# Alzheimer's Disease: Quality Improvement

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## Quality Improvement

It is important to have a system that helps improve the structure and output of the quality of healthcare used today. Providing space for improvement through studies and evidence research is a major goal with quality improvement. According to Puri et al, quality improvement is a process of approaching systemic problems in healthcare through training and expertise functioning in social hierarchies. Quality and Safety Education for Nurses (QSEN) prepares future nurses who will have knowledge, skill and attitudes necessary to improve quality and safety of the healthcare system (QSEN Institution, n.d.). Improving the quality of healthcare through knowledge, skills and attitudes are important because it helps explain the importance of changing processes of care by using tools and methods helpful in understanding and measuring the change and allowing members of the healthcare team to voice concerns and opinions to improve their quality of care. Alzheimer's disease is a form of dementia, affecting mostly older adults. Improvement of care happens in all areas of nursing and in improving the care for the types of disorders like Alzheimer’s disease. This neurodegenerative disorder impacts the thinking and memory skills by impairing the ability to create new ones and complete normal tasks (Mayo clinic, 2024). This disorder is significant because no one has identified the root and cause of it. However, researchers believe there is a combination of age-related changes, lifestyle changes, and health and family history (Medline Plus, 2025).

## Article Summary

A study was conducted to diagnose Alzheimer's disease through magnetic resonance imaging (MRI), machine learning (ML), and multi-diagnostic classifiers. Scans, data, and follow-ups of mild cognitive impairments are tools used to identify brain abnormalities that will help detect

early signs of dementia. Characteristics of the many subjects are organized by the experiment used and healthy control versus Alzheimer disease classifiers through a tree-based algorithm. Magnetic resonance imaging protocol and clinicians can be a resource in identifying early signs of dementia in older adults and early detection can provide a better outcome for the patient and assist in delaying the onset of the disorder symptoms (Diogo et al., 2022).

**Overview**

This research article is a study of tests used to identify early diagnosis of Alzheimer disease. According to Mayo Clinic, 6.9 million people in the United States live with Alzheimer's. There is no cure for this disorder, but medicines are useful in improving symptoms like forgetfulness and memory loss (Mayo Clinic, 2024). Although it is impossible to prevent this disorder, this article gives ways in which tests and scans can help with an early diagnosis which slows down the progression (Diogo et al., 2022). Quality improvement occurs because there is a goal of improving interpretability through magnetic resonance imaging and other biomarkers that are used for early detection of mild cognitive impairments where about twenty percent of mild cognitive impairment patients transition to Alzheimer's disease after one year (Diogo et al., 2022).

**Quality Improvement**

The efforts of improving early detection of Alzheimer's disease should take place in inpatient hospital stays. Although there are more pre-demented patients in the long-term care facilities, there isn't an MRI lab available. With multiple resources inside a hospital, there's a high chance of identifying if someone has early signs of dementia alongside their commonly known

symptoms. To begin implementation, a standard checklist of identifiers of changed behavior needs to be assessed in the patient and a desired score would allow the patient to qualify for the tests and scans. During the post implementation stage, frequent follow-up with the first year of diagnosis should be reassessed and monitored for signs and changes in brain structures and behavioral changes. The data was only limited to individuals who have mild cognitive impairments so future researchers should utilize these testing methods on multiple demographics of individuals. Since there is no cure, occupational therapy should be ordered for patients to assist in slowing down the progression of dementia characteristics. MRI biomarkers should undergo evaluation in the future as it can improve clinical performance and their decision-making while opening room for a combination of MRI protocols (Diogo et al., 2022).

## Application to Nursing

The purpose of caring for and treating a patient with Alzheimer's disease is to increase their quality of life by understanding their needs, practicing safety, and managing their behaviors. Educating healthcare members on how to identify early signs is beneficial for the patient and the quality of their care. Researchers should continue to identify ways in which they can test the brain activity of individuals experiencing symptoms of Alzheimer's. With early detection individuals can plan their future, address safety concerns, and develop a support team through family and providers.

### Practice

The current best practice for early diagnosis of dementia is to conduct tests, run labs, and assess the patients' changed behaviors. If reported or suspected that the individual may be

experiencing Alzheimer's, further assessment is provided through a referral to a specialist like neurologists and geriatricians (National Institute of Health, 2022). Brain imaging, preferably magnetic resonance imaging (MRI) and computed tomography (CT), are commonly used to identify neurodegeneration through structural and volumetric changes (Goldfarb & Burke, 2023). This structural imaging identifies the shape, position and volume of the brain tissue and defines pre-existing tissue damage (Alzheimer's Association, n.d.). Functional imaging scans like fluorodeoxyglucose-positron emission tomography (FDG-PET) reveal the function of specific brain regions from reduced use of glucose or oxygen in the brain (Alzheimer's Association, n.d.). Molecular imaging like positron emission tomography (PET) are used to detect cellular and chemical changes (Alzheimer's Association, n.d.). Biomarker fluorodeoxyglucose and positron emission tomography scans (PET) are more invasive than MRIs (Diogo et al., 2022). A blood test is ordered to indicate if amyloid proteins are present in the brain (Goldfarb & Burke, 2023). There will be routine tests ordered to identify patterns and determine how their cognitive functions are changing over time (National Institute of Health, 2022).

**Education**

More than 60% of individuals with dementia are never diagnosed with it, making it difficult to diagnose Alzheimer's disease (Goldfarb & Burke, 2023). It is important that individuals can express concern and notice a change in behavior. Since behavioral changes are the first sign of early diagnosis, educating family members on the early signs of cognitive changes and how to manage behaviors will be beneficial for the patient and those who are a part of their care team. Being patient, reassure the individual that you're assisting them to complete a task, redirecting their attention, and keeping a routine are ways in which the caregiver can manage their behavior

change (National Institute of Health, 2024). The Public Act 100-1074 is an Illinois state regulated, Alzheimer's services curriculum that requires staff to complete annual advance training hours when interacting with clients who have Alzheimer's disease (Illinois Department of Public Health, 2025).

## Research

As we know, early detection can help slow down the progression of dementia disorders. However, lack of information and resources can be a barrier in diagnosis Alzheimer's disease (Goldfarb & Burke, 2023). Since it is mistaken as a normal sign of aging, prioritizing signs and symptoms and identifying the warning signs should be a required educational resource for older adults over the age of 60. An annual exam, routine laboratory testing and assessing medical and family history are necessary in diagnosis dementia. A risk assessment scale should be created and utilized in identifying factors of the individual developing a dementia disorder. The complexity of this disorder makes it difficult to find treatment and prevention.

## Conclusion

The purpose of Quality and Safety Education for Nurses (QSEN) is to assess, monitor and document patient outcomes and create a change and improve the healthcare setting (QSEN, 2020). Since science is ever changing, the improvement in healthcare is infinite. Nurses aren't just trained to be skilled but have training that will ensure that they are using their skill to educate patients and improve their quality of care. Alzheimer's disease is a progressive brain disorder that affects memory and thinking skill and impairs their ability to complete simply tasks and learn new skills (Medline Plus, 2025). Early detection of dementia is determined by their cognitive changes with evidence of tests and scans. This will assist providers with initiating

therapeutic interventions that will aid in slowing down the progression of the disorder. Education should be provided by healthcare members on the early signs of dementia, how to handle their cognitive changes and safety risks. Understanding that some characteristics of Alzheimer's are common signs of aging, however, a diagnosis test should be offered and supported by team members of their care team. It is not the providers' job to cure their disorder but rather make their lives manageable with their condition. As healthcare age, the quality of life for individuals diagnosed with Alzheimer's shall improve.

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