Treatment Patterns and Healthcare Spending Among Medicare Beneficiaries with Huntington's Disease

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#EE141

Background

- Huntington's disease (HD) is a rare, inherited, and progressive neurodegenerative disease that imposes a substantial cognitive and physical functioning burden, impacting the lives of individuals with HD and their families.[1,2]
- Most individuals with HD develop symptoms at around 40 years of age;[3] however, the economic burden associated with HD can start accumulating in the early years leading up to diagnosis due to symptom management, and continues to increase over time.[4]
- Few studies have evaluated the costs and resource use associated with HD across various insurance systems, i.e. commercial and Medicare/Medicaid. However, changes in insurance status and coverage changes (e.g. disability insurance) as individuals with HD transition through disease and life stages, which is likely to add to the already existing burden, are not yet well understood.

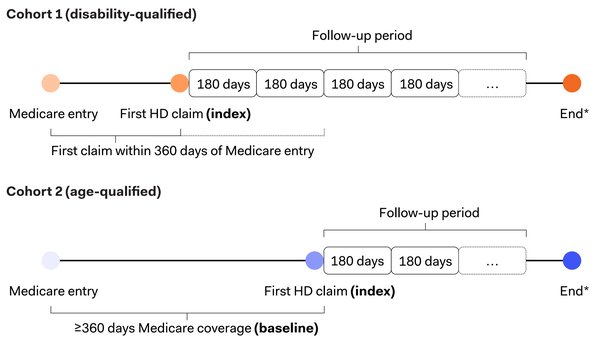
Objective

- To quantify the economic burden among Medicare beneficiaries and describe treatment patterns, healthcare resource utilization (HCRU), and spending among individuals with HD in the Medicare claims database who entered/qualified for Medicare coverage due to either disability or age.

Methods

- Medicare eligibility can be based upon age (≥65 years), disability, end-stage renal disease, or amyotrophic lateral sclerosis. For this study, individuals with HD were identified in fee-for-service Medicare claims between January 2010 and December 2020, and assigned to two cohorts based on Medicare qualification criteria **(FIGURE 1):**
  - Cohort 1: Age <65 years and entered Medicare due to disability.
  - Cohort 2: Age ≥65 years, entered Medicare due to age, and had continuous coverage in Medicare Parts A, B, and D for ≥360 days before the index date (baseline).
- The index date was defined as the first HD-related claim. For Cohort 1, the index claim was required to have occurred within the first 360 days of data entry in order to ensure that the disability qualification into Medicare was most likely on account of HD-related disabilities. For Cohort 2, only incident HD cases were observed, i.e. the index HD claim was required to have occurred after 360 days of data entry.
- Follow-up consisted of consecutive 180-day 'blocks', starting at the index date and finishing at the last complete block prior to whichever occurred first of Medicare drop-out, death, or end of data coverage (December 2020); all beneficiaries were followed for ≥180 days following their first HD claim. Exclusion criteria are detailed in **FIGURE 1.**

FIGURE 1: STUDY DESIGN



*The 'end' date is the earliest of Medicare drop-out, death, or end of data coverage (31 December 2020).
Exclusion criteria: enrollment in Medicare Part C during baseline (Cohort 2) or between start of Medicare coverage and index date (Cohort 1), and from 6 months after index (both cohorts). Individuals with Parkinson's or Alzheimer's disease were also excluded.
HD, Huntington's disease

Results

BENEFICIARY CHARACTERISTICS AND DEMOGRAPHICS

- In total 6,316 eligible Medicare beneficiaries with HD-related claims were identified; of these, 1,715 were in Cohort 1, and 4,601 were in Cohort 2.
- At index, individuals in Cohort 1 were younger (>50% under the age of 50 years), had greater proportions of racial/ethnic minority populations, and a larger proportion had dual eligibility vs Cohort 2 **(TABLE 1).**

TABLE 1: CHARACTERISTICS OF MEDICARE BENEFICIARIES WITH HD

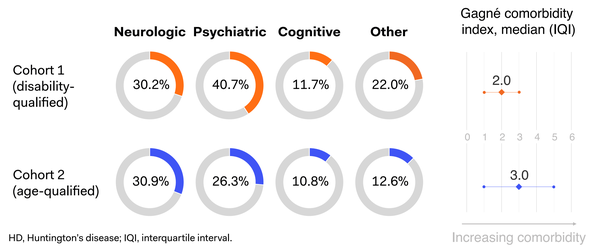
	Cohort 1 (disability-qualified) N=1,715	Cohort 2 (age-qualified) N=4,601
Mean duration of follow-up, years	3.9	2.8
Characteristics at index		
Mean age, years (SD)	45 (11)	75 (7)
Female, %	53	63
Non-Hispanic White, %	77	82
Medicaid eligible, %	79	24

HD, Huntington's disease; SD, standard deviation.

COMORBIDITIES AND CLINICAL BURDEN

- Neurologic, psychiatric, and cognitive comorbidities relevant to HD were frequently reported in both cohorts. The proportion with psychiatric comorbidities was 1.5 times higher in Cohort 1 (40.7%) than Cohort 2 (26.3%), but Cohort 1 had a lower overall comorbidity burden according to Gagné index (median index: 2.0 and 3.0, respectively; **FIGURE 2**).

FIGURE 2: FREQUENCY OF COMORBIDITIES DURING FOLLOW-UP AMONG MEDICARE BENEFICIARIES WITH HD

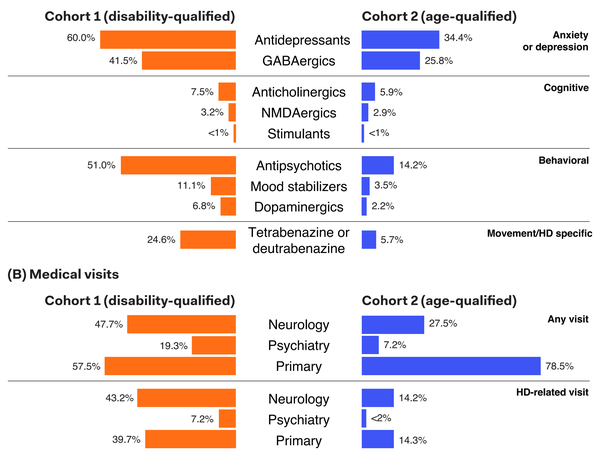


HD, Huntington's disease; IQI, interquartile interval.

MEDICATION USE

- In accordance with the higher burden of psychiatric comorbidities in Cohort 1, the use of psychiatric medications was also higher in Cohort 1, with 1.7 times higher use of antidepressants and 3.6 times higher use of antipsychotics compared with Cohort 2 **(FIGURE 3A)**.
- HD-specific medication use was low in both cohorts with a large proportion of beneficiaries remaining untreated for HD. However the utilization rates were 4 times higher in Cohort 1 compared with Cohort 2.
- Care visits for individuals in Cohort 1 were largely on account of HD, who were more likely to see neurologists or psychiatrists compared with Cohort 2 **(FIGURE 3B)**.

FIGURE 3: MEDICATION USE AND MEDICAL VISITS DURING FOLLOW-UP AMONG MEDICARE BENEFICIARIES WITH HD

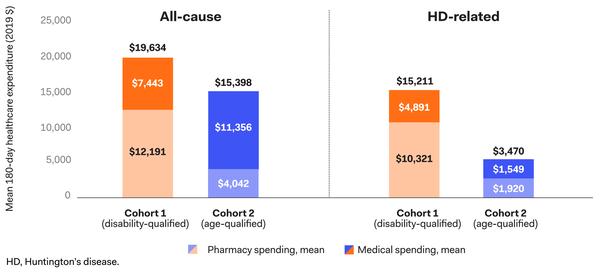


GABAergic, γ-aminobutyric acid-modifying drug; HD, Huntington's disease; NMDAergic, N-methyl-D-aspartate-modifying drug.

HEALTHCARE RESOURCE UTILIZATION

- During follow-up, HD-related overall mean spending over 180 days was 4 times higher in Cohort 1 [$15,211 (SD: 28,137)] than Cohort 2 [$3,470 (SD: 12,540)].
- Mean overall and pharmacy all-cause spending over 180 days was also higher in Cohort 1 than Cohort 2 (overall: $19,634 vs $15,398; **FIGURE 4**).
- The majority of HCRU was for outpatient services (used by 79% across both cohorts). Beneficiaries had a mean 6 outpatient visits (SD: 7), 6 home health visits (SD: 21), and 1 emergency department visit (SD: 1).

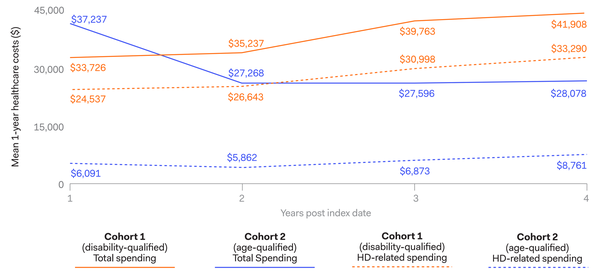
FIGURE 4: MEAN 180-DAY HEALTHCARE EXPENDITURE (ALL-CAUSE AND HD-SPECIFIC) DURING FOLLOW-UP FOR MEDICARE BENEFICIARIES WITH HD



HD, Huntington's disease.

- Mean 180-day healthcare expenditure during the total follow-up period was higher in Cohort 1 compared with Cohort 2. Specifically, the HD-related expenditure was 4 times higher in Cohort 1 than Cohort 2 indicating a much higher burden of disease in the disability-qualified cohort which was largely on account of pharmacy spending **(FIGURE 5)**.
- Overall, mean annual healthcare spending in both cohorts ranged from $27,268–41,908; at the upper end, this expenditure is consistent with published Medicare spending in beneficiaries with HD ($41,631 [SD: 57,393]) and higher than Medicare beneficiaries without HD ($17,222 [SD: 31,218]).[4]

FIGURE 5: MEAN ANNUAL HEALTHCARE EXPENDITURE (TOTAL AND HD-SPECIFIC) DURING FOLLOW-UP AMONG MEDICARE BENEFICIARIES WITH HD



HD, Huntington's disease.

Limitations & Conclusion

- The study results should be viewed in light of some limitations: (i) lack of clinical information and incomplete, inaccurate and/or missing values in the claims database may affect the interpretation and generalizability of findings; (ii) reason for disability qualification could not be attributed directly to HD; however, requirement of an HD claim within 360 days of data entry was used as a proxy indicator.
- Consistent with published literature, the burden of HD is high in Medicare beneficiaries with substantial use of drugs targeting symptom management and limited use of HD-specific treatments.
- Despite a higher overall comorbidity burden in the age-qualified cohort due to age-related conditions, younger individuals with HD qualifying on account of disability experience a substantial negative impact on their psychiatric well-being and HD-related HCRU. The cost burden for disability-qualified individuals was largely due to HD.
- Reasons for the HCRU gap between the two cohorts cannot be determined using Medicare claims. Potential reasons for the higher burden in the disability-qualified cohort could include greater severity of HD, faster disease progression with impacts on work ability and employment, early diagnosis, and differing disease management.
- Further research could help characterize disease severity, associated disability, and burden, for individuals with HD who receive their diagnosis early vs late. This is particularly important for individuals in whom disease-related disability can influence work status and coverage conditions, potentially leading to a gap between diagnosis and receiving financial support.

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