HSD120

Evaluating Pre-Treatment Patient Pathways in Early Alzheimer's Disease Management: A Claims Data Analysis in Germany

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Background

- In Germany, the prevalence of Alzheimer's disease (AD) is increasing due to an aging population.[1-2] Timely diagnosis and effective treatment strategies are crucial in improving patient outcomes and resource allocation due to the high economic burden of the disease.[4]
- The initial clinical stage of AD is known as mild cognitive impairment (MCI). At this stage, measurable cognitive impairments are present, but they do not interfere with daily activities. As symptom severity increases and daily life becomes more affected, patients progress to dementia stages, starting with mild dementia.[5, 6]
- The current structure of ICD-10-GM lacks the necessary refinement to document the progression of AD. It does not include stage-specific codes to capture the symptoms of AD as they gradually develop and worsen at each stage.
- Apart from symptomatic treatment with AChE inhibitors or memantine for mild and later stages, no other agents are currently approved in Europe/Germany.
- Furthermore, there is a lack of knowledge regarding patients approaching their first treatment for early AD and consequently, comprehensive information on their care pathways in routine practice in Germany is unavailable.

Objective(s)

- This study aims to analyze patient pathways leading up to the first treatment for early AD (mild cognitive impairment due to AD and mild AD dementia) in Germany from the perspective of statutory health insurance (SHI).
- Due to the lack of stage-specific coding, we aim to develop an approach for identifying the study population of patients with incident early AD.
- In this study, we assessed the following: 1) the application of diagnostic procedures 2) the proportion of patients with AD-specific diagnoses up to 8 years before their first AD treatment, as recommended by the German S3 dementia guideline[7], and 3) indication-specific prescriptions up to 8 years before the first AD treatment.
- An observation period prior to first AD treatment was used to approximate information on patients affected by mild cognitive impairment due to AD (MCI-AD) and mild AD dementia.

Methods

Study design

- A non-interventional retrospective claims data analysis was conducted using German SHI claims data from the InGef research database.
- This database is an adjusted dataset of about 4 million individuals, which corresponds to about 5% of the German population and is derived out of a pool of 9 million individuals.
- It represents the overall German population in terms of age, gender and region, and further provides a good representation of morbidity, mortality and drug use.[8]
- This study covered the period from January 1, 2014, to December 31, 2022.

Study population

- All individuals who were continuously observed from January 1, 2014, to December 31, 2022, and who were at least 50 years old by December 31, 2022, were used as the basis for the analysis.
- Patients approaching their first treatment for AD (analysis cohort) comprised individuals with de-novo prescriptions of AChE inhibitors - specifically donepezil, galantamine, or rivastigmine - in 2022 (with the first observable prescription defining the index date) and without memantine prescriptions within a 100-day period following the index date.
- An observation period prior to first AD treatment was used to approximate information on patients affected by mild cognitive impairment due to AD (MCI-AD) and mild AD dementia.
- Prescriptions were identified via ATC (Anatomical therapeutic chemical classification system) codes for donepezil (ATC: N06DA02), galantamine (ATC: N06DA04), rivastigmine (ATC: N06DA03), and memantine (ATC: N06DX01).

Study outcomes

- Outcomes were evaluated longitudinally in patient's individual pre-observation periods on a year-by-year basis (year -8 until year -1) by the following operationalization:
  - Evidence of early AD was identified via the following ICD-10-GM codes (International Statistical Classification of Diseases and Related Health Problems, 10th revision, German Modification)
    - G30 (Alzheimer’s disease)
    - F00 (Dementia with Alzheimer’s disease)
    - F06.7 (Mild cognitive impairment)
  - Indication-specific prescriptions were identified through ATC codes. Specific code groups analyzed (among others) were:
    - Prescription group psycholeptics: a selected subset of specific codes of N05 (e.g. risperidone)
    - Prescription group psychoanaleptics: a selected subset of specific codes of N06 (e.g. mirtazapine)
  - Indication-specific diagnostics were identified using OPS (German Surgery and Procedure Coding System) and EBM (German Uniform Value Scale) codes and analyzed in combination.
- Guideline-conform diagnosing for AD involves a comprehensive evaluation using clinical, laboratory, imaging, and neuropsychological methods to accurately identify the underlying causes of dementia.[9] Methods can be classified as basic and advanced diagnostics procedures.
- The categories of basic diagnostic procedures (test procedures for suspected dementia, psychometric test procedures and serum/plasma tests) and advanced diagnostic procedures (MRI of the brain, CT of the brain, electroencephalography (EEG), cerebrospinal fluid diagnostics, sonography*, PET) were defined in accordance with guidelines (7) as well as common methods within neurological practice.

Results

- After applying the patient selection, 1,997 patients were identified with de-novo prescriptions of the AChE inhibitors. The average age was 80.1 years, and 56.5 % of the cohort were female.
- Examining AD-specific diagnoses using ICD-10-GM codes prior to the first treatment, the diagnosis rate was 20.5% in the year immediately preceding treatment, compared to only 0.9% eight years prior (see **Figure 1**).

Figure 1. Proportion of patients with AD specific diagnoses in the first (year -8) and the last year (year -1) preceding first treatment

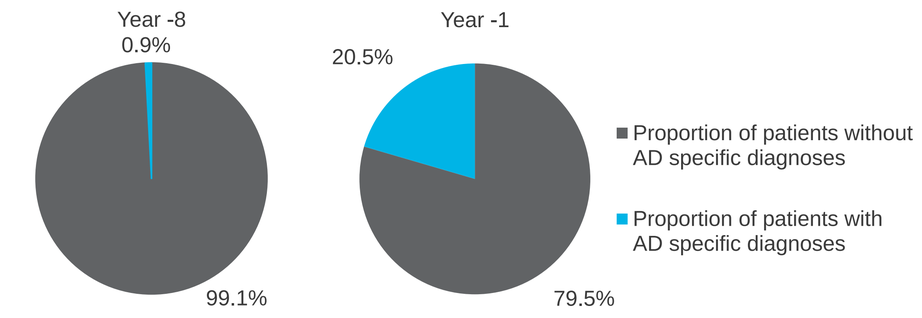
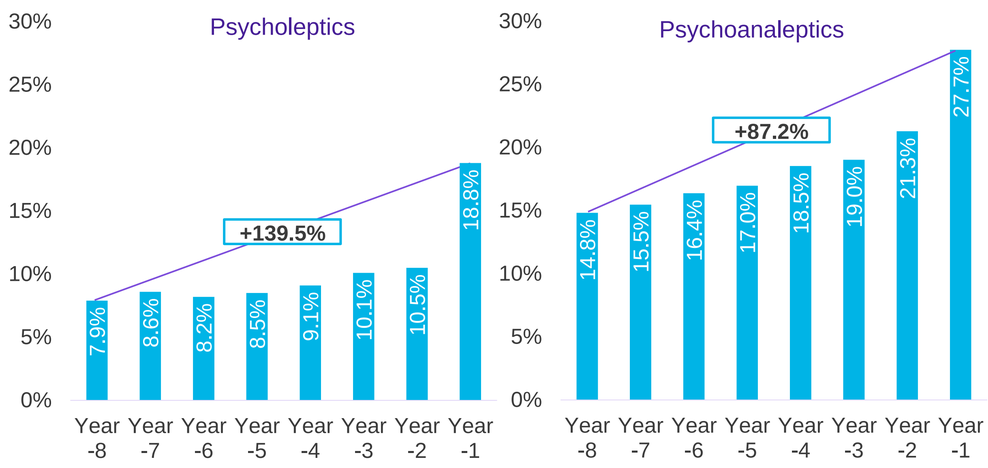


Figure 2. Development of the proportion of patients with indication-specific prescriptions



- Psycholeptics showed the most significant changes in prescripttions from year -8 to year -1 with a 139.5% rise, from 7.9% of patients in year -8 to 18.8% in year -1 (see **Figure 2**).
- Psychoanaleptic prescriptions were also among those with the highest increase over time. The proportion of patients in the analysis cohort with these prescriptions rose from 14.8% (year -8) to 27.7% (year -1), representing an increase of +87.2% (see **Figure 2**).
- When looking at EBM and OPS combined, cerebrospinal fluid (CSF) diagnostics showed one of the largest relative increases of the diagnostics procedures: the proportion of patients treated rose from 1.2 % in year -8 to 9.2 % in year -1 (see **Figure 3**).
- For advanced diagnostics, the highest proportion of patients in year -1 was observed in MRIs, with 39.1% of patients, followed by CTs at 28.6% (see **Table 1**).
- Other diagnostic procedures such as EEG were performed in 25.5% of patients, fluid diagnostics in 9.2% and sonography in 7.2%.
- Overall, 75.4% of the 1,997 patients received advanced diagnostics in year -1.

Figure 3. Proportion of patients with cerebrospinal fluid (CSF) diagnostics in the first (year -8) and the last year (year -1) preceding first treatment

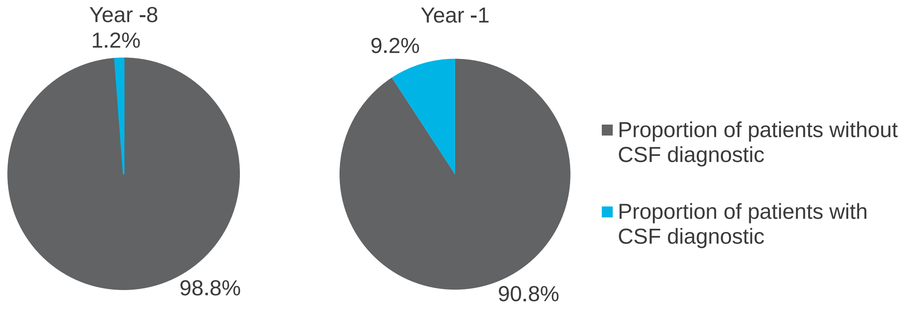


Table 1. Proportion of patients with advanced diagnostics procedures in the last year (year -1) preceding first treatment

Diagnostics procedure groups		N=1,997 Year -1	
Category	**Group**	**n**	**%**
Advanced diagnostics	MRI	780	39.1
	CT	572	28.6
	EEG	509	25.5
	Cerebrospinal fluid (CSF)	184	9.2
	Sonography	143	7.2
	PET	<5	-
Total		1,506	75.4

Conclusions

- The number of dementia patients is projected to rise resulting in increased economic burden of disease. Understanding patient pathways can help to identify potential areas for improvement in clinical practice, healthcare resource allocation, and patient care delivery.
- The findings of this study indicate a discrepancy between guideline recommendations and current practices in the diagnosis and pharmacological management of early AD (mild cognitive impairment due to AD and mild AD dementia) in Germany.
- The low number of patients with a documented ICD diagnosis, combined with the increasing use of psycholeptics and psychoanaleptics in the year preceding the first prescription of AD-specific medications and low rates of diagnostic procedures enabling an etiological diagnosis, further indicates a delay in diagnosis and AD-specific treatment.
- Targeted efforts to improve the patient pathway for AD patients in Germany are necessary to diagnose the disease in its early stages, initiate AD-specific treatment timely, and thereby improve patient outcomes and efficiently utilize healthcare resources.

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*for sonographies, all available codes were utilized including for OPS: Complex differential diagnostic sonography with contrast agent, […] with TDI and speckle tracking, […] with quantitative evaluation; for EBM: PW Doppler sonography and duplex sonography

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