

GPs are the gatekeepers of brain health:

Reshaping the approach to brain diseases by enhancing the early diagnosis capacity of GPs.

Primary Care Providers (PCPs) serve as the front line in the evolving landscape of healthcare, particularly when it comes to neurodegenerative illnesses and age-related brain conditions. As individuals' initial touchpoints with the healthcare system, PCPs play a pivotal role in establishing enduring patient relationships and coordinating care across various providers. A robust primary care framework not only leads to improved overall health outcomes and enhanced healthcare accessibility but also contributes to reduced per capita healthcare expenditures.

PCPs, specializing in family medicine, general internal medicine, general pediatrics, combined internal medicine/ pediatrics (med/peds), and general obstetrics and gynecology (ob/gyn), cater to the general medical needs of specific patient populations. Out of nearly 1 billion visits to office-based physicians in 2019, 50.3% were to primary care physicians¹. Despite this significant role, slightly less than one-third of the 624,434 physicians in the United States, spending most of their time in direct patient care, are specialists in primary care. General and Family Medicine practitioners (GPs) particularly stand out due to their extensive patient interaction time, making them crucial in identifying and providing initial diagnosis for a wide range of diseases and conditions across various medical domains and fields.

Physician Specialty	Number of Visits	Percent of Visits
General and Family Medicine	202,494,171	22.9%
Internal Medicine	81,700,886	9.2%
Pediatrics	126,063,214	14.3%
All Primary Care	410,258,271	46.4%
Other Medical Specialties	238,945,991	27.0%
Surgical Specialties	234,520,916	26.5%
All Visits	883,725,178	100.0%

Figure 1: Physician Office Visits by Specialty | Source: Robert Graham Center

GPs undergo training across diverse domains such as endocrinology, rheumatology, neurology, orthopedics, geriatrics, and rehabilitation. They typically serve as the initial touchpoint for patients dealing with neurodegenerative diseases. However, their role becomes notably more complex when addressing the early detection and referral of brain-related disorders (Normal Pressure Hydrocephalus), stroke, and more.

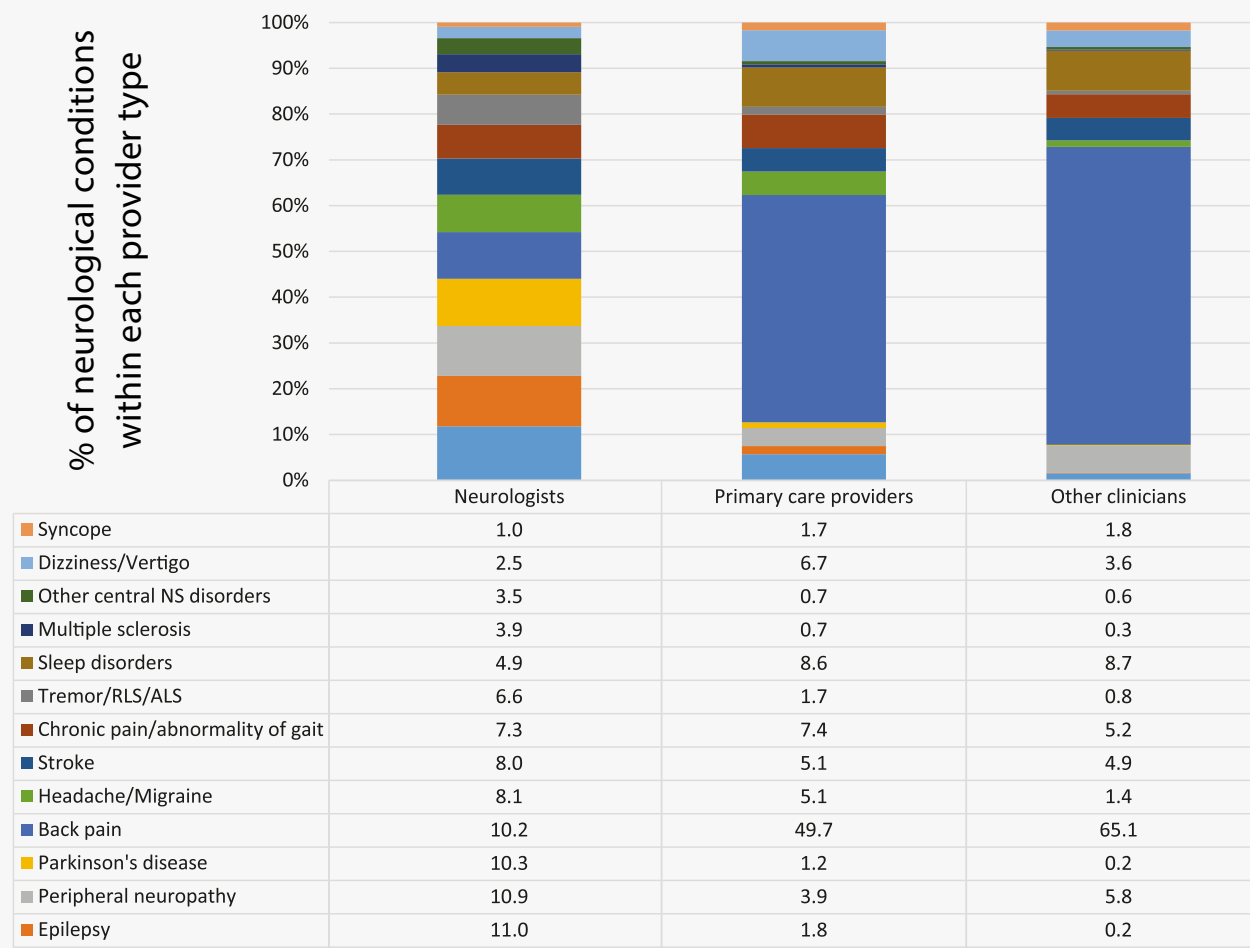


Figure 2. The distribution of neurological conditions cared by medical provider type 1-3

Source: Journal of Evaluation in Clinical Practice

In today's healthcare landscape, GPs face numerous challenges when dealing with neurodegenerative illnesses and age-related brain conditions. These challenges significantly impede the effectiveness and timeliness of the diagnostic process. Indistinct and overlapping symptoms make it difficult to pinpoint specific conditions. Additionally, GPs often lack specialized training and resources, further complicating the accurate identification of these complex disorders. The time constraints inherent in primary care settings exacerbate these challenges, presenting GPs with the dilemma of whether to refer patients to specialists for treatment or manage the follow-up themselves.

Main challenges faced by GPs in neurodegenerative illnesses and age-related brain conditions:



Vague Symptoms: Brain diseases often present symptoms that can be vague or nonspecific, making it challenging for PCPs to identify them. Symptoms such as headaches, fatigue, memory problems, or mood changes can be attributed to various factors, and distinguishing them as indicators of a brain disease requires specialized knowledge.

“A pair of recent studies both concluded that 92 percent of people experiencing MCI in the United States are not getting diagnosed at an early stage, preventing them from accessing new Alzheimer’s treatments that may be able to slow cognitive decline if it’s caught soon enough.”⁴

For example, the progression of Alzheimer's disease (Figure 3 below), from subtle brain changes to memory problems and physical disability, is known as the Alzheimer's disease continuum. It encompasses three main phases: preclinical Alzheimer's, mild cognitive impairment (MCI) due to Alzheimer's, and Alzheimer's dementia. Detection of Alzheimer's disease in the preclinical phase is nearly impossible in current clinical care, as there are no noticeable clinical symptoms. Detection at early stages is more feasible, however often missed or misdiagnosed due to current standard practice and lack of patient awareness.

Alzheimer's Disease (AD) Continuum

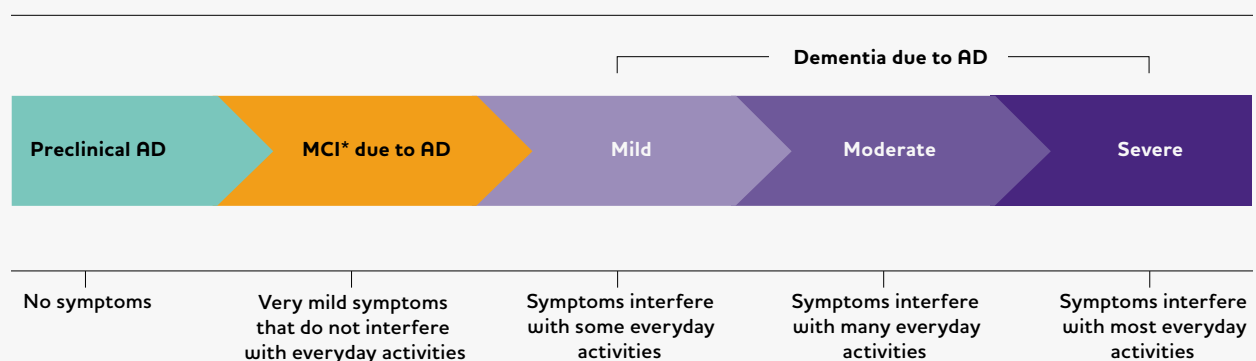


Figure 3. Alzheimer's Disease Continuum | Source : Alzheimer's Association



Overlapping Symptoms: Many brain diseases share common symptoms, which can further complicate the diagnostic process. For example, symptoms like dizziness and balance issues can be related to various conditions, including neurological disorders or inner ear problems. A depressive mood and cognitive deficits can manifest as symptoms of both depression and dementia. This overlap makes it difficult for PCPs to pinpoint the exact cause without specialized expertise.



Lack of Specialized Training: PCPs have a broad knowledge base but may not receive extensive training in diagnosing complex brain diseases. Their primary focus is on general health concerns and managing common ailments. While they are skilled at providing initial care and treating common conditions, they may lack the specialized knowledge needed to recognize subtle signs of brain diseases. Half of PCPs believe the medical profession is not prepared to meet the expected increase in demand.² More than half of PCPs say there are not enough specialists to receive patient referrals.



Diagnostic Guidelines and Resources: Navigating the dynamic landscape of neuroscience and the diverse spectrum of brain diseases poses a continuous challenge for Primary Care Physicians (PCPs) to stay abreast of the latest diagnostic guidelines and resources. This ongoing evolution can potentially impact their efficiency in accurately identifying and diagnosing specific brain disorders.

Diagnosis and Care Information Source

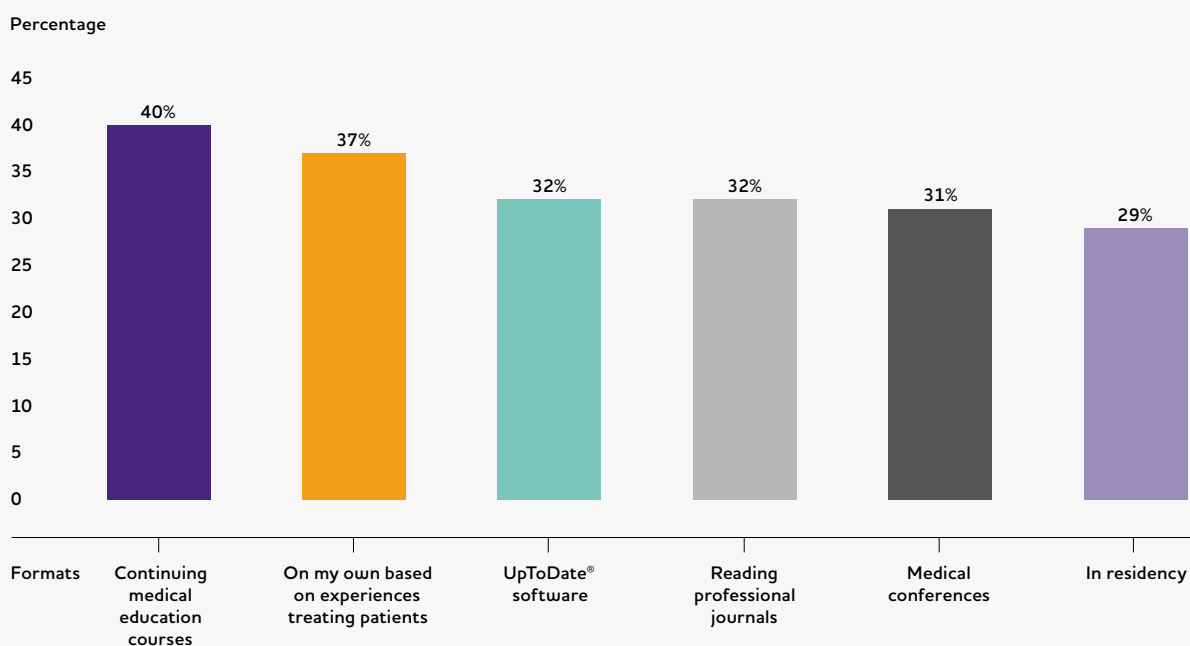


Figure 4. Where PCP's Learned the Most about Dementia Diagnosis and Care | Source : Alzheimer's Association



Time Constraints: PCPs often have limited time for each patient appointment, which can make it difficult to thoroughly investigate and assess potential brain disease symptoms. In some cases, the complexity of brain disease diagnosis may require additional time for comprehensive evaluation, which may not be feasible in a primary care setting.

“PCPs were estimated to require 26.7 h/day, comprising of 14.1 h/day for preventive care, 7.2 h/day for chronic disease care, 2.2 h/day for acute care, and 3.2 h/day for documentation and inbox management.”³



Referral Decision Dilemma: Knowing when to refer a patient to a neurologist or other specialists is a critical challenge for PCPs. They are required to balance the need for timely specialist involvement with the potential risks and costs associated with unnecessary referrals. Determining the threshold for referral requires careful consideration of the patient's symptoms, medical history, and available resources.

When dealing with detection and diagnosis of brain disorders, specifically neurodegenerative conditions affecting cognitive function like Alzheimer's disease or other dementias, identifying cognitive impairment and its cause is extremely important, but poses a considerable challenge. Individuals may sense that something is amiss, yet they can still manage daily tasks independently, and may not report these changes to the physician, or consult primary care physicians rather than specialists. The PCP is then required to ascertain the presence and origin of these deficits and decide how to address and screen patient's complaints, and whether to refer to a specialist.

To meet the challenges in the neurological field effectively, it is crucial to promote collaboration and ensure effective communication between primary care physicians (PCPs) and neurologists. This involves providing access to available resources, utilizing new technologies for early detection, fostering a culture of collaborative care, implementing enhanced training programs, and establishing clear referral guidelines. These measures collectively empower PCPs to recognize early warning signs of brain diseases and make informed referrals when necessary. Adopting this comprehensive approach ensures that patients receive timely and accurate diagnosis, facilitating optimal management of brain diseases.

Current diagnostic and screening methodology for neurological and neuro-psychiatric conditions at the PCP's office.

The initial and crucial stage of the diagnostic process involves a comprehensive examination of medical history, along with a thorough neurological and cognitive assessment. During the neurological examination, physicians subjectively evaluate motor function, sensory responses, reflexes, and cognitive abilities. The results of this examination guide the decision for further diagnostic tests if required, including laboratory tests and imaging, or a referral to a specialist such as a neurologist or psychiatrist. The current process faces significant challenges in providing effective brain health care and preventive measures. First, the detection of symptoms indicating brain diseases is often delayed and ineffective. Secondly, the referral to additional tests and specialists is time-consuming (an averaged 6 months for a referral to a Neurologist, in the US) and can impose a financial burden. As general practitioner practices evolve, recognizing their role as primary caregivers and mediators, it becomes evident that they need access to objective and informative data. This access would empower them to send their patients for accessible and informative first-line diagnostic tests, when needed, such as blood test biomarkers, ECG, ultrasound, or other imaging tests.

Hence, there is a distinct need for an objective and accessible evaluation capable of detecting abnormal changes in brain function in the early stages of the disease. This evaluation should be accessible for use by primary care physicians (PCPs) as well as specialists. As PCPs are the gatekeepers, they hold the key for early detection and diagnosis and better downstream patient care. Having the right methodology or tools will enable the PCP to manage patient care and specialist referrals more effectively, while improving clinical outcomes through early and optimized treatment.

To read more about neurodiagnostic
technologies and advances

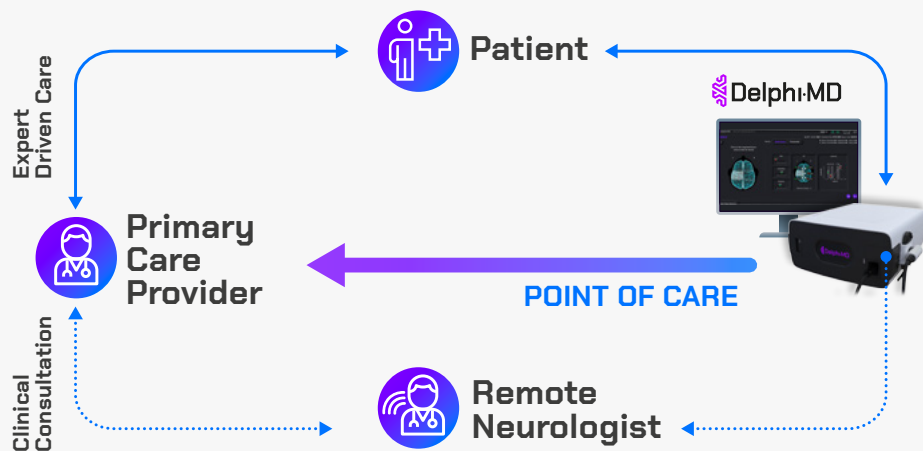
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Delphi-MD: Bridging the brain health gap

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Key Features:

Collaborative Neurological Care Model



- Personalized Patient Care:** By analyzing individual response signatures, Delphi-MD enables personalized patient care tailored to specific brain health conditions, optimizing treatment outcomes.
- Instant Actionable Recommendations Report:** Delphi-MD generates an actionable recommendations report in real-time, empowering clinicians with immediate insights for guiding patient care and treatment decisions.
- Higher Patient Compliance:** With early and accurate diagnosis, patients are more likely to understand the importance of treatment and adhere to recommended therapies, leading to improved patient compliance.
- Driving Patients Towards Effective Treatment Pathways:** By facilitating precise and timely diagnosis, Delphi-MD assists clinicians in guiding patients towards effective treatment pathways, enhancing overall health outcomes.

For more information about accessible brain health diagnosis, visit

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