OBSTETRIC ANAESTHESIA QUICK REFERENCE

COVID19

QUICK SUMMARY

PPE

ELECTIVE CS

ISOLATION ROUTE

KARDEX EXAMPLE

PRM COVID19 PLAN

COVID-19: Key PRM Messages

- Use appropriate PPE for <u>all cases</u> regardless of COVID status

- Suspected / Confirmed COVID-19 Cases
  - Manage in LW Rooms 9-12 / specified areas of ward 68
  - Use Theatre 1 for operative delivery

- RA is default in ***<u>all</u>*** situations
  - RA *even* in Cat 1 CS
  - No time benefit for GA
  - Reduces maternal & staff risk

In ALL patients regardless of COVID status

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Summary guidance from PHE/RCoA/AAGBI/RCOG relevant to obstetric anaesthetists

Antenatal /postnatal ward /clinic	Consultation/assessment >2 m distance from patient	FRSM, eye protection
Labour ward	Consultation/assessment if not in labour/1st stage labour e.g. consent for epidural analgesia	Apron, gloves, FRSM, eye protection
	Consultation/assessment in 2nd/3rd stage labour e.g. attending PPH	Apron, FRDG, gloves, FRSM, eye protection
	Epidural insertion	Apron, sterile FRDG, sterile gloves, FRSM, eye protection
Theatre	Caesarean section with neuraxial anaesthesia[1] (low risk of GA, e.g. elective CS for breech)	Apron, sterile[2] FRDG, sterile gloves, FRSM, eye protection
	Caesarean section with neuraxial anaesthesia (but higher risk of GA[3] e.g. Category 1 CS)	Apron, sterile FRDG, sterile gloves, **FRSM or FFP3**, eye protection
	Caesarean section with general anaesthesia	Apron, FRDG, gloves, FFP3, eye protection
Non-CS obstetric theatre cases	Trial of instrumental delivery in theatre, removal of retained placenta (with regional anaesthesia)	Apron, sterile FRDG, sterile gloves, FRSM, eye protection
	Any other case requiring general anaesthesia	Apron, FRDG, gloves, FFP3, eye protection

1. Neuraxial anaesthesia refers to epidural, spinal or combined spinal-epidural analgesia/anaesthesia.
2. Sterile only if de novo procedure, otherwise non-sterile acceptable.
3. Predictors of higher risk of GA conversion include:

- *Top up of pre-existing poorly functioning epidural, missed segments, unilaterality, breakthrough pain (consider removing and performing spinal).*
- *Anticipated difficult or prolonged surgery or haemorrhage, previous abdominal surgery, adhesions, classical incision, placenta praevia, multiple procedures, uterine structural abnormalities.*

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Donning PPE for obstetric anaesthesia

Labour epidural

Prior to entering room:
- Put on theatre hat, FRSM & eye protection
- Scrub up
- Put on disposable fluid resistant sterile gown, sterile gloves
- Perform epidural procedure and ensure epidural is working

Prior to exit of room:
- Remove gloves, clean hands with gel
- Remove gown & turn inside out
- Remove eye protection.
- Dispose of all items in clinical waste bin
- Gel hands

Outside room:
- Remove FRSM (avoid touching outside) & hat
- Dispose of in clinical waste bin
- Wash hands with soap and water

Caesarean delivery spinal anaesthesia

Theatre:
- Put on sterile PPE as described, in an area at least 2m away from patient
- Perform spinal procedure
- Wear this PPE throughout case.

Prior to transfer from theatre:
- Ask patient to put on FRSM after cleaning hands with gel prior to transfer back to room

After transfer:
- Move at least 2m away from patient
- Remove PPE as described
- Wash hands with soap and water

Staff transferring patient from theatre to doff FRDG and gloves, perform hand hygiene and replace with apron and fresh gloves

Caesarean delivery general anaesthesia

Theatre:
- Put on AGP PPE in an area at least 2m away from patient prior to induction https://youtu.be/kKz_vNGsNhc
- Undertake induction and intubation
- Keep AGP PPE on until after extubation

Prior to transfer from theatre:
- Put well fitted oxygen mask on patient
- Wait in theatre till patient's airway is safe before transfer of patient to room
- Hand over to clean team who will be wearing standard PPE (midwife looking after patient + someone to push bed)
- Patient transferred to room by clean team
- Remove AGP PPE as per doffing procedure https://youtu.be/oUo5O1JmLH0
- Wash hands with soap & water

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General Anaesthesia

Key points

In ALL patients regardless of COVID status

- **Consultant decision**
- **Perform GA checklist outside theatre**
- **All staff** must don full PPE including FFP3 mask & are in theatre **prior to induction** for **duration** of case
- Non-anaes staff wait in Th 1 ante-room
- Avoid theatre entry/exit wherever possible within **20 mins** of intubation/extubation
- All drugs prep'd before GA
- ***No*** sodium citrate
- Have Sugammadex in theatre
- Avoid NSAIDs & Dex in suspected / confirmed COVID-19 cases
- Pre-oxygenate with tight fitting mask
- Avoid manual ventilation (low vols if essential, consider 2-person technique)
- Turn off gas flow before intubation
- **NO** first breath until ETT balloon inflated
- Check position *without* auscultation (chest wall expansion, $ETCO_2$)
- Avoid breaking breathing circuit (clamp ETT if required)
- **Non-anaesthetic staff leave before extubation** (need one runner outside theatre)
- **All staff present at extubation remain in theatre for 20 mins afterwards**
- **Patient recovered in theatre for 20 mins**
- Clean team in fresh PPE (surgical mask adequate), receives patient & takes to room)
- Theatre team doff
- Remove mask in bin outside theatre door
- Wipe neck and wipe down shoes

Ventilated transfer to ICU

In ALL patients regardless of COVID status

- Request MICU (24225)
- Pre-oxygenate with 100% O_2
- Ensure patient paralysed
- Turn off gas flow **before** switching ventilators
- Turn APL valve to fully open
- Clamp ETT
- Detach anaesthetic circuit
- Connect to transport ventilator
- Unclamp ETT
- Clean team to transfer patient to ICU
- Usual transfer checks
- Call ICU to inform of transfer pre-departure
- Theatre team doff PPE after patient has left

PPE

Masks must be kept on whilst in presence of the patient. These are the last thing to be removed when doffing PPE

- Don PPE ≥ 2m from patient.
- For epidural, enter room wearing contact PPE (FRSM, visor and apron). Scrub in room. Scrub in theatre scrub area for spinal
- Doff PPE (apart from mask) in the LW room for epidural / inside theatre by theatre door for theatre cases
- Doff mask in bin immediately outside LW room / theatre
- A buddy will supervise donning and doffing on a one to one basis using the PRM donning/doffing guide

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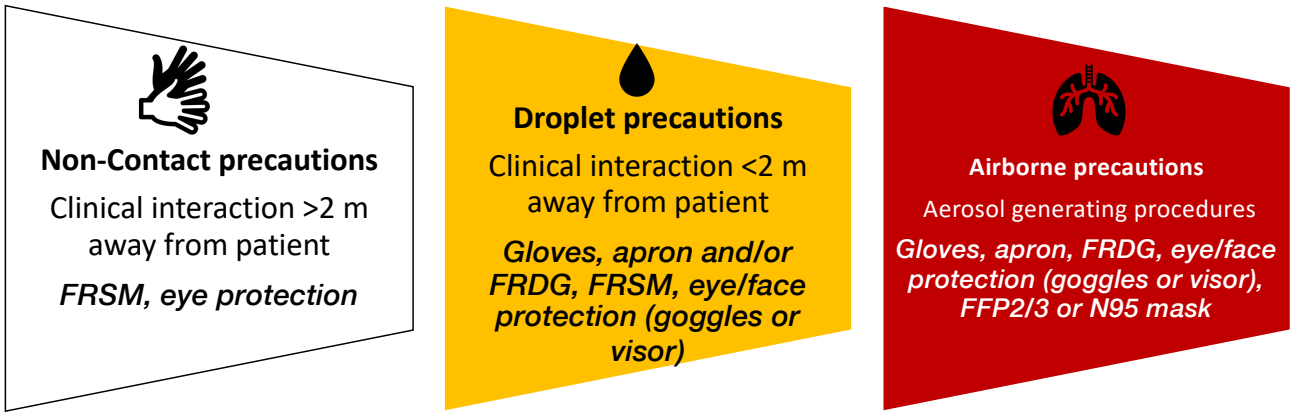
Choice of PPE for obstetric anaesthetists according to mode of transmission risk



PHE guidance as updated on 5 April 2020 is that for possible and confirmed COVID-19 cases:

- Where AGPs are performed PPE guidance set out for AGPs (airborne precautions) should be followed
- For operative procedures without AGPs standard infection prevention and control practice (droplet precautions) should be followed
- Otherwise, for care of possible or confirmed cases during the second and third stage of labour (vaginal delivery) long-sleeved disposable fluid repellent gowns, plastic aprons, FRSMs, eye protection and gloves should be used
- Such PPE in labour wards and theatres may be indicated regardless of case status of patients, subject to local risk assessment

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General contact PPE	Droplet PPE	Aerosol (AGP) PPE
		
Working in inpatient and maternity area Direct patient care (within 2 metres) • Examples: assessing epidural block, clinical patient review • Eye protection in non-covid patient is an individual risk assessment (risk of droplet, splashes of blood/body fluids) • Mask/eye protection can be sessional use	Operating theatre with no AGP anticipated • Sterile PPE for regional anaesthesia Labour ward for 2nd/3rd stage labour vaginal delivery • Addition of plastic apron	Performing single aerosol generating procedure • GA caesarean section

DONNING PPE

Don PPE in a location at least 2m distant to the patient

Don in the following order:

1. **MASK**
    - **FFP3 Mask for GA**
    - **Surgical Mask**

2. **HAT (SIT OVER MASK STRAPS)**
3. **VISOR**
4. **PERFORM SURGICAL SCRUB**
5. **PUT ON STERILE GLOVES**
6. **PUT ON STERILE GOWN – a buddy will fasten Velcro at neck. Avoid tie at back of gown**
7. **PUT ON 2ND PAIR OF STERILE GLOVES**

DOFFING PPE

1. **Remove outer gloves**
    - **Pinch the outside of the glove with the opposite gloved hand: peel off**
    - **Hold the removed gloved in the double gloved hand**
    - **Slide the fingers of the remaining single gloved hand under the double gloved hand and peel off**
    - **Dispose in clinical waste**
    - **Apply alcohol rub to inner gloves**
2. **Remove gown**
    - **Pull gown away from neck and shoulders touching as little of the outside gown as possible, turning the gown inside out to discard carefully in the clinical waste**
3. **Remove inner gloves**
    - **Pinch the outside of the glove with the opposite gloved hand: peel off**
    - **Hold the removed gloved in the gloved hand**
    - **Slide the fingers of the un-gloved hand under the remaining glove at the wrist**
    - **Peel the second glove off over the first glove and discard in clinical waste**
4. **Perform hand hygiene as normal protocol after removing gloves**
5. **Remove face visor (If wearing separate visor)**
    - **Remain upright and avoiding bending, handle the headband and use forward motion to avoid touching the front visor then dispose in clinical waste.**
6. **Remove the hat and dispose of it**
7. **Remove spectacles**
    - **If the HCW wear spectacles, the buddy will remove these at this point and decontaminate with alcohol wipes / detergent wipes / soap and water**
9. **Remove and dispose of facemask (bin outside LW room / bin outside theatre door)**
    - **Stand up straight and bring the bottom strap or elastic up to meet the top strap or elastic**
    - **Avoid bending your neck**
    - **Lift both straps over the top of the head, allow the respirator to fall away from the face and discard in clinical waste**
10. **Immediately perform hand hygiene, wipe neck then rewash hands**
11. **Buddy follows same steps as above for removal of PPE**
12. **Wipe down footwear**

PRM Theatre GA Checklist

(Usual practice + follow guidance below)

Prepare

- ❑ **ALL STAFF SHOULD BE IN THEATRE PRIOR TO INDUCTION OF GA**
- ❑ **ALL STAFF MUST WEAR FULL AGP PPE (FFP3 mask, visor, gown, gloves x 2)**
- ❑ Runner (outside) in full FFP3 PPE

Prepare

- ❑ Airway plan agreed
- ❑ All usual equipment

NB - Airway equipment in bottom drawer of theatre trolley

- ❑ ETT clamp available

Drugs

- ❑ GA & Emergency drugs ready
- ❑ Airway rescue trolley available in anteroom

Pre-induction

- ❑ Ensure ALL staff wearing full AGP PPE
- ❑ **NO** sodium citrate

Post-intubation

- ❑ Inflate cuff ***prior*** to ventilation
- ❑ Check $ETCO_2$ and chest rise
- ❑ No chest auscultation
- ❑ Clamp ET tube before any disconnection

Extubation – ENSURE NON-ESSENTIAL STAFF LEAVE THEATRE PRIOR TO EXTUBATION

- ❑ Prepare mask with filter fitted
- ❑ Transfer patient to bed and sit up
- ❑ Adequate reversal once prepared
- ❑ Cuff down at ***moment*** of extubation

COVID-19 HDU LEVEL ADMISSION
Inform consultant obstetrician and consultant anaesthetist on admission

Transmission
Droplets produced when an infected person breathes or coughs carry viruses that may be inhaled. Droplets spread about 1-2 metres. Droplets remain infectious when they settle on surfaces, can contaminate hands and then be carried to nose or mouth. Incubation time 1 - 14 days, average 5 days. Duration of infectivity unknown – up to 21 days?

PPE
Contact precautions (gloves, waterproof apron, eye protection, FRSM)

Clinical features
65-80% cough; 45% febrile on presentation (85% febrile during illness); 20-40% dyspnoea; 15% URTI symptoms; 10% GI symptoms. Symptom duration up to 3 weeks. Respiratory failure / pneumonia occurs after 5 - 7 days of symptoms

Investigations
FBC, U&E, LFTs, CRP, Coag (use COVID blood set on trakcare)
ABG are not req'd for initiating O_2 R_x. ABGs should be measured as standard in deteriorating or drowsy patients if results would potentially alter management
Nasal and throat swab and if producing sputum, a sputum sample are mandatory – send both on admission. Repeat at 24hrs if -ve and ongoing high clinical suspicion
Other as clinically appropriate e.g. blood/urine/stool cultures, troponin, ECG, viral gargle if influenza-like illness
CXR: compulsory. May be normal or show hazy bilateral, peripheral opacities or other condition. Consider CT if would change R_x (eg ?PE)

Laboratory features
Renal failure, leukopenia/lymphopenia (80%), ↑AST/ALT/bilirubin, ↑D-dimer, ↑ CRP, ↑ LDH, ↑ferritin

Management

Airway	Anaesthetic assessment on admission
Breathing	Continuous SpO2, hourly RR, CXR Art line O_2 to maintain $SpO_2 \geq 94\%$ Nasal cannulae up to 4L, titrate humidified O_2 if NC not sufficient Urgent review if ↑FiO2, ↑RR, ↓SpO_2 **ICU referral if $FiO_2 \geq 0.6$ – MEDICAL EMERGENCY**
Circulation ***Remember left lat tilt***	HR, BP, CRT, catheterise, hourly UOP Fluid resus on admission if required with 250ml boluses of Hartmanns then review Accurate hourly fluid balance Aim even fluid balance after initial resus Echo if unstable
Disability	AVPU / GCS / BM
Exposure	Hourly temp Ensure all relevant cultures sent **Don't forget other common causes of sepsis** LMWH as protocol
Fetus	Consider delivery on a case by case basis based on maternal condition, disease trajectory and gestation of fetus (consult with neonatology) Fetal monitoring as directed by obstetricians Steroids / $MgSO_4$ as required for fetus

Other - Avoid NSAIDs, give paracetamol for fever. If influenza-like illness treat with oseltamivir until flu excluded. Consider antibiotic if suspect bacterial infection (e.g. sputum, neutrophilia).

All AIP cases during C-19 crisis

<table>
<tr><td colspan="2">Minimum anaesthetic staffing: 1 obs anaesthetist + senior trainee or general consultant

ELECTIVE
COVID test 24hrs prior to surgery → may affect decision making

EMERGENCY
Can delivery be delayed until dayshift and/or team assembled? → prepare patient & <u>wait</u>
Note pause-points for emergency/undiagnosed AIP, below</td></tr>
<tr><td>Anaesthesia
Spinal → GA
CSE → GA only if required
GA only</td><td>Patient surgical face mask if COVID +ve
On arrival & all stages of process
+/- nasal O_2 or venturi mask</td></tr>
<tr><td>Cell salvage
May be used but ensure team wearing PPE
XM ≥ 6U</td><td>Droplet PPE for
All patient contact
Urology & IR procedures</td></tr>
<tr><td>Urology & IR
Elective: Yes, consider
Emergency: Only if strong indication</td><td>AGP (FFP3) PPE for
Entire team <u>before</u> KTS regardless whether GA (Including neonates)
High risk of intra-operative conversion</td></tr>
</table>

<u>Management of unscheduled or undiagnosed AIP</u>

If AIP suspected before or during CS → **STOP & COMMUNICATE**

Aortic compression is life-saving to allow catch-up resuscitation as a last resort

If unsure, or bleeding is heavy, prompt recourse to hysterectomy is appropriate

PRE-operative pause: known AIP

- Move patient to within reach of appropriate operating theatre
- Prepare for surgery (IV/IA access, key personnel, blood bank etc.)
- Consider <u>*holding*</u> patient at this stage until appropriate team has assembled
- Consider alerting urology and interventional radiology if required

INTRA-operative pause: known *or* undiagnosed AIP

- Midline laparotomy → high transverse uterotomy at fundus → delivery
- **REFLECT BLADDER** → visualise lower segment ***before*** placental management
  - Only if possible to do so safely, otherwise await assistance if conditions allow

- **Low concern**
  - Delivery of placenta → complete CS

- **Localised disease**
  - Leave uterotomy open → if conditions allow, ***do not proceed*** to manage placenta
  - Await gynaecology & anaesthetic preparation → excision *or* hysterectomy required
  - Attempting delivery of the placenta will exacerbate catastrophic bleeding

- **Extensive disease**
  - Close uterotomy → if conditions allow, ***do not proceed*** to manage placenta
  - Await gynaecology & anaesthetic preparation → hysterectomy probably required
  - Attempting delivery of the placenta will exacerbate catastrophic bleeding

GRI PRM Maternity Unit

COVID-19 planning: Live from 5th April 2020

Version 7

The situation is fluid and guidance is likely to change with time.

Please see most recent HPS Briefing note on COVID-19

Contents

Reducing footfall within the hospital is key. Minimise exposure wherever possible and safe to do so

Case definition (based on HPS guidance for secondary care, v9.1, 11/4/20)

Case definition for individuals in the community

People with the following symptoms are advised to self-isolate for 7 days and COVID-19 testing is not required unless hospital admission clinically indicated:

Recent onset (within the last 7 days):

- New continuous cough

and/or

- High temperature.

Case definition for individuals requiring hospital admission

- Clinical or radiological evidence of pneumonia

or

- Acute respiratory distress syndrome

or

- Influenza like illness (fever ≥37.8°C and at least one of the following respiratory symptoms, which must be of acute onset: persistent cough (with or without sputum), hoarseness, nasal discharge or congestion, shortness of breath, sore throat, wheezing, sneezing)

Management of COVID-19 patients within Labour Suite – general advice

- **From 3/4/20, staff will wear PPE as appropriate to the clinical situation for all patients regardless of COVID status**
- **The COVID handover checklist should be performed at every change of shift, led by the senior charge midwife. All staff members not already fit tested should be identified and tested as a matter of urgency. A team who are fit tested and can form a GA team should be identified at the start of each shift. All staff members require to be fit tested with the 3M 1863 mask as a matter of urgency**
- For suspected COVID cases, the NHS GGC flowchart on maternity admissions should be followed
- Consultant obstetrician, anaesthetist, neonatologist, charge midwife and PRM coordinator must be informed of any confirmed / suspected COVID-19 case and patient should receive obstetric review within 30 minutes wherever possible
- Women should be asked to alert a member of maternity staff to their attendance when on the hospital premises, but prior to entering the hospital
- Staff providing care should take personal protective equipment (PPE) precautions as per local / Public Health England / Health Protection Scotland guidance
- Women should be met at the maternity unit (Wishart St) entrance by staff wearing appropriate droplet PPE and provided with a fluid resistant surgical face mask.
- Women should immediately be escorted to an isolation room, suitable for the majority of care during their hospital visit or stay
- Patient should be tested for COVID-19 and treated as a confirmed case
    - Isolate in designated room (rooms 9-12)
    - All non-essential items should be removed from these rooms
    - Patients and partners patients will be required to wear a fluid resistant surgical face mask in order to prevent environmental spread
    - If patient requires oxygen, use nasal cannulae, and cover mouth and nose with surgical mask. If higher FiO2 required, use venturi mask
- **Efforts should be made to minimise the number of staff members entering labour ward rooms wherever possible**

- Partners (who are themselves not sick) will be allowed to accompany patient during labour and will be asked to leave at an appropriate point after delivery after individual risk assessment. Partners should also wear fluid resistant surgical masks due to risk of clustering within households
- There is no evidence that Entonox an aerosol generating procedure. If Entonox is used then the breathing system must contain a filter to prevent contamination with the virus (< 0.05µm pore size)
- Donning PPE is time-consuming. This may impact on decision-to-delivery-interval in urgent caesarean section but must be done. Management in labour with early decision making to avoid the eventuality of cat 1 caesarean section is encouraged (see obstetric documents – category 1 sections in women with suspected or proven covid-19, available on NHS GGC obs + Gyn app)
- Consent for anaesthesia may often have to take place in theatre. Patient electronic notes should be reviewed prior to donning PPE in theatre. Verbal consent can occur whilst patient in theatre. This will depend on circumstances
- **General anaesthesia should be avoided wherever possible**. The decision to proceed with a GA must be discussed with a consultant. GA poses higher risk to staff and all other persons in theatre. Any potential time benefit is negated by the significant time constraints posed by donning PPE
- Epidurals will be delivered as requested where possible but will not take precedence over operative deliveries. Patients should be made aware that there may be a delay in receiving epidural analgesia. The epidural service may not be possible if the demand outstrips resource
- All clinical areas used will need to be cleaned after use as per local/Public Health England10/ Health Protection Scotland guidance

Unwell patients

- **Use the PRM COVID-19 HDU guidance to guide management in these patients**
- If the woman has signs of sepsis, investigate and treat as per RCOG guidance on sepsis in pregnancy, but also consider active COVID-19 as a cause of sepsis and send viral samples (search for covid-19 on trakcare and contact lab to ask for virology specimen transport bags)
- Do not forget about common causes of sepsis (eg chorioamnionitis)
- A multi-disciplinary discussion planning meeting ideally involving the consultant obstetrician, midwife-in-charge, consultant anaesthetist +/- intensivist should be arranged as soon as possible following admission. The discussion and its conclusions should be discussed with the woman. The following should be discussed:
    - Key priorities for medical care of the woman;
    - Most appropriate location of care (e.g. intensive care unit, other suitable isolation room) and lead specialty;
    - Concerns amongst the team regarding special considerations in pregnancy, particularly the condition of the baby.
- The priority for medical care should be to stabilise the woman's condition with standard supportive care therapies.
- Particular considerations for pregnant women are:
    - Hourly observations, monitoring both the absolute values and the trends.
    - Titrate oxygen to keep saturations >94%.
    - Hourly respiratory rate looking for the rate and trends
    - Ensure LMWH prescribed as appropriate

- Young fit women can compensate for a deterioration in respiratory function and are able to maintain normal oxygen saturations before they then suddenly decompensate. So a rise in the respiratory rate, even if the saturations are normal, may indicate a deterioration in respiratory function and should be managed by starting or increasing oxygen.
- Radiographic investigations should be performed as for the non-pregnant adult; this includes chest X-ray and CT of the chest. Chest imaging, especially CT chest, should be performed when indicated (eg for suspected PTE), and not delayed due to fetal concerns. Abdominal shielding can be used to protect the fetus as per normal protocols.
- Consider additional investigations to rule out differential diagnoses, e.g. ECG, CTPA as appropriate, echocardiogram. Do not assume all pyrexia is due to COVID-19 and also perform full sepsis-six screening.
- Consider bacterial infection if the white blood cell count is raised (lymphocytes usually normal or low with COVID-19) and commence antibiotics.
- Apply caution with IV fluid management. Try boluses in volumes of 250ml over 2 mins looking for improvement in BP / HR of 10% and then assess for fluid overload before proceeding with further fluid resuscitation.
- The frequency and suitability of fetal heart rate monitoring should be considered on an individual basis, taking into consideration the gestational age of the fetus and the maternal condition. If urgent delivery is indicated for fetal reasons, birth should be expedited as normal, as long as the maternal condition is stable.
- If maternal stabilisation is required before delivery, this is the priority, as it is in other maternity emergencies, e.g. severe pre-eclampsia.
- An individualised assessment of the woman should be made by the multidisciplinary team to decide whether elective birth of the baby is indicated, either to assist efforts in maternal resuscitation or where there are serious concerns regarding the fetal condition. Individual assessment should consider: the maternal condition, the fetal condition, the potential for improvement following elective birth, and the gestation of the pregnancy. The priority must always be the wellbeing of the mother.
- There is no evidence to suggest that steroids for fetal lung maturation, when they would usually be offered, cause any harm in the context of COVID-19. Steroids should therefore be given when indicated and certainly prior to 30 weeks where even one dose may benefit the neonate. As is always the case, urgent delivery should not be delayed for their administration.
- There are some reports that even after a period of improvement there can be a rapid deterioration. Following improvement in a woman's condition, consider an ongoing period of observation, where possible, for a further 24-48 hours. On discharge, advise the woman to return immediately if she becomes more unwell.
- We will not use NIV or NHFO for possible or confirmed cases currently (this may change as guidance is updated)
- Delivery may be required for maternal wellbeing. This should be discussed at an early stage and reviewed regularly. Consult ICU early if escalating FiO_2 requirements or if $SpO_2 \leq 94\%$ on $FiO_2 \geq 0.6$

Scenarios

All staff should wear appropriate PPE for ALL cases regardless of COVID status

Non-theatre cases

1. Non- regional analgesia

- If Entonox® is used then the breathing system must contain a hydrophobic filter to prevent it being contaminated with the virus (≤ 0.05µm pore size)
- Remifentanil may be used as an analgesic in labour using standard protocol. This should be discussed with a consultant anaesthetist. Patient should wear a surgical mask on top of nasal cannulae. Pumps are being adapted to increase our capacity to deliver remifentanil analgesia. Vigilance must be employed at all times to avoid drug route errors
- Staff should wear droplet PPE (disposable plastic apron, gloves, fluid resistant surgical mask and eye protection). The apron will be replaced by a fluid repellent disposable gown in the 2nd/3rd stage of labour. See full PPE guide for women in labour on NHS GGC O+G app

2. Epidural in room

- Hydrate / go to toilet / empty pockets
- Ensure isolation sign on door
- Midwife to give patient epidural information sheet (printed copies are outside each labour ward room)
- Review blood results (note risk of thrombocytopaenia). (ideally have fbc within 4 hours but this is not an absolute requirement and must be judged on an individual basis)
- Midwife to ensure patient and partner are wearing a fluid resistant surgical mask
- Inform anaesthetic assistant
- Use laminated PRM donning / doffing guide to apply PPE
- Enter room wearing contact PPE (FRSM, apron, eye protection, gloves) and scrub in room
- Anaesthetic assistant to prepare:
    - Trolley for outside room (alcogel, disinfectant wipes)
    - Epidural trolley (plain metal trolley with plastic sheet cover)
    - All sterile equipment opened on to metal trolley.
    - Lignocaine, additional sterile saline, bupivacaine / fentanyl bag and strips of mepore for securing epidural on separate tray
    - Act as buddy for donning PPE
- Try to minimise staff in labour ward room to anaesthetist and midwife wherever possible. It may be necessary for the anaesthetic nurse to assist with the epidural in the room depending on anaesthetist / midwife level of experience and patient requirements
- If not required to assist in the room, the anaesthetic assistant should remain outside the room where this is feasible
- Consent lady and perform epidural

- Follow laminated sheet for doffing PPE with a buddy
- Doff PPE (all but mask) in “ante-room area” of labour ward room (area by store cupboard) ensuring cupboard door and room doors are closed - buddy to read out instructions
- Remove mask into orange bin immediately outside labour ward room as per guidance
- Wash hands immediately
- Clean trolley as per protocol
- **Doffing is when you are most likely to self-contaminate so care must be taken**

Theatre cases

1. Epidural top-up in room

- Hydrate / go to toilet / empty pockets
- Inform anaesthetic nurse who will:
    - Ensure isolation sign on theatre door
    - Place isolation route signs on doors / corridor route to theatre
    - Ensure corridor vacated by non-essential personnel for all transfers to and from theatre
    - Ensure staff have donned droplet PPE prior to patient arrival
    - Perform surgical safety checklist
- Don droplet PPE for theatre case (fluid resistant surgical gown, gloves, FRSM and eye protection)
- Get epidural top up solution – bring this to the room
- Ensure patient and partner are wearing fluid resistant surgical mask
- Assess epidural – lower threshold for conversion to spinal.
- Risk assess need for staff to wear AGP PPE (ie risk of failed top up, prolonged surgery etc)
- Transfer patient to theatre (keep on PPE)
- Complete top-up in theatre in full PPE
- Maintain PPE for the case
- Doff gown and gloves, perform hand hygiene and put on plastic apron and fresh gloves to transfer patient
- Patient to be recovered in her labour ward room by original midwife
- Theatre staff doff PPE (all but mask) in theatre in doffing area by theatre door - buddy to read out instructions
- Remove mask into orange bin outside theatre
- Wash hands immediately
- Standard theatre clean with wipe down of surfaces. Theatre must not be used for 20mins after last person has left theatre
- Person cleaning theatre will also clean corridor according to current guidelines

2. Spinal

- Hydrate / go to toilet / empty pockets
- Review bloods (ideally have fbc within 4 hours but this is not an absolute requirement and must be judged on an individual basis)
- Ensure patient and partner are wearing fluid resistant surgical mask
- Inform anaesthetic nurse who will:
    - Ensure isolation sign on theatre door
    - Place isolation route signs on doors / corridor route to theatre
    - Ensure corridor vacated by non-essential personnel for all transfers to and from theatre
    - Ensure staff have donned droplet PPE prior to patient arrival
    - Perform surgical safety checklist
- Don sterile droplet PPE with buddy in scrub area as per PRM guideline
- If conversion to GA anticipated, all staff must don AGP PPE from the start of the procedure
- Consent may be performed in theatre after prior electronic notes review in order to minimise patient contact
- Perform spinal anaesthesia in the usual manner
- Consider higher dose / CSE for longevity and to mitigate against need to convert to GA
- Maintain PPE cover for duration of case
- Doff gown and gloves, perform hand hygiene and put on plastic apron and fresh gloves to transfer patient
- Patient to be recovered in her labour ward room by original midwife
- Theatre staff doff PPE (all but mask) in theatre in doffing area by theatre door - buddy to read out instructions
- Remove mask into orange bin outside theatre
- Wash hands immediately
- Standard theatre clean with wipe down of surfaces. Theatre must not be used for 20mins after last person has left theatre
- Person cleaning theatre will also clean corridor according to current guidelines

General anaesthesia

- **Any decision to perform GA <u>MUST</u> be discussed with a consultant**
- **Use GA checklist (this highlights differences to usual practice)**
- **Most senior anaesthetist to perform intubation**
- **Staff in theatre must wear full PPE including FFP3 mask for duration of case**
- **All required staff in theatre for intubation**
    - **Staff not required for theatre anteroom/computer room during induction**
- **All non-essential staff out of theatre prior to extubation**
- **A runner MUST be available during extubation to get equipment / help if required at all times**
- **Theatre doors closed for 20 minutes after intubation and extubation**
- **Use disposable equipment where possible**

<u>Checklist:</u>

1. Inform Anaesthetic Nurse

Anaesthetic Nurse Roles:

- Ensure isolation sign on door
- Place isolation route signs on doors / corridor route to theatre
- Ensure corridor vacated by non-essential personnel for all transfers to and from theatre
- Ensure staff have donned full PPE (including FFP3 masks) prior to induction of anaesthesia
- Ensure filters are on both inspiratory and expiratory limbs of anaesthetic breathing circuits
- Ensure GA drugs available in theatre
- Ensure facemask with fresh filter attached is available for extubation procedure
- Perform surgical safety checklist

2. Don PPE

All staff in theatre should wear:

- **AGP PPE** - Hat, **<u>FFP3 mask</u>**, eye / face protection, 2 pairs of sterile gloves, disposable fluid resistant gown

3. Delivery of GA:

Induction:

- Confirm all staff required for operative procedure in theatre and wearing full AGP PPE
- Pre-oxygenate with tight fitting face mask and 2 handed V grip
- Avoid/minimise hand ventilation
- If hand ventilation required use minimal tidal volumes

- Use choice of laryngoscope with highest level of success at first attempt
- RSI with cricoid pressure
- Ensure adequate paralysis (1.5-2mg/kg sux)
- Inflate cuff BEFORE manual ventilation
- Check position with chest wall expansion, $ETCO_2$. No auscultation.
- Ensure connections tight to avoid breaking the breathing circuit throughout
- Start timer after intubation
- Theatre doors remain closed for 20 minutes (use timer to assess this)

During surgery:

- Runner in AGP PPE outside door at all times including extubation and recovery period
- Avoid breaking the breathing circuit throughout
- Neonatologist to assess baby once delivered
- Baby should be moved to location as far from mother as possible (ie into computer room in theatre or to neonatal unit depending on circumstances)

Extubation and Recovery:

- **All non-essential staff should leave theatre prior to extubation**
- **One staff member to remain fully donned in AGP PPE to act as runner if required**
- Hold facemask with fresh filter close to ETT
- Consider measures to avoid/minimise coughing:
    - convert to pressure support ventilation
    - careful titration of alfentanil
    - avoid stimulation
- ODP deflates cuff slowly and pulls out ETT **carefully** whilst anaesthetist places mask over mouth
- Patient recovered in theatre wearing well-fitting oxygen mask
- Theatre doors remain closed for 20 minutes
- Clean team will collect patient from theatre and transfer to labour ward room for ongoing recovery/monitoring
- If no clean team available, doff gown and gloves, perform hand hygiene and put on plastic apron and fresh gloves. Leave mask, mask and eye protection on
- Remaining staff will then doff PPE (except FFP3 mask) in theatre doffing area
- Remove FFP3 mask last and put into orange bin outside theatre
- Wash hands immediately

4. Ventilated transfer to ICU

- Request MICU (24225)
- Pre-oxygenate with 100% O_2
- Ensure patient adequately paralysed
- Turn off gas flow prior to switching ventilators
- Turn APL valve to be fully open
- Clamp ETT
- Detach anaesthetic machine circuit
- Connect to transport ventilator
- Unclamp ETT
- Clean team to collect patient and perform transfer
- Theatre team doff PPE as before
- Inform ICU that transfer imminent

5. Referral to ICU

- Inform ICU of any obstetric patient commenced on oxygen therapy
- Observe closely for deterioration
- Ensure consultant obstetrician, obstetric anaesthetist and consultant neonatologist (if antenatal) aware of any obstetric patient admitted to ICU
- Ensure carevue obstetric admission and daily review forms filled out daily
- ICU consultant will liaise with obstetric anaesthetist / obstetrician to complete daily plan. This will be via telephone wherever possible
- Utilise remote consultations as appropriate to ensure ongoing multi-disciplinary discussion
- For antenatal patients, anticipatory planning regarding delivery should be performed jointly by obstetric and ICU staff on a twice daily basis and more regularly depending on clinical progress

ELECTIVE C-SECTIONS
Guide for visiting anaesthetists

NB - wear appropriate PPE for all cases regardless of COVID status

Patients will arrive to ward 71. A midwife will have the notes prepared and blood results printed.

You should complete a routine pre-op assessment and discuss the spinal consent. Use the maternity anaesthetic chart as a guide.

A theatre team brief will occur around 0830hrs.

A routine check of anaesthetic machines should be carried out.

The ODP will have drawn up the emergency obstetric drugs. It is useful to familiarise yourself with these again:

- Phenylephrine Infusion (standard GRI mix **20mcg/ml**). 50ml Syringes. Initial infusion rate is 80ml/hr. Start infusion once spinal in. Titrated up to 100ml/hr.
- Phenylephrine Boluses of 40-80mcg/ml can be given. A separate pre-filled 20ml syringe will be provided for this.
- Oxytocin (5units) for initial IV bolus once baby delivered and cord clamped.
- Oxytocin (15units in 500ml Hartmanns) run @999ml/hr once baby delivered and cord clamped.

When a mother is deemed high risk for poor uterine tone the obstetrician may ask for "*SUPERACTIVE*." This is an addition of IM syntometrine (1 amp). Contraindicated in patients with pre-eclampsia & hypertension.

- Patient will be brought into theatre, sat on operating table and back exposed.
- Routine monitoring attached and a 16G cannula sited.
- Fluids are connected and run using an octopus and three-way tap. The OPD will have set this up in advance.
- Ensure the phenylephrine infusion is attached but do not started until spinal anaesthetic is delivered.
- Full asepsis so patient's back is sprayed with chlorhexidine 0.5% as for any spinal anaesthetic. Anaesthetist should be fully scrubbed.
- Our standard spinal needle is a 25G Sprotte. Whitacre needles are available on request.
- Landmark technique aiming for L3/4 interspace (along Tuffier's line)
- 2-4ml of 1% lidocaine infiltration S/C.
- Pre-make your spinal drug mix. This will involve dissolving diamorphine into a 1mg/ml mix.

- 0.3ml (300mcg) of this mix is then added to 2.5ml of 0.5% heavy marcain. This dose may be increased if small bump / premature. D/W Obs anaesthetist for advice.
- 25G Sprotte inserted in the midline.
- 2.8ml of spinal drug mix (0.5% heavy marcain plus 300mcg diamorphine) injected into SA space
- Once spinal anaesthetic is complete start a timer and lay patient onto operating table with a *left lateral 15degree tilt*.
- Commence the phenylephrine infusion @80ml/hr
- Change NIBP monitor to cycle every 1 minute.
- Routine antibiotics should be given at this point. The standard treatment is:
  - 1.2g Co-Amoxiclav (<100kg)
  - 1.2g Co-Amoxiclav + 1g Amoxicillin (>100kg)
  - PENICILLIN ALLERGY 600mg Clindamycin + Gentamicin (<80kg)
  - PENICILLIN ALLERGY 900mg Clindamycin + Gentamicin (>80kg)
  - PENICILLIN ALLERGY 1200mg Clindamycin + Gentamicin (>160kg)
  - Gentamicin dosing charts found on laminated sheets in theatre based on height
- Spinal block height should be checked regularly with ethyl chloride prior to surgical prepping.
- Block height can be optimised by tilting table from side to side, putting in head down tilt and by putting legs in knee / chest position.
- Block height to T4 (nipples) should be achieved before KTS.
- Regular re-assurance to patient about normal pulling and tugging sensations is useful.
- Once baby is delivered, flatten table and give 5U bolus of oxytocin IV. Commence the 15U/500ml infusion @999ml/hr.
- Slowly titrate the phenylephrine infusion down.
- Give routine antiemetics 4mg Ondansetron & 6.6mg Dexamethasone.
- Blood loss > 1L consider 1g TXA.
- Post-Partum Haemorrhage should be declared if blood loss >1.5L – consider activating major haemorrhage protocol.
- A second dose of IV antibiotics must be given if blood loss >1.5L.
- Post-op Analgesia must be prescribed on patient's drug Kardex. A template example Kardex is found in each theatre for easy reference.
- LMWH (enoxaparin) is to be prescribed 4 hours post spinal if patient deemed high risk. (Midwives will score each patient according to GGC policy)

Uterotonics

Flow chart of pharmacological Rx for reduced uterine tone following CS:

(Patient will have already received 1st 5U of syntocinon IV bolus and 15U syntocinon infusion over 30mins)

Obstetric Quick Guide for Visiting Anaesthetists

Phenylephrine

- 20mcg/ml in 500mls bag (bolus dose 40-80mics)
- Infusion rate for CS 80mls/hr (can increase to 100mls/hr)

Antibiotics for LSCS or 3rd Tears Repairs

- Co-Amoxiclav 1.2g (+ 1g Amoxicillin > 100kg)
- Clindamycin 600mg in 100mls 0.9%NaCl if penicillin allergy

Uterotonics

- Every LSCS 5 units Syntocinon slow IV + 15units Syntocinon in 500mls Hartmanns @ 999ml/hr
- Superactive: as above + 1 amp IM ***Syntometrine*** (NOT in Hypertension/pre-eclampsia)

Analgesia

- As prescribed per example Kardex in theatre

Post-partum haemorrhage >1500mls

- Call for help & activate Major Haemorrhage Protocol
- Tranexamic Acid 1g (>1000mls EBL)
- 2nd dose IV antibiotics >1500mls EBL

Pre-eclampsia

- Check platelets before neuraxial procedures (if severe PET, check within 4hrs) & **ask advice if unsure**
- Careful fluid balance. Risk of pulmonary oedema
- **NO** Ergometrine (syntometrine)

Spinal for LSCS/Forceps/Tear Repair

- **Remember left lateral tilt before delivery**
- 2.5mls 0.5% (H) Bupivacaine + 300micrograms Diamorphine ('standard' PRM dose)
    - Ask advice if unsure whether patient requires higher/lower dosing
- Block height CS:T4, Forceps: T4 (may progress to CS), Tear: sacral block (leave sitting)
    - Dense motor block and sacral block for all above

Spinal for manual removal of placenta

- Spinal 2.5mls 0.5% (H) Bupivacaine
    - Block height to T10/motor/sacral

Epidural Top up

- 20mls 2%Lidocaine + 1:200,000 Adrenaline = (0.1ml 1:1000 Adrenaline into 20mls of 2% lidocaine)
- + 3mg epidural diamorphine post delivery

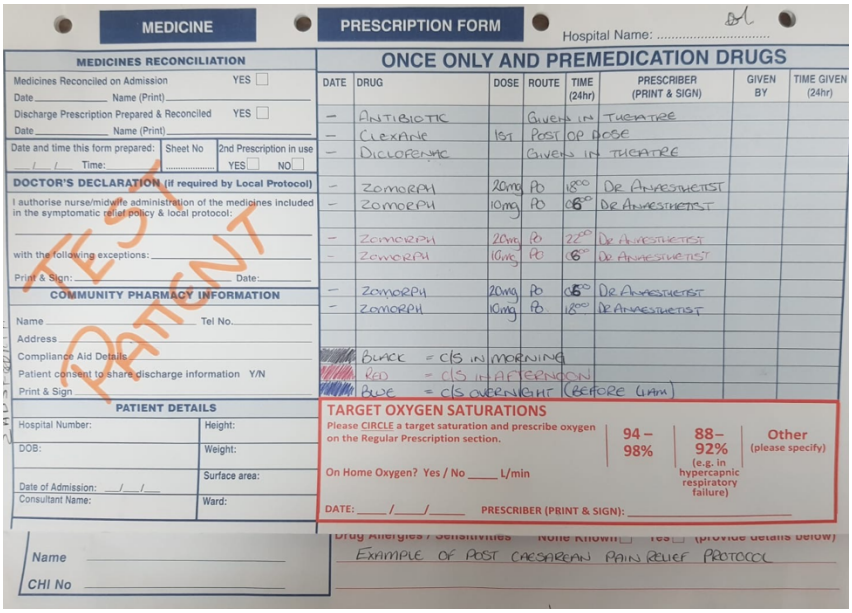
GA

- Sodium citrate + position carefully + pre-oxygenate properly
- RSI (can bag gently): videolaryngoscope available
- Propofol/Thiopentone + Sux (or Rocuronium) & **ensure appropriate dosing**
- Add Alfentanil 1-2mg if pre-eclampsia

Labour Epidural (pump level 1 code 700)

- 18G tuohy (16G tuohy available on request) & LORS
- Test Dose 3mls 0.25% Levobuvipicaine or 5mls of Bag mix
- Loading dose 15-20mls bag mix (0.1% levo-bupiv + 2mic/ml fentanyl)
- Epidural Programme 5mls/hr continuous infusion + max 3 x 5ml PCEA boluses per hour

Kardex Examples for CS



MEDICINE

PRESCRIPTION FORM

Hospital Name: .....

MEDICINES RECONCILIATION

Medicines Reconciled on Admission YES ☐

Date _____ Name (Print) _____

Discharge Prescription Prepared & Reconciled YES ☐

Date _____ Name (Print) _____

Date and time this form prepared: ___/___/___ Time: _____ | Sheet No ..... | 2nd Prescription in use YES ☐ NO ☐

DOCTOR'S DECLARATION (if required by Local Protocol)

I authorise nurse/midwife administration of the medicines included in the symptomatic relief policy & local protocol:

with the following exceptions: _____

Print & Sign: _____ Date: _____

COMMUNITY PHARMACY INFORMATION

Name _____ Tel No. _____

Address _____

Compliance Aid Details: _____

Patient consent to share discharge information Y/N

Print & Sign _____

PATIENT DETAILS

Hospital Number:	Height:
DOB:	Weight:
Date of Admission: ___/___/___	Surface area:
Consultant Name:	Ward:

TEST PATIENT

Name _____

CHI No _____

ONCE ONLY AND PREMEDICATION DRUGS

DATE	DRUG	DOSE	ROUTE	TIME (24hr)	PRESCRIBER (PRINT & SIGN)	GIVEN BY	TIME GIVEN (24hr)
–	ANTIBIOTIC		GIVEN IN THEATRE				
–	CLEXANE	1ST	POST OP DOSE				
–	DICLOFENAC		GIVEN IN THEATRE				
–	ZOMORPH	20mg	PO	18:00	DR ANAESTHETIST		
–	ZOMORPH	10mg	PO	06:00	DR ANAESTHETIST		
–	ZOMORPH	20mg	PO	22:00	DR ANAESTHETIST		
–	ZOMORPH	10mg	PO	06:00	DR ANAESTHETIST		
–	ZOMORPH	20mg	PO	05:00	DR ANAESTHETIST		
–	ZOMORPH	10mg	PO	18:00	DR ANAESTHETIST		

BLACK = CIS IN MORNING

RED = CIS IN AFTERNOON

BLUE = CIS OVERNIGHT (BEFORE 11AM)

TARGET OXYGEN SATURATIONS

Please CIRCLE a target saturation and prescribe oxygen on the Regular Prescription section.

94 – 98% | 88 – 92% (e.g. in hypercapnic respiratory failure) | Other (please specify)

On Home Oxygen? Yes / No ____ L/min

DATE: ____/____/____ PRESCRIBER (PRINT & SIGN): _____

Drug Allergies / Sensitivities None Known ☐ Yes ☐ (Provide details below)

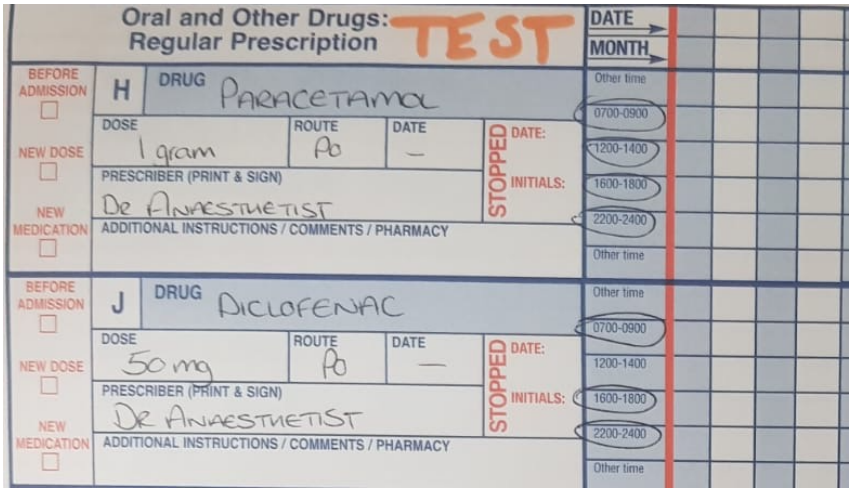
EXAMPLE OF POST CAESAREAN PAIN RELIEF PROTOCOL

Post-op Analgesia & Thromboprophylaxis must be prescribed before patient leaves theatre.

On the front of the Kardex record:

- **Antibiotics**
- **LMWH dose** (4 hours post spinal / removal of epidural catheter)
- **Diclofenac** (if given in theatre)
- **Zomorph** (20mg followed by 10mg roughly 12 hours apart)

Alter timings of dose depending on when patient leaves theatre (as shown).



Oral and Other Drugs: Regular Prescription

TEST

DATE →

MONTH →

Other time | 0700-0900 | 1200-1400 | 1600-1800 | 2200-2400 | Other time

BEFORE ADMISSION ☐ | NEW DOSE ☐ | NEW MEDICATION ☐

H DRUG PARACETAMOL

DOSE 1 gram | ROUTE PO | DATE —

PRESCRIBER (PRINT & SIGN) DR ANAESTHETIST

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY

STOPPED DATE: INITIALS:

J DRUG DICLOFENAC

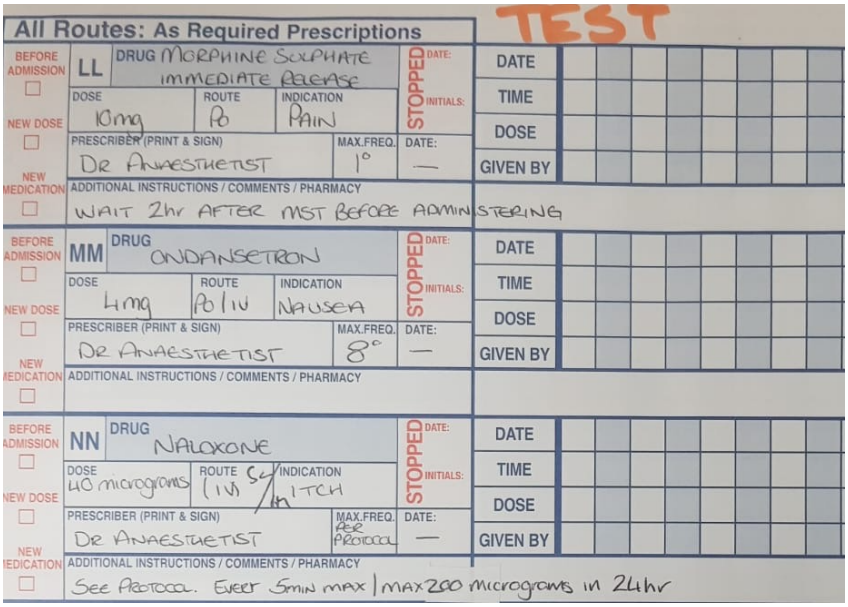
DOSE 50 mg | ROUTE PO | DATE —

PRESCRIBER (PRINT & SIGN) DR ANAESTHETIST

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY

STOPPED DATE: INITIALS:

- Prescribe regular enoxaparin on the pink parental section (1800hrs) ensuring that start date is the following day.
- Enoxaparin dosing guides can be found laminated on all theatre walls
- Prescribe regular paracetamol and diclofenac if not contraindicated.



All Routes: As Required Prescriptions

TEST

BEFORE ADMISSION ☐ | NEW DOSE ☐ | NEW MEDICATION ☐

LL DRUG MORPHINE SULPHATE IMMEDIATE RELEASE

DOSE 10mg | ROUTE PO | INDICATION PAIN

PRESCRIBER (PRINT & SIGN) DR ANAESTHETIST | MAX.FREQ. 1° | DATE —

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY WAIT 2hr AFTER MST BEFORE ADMINISTERING

STOPPED DATE: INITIALS:

DATE | TIME | DOSE | GIVEN BY

MM DRUG ONDANSETRON

DOSE 4mg | ROUTE PO/IV | INDICATION NAUSEA

PRESCRIBER (PRINT & SIGN) DR ANAESTHETIST | MAX.FREQ. 8° | DATE —

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY

STOPPED DATE: INITIALS:

DATE | TIME | DOSE | GIVEN BY

NN DRUG NALOXONE

DOSE 40 micrograms | ROUTE IV | INDICATION ITCH

PRESCRIBER (PRINT & SIGN) DR ANAESTHETIST | MAX.FREQ. AS PER PROTOCOL | DATE —

ADDITIONAL INSTRUCTIONS / COMMENTS / PHARMACY See Protocol. Every 5min max | MAX 200 micrograms in 24hr

STOPPED DATE: INITIALS:

DATE | TIME | DOSE | GIVEN BY

- Prescribe breakthrough analgesia as shown *"MORPHINE SULPHATE IMMEDIATE RELEASE"*

References

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/877728/T1_Recommended_PPE_for_healthcare_workers_by_secondary_care_clinical_context_poster.pdf

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https://www.hps.scot.nhs.uk/a-to-z-of-topics/covid-19/

https://www.rcog.org.uk/coronavirus-pregnancy

https://anaesthetists.org/Home/Resources-publications/COVID-19-guidance

NHS Greater Glasgow and Clyde

COVID-19 APPROVED GUIDANCE

OFFICIAL SENSITIVE

Note: This guidance has been fast-tracked for approval for use within NHSGGC

Covid-19 Anaesthesia Full Reference Guide, PRM

This guidance is intended to assist healthcare professionals in the choice of disease-specific treatments.

Clinical judgement should be exercised on the applicability of any guidance, influenced by individual patient characteristics. Clinicians should be mindful of the potential for harmful polypharmacy and increased susceptibility to adverse drug reactions in patients with multiple morbidities or frailty.

If, after discussion with the patient or carer, there are good reasons for not following guidance, it is good practice to record these and communicate them to others involved in the care of the patient.

Version Number:	4
Does this version include changes to clinical advice:	No
Date Approved:	19th January 2023
Approval Group:	Covid-19 Tactical Group (Acute)

Important Note:

The version of this document on the Clinical Guideline Directory is the only version that is maintained.
Any printed copies should therefore be viewed as 'Uncontrolled' and as such, may not necessarily contain the latest updates and amendments.