Closing the Dementia Diagnosis Gap
The Science, the System, and the Stakes for Quality Patient Care

Presented By:

Professor Adrian Owen (PhD, OBE, FRS, FRSC, FCAHS) - Neuroscientist and Chief Scientific Officer - Creyos

Donna Malone (CPC, CRC, CRC-I, AHCCA, RAP) - Director Risk Capture, Population Health Management - Mass General Brigham

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Webinar Participant Tips

- All participant lines are muted. To protect your privacy, you will only see your name and the presenters names in the participant box.

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  - In the Event window, in the Panels drop-down list, select Q & A.

  - Type your question in the Q & A box.

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Your Presenters

Prof. Adrian Owen
Neuroscientist and Chief Scientific Officer
Creyos

Donna Malone
Director Risk Capture, Population Health Management
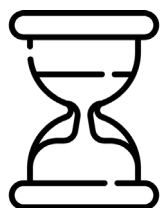Mass General Brigham

The Growing Dementia Crisis

70%
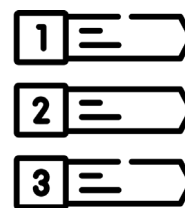of individuals living with dementia in the US remain undiagnosed[1]

14 million
Americans are projected to be living with dementia by 2060[2]

3 out of 5
people living with dementia wished they had gotten diagnosed sooner[3].

5th
leading cause of death for people aged 65 and older in 2021[4]

1. Alzheimer's Association, 2023 2. U.S. Census Bureau, 2021 3. Alzheimer's Society UK, 4. Alzheimer's Association, 2021

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Beyond the Statistics
The Real-World Impact of the Dementia Epidemic

Patients

Increases care complexity often without early diagnosis, leading to fragmented care, avoidable hospitalizations, and added pressure on primary care teams

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Drives up costs through longer lengths of stay, unplanned readmissions, issues from comorbid conditions, and a greater reliance on high-cost services

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Drives up costs through longer lengths of stay, unplanned readmissions, issues from comorbid conditions, and a greater reliance on high-cost services

Population Health Outcomes

Undermines population health goals by reducing quality of life and complicating chronic disease management–widening health disparities.

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The Science of Missed Diagnosis

Blunt Tools in a Precision Era

Many widely used tools weren't built for early detection—and research shows they can miss what matters most

Low Sensitivity to Early Impairment	Learning Effects / Practice Bias	Cultural and Educational Bias	Interpretation and Manual Errors
Traditional screeners rely on single cutoff scores that oversimplify brain health, often missing subtle impairments and providing minimal insight into specific cognitive domains.	Repeat testing can artificially inflate scores, masking true cognitive decline and impairing accuracy of longitudinal tracking	Scores can be skewed by socioeconomic status, education level, and cultural familiarity with content–leading to both false positives and missed cases	Results can vary based on the clinician's experience and patient's physical abilities, reducing consistency and reliability

> *Using a cut-off to interpret a cognitive test is very simple and straightforward, but it can be hazardous*
> *— Series & Burns, 2025*

> *Screener questions can be memorized or practiced…impacting their reliability for tracking cognitive changes over time – Lei et al, 2022*

> *MoCA can have specificity of 50% or lower, depending on the population – Kansagara & Freeman, 2010*

> *Manual administration involving fine motor actions like drawing can introduce barriers…especially in adults over 65 with motor or sensory impairment – Hill-Briggs et al 2007*

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The Subtleties Matter: Dementia Is a Cognitive Disease First

- Many early dementia symptoms overlap with typical aging—making them hard to spot

- Patients can present well in brief visits

- Reliance on patient-reported symptoms may under represent functional deficits

- Age-related decline is expected—but progressive neurodegeneration is not

- The difference lies in the pattern, frequency, and cognitive domains affected

| Signs of Dementia	Typical Age-Related Changes
Memory loss that disrupts daily life	Sometimes forgetting names or appointments
Challenges in planning or solving problems	Making occasional errors on select tasks
Difficulty completing familiar tasks	Occasionally needing help with certain tasks
Confusion with time or place	Getting confused, but figuring it out later
Trouble understanding visual images and spatial relationships	Vision changes related to age-related issues, like cataracts
New problems with words in speaking or writing	Sometimes having trouble finding the right word
Misplacing things and losing the ability to retrace steps	Misplacing things from time to time and retracing steps to find them
Decreased or poor judgement	Making bad decisions or mistake once in a while
Withdrawal from work or social activities	Sometimes feeling uninterested in family or social obligations
Changes in mood and personality	Developing very specific ways of doing things and not liking routine disrupted

Alzheimer's Association. (n.d.). *10 early signs and symptoms of Alzheimer's and dementia.* https://www.alz.org/alzheimers-dementia/10_signs

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Early Signs of Dementia Often Hide in Plain Sight

What looks like normal aging may be the first sign of decline

- Three patterns of decline:

  - **Rapid decline** (e.g. >3 MoCA points lost within 6 months)

  - **Stepwise deterioration** (often seen in vascular dementia)

  - **Slow decline** (more typical of Alzheimer's disease in early stages)

- Early changes often mimic "normal aging", making detection hard without highly sensitive testing

Cognitive domains affected by dementia and their trajectory since onset
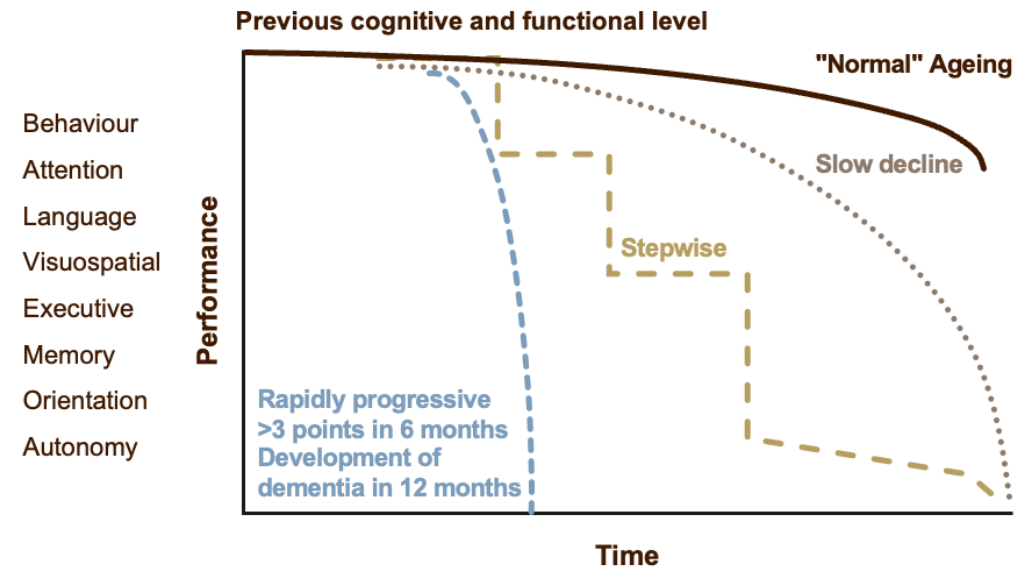
This work is adapted from 'World Alzheimer Report 2021: Journey through the diagnosis of dementia' by Gauthier et al., used under CC-BY. This work is licensed under Creative Commons license CC-BY-SA by The Lundbeck Foundation.

Risk Adjustment and the Diagnosis Gap

A Shift Toward Precision in Dementia Diagnosis

|	HCC-V24 (Legacy Model)
HCC Structure	Broad grouping: HCC 51 (with complications); HCC 52 (without complications
No. of HCCs	2
RAF Impact	0.346
Combination Rules / Hierarchies	Complication-driven category — versus severity of dementia
Subtypes Supported	Subtypes (e.g., Alzheimer's, vascular) rolled up into a broader category
Coding Specificity Requirements	Less emphasis on subtype specificity or early signs
Documentation Importance	Moderate documentation pressure
Implications for Risk Adjustment	Less incentive to capture mild/early-stage dementia

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A Shift Toward Precision in Dementia Diagnosis

	HCC-V24 (Legacy Model)	HCC-V28 (Incoming Model)
HCC Structure	Broad grouping: HCC 51 (with complications); HCC 52 (without complications	Specified severity: HCC 125 (severe); HCC 126 (moderate); HCC 127 (mild or unspecified)
No. of HCCs	2	3
RAF Impact	0.346	0.341
Combination Rules / Hierarchies	Complication-driven category — versus severity of dementia	No longer based on complications — subtypes must be documented accurately with complications, when applicable
Subtypes Supported	Subtypes (e.g., Alzheimer's, vascular) rolled up into a broader category	Alzheimer's, vascular dementia, and behavioral disturbances more clearly delineated
Coding Specificity Requirements	Less emphasis on subtype specificity or early signs	Greater emphasis on specificity and supporting documentation
Documentation Importance	Moderate documentation pressure	Increased documentation pressure — specificity, visit notes, timing
Implications for Risk Adjustment	Less incentive to capture mild/early-stage dementia	Stronger financial incentive for early and accurate diagnosis
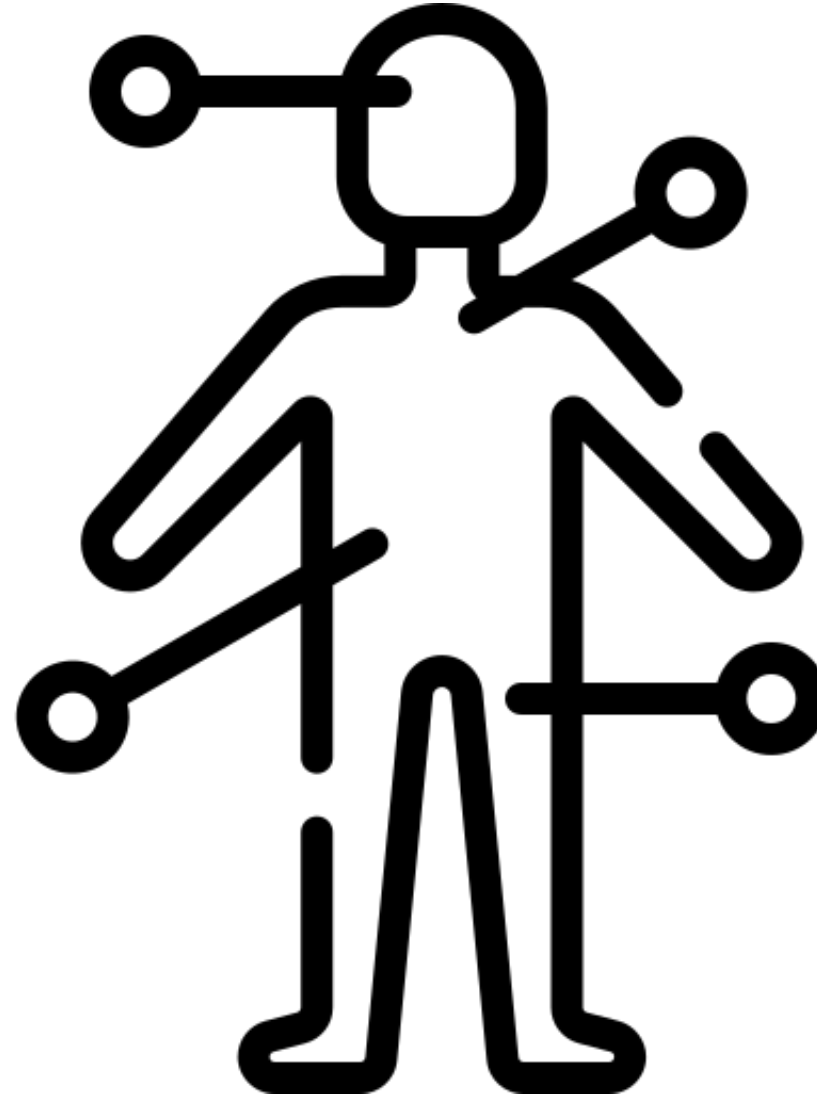
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70-year-old female
(Community, Aged, Non-Dual)

Demographic RAF = 0.395
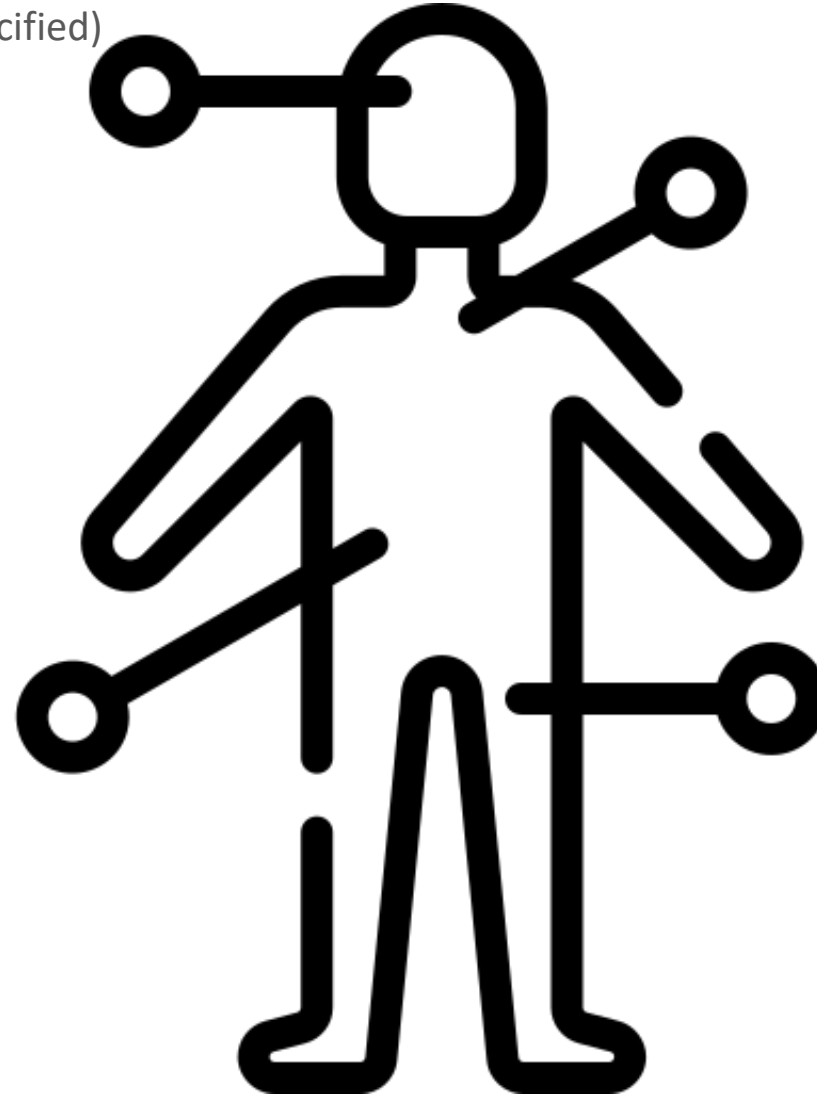
70-year-old female

(Community, Aged, Non-Dual)

Demographic RAF = 0.395

Condition-Specific Coding
- Unspecified dementia, mild, without behavioral disturbance etc(F03.A0) -

HCC 127 (0.341)
(Dementia, Mild or unspecified)

70-year-old female

(Community, Aged, Non-Dual)

Demographic RAF = 0.395
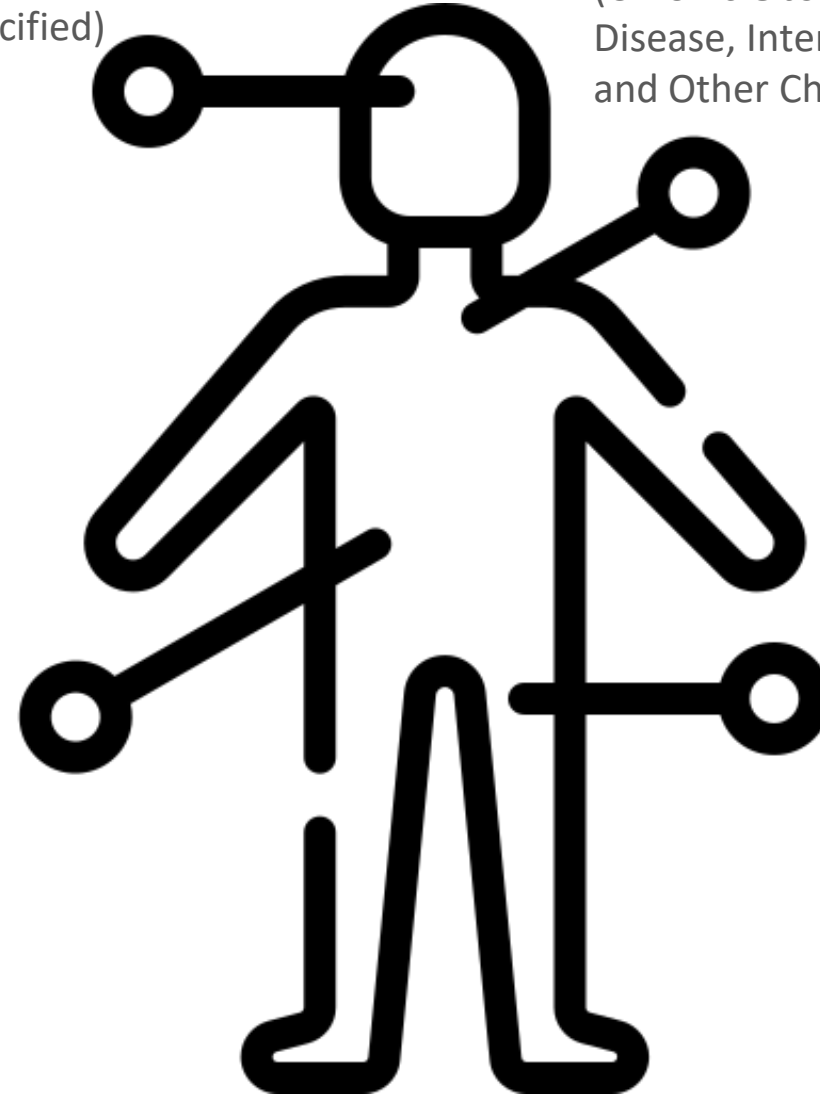
Condition-Specific Coding

- Unspecified dementia, mild, without behavioral disturbance etc(F03.A0) -

- COPD, unspecified (J449)

HCC 127 (0.341)
(Dementia, Mild or unspecified)

HCC 280 (0.319)
(Chronic Obstructive Pulmonary Disease, Interstitial Lung Disorders, and Other Chronic Lung Disorders)

70-year-old female

(Community, Aged, Non-Dual)

Demographic RAF = 0.395

Condition-Specific Coding

- Unspecified dementia, mild, without behavioral disturbance etc(F03.A0) -

- COPD, unspecified (J449)

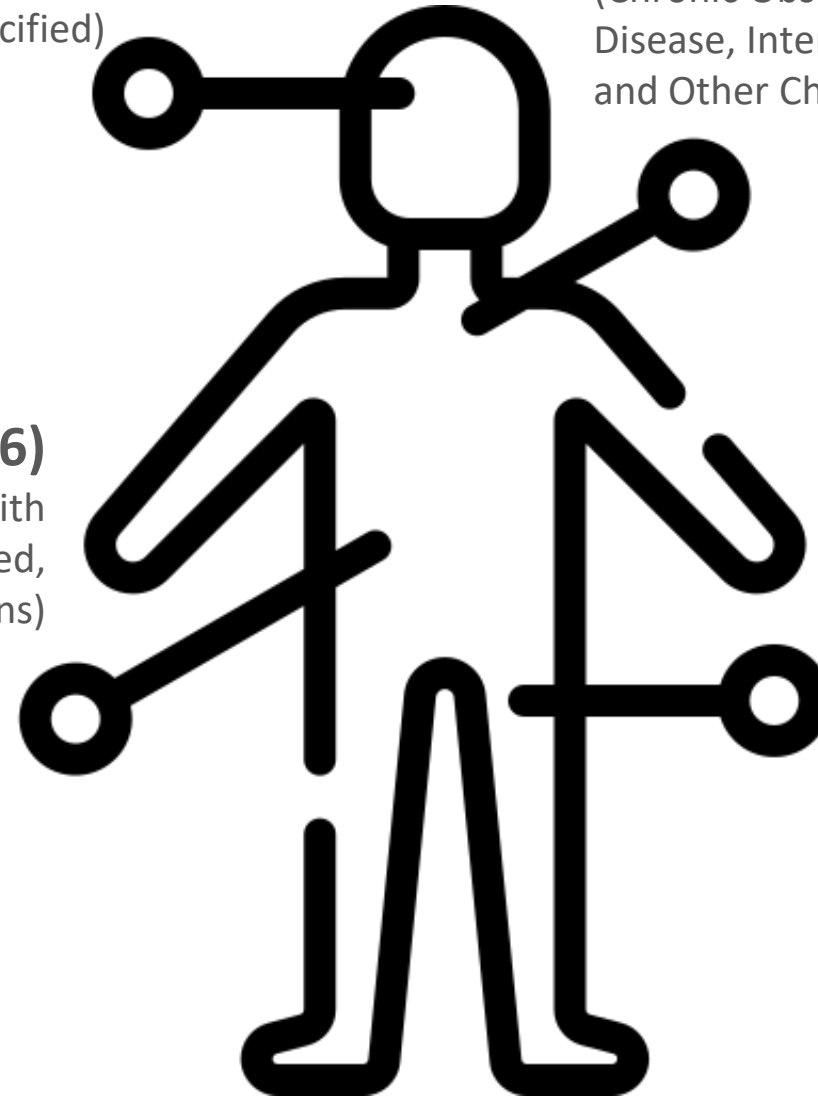- Type 2 diabetes with hyperglycemia (E11.65)

HCC 127 (0.341)
(Dementia, Mild or unspecified)

HCC 280 (0.319)
(Chronic Obstructive Pulmonary Disease, Interstitial Lung Disorders, and Other Chronic Lung Disorders)

HCC 38 (0.166)
(Diabetes with glycemic, unspecified, or no complications)

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70-year-old female

(Community, Aged, Non-Dual)

Demographic RAF = 0.395

Condition-Specific Coding

- Unspecified dementia, mild, without behavioral disturbance etc(F03.A0) -

- COPD, unspecified (J449)

- Type 2 diabetes with unspecified complications (E11.8)

- Rheumatoid lung disease with rheumatoid arthritis of multiple sites (M05.19)

HCC 127 (0.341)
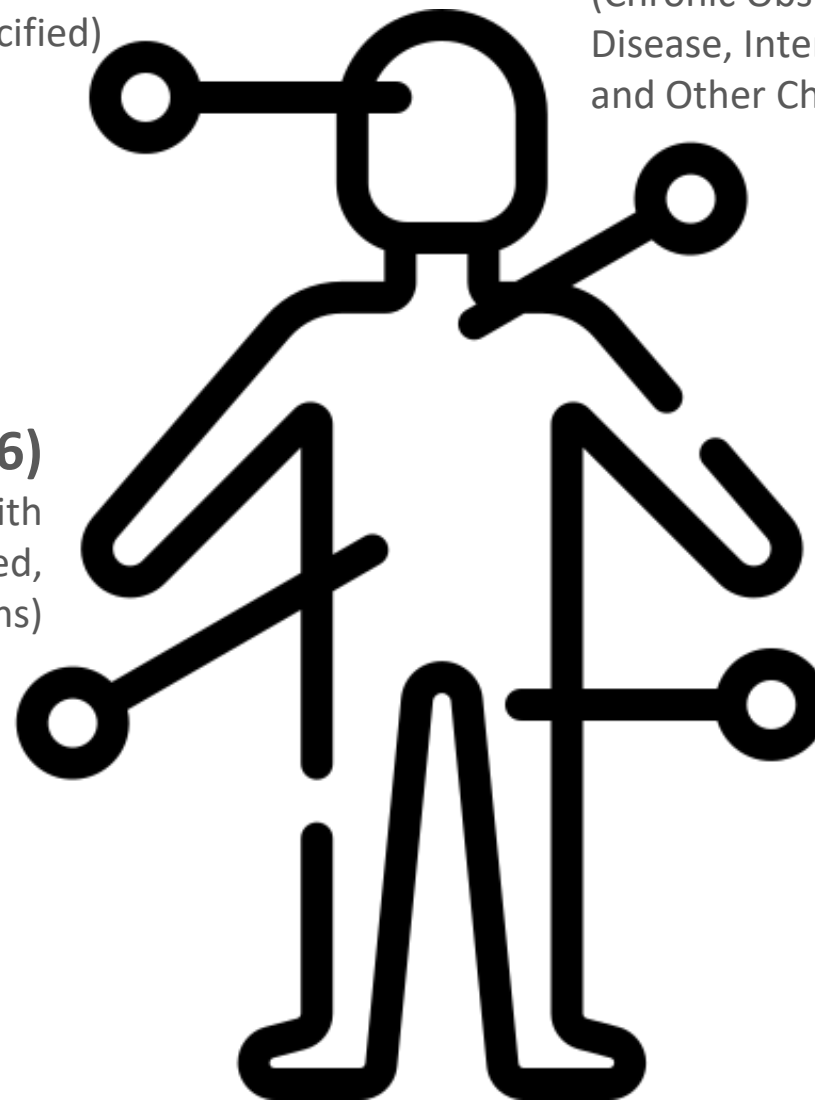(Dementia, Mild or unspecified)

HCC 280 (0.319)
(Chronic Obstructive Pulmonary Disease, Interstitial Lung Disorders, and Other Chronic Lung Disorders)

HCC 38 (0.166)
(Diabetes with glycemic, unspecified, or no complications)

HCC 93 (0.617)
(Rheumatoid Arthritis and Other Specified Inflammatory Rheumatic Disorders)

70-year-old female

(Community, Aged, Non-Dual)

Demographic RAF = 0.395

Condition-Specific Coding

- Unspecified dementia, mild, without behavioral disturbance etc(F03.A0)

- COPD, unspecified (J449)

- Type 2 diabetes with hyperglycemia (E11.65)

- Rheumatoid lung disease with rheumatoid arthritis of multiple sites (M05.19)

RAF Subtotal = 1.838
- PY25 Normalization factor = ÷ 1.045
- PY25 MA PC adjustment = x 0.941

RAF Total = 1.655

MA Payment = $19K - $20K PMPY

HCC 127 (0.341)
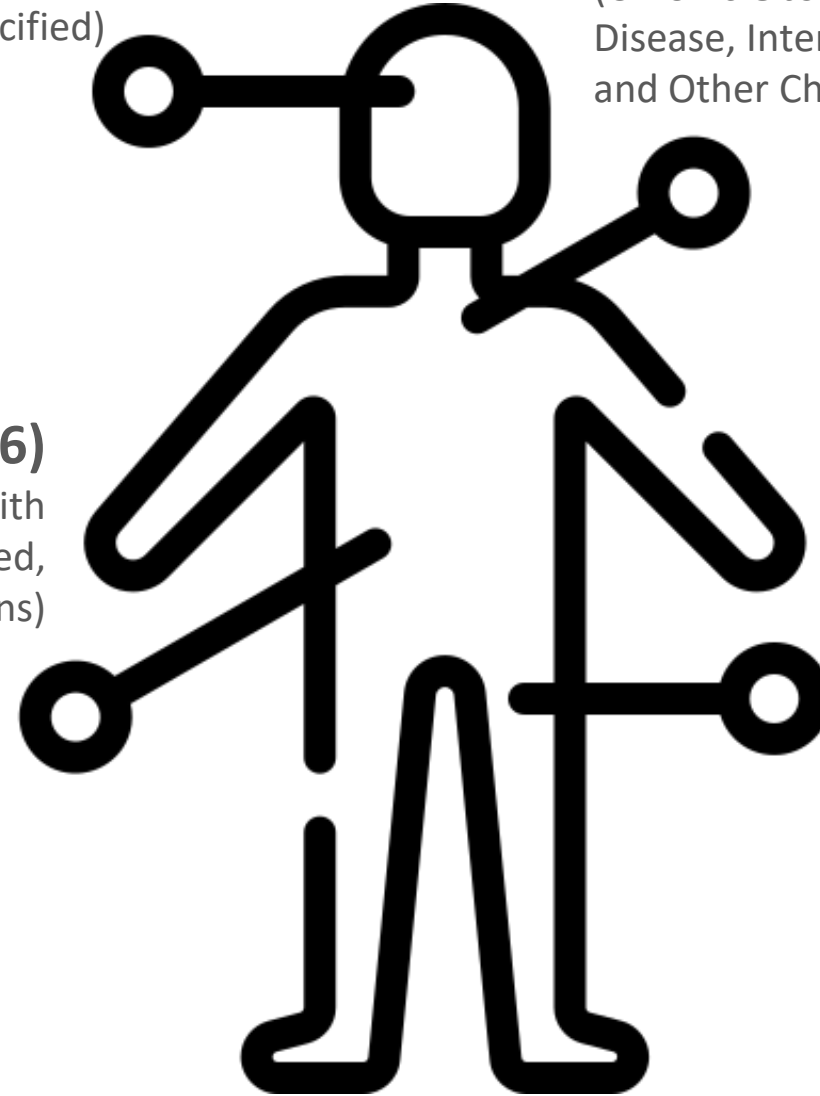(Dementia, Mild or unspecified)

HCC 280 (0.319)
(Chronic Obstructive Pulmonary Disease, Interstitial Lung Disorders, and Other Chronic Lung Disorders)

HCC 38 (0.166)
(Diabetes with glycemic, unspecified, or no complications)

HCC 93 (0.617)
(Rheumatoid Arthritis and Other Specified Inflammatory Rheumatic Disorders)

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The Details Matter
Accurate Dementia Coding Drives RAF and Compliance

The Specificity Spectrum

❌ **Unspecified**
No HCC / High Audit Risk

⚠️ **Generic DX**
Low confidence / Potentially dropped in review

✅ **Specified DX**
HCC 127 / 126 / 125 (0.341)

SPECIFIC CODING PATH

✔ Maps to HCC codes
✔ RAF score captured
✔ Reimbursement accuracy
Audit confidence

UNSUBSTANTIATED CODING PATH

❌ No mapped HCC
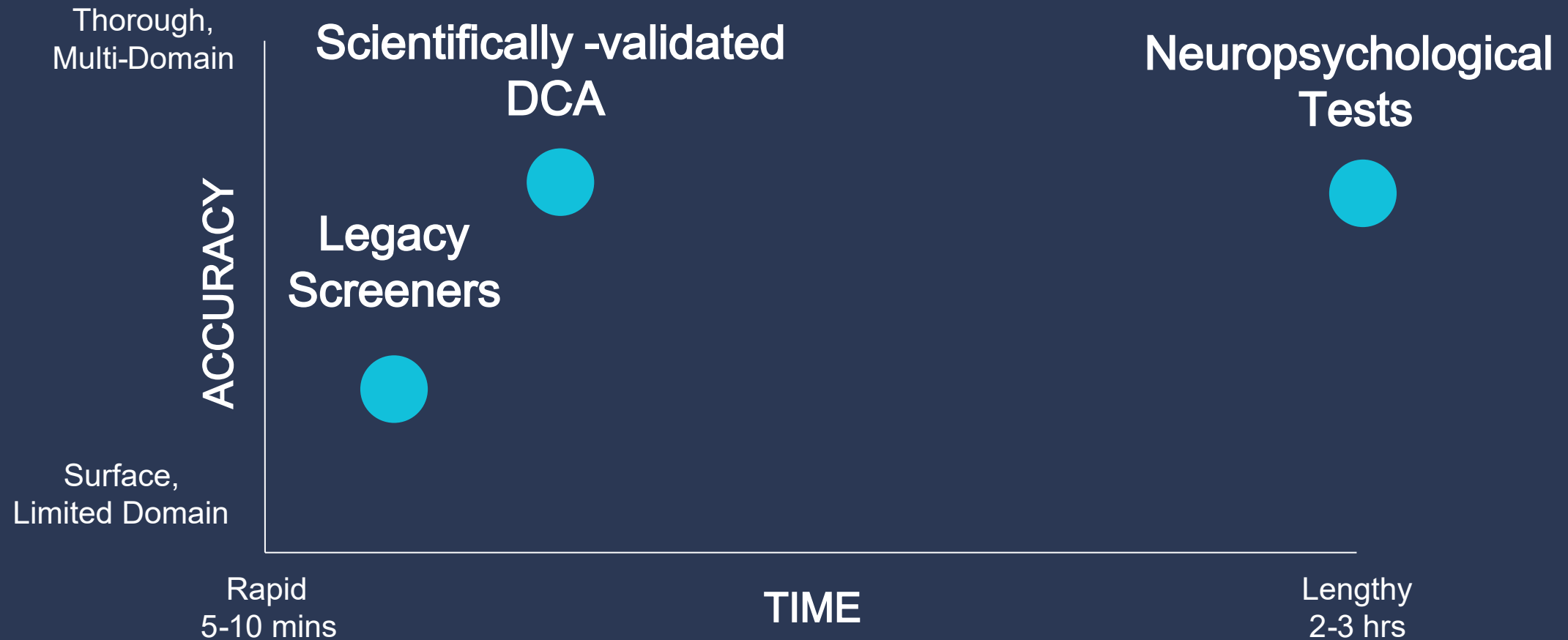❌ RAF not captured
❌ RADV flag
❌ Potential Recoupment
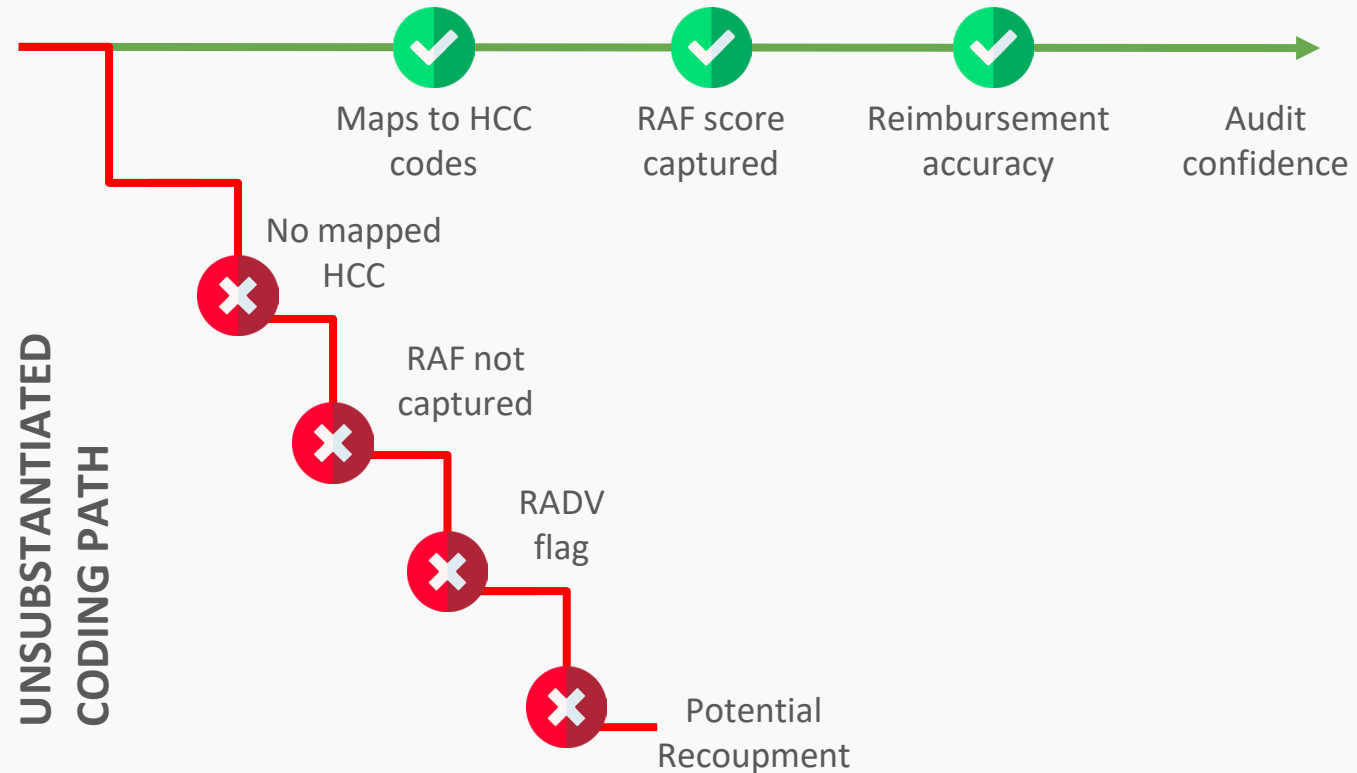
From Detection to Documentation: Best Practices in Cognitive Coding

☑ Use validated assessments

☑ Document severity

☑ Link to functional impact (IADLs)

☑ Ensure documentation matches coded Dx

☑ Use the appropriate ICD-10 codes to capture the severity of dementia

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Bridging the Gap

Digital Speed. Neuropsychological Precision

- Validation of a novel computerized test battery for automated testing (Levine et al., 2013)

- 2-3 hour Neuropsychological test battery vs. Creyos (30 mins)

- A 30 minute battery of computerized measures of attention, memory and executive functioning was comparable to the standard 2-3 hour (paper and pencil) neuropsychological battery in terms of its latent structure and relation to age
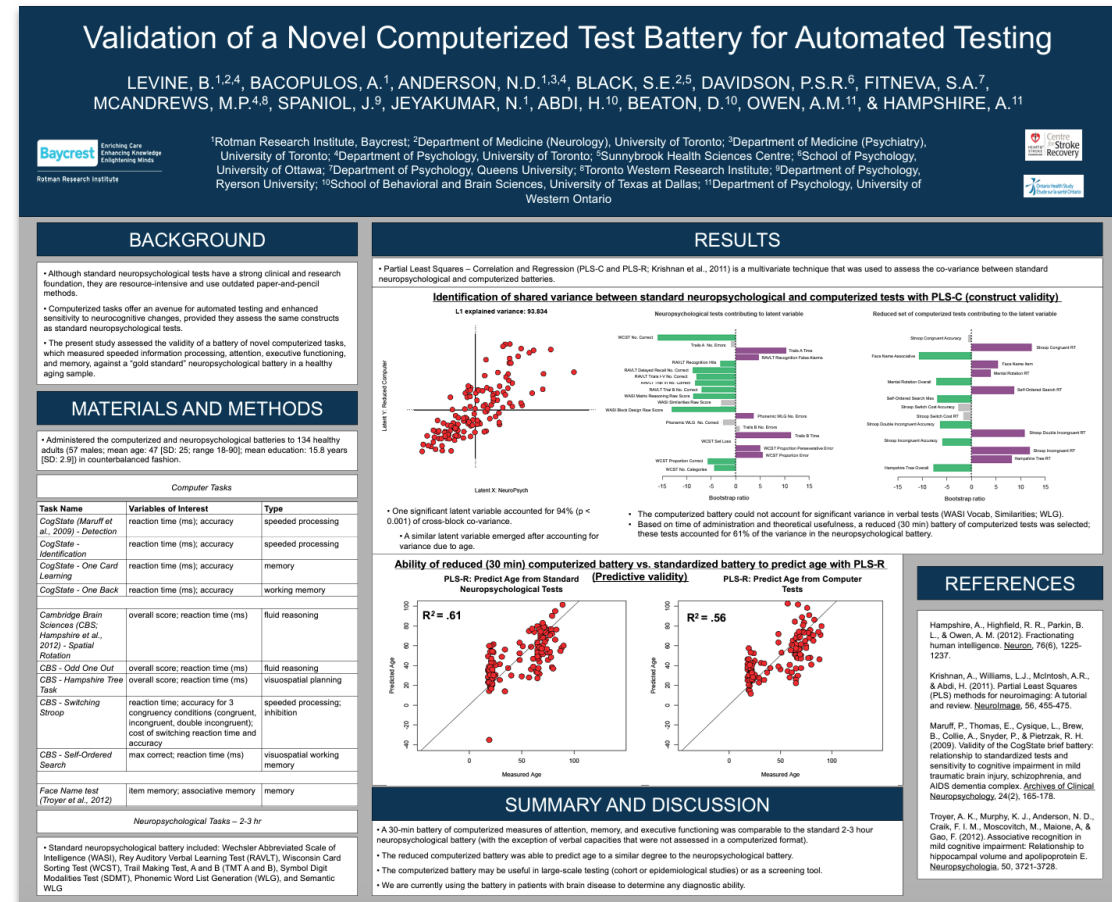
A Scalable Workflow Example for Assessment in Primary Care
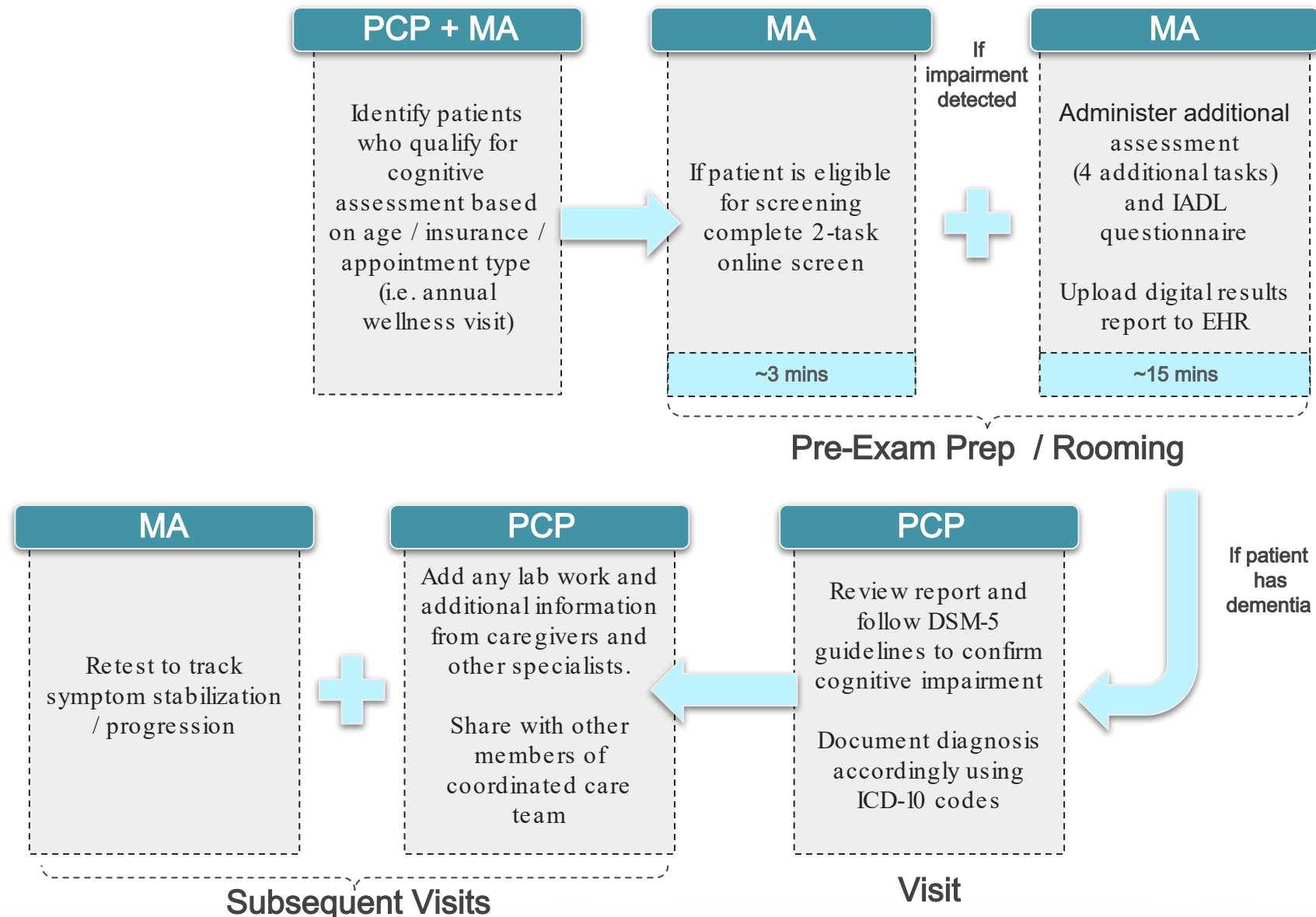
PCP + MA

Identify patients who qualify for cognitive assessment based on age / insurance / appointment type (i.e. annual wellness visit)

MA

If patient is eligible for screening complete 2-task online screen

~3 mins

If impairment detected

MA

Administer additional assessment (4 additional tasks) and IADL questionnaire

Upload digital results report to EHR

~15 mins

Pre-Exam Prep / Rooming

MA

Retest to track symptom stabilization / progression

PCP

Add any lab work and additional information from caregivers and other specialists.

Share with other members of coordinated care team

PCP

Review report and follow DSM-5 guidelines to confirm cognitive impairment

Document diagnosis accordingly using ICD-10 codes

If patient has dementia

Subsequent Visits

Visit

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A Win for All Stakeholders

Patients

Enables earlier diagnosis, care planning, and access to resources—improving quality of life, reducing avoidable crises, and better supporting the care journey.

Health Systems

Reduces costs by minimizing unnecessary hospitalizations, ED visits, and diagnostic delays—while improving care coordination and optimizing resource utilization.

Population Health Outcomes

Supports healthier aging populations by enabling proactive management, improving chronic disease outcomes, and reducing disparities in cognitive care.

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Q & A

Thank you

For more information on how the Creyos dementia protocol can help support your health system or physician group

www.creyos.com