

## PAEDIATRIC CRITICAL CARE COVID-19 GUIDANCE

### Key points

- *Coronavirus (COVID-19) is an air-borne disease, characterized by its ability to spread rapidly among healthcare staff who are not properly protected. It can be difficult to rapidly diagnose and has a high case-fatality rate in adults but generally appears to be a mild illness in children.*
- *The key considerations for all healthcare staff managing critically ill children are safe isolation, the wearing of Personal Protective Equipment (PPE), and consideration whether or not to transfer suspected and/or confirmed Covid-19 cases.*
- *The High Consequence Infectious Disease (HCID) network in operation during the containment phase is no longer operating as the UK has moved beyond the 'containment' phase of the pandemic to the 'delay' phase.*

### Referral and transport of critically ill children with suspected and confirmed covid-19 infection

- *The flow diagrams A and B below provide a summary of referral and transport of critically ill children.*

### Useful links

Latest Case definition (PHE): <https://www.gov.uk/government/publications/wuhan-novel-coronavirus-initial-investigation-of-possible-cases/investigation-and-initial-clinical-management-of-possible-cases-of-wuhan-novel-coronavirus-wn-cov-infection#criteria>

Isolation guidance (PHE): <https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control/wuhan-novel-coronavirus-wn-cov-infection-prevention-and-control-guidance#isolation>

PPE donning and doffing guidance (PHE): <https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control/wuhan-novel-coronavirus-wn-cov-infection-prevention-and-control-guidance#PPE>

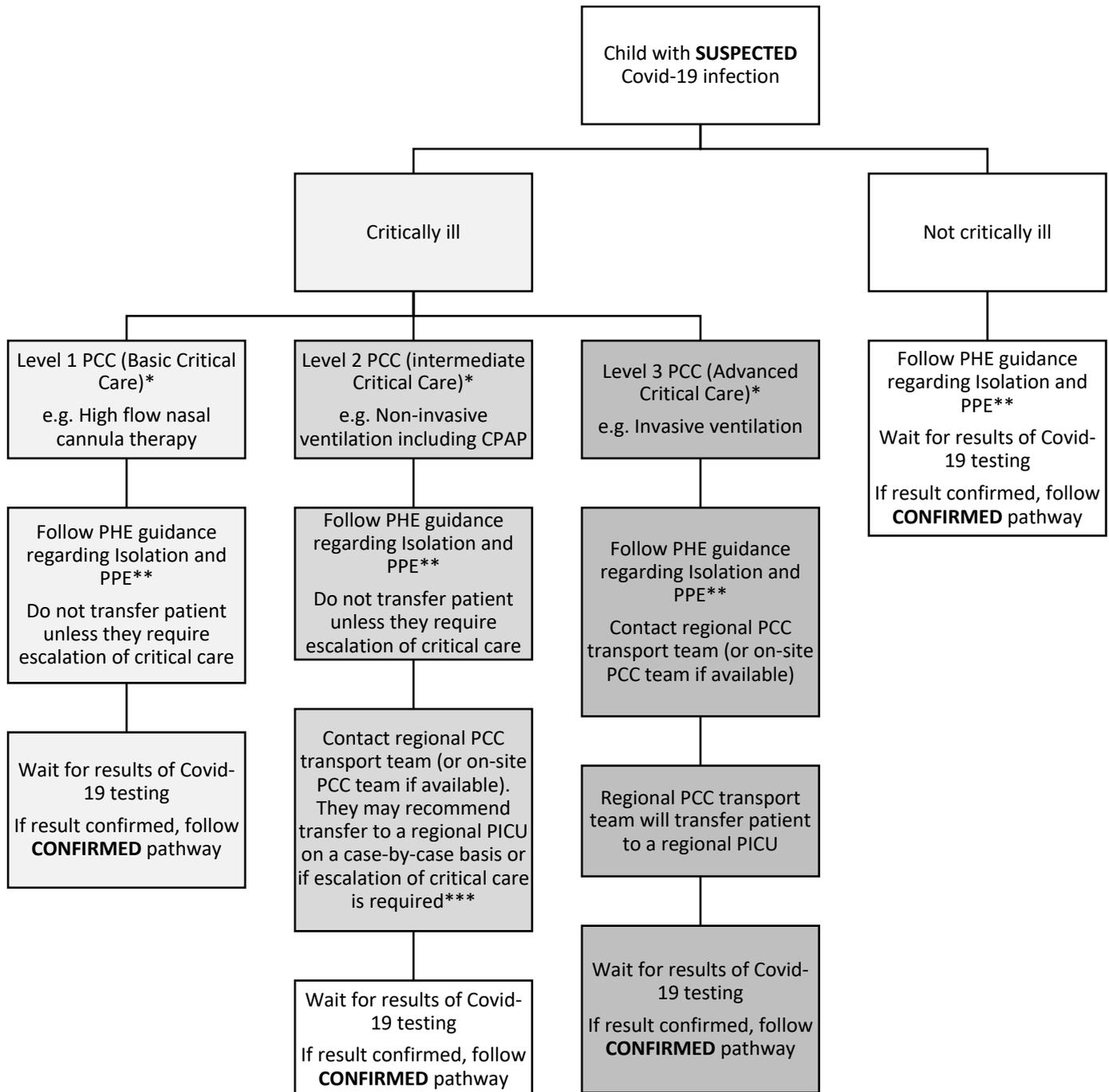
PPE **donning** PDF sheet (PHE):

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/869978/PHE\\_COVID-19\\_Donning\\_quick\\_guide.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/869978/PHE_COVID-19_Donning_quick_guide.pdf)

PPE **doffing** PDF sheet (PHE):

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/870078/PHE\\_COVID-19\\_Doffing\\_quick\\_guide.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/870078/PHE_COVID-19_Doffing_quick_guide.pdf)

**FLOW DIAGRAM FOR MANAGEMENT OF CRITICALLY ILL CHILDREN WITH SUSPECTED COVID-19 INFECTION**



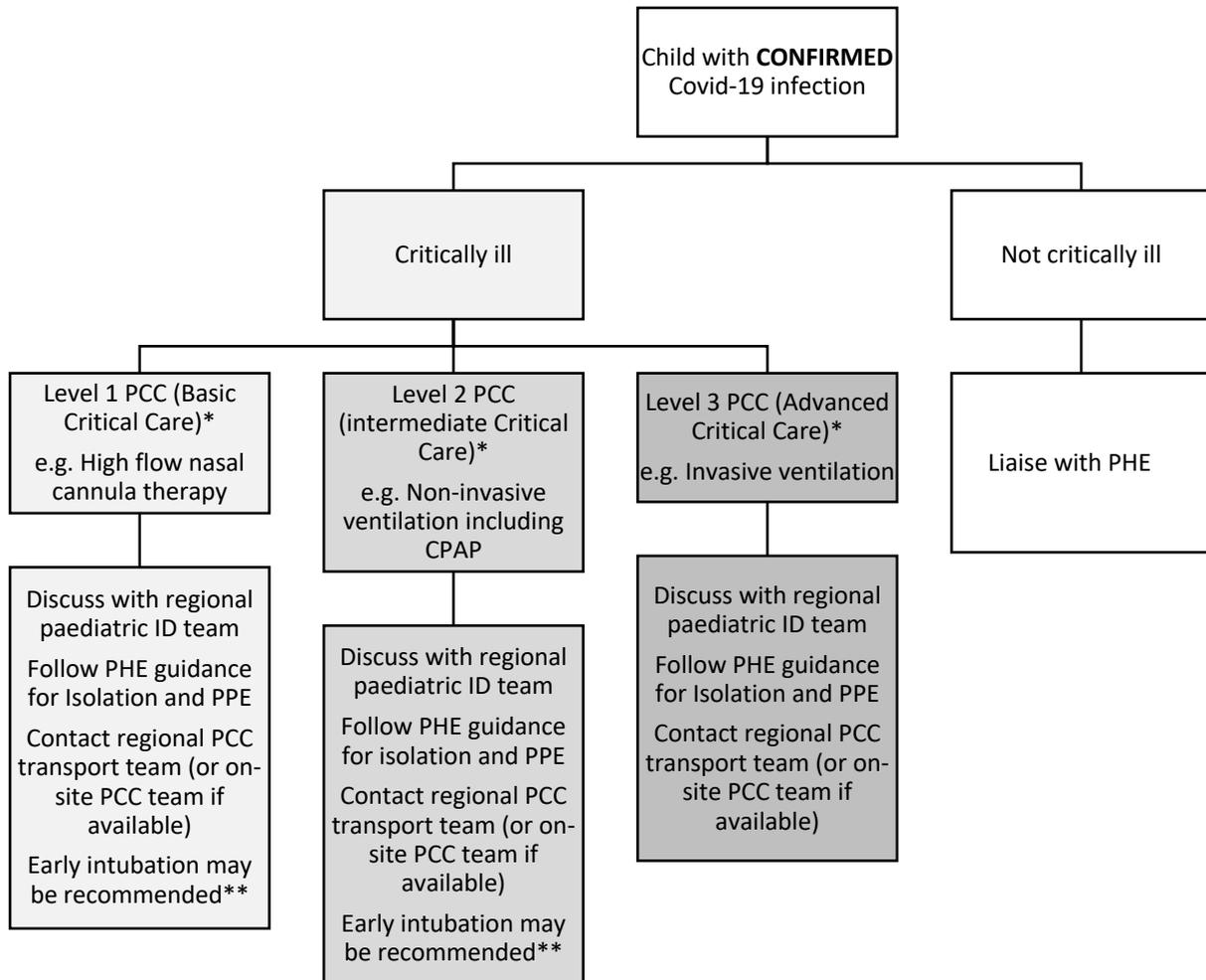
**NOTES:**

\* For definitions of Levels of paediatric critical care (PCC) refer to: [https://picsociety.uk/wp-content/uploads/2016/05/PICS\\_standards\\_2015.pdf](https://picsociety.uk/wp-content/uploads/2016/05/PICS_standards_2015.pdf)

\*\* Isolation and PPE guidance from PHE: <https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control/wuhan-novel-coronavirus-wn-cov-infection-prevention-and-control-guidance#isolation>

\*\*\* Intubation of suspected cases should follow PHE guidance: <https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control/wuhan-novel-coronavirus-wn-cov-infection-prevention-and-control-guidance#aerosol-generating-procedures>. (See detailed intubation guidance in Appendix 1).

## FLOW DIAGRAM FOR THE MANAGEMENT OF CRITICALLY ILL CHILDREN WITH CONFIRMED COVID-19 INFECTION



### NOTES:

\* For definitions of Levels of paediatric critical care (PCC) refer to: [https://picsociety.uk/wp-content/uploads/2016/05/PICS\\_standards\\_2015.pdf](https://picsociety.uk/wp-content/uploads/2016/05/PICS_standards_2015.pdf)

\*\* Aerosolisation of infected secretions may be higher with high flow nasal cannula therapy or non-invasive ventilation than invasive ventilation. Therefore, early intubation may be recommended. See Intubation checklist in Appendix 2.

### *Can I use NIV or HFNC in suspected/confirmed covid-19 cases?*

There is currently no strong evidence that the risk of aerosol generation is different for HFNC compared to NIV. Both HFNC and NIV have been used in China as well as in Italy.

They can be used in suspected cases if strict isolation precautions are adhered to – i.e. staff are in full PPE and patient is isolated as per PHE guidance.

Confirmed cases can also be managed with full PPE and isolation as per PHE guidance. However, if the risk of aerosol generation with HFNC or NIV is considered to be high, early intubation and invasive ventilation may be necessary.

## Appendix 1 – PHE recommendations for Aerosol generating procedures

This can be found on the PHE website – link below

<https://www.gov.uk/government/publications/wuhan-novel-coronavirus-infection-prevention-and-control/wuhan-novel-coronavirus-wn-cov-infection-prevention-and-control-guidance#aerosol-generating-procedures>

- Procedures that produce aerosols of respiratory secretions, for example bronchoscopy, induced sputum, positive-pressure ventilation via a face mask, intubation and extubation, and airway suctioning carry an increased risk of transmission. Where these procedures are medically necessary, they should be undertaken in a negative-pressure room, if available, or in a single room with the door closed.
- Only the minimum number of required staff should be present, and they must all wear [PPE as described above](#). Entry and exit from the room should be minimised during the procedure.
- If aerosol generating procedures are undertaken in the patient’s own room, the room should be decontaminated 20 minutes after the procedure has ended.
- If a different room is used for a procedure it should be left for 20 minutes, then cleaned and disinfected before being put back into use.
- Clearance of any aerosols is dependent on the ventilation of the room. In hospitals, rooms commonly have 12-15 air changes per hour, and so after about 20 minutes there would be less than 1 per cent of the starting level (assuming cessation of aerosol generation).
- If it is known locally that the design or construction of a room may not be typical for a clinical space, or that there are fewer air changes per hour, then the local IPCT would advise on how long to leave a room before decontamination.
- **Re-useable equipment should be avoided** if possible; if used, it should be decontaminated according to the manufacturer’s instructions before removal from the room
- Use dedicated equipment in the isolation room. Avoid storing any extraneous equipment in the patient’s room
- Dispose of single use equipment as per clinical waste policy inside room
- **Ventilators should be protected with a high efficiency filter**, such as BS EN 13328-1
- **Closed system suction should be used**
- Disposable crockery and cutlery may be used in the patient’s room as far as possible to minimise the numbers of items which need to be decontaminated

## Appendix 2 - CHECKLIST FOR INTUBATION

1. Remember that your personal protection is the priority. All team involved must be mask fit tested and experienced in donning and doffing of PPE. Please review the material and use droplet/ contact isolation precautions (PPE – mask-surgical gown and gloves with eye protection if required) when interacting with patients
  - Plan ahead: make sure you have practice donning and doffing and have a buddy
  - Pay close attention to avoid self-contamination
  - Intubation checklist / senior personnel / allocate roles
  - Negative pressure room if possible
  - Identify these patients early as we want to avoid NIV
  - Lines of communication should be easily available to the team inside the room and the team outside

### Suggested roles:

- Doctor A. Most suitably experienced intubator undertakes first attempt at intubation.
  - Doctor B. Acts as the team leader during intubation attempt. Gives induction.
  - Nurse A. Airway assistance to Doctor A.
  - Nurse B. The team should decide whether Nurse B should be inside the isolation room or remain in PPE outside the room.
2. Don PPE
  3. Most experienced intubator available to perform intubation if possible
  4. Standard monitoring, IV access, instruments, drugs, ventilator and suction checked –
  5. Consider airway adjuncts/ glidescope/ AirTraq
  6. Plan for RSI with skilled assistant to perform cricoid pressure. RSI can be modified
  7. If plan for manual ventilation use small tidal volumes
  8. Preoxygenate for 5 minutes with 100% O<sub>2</sub> to avoid manual ventilation
  9. Ensure filter between face mask and bag
  10. Intubate and confirm - avoid stethoscope - EtCO<sub>2</sub> and examination of the chest. –
    - a. If using glidescope – use disposable blade
    - b. Encase rest of the unit in a clear plastic cover
    - c. Keep other associated equipment outside the room until needed
  11. Start MV – use filter, inline suction, try not to disconnect from ventilator
  12. After leaving negative pressure area (which is where this should be done if possible) – spillage team to wipe down the surfaces and non-disposable items with hyper chlorite wipes
  13. Disposable equipment should be placed in disposable double zip-locked clear plastic bag at end of procedure and disposed of in the burn bins inside the isolation room. All drugs must be discarded
  14. Proper Doffing PPE with Buddy

## Appendix 3 – Other guidance

### *Management of Paediatric ARDS*

Tamburro RF, Kneyber MC. Pulmonary specific ancillary treatment for paediatric acute respiratory distress syndrome: **proceedings from the paediatric acute lung injury consensus conference.**

*Paediatr Crit Care Med*: June 2015;16(5s): s61–S72.

### *Management of Paediatric Septic Shock*

**Surviving sepsis** campaign international guidelines for the management of septic shock and **sepsis**-associated organ dysfunction in children.

Weiss SL, Peters MJ, Alhazzani W, et al. *Intensive Care Med.* 2020 Feb;46(Suppl 1):10-67. doi: 10.1007/s00134-019-05878-6.

### *How to manage a paediatric cardiac arrest in suspected/confirmed cases*

- Do not use the hospital cardiac arrest team
- Devise a modified protocol beforehand with identified members of senior paediatric team and ensure all are mask fit tested and able to don and doff PPE
- If the child is intubated and ventilated – try not to disconnect from the ventilator when doing CPR
- If the crash trolley is used – dispose of all the contents within the isolation room before taking the trolley out of the room to be cleaned with hyperchlorite wipes