HEALTH CARE RESOURCE USAGE AND COSTS IN PATIENTS WITH TYPE 2 DIABETES AND VARIATIONS ACROSS SUB-GROUPS WITH HIGHEST UNMET NEED

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Summary

- Nearly half a billion people globally are living with Type 2 diabetes (T2DM), and this is known to be a major cause of morbidity, causing impacts on healthcare usage and cost
- We used a large, linked database of the electronic health records of 2.5 million people living in London to describe the patterns of comorbidity in people with T2DM, and the associated healthcare resource utilization and costs
- High morbidity (five or more comorbidites) was the biggest driver of high HCRU and costs
- Future interventions and therapies for T2DM should consider the impact of comorbidity and the large variation in HCRU and cost between patients

Background

- There are approximately 463 million people living with diabetes worldwide of which 90-95% is estimated to be type 2 diabetes (T2DM)
- All-cause mortality has declined substantially in this patient group in recent decades driven in part by large declines in cardiovascular disease (CVD) mortality however this has been accompanied by a diversification in morbidity
- How the healthcare resource usage (HCRU) and cost impacts vary over time, by setting and sub-group according to comorbidities is unclear
- We aimed to estimate HCRU and costs in people living with T2DM, how this changes over time and varies by setting and sub-group according to comorbidity prevalence and other risk factors during the disease

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Methods

- We used a real-world administrative primary care dataset – Discover-NOW – linked to hospital records to identify people approximately 224,000 living with T2DM. The dataset covers 2.5 million people living in North-West London, England, with primary care data from 2000-2020 and secondary care data from 2015
- We generated a mixed prevalent and incident T2DM population and captured a broad set of 35 comorbidities covering traditional T2DM complications, emerging complications and other common comorbidities
- We estimated HCRU and associated costs across primary and secondary care disaggregated across inpatient admissions, outpatient appointments and emergency department attendance
- We estimated crude and age-standardised (European Standard Reference Population) comorbidity prevalence, HCRU and cost over the course of the disease across several sub-groups including by age, gender and specific comorbidities at diagnosis

HCRU and costs by sub-groups

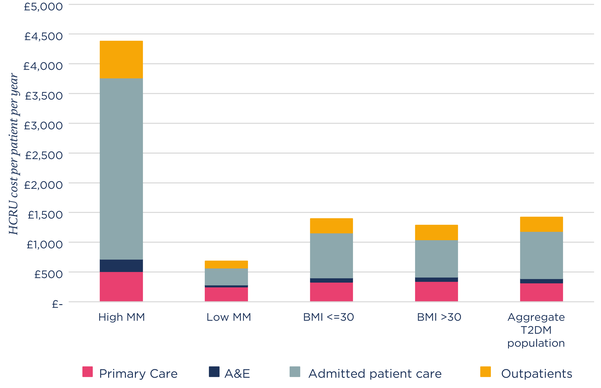

Figure 1. Crude Health care resource usage costs per patient per year in the year of T2DM diagnosis in those with i) high multimorbidity (5 or more comorbidities); ii) low multimorbidity (<2 comorbidities) iii) BMI of 30 or less iv) BMI more than 30 v) aggregate T2DM population

HCRU and costs

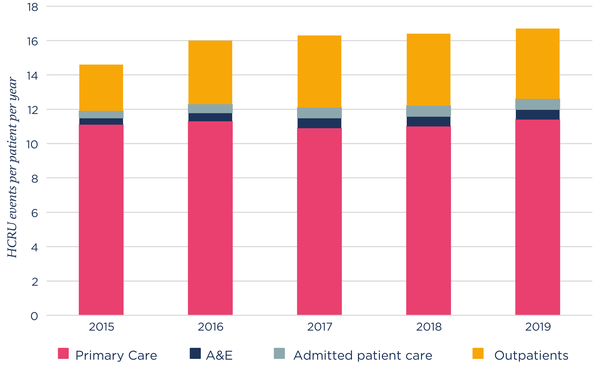

Figure 2. Crude Health Care Resource Usage (HCRU) by setting from 2015 to 2019 per patient per year

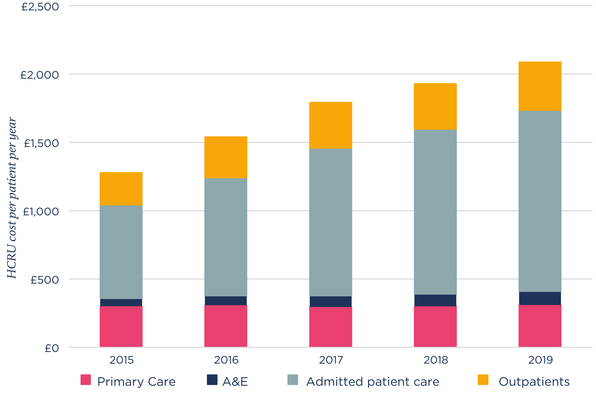

Figure 3. Crude Health Care Resource Usage (HCRU) costs per patient per year over time stratified by HCRU type

Results

- **HCRU and costs increased over time**
- There were 14.6 HCRU events per T2DM patient in 2015 increasing to 16.7 in 2019. Healthcare costs increased by more than 60% from £1,300 to £2,100 per patient
- While the majority of events were observed in primary care, inpatient admissions accounted for the largest portion of costs
- **There were large variations within the T2DM population**
- HCRU and costs were generally higher in women compared to men throughout the study period
- There were large differences among people living with T2DM across several risk factors including age with costs three-fold higher in adults over 75 years compared to those under 55 years
- **Multimorbidity was the biggest driver of HCRU and costs**
- Age standardised HCRU costs were £5,520 (crude: £4,380) per patient per year in the year of diagnosis for those with 5 or more comorbidities at diagnosis compared to £770 (crude: £680) in those with fewer than 2 comorbidities
- Surprisingly, the presence of obesity at diagnosis was not associated with higher HCRU and costs compared to those without obesity

Conclusions

- HCRU and costs for patients living with T2DM are large and increasing over time
- There are large variations in the setting that observed the largest HCRU events and this differs to costs
- HCRU and costs vary substantially across people living with T2DM representing substantial differences in unmet need
- Interventions targeted at those with highest unmet need could reduce inequalities across patients living with T2DM and subsequently have greatest returns for healthcare systems and partners