

Deploying the healthcare science workforce to support the NHS clinical delivery plan for COVID-19

5 April 2020, Version 2

This is a working document created during an evolving situation. It will be updated based on emerging experience.



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1. Introduction

This document has been produced to assist trusts and other organisations in deploying the healthcare science (HCS) workforce in the surge response to coronavirus. It sets out how healthcare scientists support these areas and the issues that need to be addressed, with detailed advice broken down by professional area. It builds on work already being undertaken by HCS staff across the NHS to adapt to the challenges posed by COVID-19

Specifically, this guidance is to support the provision of:

- new and expanded roles for specialists in healthcare science
- proactive leadership by HCS Leads, which is crucially important to ensure the HCS workforce is fully embedded in all planning and delivery stages
- troubleshooting to help individuals work in environments where they will have to adapt rapidly, as well as alter allegiances to individual trusts, departments and management structures
- COVID-19 molecular testing in laboratories using staff who have the potential skills and experience
- expertise and support for critical care and high dependency settings
- clinical engineering services to support crucial logistics and equipment operation and maintenance in laboratories, critical care and high dependency settings
- physical science services to support and coordinate regional equipment procurement, logistics, compliance with regulation, equipment assessment, installation, acceptance and maintenance in both the laboratories and in critical care settings
- ongoing healthcare science diagnostic and treatment services, which must continue to be maintained for urgent and emergency care pathways including cancer, dialysis, and acute cardiac events.

This guidance defines:

- the skills that exist across all HCS specialties, to help identify those who could quickly be upskilled to take on different roles and activities
- the required competencies for upskilling
- recommended training resources.

Who belongs to the HCS workforce?

There are over 50 healthcare science specialties and 4 major sections of the workforce – Laboratory (Life) Scientists; Physiological Scientists; Medical Physicists and Clinical Engineers; and Clinical Bioinformaticians. Healthcare scientists work in direct patient care and other indirect roles, either providing information for, or being part of multi professional teams. Healthcare scientists start to specialise early in their careers so although some will work with acutely unwell patients with cardiac and respiratory conditions or work in areas such as theatre, critical care or high dependency units, a large number may have not encountered an acutely unwell patient with severe respiratory problems.

Highly skilled Vascular, Respiratory, Cardiac and Neuro Physiologists can be redeployed to support managing COVID-19 patients working with critical and high dependency care teams and supporting direct patient care, with others back-filling for those that are re-deployed. Laboratory (Life) Scientists will be re-deployed to Covid-19 testing in microbiology/virology laboratories, with training provided where needed. Medical Physicists and Clinical Engineers will be essential in ensuring all equipment, including mechanical ventilators, are safe for use and maintained. They will also be critical in setting up field hospitals.

It should be noted that a proportion of the healthcare science workforce (students/trainees) are in different types of undergraduate and postgraduate training and are following curricula set by the National School for Healthcare Science or the Royal College of Pathologists. It is important therefore to consider not only the specialty, but also the stage of training. In addition, some of the healthcare science workforce will be relatively junior; others will have worked in the NHS for a decade or more. Nonetheless, the full range of people working and training in healthcare science should be available for deployment as patients and the services demand.

Working differently

The anticipated surge of coronavirus patients will require increased critical care/HDU beds and laboratory testing capacity. Existing staff will have to work in significantly and fundamentally different ways to help to respond to service demands, including responding to the potential high levels of staff absence. In addition, staff with related skills, but limited knowledge of these services, will need to be re-deployed from other areas into these critical care/HDU and testing services.

A regular review of staffing is therefore needed, to support changes in working practice and staff movement from other areas, while keeping patients safe. The HCS workforce will make a major contribution in both areas.

There will also be a requirement to support patients in community and social care who have had COVID-19 and have been discharged from hospital still requiring support, in addition to adapting services to work with those at risk of acquiring COVID-19 infection.

It is also necessary to recognise there will be a need for end of life care and bereavement support across the care continuum, which parts of the HCS workforce could support.

Practical implications for the HCS workforce during the COVID-19 pandemic

Existing hospitals and healthcare facilities are working to expand their critical care/HDU and laboratory capacity. Healthcare Scientists within these areas are already engaged in planning and carrying out activities to support this expansion, as are Healthcare Scientists in the services that support them. All these staff are having to work differently under intense pressure as hospitals reconfigure their services in response to the pandemic.

New facilities ('Field Hospitals') are being set up in locations across the country and require significant HCS input. For example, the new Nightingale Hospital in London is being set up and commissioned with expert leadership and skills from healthcare scientists in laboratory (life) science, clinical engineering, respiratory physiology, cardiac physiology and vascular science.

Guidance for employers

Guidance has been collated by the Department of Health and Social Care, NHS England and Improvement, Public Health England, Health Education England and NHS Employers, so that the latest advice is available to employers in one central resource. This guidance has also been shared with colleagues from the main health unions and staff organisations, to ensure that this is a supportive and co-ordinated response. Please see link below for guidance:

www.nhsemployers.org/covid19

2. Principles

Safe for staff and patients:

- Staff will likely be working in new ways with expansion/adaptation of physical facilities and flexible working patterns, including collaboration and excellent team working with other staff groups.
- COVID-19 testing is crucial and will be increased at pace in the coming days and will have to be on-going and sustained. COVID-19 Testing Competency Based Training Requirements can be found in Appendix 1.
- The potential for cross-skilling and upskilling of healthcare science staff is found in Appendix 2. Ideally all redeployed staff should self-assess their competence to perform the required tasks (under supervision initially) to confirm their suitability. An example framework is given in Appendix 3.
- All staff who may be required to wear Personal Protective Equipment (PPE) should be trained within their place of work in the procedures of 'donning and doffing' PPE.
- Staff should be aware of and trained in excellent infection control practices, ensuring that local guidelines and practices are adhered to.

<https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control>

- Returning HCSs should also self-assess according to their competence, which may depend on their length of time away from practice. They will be placed initially on the basis of this assessment, recognising that their competences may quickly improve after a return to practice.
- Staff should ideally not be removed from roles which would leave urgent or emergency non-COVID-19 pathways understaffed or with inexperienced staff e.g. providing diagnostic or therapeutic HCS services for patient within a cancer pathway, acute cardiac pathways or home dialysis.
- Staff who move to new areas, to work alongside existing staff, will be at high personal physical and mental health risk. Local teams should consider how they can support them and all their staff working in challenging circumstances and unfamiliar environments.
- Induction, rota management and training by employers *must* include: PPE training (face-to-face/simulation), basic life support (online) and induction/orientation to their working environment.
- The guideline <https://www.rcog.org.uk/en/guidelines-research-services/guidelines/coronavirus-pregnancy/covid-19-virus-infection-and-pregnancy/> provides information for healthcare professionals looking after pregnant patients with severe coronavirus infection.

Efficient:

Use designated teams, outlined in the cross-cutting teams section, to deliver routine tasks for whole wards or hospitals.

All staff should have their role clearly defined and identifiable (including while wearing PPE), to facilitate communication and appropriate distribution of tasks.

Patient-centred care:

Every staff member has a responsibility to contribute to patient care, as part of the wider laboratory or clinical care team, according to their competency and ability to do so.

www.ahcs.ac.uk/2020/03/06/statement-of-accredited-registers-about-covid-19-coronavirus/

3. Redeploy healthcare science staff to support critical care, high dependency units and those on oxygen therapy

Below is a list of healthcare scientists who can make a valuable contribution to critical care teams caring for COVID-19 patients. Where required, we are seeking permissions nationally for these professional groups to work outside their normal scope of practice:

Many from the HCS workforce will be redeployed in critical care roles, eg Respiratory Scientists, Cardiac Scientists, Neurophysiological Scientists, Perfusionists, Vascular Scientists, Critical Care Scientists, Medical Physicists and Clinical Engineers. Some specific examples include:

- Respiratory Physiologists who are routinely delivering Sleep Services and Nasal Ventilation Support Services can be utilised in acute Nasal Ventilation and Mechanical Ventilation.
- Cardiac Scientists in cardiac theatres, whose work may be scaled down significantly, can be released for additional duties in critical care, helping to support ventilated patients
- Perfusionists with theatre and critical care experience can support critical care teams, especially with ventilation requirements.
- Clinical Engineers/technologists will support the expansion of critical care departments into new environments, assist with equipment operation and the rapid application of new techniques in both clinical care and where required, in the laboratories.
- Clinical Engineers/technologists can be upskilled in basic critical care techniques, such as blood gas analyser support.
- Renal Technologists can support Clinical Engineering.
- MRI Physicists can support Radiation Safety or Clinical Engineering.
- Medical Physicists could also help assist with equipment and preparation teams.
- Neurophysiologists could be upskilled to work in a critical care science setting, their skills may be utilised to aid prognostication testing.
- Respiratory Scientists and Cardiac Scientists with additional training, can also perform arterial blood gases.
- Cardiac Scientists and Vascular Scientists can undertake patient monitoring and diagnostic techniques, e.g. ultrasound studies, pressure monitoring.
- Genetic Counsellors, Audiological Scientists, Gastrointestinal Scientists, Reproductive Medicine Scientists and Urodynamic Scientists can support communications with patients and relatives and sustaining the wellbeing of staff who are working as part of the critical care team.

Where the HCS workforce are not being deployed into expanded roles, those designated as *Healthcare Science Clinically Experienced Worker* will contribute to the thousands required to support service expansion.

4. Regulation and indemnity

Staff should work within their usual frame of competence and experience but may have to work outside their usual teams and hierarchies adhering to the principles of the joint statement from the professional regulators:

<https://www.hcpc-uk.org/registrants/updates/2020/how-we-will-continue-to-regulate-in-light-of-novel-coronavirus/>

In addition, the emerging model from the development of the new Nightingale Hospital is that new hospitals being urgently developed in response to the COVID-19 pandemic will be absorbed into an existing local Trust, as an additional site, and follow their governance models. All staff redeployment will be managed by HEE, who will implement secondment agreements as part of the process.

Voluntary Registers

- There are three organisations that hold registers which have been accredited by the Professional Standards Authority (PSA) that healthcare science professionals can join if they meet the required criteria: The Academy for Healthcare Science (AHCS), Register of Clinical Technologists (RCT) and Registration Council for Clinical Physiologists (RCCP).
- AHCS, RCT and RCCP are working together to introduce some form of temporary registration for healthcare science trainees and students who meet relevant requirements.
- All Healthcare Science staff not currently registered are expected to join an Accredited Voluntary Register.

Indemnity

COVID-19 NHS Indemnity

Due to the ever-increasing pressure on our NHS during this time, employers have asked for clarity regarding the application of the Clinical Negligence Scheme for Trusts (CNST) during the deployment of clinical staff to other departments, roles and clinical duties as a result of COVID-19.

NHS Resolution indemnifies those NHS organisations which are members of its schemes for clinical negligence through the NHS (Clinical Negligence Scheme) Regulations 1996. Clinical negligence defined as “*a liability in tort owed by a member [NHS organisation] to a third party in respect of or consequent upon personal injury or loss arising out of or in connection with any breach of a duty of care owed by that body to any person in connection with the diagnosis of any illness, or the care or treatment of any patient, in consequence of any act or omission to act on the part of a person employed or engaged by a member in connection with any relevant function of that member*”.

We have received confirmation from NHS Resolution that clinical staff at NHS trusts in England will still be protected by the CNST if they are deployed to a new area of

work at the trust, including one which is outside their normal speciality, or at a different trust, during the pandemic. Under section 11 of the Coronavirus Act 2020, the government will provide indemnity for clinical negligence liabilities associated with Coronavirus which are not covered by alternative indemnity arrangements such as those provided by the CNST, insurance companies or medical defence organisations.

NHS Resolution is reassuring all NHS employees (and honorary contract holders) that levels of protection and indemnity will continue to be in place through this time. Volunteers who have been sourced by NHS Trusts to assist with the delivery of clinical services will also be covered by these schemes.

NHS Resolution has set out its position on its website, making it clear that indemnity arrangements should not be a barrier to changed working arrangements during the pandemic (<https://resolution.nhs.uk/2020/03/19/covid-19-and-business-continuity/>).

5. Staffing structures and competencies

Category A: Qualified clinical scientists, biomedical scientists, and healthcare science practitioners, including mortuary (anatomical pathology) practitioners

Laboratory (Life) Sciences

- Virology, Microbiology, Molecular Pathology, Genetics and Genomics undertaking COVID-19 testing
- All specialisms undertaking urgent laboratory investigations
- Decontamination Science supporting all clinical and laboratory areas
- Genomic Counsellors supporting clinical teams and patients in communication
- Mortuary services (Anatomical Pathology)

Physical Sciences

- Medical device risk management and governance: optimisation of medical device effectiveness and efficiency, equipment acquisition, installation, management, modification, availability and dissemination of information
- Radiotherapy Physics, Radiation Physics, Imaging with Ionising and Non-Ionising Radiation undertaking urgent diagnostic testing and treatments

Physiological Sciences

- Critical Care Science, Respiratory Physiology, Neurophysiology, Cardiac Science, Vascular Science, Perfusion Science as team members in Critical Care Settings
- All specialisms undertaking urgent diagnostic investigations

Clinical Bioinformatics

- **Physical Sciences** managing advanced networked computerised medical devices as part of therapeutic, diagnostic or patient monitoring functions, specification and procurement of complex equipment and software, design and, where appropriate, write bespoke software, management of complex patient data
- **Health Informatics Science** protecting patients (e.g. prevention and avoidance of errors and adverse incidents), support efficiency, specialist analytical interpretation

Category B: Healthcare Science Staff in Training to become Clinical Scientists, Biomedical Scientists and Healthcare Science Practitioners: to be team members or support staff working in:

- Laboratory (Life) Sciences

- Physiological Sciences
- Physical Sciences
- Clinical Bioinformatics

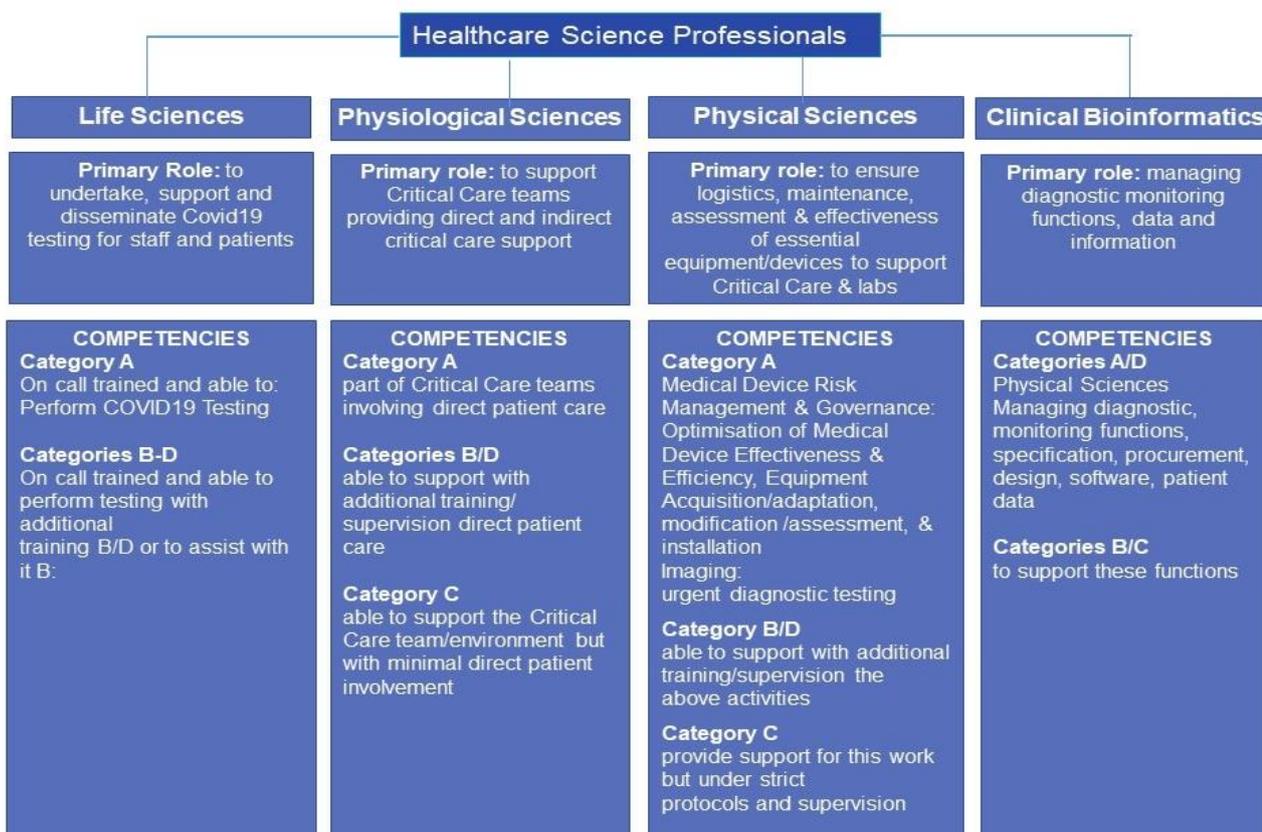
Category C: Healthcare Science Support Staff: Healthcare Science Associates and Healthcare Science Assistants as team members or support staff working in:

- Laboratory (Life) Sciences
- Physiological Sciences
- Physical Sciences
- Clinical Bioinformatics

Category D: Clinical Academics with Healthcare Science or Life Sciences experience, especially those with Category 3 and PCR experience

Many clinical academics are being asked, or requesting, to return to clinical/diagnostic duties to support patient care. Further information can be found at: <https://www.rcplondon.ac.uk/news/clinical-academics-and-covid-19>

The diagram below shows the structure of the Healthcare Science Profession and their primary roles/competences during the COVID-19 outbreak. There will also be the need for on-going tests/evaluations to support patients who do not have COVID-19 but other medical needs.



6. Cross-cutting teams in critical care and HDU: contribution of healthcare scientists

This section advises on proposed team structures and numbers. The number of teams within a particular unit (ward or hospital) will depend on the size of the unit and should be reviewed daily, alongside projected patient figures based on local modelling data. The contribution of healthcare scientists is highlighted

CARDIAC ARREST TEAM: one per hospital	
STAFF	Usual staffing No other responsibilities
ROLE	Cardiac arrest calls ONLY (2222)

TRANSFER TEAM: one per hospital	
STAFF	Transfer competent anaesthetic trainee Porter Anaesthetic assistant (ODP, theatre nurse)
ROLE	Transfers to and from radiology, ED, between wards etc

LINES TEAM: one per 'unit' of 30+ critical care patients	
STAFF	<p><u>Line insertion: any of the following</u> Surgeon; Interventional Radiologist; Interventional Cardiologist; Renal physician Vascular access nurse*</p> <p>* Vascular access nurses can help with some of these tasks dependant on competency</p> <p><u>Assistant:</u> Medical student; HCA, Respiratory, Cardiac and Vascular Scientists and other Physiological Sciences Scientists</p>

MOBILE EMERGENCY RAPID INTUBATION TEAM (MERIT): one per hospital

STAFF	<ul style="list-style-type: none">• Senior (Consultant) Anaesthetist• Middle grade anaesthetist• ODP / anaesthetic nurse / Respiratory and Cardiac Scientists, Perfusionists• <u>Runner: one of:</u> Healthcare Assistant; Medical Students; Nursing Students; Dental Nurse; FY1 (new starter), Healthcare Assistants, Associates and Practitioners• <u>Range of healthcare scientists e.g. Clinical Engineers, Medical Physicists and Physiological Scientists as well as helping with replacement lines</u>
ROLE	<ul style="list-style-type: none">• Induction of anaesthesia• Endotracheal intubation• Insertion of arterial and venous lines and NGT at time of intubation
ROLE	<ul style="list-style-type: none">• Replacement of lines in critical care patients (peripheral, central, arterial)• Blood cultures• Setting up of equipment• Assistance with patient preparation

CRITICAL CARE OUTREACH TEAM: one per hospital	
STAFF	<ul style="list-style-type: none"> • One senior nurse • One senior doctor • One middle grade or junior doctor • Respiratory, Vascular, Cardiac and Perfusion scientists
ROLE	Seeing critically ill referrals - inpatient and ED Escalation of care decisions
PALLIATIVE CARE TEAM: one per hospital	
STAFF	<ul style="list-style-type: none"> • Team leader: Palliative care doctor • Team members: • Palliative care nurses or Cancer Clinical Nurse Specialist • Chaplaincy, Genetic Counsellors and other Healthcare Science Physiologists with appropriate training
ROLE	Breaking bad news Advance Care Plan Management of end of life patients Advice or prescription of end of life medication Relative support
PRONING TEAM: one per unit of 30+ patients	
STAFF	<p>Lead: Senior anaesthetist</p> <p>Team: 4 people who have undertaken the relevant training from any of the following groups</p> <p>Surgeons who regularly position patients</p> <p>Other members of staff with manual handling training</p> <p>Healthcare Science Physiologists</p>

ROLE	<p>Ensure safety of the airway and management of infusions, lines etc.</p> <p>Coordination of team</p> <p>Manual handling of patient under the direction of the lead</p> <p>Sourcing of pillows, slide sheets etc.</p>
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PHARMACY CARE TEAM: one per unit of 30+ patients

Pharmacy technician

Pharmacist

Double checking of drugs with other staff members
 Monitoring of stock levels and ordering of drugs
 Assistance with drug preparation

EQUIPMENT AND PREPARATION TEAM: one per hospital

STAFF	<p>Team leader: OPD, Anaesthetic nurse, Clinical engineer with the assistance of one of the following</p> <ul style="list-style-type: none"> • HCAs • Medical Students • Nursing Students • Dental nurse • Other Healthcare Scientists
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ROLE	<p>Preparation of grab bags - non-drug items (clean roles)</p> <p>Preparation of equipment packs (clean roles) e.g. Intubation, lines, PPE</p> <p>Stocking up of the bed spaces (dirty role)</p>
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RENAL SUPPORT TEAM: one per hospital

STAFF	<p>Renal Nurses</p> <p>Renal Technicians</p> <p>Urodynamic Physiologists</p>
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ROLE	Setting up of RRT Troubleshooting issues RRT Central and arterial blood sampling
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COMFORT/HYGIENE TEAM: ONE PER UNIT OF 30+ CRITICAL CARE PATIENTS

STAFF	Supervision by a critical care nurse for intubated patients Bedside buddy plus two of: <ul style="list-style-type: none"> • HCAs • Medical students • Nursing students • Dental nurses / hygienists / therapists • Healthcare Science support workers and students/trainees
ROLE	Supports the bedside buddy with turning washing etc.

RUNNERS: ONE PER UNIT OF 30+ CRITICAL CARE PATIENTS

STAFF	Porters HCAs Medical students Nursing students Dental nurses Healthcare Science support staff Equipment Library staff (where available)
ROLE	Transport of bloods and Arterial blood gases Fetching of equipment

Appendix 1: COVID-19 testing: laboratory competency-based training requirements

Background

This template provides a list of approved (IBMS, RCPATH or NSHCS) on-line and e-learning modules to be used to train and assess competence of redeployed individuals who have moved into working on COVID-19 Testing in an NHS or PHE Laboratory. Taking into consideration:

1. Training and Competencies needed for workforce groups such as BMSs from other Pathology disciplines e.g. Blood Sciences, to be transferred into Microbiology/Virology Departments to support COVID-19 testing;
2. HCSs from other specialisms e.g. Genomics, Reproductive Medicine, to be transferred into Microbiology/Virology Departments to support COVID-19 testing;
3. Other non-scientific NHS HCS and other Multidisciplinary workforce e.g. Dental, Research Staff to be transferred into Microbiology/Virology Departments to support COVID-19 testing.

The e-Learning for Health (e-elf) website <https://www.e-elf.org.uk> has developed COVID training in a number of areas. These are free and registration is not required. Mandatory Training modules are also available which require registration. HCSs might find it helpful to register for an NHS on-line learning resource in order to track and record their learning.

	Training resources	Competencies required
Health and Safety		
Basic Infection Prevention Control	<ul style="list-style-type: none"> • Infection Prevention and Control for non-clinical staff • E-elf modules 1 and 2 on Infection Control 	<ul style="list-style-type: none"> • Infection Prevention and Control
Laboratory Health and Safety including donning and doffing of Personal Protective Equipment (PPE)	<ul style="list-style-type: none"> • e-elf resource • https://www.nes.scot.nhs.uk/media/3975954/sip_cep_ppe_print_v02_may_2017.pdf • https://www.nes.scot.nhs.uk/education-and-training/by-theme-initiative/healthcare-associated-infections/training-resources/personal-protective-equipment-(ppe).aspx 	<ul style="list-style-type: none"> • Health and Safety awareness • COSHH awareness • Manual Handling • Waste Management & Sharps awareness • Medical Device awareness • Understanding Containment Levels for Biosafety

	Training resources	Competencies required
Sample Reception		
Unpacking High Risk Samples	M-924 LF - Molecular Training Manual for BMS & MLA • Specimen Reception Training Checklist	M-77 Competency assessments: • Receipt and Processing of Urgent Samples • Samples not to Receipt and Process • Receipt and Processing of Routine Samples • Receipt and Processing of Outbreak Samples • Containment Level 3 laboratory • Additional Documentation to be familiar with • Miscellaneous Procedures
Booking in Samples		
Preparing Samples for Pre-analytical testing		
Storing High Risk Samples		
Setting Up Extraction of RNA/DNA		
	M-924 LF - Molecular Training Manual for BMS & MLA • Molecular Extraction Training Checklist • FLOW Training Checklist	• Equipment - Operation of Roche MagNA Pure 96 • Equipment - Maintenance of Roche MagNA Pure 96 • Equipment - Operation of Roche MagNA Pure Compact • Equipment - Maintenance of Roche MagNA Pure Compact • Routine Manual Plate - Extraction and Set Up
	M-924 LF - Molecular Training Manual for BMS & MLA • FLOW Training Checklist • Molecular Manual Plate Training Checklist	• Routine Manual Plate - Extraction and Set Up (as above) • Equipment - Operation of Roche LightCycler 480 • Equipment - Maintenance of Roche LightCycler 480 • Equipment - Operation of Roche PCR Setup (PSU) • Equipment - Maintenance of Roche MagNA Pure 96 • Equipment - Operation of Roche MagNA Pure 96 • Equipment - Operation of Roche Primary Sample Handling (PSH) • Equipment - Maintenance of Roche Primary Sample Handling (PSH) • FLOW - Set Up • Navigation of Aurora Software • FLOW Errors and Troubleshooting

	Training resources	Competencies required
Compiling Results		
	M-924 LF - Molecular Training Manual for BMS & MLA <ul style="list-style-type: none"> • FLOW Analysis and Reporting Training Checklist • Molecular Manual Plate Training Checklist 	<ul style="list-style-type: none"> • Routine Manual Plate - Analysis • FLOW 1 - Analysis and reporting • FLOW 2 - Analysis and reporting • FLOW 3 - Analysis and reporting
Writing Reports		
	M-924 LF - Molecular Training Manual for BMS & MLA <ul style="list-style-type: none"> • FLOW Analysis and Reporting Training Checklist • Molecular Manual Plate Training Checklist 	<ul style="list-style-type: none"> • Routine Manual Plate - Reporting • FLOW 1 - Analysis and reporting • FLOW 2 - Analysis and reporting • FLOW 3 - Analysis and reporting
Reporting Results		
	M-924 LF - Molecular Training Manual for BMS & MLA <ul style="list-style-type: none"> • FLOW Analysis and Reporting Training Checklist • Molecular Manual Plate Training Checklist 	<ul style="list-style-type: none"> • Routine Manual Plate - Reporting • FLOW 1 - Analysis and reporting • FLOW 2 - Analysis and reporting • FLOW 3 - Analysis and reporting

Appendix 2: Potential cross-skilling and upskilling for HCS

The e-Learning for Health (e-elf) website <https://www.e-lfh.org.uk> has developed COVID training in a number of areas. These are free and registration is not required. Mandatory Training modules are also available which require registration. HCSs might find it helpful to register for an NHS on-line learning resource in order to track and record their learning.

TASKS	COMPETENCE	CROSS-SKILLING	UPSKILLING	POTENTIAL TRAINING RESOURCES
General Skills	Infection control, cleaning	All specialisms		<i>E-Learning for Health Infection Prevention and Control - Level 1</i> https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control Infection Prevention and Control - Level 2 https://portal.e-lfh.org.uk/Component/Details/395569 Infection Prevention https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control
	Handwashing	All specialisms		https://www.nhs.uk/live-well/healthy-body/best-way-to-wash-your-hands/
	Corona virus Guidance	All specialisms		https://www.england.nhs.uk/coronavirus/ https://www.ficm.ac.uk/safety-and-clinical-quality/covid-19 https://www.esicm.org/resources/coronavirus-public-health-emergency/#ACADEMY
	Healthcare support worker tasks	Physiological Sciences	All other specialisms	
	Audit, research and development	All specialisms		

TASKS	COMPETENCE	CROSS-SKILLING	UPSKILLING	POTENTIAL TRAINING RESOURCES
	Non-critical care staff: Emergency Induction for non-critical care staff working in Critical Care to support the escalation process in times of surge	Critical Care Science Cardiac Science Respiratory Physiology Clinical Perfusion		https://www.baccn.org/static/uploads/resources/covid-19_non-critical_care_staff_in_critical_care_-_best_practice_guidelines_-_8y6KZ1o.pdf Quick Look Procedure Resource for NON-CRITICAL CARE staff Safe Alarm Setting in Critical Care Areas https://www.baccn.org/static/uploads/resources/Quicklook_resource_Safe_Alarm_Settings.pdf
General patient care	Gathering a patient history	All Specialisms		
	Administer Appointments	All Specialisms		
	Communicate Information to Authorised Personnel	All Specialisms		
	Accessing, Registering and Inputting patient data into digital systems	All Specialisms		
	Maintain Stocks of Resources, Equipment and Consumables	All Specialisms		
	Prepare and support Individuals for Healthcare Activities	All Specialisms		
	Public Health Measures for COVID-19	All Specialisms		https://www.lshtm.ac.uk/study/courses/short-courses/free-online-courses/coronavirus
Patient Care	Critical Care Setting	Critical Care Science	Cardiac Science Clinical Perfusion	Select ABCDE

TASKS	COMPETENCE	CROSS-SKILLING	UPSKILLING	POTENTIAL TRAINING RESOURCES
			Clinical Engineers	https://www.baccn.org/about/covid-19-nurse-educational-resource-centre/resources-1/
	PPE Donning and Doffing	Critical Care Science Cardiac Science Respiratory Physiology	All other specialisms	<i>E-Learning for Health</i> https://www.youtube.com/watch?v=kKz_vNGsNhc
	Removal and disposal of PPE	Critical Care Science Cardiac Science Respiratory Physiology	All other specialisms	<i>E-Learning for Health</i> https://www.youtube.com/watch?v=oUo5O1JmLH0
	PPE Assess and teach Donning and Doffing	Critical Care Science Cardiac Science Respiratory Physiology Microbiology	All other specialisms	https://www.youtube.com/watch?v=oUo5O1JmLH0 by PHE https://www.youtube.com/watch?v=kKz_vNGsNhc by PHE
	Gathering a patient history	Clinical Scientists across all specialisms		
	Triage	Physiological Sciences Specialisms	All other specialisms	
	Male and Female Catheterisation	Urodynamic Science	Gastrointestinal Physiology	
	Observations (BP, Temperature, Respiratory Rate, Pulse Oximetry)	Physiological Sciences	All other specialisms	Quick Look Procedure Resource for NON-CRITICAL CARE staff https://www.baccn.org/static/uploads/resources/Quicklook_resource_BP.pdf
	Moving and handling patients	Physiological Sciences	All other specialisms	https://www.e-lfh.org.uk/programmes/statutory-and-mandatory-training/
	Provide Point-of-care Testing	Life Science Specialisms	All other specialisms	Short introduction by a Biomedical Scientist

TASKS	COMPETENCE	CROSS-SKILLING	UPSKILLING	POTENTIAL TRAINING RESOURCES
		Some Physiological Science Specialisms		http://askmygp.uk/
Resuscitation	Basic Life Support training	All Specialisms		
	Intermediate Life Support training	Cardiac Science		
	Advanced Life Support training	Cardiac Science		
Airway Management	Basic mask ventilation skills	Critical Care Science Cardiac Science Respiratory Physiology	All other specialisms	
	Advanced airway management skills	Respiratory Physiology	Cardiac Science	https://www.youtube.com/watch?v=Nc2zl2SeQNo
Respiration	Blood gas sampling	Critical Care Science Cardiac Science Respiratory Physiology Life Sciences Clinical Engineering	Other Physiological Science specialisms	Select ABG+analysis https://www.baccn.org/about/covid-19-nurse-educational-resource-centre/resources-1/
	Basic ventilator skill CPAP and NIV Oxygen therapy	Respiratory Physiology Critical Care Science Cardiac Science	Clinical Engineering	Select Oxygen Therapy https://www.baccn.org/about/covid-19-nurse-educational-resource-centre/resources-1/
	Respiratory Assessment	Respiratory Physiology Critical Care Science	Cardiac Science	Select Respiratory Assessment https://www.baccn.org/about/covid-19-nurse-educational-resource-centre/resources-1/
	Observations/MEWS	Respiratory Physiology Cardiac Science	Other Physiological Science Specialisms	

TASKS	COMPETENCE	CROSS-SKILLING	UPSKILLING	POTENTIAL TRAINING RESOURCES
Circulation	Insertion of peripheral lines	Nuclear Medicine	Physiological Science Specialisms	
	Cardiac Output Monitoring including data Interpretation	Critical Care Science Cardiac Science	Other Physiological Science Specialisms	Quick Look Procedure Resource for NON-CRITICAL CARE staff Safe Alarm Setting in Critical Care Areas https://www.baccn.org/static/uploads/resources/Quicklook_resource_Safe_Alarm_Settings.pdf
	Measuring Central Venous and Arterial Pressure	Critical Care Science Cardiac Science	Other Physiological Science Specialisms	Select Arterial and CVP Monitoring https://www.baccn.org/about/covid-19-nurse-educational-resource-centre/resources-1/ Quick Look Procedure Resource for NON-CRITICAL CARE staff Care of and sampling from an arterial line https://www.baccn.org/static/uploads/resources/Quicklook_resource_arterial_lines_Final.pdf
	Blood Pressure and Oxygen Saturation	Critical Care Science Cardiac Science	Other Physiological Science Specialisms	Quick Look Procedure Resource for NON-CRITICAL CARE staff What to do if the SpO2 monitor alarms https://www.baccn.org/static/uploads/resources/Quicklook_resource_SPO2.pdf Simple explanation of how to measure oxygen saturation https://www.youtube.com/watch?v=Nc2zl2SeQNo
	Arrhythmia Management	Cardiac Science		

TASKS	COMPETENCE	CROSS-SKILLING	UPSKILLING	POTENTIAL TRAINING RESOURCES
Blood sampling	Phlebotomy	Life Sciences Nuclear medicine	Other Physiological Science Specialisms	
	Store Biomedical Specimens and Samples	Life Sciences	All other specialisms	
	Prepare Samples and Documentation for Transport	Life Sciences	All other specialisms	
Laboratory	Data Entry	All Specialisms	May need training on specific systems	
	Cell Biology Techniques	Reproductive Science		
	Sample reception	All Life Science Specialisms	All other specialisms	
	Preparation of samples for analysis	Genomics Reproductive Science Clinical Biochemistry Microbiology	All other Life Science Specialisms	
	Molecular techniques	Genomics Reproductive Science Clinical Biochemistry Microbiology	Immunology	
	Reporting of tests	Genomics Biochemistry Microbiology	All other Life Science Specialisms	
	Laboratory Quality assurance	Life Sciences Specialisms		
Second check of drugs, documentation, ID	Medical Physics	Other Healthcare Science Specialisms		

TASKS	COMPETENCE	CROSS-SKILLING	UPSKILLING	POTENTIAL TRAINING RESOURCES
	Sterile technique, microscopy, centrifuge	Reproductive science	All other Life Science Specialisms	
	Evaluating tests	Microbiology	All other Life Science Specialisms	
	Creating community testing pack kits	Microbiology	All other Life Science Specialisms	
	Preparing Culture Media and Solutions	Microbiology	All other Life Science Specialisms	
Equipment	Provision of equipment	Clinical Engineering Medical Physics Critical Care Science	Cardiac Science	
	Management/testing	Clinical Engineering Critical Care Science	Medical Physics including Radiation Safety Urodynamic Science Gastrointestinal Physiology Other Physiological Science Specialisms	
	Safe Handling of Liquid Nitrogen and other gases	Some Life Sciences including Reproductive Science Critical Care Science	Respiratory Physiology	

TASKS	COMPETENCE	CROSS-SKILLING	UPSKILLING	POTENTIAL TRAINING RESOURCES
	Cleaning and Disinfection of Medical Devices Testing, Maintenance and Breakdown	Decontamination Science Clinical Engineering Critical Care Science	Clinical Pharmaceutical Science Cardiac Science	
	Inspection, Assembly, un-packaging of Medical Device	Decontamination Science Clinical Engineering	Clinical Pharmaceutical Science Other Physiological Science specialisms	
	Management of Decontamination Equipment	Decontamination Science	Clinical Engineering Medical Physics	
	Technical Support for Computerised Medical Devices	Medical Physics Clinical Engineering	Clinical Bioinformatics	
	Clinical Engineering Workshop Skills	Clinical Engineering Medical Physics		
	Acceptance Testing of Medical Equipment	Clinical Engineering Medical Physics	Other Physiological Science specialisms	
	Diagnosing and Rectifying Equipment Faults	Clinical Engineering Medical Physics Life Sciences		
Technical skills	ECG	Cardiac Science Critical Care Science	Respiratory Physiology Vascular Science Urodynamic Science	

TASKS	COMPETENCE	CROSS-SKILLING	UPSKILLING	POTENTIAL TRAINING RESOURCES
			Gastrointestinal Physiology	
	Echocardiography: Screening	Cardiac Science	Critical Care Science Vascular Science	
	Echocardiography: Full Study	Cardiac Science		
	ICU Echo and Basic Lung Ultrasound	Cardiac Science	Vascular Science	Intensive Care Echo and Basic Lung Ultrasound (ICE-BLU) https://portal.e-lfh.org.uk/Component/Details/391192
	Magnetic Resonance Imaging	Medical Physics		
	Setting up a Cardiac Monitor and Cardiac Monitoring	Cardiac Science Critical Care Science	Other Physiological Science Specialisms	Quick Look Procedure Resource for NON-CRITICAL CARE staff: What to do if the ECG monitor alarms https://www.baccn.org/static/uploads/resources/Quicklook_resource_ECG.pdf
Psychological care	Colleague support and debrief	Genomic Counsellors Audiological Science		
	Supporting Informed Consent	Reproductive Science Cardiac Science Gastrointestinal Physiology	All other specialisms	
	Initial bereavement counselling	Genomic Counsellors		

TASKS	COMPETENCE	CROSS-SKILLING	UPSKILLING	POTENTIAL TRAINING RESOURCES
	Support, breaking bad news, discussing and arranging tests, facilitating decision making.	Genomic Counsellors Reproductive Science Audiological Science	All other specialisms	
IT systems	Data analysis	Clinical Bioinformatics Medical Physics Applied Epidemiology	All other specialisms	
	Patient Pathway Management	Clinical Bioinformatics	All other specialisms	
	IT tasks	Medical Physics	All other specialisms	
	Risk management	Medical physics	All other specialisms	
	Data entry and record keeping	All Specialisms		
	Software/database design and development	Clinical Bioinformatics Medical Physics Applied Epidemiology		
	Phylogenics/sequence assembly	Clinical Bioinformatics		
	Statistics/implementing ISO standards to accept untested medical equipment,	Clinical Bioinformatics	Medical Physics Clinical Engineering Applied Epidemiology	
	Audit, research and development	All specialisms		
	Use of Information Communication Technology	All Specialisms		

TASKS	COMPETENCE	CROSS-SKILLING	UPSKILLING	POTENTIAL TRAINING RESOURCES
	within the Clinical Environment			
	Public Health Measures for COVID-19	All Specialisms		https://www.lshtm.ac.uk/study/courses/short-courses/free-online-courses/coronavirus

Appendix 3: Self-assessment competency reporting framework for laboratory staff

Below is an example self-assessment template that you could use to assess the competency of your staff in order to evaluate their suitability for redeployment.

Personal Details and Competency Information

YOUR DETAILS	Answer	Comments
Name		
Current role		
Location		
Registration number e.g. HCPC		
Date of birth		
Date last worked clinically		
Date of last DBS check		
Postcode of home address		
Mobile number		
Email address		

Please spend a few minutes reviewing the list to decide which of the crucial tasks you might be able to assist with:

- For any task you COULD manage, try to assess how much supervision you would need. Could you manage to do the skill or task without supervision, or would you need someone nearby to help if you struggled?
- There may be some tasks that would be a real struggle to start with but with some supervision and support you will be able to take on. For these tasks indicate "direct" supervision here.

SKILLS YOU HAVE	Competence in the following	Yes / No / with additional training	Supervision required: Direct (D) Indirect (I) None (N)
HEALTH AND SAFETY			
Personal Protective Equipment - Including Donning and Doffing - PP3			
Basic Infection Prevention Control			
Laboratory Health and Safety			
SAMPLE RECEPTION			
Unpacking High Risk Samples			
Booking in Samples			
Preparing Samples for Pre-analytical testing			
Storing High Risk Samples			
SETTING UP EXTRACTION OF RNA/DNA			
Equipment - Operation of Roche MagNA Pure 96			
Equipment - Maintenance of Roche MagNA Pure 96			
Equipment - Operation of Roche MagNA Pure Compact			
Equipment - Maintenance of Roche MagNA Pure Compact			
Routine Manual Plate - Extraction and Set Up			

SETTING UP PCR			
Routine Manual Plate - Extraction and Set Up (as above)			
Equipment - Operation of Roche LightCycler 480			
Equipment - Maintenance of Roche LightCycler 480			
Equipment - Operation of Roche PCR Setup (PSU)			
Equipment - Operation of Roche MagNA Pure 96			
Equipment - Operation of Roche Primary Sample Handling (PSH)			
Equipment - Maintenance of Roche Primary Sample Handling (PSH)			
FLOW - Set Up			
Navigation of Aurora Software			
Flow Errors and Troubleshooting			
COMPILING RESULTS			
Routine Manual Plate - Analysis			
FLOW - 1 Analysis and Reporting			

FLOW- 2 Analysis and Reporting			
FLOW - 3 Analysis and Reporting			
WRITING REPORTS			
Routine Manual Plate - Reporting			
FLOW - 1 Analysis and Reporting			
FLOW – 2 Analysis and Reporting			
FLOW - 3 Analysis and Reporting			
REPORTING RESULTS			
Routine Manual Plate - Reporting			
FLOW - 1 - Analysis and Reporting			
FLOW - 2 Analysis and Reporting			

FLOW – 3 Analysis and Reporting			
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Appendix 4: Self-assessment competency reporting framework for physiological sciences staff

Below is an example self-assessment template that you could use to assess the competency of your staff in order to assess their suitability for redeployment.

Personal Details and Competency Information

YOUR DETAILS	Answer	Comments
Name		
Current role		
Location		
Registration number e.g. HCPC, Voluntary registers		
Date of birth		
Date last worked clinically		
Date of last DBS check		
Postcode of home address		
Mobile number		
Email address		

Please spend a few minutes reviewing the list to decide which of the crucial tasks you might be able to assist with:

- For any task you COULD manage, try to assess how much supervision you would need. Could you manage to do the skill or task without supervision, or would you need someone nearby to help if you struggled?
- There may be some tasks that would be a real struggle to start with but with some supervision and support you will be able to take on. For these tasks indicate "direct" supervision here.

SKILLS YOU HAVE	Competence in the following	Yes / No / with additional training	Supervision required: Direct (D) Indirect (I) None (N)
Patient Care	PPE Donning & doffing		
	PPE Assess and teach donning and doffing		
	Washing & personal hygiene		
	Lifting and handling patients		
	IV drug administration training		
	National Early Warning Scoring		
Resuscitation	Basic/ Intermediate Life Support training		
	Advanced Life Support training		
	Completing respect forms/DNAR		
Airway Management	Basic mask ventilation skills		
	Advanced airway management skills		
	COVID-19 Intubation trained		
Respiration	Ventilator management		
	Prone training		
Circulation	Insertion of peripheral lines		
	Insertion of central lines		
	Cardiac output monitoring interpretation		
	Arrhythmia management		

SKILLS YOU HAVE	Competence in the following	Yes / No / with additional training	Supervision required: Direct (D) Indirect (I) None (N)	
Renal	Renal replacement therapy			
Admission and Daily assessment	Medical patients			
	ED Patients			
	Critical Care Patients			
	Technical skills	Ultrasound of chest		
		Echo - screening (FICE)		
		Echo full study		
		Central line insertion		
		Arterial line insertion		
		Tracheostomy - percutaneous		
		Tracheostomy – surgical		
		Blood gas sampling		
		Arterial line insertion		
Easi-IO insertion				
Psychological Care	Debriefing/TRIM training			
	Family interaction skills - support after breaking bad news			
Support tasks	Prepare equipment according to instruction			

Previously worked in	Yes/No	Comments
ICU		
Anaesthetics		
ED		
Operating Theatres		

Appendix 5: Self-assessment competency reporting framework for physical sciences staff

Below is an example self-assessment template that you could use to assess the competency of your staff to assess their suitability for redeployment.

Personal details and competency information

YOUR DETAILS	Answer	Comments
Name		
Current role		
Location		
Registration number e.g. HCPC, IBMS		
Date of birth		
Date last worked clinically		
Date of last DBS check		
Postcode of home address		
Mobile number		
Email address		

Please spend a few minutes reviewing the list to decide which of the crucial tasks you might be able to assist with:

- For any task you COULD manage, try to assess how much supervision you would need. Could you manage to do the skill or task without supervision, or would you need someone nearby to help if you struggled?
- There may be some tasks that would be a real struggle to start with but with some supervision and support you will be able to take on. For these tasks indicate "direct" supervision here.

SKILLS YOU HAVE	Competence in the following	Yes / No / with additional training	Supervision required: Direct (D) Indirect (I) None (N)
Health and Safety	Use of Personal Protective Equipment		
	Basic Infection Prevention Control		
	Electrical safety		
	Oxygen safety		
	Electronic Workshop Health and Safety		
	Equipment decontamination		
Engineering	Gas and air management		
	Pressure Systems, Pumps & Compressors		
	PCB diagnostics		
Biomedical equipment	Equipment acceptance		
	Commissioning and functional testing		
	Preparing equipment for use		
	Software configuration		
	Calibration and functional checks		
	Preventative and scheduled maintenance		
	Fault finding and Repair		
	Electrical safety testing		

SKILLS YOU HAVE	Competence in the following	Yes / No / with additional training	Supervision required: Direct (D) Indirect (I) None (N)
Training	Production of training materials		
	Training delivery		
Quality systems	Working under formal quality systems		
Support tasks	Helpdesk		
	Stores and equipment management		
	Project management		

Previously worked in	Comments	Yes/No
ICU or high intensity care areas		
General ward environment		
Electronic equipment repair facilities		
Medical equipment manufacturer / service supplier		

Appendix 6: Bedside clinical experienced workers

Basic requirements for bedside support workers include an understanding of healthcare and a commitment to work in healthcare environment, compassion/kindness, personal resilience, willingness to learn.

Any HCS with patient facing experience can be upskilled to support the bedside team, e.g. Audiological Science, Cardiac Science, Respiratory Physiology, Neurophysiology, Reproductive Sciences, Nuclear Medicine

Examples of potential Bedside Support Workers from the HCS workforce include:

- Healthcare Science Assistant: Level 2
- Healthcare Science Assistant: Level 3
- Healthcare Science Associate Level 4
- Healthcare Science Practitioner Level 6
- Healthcare Science Research Staff
- Healthcare Science Scientist Training Programme Trainees
- Healthcare Science Practitioner Trainees

Appendix 7: Opportunities to deploy healthcare science staff

Some Healthcare Science specialisms have seen a large reduction in their workload. This appendix includes ideas for re-deployment of staff, for example in Audiological Science, to support staff during the COVID-19 outbreak and could help employers consider redeployment of their HCS staff. Some additional high level tasks for example project management, would be ideal for experienced healthcare scientists.

- Assist pathology with analysis of COVID-19 test results
- Calibration and repair of respiratory equipment including oxygen cylinders
- Calibration and repair of renal equipment
- Assistance with ward-staff in obtaining samples to test for COVID-19
- Dispensing in pharmacy where staff shortages are present
- Cleaning and distribution of PPE to medical staff
- De-sanitising and cleaning of medical areas exposed to COVID-19
- Distribution of supplies of equipment needed to treat COVID-19 patients
- Triage of incoming patients into the hospital based upon severity of symptoms based upon any available clinical guidelines with support from triage nurse.
- Support to 111 staff to help telephone triage suspected cases
- Family liaison role contact via phone between patient and families, including basic bereavement counselling and signposting for support
- Stock ordering and monitoring within the new hospital
- Documenting of in-patient notes off-site – may be a useful timesaving mechanism to avoid doctors / nurses writing down information in the ward, information could be relayed via phone from medical staff to HCS and stored electronically.
- Statistics reporting of capacity / demand in hospital, number of cases etc.
- Assisting clinicians with respiratory function tests and renal function tests.
- Provision of oxygen, fluids and food to non-ICU COVID-19 patients
- Staff-wellbeing phone line – providing advice and signposting
- Discharge nurse role – to ensure treated patients return to community safely