Advancing Diagnostic Excellence for Older Adults
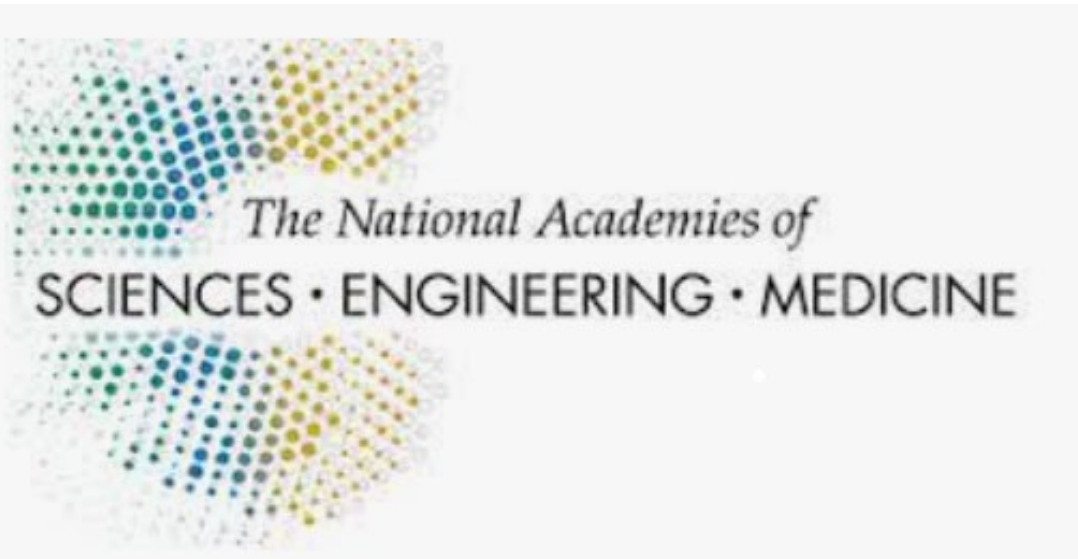
A Hybrid Workshop

Assessing cognitive function to improve diagnosis in older adults

The National Academies of
SCIENCES · ENGINEERING · MEDICINE

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Leading conditions with cognitive impairment

- **Dementia**:
  - Chronic progressive cognitive deterioration, such as Alzheimer's disease
  - 11% in those age 65+
  - 30% in those age 85+
  - Unrecognized in >60% cases
- **Mild Cognitive Impairment**:
  - Milder form of cognitive impairment, not meeting dementia criteria
  - 12-18% in those age 60+
  - Unrecognized in >50-70% cases
- **Delirium**:
  - Acute confusional state with cognitive dysfunction, typically in face of acute illness or major surgery
  - 24-50% in hospitalized older adults
  - Unrecognized in >2/3 cases

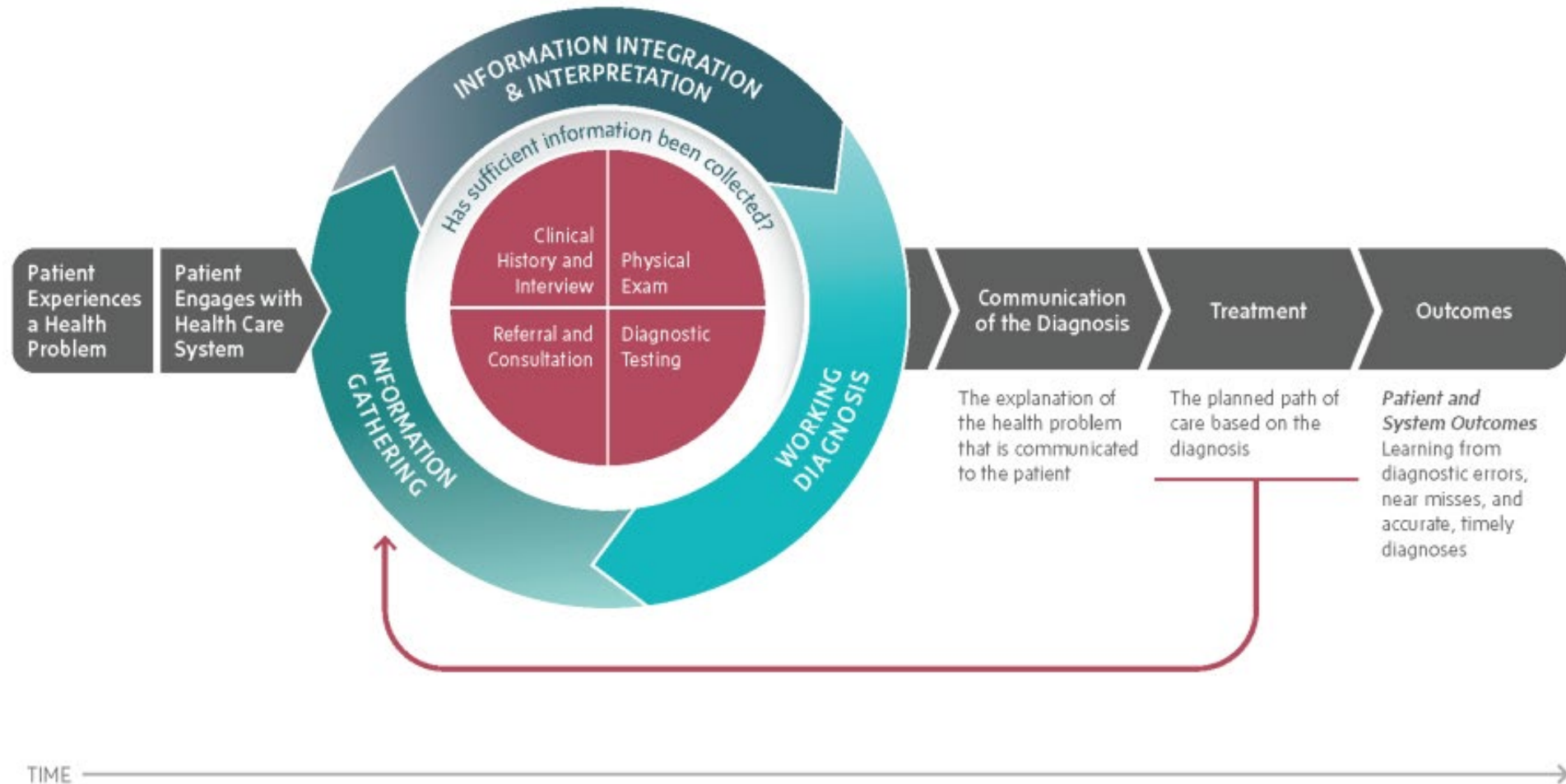# Impact of Cognitive Impairment/Delirium/Dementia on the Diagnostic Process

FIGURE S-1 The diagnostic process.

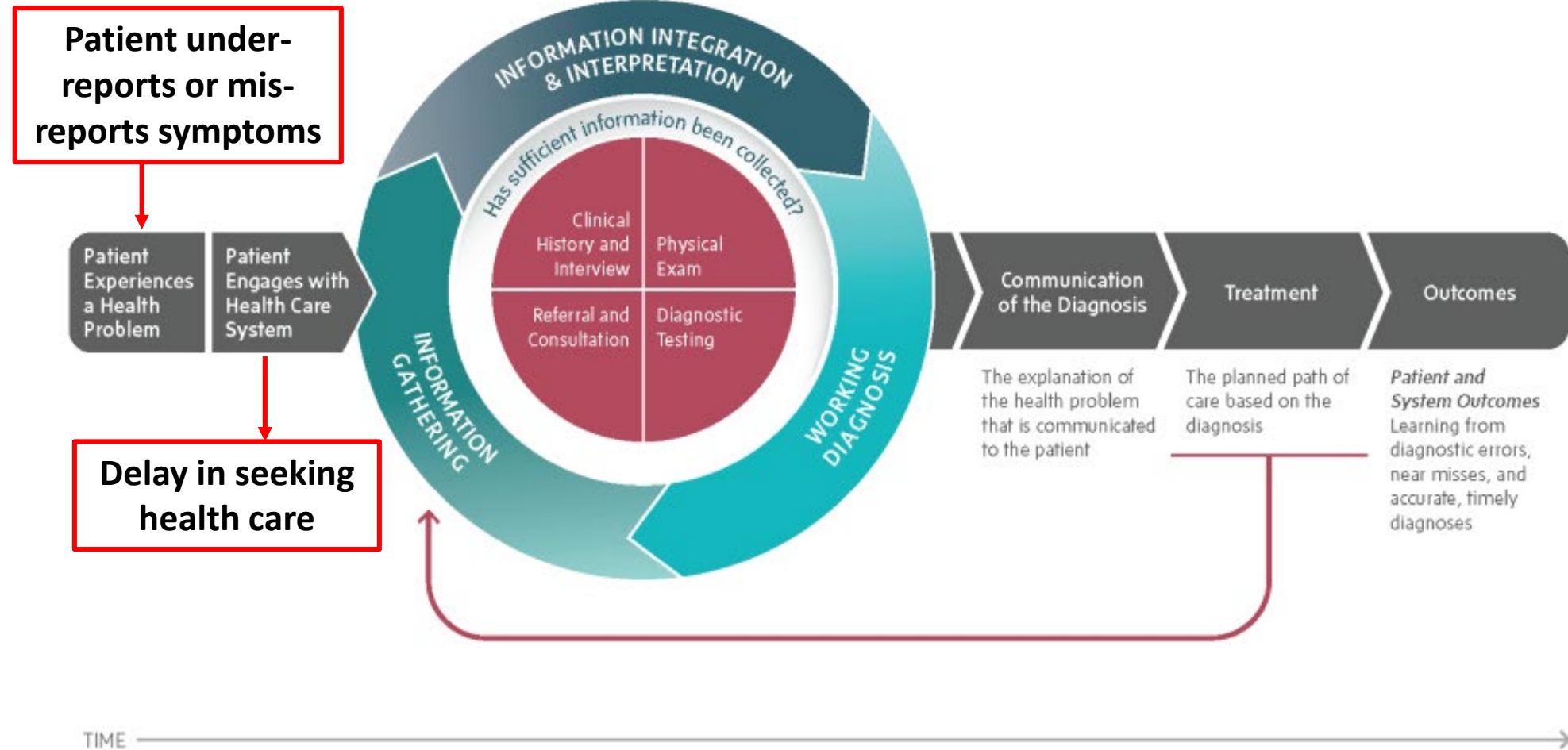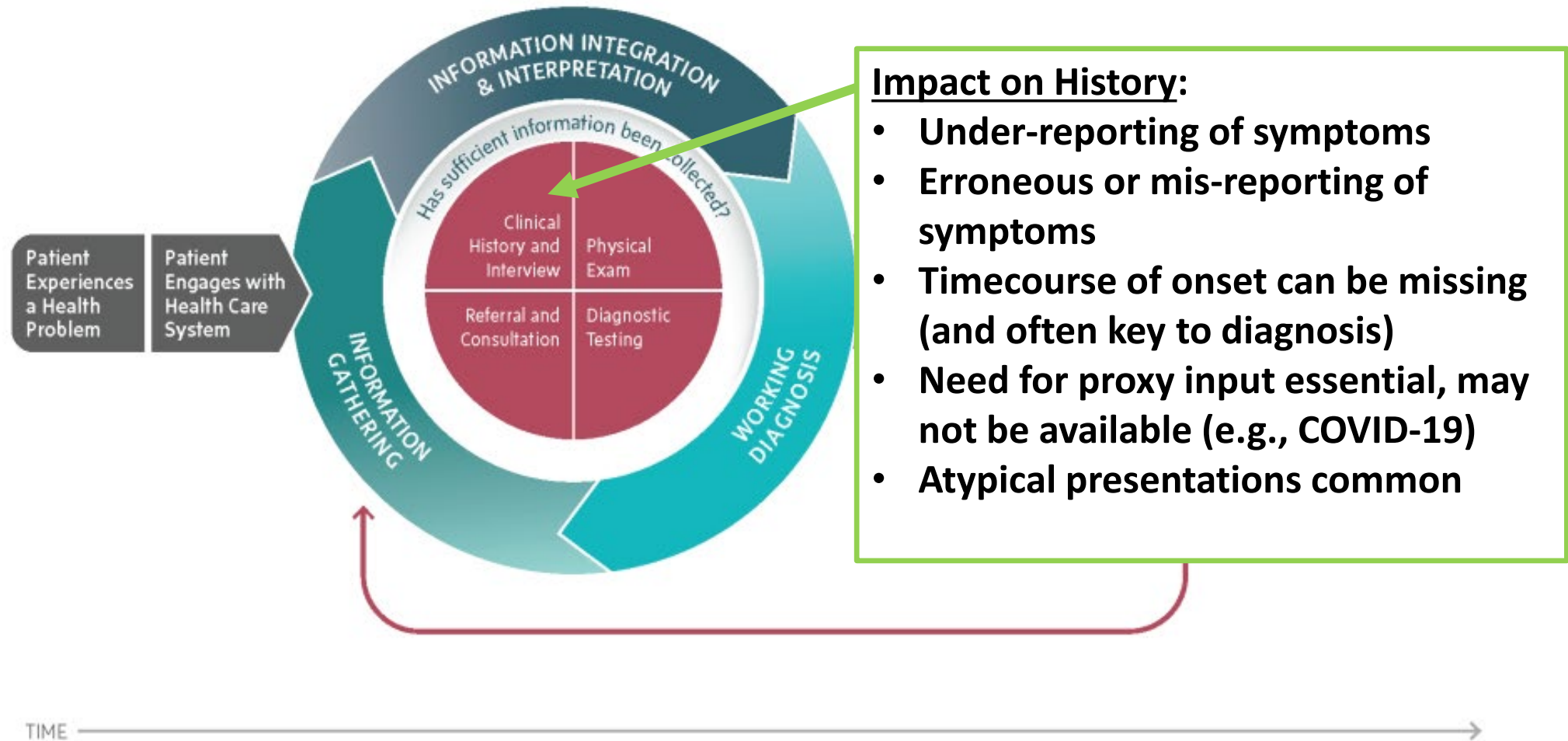# Impact of Cognitive Impairment/Delirium/Dementia on the Diagnostic Process

Patient under-reports or mis-reports symptoms

Delay in seeking health care

FIGURE S-1 The diagnostic process.

Impact of Cognitive Impairment/Delirium/Dementia on the Diagnostic Process

Impact on History:
- **Under-reporting of symptoms**
- **Erroneous or mis-reporting of symptoms**
- **Timecourse of onset can be missing (and often key to diagnosis)**
- **Need for proxy input essential, may not be available (e.g., COVID-19)**
- **Atypical presentations common**

FIGURE S-1 The diagnostic process.

Impact of Cognitive Impairment/Delirium/Dementia on the Diagnostic Process

Impact on Physical Exam:
- **Under-reporting or mis-reporting of signs on exam**
- **Muted or atypical presentations (e.g., acute abdomen, pain or tenderness, UTI)**
- **Eg. Absent fever in infection**

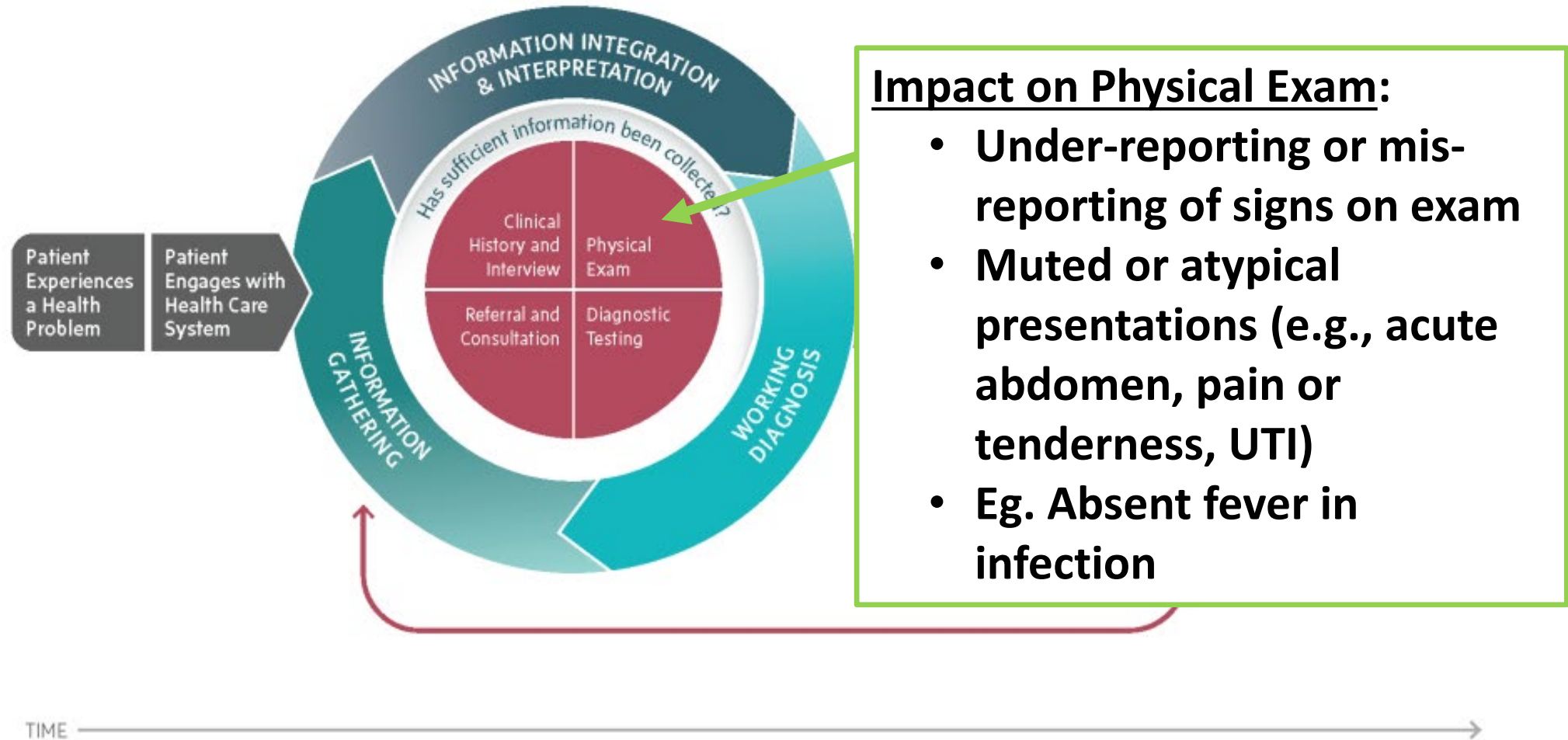**FIGURE S-1** The diagnostic process.

Impact of Cognitive Impairment/Delirium/Dementia on the Diagnostic Process

Impact on Diagnostic Testing:
- **Diagnostic tests may have decreased sensitivity or specificity in older adults (e.g., D-dimer in PE)**
- **Lack of inclusion of older adults (especially with cognitive impairment) in clinical trials for diagnostic tests or devices to evaluate diagnostic performance**

FIGURE S-1 The diagnostic process.

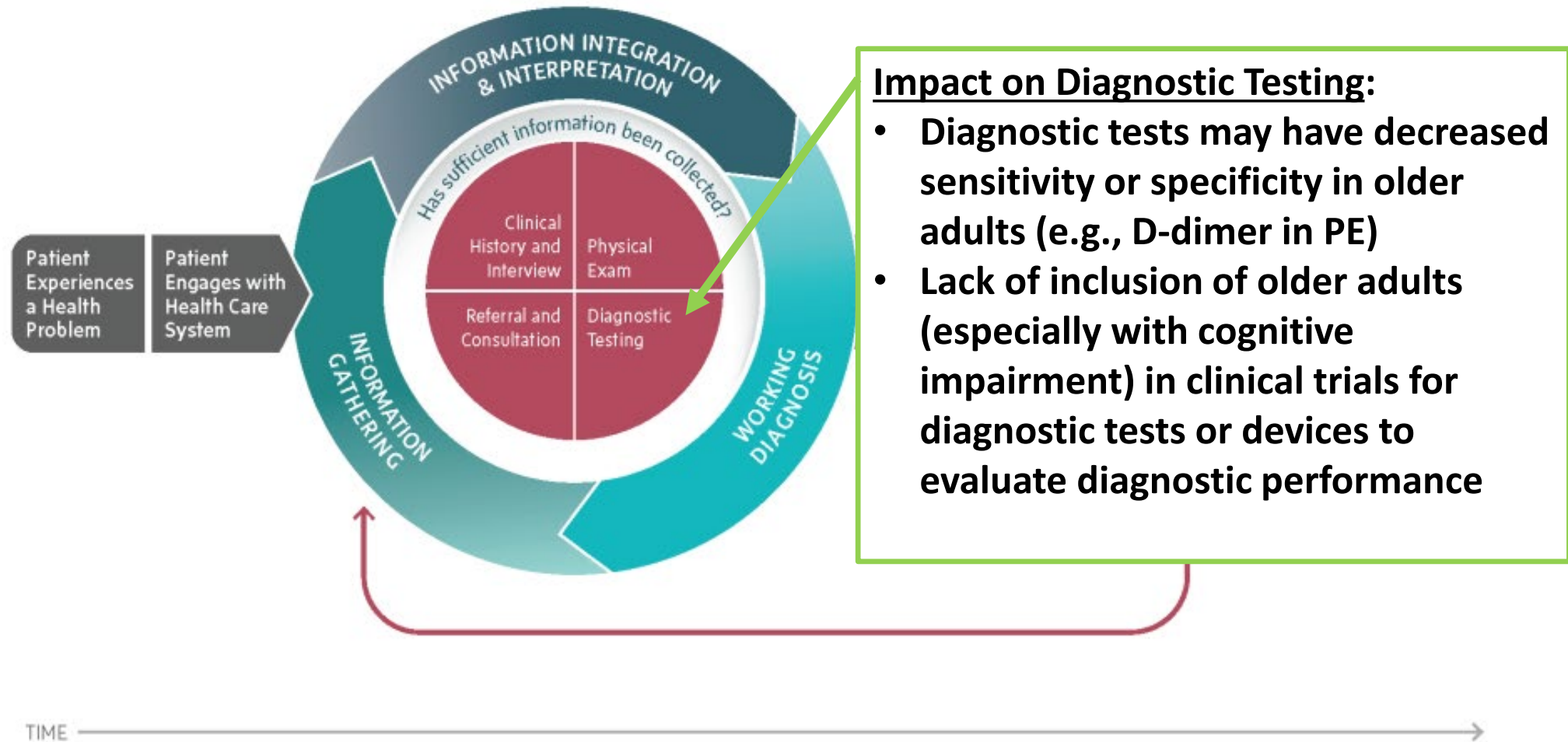**Impact of Cognitive Impairment/Delirium/Dementia on the Diagnostic Process**

Impact on Referral and Consultation:
- Common challenges encountered:
  o Lack of geriatric expertise
  o Lack of awareness of atypical presentations
  o Leads to over- and under-diagnosis
  o Lack of alignment with goals for care
  o Lack of considering multi-morbidity, concurrent treatments
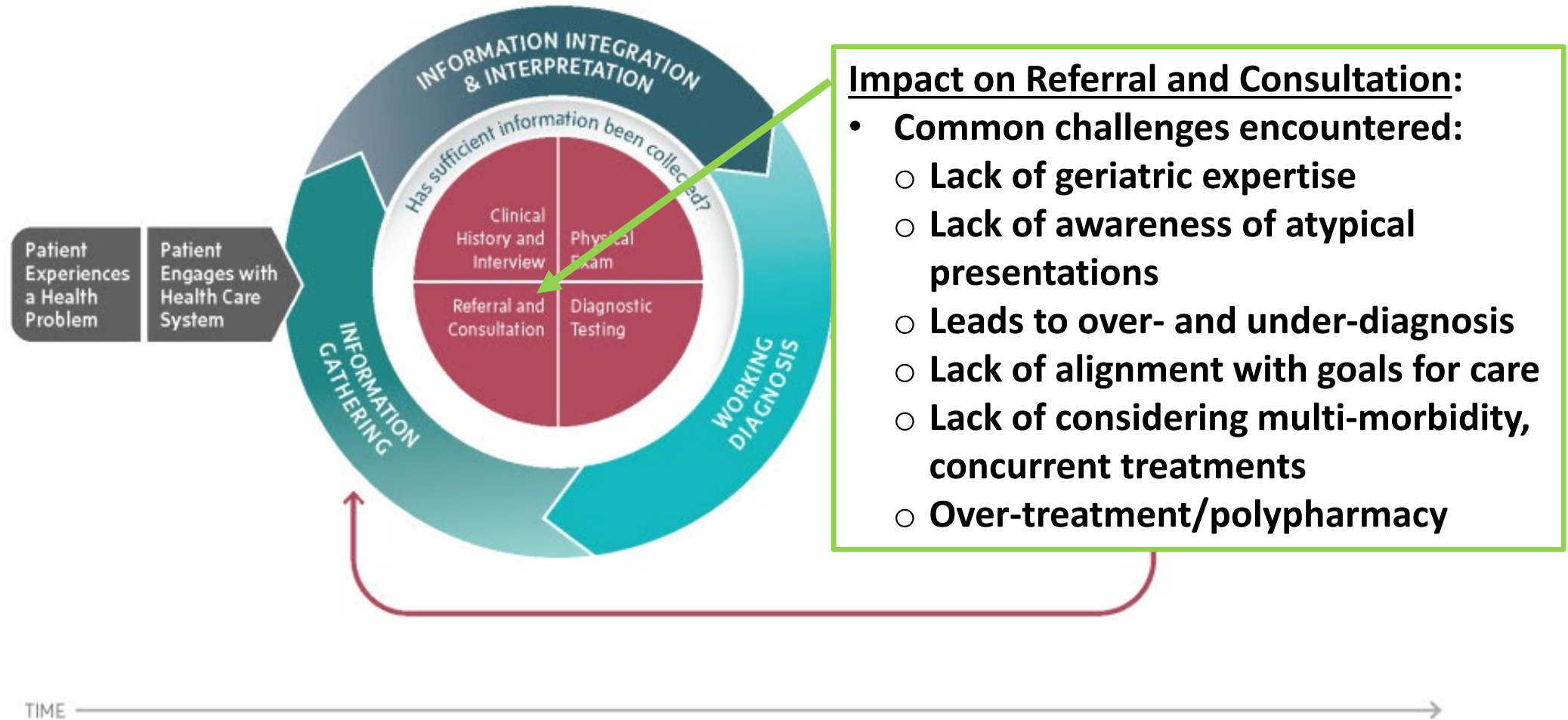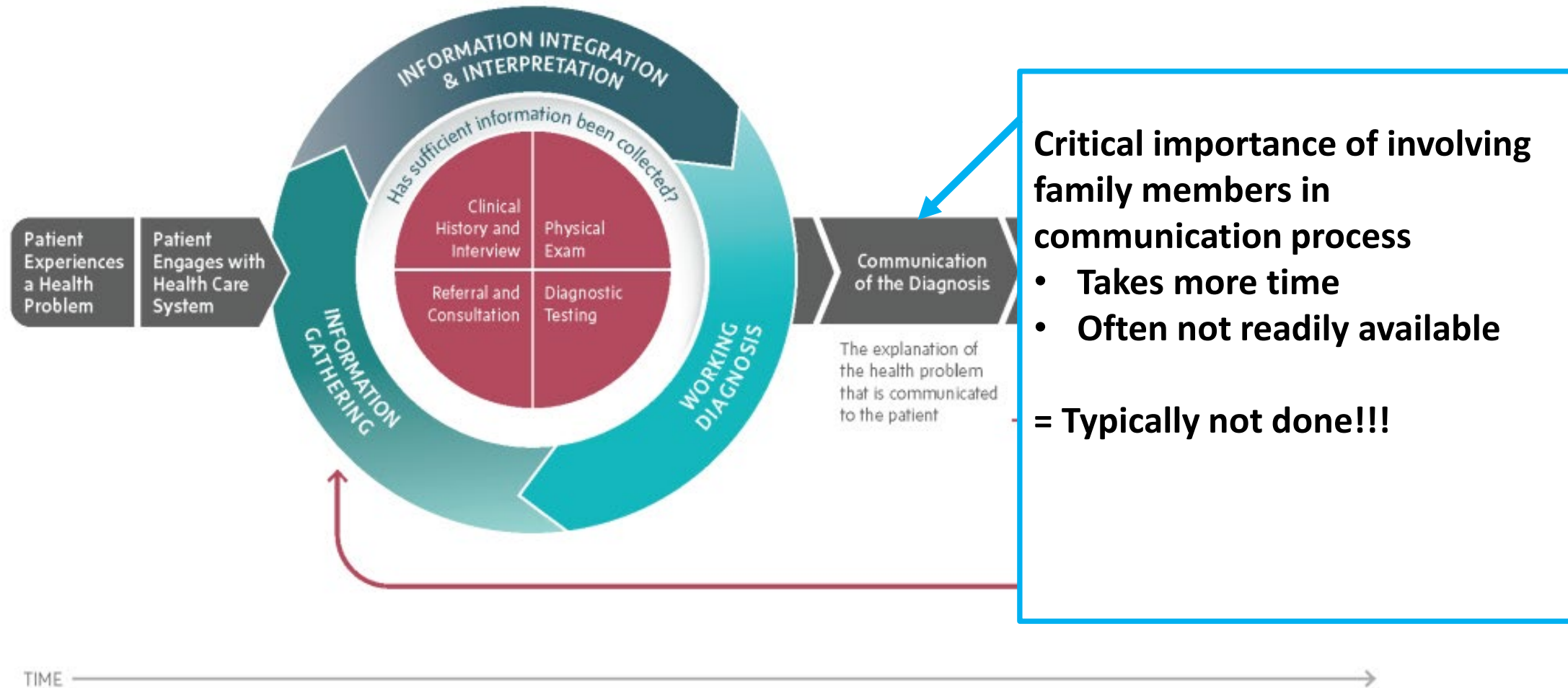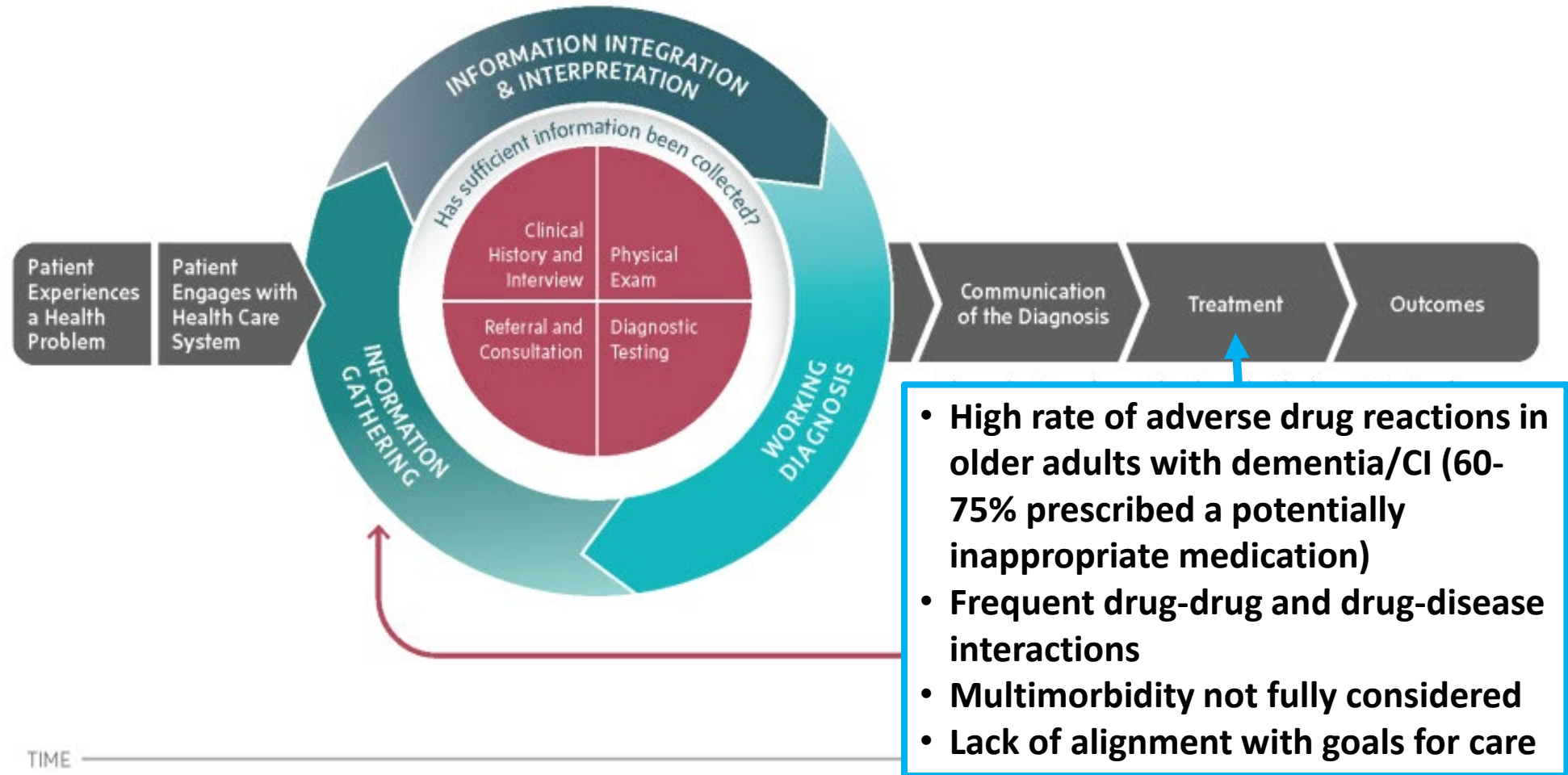 o Over-treatment/polypharmacy

FIGURE S-1 The diagnostic process.

Impact of Cognitive Impairment/Dementia on the Diagnostic Process

FIGURE S-1 The diagnostic process.

Critical importance of involving family members in communication process
- Takes more time
- Often not readily available

= Typically not done!!!

Impact of Cognitive Impairment/Dementia on the Diagnostic Process

FIGURE S-1 The diagnostic process.

High rate of adverse drug reactions in older adults with dementia/CI (60-75% prescribed a potentially inappropriate medication)
- Frequent drug-drug and drug-disease interactions
- Multimorbidity not fully considered
- Lack of alignment with goals for care

Impact of Cognitive Impairment/Dementia on the Diagnostic Process

High rates of diagnostic errors and iatrogenesis in older adults with dementia/cognitive impairment→ worse clinical outcomes
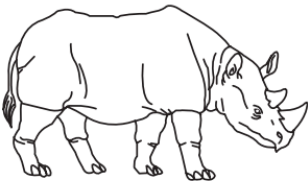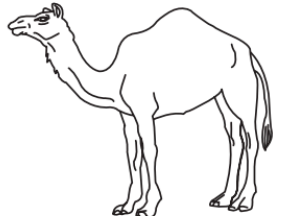
FIGURE S-1 The diagnostic process.

What are approaches to assess cognition?

- Quick cognitive screening tests:
  - MOCA Test—takes about 15 mins, provides reliable screening diagnosis
  - Mini-Cog—takes <5 mins, needs confirmation
- Delirium screening test:
  - UB-CAM—takes < 1 minute, reliable screening diagnosis

MONTREAL COGNITIVE ASSESSMENT (MOCA)

VISUOSPATIAL / EXECUTIVE		POINTS

Copy cube

Draw CLOCK (Ten past eleven) (3 points)

[ ]   [ ]   [ ]   [ ]   [ ]   __/5
                                  Contour   Numbers   Hands

NAMING

[ ]   [ ]   [ ]   __/3

MEMORY

Read list of words, subject must repeat them. Do 2 trials. Do a recall after 5 minutes.

	FACE	VELVET	CHURCH	DAISY	RED	
1st trial						No points
2nd trial						

ATTENTION

Read list of digits (1 digit/ sec.).   Subject has to repeat them in the forward order [ ] 2 1 8 5 4
Subject has to repeat them in the backward order [ ] 7 4 2   __/2

Read list of letters. The subject must tap with his hand at each letter A. No points if ≥ 2 errors
[ ] F B A C M N A A J K L B A F A K D E A A A J A M O F A A B   __/1

Serial 7 subtraction starting at 100   [ ] 93   [ ] 86   [ ] 79   [ ] 72   [ ] 65   __/3
4 or 5 correct subtractions: **3 pts**, 2 or 3 correct: **2 pts**, 1 correct: **1 pt**, 0 correct: **0 pt**

LANGUAGE

Repeat : I only know that John is the one to help today. [ ]
The cat always hid under the couch when dogs were in the room. [ ]   __/2

Fluency / Name maximum number of words in one minute that begin with the letter F   [ ] _____ (N ≥ 11 words)   __/1

ABSTRACTION

Similarity between e.g. banana - orange = fruit [ ] train – bicycle [ ] watch - ruler   __/2

DELAYED RECALL

Has to recall words WITH NO CUE	FACE [ ]	VELVET [ ]	CHURCH [ ]	DAISY [ ]	RED [ ]	Points for UNCUED recall only	__/5
Optional — Category cue							
Optional — Multiple choice cue							

ORIENTATION

[ ] Date   [ ] Month   [ ] Year   [ ] Day   [ ] Place   [ ] City   __/6

Normal ≥ 26 / 30   **TOTAL** __/30
Add 1 point if ≤ 12 yr edu

Mini-Cog©

Instructions for Administration & Scoring

ID: _____ Date: _____

Step 1: Three Word Registration

Look directly at person and say, "Please listen carefully. I am going to say three words that I want you to repeat back to me now and try to remember. The words are [select a list of words from the versions below]. Please say them for me now." If the person is unable to repeat the words after three attempts, move on to Step 2 (clock drawing).

The following and other word lists have been used in one or more clinical studies.[1-3] For repeated administrations, use of an alternative word list is recommended.

Version 1	Version 2	Version 3	Version 4	Version 5	Version 6
Banana	Leader	Village	River	Captain	Daughter
Sunrise	Season	Kitchen	Nation	Garden	Heaven
Chair	Table	Baby	Finger	Picture	Mountain

Step 2: Clock Drawing

Say: "Next, I want you to draw a clock for me. First, put in all of the numbers where they go." When that is completed, say: "Now, set the hands to 10 past 11."

Use preprinted circle (see next page) for this exercise. Repeat instructions as needed as this is not a memory test. Move to Step 3 if the clock is not complete within three minutes.

Step 3: Three Word Recall

Ask the person to recall the three words you stated in Step 1. Say: "What were the three words I asked you to remember?" Record the word list version number and the person's answers below.

Word List Version: _____ Person's Answers: _____ _____ _____

Borson S. J Am Geriatr Soc. 2003; 51:1451-4

UB-CAM

takes less than a minute combines UB-2 and 3D-CAM > 90% sens/spec

LINK to UB-CAM

https://deliriumnetwork.org/the-ultra-brief-confusion-assessment-method-ub-cam/

Ultra-Brief CAM [UB-CAM] UB-2/3D-CAM	
Instructions: Administer items in order specified. Direct questions of patients are *shown in italics* . • A positive sign for delirium is any incorrect, don't know, non-response, or non-sensical response. • CAM features 1-4 are indicated with F1, F2, F3, F4, respectively.	
Severe lethargy or severe altered level of consciousness	Check
1 **Severe lethargy or severe altered level of consciousness (no or minimal response to voice/touch).** If present, terminate assessment and ratings. **Patient is considered DELIRIOUS.** If not present, proceed to UB-2 Screener.	☐
UB-2 Screener	Check if positive
2 Ask both questions	
Please tell me the day of the week (F3)	☐
Please tell me months of the year backwards, say "December" as your first month (F2)	☐
Checkpoint: - If neither sign is positive/checked, STOP: patient is NOT DELIRIOUS - If at least one sign is positive/checked, proceed to next section (3) and follow as directed	
3D-CAM Algorithm: Part 1 - Patient Assessment	
3 **Assess Disorganized Thinking (Feature 3/F3). Stop, and go to Section 4, after the first positive sign (error) of Disorganized Thinking. Carry-forward errors from the UB2 Screener:**	Check if sign positive
Carry forward: Was the patient unable to correctly identify the day of the week? (F3, UB2)	☐
Please tell me the year we are in right now (F3)	☐
Please tell me what type of place is this [hospital, rehab, home, etc.] (F3)	☐
4 **Assess Attention (Feature 2/F2). Stop, and go to Section 5, after the first positive sign (error) of Inattention.** **Carry-forward errors from the UB2 Screener:**	Check if sign positive
Carry forward: Was the patient unable to correctly name the months of the year backwards (UB2)	☐
Please tell me the days of the week backwards, say "Saturday" as your first day(F2)	☐
Repeat these numbers in backwards order: "7-5-1" (F2)	☐
Repeat these numbers in backwards order: "8-2-4-3" (F2)	☐
5 **Assess Acute change or Fluctuation (Feature 1/F1). Stop, and go to Section 6, after the first positive sign of Acute Change is noted:**	Check if sign positive
Over the past day have you felt confused? (F1)	☐
Over the past day did you think that you were not really in the hospital [or location of interview]? (F1)	☐
Over the past day did you see things that were not really there? (F1)	☐

SCAN ME

UB-CAM APP available in iphone App store!!!

Marcantonio ER. Ann Intern Med. 2022; 175:65-73; Fick DM. J Hosp Med. 2015; 10:645-650; Motyl CM. JAGS 2020; 68:2572-2578.
https://deliriumnetwork.org/the-ultra-brief-confusion-assessment-method-ub-cam/

Take home message

Addressing cognitive function in older adults:

Key to achieving diagnostic excellence in this population!

Annotated bibliography available on request from conference organizers