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

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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

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