Changes in invasive meningococcal disease in England before and after the first Covid-19 lockdown


INTRODUCTION

• Rapid increase in the incidence of Covid-19 in February 2020 prompted the UK government to implement the first national lockdown in March 2020 to reduce its transmission leading to a dramatic, almost immediate reduction in Invasive meningococcal disease (IMD) to a record low synonymous with other respiratory pathogens including Streptococcus pneumoniae.

• We analysed the epidemiological and strain characteristics of cases in England in the three years prior to the COVID-19 pandemic, and during the first three pandemic years. During this period COVID control measures were implemented at differing levels from March 2020 before being finally withdrawn in July 2021.

METHODS

• IMD cases were confirmed by the UK Health Security Agency (UKHSA) Meningococcal Reference Unit (MRU) between April 2017 and March 2023, inclusive. Additional information was gathered as part of enhanced surveillance by the UKHSA Immunisation and Countermeasures Division. Annual data are presented from 1 April to 31 March.

• All isolates underwent phenotypic characterisation and whole genome sequence analysis using the Illumina platform. Draft genome sequences were deposited and interrogated on the PubMLST Neisseria database. PCR-only confirmed cases underwent genotyping using Taqman real-time PCR assays.

• Indexed multilocus sequence typing (MLST) data were analysed. Isolates with incomplete/partial MLST allelic profiles were assigned clonal complex (CC) but omitted from Sequence Type (ST) analysis. Twenty-seven 2022/23 isolates were omitted from ST analyses as genomic data were unavailable.

RESULTS

• The number of IMD cases confirmed in England was 1864 from April 2017 to March 2020 and 638 from April 2020 to March 2023 with MenB remaining the predominant capsular group. Overall case fatality was 9.0% and 8.1% respectively. Highest fatality was observed among infants (<1 year of age).

• Pre-pandemic IMD epidemiology (2017/18–2019/20):

  MenB was responsible for n=1066 (57.2%) cases (Fig. 1), with highest burden of disease in 0 to 11 years (35.5%) followed by 18.4% among 12 to 24 year-olds (Fig. 2).

  Predominant capsular groups among the remaining 857 cases in adults aged ≥25 years were 36.2% MenW, 17.2% MenY, 10.5% MenC and 1.6% other groups/non-groupable strains (Fig. 2).

IMD in England during national lockdown/COVID-19 restrictions

• An overall decline of 83.4% of IMD was observed across all age groups during 2020/21 compared to 2019/20 with 75.7% reduction in 0 to 11 years old, 88.8% reduction in 12 to 24 year-olds and 86.8% reduction in ≥25 years olds. However, case fatality increased to 12% (11/92) with 73% (3/4) of MenY and 11.6% (8/69) of MenB cases being fatal.

• April to September 2020 saw 73% decline in IMD cases compared to preceding year with lower positivity rates in submitted samples compared to 2019/20 with 75.7% reduction in 0 to 11 years old, 88.8% reduction in 12 to 24 years olds and 86.8% reduction in ≥25 years olds.

• September 2021 to March 2022, largely due to the return of students to full time education. This may be expected with these being the peak ages for meningococcal carriage.

DISCUSSION & CONCLUSIONS

• The initial increase in IMD post-restrictions was seen in university age groups (19-22 years) with the return of students to full time education. This may be expected with these being the peak ages for meningococcal carriage.

• IMD in older age groups in 2021/22 remained low which may reflect low levels of intergenerational mixing/transmission during that period.

• In 2022/23 MenB cases reached levels exceeding those pre-pandemic in all age groups other than those aged <12 years. Children up to 8 years would have been offered 4CMenB vaccine.

• Men ACWY cases remained low, likely due to the teenage MenACWY vaccination programme exerting good control.

• Close monitoring and catch-up programmes are required to minimise the effects of disruption of vaccination programmes observed during the pandemic

• Sub-strain fluctuations require continued surveillance as significant change in case numbers were observed in ST's associated with community-based outbreaks.

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