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Well-being Gap: One-Size MS Service Does Not Fit All

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OBJECTIVE

- To assess comorbidities, inpatient admissions, and their associated costs in patients with MS based on socioeconomic status and deprivation across 4 integrated care system (ICS) areas in England.

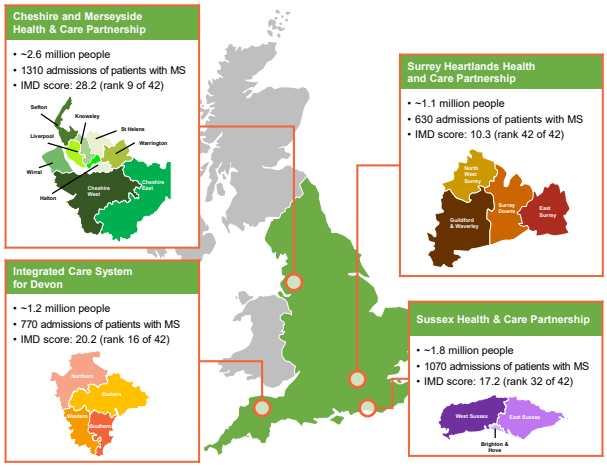
CONCLUSIONS

- While a well-being gap in the United Kingdom has long been recognized, the effects of the COVID-19 epidemic may have exacerbated differences in health outcomes between the most and least deprived populations, and this further strengthens the case for better collaboration between health, social care, and community providers.
  - Strong leadership and engagement from both the MS community and ICSs is required to establish links, work collaboratively, and maintain consistently high standards in healthcare provision for people with MS.
- Since socioeconomic status is a key determinant of health outcomes, it is imperative that solutions are broader than "just" proactive and preventive care. In accordance with the recent Marmot review,[1] we suggest that for people with MS:
  - Each ICS develops a bespoke strategy for action on the social determinants of health, with the aim of reducing inequalities in health for their population, including people with MS
  - Early interventions are made to prevent health inequalities and optimize allocation of resources
  - Whole systems monitoring is implemented and accountability for health inequalities strengthened.
- Population management is a key aspect for targeting health inequalities and requires a deeper understanding of the local populations and economies, including broader systemic issues.
  - For example, by specifically managing patients with MS with the greatest number of admissions due to comorbidities, such as those with ≥ 3 nonelective admissions (NEAs) per year, significant benefits could be achievable both in terms of patient outcomes and overall costs.
  - Data can be leveraged to understand how deprivation affects people with MS and to target effort and investment in proportion to the needs of the population.
  - Drawing upon community resources, for example to actively promote and encourage the adoption of healthy lifestyles, can help prevent and further manage comorbidities and offer further possible solutions to improve MS disease outcomes and reduce the well-being gap.

Introduction

- Overall estimates indicate that there are 131,720 people with multiple sclerosis (MS) in the United Kingdom, with an incidence of 199 per 100,000.[2]
  - This translates to 1 in every 500 people in the United Kingdom living with MS.
  - Almost 5000 people are newly diagnosed with MS each year in England.[3]
- The life expectancy of patients with MS is 7–14 years lower than that of the overall population.[4,5]
  - In addition, comorbidities such as diabetes and cardiovascular disease adversely affect outcomes throughout the course of disease in patients with MS.[6]
- Socioeconomic status and socioeconomic deprivation are major determinants of health outcomes, life expectancy, and health-related quality of life.[7,8]
  - As highlighted by the original Marmot report, inequities in health outcomes across social and demographic divides have persisted in the United Kingdom, and a recent follow-up to the report indicated that progress to narrow these differences has stalled over the past decade.[1,9]
- In England, ongoing restructuring by the Department of Health and Social Care aims to deliver more integrated health and care systems, with a focus on population health management.[10]
  - This more collaborative approach seeks to utilize resources from local systems, the National Health Service (NHS), local authorities, and the voluntary sector under the coordination of 42 integrated care systems (ICSs) across the country.[10,11]
- We explored emergency hospitalization in patients with MS and comorbidities that are, or may be, associated with lifestyle factors related to deprivation and socioeconomic status.

Figure 1. Summary of 4 Different ICS Areas in England



ICS = integrated care system; IMD = index of multiple deprivation; MS = multiple sclerosis
IMD scores based on 2019 deprivation rankings. Higher scores represent higher levels of deprivation.

Methods

- NHS England data were obtained from the NHS Digital Hospital Episode Statistics (HES) database for the financial year 2020/21.
- Socioeconomic deprivation was assessed using the English index of multiple deprivation (IMD) based on quintiles of deprivation (most deprived, above average deprivation, average deprivation, below average deprivation, and least deprived).
  - Overall deprivation was defined as the average IMD (2010) score in the Lower Layer Super Output Areas where Clinical Commissioning Groups' registered patients lived.
  - Quintiles of deprivation were based on area rankings of 7 different dimensions of deprivation: income, employment, health and disability, education, crime, barriers to housing and services, and living environment.
- Datasets were analyzed to understand service usage across 4 demographically and geographically diverse ICS areas (Figure 1):
  - Cheshire and Merseyside Health & Care Partnership
  - Integrated Care System for Devon
  - Surrey Heartlands Health and Care Partnership
  - Sussex Health & Care Partnership.
- The following outcomes were compared for patients with MS across the 4 ICS areas:
  - Incidence of most common comorbidities
  - Numbers of inpatient admissions and NEAs
  - Costs of NEAs.
- To protect patient anonymity, suppression was applied during the analyses for any HES data entries with 7 patients or fewer.

Results

- In England, there were a total of 31,275 admissions for patients with MS during the 2020/21 financial year.
- MS admissions in England and across ICS areas were associated with comorbidities including hypertension and gait abnormalities (Table 1).
  - Common NEAs also included deprivation-related comorbidity issues, such as smoking and obesity
  - Diagnoses of hypertension and diabetes are known to be associated with worse MS disease prognosis.[12,13]

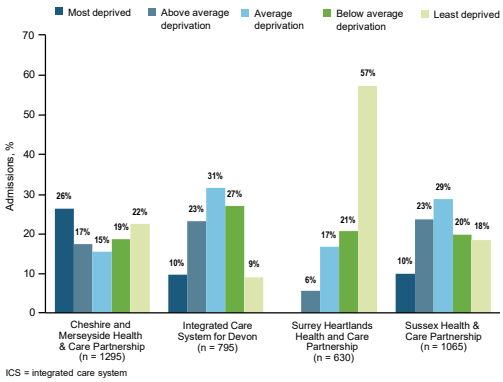
Table 1. Top 12 Most Common Comorbidities Associated With Inpatient Admissions of Patients With MS During Financial Year 2020/21

	Admissions, %				
Comorbidity	England Overall	Cheshire and Merseyside Health & Care Partnership	Integrated Care System for Devon	Surrey Heartlands Health and Care Partnership	Sussex Health & Care Partnership
Essential (primary) hypertension	24.8	24.0	18.8	28.6	19.6
Abnormalities of gait and mobility	17.1	16.8	7.1	20.6	17.3
Other disorders of the urinary system	15.3	17.2	11.7	18.3	15.4
Depressive episode	13.9	14.9	9.1	16.7	17.3
Type 2 diabetes	11.7	13.7	9.1	11.9	10.7
Smoking[a]	10.9	9.5	8.4	10.3	13.6
Asthma	10.9	10.7	8.4	11.1	12.6
Other symptoms and signs involving the nervous and musculoskeletal systems	10.6	[b]	[b]	12.7	11.2
Other functional intestinal disorders	10.0	12.6	[b]	12.7	9.8
Other anxiety disorders	9.0	11.8	[b]	9.5	10.7
Obesity	8.9	13.7	[b]	[b]	[b]
Chronic ischemic heart disease	7.5	8.4	5.2	7.9	6.1

MS = multiple sclerosis
Comorbidities that may be considered as related to deprivation are highlighted in green.
[a]Coded as "Mental and behavioral disorders due to tobacco."
[b]Figure not available as comorbidity did not feature in top 12 most common comorbidities for this integrated care system area.

- Across all inpatient admissions, the proportion of patients from the most deprived quintile was highest in Cheshire and Merseyside Health & Care Partnership (26.5%) and lowest in Surrey Heartlands Health and Care Partnership (0%; Figure 2).
- Based on NEAs of patients with MS during financial year 2020/21, the proportion of NEAs represented by patients in the most deprived socioeconomic quintile ranged from 0% for Surrey Heartlands Health and Care Partnership to 30.4% for Cheshire and Merseyside Health & Care Partnership (Table 2).
- Based on data across NHS England from 2017–2020, the costs per patient for comorbidities including hypertension, obesity, type 2 diabetes, and smoking were higher among patients with MS than among the general population (Figure 3).

Figure 2. Proportions of All Inpatient Admissions Represented by Patients From Each Socioeconomic Deprivation Quintile and 4 ICS Areas During Financial Year 2020/21



ICS = integrated care system

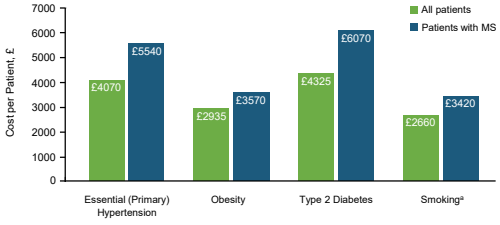
Table 2. Proportions of Inpatient Admissions Represented by Patients From the Most Deprived Quintile Across NHS England and 4 ICS Areas During Financial Year 2020/21

	% of Patients Most Deprived	
Area	All Admissions 2020/21	NEAs 2020/21
NHS England	17.2% (n/N = 5415/31,455)	18.0% (n/N = 2995/16,600)
Cheshire and Merseyside Health & Care Partnership	26.3% (n/N = 340/1295)	30.4% (n/N = 225/740)
Integrated Care System for Devon	9.6% (n/N = 75/780)	10.0% (n/N = 40/400)
Surrey Heartlands Health and Care Partnership	0	0
Sussex Health & Care Partnership	9.9% (n/N = 105/1065)	10.4% (n/N = 60/575)

ICS = integrated care system; NEA = nonelective admission; NHS = National Health Service

- At Cheshire and Merseyside Health & Care Partnership, there were 95 patients with ≥ 3 NEAs during 2020/21, resulting in average costs per patient of £12,432 for these admissions (Figure 4A and B).
  - Subject to data suppression, at the Integrated Care System for Devon, there were 30–37 patients with ≥ 3 NEAs, resulting in an estimated average per patient cost between £10,138 and £12,504.

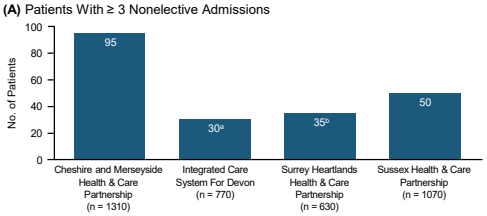
Figure 3. Average Cost per Patient of Selected Comorbidities in Patients With MS and Across All Patients Based on NHS England Data (2019/20)



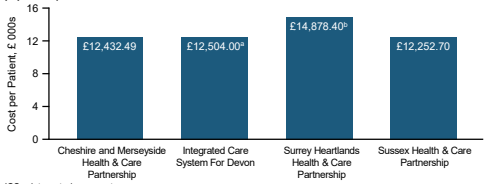
MS = multiple sclerosis; NHS = National Health Service
[a]Coded as "Mental and behavioral disorders due to tobacco."

Figure 4. Nonelective Admissions of Patients With MS Across 4 ICS Areas During Financial Year 2020/21, Showing **(A)** the Numbers of Patients ≥ 3 Nonelective Admissions and **(B)** the Associated Costs per Patient

(A) Patients With ≥ 3 Nonelective Admissions



(B) Cost per Patient for Those With ≥ 3 Nonelective Admissions



ICS = integrated care system
[a]Data for patients with 4 nonelective admissions were suppressed for Integrated Care System for Devon, and therefore cost per patient may be as low as £10,138.
[b]Data for patients with 4 nonelective admissions were suppressed for Surrey Heartlands Health and Care Partnership, and therefore cost per patient may be as low as £12,399.

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Acknowledgments Secondary care data are taken from the English Hospital Episodes Statistics (HES) database produced by NHS Digital, the new trading name for the Health and Social Care Information Centre (HSCIC). Copyright 2021. Reused with the permission of the HSCIC. All rights reserved. This study was sponsored by Biogen (Maidenhead, UK). Data analysis was performed by Wilmington Healthcare (London, UK) and supported by Biogen. Writing and editorial support for the preparation of this poster was provided by Excel Medical Affairs (Glasgow, UK); funding was provided by Biogen.