



University Hospitals **NHS**
Coventry and Warwickshire
NHS Trust

The Coventry and Warwickshire diagnostics response to the COVID-19 pandemic challenge

Dimitris Grammatopoulos on behalf of the UHCW NHS Trust/UoW COVID response collaboration
(Emma Braybrook, Harpal Randeva, Lawrence Young and Neil Anderson)

- Supported NHSE national effort to introduce SARS-CoV-2 antibody testing in the clinical laboratory using the PHE approved Roche Elecsys Anti-SARS-CoV-2 assay
- Adopted early for healthcare workers to assess levels of exposure and immunity
- > 25,000 tests performed since May 2020 with 97% result available within 1 day and a daily capacity of 3,600 across the CWPS network
- Assay kits arrived and verified within a week - live with the test on 29/05/2020



- Brand new facility developed in partnership with Warwick Medical School, undergoing UKAS accreditation
- Rapid set-up with >100,000 tests carried out and TAT of 14-16 hours
- Current daily capacity of >1700 tests, planned >4,500 by Jan 2021
- >10 PCR methods validated and introduced ensuring a flexible service responsive to reagent availability

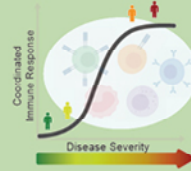


- Introduction of a test panel, including biomarkers highlighted in recent RCPATH guidance in accordance with literature and with clinician input
- Aim to monitor disease progression, generate data to enable prediction of severe outcomes and mortality
- Biomarker data is being analysed to identify significant correlations, optimal use and development of suitable algorithms and cut off values that identify patients with increased risk of mortality

Guidance on the use and interpretation of clinical biochemistry tests in patients with COVID-19 infection

COVID-19 Diagnostic Lab

COVID-19 Biomarkers



COVID-19 biomarkers panel at UHCW

Procalcitonin	* 115	ng/L	(0-64)
Interleukin-6	* 225	ng/L	(0-8)
C Reactive Protein	* 04	mg/L	(0-10)
Ferritin	* 056	ug/L	(0-350)
Transferrin	* 14	g/L	(2.0-3.0)
Iron	* 4	umol/L	(14-28)
Transferrin Saturation	* 11	%	
Albumin	* 29	g/L	(35-50)
Lactate Dehydrogenase		fluorimol/L	UK
Cardiac Troponin T	* 03	ng/L	
NT-proBNP	* 64	Prox/L	(0-2)

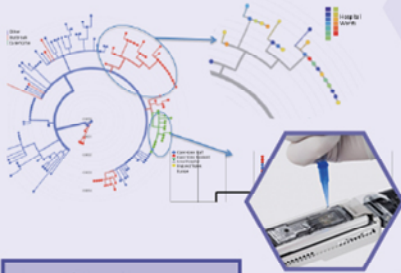
Antibody Testing

6 PILLARS OF THE COVID-19 RESPONSE

- Member of the COG-UK Consortium in collaboration with the University of Warwick (UoW)
- Financial support to establish Oxford Nanopore sequencing technology from UoW Global Research Priorities
- enome data combined with clinical and epidemiological datasets to guide UK public health interventions and policies
- Provides surveillance on outbreaks and applied locally in the investigation of a care home and hospital outbreak
- International collaboration with Masinde Muliro University of Science and Technology in Kenya involving training of local researchers in sequencing techniques



Virus Sequencing Service



COVID Biobank



- In March 2020, CWPS began saving clinical samples from COVID patients, focusing on serum, plasma, nasopharyngeal swabs and gDNA samples
- Creation of daily search lists, standardised process with storage of samples through Arden Tissue bank to comply with legislation
- >7,000 serum samples from nearly 1500 patients have been anonymised, catalogued, and stored in a searchable database
- Multiple samples from single patients allowing for disease trajectory focussed projects

Research & Innovation

- Collaboration with Quanterix Corp. Analysis of cytokines utilising SIMOA* technology to profile cytokine storm
- ACB/Siemens/UoW funded project: Investigating experimental markers of endothelial dysfunction and association with inflammation in COVID-19 complications such as thrombosis and coagulopathy
- Characterising Iron metabolism in COVID-19 patients
- Use of longitudinal laboratory, imaging and clinical data for development of AI-based prognostic tools to predict COVID-19 disease outcomes.
- Support development of innovative lateral flow devices for rapid detection of spike glycoprotein from the SARS-COV-2 virus
- Participating in the COVID-19 National Testing Programme as a Testing site of proposed innovations
- International collaboration with Faculty of Medicine, Public Health and Nursing, University of Gadjah Mada, Indonesia: Assistance in the design of protocols for development of local biobank

