

# A National Health Data Research Capability to Support COVID-19 Research Questions

SAGE Reporting: 21 April 2020

## Executive Summary:

There is considerable need for COVID-19 research questions to be rapidly answered to guide national (and international) decision making. HDR UK has teamed up with NHS Digital, the UK Health Data Research Alliance, NHS national data custodians in Scotland, Wales and Northern Ireland, and national providers of specialist data to provide: a) a process to streamline and prioritise the most important health data research questions; b) an approach to link data; and c) provide access to secure analytical environments for researchers to answer these questions to improve understanding and treatment of coronavirus. This approach was presented to SAGE on 14 April and described in the following [paper](#).

This week is the first report on three areas of progress:

- A. The Research Funnel (described in Appendix 1), prioritised questions as at 14 April 2020 (listed in Appendix 2) and their status in the process: This contains 44 research questions, (of which 19 were prioritised) against four SAGE priority areas (direct impact, indirect due to health care pressures, indirect due to socio-economic factors and other)
- B. Linked NHS data in English, Scottish, Welsh & Northern Irish Trusted Research Environments: CHES, SGSS, NICOR (6 sub-sets) datasets have been added into NHSD since last week
- C. Information Governance and access: Agreement of streamlined approach with a single front door for each nation has been achieved

The primary insights for SAGE at this stage are:

- Research questions are currently dominated by 'direct impact' questions, however, others are starting to feed through for indirect impacts associated with cardiovascular and cancer



- The current rate limiting step for prioritised questions is getting to well-defined data request submissions to submit to the custodians. We are building the health data research community around this to support and accelerate this process
- Our focus for the next week is to: increase indirect impact questions (particularly in cardiovascular and cancer) and to establish the approved researcher route so that more researchers can safely access the data to answer the questions

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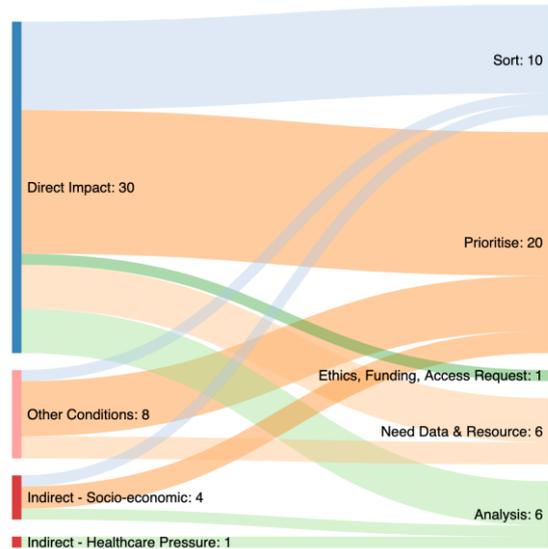


## A. Research Funnel and prioritised questions

The key messages from the first iteration of the prioritisation process are:

- We have received 44 health data research questions
- The questions address each of the four SAGE priorities, with the largest group of questions addressing the “Direct Impact of COVID-19”. Currently the 10 highest prioritised questions are associated with “Direct Impact of COVID-19”, however, we anticipate that this will change over time as the impact and knowledge of the virus progresses
- Questions are coming from a wide variety of sources, including from front-line clinicians. 11 are at stage 4 or beyond in the process, meaning that work is required to shape the scope of the project and identify the potential data resources required
- There has been a specific focus on identifying cardiovascular research questions, with the support of the National Institute for Cardiovascular Research (NICOR), British Heart Foundation, the BHF Data Science Centre and NHSD. In the week ahead we will be increasing focus on indirect impact associated with other diseases, in particular cancer, supported by DATA-CAN, the Health Data Research hub for cancer.
- We have also convened a discussion between national research experts and NHS Digital/Public Health England team, together with the ISARIC Study team to accelerate provision of a robust, validated answer to the high priority question – ‘can we investigate and quantify variation in the incidence (test-positive rate) and outcome of COVID-19 on individuals from Black, Asian and Ethnic Minority (BAME) populations in the UK?’ (See Appendix 2).

The following figure shows the 43 questions by SAGE area, and by stage in the funnel:



## B. Linked NHS data in English, Scottish, Welsh & Northern Irish Trusted Research Environments

### NHS Digital data update summary

- The major new datasets detailed in the [last paper](#), have now landed within NHS Digital: CHES, SGSS, NICOR (6 sub-sets)
- SUS+, the 'raw and more timely form' of Hospital Episode Statistics is being prepared for analysis
- Focus this week to conclude the cardiovascular analysis, working in partnership with NICOR and NHS England
- These datasets are being put to use as per other examples below (convalescent plasma trial, predictive modelling)
- Progress is being made landing new data sets for the purposes of COVID-19 response (GP data, social care)
- Focus is on linkage and use of data, while the Data Processing Services (DPS) is rapidly matured
- Detail on each point below

### Convalescent Plasma Program (Data Access)

- Linked dataset sent to NHS Blood and Transplant (NHSBT) on 17/04 – identified ~8,000 recovered COVID-19 patients whose serum could be provided to critically ill COVID-19 patients as part of the therapeutic trial. Demographic data was linked to test and intensive care data with specific exclusions agreed by NHSBT and NHSD (i.e. national data opt out, age, S-flag, Shielded Patients List, age parameters). Recruitment started on 19/4 by NHSBT.

### Intensive care and testing data (Data Collection and Analysis)

- COVID-19 Hospitalisation in England Surveillance System (CHESS – intensive care) and Second Generation Surveillance System (SGSS - testing) are now routinely being collected from PHE by NHSD, enabling *linked* analysis and dissemination. PHE lead on dissemination of these un-linked data.

### National Institute for Cardiovascular Research (NICOR) / NHS England / BHF (Data Collection and Analysis)

- Exercise has been undertaken by NICOR to encourage all sites to continue to submit timely data to NICOR. All contributing Trusts have been contacted by email supported by individual phone calls.
- HQIP / NHSE, and Information Governance agreement secured for transfer and analysis of 6 NICOR datasets (covers ~3m patients) to NHSD. Data cannot be onward shared at individual level (aggregate outputs can). Transfer completed 18/04 with environments being loaded, with relevant analytical tools, and analysis commenced w/c 20/04. NHS England analytical teams, in conjunction with Prof Colin Baigent (Oxford), Prof Christopher Gale (Leeds) and Prof Mamas Mamas (Keele), leading on analysis of first questions.
- Supporting key service line questions, jointly prioritised by NICOR, NHS England and agreed with BHF

### Strengthening Analytics Capability (Data Analysis)

- Advanced analytics cell established – redeployed specialist resources within NHS Digital and seconded resources from PHE. Initial focus on service and clinical questions to support SAGE e.g. indirect effects of COVID-19 on cancer outcomes and screening programmes.

### National Diabetes Audit (NDA) (Data Analysis)

- Linking NDA data with intensive care data – supports urgent research request to investigate potential associations / specific risk factors for diabetic patients.

### **Predictive Modelling (Data Analysis and Access)**

- Successfully piloted predictive demand modelling for ventilators and bed capacity (developed in partnership with Cambridge University) – national, regional & trust-level deployment by 19/04
- Informal indicators for COVID-10 death data – working closely with PHE to refine approach to enable more accurate modelling of the outbreak
- Population health analytics – continuing to investigate potential association between ethnicity and poorer outcomes

### **GP data (Data Collection and Access)**

- NHS Digital to centrally distribute GP data for planning and research during COVID-19 - proposal agreed 15/04 at BMA/RCGP Joint IT committee and reviewed by National Data Guardian on 17/04 (outcome expected 21/4). Centralisation reduces burden on GPs to ensure legitimate, controlled and proportionate data release. Covers all GP practices in England and will require their positive action to participate. Data Protection notice (DPN) being drafted and endorsement will be sought for DPN from BMA/RGCP w/c 20/04. Plan to deliver first weekly tactical extract w/c 11/05, subject to ongoing support from the profession.

### **Residential and Domiciliary Care (Data Collection and Access)**

- Mechanism established for daily collection of aggregate count of impact of COVID-19 on residents, service users and staff – covers ~6,000 care settings (~15% of overall market). DPN and communications plan being agreed to support start of data collection by 24/04. Solution being developed for remaining sites.

## **C. Information Governance and access**

‘Single front door’ access request routes are now operational in each devolved authority with expedited data access processes:

- England via NHSX covid-19datasharing@nhsx.nhs.uk (established for COVID-19)
- Scotland via Public Benefit and Privacy Panel (PBPP) for Health and Social Care (existing process)
- Wales via SAIL databank Information Governance Review Panel (IGRP) (existing process)
- Northern Ireland vi Honest Broker Service (existing process)



Work initiated to ensure consistent definition of 'safe user' (accredited researcher) across the 4 nations and other COVID-19 health data science initiatives.

Initial set of priority research and policy questions to guide application of Information Governance policy and legal frameworks and identify any differences in interpretation or application across four nations.

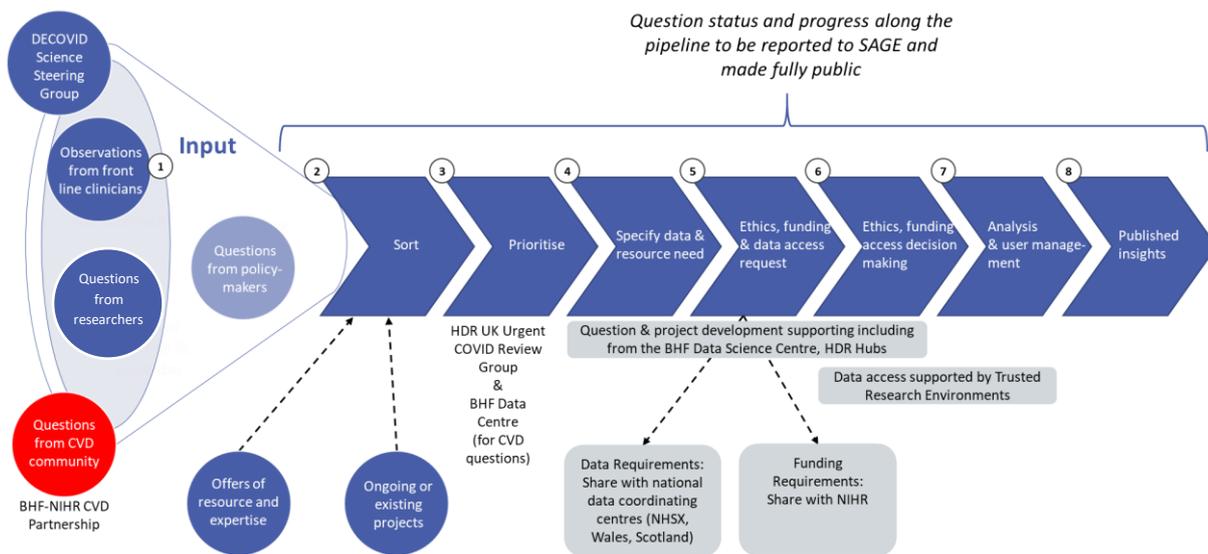


## Appendix 1 – Health Data Research question funnel

This process has been developed in response to requests from SAGE, NIHR and NHSX to provide a means to prioritising the volume of questions that are received based on new and ongoing research activity, observations from the frontline and areas of emerging national importance.

The aim through this process is to provide a list of prioritised questions for SAGE and others to track and to provide resources to support this work. Data custodians, such as NHS Digital/NICOR, and Trusted Research Environment providers, such as Secure Anonymised Information Linkage Databank (SAIL) in Wales will provide appropriate data access. The input stage will be aligned with other questions submitted through various communities such as the BHF-NIHR COVID Review Group and the DECOVID Scientific Steering Committee, chaired by Bryan Williams, Medical Director of UCLH.

The aim of this process is to align the various routes for questions coming in and support the direction of resources to the most urgent areas. The process is set out below:



### 1. Input

All questions will be directed through a single, simple [webform](#). This will also receive input from other groups, as referenced above, in order to ensure there is a single 'front door' to the national health data research prioritisation process. There will be separate routes to collect information about ongoing projects or offers of resources.



## **2. Sort**

Questions will be quickly reviewed to ensure completeness of information, lack of duplication and consistency of format. All questions, along with projects and offers of resources, will be displayed on the HDR UK Matchmaking tool, to foster national collaboration.

## **3. Prioritise**

New questions will be presented to the HDR UK Urgent COVID Review Group (membership in appendix 2) for an initial prioritisation decision

## **4. Specify data and resource need**

Prioritised questions will be supported to develop an understanding of the data and resources that will be needed to undertake the research. This support will be provided by elements of the health data research community, including the BHF Data Science Centre and the Health Data Research Hubs.

## **5. Ethics, funding and data access request**

Once the project protocols have been developed, support will be required to ensure appropriate information governance is in place. Funders, such as NIHR, and organisations supporting data access, such as NHSX, will support at this stage.

## **6. Ethics, funding and access decision making**

Once approvals have been received, the relevant data custodian Trusted Research Environment will support secure data access.

## **7. Analysis and user management**

Throughout the duration of the project, progress will be tracked and reported to SAGE and other groups.

## **8. Published Insights**

The Principal Investigator and project team will rapidly publish the insights from the project for peer scrutiny and to support decision-making at a national and international level.



## Appendix 2 - List of Priority Questions

The questions are being prioritised by the HDR Urgent COVID Review Group (membership provided in appendix 2). The top prioritised questions (prioritised 8 out of 10 and above) and their status is provided below. Questions that had already prioritised via NIHR are shaded in green, questions related to Cardiovascular Disease are shaded in orange. In future reports we will provide a short overview of the emerging insight for each of the priority questions. The full list of 50 active questions is available in our [Matchmaker Tool](#).

| SAGE Category                   | Keyword                  | Date of input | Question  | (Expected) data requested                           | Prioritisation Score (Median) | Days since input | Moved stage?<br>↑ / - / ↓ | Current funnel stage | Question posed by (lead) | Question lead role  | HDR UK lead                  |
|---------------------------------|--------------------------|---------------|---|---|-------------------------------|------------------|---------------------------|----------------------|--------------------------|---|------------------------------|
| Direct Impact                   | Treatments               | 02/04/20      | RECOVERY Can Lopinavir-Ritonavir vs Interferon β vs lowdose corticosteroids be effective in treating COVID 19 test +ve hospitalised patients?   | Complete  | Auto prioritised              | 22               | -                         | 7                    | Peter Horby              | Professor of Emerging Infectious Diseases and Global Health, University of Oxford | NHS Digital (Martin Landray) |
|                                 | RECOVERY                 |               |   |   |                               |                  |                           |                      |                          |   |                              |
| Direct Impact; Other conditions | Clinical characteristics | 02/04/20      | ISARIC-CCP What are the clinical characteristics of COVID-19 positive patients; what are the determinants (genetic, other omic, prior medical history, other) of good and poor outcome; and how can knowledge of this | England, Scotland population / demographic datasets | Auto prioritised              | 22               | -                         | 7                    | Cathie Sudlow            | HDR UK Scotland, Edinburgh; and BHF Data Science Centre                           | Cathie Sudlow                |
|                                 | Patient outcomes         |               |   |   |                               |                  |                           |                      |                          |   |                              |

| SAGE Category                            | Keyword          | Date of input | Question  | (Expected) data requested   | Prioritisation Score (Median) | Days since input | Moved stage? ↑/~/↓ | Current funnel stage | Question posed by (lead) | Question lead role                     | HDR UK lead                      |
|--|------------------|---------------|---|---|-------------------------------|------------------|--------------------|----------------------|--------------------------|--|----------------------------------|
|  |                  |               | help to target clinical and public health strategies?   |   |                               |                  |                    |                      |                          |  |                                  |
| Direct Impact                            | Virus genome     | 02/04/20      | COG-UK Can study of the whole virus genome enable scientists to monitor changes at a national scale, reveal how the virus is spreading and whether different strains are emerging?  | Population clinical datasets (e.g. HES)   | Auto prioritised              | 22               | -                  | 7                    | Ewan Harrison            | HDR UK Cambridge; HDR UK fellow        | Ewan Harrison                    |
| Direct Impact; Indirect - socio-economic | BME              | 06/04/20      | Why do BME groups appear to have increased risk of severe COVID outcomes (e.g. ventilation and mortality)? Is this caused by social, environmental and/or genetic factors? Are BME outcomes the same or different across the UK? And internationally? Does this tell us anything about the different outcomes?<br><br>Initial aim: To investigate and quantify variation in the incidence (test-positive rate) and outcome of COVID-19 on individuals from Black, Asian | Administrative health datasets available in Public Health England and NHS Digital (CHES, HES & SUS+, Mortality) | 10                            | 11               | ↑                  | 4                    | Rhoswyn Walker           | Chief Science Strategy Officer, HDR UK | Eva Morris, University of Oxford |
|  | Patient outcomes |               |   |   |                               |                  |                    |                      |                          |  |                                  |

| SAGE Category | Keyword             | Date of input | Question   | (Expected) data requested | Prioritisation Score (Median) | Days since input | Moved stage? ↑/~/↓ | Current funnel stage | Question posed by (lead)                                   | Question lead role   | HDR UK lead      |
|---------------|---------------------|---------------|--|---------------------------|-------------------------------|------------------|--------------------|----------------------|--|--|------------------|
|               |                     |               | and Ethnic Minority (BAME) populations in the UK.  |                           |                               |                  |                    |                      |  |  |                  |
| Direct Impact | COVID-19 testing    | 07/04/20      | How do we support the scale-up of COVID-19 testing, by making sure that the data that is provided on the confirmed state of COVID-19 diagnosis and antibody levels is robust and reliable? |                           | 9.5                           | 10               | ↑                  | 3                    | Philip Quinlain  | Head of Digital Research Service at University of Nottingham | Philip Quinlain? |
| Direct Impact | Vaccines            | 02/04/20      | Is the rubella vaccination (or prior exposure to German measles) protective against COVID-19 due to shared capsid sequence homology between SARS-CoV2 and Rubella?                         |                           | 9                             | 22               | ↑                  | 5                    | Adam Young, Yorgo Modis, Bjoern Neumann and Robin Franklin | University of Cambridge                                      | Cathie Sudlow    |
| Direct Impact | Antibody diagnostic | 07/04/20      | How can we accurately measure the ongoing prevalence of COVID-19 in the population following identification of a "good enough" antibody diagnostic?  |                           | 9                             | 10               | ↑                  | 3                    | Rhoswyn Walker   | Chief Science Strategy Officer                               |                  |

| SAGE Category                   | Keyword             | Date of input | Question   | (Expected) data requested | Prioritisation Score (Median) | Days since input | Moved stage? ↑/~/↓ | Current funnel stage | Question posed by (lead)                        | Question lead role   | HDR UK lead |
|---------------------------------|---------------------|---------------|--|---------------------------|-------------------------------|------------------|--------------------|----------------------|---|--|-------------|
|                                 |                     |               | (This requires representative and random sampling from the whole or at-risk sub-populations)   |                           |                               |                  |                    |                      |   |  |             |
| Direct Impact; Other conditions | Vulnerable patients | 06/04 /20     | Understanding vulnerable patients: How are underlying conditions defined, and what is the impact of infection on a range of outcomes, and what are the benefits of 'shielding' and other preventive interventions?   |                           | 9                             | 11               | ↑                  | 4                    | Harry Hemingway                                 | Professor of Clinical Epidemiology at UCL  |             |
|                                 | Shielding           |               |  |                           |                               |                  |                    |                      |   |  |             |
| Direct Impact                   | Patient outcomes    | 07/04 /20     | Are there any treatments which show evidence of improving outcomes for patients infected with coronavirus? Clinicians are having to make real-time decisions today, on the best possible treatment options for critically ill patients without robust evidence of harm or potential benefits of the therapeutic interventions. Better use of routine medication data could provide additional evidence to inform these decisions |                           | 9                             | 10               | ↑                  | 3                    | Liz Sapey, Alastair Denniston, Tanya Pank Hurst | Director of PIONEER and Reader in Acute and Respiratory Medicine at University of Birmingham; Director of INSIGHT and Consultant Ophthalmologist at University of Birmingham |             |

| SAGE Category  | Keyword  | Date of input | Question   | (Expected) data requested | Prioritisation Score (Median) | Days since input | Moved stage? ↑/~/↓ | Current funnel stage | Question posed by (lead)                | Question lead role  | HDR UK lead  |
|--|--|---------------|--|---------------------------|-------------------------------|------------------|--------------------|----------------------|---|---|--|
|  |  |               | prior to the definitive outcomes of clinical trials.   |                           |                               |                  |                    |                      |   |   |  |
| Direct Impact; Indirect - healthcare pressures; Other conditions | EHRs, Patient Outcomes, Co-morbidities                 | 02/04/2020    | Where hospitals have EHRs is it possible to provide real time data on outcomes per COVID-19 admission by age and by co-morbidities by hospital? To understand whether there are hospitals that appear to have better outcomes for co-morbidity sub-groups (indicating potentially more effective interventions to learn from)? |                           | 8.5                           | 22               | -                  | 3                    | Jose Sousa                              | CTU Manager, School of Medicine, Dentistry and Biomedical Sciences, Queens University Belfast | <a href="mailto:j.sousa@qub.ac.uk">j.sousa@qub.ac.uk</a>   |
| Indirect - healthcare pressures; Other conditions                | Cardiovascular disease, MI, Stroke, Disease Management | 02/04/2020    | What is the influence of COVID 19 epidemic in the UK and the NHS response to this on presentation, management and prognosis of non-COVID disease, in particular cardiovascular diseases such as MI and stroke?   |                           | 8.5                           | 22               | ↑                  | 6-7                  | Cathie Sudlow                           | HDR UK Scotland, Edinburgh; and BHF Data Science Centre                                       | <a href="mailto:Cathie.Sudlow@hdruk.ac.uk">Cathie.Sudlow@hdruk.ac.uk</a>   |
| Direct Impact; Indirect -  | ICU, Ventilation                                       | 02/04/2020    | Can we use data science to support front line decision making in Intensive Care Units? E.g. at the point of  |                           | 8                             | 22               | -                  | 4                    | Simon Ball; Chris Holmes; John Bradley; | Medical Director, University Hospitals  | <a href="mailto:chris.holmes@stats.ox.ac.uk">chris.holmes@stats.ox.ac.uk</a> ,<br><a href="mailto:john.bradley@addenbrookes.nhs.uk">john.bradley@addenbrookes.nhs.uk</a> , |

| SAGE Category        | Keyword          | Date of input | Question   | (Expected) data requested | Prioritisation Score (Median) | Days since input | Moved stage? ↑/-/↓ | Current funnel stage | Question posed by (lead)    | Question lead role   | HDR UK lead  |
|----------------------|------------------|---------------|--|---------------------------|-------------------------------|------------------|--------------------|----------------------|-----------------------------|--|--|
| healthcare pressures |                  |               | peak need, if patient requirements outstrip ventilation capacity, how should hospitals stratify and prioritise patients for ventilation? |                           |                               |                  |                    |                      | Liz Sapey; Axel Heitmueller | Birmingham; Health Data Science/Alan Turing Institute; Gut Reaction – HDR Hub for Inflammatory Bowel Disease; Pioneer – HDR Hub for acute care; Discover-NOW – HDR Hub for Real World Evidence | E.Sapey@bham.ac.uk<br>Axel.Heitmueller@imperialcollegehealthpartners.com |
| Other conditions     | Patient outcomes | 02/04/2020    | What is the influence of pre-existing cardiovascular disease on outcomes of COVID-19 infection?  |                           | 8                             | 22               | -                  | 4                    | Cathie Sudlow               | HDR UK and BHF Data Science Centre   | Cathie.Sudlow@hdr.uk.ac.uk   |

| SAGE Category                            | Keyword                      | Date of input | Question  | (Expected) data requested | Prioritisation Score (Median) | Days since input | Moved stage? ↑/~/↓ | Current funnel stage | Question posed by (lead)         | Question lead role  | HDR UK lead             |
|--|------------------------------|---------------|---|---------------------------|-------------------------------|------------------|--------------------|----------------------|----------------------------------|---|-------------------------|
| Indirect - socio-economic                | Socioeconomic, psychological | 02/04/2020    | What are the psychological, social and economic consequences of policies to limit the spread and flatten the peak of COVID 19?              |                           | 8                             | 22               | ↑                  | 7                    | David Porteous and Cathie Sudlow | HDR UK Scotland (on behalf of Generation Scotland and other UK cohorts) | Cathie.Sudlow@hdk.ac.uk |
| Direct Impact; Indirect - socio-economic | Socioeconomic, communication | 02/04/2020    | Socioeconomic inequalities: Analysis by postcode IMD. What's the best way to provide targeted and tailored messages to diverse communities? |                           | 8                             | 22               | -                  | 4                    | Linsey Hovard                    |   | Linsey Hovard DAIS      |

| SAGE Category                            | Keyword                             | Date of input | Question   | (Expected) data requested | Prioritisation Score (Median) | Days since input | Moved stage? ↑/~/↓ | Current funnel stage | Question posed by (lead)   | Question lead role   | HDR UK lead              |
|--|-------------------------------------|---------------|--|---------------------------|-------------------------------|------------------|--------------------|----------------------|--|--|--------------------------|
| Direct Impact; Indirect - socio-economic | Socioeconomic, response, population | 02/04/2020    | How can we ensure that we fully understand variations in response to COVID-19 infection at the molecular, environmental, social and economic levels, by effectively coordinating the UK's longitudinal population studies to gain a much richer understanding of disease progression and outcomes? |                           | 8                             | 22               | -                  | 3                    | Mary De Silva, Debbie Lawlor, Martin Tobin. John Danesh, Nic Timpson, & David Porteous | Wellcome Trust COVID-19 Longitudinal Population Study Steering Group | jd292@medschl.cam.ac.uk; |
| Direct Impact                            | Genomic studies                     | 02/04/2020    | How can we maximise the speed and power of host genomic studies internationally to inform drug development?  |                           | 8                             | 22               | -                  | 3                    | Martin Tobin   | With the (International) COVID-19 Host Genomics Initiative           |                          |

| SAGE Category    | Keyword            | Date of input | Question  | (Expected) data requested | Prioritisation Score (Median) | Days since input | Moved stage? ↑/~/↓ | Current funnel stage | Question posed by (lead)                        | Question lead role   | HDR UK lead   |
|------------------|--------------------|---------------|---|---------------------------|-------------------------------|------------------|--------------------|----------------------|---|--|---|
| Other conditions | Immunosuppressants | 02/04/2020    | Current guidelines recommend shielding is carried out for patients receiving immunosuppressants, however there is mixed evidence as to whether these patients will have poorer outcomes following coronavirus infection. Could we compare the outcomes data for patients who are receiving / not immunosuppressants and validate whether this population group are more vulnerable? |                           | 8                             | 22               | -                  | 3                    | Liz Sapey, Alastair Denniston, Tanya Pank Hurst | Director of PIONEER and Reader in Acute and Respiratory Medicine at University of Birmingham; Director of INSIGHT and Consultant Ophthalmologist at University of Birmingham | E.Sapey@bham.ac.uk<br>Alastair.denniston@insight.hdrhub.org |
| Other conditions | Patient outcomes   | 02/04/2020    | Are there any concomitant treatments/ongoing prescribed medication which are making the outcomes of coronavirus infection worse for patients? This information would help clinicians to understand if there are any ongoing treatments which should be stopped as a priority when patients present with suspected   |                           | 8                             | 22               | -                  | 3                    | Liz Sapey, Alastair Denniston, Tanya Pank Hurst | Director of PIONEER and Reader in Acute and Respiratory Medicine at University of Birmingham; Director of INSIGHT and Consultant Ophthalmologist                             | E.Sapey@bham.ac.uk<br>Alastair.denniston@insight.hdrhub.org |

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|---------------|---------|---------------|---|---------------------------|-------------------------------|------------------|--------------------|----------------------|--------------------------|-------------------------------|-------------|
|               |         |               | COVID-19. For example, help to better understand existing theoretical associations between anti-hypertensives and NSAIDs and COVID-19 outcomes. |                           |                               |                  |                    |                      |                          | t at University of Birmingham |             |

## Appendix 3: Urgent COVID Review Group Membership

Comprising the HDR UK Uniting and Improving the Data Delivery Group (IDG) and Using the Data Delivery Group (UDG), in addition to 4 rotating members of the HDR UK Public Advisory Board

| Name                      | Role   | Sector                       | Nation/Region       | Data Expertise/<br>Disease area                 |
|---------------------------|--|------------------------------|---------------------|---|
| <b>Simon Ball</b>         | Executive Medical Director at University of Birmingham   | Clinical practice & research | England-Midlands    | Better Care Nephrology                          |
| <b>John Bradley</b>       | Consultant Physician at Cambridge University Hospitals   | Clinical practice & research | England - Cambridge | Gut Reaction Hub Renal                          |
| <b>Caroline Cake</b>      | Chief Executive Officer of Health Data Research UK   | Central Management           | UK                  | One Institute                                   |
| <b>John Danesh</b>        | Professor of Epidemiology and Medicine and Head of the Department of Public Health and Primary Care at the University of Cambridge | Clinical research            | England - Cambridge | Understanding Causes of Disease Cardiovascular  |
| <b>Charlie Davie</b>      | Managing Director of UCLPartners, practising Consultant Neurologist at the Royal Free London NHS Foundation Trust.                 | Clinical practice & research | England - London    | DataCan Hub Neurology                           |
| <b>Alastair Denniston</b> | Director of INSIGHT, Consultant Ophthalmologist at University of Birmingham  | Clinical practice & research | England - Midlands  | Insight Hub Ophthalmology                       |
| <b>Ben Gordon</b>         | Digital Innovation Hub Programme Director  | Central Management           | UK                  | Improving Health Data                           |
| <b>Axel Heitmüller</b>    | Director of Discover-NOW and Managing Director at Imperial College Health Partners at Imperial College London                      | Clinical delivery & research | England - London    | DiscoverNow Hub Strategy & Business Development |
| <b>Harry Hemingway</b>    | Professor of Clinical Epidemiology at UCL  | Clinical research            | England - London    | Human Phenome Cardiovascular                    |

|                        |  |                              |                    |  |
|------------------------|--|------------------------------|--------------------|--|
| <b>Chris Holmes</b>    | Health Data Science and AI Lead  | Research                     | UK                 | Applied Analytics<br>Statistical Genetics          |
| <b>Martin Landray</b>  | Professor of Medicine and Epidemiology at the University of Oxford, HDR UK's Science Priority Lead for Clinical Trials   | Clinical practice & research | England - Oxford   | NHS DigiTrials & Clinical Trials<br>Cardiovascular |
| <b>Ronan Lyons</b>     | Clinical Professor of Public Health at the University of Swansea   | Clinical Research            | Wales              | Public Health<br>Accident & Emergency              |
| <b>Andrew Morris</b>   | Director of Health Data Research UK  | Clinical Research            | Scotland/UK        | One Institute<br>Diabetes                          |
| <b>Gerry Reilly</b>    | Chief Technology Officer   | Central Management           | UK                 | Uniting Health Data - Technology                   |
| <b>David Robertson</b> | Chair of Applied Logic, Vice Principal and Head of College of Science and Engineering at The University of Edinburgh   | Research                     | Scotland           | Applied Analytics<br>Computing – applied logic     |
| <b>Elizabeth Sapey</b> | Director of PIONEER and Reader in Acute and Respiratory Medicine at University of Birmingham   | Clinical practice & research | England - Midlands | Pioneer Hub<br>Acute Care                          |
| <b>Neil Sebire</b>     | Professor of Pathology at UCL Great Ormond Street Hospital Institute of Child Health, Chief Research Information Officer and Director of the Digital Research, Informatics and Virtual Environment (DRIVE) Unit at GOSH. | Clinical practice & research | England - London   | Standards<br>Paediatric Pathology                  |
| <b>David Seymour</b>   | Partnership Director at Health Data Research UK  | Central Management           | UK                 | Uniting Health Data                                |
| <b>Aziz Sheik</b>      | Professor of Primary Care Research & Development   | Clinical research (?)        | Scotland           | Breathe Hub  |



|                       |  |                              |             |                               |
|-----------------------|--|------------------------------|-------------|-------------------------------|
|                       | and Director of the Usher Institute at The University of Edinburgh   |                              |             | Paediatric Allergy & Asthma   |
| <b>Cathie Sudlow</b>  | Director of the Scottish site of Health Data Research UK and Director of the British Heart Foundation UK Centre for Cardiovascular Health Data Science | Clinical practice & research | Scotland/UK | BHF Centre Neurology (stroke) |
| <b>Rhoswyn Walker</b> | Chief Science Strategy Officer   | Central Management           | UK          | Using Health Data             |

**X 4 Public Advisory Group Members (rotating) 75% female, 25% male**

**Diversity (not including public members): Gender balance: ~75% male, 25% female  
Ethnicity: 90% non-BAME**

## Health Data Research UK:

Health Data Research UK is the national institute for health data that includes England, Wales, Scotland and Northern Ireland. Its mission is to unite the UK’s health data to enable discoveries that improve people’s lives. It is a not-for-profit public benefit company funded by UK funded by UK Research and Innovation, the Department of Health and Social Care in England and equivalents in Northern Ireland, Wales and Scotland, and leading medical research charities [www.hdruk.ac.uk](http://www.hdruk.ac.uk).

