UK Biobank and COVID-19: health data linkages and serology study

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UK Biobank activities

• Rapid and regular updates of medical records

• Longitudinal serology study in 20,000 individuals to determine the extent of past infection across the UK
Rapid and regular updates of health records

SARS-CoV-2 test data
Available since 17 April (2,600 positive results 16 Mar-14 June)

Death
Available since 11 June (300+ deaths up to 26 Apr)

Hospital inpatient data
Available end-June (up to 31 March)

Intensive care

Primary care data
Available July

Primary care data made available under the COPI regulations and are ONLY available for COVID-19 research purposes
Streamlined process to access data for COVID-19 research

- Researchers can use an existing UKB project
- No need to submit a project extension
- No need for an amended MTA
- New applications related to COVID-19 are fast-tracked

- Accessed directly via the Data Portal

- 540 projects (~30%) accessing these data
UK Biobank’s Serology Study

- **Aim:** to determine extent of infection with coronavirus (by measuring antibodies) in 20,000 people across the UK.
- Will assess sero-prevalence in different regions and whether this changes by age, sex, ethnicity, urban/rural, socio-economic status.
- Will correlate self-reported symptoms with antibody status to assess what % are asymptomatic in the general population.
- Will assess changes in antibody levels over time to address questions about waning immunity and re-infection (& whether this is symptomatic or not).
Study outline

• To recruit 10,000 UKB participants and 10,000 adult children/grand-children to increase representation across all ages and regions

• Participants mailed a blood sampling kit every month for at least six months

• Weekly batches of samples shipped to Oxford TDI for ELISA assay (IgG Ab to spike protein)

• Results made available on a regular basis to DHSC to inform approach to pandemic
Rapid turn-around of the UKB lab

1st April

9th April

21st May
Collection kit sent to participants
• Mail 20,000 kits in 4 weekly batches of 5,000
• Repeat every month for at least 6 months

07 May: First email invites sent (116,000 signed-up over 4 weeks)
15 May: First participants selected
20 May: First batch of sample kits despatched
09 June: Processed samples sent to TDI for assay
15 June: Results provided for first batch of samples
Results for first 3,300 participants: Region

Overall seroprevalence: 5.6%
Results for first 3,300 participants: Sex

- Men: 5.6% (4.6%-6.9%)
- Women: 5.5% (4.5%-6.7%)
Results for first 3,300 participants: Age

- 50-59: 7.3% (5.8% - 9.0%)
- 60-69: 4.9% (3.7% - 6.4%)
- 70+: 3.4% (2.4% - 4.8%)
Summary of research opportunities using linked EMR and serology data

• Availability of medical records and genetic data for all 20,000 individuals will facilitate research into:
  • Antibody levels and disease severity
  • Persistence of antibody levels over time and recurrence of COVID-19
  • Genetic determinants of antibody response

• Medical records for all 500,000 individuals will enable:
  • Assessment of longer-term health outcomes in those with COVID-19
  • How this varies by disease severity