Optimizing Access Capacity: Systems View

Eva K Lee, Ph.D.

Director and Professor, Center for Operations Research in Medicine and HealthCare
Distinguished Scholar in Health Systems, Health System Institute
Georgia Tech and Emory University School of Medicine

evalee-gatech@pm.me

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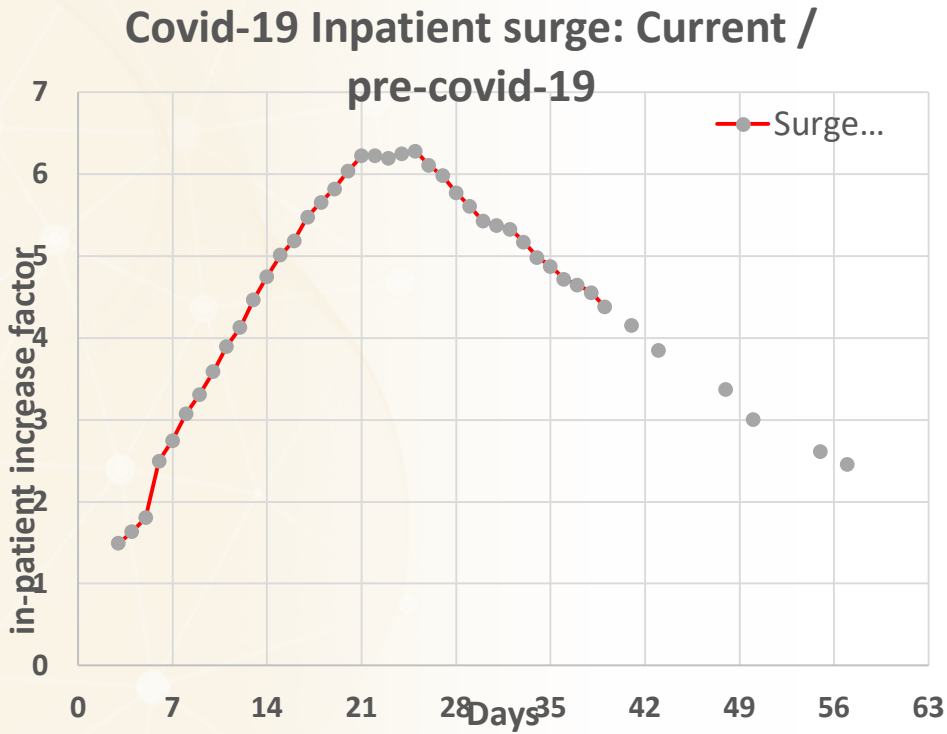
Developing a Patient-Centered Approach to Optimizing Veterans' Access to Health Care Services: A Workshop

Access of Care

- Traditional face-to-face
- Community care
- Patient care home
- Telehealth/telemedicine
  - VHA has always led the way
  - Different from private sectors
- **Challenges**
  - How to efficiently use multi-modalities to improve access and supplement face-to-face consultations for best patient outcomes?
  - How to determine what types of access is best for what type of health conditions and for which patients?

Covid-19 Hospital Surge



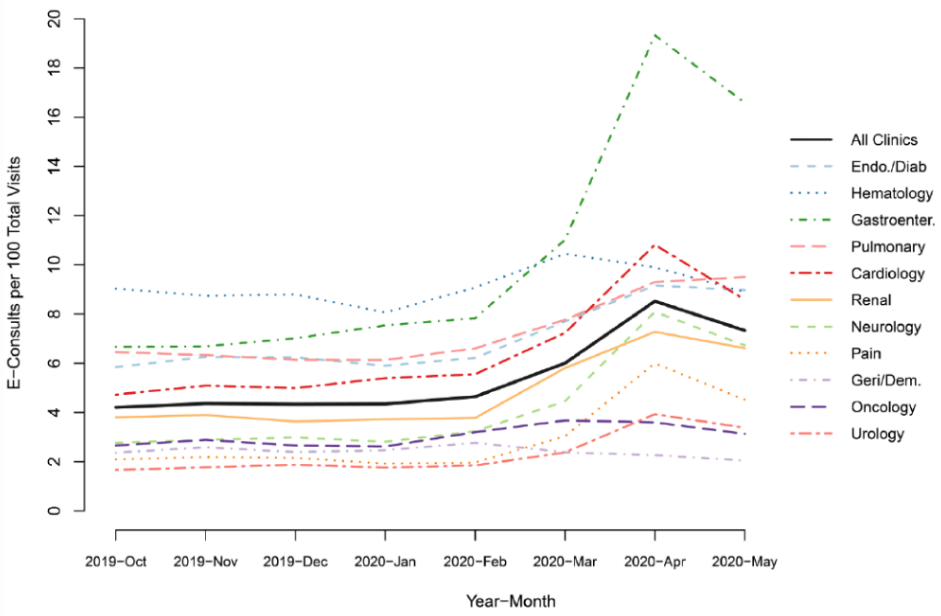
- Rapid increase in covid-19 hospitalization
- Resources shortage
- Extreme contagious environment
- Regular needs are sidelined
- Providers quarantined
- Emotional fragility of providers and patients

Implementing telemedicine is everywhere in all level of care

Major barrier has been removed

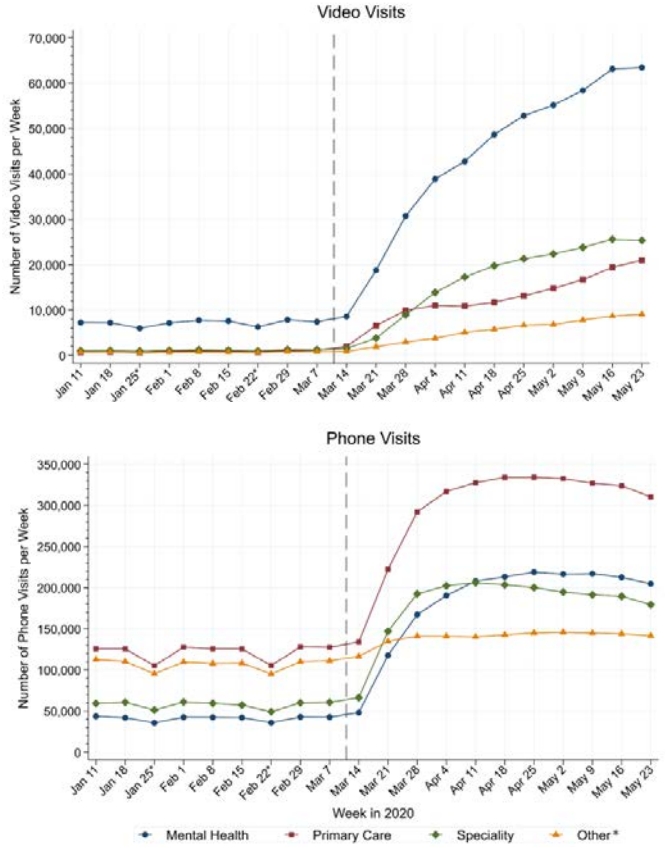
VHA Telehealth Advances During Covid-19

Rates of Electronic Consults (E-Consults) per 100 Visits, by Clinical Specialty



Source: Veterans Affairs Collaborative Evaluation Center
NEJM Catalyst (catalyst.nejm.org) © Massachusetts Medical Society

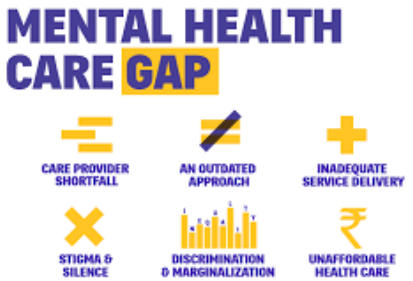
Weekly Rates of Home-Based Video and Telephone Visits Across Types of Care, January Through April of 2020



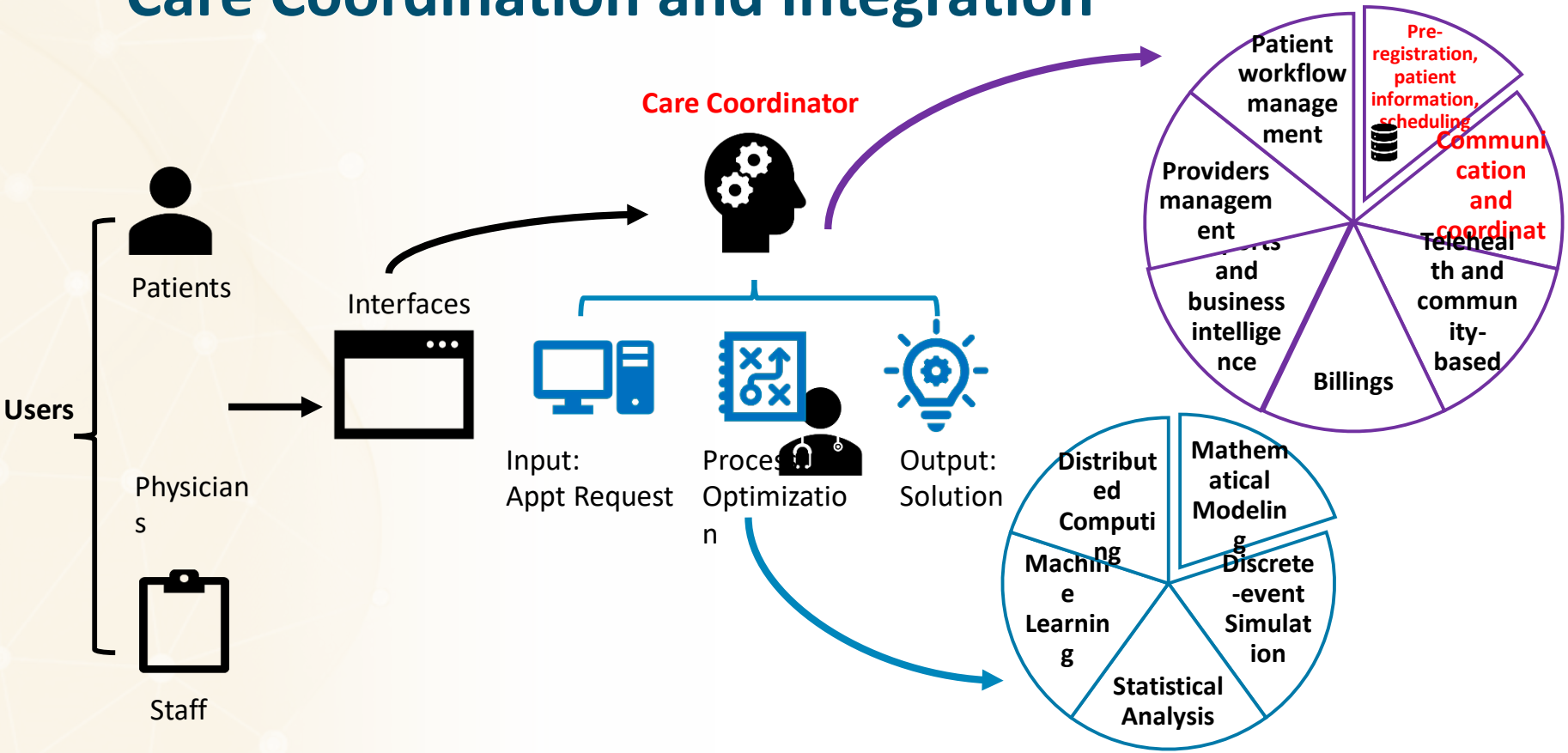
*Other includes social work, and some other non-physician visits
Source: Veterans Affairs Virtual Access QUERI
NEJM Catalyst (catalyst.nejm.org) © Massachusetts Medical Society

Technological Challenges

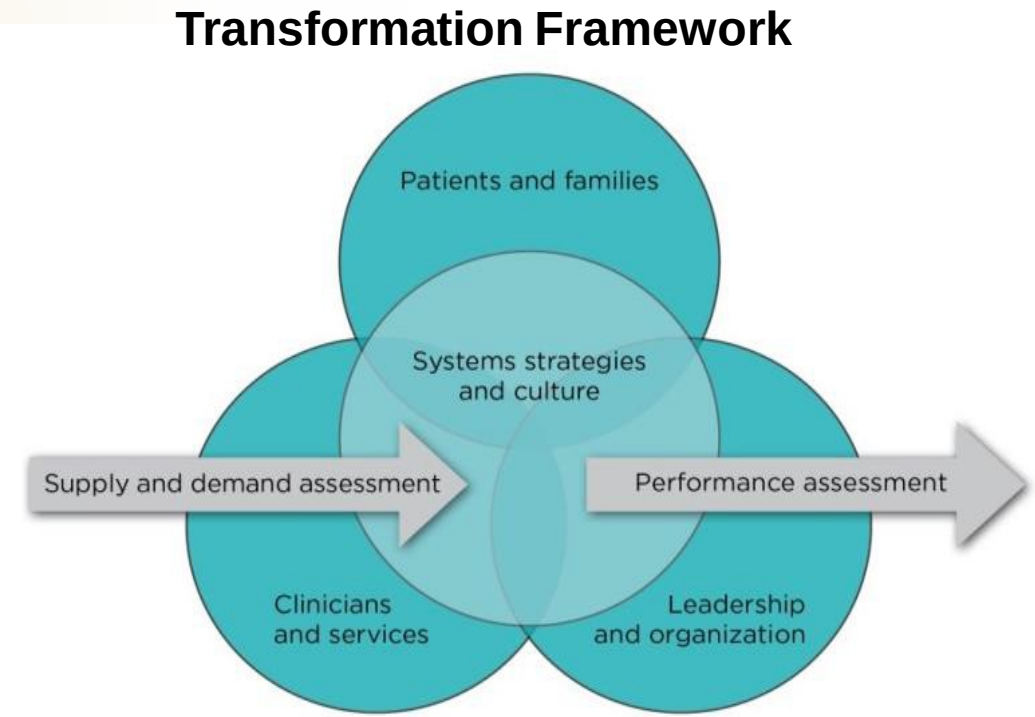
- Can manage chronic disease management
- Can supplement mental health active engagement
- Can supplement primary care
- Can assess emergency medical needs
- Can connect providers and patients



Care Coordination and Integration



Conceptual Reference Points



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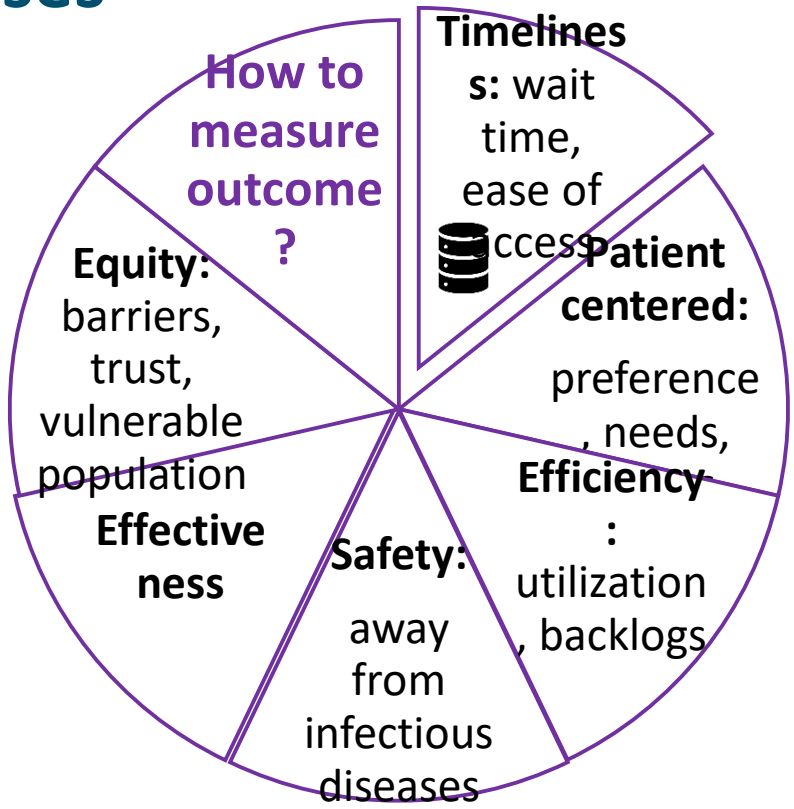
Evaluation and Added Bonuses

- How to quantify the values, quality, safety?
- What is the best mode for the best outcome?
- Combination strategies, individualized approach?
- How resilience is the VHA?
- **Added bonuses:** reduce costs? happier patients, happier providers? more adaptable/agile capability and capacity?



Challenges and Opportunities

- Technological advances (e.g., preventive care)
- Machine learning, predictive analytics, and optimization
  - Identify characteristics of success and shortcomings (care, patient types, clinical processes, disease types, patient satisfaction, etc)
  - Uncover outcome patterns
  - Personalize and optimize individual care
  - Uncover providers experience, strength and weaknesses
  - Optimize systems performance (patients, providers, and organization)
- Care coordination and integration
- Metrics to measure outcome
- Transform beyond VHA

Successful Implementation: Patient-centered approach

- Predict patient complexity to optimize and personalize care
- Optimize clinic workflow and resource allocation
- Uncover hidden signs/patterns for early diagnosis and intervention
- Treatment outcome prediction
- Understand priority queues and systems effect
- Advance clinical translational research

- EK Lee, Z Li. Devices, Systems, and Methods for Enhanced Patient Monitoring and Vigilance. US Patent App. 16/676,348
- EK Lee, X Wei, F Baker-Witt, MD Wright, A Quarshie Outcome-driven personalized treatment design for managing diabetes.Interfaces 48 (5), 422-435
- EK Lee, Y Wang, et al., Machine Learning: Multi-site Evidence-Based Best (Clinical) Practice Discovery. International Workshop on Machine Learning, Optimization and Big Data. 2016: 1-15.
- Lee, Atallah, et al. Transforming emergency department workflow and patient care. Interfaces – The 2014 Franz Edelman Award Achievement in Operations Research. 2015; 45(1):58-82.
- Lee, Nakaya,, et al..Machine learning framework for predicting vaccine immunogenicity. Interfaces – The Daniel H. Wagner Prize for Excellence in Operations Research Practic. 2016; 46(5): 368 - 390.
- EK Lee, TL Wu, F Goldstein, A Levey.Predictive model for early detection of mild cognitive impairment and Alzheimer's disease. Optimization and Data Analysis in Biomedical Informatics. Fields Institute Communications. 2012; 63: 83-97.

- 20 more related articles

THANK YOU

Contact: evalee-gatech@pm.me

Session 4 Discussion Questions:

- In context of the SARS COV-2 pandemic, how has technology been used to improve access to clinical services? How did you assess opportunities to improve barriers created by the SARS COV-2 pandemic? What challenges did use experience while using technology to expand care delivery? Was the uptake of telehealth services homogeneous across populations, conditions, specialties?
- How has telehealth and telemedicine technologies been used by the VA and other health care providers, and how have they been received by patients?
- How were telehealth technologies used to improve the quantity and quality of patient-clinician contact to support patients' relationship with the VA and build trust? What steps should be taken to build telehealth programs and build trust in the VA?
- In addition to technology, what modalities can be used to expand access to health care services?
- What organizational strategies/tools can be used to increase access capacity within health care systems?
- What existing VA assets could be used to improve patient access and promote continuity of care?