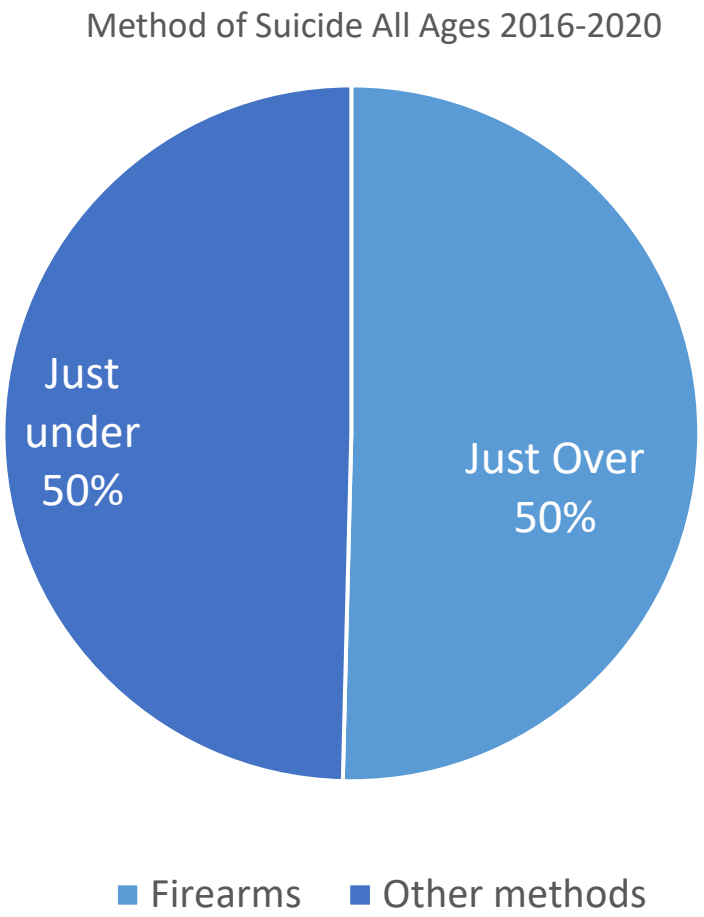
From 2016-2020 The Rate of Suicide In The US Generally Increased With Age, Peaking In Men 85+

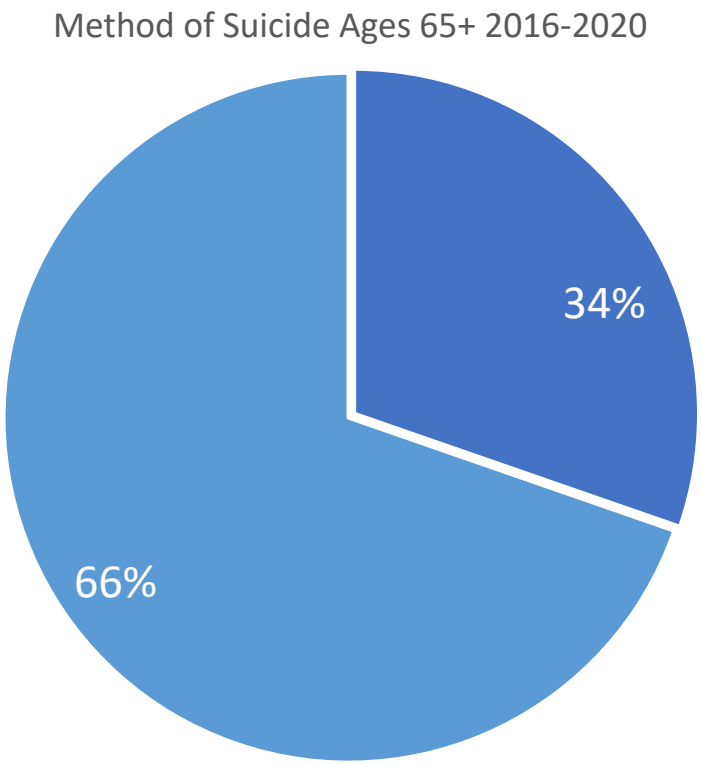
Rates of Suicide By Age in Maryland 2016-2020 (Per 100,000)

Age	Suicide Rate	Female Suicide Rate	Male Suicide Rate
All Ages	14.33	6.14	22.77
15-24	14.06	5.67	22.07
25-39	17.59	7.31	27.64
40-49	18.50	9.09	28.06
50-64	19.22	9.31	29.71
65+	17.04	5.16	32.77
75+	18.84	4.07	39.87
85+	19.84	3.49	**49.33**

Source: *Fatal Injury Reports.* (2022). Retrieved 4/6/2022, from Centers for Disease Control and Prevention: https://wisqars.cdc.gov/fatal-reports

In 2020, 50% Of Completed Suicides Involved Guns But 2/3 Of Older Adults Who Completed Suicide Used Guns





Centers for Disease Control and Prevention (2022). "Fatal Injury Data and Visualization." *Web-based Injury Statistics Query And Reporting System (WISQARS).* https://www.cdc.gov/injury/wisqars/fatal.html

People With Severe Mental Illness Are At High Risk For Serious Physical Disorders And Have Low Life Expectancy [1]

- People with severe mental illness are at high risk of serious physical health conditions and low life expectancy due to:
  - High rates of smoking, obesity, diabetes, and heart disease [1, 2]
  - High rates of substance abuse (about 50% lifetime) [3]
  - Lingering effects of homelessness and crime victimization [4]
  - Poor access to adequate physical health care [5]
  - Behaviors and lifestyles that increase health risk [6]
  - High suicide rates (8.5 times the general population) [7]
- They are also at elevated risk for dementia. [8]
- People with severe mental illness often rely on special housing and on public income supports to be able to live in the community. [9]

1. World Health Organization (Undated). "Premature Death Among People With Severe Mental Disorders" info_sheet.pdf (who.int)
2. Tam, J. et al (2016). "Smoking and the Reduced Life Expectancy of Individuals With Serious Mental Illness" in *American Journal of Preventive Medicine*, December 2016. Smoking and the Reduced Life Expectancy of Individuals With Serious Mental Illness - PubMed (nih.gov)
3. Menne, V. and Chesworth R. (2020). "Schizophrenia and Drug Addiction Co-Morbidity: Recent Advances in Our Understanding of Behavioral Susceptibility and Neural Mechanisms" in Neuroanatomy and Behaviour, 2020. Schizophrenia and drug addiction comorbidity: recent advances in our understanding of behavioural susceptibility and neural mechanisms | Neuroanatomy and Behaviour (epistemehealth.com)
4. Newman, J. M., et al (2010). "Impact of Traumatic and Violent Victimization Experiences in Individuals With Schizophrenia and Schizoaffective Disorder" in *The Journal of Nervous and Mental Disease,* October 2010. Impact of traumatic and violent victimization experiences in individuals with schizophrenia and schizoaffective disorder - PubMed (nih.gov)
5. Bartels, S. J. (2004). "Caring for the Whole Person: Integrated Health Care for Older Adults with Severe Mental Illness and Medical Comorbidity" in *Journal of the American Geriatrics Society.* Caring for the whole person: integrated health care for older adults with severe mental illness and medical comorbidity - PubMed (nih.gov)
6. Yasami, M. T., et al (2014). LIVING A HEALTHY LIFE WITH SCHIZOPHRENIA: PAVING THE ROAD TO RECOVERY. *World Mental Health Day 2014 Living with Schizophrenia*. http://www.who.int/mental_health/world-mental-health-day/paper_wfmh.pdf
7. Pompili, M., et al (2007). Suicide risk in schizophrenia: Learning from the past to change the future. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1845151/
8. Brown, M and Wolf, D. (2018). "Estimating the Prevalence of Serious Mental Illness and Dementia …" in *Research in Aging*, August 2018. Smoking and the Reduced Life Expectancy of Individuals With Serious Mental Illness - PubMed (nih.gov)
9. Friedman, M et al (2019). "Schizophrenia in Later Life: Public Policy Issues in the United States". Chapter 18 in Cohen, C and Meesters, P. *Schizophrenia and Psychoses in Later Life: New Perspectives on Treatment, Research, and Policy.* Cambridge University Press, 2019. Schizophrenia_in_Later_Life_PF.pdf (michaelbfriedman.com)

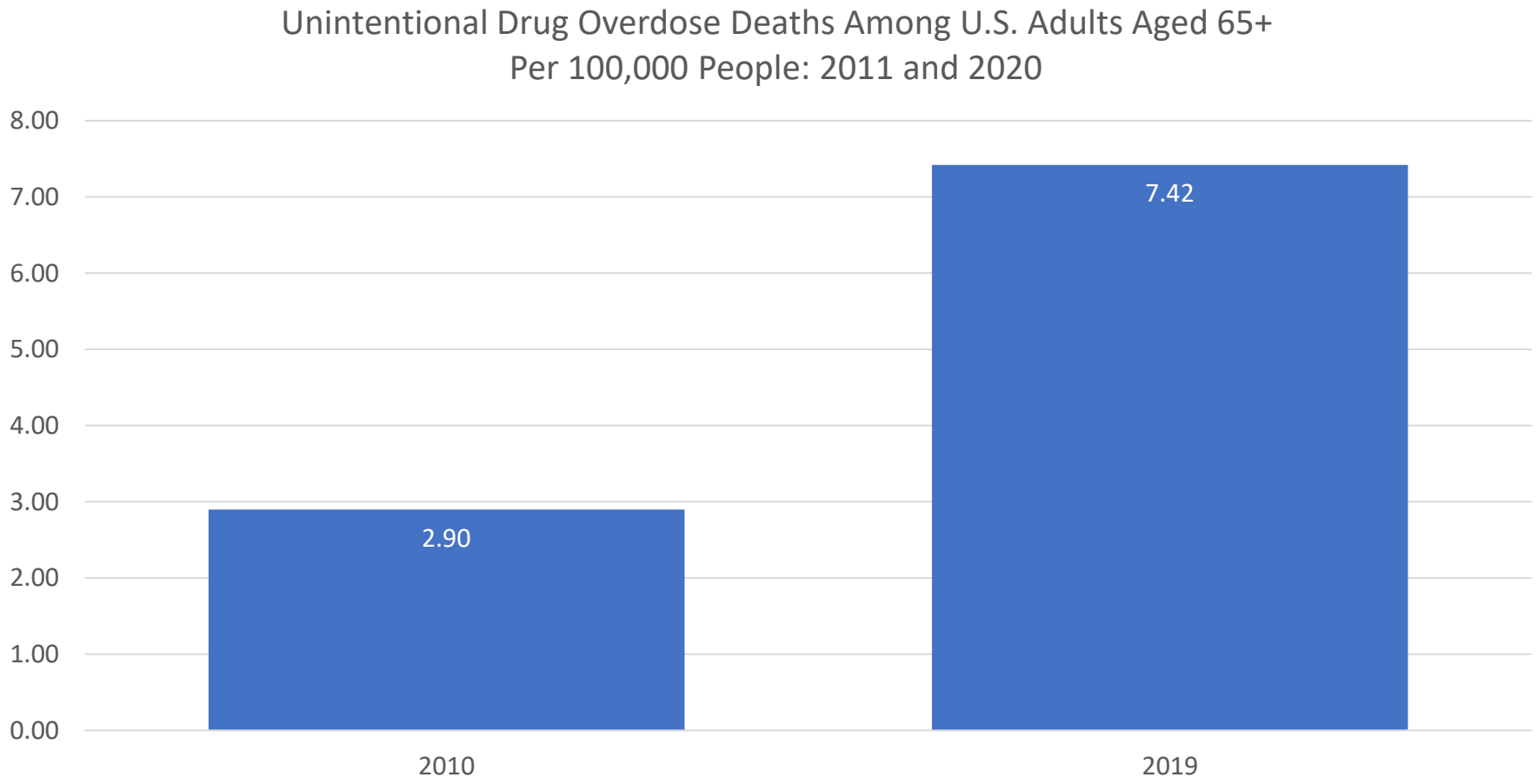
Misuse Of Alcohol, Medications, And Illegal Substances Can Be Extremely Dangerous To Older Adults [1, 2]

- Nearly 1 million adults aged 65 and older live with **substance use disorder** as reported in 2018 data.[7]
- Approximately 14.5% of older adults consume more **alcohol** than is recommended by health authorities [1] with high risks of falls[3] and other accidents as well as physical illnesses.
- An estimated 3.6% to 7.2% of older adults age 50+ used **illegal drugs** between 2002-2012, including heroin, cocaine, methamphetamine and cannabis. [1, 4]
- The **drug overdose epidemic** has impacted everyone of all ages and has not left the older adult population untouched.[6]

- Use of **cannabis**, the most commonly used "illegal" substance, is expected to rise due to relatively higher use by the baby boomer population and to the legalization of cannabis for medical and recreational purposes.[2, 3]
- **Prescription opioids** sometimes result in addiction, overdoses, and later heroin use.[5]
- The misuse of **prescription** and/or over-the-counter **medications** by older adults can result In injury, addiction, or death.[1, 4]

1. Lehmann, S. W., & Fingerhood, M. (2018, December). *Substance-Use Disorders in Later Life.* Retrieved from New England Journal of Medicine: https://www.nejm.org/doi/10.1056/NEJMra1805981
2. Blanco, C., & Lennon, I. (2021). *Substance Use Disorders in Older Adults: Overview and Future Directions.* Retrieved 11 06, 2021, from American Society on Aging: https://generations.asaging.org/substance-use-disorders-older-adults-overview
3. *Facts About Aging and Alcohol.* (2017). Retrieved 11 06, 2021, from National Institute on Aging: https://www.nia.nih.gov/health/facts-about-aging-and-alcohol
4. Wu, L.-T., & Blazer, D. G. (2011, April). *Illicit and Nonmedical Drug Use Among Older Adults: A Review.* Retrieved 11 06, 2021, from National Institutes of Health: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3097242/pdf/nihms288551.pdf
5. National Institute on Drug Abuse; National Institutes of Health; U.S. Department of Health and Human Services. (2018, January). *Prescription Opioids and Heroin Research Report.* Retrieved 11 06, 2021, from National Institute on Drug Abuse: https://www.drugabuse.gov/download/19774/prescription-opioids-heroin-research-report.pdf?v=fc86d9fdda38d0f275b23cd969da1a1f
6. *Overdose Death Rates.* (2021, January). Retrieved 11 06, 2021, from National Institute on Drug Abuse: https://www.drugabuse.gov/drug-topics/trends-statistics/overdose-death-rates
7. NIDA. (2020, July 9). *Substance Use in Older Adults DrugFacts.* Retrieved 11 23, 2021, from National Institutes of Health: https://www.drugabuse.gov/publications/substance-use-in-older-adults-drugfacts

In The U.S. From 2011 To 2020, The Rate Of Overdose Deaths Among Older Adults Rose 250%



Centers for Disease Control and Prevention (2021). "Fatal Injury Data and Visualization." *Web-based Injury Statistics Query And Reporting System (WISQARS).* https://www.cdc.gov/injury/wisqars/fatal.html

Traumatic Brain Injuries Contribute To The Development Of Cognitive and Behavioral Health Conditions

- The incidence of traumatic brain injury is increasing. [1, 2, 3]
- Traumatic brain injuries contribute to early development of dementia and other neurodegenerative disorders. [4]
- Traumatic brain injuries contribute to the development of mood and anxiety disorders including PTSD. [5,6]

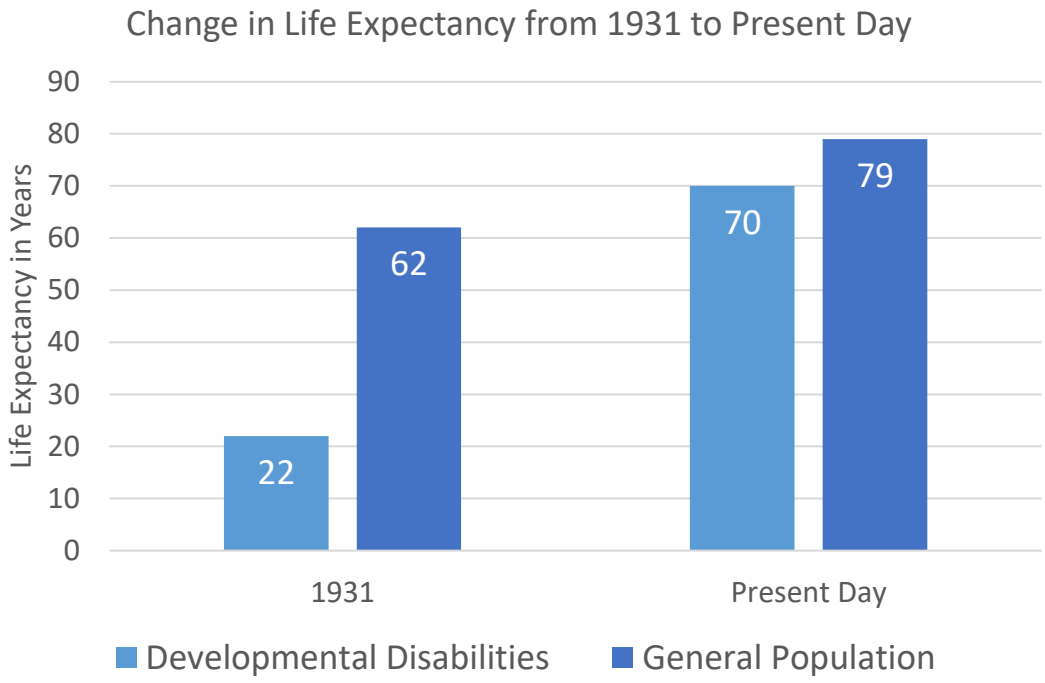
1. Centers for Disease Control and Prevention. Traumatic Brain Injury and Concussion. 2016. https://www.cdc.gov/traumaticbraininjury/data/index.html.
2. Albrecht JS, Hirshon JM, McCunn M, et al. Increased rates of mild traumatic brain injury among older adults in US emergency departments, 2009-2010. *J Head Trauma Rehab*. 2016;31:E1-E7.
3. Taylor CA, Bell JM, Breiding MJ, Xu L. Traumatic brain injury-related emergency department visits, hospitalizations, and deaths: United States, 2007 and 2013. *MMWR Surveill Summ*. 2017.
4. LoBue C. et al. (2018) "Neurodegenerative Dementias After Traumatic Brain Injury" in *The Journal of Neuropsychiatry Clin Neurosci*
5. Albrecht JS, Peters ME, Smith GS, Rao V. Anxiety and posttraumatic stress disorder among medicare beneficiaries after traumatic brain injury. *J Head Trauma Rehab*. 2017;32:178-184.
6. Gardner RC, Dams-O'Connor K, Morrissey MR, Manley GT. Geriatric Traumatic Brain Injury: Epidemiology, Outcomes, Knowledge Gaps, and Future Directions. *J Neurotrauma*. 2018;35(7):889-906. doi:10.1089/neu.2017.5371

Many People With Developmental Disabilities Now Survive Into Old Age

Historically, people with developmental disabilities died at younger ages.

- Recently, individuals with developmental disabilities have experienced a dramatic increase in lifespan.

- The average life expectancy for people with a developmental disability was 22 years in 1931, compared to 62 years for the general population.[1] Now, their average life expectancy is 70, which is approaching that of the general population, about 79 years in 2018. [1, 2]



1. Association On Aging With Developmental Disabilities (2021). "About Us." https://www.agingwithdd.org/about/
2. Centers for Disease Control and Prevention: National Center for Health Statistics (2021). "Life Expectancy Fast Stats." https://www.cdc.gov/nchs/fastats/life-expectancy.htm

Emotional Reactions To Adverse Life Circumstances, Including Social Determinants and Personal Trauma

Emotional Reactions Include:

- Grief
- Fear for self or loved ones
- Loneliness/sense of isolation
- Economic dIstress
- Loss of a sense of control
- Sense of uncertainty
- Sense of helplessness
- Sadness and hopelessness
- Demoralization
- Apathy
- Anger
- Sense of bigotry and injustice
- Stress for working parents
- Stress for grandparents
- Stress for family caregivers
- Family tension and violence
- Overuse of alcohol and/or drugs
- Exacerbation of pre-existing mental conditions
- Sleep disturbance
- Eating disturbance
- Thoughts of suicide

Developmental Emotional Challenges Of Old Age

- Retirement and other role changes
  - Finding meaningful activities
- Decreasing social connections and increasing social isolation as friends and family move away or die
  - Developing new relationships, including intimate relationships
- Dealing with loss and grief
- Living with declining physical and mental capabilities, with chronic health conditions, and with pain
- Tolerating increasing risk of dependency
- Reconciliation with one's past despite regrets and disappointments
- Coming to terms with the inevitability of death

1. Agronin, M. (2011). *How We Age: A Doctor's Journey Into The Heart of Growing Old.* Da Capo Press. https://www.marcagronin.com/book/how-we-age/
2. Erikson E. (1982). *The Life Cycle Completed.* WW Norton. https://wwnorton.com/books/9780393317725
3. Vaillant, G. (2002) *Aging Well.* Little, Brown. https://www.amazon.com/Aging-Well-Surprising-Guideposts-Development/dp/0316090077

Co-occurring Disorders Are Highly Prevalent Among Older Adults, Contributing To Higher Rates of Disability, Premature Death, and High Medical Costs

- Types of co-occurring conditions
  - Co-occurring dementia and neuro-psychiatric symptoms including depression and anxiety[1,2]
  - Co-occurring types of mental disorders, e.g., depression and anxiety[3]
  - Co-occurring mental and substance use disorders[4]
  - Co-occurring acute/chronic physical and behavioral health conditions[5,6,7]
- Older adults with co-occurring disorders are at high risk for premature disability and death [8]
- Older adults with co-occurring disorders require more care leading to high health care costs [9]

1. Lyketsos, C., et al. (2005). *Population-Based Study of Medical Comorbidity in Early Dementia and "Cognitive Impairment, No Dementia (CIND)": Association With Functional and Cognitive Impairment: The Cache County Study.* Retrieved 11 06, 2021, from The American Journal of Geriatric Psychiatry: https://www.ajgponline.org/article/S1064-7481(12)60933-6/fulltext
2. Onyike, C. U. (2016). *Psychiatric Aspects of Dementia*. Retrieved 11 13, 2021, from National Center for Biotechnology Information: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5390928/
3. Byers, A. L., Yaffe, K., Covinsky, K. E., Friedman, M. B., & Bruce, M. L. (2010). *High Occurrence of Mood and Anxiety Disorders Among Older Adults: The National Comorbidity Survey Replication*. Retrieved 11 06, 2021, from JAMA Psychiatry: https://jamanetwork.com/journals/jamapsychiatry/article-abstract/210776
4. Bartels, S. J., Blow, F. C., Van Citters, A. D., & Brockmann, L. M. (2008). *Dual Diagnosis Among Older Adults: Co-Occurring Substance Abuse and Psychiatric Illness*. Retrieved 11 13, 2021, from Taylor & Francis Online: https://www.tandfonline.com/doi/pdf/10.1300/J374v02n03_03?needAccess=true
5. Dual Diagnosis Among Older Adults: Co-Occurring Substance Abuse and Psychiatric Illness: Journal of Dual Diagnosis: Vol 2, No 3 (tandfonline.com)
6. El-Gabalawy, R., Mackenzie, C. S., Shooshtari, S., & Sareen, J. (2011). *Comorbid physical health conditions and anxiety disorders: a population-based exploration of prevalence and health outcomes among older adults.* Retrieved 11 07, 2021, from National Center for Biotechnology Information: https://pubmed.ncbi.nlm.nih.gov/21908055/
7. Mills, T. L. (2001, September). *Comorbid depressive symptomatology: isolating the effects of chronic medical conditions on self-reported depressive symptoms among community-dwelling older adults.* Retrieved 11 07, 2021, from National Center for Biotechnology Information: https://pubmed.ncbi.nlm.nih.gov/11478537/
8. Fiske, A., Loebach Wetherell, J., & Gatz, M. (2009). *Depression in Older Adults.* Retrieved 11 07, 2021, from Annual Reviews of Clinical Psychology: https://www.annualreviews.org/doi/pdf/10.1146/annurev.clinpsy.032408.153621
9. Wammes, J., van der Wees, P., Tanke, M., & et al. (2018). *Systematic review of high-cost patients' characteristics and healthcare utilisation*. Retrieved 11 13, 2021, from BMJ Open: https://bmjopen.bmj.com/content/bmjopen/8/9/e023113.full.pdf

Despite Common Emotional Challenges In Old Age, Psychological Well-Being Is The Norm And Older Adults Are Often A Resource Rather Than A Burden[1, 2]

- Personality traits that support well-being include: a positive attitude, optimism, adaptability, and resilience.
- Satisfying social relationships are a key element of well-being.
- Engaging activities that provide pleasure and/or meaning are also key to well-being
  - Grandparenting
  - Volunteering or working for pay
  - Civic/political activity
  - Creative arts
  - Self-improvement: education, hobbies including sports
- A sense of self-worth is a key element of psychological well-being.
- Self-care: exercise, eating well, sleeping well
- Complementary practices: yoga, meditation, and the like

1. Friedman, M. B., Furst, L., & Williams, K. (2015, February). *Physicians Promote Successful Aging*. Retrieved 11 15, 2021, from Today's Geriatric Medicine: https://www.todaysgeriatricmedicine.com/archive/0115p20.shtml
2. Jeste, D. V., Depp, C. A., & Vahia, I. V. (2010, June). *Successful cognitive and emotional aging*. Retrieved 11 15, 2021, from National Center for Biotechnology Information: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2912035/

POPULATIONS AT HIGH RISK OF COGNITIVE AND BEHAVIORAL HEALTH CONDITIONS

The COVID-19 Pandemic Highlighted The Psychological Vulnerability Of Many Older People

- Although fewer older adults report emotional distress in response to the pandemic than younger adults, **nearly ½ report significant levels of distress and ¼ report symptoms of depression or anxiety disorders**.
- Especially vulnerable older adults include but are not limited to:

  - Those with dementia and/or other disabilities
  - Those with pre-existing serious and persistent mental illness
  - Those with substance use disorders
  - Those in long-term residential care
  - Those confronting severe illness or death
  - Those in social isolation
  - Older adults who are Black, Indigenous, and/or People of color
  - People living in economic instability
  - Informal caregivers

Koma W. et al. (2020). "One in Four Older Adults Report Anxiety or Depression Amid the COVID-19 Pandemic." Kaiser Family Foundation, October, 2020. https://www.kff.org/medicare/issue-brief/one-in-four-older-adults-report-anxiety-or-depression-amid-the-covid-19-pandemic/

Loneliness And Social Isolation Increase Risks Of Physical, Cognitive, And/Or Behavioral Health Disorders

- Social isolation significantly increases a person's risk of premature death from all causes, a risk that may rival those of smoking, obesity, and physical inactivity.[1]
- Social isolation is associated with about a 50% percent increased risk of dementia.[1]
- Loneliness is associated with higher rates of depression, anxiety, and suicide.
- Poor social relationships are associated with a 29% increased risk of heart disease and a 32% increased risk of stroke.[1]
- Loneliness among heart failure patients is associated with a nearly 4 times increased risk of death, 68% increased risk of hospitalization, and 57% increased risk of emergency department visits.[1]

1. CDC November 2020 - https://www.cdc.gov/aging/publications/features/lonely-older-adults.html
2. National Academies of Sciences, Engineering, and Medicine. *Social Isolation and Loneliness in Older Adults: Opportunities for the Health Care System*. Washington, DC: The National Academies Press. https://doi.org/10.17226/25663external icon 2020,

Family Caregivers Of People With Mental Disabilities Are At High Risk For Anxiety Disorders, Depression, And Burn-Out

- Family members and friends provide basic care for people with
  - Dementia
  - Psychiatric Disabilities Due to Severe Mental Illness
  - Autism and Other Developmental Disabilities

- Informal caregivers are at high risk for depression, anxiety disorders, physical ailments and burn-out, resulting in premature institutionalization.

- Their ability to provide care diminishes as they age, particularly if they become disabled themselves.

Family Caregiver Alliance (2006). Caregiver Health. https://www.caregiver.org/resource/caregiver-health/

Cognitive And Behavioral Health Disorders Are Highly Prevalent In Nursing Homes And Assisted Living Facilities

- **Nursing Homes** [1, 2, 3]
  - About 2/3 of nursing home residents are cognitively impaired.
  - Most of those with cognitive impairment also have neuropsychiatric symptoms.
  - Many nursing home residents have a primary diagnosis of serious mental illness.

- **Assisted Living Facilities** [4, 5]
  - About 2/3 of those in assisted living have some dementia, most with co-occurring neuro-psychiatric symptoms.
  - Over 20% have a psychiatric disorder other than dementia or cognitive impairment.

1. Seitz, D. et al. (2010). "Prevalence Of Psychiatric Disorders Among Older Adults In Long-Term Care Homes: A Systematic Review." *International Psychogeriatrics.* November 22, 2010. https://pubmed.ncbi.nlm.nih.gov/20522279/
2. Gaughler, J. et al (2014). "Alzheimer's Disease and Nursing Homes" in *Health Affairs* April 2014 Alzheimer's Disease And Nursing Homes | Health Affairs
3. Centers for Disease Control. National Center for Health Statistics. (2019). *Long-term Care Providers and Users In the United States 2015-2016: Analytical and Epidemiological Studies.*
4. Rosenblatt R. et al. (2004). "The Maryland Assisted Living Study: Prevalence, Recognition, And Treatment Of Dementia And Other Psychiatric Disorders In The Assisted Living Population Of Central Maryland." http://www.hopkinsmedicine.org/Press_releases/2004/10_04c_04.html
5. Zimmerman, S. et al (2014). "Dementia Prevalence and Care in Assisted Living" in *Health Affairs,* April 2014. Dementia Prevalence And Care In Assisted Living | Health Affairs

Black And Latino Older Adults Are At Higher Risk Of Developing Dementia [1] They Also Have More Limited Access To Behavioral Health Services [2]

- **Dementia**
  - Black older adults are about two times, and Latinos are about one and one-half times, more likely than Whites to have Alzheimer's and other dementias.
  - Although the rate of Alzheimer's and other dementias among Black and Latino older adults is higher than among Whites, they are less likely than Whites to have a diagnosis of the condition.
  - Physical conditions, such as high blood pressure and diabetes, rather than genetic factors appear to account for the greater prevalence of Alzheimer's among Black and Latino older adults.
  - It is likely that improved access to high quality health care could reduce the prevalence of dementia among Black and Latino older adults.
- **Mental and Substance Use Disorders**
  - Rates of mental illnesses among Black Americans are similar with those of the general population. Rates for Latino-Americans is somewhat lower. However, both Latinos and Blacks generally receive poorer quality of care that White non-Hispanics and lack access to culturally competent care.
  - Rates of substance use disorders among these populations are about the same as White non-Hispanics. Studies of disparities in the use of public behavioral health services reveal complex patterns of use and completion of services that vary by race, ethnicity, and socio-economic status.[3]

1. Alzheimer's Association (2020) "Race, Ethnicity, and Alzheimer's" An Alzheimer's Impact Movement Fact Sheet. Race, Ethnicity, and Alzheimer's
2. American Psychiatric Association Mental Health Disparities
3. https://academic.oup.com/innovateage/article/4/6/igaa051/5939962

Poverty Is Associated With Increased Risk Of Dementia, Mental Illness, and Suicide

- Poverty is associated with increased risk of dementia. There may be intervening variables such as poor diet and loss of control of finances due to dementia. [1, 2]
- People living in poverty are at higher risk for developing mental illness, and people with mental illness are at higher risk of becoming impoverished, a "vicious cycle".[2]
- People living in neighborhoods with high rates of poverty have less access to physical and behavioral health care.[3]
- Mental illness is associated with lower levels of household income. [4]
- "Suicide rates in the U.S. are closely correlated to poverty rates" [5]

1. Powell, W.R. et al. (2020). "Association of Neighborhood-Level Disadvantage With Alzheimer Disease Neuropathology" in *JAMA Network Open, 3(6).* *https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2767007*
2. Samuel, L. et al (2020). "Socioeconomic disparities in six-year incident dementia in a nationally representative cohort of U.S. older adults: an examination of financial resources" in *BMC Geriatrics , May 2020.*
3. Simon K.M. et al. (2018). "Addressing Poverty and Mental Illness" in *Psychiatric Times*, 35(6). https://www.psychiatrictimes.com/view/addressing-poverty-and-mental-illness
4. Sareen, et al. Relationship Between Household Income and Mental Disorders Findings From a Population-Based Longitudinal Study
5. Kerr, et al. Economic Recession, Alcohol, and Suicide Rates: Comparative Effects of Poverty, Foreclosure, and Job Loss

Women Are At Higher Risk Than Men For Some (But Not All) Cognitive and Behavioral Health Disorders

- As they age, women become more at risk of social isolation than men.[1]
- Women are at higher risk of dementia than men and of faster decline after diagnosis [2]
- Women are at higher risk than men of anxiety and depression but of lower risk of substance use disorders.[3]
- Women are 1.75 times more likely than men to attempt suicide. [4]
- Older men are almost 5 x more likely to complete suicide than are women.[5]

1. The Health and Medical Dimensions of Social Isolation and Loneliness in Older Adults. Nationalacademies.org. (n.d.). Retrieved February 27, 2022, from https://www.nationalacademies.org/our-work/the-health-and-medical-dimensions-of-social-isolation-and-loneliness-in-older-adults

2. Beam, C. R., Kaneshiro, C., Jang, J. Y., Reynolds, C. A., Pedersen, N. L., & Gatz, M. (2018). Differences between women and men in incidence rates of dementia and alzheimer's disease. *Journal of Alzheimer's Disease*, *64*(4), 1077–1083.

3. Eaton, N. R., Keyes, K. M., Krueger, R. F., Balsis, S., Skodol, A. E., Markon, K. E., Grant, B. F., & Hasin, D. S. (2012). An invariant dimensional liability model of gender differences in mental disorder prevalence: evidence from a national sample. *Journal of abnormal psychology*, *121*(1), 282–288. https://doi.org/10.1037/a0024780

4. SAMHSA. (2019). *2019 National Survey of Drug Use and Health (NSDUH) releases*. SAMHSA. Retrieved February 27, 2022, from https://www.samhsa.gov/data/release/2019-national-survey-drug-use-and-health-nsduh-releases

5. Centers for Disease Control and Prevention. (2021, December 2). *WISQARS (web-based injury statistics query and reporting system)|injury center|cdc*. Centers for Disease Control and Prevention. Retrieved February 27, 2022, from https://www.cdc.gov/injury/wisqars/index.html

Older Adults Are At High Risk For Trauma Which Increases Risks for Dementia and Mental Disorders

- 10-15% of older adults are victims of elder abuse [1, 2]
- Many older adults experience other forms of trauma, such as injuries from falls and deaths of loved ones [3]
- Traumatic experiences in old age can result in PTSD and other anxiety and mood disorders [3]
- PTSD contributes to the development of dementia and vice versa.[4]
- People with dementia are at increased risk of elder abuse.[5]

1. Centers for Disease Control and Prevention. (2021, June 2). *Elder abuse|violence prevention|injury Center|CDC*. Centers for Disease Control and Prevention. Retrieved February 27, 2022, from https://www.cdc.gov/violenceprevention/elderabuse/index.html
2. World Health Organization (2021). "Elder Abuse Key Facts." https://www.who.int/news-room/fact-sheets/detail/elder-abuse
3. Kusmaul, N. and Anderson, K (2018). "Applying a Trauma-Informed Perspective to Loss and Change in the Lives of Older Adults" in *Social Work in Health Care*, March 2018. https://www.tandfonline.com/doi/10.1080/00981389.2018.1447531
4. Desmarais, P., & Weidman, D. (2019, August 9). *The Interplay Between Post-traumatic Stress Disorder and Dementia: A Systematic Review*. The American Journal of American Psychiatry. Retrieved February 27, 2022, from https://www.ajgponline.org/article/S1064-7481(19)30469-5/fulltext
5. Dong, et al. (2014, April 1). *Elder abuse and dementia: A review of the Research and Health Policy: Health Affairs Journal*. Health Affairs. Retrieved February 27, 2022, from https://www.healthaffairs.org/doi/full/10.1377/hlthaff.2013.1261#:~:text=Physical%20abuse%20was%20estimated%20to,greater%20levels%20of%20cognitive%20impairment.

Veterans Are At Significant Risk Of Complex, Co-Occurring Physical, Cognitive, And Behavioral Disorders

- Older veterans have co-occurring medical, mental health, and substance use disorders, and cognitive impairments more frequently than younger veterans. [1]
- Rates of post-traumatic stress disorder (PTSD) are highest among Vietnam-era veterans. [1]
- In 2018, the rate of suicide among veterans was 32.0 per 100,000, compared with 17.2 per 100,000 for nonveterans. [2]
- Alcohol and substance use disorders are more common among veterans than non-veterans and frequently co-occur with mental disorders, especially PTSD.
- Despite higher rates of PTSD, older veterans are less likely to seek mental health services, than younger veterans. [1]
- This willingness to seek services will likely continue as this cohort ages and will require a system designed to support the increased care needs of the aging veteran population. [1]

1. O'malley, K. et al. (2019). "Mental Health and Aging Veterans: How the Veterans Health Administration Meets the Needs of Aging Veterans" *Public Policy & Aging Report*. https://academic.oup.com/ppar/article/30/1/19/5687922
2. Ramchand, R. (2021). "Suicide Among Veterans: Veterans' Issues in Focus" RAND Corporation. https://www.rand.org/pubs/perspectives/PEA1363-1.html
3. National Institute on Drug Abuse (2019). Substance Use and Military Life Drug Facts. https://www.drugabuse.gov/publications/drugfacts/substance-use-military-life

Older LGBTQ+ Are Less Likely To Be Diagnosed And Treated For Cognitive Impairment And At Higher Risk For Behavioral Health Disorders

- Older LGBTQ+ individuals are more likely to experience emotional distress leading to anxiety, depression and substance use due to lifetime exposure to stigma and discrimination.[1]
- Older LGBTQ+ individuals are less likely to get adequate cognitive and behavioral health care including culturally competent diagnosis and treatment.[3]
- Older LGBTQ+ individuals are less likely to receive informal caregiving due to being less likely to have children and having smaller social support networks.[2, 3]
- Outcomes vary greatly depending on geography, race, economic status, education and specific sexual and gender identities.

There are

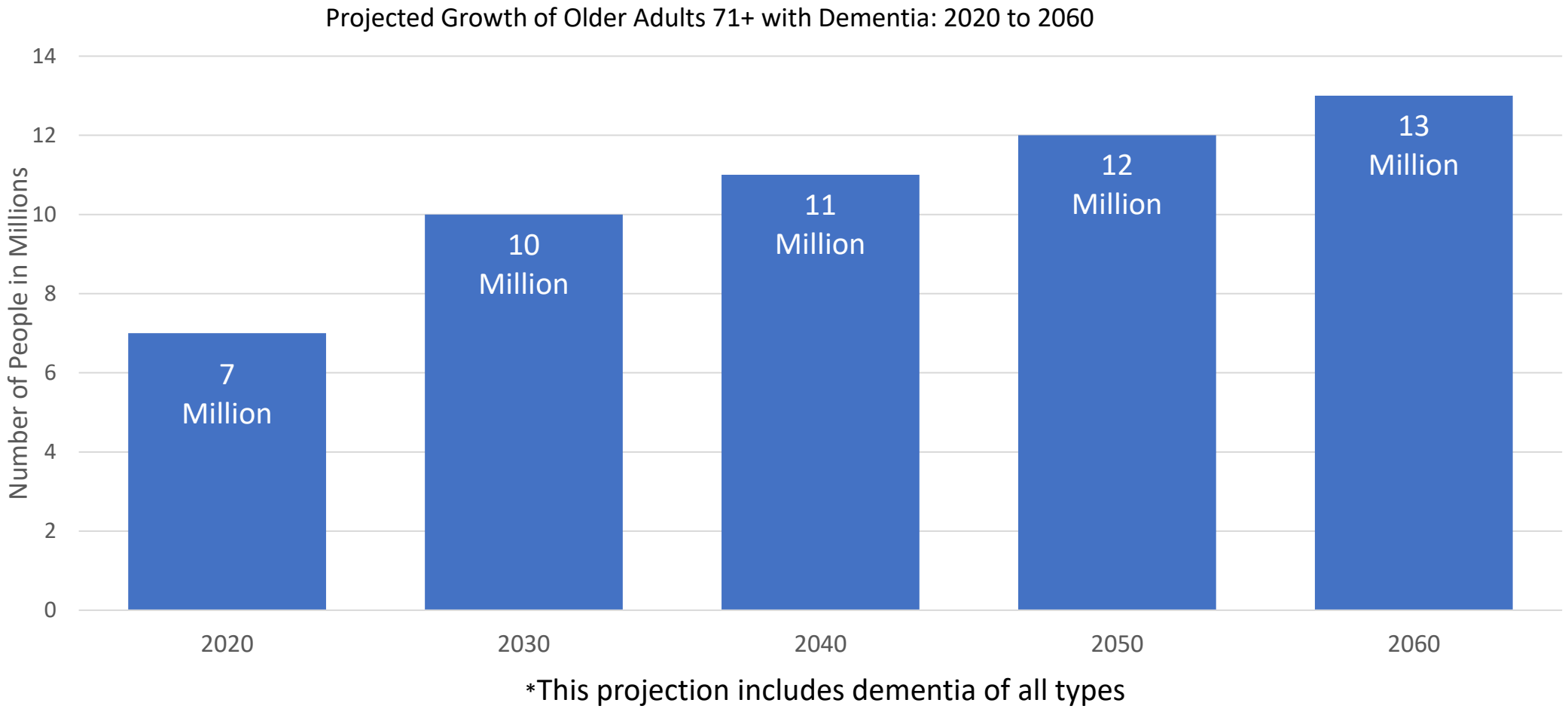
2.7 Million

LGBTQ+ Adults over the age of 50 in the US.[2]

1. King, S., & Richardson, V. (2017). *ResearchGate* (1st ed., Vol. 37). Annual Review of Gerontology and Geriatrics.
2. SAGE. (2018, August 14). *Issues brief: LGBTQ+ and dementia*. SAGE. Retrieved April 18, 2022, from https://www.sageusa.org/resource-posts/issues-brief-lgbt-and-dementia/
3. Fredriksen-Goldsen, K. I., Jen, S., Bryan, A., & Goldsen, J. (2018). Cognitive Impairment, Alzheimer's Disease, and Other Dementias in the Lives of Lesbian, Gay, Bisexual and Transgender (LGBT) Older Adults and Their Caregivers: Needs and Competencies. *Journal of applied gerontology : the official journal of the Southern Gerontological Society*, *37*(5), 545–569. https://doi.org/10.1177/0733464816672047

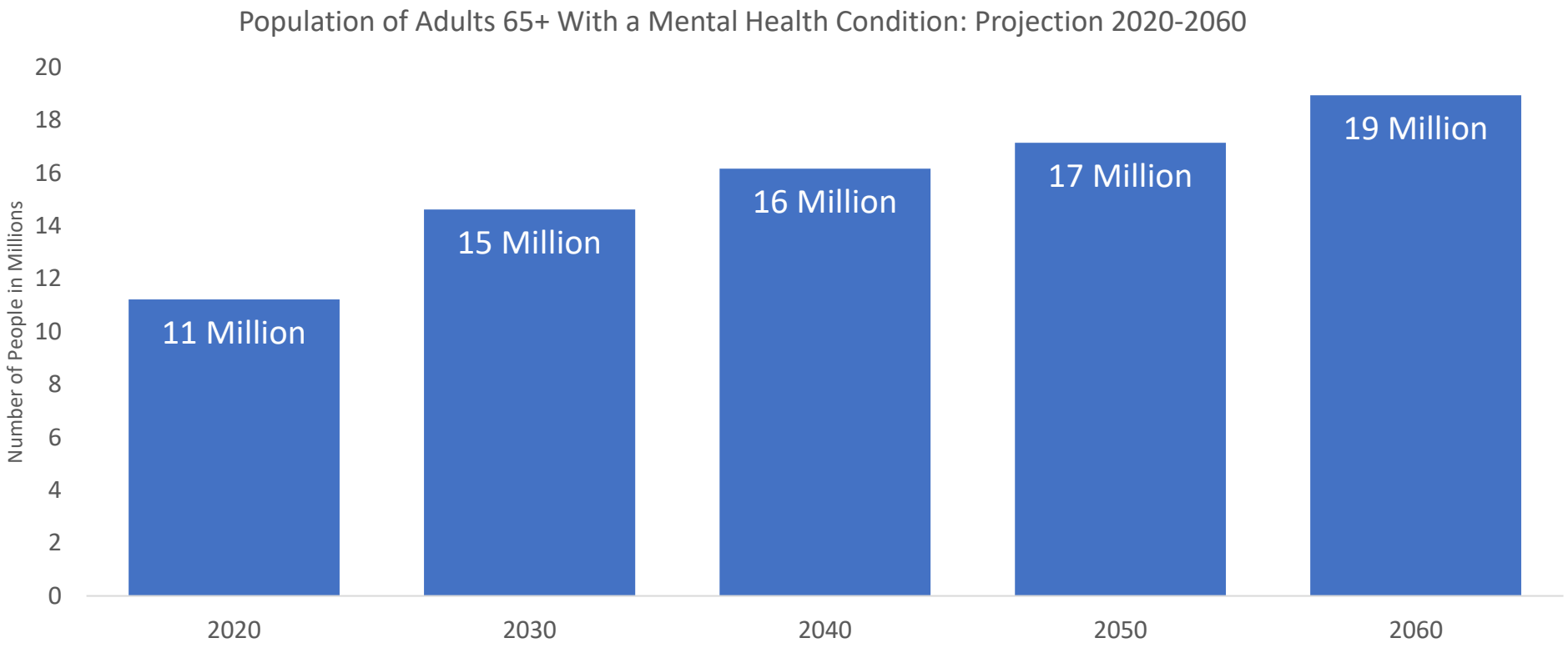
PROJECTED GROWTH OF OLDER ADULTS WITH COGNITIVE AND/OR BEHAVIORAL HEALTH CONDITIONS

Adults 71+ With Dementia* Will Nearly Double Unless There Is A Breakthrough In Prevention Or Treatment



Alzheimer's Association (2020). "Alzheimer's Disease Facts and Figures." https://alz-journals.onlinelibrary.wiley.com/doi/full/10.1002/alz.12068

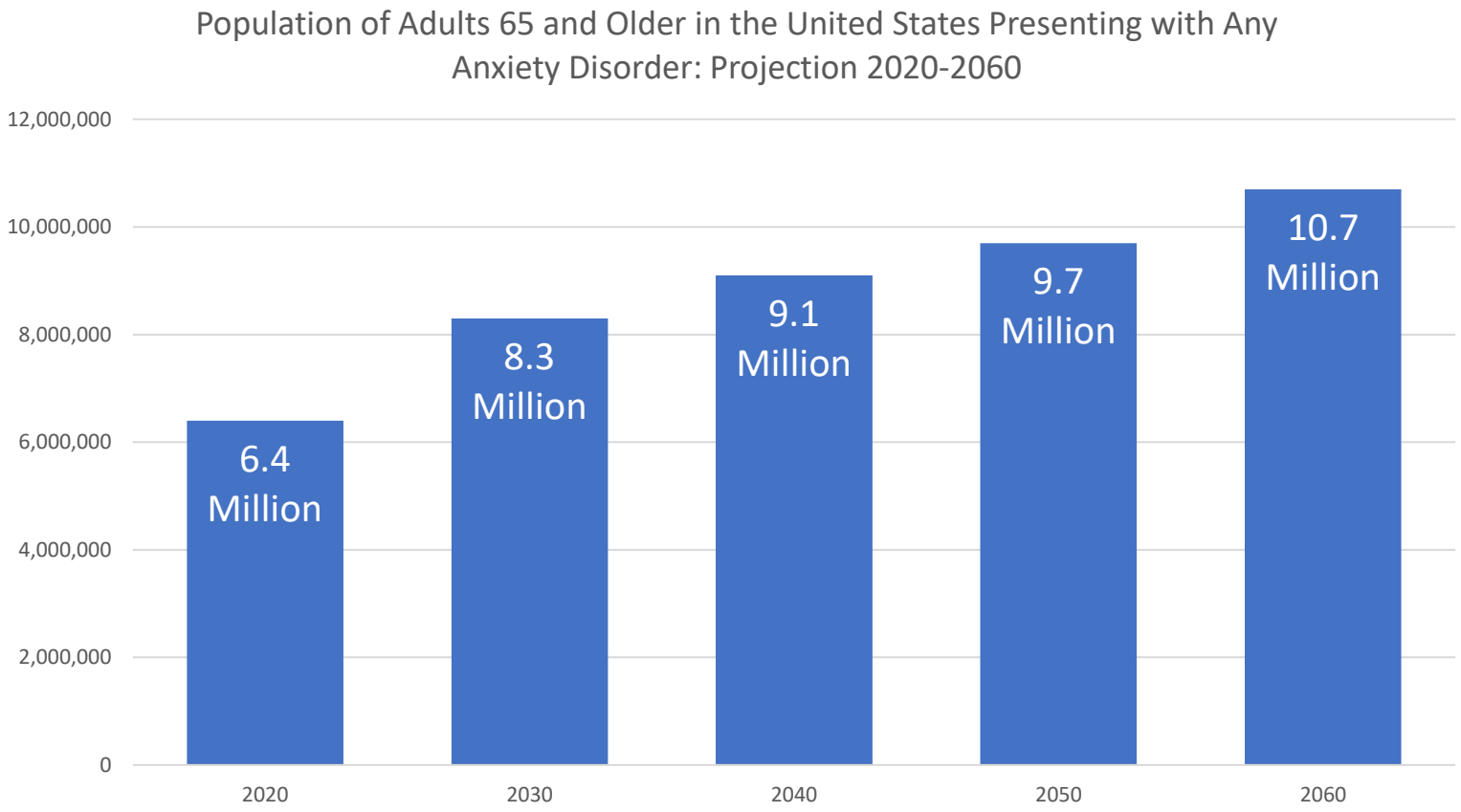
The Number Of Adults 65+ With A Behavioral Health Condition Will Increase By 4 Million Over The Next Decade



1. WHO. (2017, December 12). Mental health of older adults. *World Health Organization*. Retrieved from https://www.who.int/news-room/fact-sheets/detail/mental-health-of-older-adults

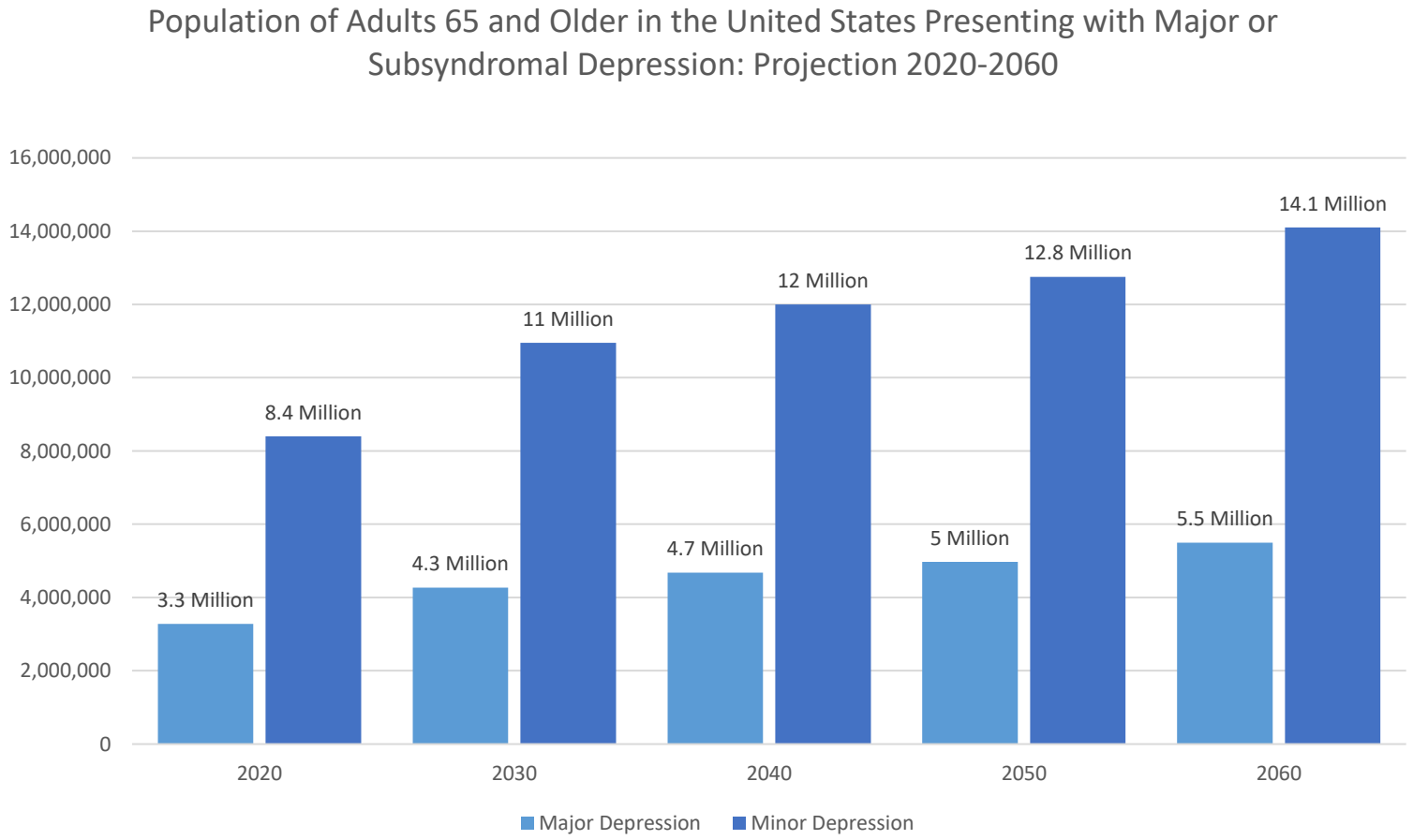
2. Kessler RC, Wang PS. The descriptive epidemiology of commonly occurring mental disorders in the United States. *Annu Rev Public Health*. 2008;29:115-129. doi:10.1146/annurev.publhealth.29.020907.090847

The Number Of Older Adults With Anxiety Disorders In The U.S. Will Grow By 1.9 million Over The Next Decade



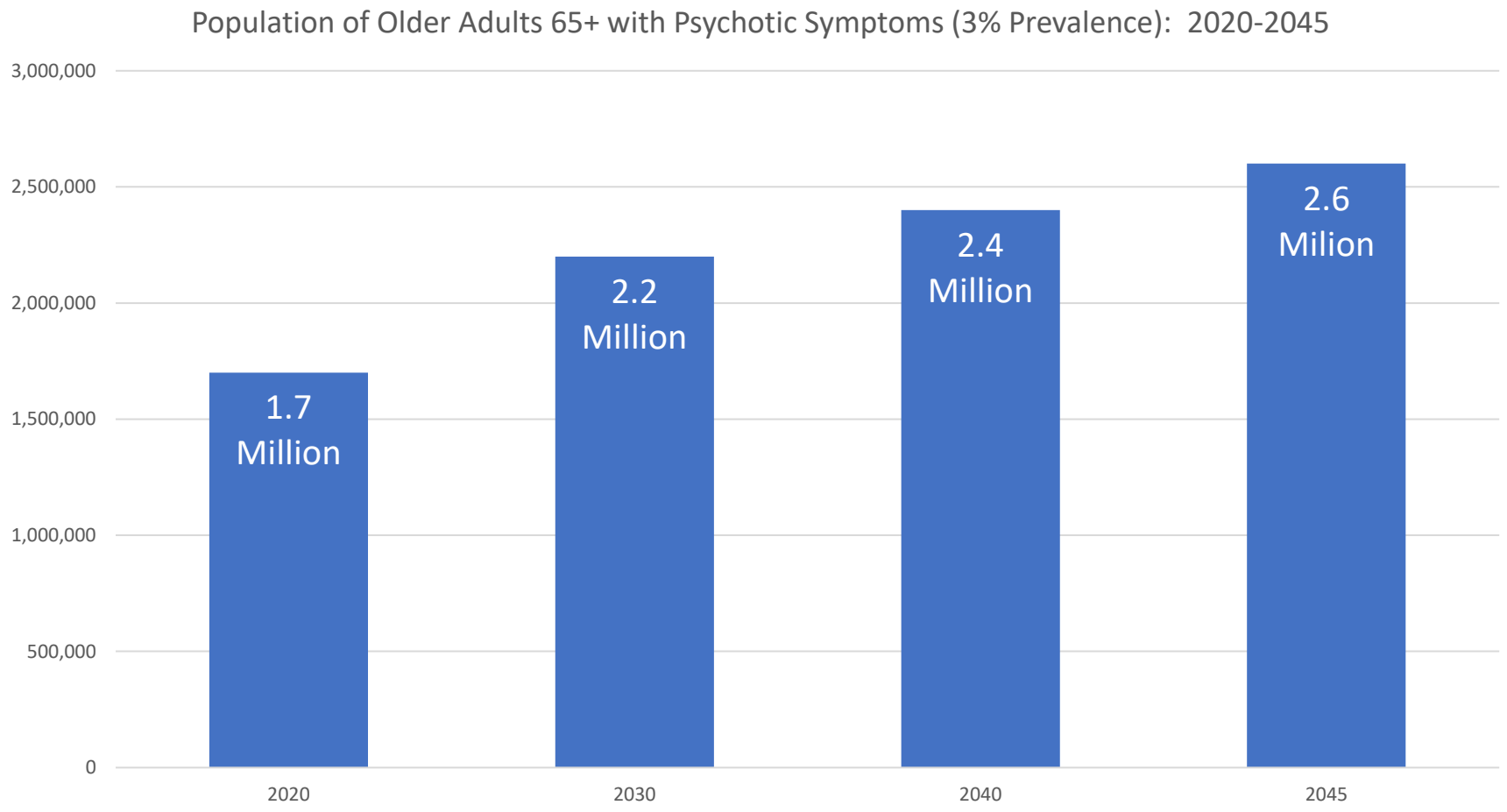
1. US Census Bureau (2017) National Population Projections Datasets. https://www.census.gov/data/datasets/2017/demo/popproj/2017-popproj.html
2. Reynolds K. et al (2015). "Prevalence of Psychiatric Disorders In U.S. Older Adults: Findings From A Nationally Representative Survey" *World Psychiatry,* February 2015.

From 2020 To 2040 In The U.S. The Number Of Older Adults With Major Or Minor (Subsyndromal) Depression Will Nearly Double



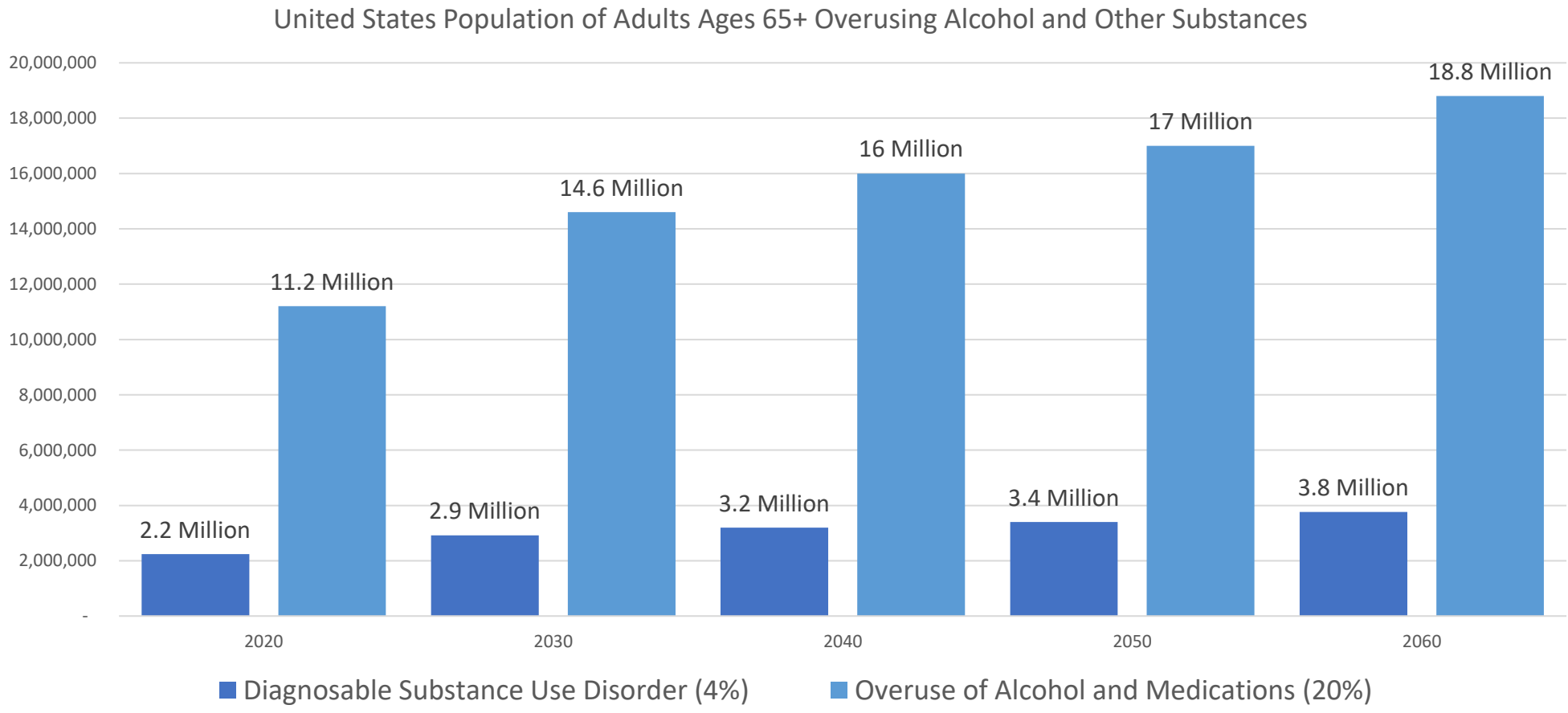
1. Byers, A et al (2010). "High Occurrence of Mood and Anxiety Disorders Among Older Adults: The National Comorbidity Survey Replication" in *Archives of General Psychiatry*, May 2010.
2. Reynolds K. et al (2015). "Prevalence of Psychiatric Disorders In U.S. Older Adults: Findings From A Nationally Representative Survey" *World Psychiatry,* February 2015.
3. Vanltallie, T. (2005). "Subsyndromal depression in the elderly: underdiagnosed and undertreated" in *Metabolism*

During The Next Decade In The U.S. The Population Of Older Adults 65+ With Psychotic Conditions Will Increase By 500,000 (Over 30%)



1. Cohen, C and Meesters, P (2019*). "*Schizophrenia And Psychoses In Later Life: New Perspectives On Treatment, Research, and Policy." *Cambridge University Press*. https://pubmed.ncbi.nlm.nih.gov/26360087/

During The Next Decade In The U.S. The Number Of People 65+ With Substance Use Disorders Or Who Misuse Alcohol, Medications, or Illegal Substances Will Grow About 30%



1. Lehmann, S. and Fingerhood, M. (2018). "Substance Use In Later Life." *New England Journal of Medicine.* https://pubmed.ncbi.nlm.nih.gov/30575463/. Dec 13, 2018.

2. US Census Bureau (2017) National Population Projections Datasets. https://www.census.gov/data/datasets/2017/demo/popproj/2017-popproj.html

ACCESS TO QUALITY CARE AND TREATMENT REMAINS INADEQUATE

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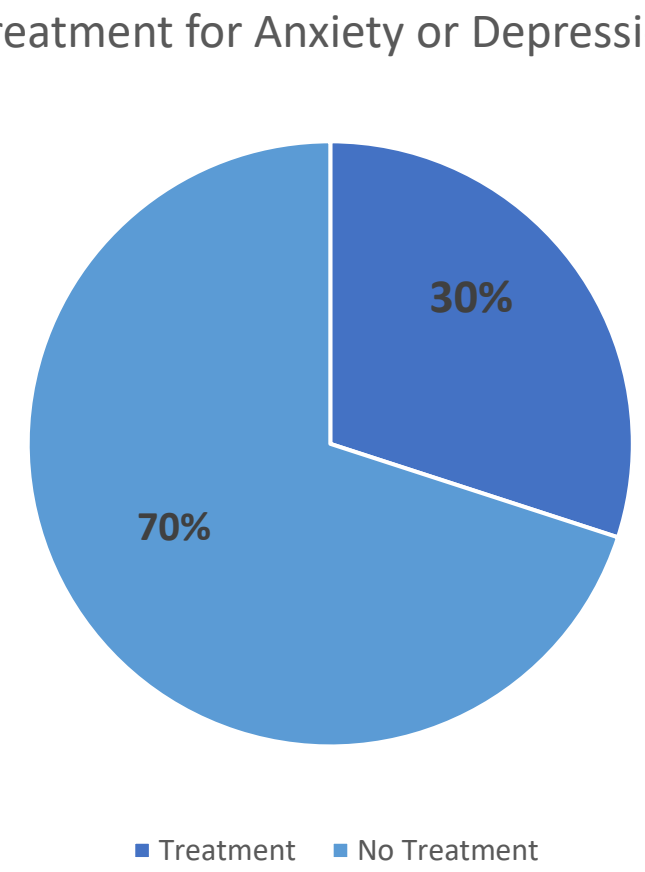
Older Adults With Cognitive Impairment Have Extensive Unmet Needs

- They have high rates of anxiety disorders, depressive disorders, as well as physical disorders. [1, 2]
- Unmet needs for people with dementia living in the community and their caregivers include: [3, 4]
    - More extensive screening for functional abilities, neuropsychiatric symptoms, misuse of substances, safety, and pain
    - Early disclosure of diagnosis to people with dementia and their family to enable advance care planning
    - Education, support, and behavioral health care for family caregivers
    - Training for primary care physicians and gerontologists in diagnosis, treatment (including more cautious use of medications), and the use of motivational techniques to promote healthy aging.
    - Neuropsychiatric behavior management
    - Daily/meaningful activities
    - Home and personal safety provisions
    - Medical condition management

1. Onyike, CU, et al (2016). "Psychiatric Aspects of Dementia" in *Continuum,* April 2016. Psychiatric Aspects of Dementia - PMC (nih.gov)
2. Hughes TB, et al. (2014) "Correlates of objective and subjective measures of caregiver burden among dementia caregivers: influence of unmet patient and caregiver dementia-related care needs" in *International Psychogeriatrics*.
3. Black BS, et al. (2019) "Unmet needs in community-living persons with dementia are common, often non-medical and related to patient and caregiver characteristics" in International Psychogeriatrics. February 2019
4. Bouldin, E. (2021). "Unmet Needs for Assistance Related to Subjective Cognitive Decline" in *International Psychogeriatrics,* July 2021
5. Schultz, S. K., Llorente, M. D., Sanders, A. E., Tai, W. A., Bennett, A., Shugarman, S., & Roca, R. (2020, February). *Quality Improvement in Dementia Care: Dementia Management Quality Measurement Set 2018 Implementation Update*. Retrieved 11 15, 2021, from American Journal of Psychiatry: https://ajp.psychiatryonline.org/doi/10.1176/appi.ajp.2019.19121290

Most Older Adults With Mental Disorders Do Not Get Treatment



Byers, A. et al (2012). "Low Use of Mental Health Services Among Older Adults With Mood and Anxiety Disorders" in *Psychiatric Services,* January 2012.

Most Older Adults With Mental Illnesses Do Not Get Even Minimally Adequate Mental Health Services

- Treatment by primary care physicians is **not** minimally adequate 87.3% of the time.[1]
- Treatment by mental health professionals is **not** minimally adequate 51.7% of the time. [1]
- Older adults are less likely to get health care in mental health specialty settings than other age groups. [2]
- In-home service providers, such as home health aides, are rarely trained to identify or treat mental disorders. [2]
- Community service providers in senior centers, adult day care, etc. are rarely trained in identification or treatment. [2]
- Mental health care in nursing and adult homes is also uneven. Overuse of anti-psychotic medications is common and dangerous. [2]

1. Wang, P.S. et al. (2005). "Twelve-Month Use Of Mental Health Services In The U.S." *Archives of General Psychiatry.* *https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1931566/*
2. Institute of Medicine (2012). *The Mental Health and Substance Use Workforce for Older Adults: In Whose Hands?* The National Academies Press. The Mental Health and Substance Use Workforce for Older Adults: In Whose Hands? | The National Academies Press (nap.edu).

Primary Care Physicians Often Fail To Identify Or Treat Mental Illness In Older Adults

- Almost 90% of older adults with depression get no treatment or inadequate treatment in a primary care setting.[1]

- Older adults who meet diagnostic criteria for mental illness are less likely than young or middle-aged patients to receive specialty mental health care or to be referred from primary care to specialists.[2]

- 50-70% of older adults who complete suicide have seen their primary care physician within 30 days.[3]

1. O'Neill, G. and Patrick, M. (2002). State of aging and health in America. Merck Institute of Aging & Health, Washington, D.C. and Gerontological Society of America.
2. Klap, R. et al. (2003). "Caring For Mental Illness In The United States: A Focus On Older Adults." *The American Journal Of Geriatric Psychiatry.* September-October 2003. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3184156/
3. Luoma, J et al (2002). Contact with mental health and primary care providers before suicide: A review of the evidence. *Am J Psychiatry.*

Barriers To Care And Treatment Of Older Adults With Behavioral Health Conditions

- Shortages of clinically, culturally, and geriatrically competent providers
- Over reliance on primary care providers without adequate training
- High out of pocket cost
- Inadequate public information about where and how to get services
- Transportation problems to reach service sites
- Shortages of services in rural areas
- Shortages of in-home services
- Shortages of outreach and engagement services
- Shortages of bi-lingual providers
- Low perceived need
- Stigma
- Cultural differences regarding sources of help

- The **use of tele-health** services during the pandemic has significantly improved access, but such services are less available to older adults than younger due to issues of broadband access, ownership of needed equipment, and ability to use it.

Soloway E. et al (2010). "Access Barriers to Mental Health Services for Older Adults from Diverse Populations: Perspectives of Leaders in Mental Health and Aging."
https://www.tandfonline.com/doi/full/10.1080/08959420.2010.507650?casa_token=uOSTfTGj26cAAAAA%3A67B2B06iEymDr6LJtdPHmu9AyneOZTfgFZbS8jxeKwsfPGnYF7D664BIZYNx5AeAfwOkwQvKEObvHg&

The Workforce For Geriatric Cognitive And Behavioral Health Is Too Small And Not Keeping Pace With Population Growth [1]

- **Actions Needed To Address Workforce Shortages**

  - Increase and improve the geriatric workforce with financial and other **incentives** to work with older adults as well as by providing increased training. [2]
  - Because it is not possible to train enough geriatric cognitive and behavioral health specialists, it is necessary to **change the workforce paradigm** and to train primary care clinicians, social service providers, paraprofessionals, peers, volunteers, etc. to identify needs and provide care.[3, 4]
  - Increase the use of **internet technology**. [3]
  - Provide increased **support for family caregivers,** who are the primary *de facto* workforce for people with mental disabilities. [5]

1. Institute of Medicine (2012). *The Mental Health and Substance Use Workforce for Older Adults: In Whose Hands?* The National Academies Press. The Mental Health and Substance Use Workforce for Older Adults: In Whose Hands? | The National Academies Press (nap.edu).
2. Warshaw, G and Bragg, E. (2014) "Preparing The Health Care Workforce To Care For Adults With Alzheimer's Disease And Related Dementias." *Health Affairs.* April 2014.
3. Stephen J. et al. (2013). "The Underside of the Silver Tsunami — Older Adults and Mental Health Care" in *The New England Journal of Medicine*, February 7, 2013. https://www.nejm.org/doi/full/10.1056/nejmp1211456
4. Kunik, M. et al. (2017). "Expanding the Geriatric Mental Health Workforce Through Utilization of Non-Licensed Providers" in *Aging and Mental Health*, September 2017. Expanding the Geriatric Mental Health Workforce through Utilization of Non-Licensed Providers (nih.gov)
5. Parmar, J et al. (2020). "Caregiver-Centered Care Health Workforce Competencies: Taking Steps to Support Family Caregivers of People Living With Dementia" in *Alzheimer's and Dementia*, December 2020.

An Agenda For Improved Cognitive And Behavioral Health Policy

1. Provide services to support **community integration** ("aging in place").
2. Improve **long-term care**—nursing homes, assisted living, and home and community-based services**.**
3. Increase cognitive and behavioral health service **capacity** to keep pace with the growth of the older population and to address current shortfalls.
4. Enhance **access** to care particularly with **extensive use of telehealth.**
5. Improve **quality of care** emphasizing clinical, cultural, dementia, and geriatric competence in service design and delivery.
6. Increase and improve the professional and paraprofessional **workforce** and **change the workforce paradigm** to create clinical, cultural, and geriatric competence in the primary care, long-term care, behavioral health, and social service workforces.
7. Enhance **integration of care** within and between separate service "systems"—dementia care, behavioral health care, long-term health care, and aging social services.
8. Enhance **support for family caregivers.**
9. Address **social "determinants" of behavioral health** such as racism, poverty, and isolation**.**
10. Improve **public and professional education.**
11. Increase and redesign **funding** to meet the needs of older adults.
12. Develop a publicly accessible **data dashboard** for planning purposes.