Screening

History/Physical and Stratification

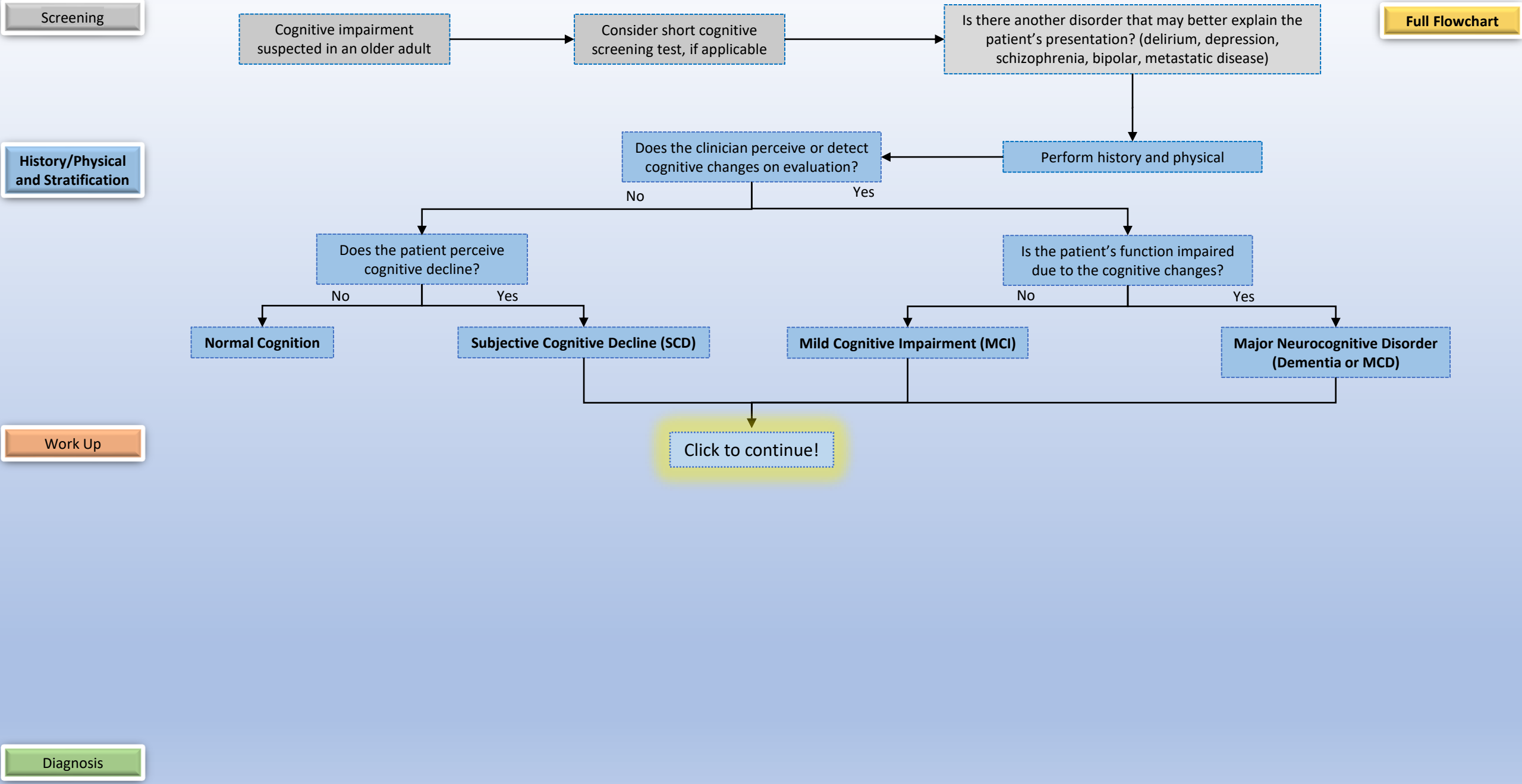
Work Up

Diagnosis

Full Flowchart

Cognitive impairment suspected in an older adult → Consider short cognitive screening test, if applicable → Is there another disorder that may better explain the patient's presentation? (delirium, depression, schizophrenia, bipolar, metastatic disease)

Click to continue!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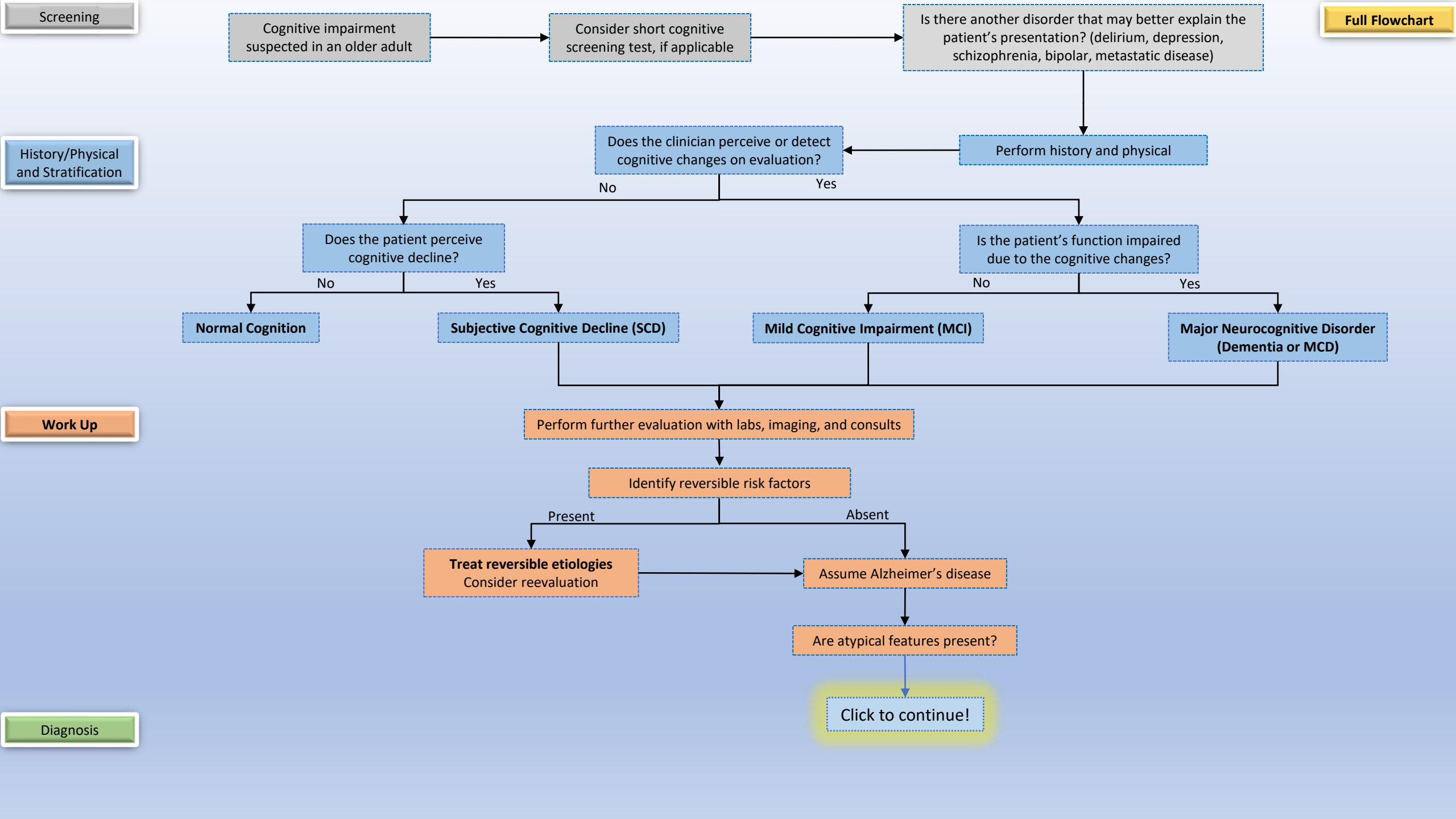
Mild Cognitive Impairment (MCI)
Major Neurocognitive Disorder (Dementia or MCD)
Click to continue!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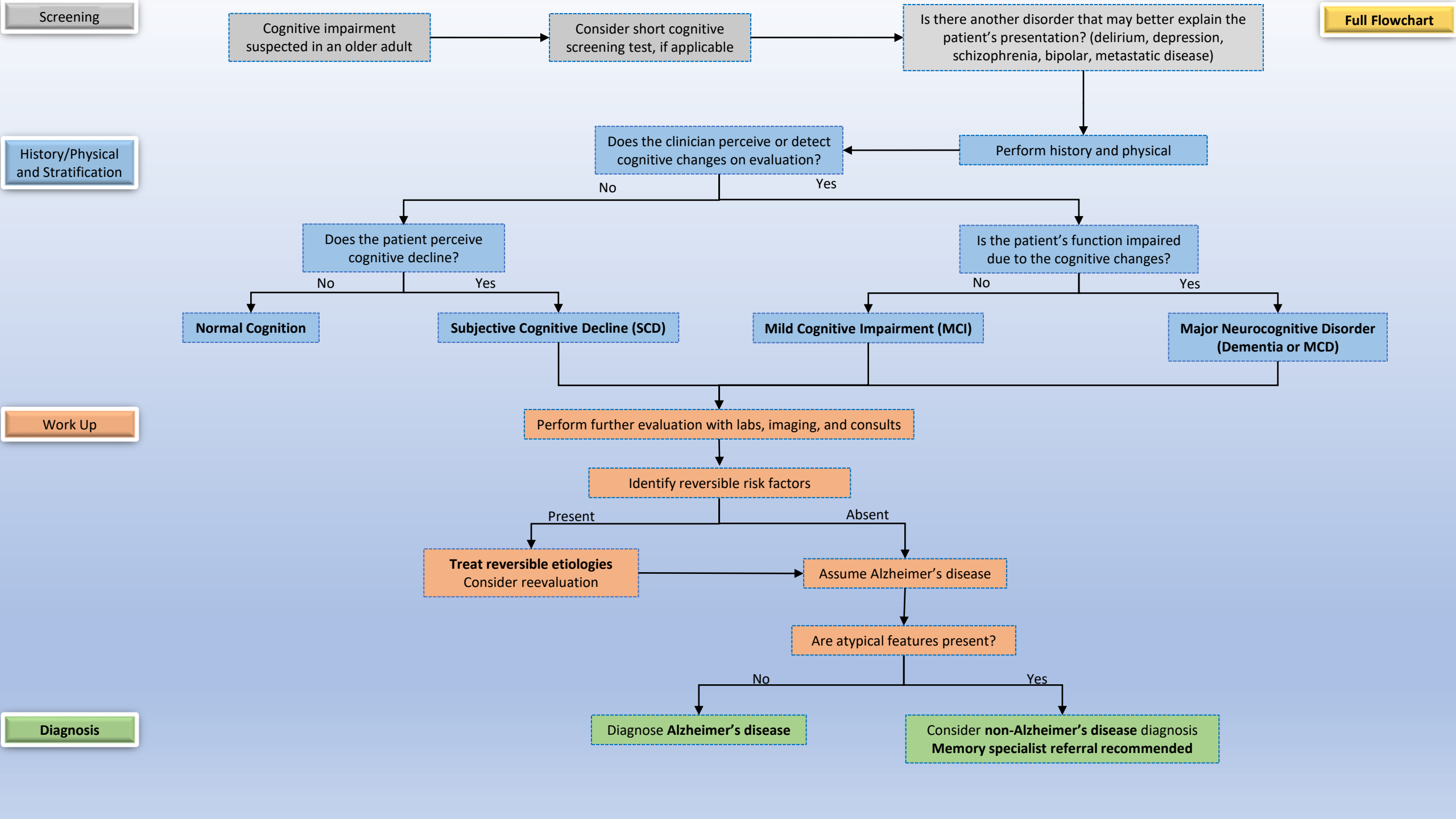
Absent
Treat reversible etiologies
Consider reevaluation
Assume Alzheimer's disease
Are atypical features present?
Click to continue!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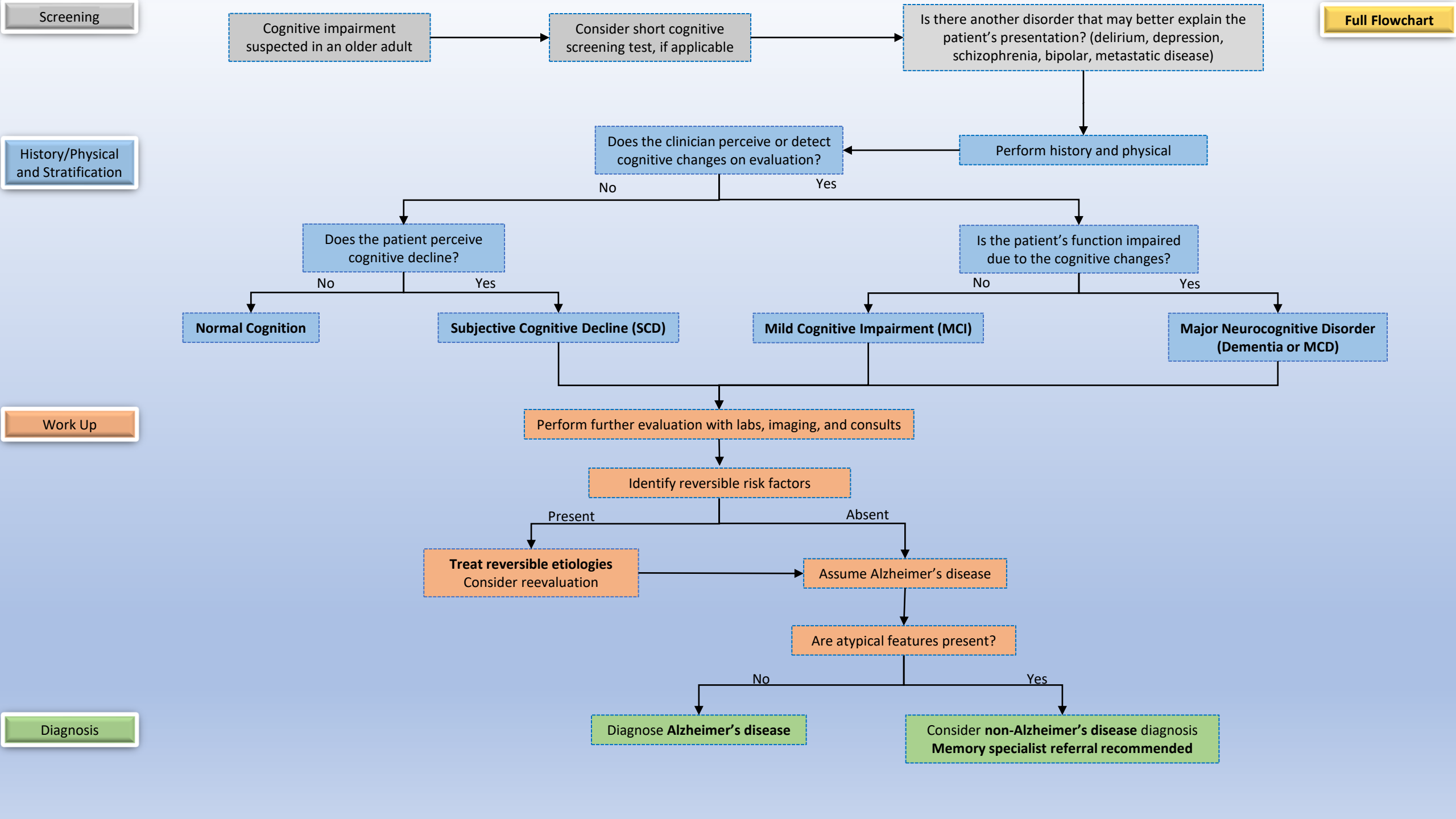
Memory specialist referral recommended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Cognitive impairment suspected in an older adult

History/Physical and Stratification

**PEARL: Dementia is common and increases with age, affecting 3% of people aged 65-74 years and 30% of those 85 and older.**

New cognitive impairment is characterized by a **decline in one or more cognitive domains**:

1. **Learning and memory**: ability to encode, retrieve, store, and make new memories
2. **Language:** ability to understand and produce language
3. **Executive function**: ability to reason and problem solving
4. **Perceptual-motor function**: ability to detect sensations, perform motor skills and copy/produce drawings of objects (construction)
5. **Complex attention**: ability to focus on relevant info (selective) and sustain attention
6. **Social cognition:** ability to understand and respond to others' feelings and social situations

Work Up

Cognitive impairment is common in older adults with an estimated prevalence of ~11% in adults aged 65 and older.

However, dementia has been estimated to be undiagnosed at least 40% of the time which can lead to reduced quality of life and caregiver burden.

**(Selected) Warning signs of possible cognitive impairment**:

- Any patient or family concern
- Memory loss or forgetfulness, repeating questions
- Getting lost while driving or getting into car accidents
- New personality changes (depression, impulsivity, apathy, inappropriate behavior, hallucinations, or paranoia)
- Difficulty in completing familiar tasks:
  - Managing healthcare including taking medications
  - Managing finances
  - Being a "poor historian"

Diagnosis

*Click for more about suspecting cognitive impairment in an older adult!*

**PEARL: The USPSTF has found that screening instruments are adequate to detect cognitive impairment. However, they concluded that there is insufficient evidence to assess the balance of benefits or harms of screening because the current treatments have small and/or short-lived benefits.**

A comprehensive cognitive evaluation is a necessary and time intensive process! In situations where there is a **reasonable** concern for cognitive impairment, a complete evaluation is necessary because a negative screening test raises concern of a false negative.

In select circumstances, a brief cognitive screen may be helpful in ruling out cognitive impairment. Choose a screen from the table below:

| Time | Name of Screen (responder) | Sensitivity | Specificity | PPV | NPV |
|---|---|---|---|---|---|
| <5 minutes | Mini-Cog (patient) | MCI: 0.5<br>Dementia: 0.87-1.0 | MCI: 0.73<br>Dementia: 0.54-0.85 | MCI: 0.9<br>Dementia: 0.23-0.53 | MCI: 0.22<br>Dementia: 0.88-1.0 |
| | AD8 (informant) | Dementia: 0.82-0.91 | Dementia: 0.74-0.91 | Dementia: 0.63-0.84 | Dementia: 0.85-0.98 |
| | FAQ (informant) | Dementia:0.86-0.94 | Dementia:0.82-0.84 | Dementia: 0.33-0.50 | Dementia: 0.98 |
| 6-10 minutes | SLUMS (patient) | MCI: 0.74-0.92<br>Dementia: Not reported | MCI: 0.65-0.81<br>Dementia: Not reported | MCI: 0.64-0.82<br>Dementia: Not reported | MCI: 0.64-0.93<br>Dementia: Not reported |

*MCI = mild cognitive impairment*

Consider administering one tool to the patient (Mini-Cog or SLUMS) while the informant fills out their screen (AD8 or FAQ). Ideally, the informant is not in the room when you administer a cognitive screening test to a patient.

*Click for more info about screening!*

Screening

History/Physical and Stratification

Work Up

Diagnosis

Is there another disorder that may better explain the patient's presentation? (delirium, depression, schizophrenia, bipolar, metastatic disease)

Full Flowchart

**PEARL: A dementia diagnosis requires excluding other potential etiologies!**

Prior to proceeding with a full evaluation of suspected cognitive impairment, it is important to perform a quick review of the patient's problem list/PMH in their medical record to identify if they have been previously diagnosed with **cognitive impairment, psychiatric disease,** or **active cancer**. Additionally, consider whether the patient may be experiencing delirium. This review will help you decide if, and when, to proceed with the full evaluation for suspected cognitive impairment.

*Click for more info about dementia considerations and mimics!*

Perform history and physical

History/Physical and Stratification

Work Up

Diagnosis

## History and Physical for Cognitive Impairment (Abbreviated)

| | |
|---|---|
| **History** *Collected from patient and informant* | HPI:<br>• Onset of cognitive changes<br>• Tempo of progression (weeks, months, years)<br>• Cognitive domain involved (with examples):<br>  • Learning and memory: *repeating questions, difficulty keeping track of appointments*<br>  • Language: *word finding difficulty, difficulty with writing*<br>  • Executive function: *Difficulty with planning or finances*<br>  • Perceptual-motor function: *Trouble using daily objects (utensils, remote), difficulty walking*<br>  • Complex attention: *Easily distracted, unable sustain focus on reading*<br>  • Social cognition: *Acting inappropriately in social situations, trouble with social cues*<br>• Degree of functional impairment (assistance/dependence with ADLs and IADLs)<br><br>ROS:<br>❑ Falls?<br>❑ Hallucinations?<br>❑ Tremor?<br>❑ Gait changes?<br>❑ Sleep changes?<br>❑ Mood changes?<br>❑ Personality changes?<br><br>Medical history: cardiovascular risk factors and disease, head trauma history<br>Family history: cognitive impairment<br>Social history: substance use, sexual history, educational attainment, work history,<br>Review of medications: anticholinergics, sedatives |
| **Physical exam** | • General physical exam<br>• Neurologic exam including assessment for tremor, coordination, muscle tone, and gait |
| **Screening Tests** | • Cognitive screening: SLUMS (recommended as it is free and readily accessible)<br>• Depression screening: PHQ9<br>• Sleep apnea screening: STOP-BANG |

*Click for more info on and how to do a comprehensive H&P!*

Does the clinician perceive or detect cognitive changes on evaluation?

**Objective evidence of cognitive decline includes:**

- Acquired impairment (assistance or dependence) in IADLs or ADLs due to cognitive changes.

**OR**

- Abnormal score on a validated cognitive test*

*Validated cognitive tests include the Mini-COG, MMSE, SLUMS, MoCA, neuropsychiatric testing, and many more.

Does the patient perceive cognitive decline?

A patient or family may present to clinic with a complaint of memory loss, word-finding difficulties, or other cognitive domain deficit in the absence of detectable objective changes on evaluation.

This may be due to cognitive changes that are too subtle to pick up on conventional testing.

It is important to consider doing whether further evaluation is warranted as this scenario (subjective cognitive decline) is emerging as a “pre-dementia” state.

Is the patient's function impaired due to the cognitive changes?

**PEARL: The distinction between mild cognitive impairment and major neurocognitive impairment (dementia) is made based on presence of functional impairment.**

It is key to ascertain whether the patient's **daily functioning is impaired due to the cognitive changes** in order to make a correct diagnosis.

Reviewing whether there have been any **new** changes in the patient's ability to manage **ADLs and IADLs** is key here; some people may never have performed a particular IADL (due to a long-standing division of household responsibilities)

- **ADLs**: bathing, dressing, grooming, toileting, feeding, transferring, maintaining continence
- **IADLs**: transportation, shopping, use of telephone, housework, laundry, meal preparation, medication management, finance management

**Normal Cognition**

**PEARL: Some cognitive changes, such as reduced processing speed and mental flexibility, are a normal part of aging and do not interfere with daily life. Other changes, such as language and crystalized intelligence, improve with age!**

Occasionally an evaluation of suspected cognitive impairment will lead to a diagnosis of **normal cognition**. This is true if their cognitive testing is preserved, the patient does not have any concerns, and there are no abnormalities detected on the provider's exam.

| | Normal cognition | Subjective Cognitive Decline | Mild Cognitive Impairment | Major Neurocognitive Disorder |
|---|---|---|---|---|
| Patient/Family Concern | None | Concerned | +/- Concern | +/- Concern |
| Cognitive Testing | Preserved | Preserved | Reduced | Greatly Reduced |
| Function | Preserved | Preserved | Preserved | Impaired |

*Click for more info on normal cognitive changes with aging!*

## Subjective Cognitive Decline (SCD)

**PEARL: There is a 4.5x greater risk of progression to mild cognitive impairment or dementia over seven years in those with SCD vs non-SCD.**

Subjective Cognitive Decline (SCD) indicates a subjective perception of cognitive decline by a patient, in the **absence of objective findings on medical evaluation.** When cognitive testing is performed, it is normal.

SCD is thought to represent an intermediate state between normal cognition and mild cognitive impairment.

SCD can **resolve, stabilize, or progress.**

| | Normal cognition | Subjective Cognitive Decline | Mild Cognitive Impairment | Major Neurocognitive Disorder |
|---|---|---|---|---|
| Patient/Family Concern | None | Concerned | +/- Concern | +/- Concern |
| Cognitive Testing | Preserved | Preserved | Reduced | Greatly Reduced |
| Function | Preserved | Preserved | Preserved | Impaired |

****Please note: While the diagnosis of SCD can be made here, further evaluation may be needed to determine the etiology.****

*Click for more info on subjective cognitive decline!*

## Mild Cognitive Impairment (MCI)

**PEARL: 10-20% of people aged 65+ with MCI will develop dementia in 1 year, and 50% over 5 years!**

Generally accepted diagnostic criteria for mild cognitive impairment (MCI):

1. Concern regarding a change in cognition – doctor, informant, patient

2. Impairment in one or more cognitive domains
   - Learning and memory, Language, Executive function, Perceptual-motor function, Complex attention, Social cognition)

3. Preservation of independence in functional abilities
   - It can take more time, be less efficient, and make more errors; with minimum aids or assistance

MCI can **improve, stabilize,** or **progress** into dementia.

| | Normal cognition | Subjective Cognitive Decline | Mild Cognitive Impairment | Major Neurocognitive Disorder |
|---|---|---|---|---|
| Patient/Family Concern | None | Concerned | +/- Concern | +/- Concern |
| Cognitive Testing | Preserved | Preserved | Reduced | Greatly Reduced |
| Function | Preserved | Preserved | Preserved | Impaired |

****Please note: While the diagnosis of MCI can be made here, further evaluation is needed to determine the etiology.****

*Click for more info on mild cognitive impairment!*

# Major Neurocognitive Disorder (Dementia or MCD)

**PEARL: There are over 50 million people in the world living with dementia!**

**A note on terminology:** "Major neurocognitive disorder" in DSMV replaced the previous terminology of "dementia"; both terms are considered acceptable and interchangeable by most.

**Diagnosis of major neurocognitive disorder in the DSM-V**:

1. Evidence from history or clinical assessment of an **acquired and significant impairment** in at least one cognitive domain
   - Learning and memory, Language, Executive, Perceptual-motor, Complex attention, Social cognition
2. Deficit must **interfere with independence** in everyday activities
3. Disturbances must not occur exclusively during course of **delirium**
4. Disturbances are not better accounted for by another mental disorder (such as depression, schizophrenia, etc.)

| | Normal cognition | Subjective Cognitive Decline | Mild Cognitive Impairment | Major Neurocognitive Disorder |
|---|---|---|---|---|
| Patient/Family Concern | None | Concerned | +/- Concern | +/- Concern |
| Cognitive Testing | Preserved | Preserved | Reduced | Greatly Reduced |
| Function | Preserved | Preserved | Preserved | Impaired |

****Please note: While the diagnosis of dementia can be made here, further evaluation is needed to determine the etiology.****

*Click for more info on major neurocognitive disorder (dementia)!*

Screening

Full Flowchart

History/Physical and Stratification

Perform further evaluation with labs, imaging, and consults

Work Up

**PEARL: Generally, lab tests are used to identify any potential modifiable contributors, and imaging is used to rule out the presence of non-dementia related pathology.**

**Labs:** CBC, CMP, TSH with reflex, B12/folate, +/- HIV and syphilis testing (based on risk factors)

**Imaging:** MRI brain without contrast (with hippocampal volume, if available) is preferred. Otherwise, CT head without contrast is the preferred alternative.

**Consults:** Consider referral for thorough neuropsychiatric testing. Neuropsychiatric testing can be useful if

- further cognitive testing is needed
- the evaluation reveals a borderline diagnosis
- the cognitive testing does not match the history
- or family and/or patient request it.

*Note:* Advanced diagnostic testing, including a lumbar puncture for measuring beta-amyloid and tau proteins in the CSF, and blood tests to measure beta amyloid, tau, and neurofilament light chains, are offered by some memory specialists now and will likely become increasingly used in the future. Currently, these tests are mostly for informational purposes and may be more helpful for people with SCD and MCI, rather than dementia, to guide treatment and prognosis. Primary care providers should be aware that these tests exist and let patients know that memory specialists may offer these informational tests.

*Click for more info!*

Diagnosis

The common conditions below are *rarely* the **sole** driver of major cognitive impairment. However, they may be responsible for mild cognitive impairment and generally worsen cognition at any level.

- Any uncontrolled medical condition
- Thyroid dysfunction
- B12 deficiency
- OSA and other sleep disorders
- Hearing loss, vision loss
- Depression
- Medications (especially **anticholinergics**, benzodiazepines, and other sedatives)
- Recent surgery

*Click for more info on potentially reversible contributors to cognitive impairment!*

Identify reversible risk factors

Most of the time, Alzheimer's disease will be the correct diagnosis. Alzheimer's accounts for 60-80% of cases of dementia in adults aged 65+.

**The most common form of Alzheimer's is characterized by:**

1. A primary amnestic pattern (memory is affected first and more severely than other domains)

2. No other neurologic deficits

3. Hallucinations and behavioral symptoms that occur middle to late in the course, not early in the disease course

Assume Alzheimer's disease

Screening

Full Flowchart

History/Physical and Stratification

Work Up

Diagnosis

Most of the time, treatment of a potentially contributing etiology does not significantly change a person's cognitive status.

However, there are exceptions depending on the severity or type of contributing factor.

For example, it is reasonable to delay a final diagnosis of the underlying etiology while pursuing treatment for a condition – such as hearing loss or major depression – and having the patient return for a repeat evaluation after their treatment is optimized.

**Treat reversible etiologies**
Consider reevaluation

**PEARL: Classic Alzheimer's disease has a primary amnestic pattern, a normal neurologic physical exam, and does not include hallucinations or behavioral symptoms until middle to late in the disease course. The presence of atypical features suggests an alternative etiology.**

Atypical features of dementia:

- ❑ Early onset at age <65
- ❑ Non-primary amnestic (memory is not the earliest or most severely effected)
- ❑ Rapid progression (weeks)
- ❑ Hallucinations
- ❑ Parkinsonism (resting tremor, bradykinesia, rigidity)
- ❑ Falls
- ❑ History of a stroke or vascular disease (especially with corresponding neurologic deficit)
- ❑ History of head trauma (repeated or associated with loss of consciousness)
- ❑ Heavy alcohol use
- ❑ HIV or syphilis infection present (with corresponding neurologic deficits)

*Click for more info on atypical features in dementia!*

Are atypical features present?

Screening

History/Physical and Stratification

Work Up

Diagnosis

Full Flowchart

**PEARL: Alzheimer's disease (AD) is a progressive, neurodegenerative disorder that is the most common type of dementia. The diagnosis of Alzheimer's disease largely remains a clinical diagnosis in practice, using the criteria like the ones below. However, we expect that biomarkers will enter routine practice instead of as a research framework especially as new therapeutic agents are developed.**

2011 NIA-AA criteria for **probable** Alzheimer's disease dementia:

1. Meets criteria for dementia (linked here)
2. Insidious onset. Symptoms have a gradual onset over months to years
3. Clear-cut history of worsening of cognition by report or observation
4. The initial and most prominent cognitive deficits are evident on history and examination in one of the following categories:

- **Amnestic presentation**: It is the most common syndromic presentation of AD dementia. The deficits should include impairment in learning and recall of recently learned information. There should also be evidence of cognitive dysfunction in at least one other cognitive domain.
- **Nonamnestic presentations**:
  - *Language presentation*: The most prominent deficits are in word-finding, but deficits in other cognitive domains should be present.
  - *Visuospatial presentation*: The most prominent deficits are in spatial cognition, including object agnosia, impaired face recognition, simultanagnosia, and alexia. Deficits in other cognitive domains should be present.
  - *Executive dysfunction*: The most prominent deficits are impaired reasoning, judgment, and problem solving. Deficits in other cognitive domains should be present.

2011 NIA-AA criteria for **possible** Alzheimer's disease dementia:

- Atypical course: Meets the core clinical criteria in terms of the nature of the cognitive deficits for AD dementia, but either has a sudden onset of cognitive impairment or demonstrates insufficient historical detail or objective cognitive documentation of progressive decline.
- Etiologically mixed presentation: Meets all core clinical criteria for AD but has either (a) concomitant cerebrovascular disease, defined by a history of stroke temporally related to the onset or worsening of cognitive impairment; or the presence of multiple or extensive infarcts or severe white matter hyperintensity burden; or (b) features of Dementia with Lewy bodies other than the dementia itself; or (c) evidence for another neurological disease or a non-neurological medical comorbidity or medication use that could have a substantial effect on cognition.

As the criteria above suggests, mixed presentations of dementia exist and are likely common!

*Click for more info on diagnosing Alzheimer's Disease!*

Diagnose **Alzheimer's disease**

**PEARL: The presence of atypical features does not necessarily exclude Alzheimer's disease as the cause of dementia but should prompt you to consider additional etiologies of dementia.**

Non-AD causes of dementia, using the DSMV terminology and classification of neurocognitive disorders (NCD), include:

- Vascular NCD (or vascular contributions to cognitive impairment and dementia [VCID])
- NCD with Lewy bodies
- NCD due to Parkinson's disease
- Frontotemporal NCD
- NCD due to traumatic brain injury
- NCD due to HIV infection
- NCD due to syphilis
- Substance/medication induced NCD (alcohol)
- Normal pressure hydrocephalus
- NCD due to Huntington's disease
- NCD due to prion disease
- NCD due to other medical conditions
- NCD due to multiple etiologies
- Unspecified NCD

Except for possible vascular-related neurocognitive disorder, **memory specialist referral is recommended** for further evaluation and management of non-Alzheimer's dementias. Ask your colleagues which specialists are present in your community or use alz.org/CRF to search for specialists by location.

**Memory specialists**: geriatricians, geriatric psychiatrists, and neurologists

Consider **non-Alzheimer's disease** diagnosis
**Memory specialist referral recommended**