

Specialty guides for patient management during the coronavirus pandemic

Clinical guide for the management of surge during the coronavirus pandemic: rapid learning

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The majority of patients recover from coronavirus infection following an uncomplicated clinical course. However, a small but significant number will deteriorate due to a rapidly evolving pneumonitis. Because of the high infectivity of this virus and the scale of the population at risk, this can result in surges of patients presenting at hospitals over a short period of time. The rate and number of patients associated with these surges can significantly challenge hospital logistics. A number of NHS England hospitals have already experienced a surge of this type and we must rapidly learn from their experience.

Every hospital has a unique service configuration, geographical and population context. This document describes some of the challenges faced in surge and shares experiences, innovations and adaptations employed to mitigate those challenges. These may be useful in informing preparations in other hospitals and healthcare facilities.

Key Learning Points

- **COVID surge** can be extremely rapid and occur over a 48-72hr period. Not all hospitals in a region will surge at the same time. There will be great geographical variation.
- **Expansion of ITU capacity** depends on many factors beyond ventilator and bed capacity. These include staff skill mix, staff absence, training and ancillary equipment (e.g. syringe drivers, patient monitors).
- **CPAP** use in early patient management may prevent the requirement for intubation in certain groups. Further information is available in [Guidance for the role and use of non-invasive respiratory support in adult patients with coronavirus \(confirmed or suspected\)](#).
- **Unexpected shortages** can limit the capacity to deliver care. These include **anaesthetic** drugs and consumables such as ET tubes, syringe drivers, central line insertion kits.
- **Extensive training** in COVID procedures is needed before surge and can be achieved through online resources, simulation and hands on drills. This includes the

performance of anaesthetic induction, donning and doffing of PPE and intra-hospital patient transfer.

- **Regional Emergency Preparedness Response and Resilience (EPRR) teams** are key to assisting hospitals in the management of acute surge. Clinicians and managers should understand how and when to communicate with and escalate concerns to EPRR.
- **Early warning triggers** to help anticipate the consequences of surge should be put in place. This allows the hospital to recognise impending difficulty and provides an opportunity to begin dialogue with EPRR **before** staffing issues become impossible to manage or equipment and consumables have been exhausted.
- **Early dialogue** in the face of COVID19 surge is useful. It gives time for an appropriately tailored responses to be put in place. These might include equipment resupply, temporary ambulance diversion and interhospital transfer to decompress the intensive care capacity.
- **Begin dialogue with regional EPRR** before the consequences of surge begin to limit the capacity of the hospital to deliver care.
- **Interhospital transfers** to other hospitals in the same critical care network can reduce the impact of the peak of the surge. Ensure that interhospital transfer networks are properly established and reinforced.
- **Retrieval of COVID19** patients should ideally be performed by staff from receiving – rather than the originating - hospitals.
- **An in-reach system** may be useful. Where acute surge acutely challenges the local availability of anaesthetic and intensive care staff, temporary assistance using staff from neighbouring hospitals may help to manage immediate surge.
- **Patterns of work and staff absences:** rotas need substantial revision, in terms of pattern and intensity, to deal with acute COVID surge.

Workforce re-organisation

Challenge	Change
Principle: Flexibility and skill mix need consideration: see published guidance on staffing framework for adult critical care and principles for increasing the nursing workforce .	
Workforce reorganisation Capacity will be limited by staff absence due to illness	<ul style="list-style-type: none"> • Converting all shifts to long day or night shifts. • Increase flexibility in rota. • Stratify potential trust staff to redeploy into ICU based on competency (for example, using postgraduate department) to expand workforce. • Incorporate extra staff who would have been on leave. • Employ any extra staff on rolling/ short-term contracts not locums to provide job security and rota predictability. • Trainee-led rota design to get buy-in.

Clinical process and Equipment

Challenge	Change
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Principles: Spread burden of work, efficient use of resource, drawing on prior expertise of staff and reduction of exposure to contamination. Processes must be adapted and practiced locally.	
Teams-based approaches See published guidance on staffing framework for adult critical care	<ul style="list-style-type: none"> • Designated emergency intubation teams drawing on competencies of expanded workforce. • Designated proning teams drawing on competencies of the expanded workforce. • Designated transfer teams - traditionally a senior anaesthetist and ICU nurse. May consider using other staff to avoid depriving hospital of airway trained staff.
Communication with relatives NB: 'No visitor' policy in critical care	<ul style="list-style-type: none"> • Process of regular phone updates to named relative who disseminates information to the rest of the family. • Staff allocated to the conversation depending on complexity and appropriateness: can be doctor or nurse.
Locations	<ul style="list-style-type: none"> • Some teams have decided to use the theatre environment as a place to perform procedures and store equipment before deciding where further care is to be delivered.
Intubation teams	<ul style="list-style-type: none"> • All necessary equipment in single grab bags/kits. • Use of disposable grab bags. • Pre-loading an endotracheal tube onto a bougie to reduce apnoea time.
Ventilation	<ul style="list-style-type: none"> • Maximise existing capacity. • Play to the existing strengths of staff <ul style="list-style-type: none"> - Considering what theatre and critical care staff are used to doing (familiarity with ventilators, managing infusions) and separating tasks accordingly. • Innovative use of resource: <ul style="list-style-type: none"> - Using CPAP where appropriate, to reduce number of intubations. - Sedating patients with volatile agents if using an anaesthetic machines. - Using anaesthetic theatre machines for ventilating patients (Note: need to understand limitations of machines, for example, not designed for weaning of patients and may not deliver PEEP). - To circumvent limited numbers of pumps/syringe drivers: Mixing anaesthetic medications (propofol and fentanyl) into single syringe using protocols created in collaboration with pharmacy. - To circumvent limited CPAP capacity, can utilise BiPAP machines with supplemental oxygen in non-acute phase.

Personal Protective Equipment (PPE)

Challenge	Change
Principle: Create a single local message based upon the most recent PHE guide and teach principles rather than strict procedures.	

Multiple resources specific to multiple variants of equipment -> creates multiple versions of the truth	<ul style="list-style-type: none"> • Create a single locally specific message that is specific to the equipment you have available. This instils confidence in staff and ensures safety and efficient use of equipment. Staff are neither over, nor under, protected. • Teach the basic principles (rather than a strict procedure) of avoiding self-contamination with local PPE, allowing staff to modify their technique allowing for 'real life' scenarios, for example, glove breaking.
FIT testing a large number of staff in short time	<ul style="list-style-type: none"> • Requires flexibility and good will on behalf of health and safety team. • Train critical care and theatre senior staff to FIT test. • Ensure FIT testing strategy takes account of current and predicted stock levels of masks, and prioritises critical care staff, anaesthetists, A&E staff and arrest teams.

Training

Challenge	Change
Principles: Training takes time and therefore should commence as long as possible before clinical need increases; efficient use of time.	
Simulation training is essential but time and resource consuming, for example, using RCoA guidelines	<ul style="list-style-type: none"> • Preserve equipment during training due to limited resource. • Be flexible during simulation in roles to reflect real world environment.
Staff redeployed into unfamiliar roles	<ul style="list-style-type: none"> • Streamlined induction processes. • Buddy system at the start and pastoral support system. • Refresher sessions and bespoke guidelines produced by critical care staff for those adapting to work in critical care environment.

Communication/ Information dissemination

Challenge	Change
Principles: Efficient channelling of information to save time and create single version of truth. Specific streams of communication for particular areas.	
Information overload	<ul style="list-style-type: none"> • Limit use of multiple email chains. • Use of technology to streamline communication, for example: <ul style="list-style-type: none"> - Departmental Dropbox accounts - Publication of guidelines on apps, for example, Induction and Clinibee - Bespoke WhatsApp groups for specific purposes.

Connection difficulties using bleep/mobile systems due to volume, connection or answering in PPE	<ul style="list-style-type: none"> • Intensive care DECT/WIFI phones or walkie talkies which can be heard while in PPE.
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Wellbeing

Challenge	Innovation
Principles: Ensure the health and wellbeing of staff is a priority. Provide the resources staff need to find their own local solutions.	
Ensuring adequate rest facilities exist	<ul style="list-style-type: none"> • Modify existing areas which are unsuitable for inpatients, for example, elective pre-assessment areas due to lack of piped oxygen, into areas for rest. • Tired staff are at more risk of PPE failure. • Tired staff removing PPE at the end of a long shift is a particularly risky moment. How can they be assisted?
PPE hinders hydration and nutrition	<ul style="list-style-type: none"> • Dedicated wellbeing area which provides privacy, food, hot drinks, toiletries, and access to psychological first aid and mindfulness apps.
Psychological strain	<ul style="list-style-type: none"> • Make psychological support available to staff.