

Models of COVID impact on meningitis infections

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Models of meningitis

Models developed to assess the impact of meningococcal vaccines were adapted to investigate COVID impact

- 1) to investigate the effect of lower vaccine uptake on infection dynamics
- 2) to investigate the impact of social distancing measures on infection dynamics

Settings

- a) countries in the African meningitis belt using MenAfriVac (Karachaliou et al 2015)
- b) UK in relation to MenACWY teenage programme (Christensen et al 2014)

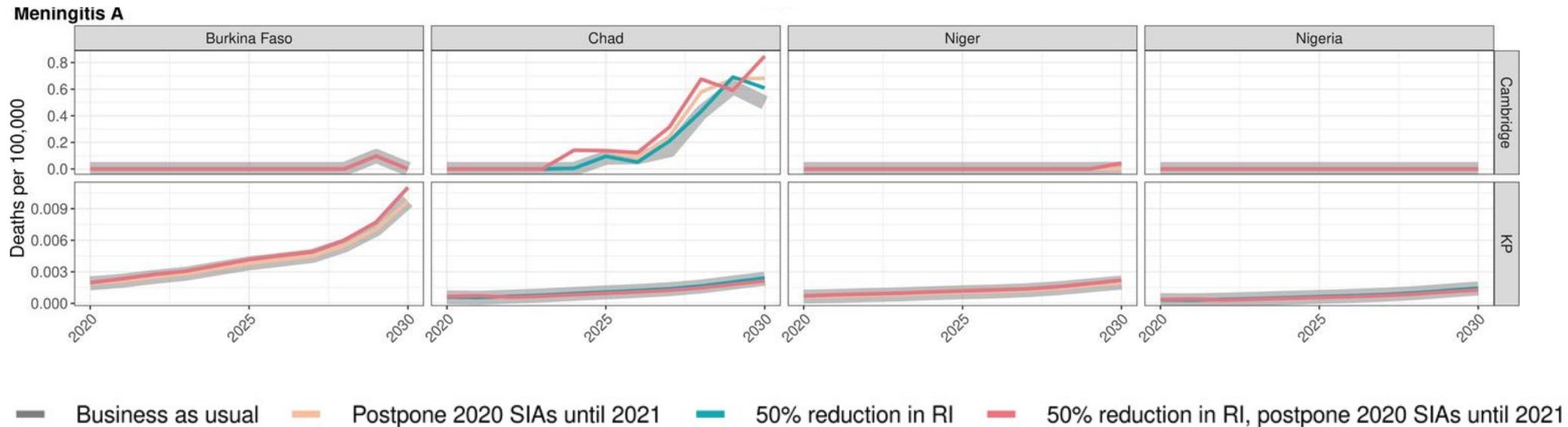
Impact of COVID-19-related disruptions to measles, meningococcal A, and yellow fever vaccination in 10 countries



Katy AM Gaythorpe, Kaja Abbas, John Huber, Andromachi Karachaliou, Niket Thakkar, Kim Woodruff, Xiang Li, Susy Echeverria-Londono, VIMC Working Group on COVID-19 Impact on Vaccine Preventable Disease, Matthew Ferrari, Michael L Jackson, Kevin McCarthy, T Alex Perkins, Caroline Trotter, Mark Jit  [« see less](#)

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MenAfriVac disruption



For MenAfriVac, **short-term disruptions in 2020 are unlikely to have a significant impact** due to the persistence of direct and indirect benefits from past introductory campaigns of the 1- to 29-year-old population, bolstered by inclusion of the vaccine into the routine immunisation schedule accompanied by further catch-up campaigns

MenACWY in UK -methods

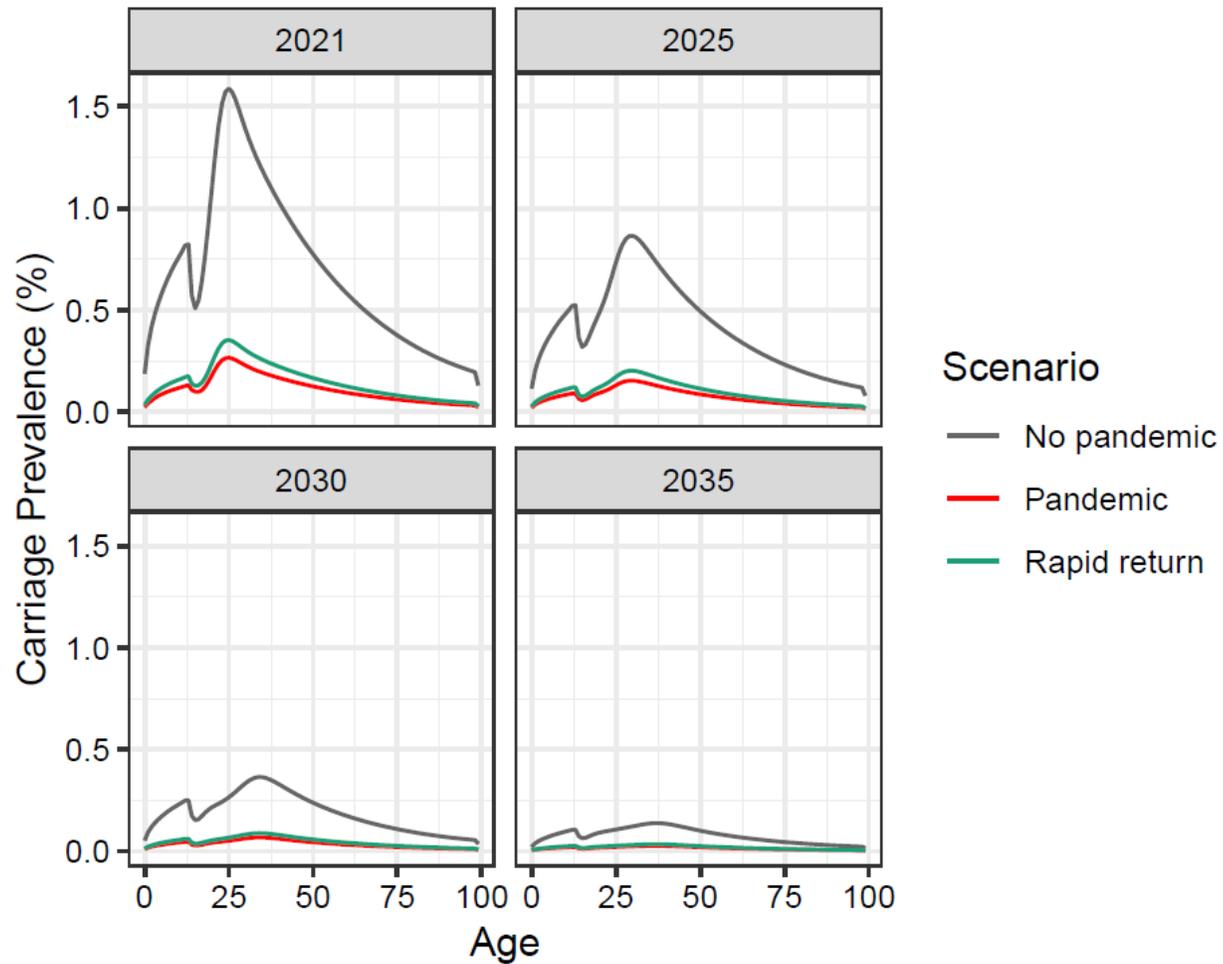


Pandemic modelling assumptions:

- 18-month pandemic timeframe
(March 2020 to September 2021)
- Reduced meningococcal vaccinations
(34% reduction in MenACWY vaccine uptake)
- Reduced social interactions*
(75% reduction in social mixing for periods of school closure;
60% reduction in social mixing for periods of school openings)
- Vaccine uptake and social interactions return to “normal” in Sept 2021

*Jarvis, C. I. et al. (2020). Quantifying the impact of physical distance measures on the transmission of COVID-19 in the UK. *BMC Medicine*.

Carriage prevalence by age
(ACWY strains)



MenACWY in UK - results

We predict a substantial reduction in carriage (and disease, not shown) as a result of social distancing

This far outweighs effect of fall in uptake in 2020/21

Thank you