

# NTS LONDON SOP ( Standard Operating Procedure ) FOR THE TRANSFER OF A BABY WITH CONFIRMED OR SUSPECTED COVID 19 VIRUS

( VERSION 10 – 19/05/2020; 10a 24/05/2020)

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The purpose of this SOP is to guide those persons involved with the triage and transfer of all neonates within the London area. Protection of staff and patients is the main priority.

Because this is a working SOP that will be used during transfers, discussion of the rationale

## Triage Process for all Transfers

### **Key changes from previous versions:**

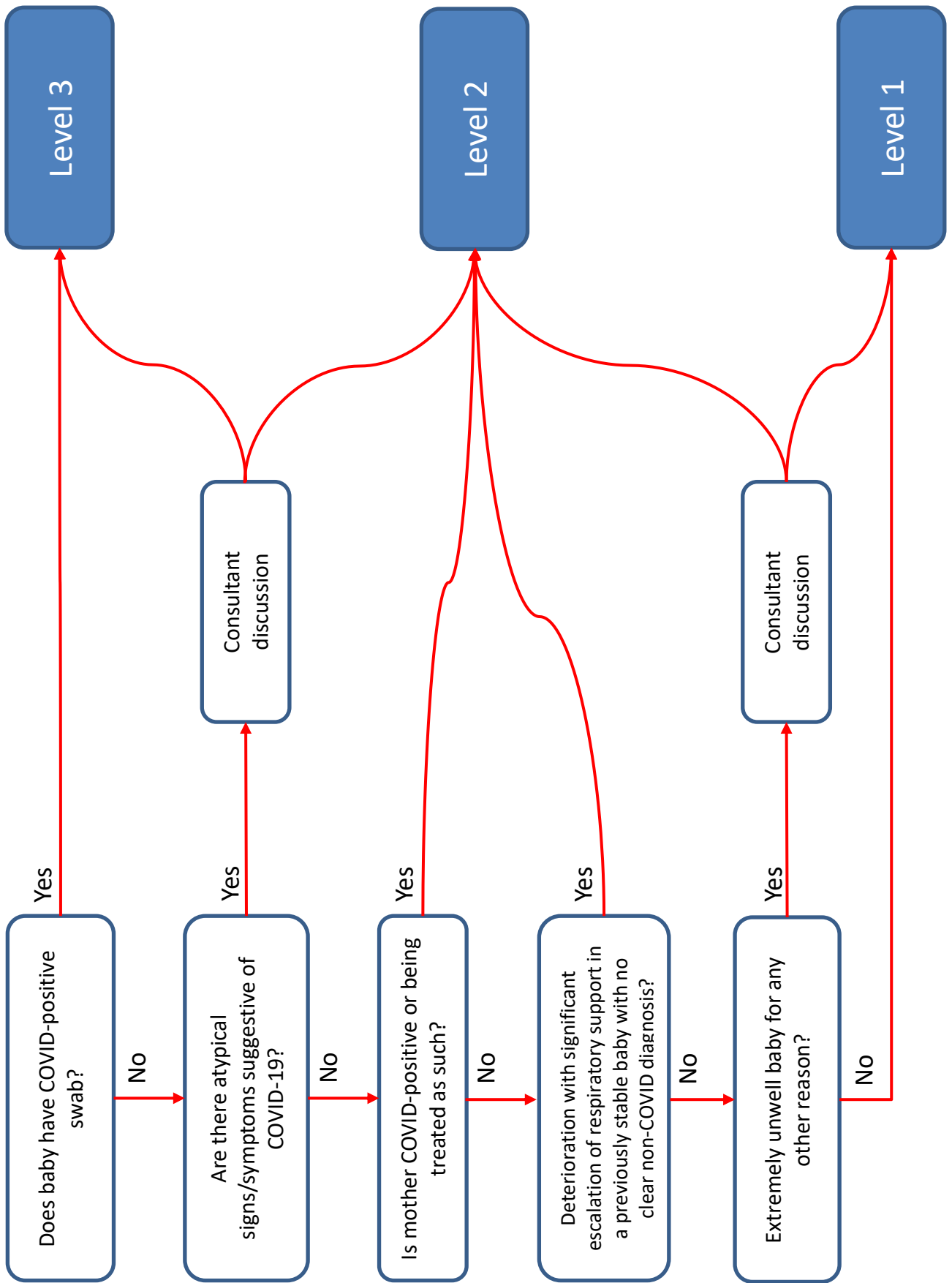
- All patients will now be triaged as LEVEL 1, LEVEL 2 or LEVEL 3. As a minimum all NTS transfers will now be LEVEL 1
- For LEVEL 1 universal ‘standard precautions’ will be used – plastic apron, gloves and FFP3 mask
- For LEVEL 2 and 3 ‘Enhanced precautions’ (the PPE described in previous versions) will apply
- AGPs during the stabilisation of a LEVEL 1 patient will also require enhanced PPE
- Use of two-way radios (“walkie-talkies”) added
- Cleaning of Tecotherm mattress added
- Appendix added with summary of evidence and discussion of consensus position

### Revision 10a

- *Clarification of ventilation modes and AGPs* – Appendix 3: the use of any mode of ventilation does not constitute an AGP if the sides of the incubator remain closed and any patient intervention is via the portholes with sleeve protectors worn
- *Removal of references to additional sets of gloves.* For Enhanced PPE a “base layer” is worn including sterile gloves, and an additional layer of a plastic apron and non-sterile gloves is added on top for patient interaction, or sterile gown and sterile gloves for a sterile procedure.

### Revision 10b

- Discrepancies between summary flow charts and main text corrected. Team do not need to triple-glove.
- Added signposts from flow charts to main text – the flow charts are a summary guide and the main text still needs to be read and used during a transfer.



## Summary Flow Charts – to be used alongside main text

### LEVEL 2 and LEVEL 3 stabilisation (section 4 and 5)

#### Prepare for transfer

- Ensure team members prepared and consultant updated
- Proceed to referring unit



#### At referring unit prepare to enter isolation area

- Minimise spare items on rig
- Prepare ventilator
- Prepare extra paperwork and protection for team phone (food grade plastic bag - ziploc)



#### Don PPE to enter isolation area with 1 pair of surgical gloves

- Ambulance crew member to remain 'clean' and act as buddy for other team members.
- Two-way radios (walkie-talkies) may be used to aid communication between isolation area and ambulance crew



#### Stabilise and prepare patient

- For direct patient contact, don second pair of gloves and a plastic apron. After contact, doff and dispose of outer gloves and apron
- Inline suction for ventilated patients.
- Phone may be used within food grade bag (ziploc) to update consultant



#### Prepare to leave isolation area

- Photograph observation sheets and clinical paperwork with team phone
- Team doffing interleaved with equipment cleaning
- Aim for 'clean team' and 'clean incubator rig exterior'
- Team to have water and snack, use toilet

## LEVEL 2 and LEVEL 3 transfer (section 6 and 7)

### Prepare to transfer to the ambulance

- Prepare fresh observation sheet for use on journey
- Team don new PPE, ambulance crew remains in normal uniform
- Local unit to escort NTS to the ambulance via shortest route
- Alert receiving unit of need for escort



### Maintain ambulance separation

- NTS bags and personal effects in cab
- Cab/saloon door closed
- Parents/carers not to be conveyed



### Proceed to accepting unit

- Continue to use loose observation sheet
- Journey must be assessed as 'contaminated' if patient is handled or AGP takes place - see main text for guidance



### Prepare to leave ambulance

- If transfer was assessed to be 'contaminated' the incubator must be cleaned and the team must doff their PPE and don a complete new set of PPE
- The NTS team do not transfer the patient until the escort has arrived, unless the patient's life is at risk. Team should use the shortest route available.

## **LEVEL 2 and LEVEL 3 handover (section 7 and 8)**

### **Patient Handover**

- NTS Team to enter isolation area in full PPE
- Verbal handover to local team
- Photographs to be taken of documentation using team phone



### **Prepare to leave the isolation area**

- Dismantle and stow reusable components including ventilator block inside double-bags
- Team doffing interleaved with equipment cleaning
- Debagging of NTS phone



### **After exiting from isolation area**

- Complete clinical paperwork using phone photographs as guide.
- Photocopy the completed notes and handover to the receiving team.
- Consider short “hot debrief” via speakerphone with NTS consultant

## Post-transfer decontamination (section 8)

### LEVEL 3 TRANSFER

#### Prepare to transfer to the ambulance

- Contact SJA or LAS to confirm deep clean location
- Team don new PPE, ambulance crew remains in normal uniform
- Move rig to the ambulance via shortest route
- Maintain saloon/cab isolation



#### At cleaning station

- SJA/LAS team to deep clean ambulance
- NTS team in PPE to dismantle and double-bag reusable equipment
- Incubator to be strip cleaned with Chlorclean



#### Prepare to return to NTS base

- Doff all PPE
- Stow double-bagged reusable items for CSSD
- Ambulance saloon can now be used as normal



#### At NTS base

- CSSD items into designated box and CSSD to be informed
- Further normal 'post transfer' clean of incubator before reuse

### LEVEL 2 TRANSFER

#### Equipment cleaning

- Place CSSD equipment into clean outer bag
- Team don basic PPE (see main text)
- Incubator to be wiped down



#### Ambulance cleaning

- Team don basic PPE
- Ambulance interior wiped down



#### Return to NTS base

- Team do not need to wear PPE in ambulance



#### At NTS base

- Transport incubator to be strip cleaned in NICU sluice
- Update incubator cleaning record

## **1 Team readiness and advanced preparation**

- 1.1 All team members should make themselves aware of the contents of the Infectious Kit Box and watch the videos on WeShare, these include the handwashing and the 'donning' and 'doffing' of PPE. Please sign the confirmation sheet in the Infectious Folder.
- 1.2 All staff should be able to perform a fit check for the FFP3 masks provided. Guidance can be found in the infectious folder and in the Infectious Kit Box.
- 1.3 Team members should ensure they are competent to use inline suction, guidance can be found in the Infectious Folder and the Infectious Kit Box
- 1.4 It is recommended that staff routinely bring an extra set of scrubs to change into following a potential COVID-19 transfer

## **2 Referral, Triage and Advice**

- 2.1 During a declared epidemic within the United Kingdom, all babies will be considered potentially infected with COVID-19.
- 2.2 At the time of referral, babies should be triaged into one of the following levels and the details entered on the referral form. The triage level may require revision once further details of the patient emerge, or if any contaminating event occurs during transfer.

	<b>Criteria (take the highest level where any criteria met)</b>	<b>PPE</b>	<b>Vehicle clean</b>
<b>LEVEL 1</b>	Baby admitted at birth and being transferred due to admitting complaint without any other suspicion of COVID-19  Any baby not meeting LEVEL 2-3 criteria	Standard	Per regular schedule
<b>LEVEL 2</b>	Deterioration with significant escalation of respiratory support in a previously stable baby with no clear non-COVID diagnosis  Atypical symptoms that may suggest COVID-19 in any baby (consultant discretion)  Mother swab-positive or being treated as presumed COVID-19	Enhanced	Surface clean by team
<b>LEVEL 3</b>	Atypical symptoms that strongly suggest COVID-19 in any baby (consultant discretion)  Baby swab-positive for COVID-19  Any LEVEL 2 transfer where a potentially contaminating event occurred during transfer	Enhanced	Deep clean at designated station

- 2.3 All transfers should be discussed with the duty consultant and triage category agreed. In the case of extremely sick babies, the consultant may choose to upgrade from a LEVEL 1 to LEVEL 2 transfer at the outset to avoid delay donning PPE if e.g. reintubation or other intervention is required en-route.
- 2.4 Some NHS Trusts have implemented universal precautions for all patients, however NTS will not trigger COVID-19 precautions based on this alone
- 2.5 Cats and STRS should be approached for COVID-19 patients that fall within their remits (weight, gestation and destination) as these teams have been commissioned by NHSE to undertake these transfers.
- 2.6 Where there is not an overriding clinical need for transfer a COVID-19 patient, a conference call should be arranged between the referring consultant, NTS consultant and network tertiary centre (or other accepting centre) to discuss appropriateness of transfer and consideration of ongoing management at the referring unit with tertiary advice and support.
- 2.7 Where a transfer is deemed necessary:
  - 2.7.1 NTS should not dispatch until a cot has been confirmed, unless there is an overriding need e.g. therapeutic cooling, nitric oxide therapy
  - 2.7.2 Parents will not normally be transferred by NTS – the referring team should be asked to arrange transfer e.g. by taxi if appropriate (may be overridden by consultant agreement if there is a high chance of the patient dying en-route)
  - 2.7.3 Patients on high flow therapy, CPAP or Biphasic respiratory support may need to be intubated and ventilated to create a sealed respiratory system
- 2.8 There may be a need for ongoing advice and support to be facilitated by the NTS duty doctor or consultant.

### **3 Conducting a LEVEL 1 transfer**

#### **3.1 Use of 'standard' PPE**

- 3.1.1 For the stabilisation and transfer of a baby who has not been triaged as having enhanced risk for COVID-19 transmission, the team shall wear 'standard' PPE throughout the stabilisation and transfer, consisting of:
  - a) FFP3 mask
  - b) Plastic disposable apron
  - c) Disposable non-sterile gloves



- 3.1.2 After any patient contact, the gloves should be removed, hand hygiene performed and a new pair of gloves put on.
- 3.1.3 The plastic apron should be changed on entry and exit from each unit, and after any visible contamination.
- 3.1.4 The surgical mask can be worn throughout the transfer and disposed of after handover at the accepting unit.

### **3.2 Review of triage category**

- 3.2.1 If there is a change in ventilation or new information becomes available regarding the patient's triage category, this should be discussed with the NTS consultant with a view to upgrading to a LEVEL 2 transfer.
- 3.2.2 Where there is a potential change in the patient's triage category 'on the road' this should be discussed with the NTS consultant and a course of action agreed that balances the risks to patient, staff and the general public.

### **3.3 Discrete AGP during stabilisation**

- 3.3.1 During a LEVEL 1 transfer, it may be necessary to perform an intervention that is a potential AGP, for instance babies with no suspicion of COVID-19 may still require intubation.
- 3.3.2 Those involved in the procedure should don 'enhanced' PPE as outlined below.
- 3.3.3 The local team should be consulted about where they would like the procedure to take place
- 3.3.4 Once the AGP has been completed, the team should decontaminate the outside of the incubator with Clinell wipes, doff the enhanced PPE and re-don standard PPE
- 3.3.5 The transfer should continue as a normal LEVEL 1 transfer

### **3.4 AGP during transfer**

- 3.4.1 Where there is the need for an "open incubator" AGP during transfer, the team should don enhanced PPE as soon as possible.
- 3.4.2 Ideally the patient should be maintained within the incubator environment, e.g. by T-piece (neopuff) ventilation through the incubator porthole whilst the other team member dons additional PPE, then team members swap over so that both are donned before the incubator is opened.
- 3.4.3 Team member discretion may be used where urgent action is required. As a minimum, team members should don a visor or goggles to avoid splashes to the eyes.
- 3.4.4 The transfer is automatically upgraded to a LEVEL 3 after such a procedure.

## **4 Preparing for a LEVEL 2 or LEVEL 3 transfer**

### **4.1 General Principles**

- 4.1.1 NTS will use local units' consumable equipment and PPE by preference
- 4.1.2 Ambulance technician to stay 'clean' and not to have patient contact or enter the isolation room or ambulance saloon unless absolutely clinically necessary

- 4.1.3 Kit bag and other items to be kept 'clean', including personal effects of staff, are to be transported in the front cab of the ambulance and remain outside isolation rooms unless needed.
- 4.1.4 Fridge drugs and a drugs bag should be taken on the transfer but should remain in the front of the cab. Use of the unit drugs should be the preference.
- 4.1.5 No observers will be taken on the transfer

## **4.2 Collecting Equipment**

- 4.2.1 NTS team to use kit bag on ambulance if available, or else return to base to collect PPE and Emergency Infectious Kit Box from NTS base prior to transfer. Use of blue lights to return to base will be decided on a case by case.

## **4.3 Ventilation and Respiratory Support**

- 4.3.1 The normal ventilation equipment should be:
  - Sophie ventilator
  - Disposable circuit
  - Reusable flow sensor
- 4.3.2 If a disposable circuit is not available then a reusable circuit may be used
- 4.3.3 If the Sophie ventilator cannot be used, the equipment should be:
  - BabyPAC ventilator
  - Disposable BabyPAC circuit
  - End-tidal CO2 sensor
- 4.3.4 CPAP/BiPAP/High Flow respiratory support should be avoided as far as possible.

## **5 Stabilisation and Packaging for a LEVEL 2 or LEVEL 3 transfer**

- 5.1 **All extraneous equipment and paperwork should be removed from the transport rig. Ventilator and other equipment may be set up ready if it will definitely be used.**
- 5.2 **Two team members (doctor/ANNP and nurse) should don full PPE in preparation for entering isolation room**
  - 5.2.1 The team should enter referring unit in regular NTS scrubs
  - 5.2.2 Ambulance crew member is to remain 'clean' and act as buddy for the other team members
  - 5.2.3 The 'enhanced' PPE should consist of:
    - long sleeved gown
    - one set of surgical/sterile gloves
    - if gloves do not create a good seal with gown sleeves then tape can be used or sleeve protectors (if available)
    - face mask, FFP3 or equivalent
    - visors should be worn if available, if not goggles
    - Aprons and extra pair of gloves for the direct patient contact.

- hats and shoe covers are optional but may be worn if available locally
- Arm sleeves (only to be used in ambulance patient contact through portholes)

5.2.4 A fit check should be performed for each new mask worn

### **5.3 Communication and Paperwork**

5.3.1 Handover should be taken outside isolation area

5.3.2 The team phone should be placed in a plastic food grade bags and sealed by tape or Ziploc

5.3.3 The two-way radio, if available, should be also be placed in a bag and sealed.

5.3.4 The speaker phone may be used to update consultant and receiving unit, and to communicate with the ambulance crew if necessary

5.3.5 Loose observation and clinical continuation sheets and two pens should be taken from the black folder into the isolation area

### **5.4 Preparing the patient**

5.4.1 Infectious kit box should not be taken into the isolation area.

5.4.2 For direct patient contact, don an outer pair of non-sterile gloves and plastic apron. After contact, doff and dispose of outer gloves and apron, and apply alcohol gel to gloved hands.

5.4.3 For sterile procedures, e.g. siting lines or drains, an additional gown and sterile gloves should be donned on top then doffed following the procedure.

5.4.4 The unit's or NTS stethoscope may be used, clean before and after use with 70% alcohol or green Clinell wipes

5.4.5 Inline suction should be used for all ventilated patients

5.4.6 Oscillatory ventilation should be avoided if possible, but may be necessary for a minority of patients

5.4.7 Additional medications that may be needed en route should be prepared and placed inside the incubator hood

5.4.8 do not take any personal effects of the patient.

### **5.5 Preparing to leave the isolation area**

5.5.1 Photographs should be taken of observation sheets and clinical paperwork using the team phone, paperwork should be destroyed by the referring team.

5.5.2 Team to don clean plastic apron and outer pair of non-sterile gloves

5.5.3 The transport incubator rig should be wiped down with 70% alcohol wipes and allowed to air dry

5.5.4 A member of the local team should remain in PPE to monitor the patient under verbal instruction from NTS team

5.5.5 Team members to then doff all PPE except for their face mask. Place all PPE in the clinical waste in the isolation room

5.5.6 Team members then wash and alcohol gel their hands and don a new pair of non-sterile gloves inside the isolation room.

## **5.6 Transferring to the ambulance**

- 5.6.1 Team to exit the isolation room with the patient in the transport incubator and dispose of face mask and gloves in clinical waste directly outside isolation room then wash their hands again
- 5.6.2 Team members should take water, a snack and use the toilet if needed.
- 5.6.3 The two team members should then 'don' new clean PPE outside the isolation room, the ambulance crew member remains in normal uniform
- 5.6.4 Fresh 'loose' observation sheet should be prepared for the journey
- 5.6.5 Local team to provide an escort ( preferably security ) to clear corridors and obtain lifts to make sure the journey is as short as possible. NTS team do not leave unit until escort is provided
- 5.6.6 Prior to leaving, team to telephone the receiving unit to arrange a similar escort at the receiving end.
- 5.6.7 Team to enter the ambulance with PPE on

## **6 Management in Transit for a LEVEL 2 or LEVEL 3 transfer**

- 6.1 The two team members involved in the direct care of the patient remain wearing full PPE, and are to reside in the back of the ambulance only during the transfers**
- 6.2 The infectious kit box and any team personal effects should remain in the cab**
- 6.3 The door between the ambulance saloon and cab is to remain closed**
- 6.4 No Parents or carers will be allow to accompany on the journey.**
- 6.5 For patient contact through the portholes only and when no AGP is undertaken**
  - 6.5.1 don an arm sleeve, a second pair of gloves and a plastic apron
  - 6.5.2 after contact, doff and dispose of the sleeve, outer gloves and apron, and apply alcohol gel to gloved hands.
- 6.6 At the end of the transfer the transfer must be assessed as 'clean' or 'contaminated'.**
  - 6.6.1 if no interventions have taken place during the transfer, or only interventions through the portholes using additional coverings as above, and the ventilator circuit (if used) has remained unbroken then the ambulance and team can be classed as 'clean'.
  - 6.6.2 If the team members needed to handle the patient other than as above, and/or an AGP has taken place, the transfer is considered 'contaminated' and the response level is upgraded to **LEVEL 3** – this means additional cleaning as per section 8.

## **7 At the Receiving Hospital for a LEVEL 2 or LEVEL 3 transfer**

**7.1 If the transfer was classed as ‘contaminated’, the incubator must be cleaned and PPE re-established outside the ambulance in the parking area before proceeding to the unit.**

- 7.1.1 Remove the incubator from the vehicle, using a ‘best effort approach’ to find an area of the car park where the public will not be walking immediately next to the vehicle
- 7.1.2 Team to remove top set of gloves and dispose.
- 7.1.3 The transport incubator rig should be wiped down with 70% alcohol wipes and allowed to air dry.
- 7.1.4 ‘doff’ the contaminated PPE except face mask then use alcohol gel to clean hands
- 7.1.5 ‘don’ new clean PPE, leaving the mask in place.
- 7.1.6 all ‘dirty’ PPE should be double bagged in clinical waste bags and secured with a cable tie.

**7.2 Await escort - the NTS team do not transfer the patient until the escort has arrived, unless the patient’s life is at risk. Team should use the shortest route available.**

### **7.3 Handover process**

- 7.3.1 NTS team members to enter the isolation room in full PPE
- 7.3.2 Verbally hand patient over to receiving team
- 7.3.3 Decant all medications into appropriate clinical waste bins
- 7.3.4 Transfer the patient to the receiving unit cot.

### **7.4 Preparing to exit the isolation area**

- 7.4.1 Photographs should be taken of observation sheets and clinical paperwork using the team phone, paperwork may be kept by accepting team.
- 7.4.2 an outer pair of gloves and plastic apron should be donned.
- 7.4.3 all linen and disposable consumables to be disposed of inside the isolation room in the appropriate clinical waste bins
- 7.4.4 reusable equipment that requires CSSD cleaning should be dismantled as much as possible, put into metal cages and then placed into the incubator itself – this includes dismantling the Sophie ventilator block ready for cleaning
- 7.4.5 the top pair of gloves should be doffed, alcohol gel applied to hands and a new pair of gloves donned
- 7.4.6 the outside of the transport incubator should be cleaned with 70% alcohol and air dried
- 7.4.7 one team member to doff remaining contaminated PPE – except for the face mask – and dispose of it inside the isolation room
- 7.4.8 team phone and two-way radio bags to be opened by ‘donned’ team member and contents extracted by ‘doffed’ team member
- 7.4.9 other team member to doff – except for face mask
- 7.4.10 team phone and two-way radios to be cleaned with Clinell wipes
- 7.4.11 wash hands and put on clean gloves

- 7.4.12 NTS team to exit isolation room with transport incubator rig, then remove face mask and gloves as per guidance
- 7.4.13 Wash hands and use alcohol gel again

## **7.5 Paperwork and communication**

- 7.5.1 Clinical paperwork to be completed using photographs from phone as a guide.
- 7.5.2 The photographs of the clinical paperwork should be emailed via a secure nhs.net email to the doctor who has taken the handover in the receiving hospital or photocopy the completed notes and handover to the receiving team.
- 7.5.3 NTS consultant to be updated – a short “hot debrief” via speakerphone with the whole team may be desirable

## **7.6 Leaving the receiving unit**

- 7.6.1 For ‘suspected’ COVID-19 patients, where the ambulance is deemed ‘clean’, incubator to be cleaned before leaving per section 7 below.
- 7.6.2 For ‘confirmed/strongly suspected’ patients, proceed to the ambulance with the ‘dirty’ rig.
- 7.6.3 If the ambulance was deemed to be ‘contaminated’ then team to ‘don’ new full PPE and maintain isolation between cab and saloon; otherwise team can enter the ambulance as normal

## **8 Decontamination Process**

### **8.1 LEVEL 3 Transfers – high clinical risk and/or contaminated transfer**

- 8.1.1 Clinical team should remain in their ‘clean’ PPE as donned before leaving the receiving unit
- 8.1.2 Team to contact relevant supervisors as listed in Appendix 1. Once decontamination station allocated team should drive directly to designated station.
- 8.1.3 Clinical team to then offload transport incubator and any double bagged contaminated PPE into decontamination station.
- 8.1.4 Reusable contaminated equipment for CSSD should be placed into clinical waste bags and sealed with a cable tie
- 8.1.5 Ambulance to be deep cleaned by LAS/ St John cleaning teams.
- 8.1.6 At the decontamination station the reusable equipment should be wiped down with 70% Alcohol wipes wearing full PPE and then double bagged in clinical waste bags and cable tied. These should then be placed back on the floor of the ambulance once it has been decontaminated.
- 8.1.7 Clinical team to *strip clean* transport incubator as per NTS cleaning guidance with Chlorclean tablets. Place equipment onto the floor or suitable surface as carefully as possible.
- 8.1.8 The already-bagged reusable contaminated equipment for CSSD should be placed into another outer clinical waste bag with help from a ‘clean’ staff member, and sealed with a further cable tie.
- 8.1.9 ‘Doff’ contaminated PPE, double bag in clinical waste bags and cable tie. Dispose of all contaminated PPE in designated decontamination area.
- 8.1.10 Wash hands and reload clean incubator onto clean ambulance, then return to base.

- 8.1.11 A further normal 'post transfer' clean of the incubator and rig should be performed prior to the next mission.
- 8.1.12 CSSD items are then placed in the blue 'contaminated equipment' box lid on firmly, in the infectious linen cupboard at the back of 8D unit. These will need to be taken to CSSD as soon as possible.

## **8.2 LEVEL 2 Transfers – lower clinical risk and non-contaminated transfer**

- 8.2.1 Already bagged, reusable equipment for CSSD should be placed into a clean outer bag ready to stow in ambulance
- 8.2.2 At receiving unit, team are to clean incubator
- identify a suitable area for cleaning
  - wear white apron, non-sterile gloves, and surgical mask
  - wipe down all surfaces inside and outside of the transport incubator, including wheels with green Clinell wipes (beware pinch points)
  - Decontaminate hands afterwards by washing and using alcohol gel.
- 8.2.3 Ambulance interior should be cleaned:
- wear white apron, non-sterile gloves, and surgical mask
  - wipe down all surfaces with green Clinell wipes
  - Decontaminate hands afterwards by washing and using alcohol gel.
- 8.2.4 PPE and dirty wipes to be disposed of in clinical waste bags and cable tied. This should be disposed of in the clinical waste bins on the receiving NICU.
- 8.2.5 Team to proceed back to NTS base
- 8.2.6 Transport incubator should be strip cleaned in the sluice on 8D NICU according to the NTS cleaning protocol with Chlorclean tablets. Team should wear appropriate PPE (surgical mask, white apron, non-sterile gloves ). PPE to be disposed of in the clinical waste bins. Decontaminate hands by washing and alcohol gel.
- 8.2.7 Incubator can now be used for all transfers. Update cleaning record and document clean has been performed in the babies paperwork for track and trace

## **8.3 Thermal management equipment (Tecotherm)**

- 8.3.1 Where the Tecotherm system has been used this will require cleaning prior to further use
- 8.3.2 The Tecotherm machine should be decontaminated along with the rest of the transport incubator rig
- 8.3.3 The Tecotherm mattress and hose should be double-bagged and cleaned on return to base
- 8.3.4 Make up a bucket of Chlo-clean, one tablet to 2 litres of water, allow to dissolve.
- 8.3.5 Don gloves, white apron, FFP3 mask and goggles.
- 8.3.6 Mattress and hose should be dunked individually in the bleach solution at least 3 times to make sure there is full coverage. They should then be dried with paper towels.
- 8.3.7 Empty the bucket and place the mattress and hose in bucket for storage in the NTS store room to fully dry for 12 hours. Spare mattress and hose should be used to replace on the vehicle.

8.3.8 If team is late off and cannot decontaminate, communication is paramount. Items should be left double aged in the NTS store room with a visible note. A message must be handed over verbally and visually on the white board and it is the responsibility for the next team to undertake the decontamination.



## **Appendix 1: contacts for arranging decontamination of vehicles and equipment**

### **St John (Park Royal)**

Positive COVID-19 patient or AGP has taken place - ambulance requires deep clean.

Contact Number: 0203 617 9999

### **London Ambulance Service**

Positive COVID-19 patient or a AGP has taken place in the ambulance requires a deep clean.

Contact Channel 35 to organise a deep clean post transfer. VP stations include

C3 Brent, A2 Isleworth, M1 Bromley, R1 St Helier and K3 Ilford

## Appendix 2: CSSD Contacts

CSSD Contacts – Contact CSSD on one of the following numbers.

01332 386815

01332 386816

01332 386822

01332 386823

Ask for the person in charge and state you have COVID-19 contaminated equipment that requires CSSD process. Complete a pack and track form and state the equipment was used on a positive or suspected COVID-19 patient.

CSSD will send someone to collect the equipment who will be wearing full PPE. Please escort this staff member to the containment box in the infectious linen cupboard at the back of 8D.

## Appendix 3: Aerosol Generating Procedures (AGP)

The agreed list of AGP relevant to Neonates is :

- Intubation, extubation and related procedures such as manual ventilation and open suctioning
- tracheotomy/tracheostomy procedures (insertion/open suctioning/removal)
- non-invasive ventilation (NIV) such as Bi-level Positive Airway Pressure (BiPAP) and Continuous Positive Airway Pressure ventilation (CPAP)
- High-Frequency Oscillating Ventilation (HFOV)
- High Flow Nasal Oxygen (HFNO), also called High Flow Nasal Cannula
- Induction of sputum

### Ventilation during transfer

The use of the ventilation modes described above will not be considered an AGP for the purposes of determining team and vehicle contamination en-route, so long as:

- ventilation is established prior to moving to the ambulance;
- there has been no disconnection or break of the patient circuit during transfer;
- baby has remained within the incubator hood with the sides shut;
- any intervention has been made via porthole doors with sleeve protectors worn.

### Open Suction

For non-invasively ventilated babies, the use of open suctioning during a LEVEL 1 transfer will not be considered an AGP for the purposes of determining team and vehicle contamination en-route, so long as all suctioning has taken place through the portholes of the otherwise closed incubator.

## Appendix 4: Summary of Evidence and Discussion of Consensus Position

### Background

SARS-CoV-2 is a novel virus that causes the disease COVID-19, leading to a variety of symptoms in adults, with the most severe requiring treatment for an ARDS-like illness (Acute Respiratory Distress Syndrome) and potentially requiring ITU admission for respiratory or multiorgan failure<sup>1</sup>.

It is likely that vertical transmission (from mother to baby) can occur, although the risk is likely to be very low. In a recent study of a group of pregnant women with confirmed SARS-CoV-2 infection, only 5% of the babies tested positive, half within the first 12 hours after birth<sup>2</sup>. The likelihood of transmission from one individual to another is thought to be proportional to viral load<sup>3</sup>; this has not been established in neonates but in line with other vertically transmitted viruses it is likely to be low<sup>4</sup>.

In other words, for the risk to staff and other patients to be high, the baby must be infected with the virus and producing significant copies of the virus in respiratory secretions, both of which are unlikely for a newborn neonate.

Symptoms and signs of COVID-19 infection in the neonate may include<sup>5,6</sup>:

- respiratory distress
- cyanosis
- vomiting and feeding intolerance
- fever or temperature instability
- increased heart rate
- rashes
- thrombocytopenia
- leukopenia
- abnormal liver function.

NHS England policy is that all inpatient admissions should be swabbed for SARS-CoV-2, although the experience of London NTS is that this is not being universally applied to babies. The false-positive and false-negative rates for these tests remains unknown<sup>7</sup>.

### Infection Risk during Neonatal Transfers

The use of PPE for a transfer may cause staff fatigue and impaired performance<sup>8</sup>, and depletes an important national resource. Additional equipment and vehicle cleaning is similarly burdensome. There is no question that, when there is established SARS-CoV-2 infection, all precautions must be taken. However, given the non-specific nature of COVID-

19 signs and symptoms in the neonate, together with the relatively low risk of transmission to other patients and staff, a pragmatic approach to the management of neonatal transfers is reasonable when there is no clear evidence of neonatal infection.

As well as differing from adults in signs, symptoms and presumed risk of transmission, neonates are also distinct from other patient groups as they are universally transported within an incubator, providing a degree of isolation from the ambulance environment.

Given the above considerations, the guideline committee reached the following consensus:

- Transfer of babies with a clear non-COVID diagnosis, and no indication of exposure to SARS-CoV-2, should be treated as low risk. This includes babies requiring respiratory support, preterm and term babies.
- Transfer of babies that have experienced a deterioration requiring significant escalation of respiratory support, with no established non-COVID diagnosis, should be treated as medium risk. This includes babies started on CPAP/High Flow Oxygen, or ventilated.
- Where there has been a positive SARS-CoV-2 swab for the mother, or she is being treated for presumed COVID-19, this will be treated as medium risk.
- Where there is significant atypical symptoms in the baby, the NTS consultant will decide whether to treat this as medium or high risk based on clinical judgement. Atypical symptoms may include abnormal chest x-ray findings, abnormal haematology and/or liver function results, or other symptoms that are not readily attributable to a normal neonatal diagnosis.
- Where the baby has a positive SARS-CoV-2 swab, this will be treated as high risk.

These risk strata are mapped onto the LEVEL 1, LEVEL 2 and LEVEL 3 transfers as outlined in the main text.

The existence of a negative swab has not been used as a risk-reducing consideration because babies that are clinically unwell may have contracted the virus following their negative swab. The consensus may change when rapid tests become available.

### **Choice of PPE**

Public Health England (PHE) have issued guidelines for recommended PPE for ambulance services<sup>9</sup>. However, these are not specific to neonatal transfers and reference “possible or confirmed cases” based on adult symptom assessment. They also do not take into account the mitigating effect of the incubator.

The guideline committee consensus is:

- London NTS will not make use of surgical masks, and only use FFP3 respirators or equivalent, based on the perception of increased risk for staff that are working across 28 units as part of an ambulance-based team;
- To follow the PHE guidance for medium- and high-risk transfers and use disposable gloves, disposable fluid-repellent coverall/gown, filtering face piece respirator (FFP3 or equivalent) and eye/face protection (visor or goggles);
- For low risk transfers to use a hybrid of the PHE guidance, with enhanced respiratory protection but not to mandate the use of eye/face protection as the closed incubator fulfils the same role. This means disposable gloves, disposable plastic apron, and filtering face piece respirator (FFP3 or equivalent).

These two PPE types have been termed “enhanced PPE” and “standard PPE” and mapped onto the LEVEL 1, LEVEL 2 and LEVEL 3 transfers as outlined in the main text.

### **Ambulance Decontamination**

Public Health England (PHE) have issued guidelines for vehicle decontamination following a suspected COVID-19 transfer<sup>10</sup>. The guideline distinguishes transfers where an Aerosol Generating Procedure (AGP) has taken place and recommends enhanced decontamination for these. Following a pragmatic approach and considering the likely protective factor of using an incubator, the guideline committee reached the following consensus:

- the PHE guidelines for ambulance decontamination will be observed with the modifications below;
- the use of oscillatory ventilation (HFOV) will not be considered an AGP so long as the ventilator circuit is not broken and the patient remains in the incubator (the portholes may be opened for interventions);
- open suctioning of non-ventilated patients during a LEVEL 1 transfer will not be considered an AGP so long as the patient remains in the incubator (the portholes may be opened for interventions);
- all patients assessed as clinically high risk will be treated as if an AGP had occurred for the purposes of ambulance decontamination.

### **Variation from Other Services**

The aforementioned PHE guidelines also use the LEVEL 1-3 terminology, with LEVEL 1 PPE based on a risk assessment of each patient. Given the difficulty in assessing neonates, London NTS has elected to use standard PPE for all transfers as detailed above.

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<sup>1</sup> Michelen, M., Jones, N., and Stavropoulou, C. (2020) *In patients of COVID-19, what are the symptoms and clinical features of mild and moderate cases?* [online] The Centre for Evidence-Based Medicine Available at: <https://www.cebm.net/covid-19/in-patients-of-covid-19-what-are-the-symptoms-and-clinical-features-of-mild-and-moderate-case/> [Accessed 18<sup>th</sup> May 2020].

<sup>2</sup> Knight, M. et al. (2020) *Characteristics and outcomes of pregnant women hospitalised with confirmed SARS-CoV-2 infection in the UK: a national cohort study using the UK Obstetric Surveillance System.* [Preprint]. [online]. The National Perinatal Epidemiology Unit Available at: <https://www.npeu.ox.ac.uk/downloads/files/ukoss/annual-reports/UKOSS%20COVID-19%20Paper%20preprint%20draft%2011-05-20.pdf> [Accessed 18<sup>th</sup> May 2020].

<sup>3</sup> Little, P. et al. (2020) *Reducing risks from coronavirus transmission in the home—the role of viral load.* *BMJ* 2020;369:m1728

<sup>4</sup> *COVID-19 - guidance for neonatal settings.* Royal College of Paediatrics and Child Health & British Association of Perinatal Medicine. [online] Available at: <https://www.rcpch.ac.uk/resources/covid-19-guidance-neonatal-settings#transport>. [Accessed 18<sup>th</sup> May 2020]

<sup>5</sup> Zhu, H. et al. (2020) *Clinical analysis of 10 neonates born to mothers with 2019-nCoV pneumonia.* *Transl Pediatr.* 2020 Feb; 9(1): 51–60. doi: 10.21037/tp.2020.02.06

<sup>6</sup> Zhang, Z. et al. (2020) *Novel Coronavirus Infection in Newborn Babies Under 28 Days in China.* *European Respiratory Journal* 2020; DOI: 10.1183/13993003.00697-2020

<sup>7</sup> *Coronavirus (COVID-19) Infection Survey pilot: England.* Office for National Statistics. [online] Available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/bulletins/coronaviruscovid19infectionsurvey/england10may2020> [Accessed 18<sup>th</sup> May 2020]

<sup>8</sup> Hur, P. et al. (2013) *Effect of Protective Clothing and Fatigue on Functional Balance of Firefighters.* *J Ergonomics* 2013, S2 DOI: 10.4172/2165-7556.S2-004

<sup>9</sup> *Recommended PPE for ambulance staff, paramedics, other patient transport services and pharmacy staff.* Public Health England. [online] Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/879108/T3\\_poster\\_Recommended\\_PPE\\_for\\_ambulance\\_staff\\_paramedics\\_transport\\_pharmacy.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/879108/T3_poster_Recommended_PPE_for_ambulance_staff_paramedics_transport_pharmacy.pdf) [Accessed 18<sup>th</sup> May 2020]

<sup>10</sup> *COVID-19: guidance for Ambulance Trusts.* *Public Health England.* [online] Available at: <https://www.gov.uk/government/publications/covid-19-guidance-for-ambulance-trusts/covid-19-guidance-for-ambulance-trusts> [Accessed 18<sup>th</sup> May 2020]