

NHS Standard Data for Children admitted to hospital with suspected and confirmed COVID-19

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COVID-19 is responsible for the global pandemic currently sweeping across the world. As a new virus there is little known about the impact that it has on children, the course of the disease and which children are at higher risk of respiratory failure and death. Published and unpublished reports from China and Italy have begun to describe the trends that are being seen in these populations^{1,2}, enabling UK clinicians to make more informed decisions in identifying which patients should be admitted, which supportive strategies are most effective³ and the role of additional medications¹.

It is possible that COVID-19 causes more severe disease in children with significant co-morbidities including long-term respiratory conditions, immunocompromise, congenital heart disease and arrhythmias or neuromuscular conditions. In addition, there may be early predictors of severity that have not yet been recognised and therapeutic strategies that are more effective than others. There may be factors within this that are specific to the UK population and to the National Health Service, in particular for modelling and anticipating the need for high dependency and intensive care support. A guideline for the management of children with COVID-19 has been written based on current evidence and this work aims to evaluate the practice of UK paediatricians in comparison to the guideline and identify any areas where the guidelines are not followed⁴.

This service evaluation and audit aims to provide important up-to-date information to clinicians relating clinical aspects of COVID-19 whilst also determining the care needs of children admitted to hospital with COVID-19. Being able to respond to these data that will emerge as the pandemic progresses will help clinicians to plan for the service requirements of these patients, particularly the need for intensive care support. In addition it will be used to identify any populations of children who are at higher risk from SARS-CoV-2 infection to identify groups who may need to isolate more stringently.

The study will collect data in two parts, the first part will collect the baseline data on all children confirmed as having COVID-19 and requiring admission to hospital, or whilst an inpatient (Part 1). Part 2 will be used to determine the course of disease, therapeutic strategies used and level of care required. If a patient has a short stay in hospital, a single Part 2 form can be completed for the entire stay with documentation of the maximum level of respiratory/nutritional etc support required.

The data collected will complement the data on incidence of COVID-19 which is being collected by Public Health England and the UK-Clinical Characterisation Protocol (CCP) but intends to provide real-time information to clinicians so that they feel armoured with the most up-to-date information when managing the care of these patients.

Aims:

- (1) Compare the management of children with suspected and confirmed COVID-19 in the UK with current UK guidance and communicate this 'real-time' with clinicians.
- (2) Determine the level of care required by children with COVID-19 in the UK to improve service delivery and anticipate ongoing service requirements.

(3) Identify any particularly 'at risk' groups of children.

Inclusion Criteria:

- Children <18 years requiring admission to hospital and are confirmed as having COVID-19 by RT-PCR or serological testing
- Children <18 years who are current inpatients and are confirmed as having COVID-19 by RT-PCR or serological testing

Exclusion Criteria:

- Neonates and infants < 29 days (these children are being captured by the BPSU collection form).

Key Reported Outcomes

- Incidence of COVID-19 in UK children in hospital (absolute number)
- Incidence of COVID-19 in UK children in intensive care (absolute number)
- Mortality rate (absolute number)
- Baseline clinical features which are associated with a positive COVID-19 swab (%age)
- Day of illness that children are admitted to hospital (Median, IQR)
- Age of children admitted to hospital
 - o COVID-19 confirmed (Median, IQR)
- Co-morbidities which are associated with hospital admission in patients who are COVID-19 positive (%age)
- Co-morbidities which are associated with intensive care admission in patients who are COVID-19 positive (%age)
- Day of illness that intensive care admission is required (Mean, Std Dev)

Additional outcomes that will be analysed

- Imaging (CXR, CT, USS) features that are associated with the need for respiratory support and intensive care admission (descriptive)
- Association of medications with severity of COVID-19 including NSAIDS, steroids, DMARDS, Biologics, chemotherapy

Data Collection

Data will be collected using an online collection tool, accessed through the website www.covidinchildren.co.uk. There will be two data collection tools, the first (part 1) will be completed for all hospitalised children confirmed as having COVID-19 by RT-PCR or serological testing. The second (part 2) will be completed daily for all patients confirmed as having COVID-19 and their records will be linked by the patient's NHS number.

Part 1 will be completed for the day of admission (date of registration at A&E is day 0) or the day when an inpatient is suspected of having SARS-CoV-2. Every subsequent day is designated from 00:00-23:59 the day(s) following admission and a new part 2 form should be completed for each day of admission. If the child has a short stay in hospital and the diagnosis is confirmed after discharge or at the end of their stay, a single 'Part 2' form can be completed for the whole stay, documenting the maximum level and location of support required within their stay. If patients are transferred to another hospital their record can be linked using their NHS number and we encourage all paediatricians to continue to complete the data collection forms.

Data processing and confidentiality

The data requested includes the NHS number of children suspected of, or confirmed as having, COVID-19. In usual circumstances collecting personal data such as this would require consent. However, in these exceptional circumstances the European Data Protection Board have recognised that in the fight against COVID-19 the processing of personal data is necessary in the interests of public health and to protect public interests (Art 6 and 9 of the GDPR). Nevertheless, the data within this study will be held in a secure database which will only be accessed by the study investigators. All data will be anonymised prior to publication. It may be that as a result of this emergent data set long-term issues arise for patient groups affected by COVID-19. Collection of confidential patient details (NHS number and Date of Birth) is permitted under the section 251 exemption of the National Health Service Bill 2006 as this data is required in the interests of the wider public and this is supported by the COPI notice issued on the 20th March, 2020, regarding data collection for service delivery during COVID-19. In some cases there may be small numbers of patients included within groups (i.e. <5). Whilst it is normal practice to not display aggregate data with <5 patients per group, due to the small numbers of patients currently affected and the pressing need for information to guide decision making it has been decided that these data will be presented.

- 1 Xia, W. *et al.* Clinical and CT features in pediatric patients with COVID-19 infection: Different points from adults. *Pediatr Pulmonol*, doi:10.1002/ppul.24718 (2020).
- 2 Cai, J. *et al.* A Case Series of children with 2019 novel coronavirus infection: clinical and epidemiological features. *Clin Infect Dis*, doi:10.1093/cid/ciaa198 (2020).
- 3 MacLaren, G., Fisher, D. & Brodie, D. Preparing for the Most Critically Ill Patients With COVID-19: The Potential Role of Extracorporeal Membrane Oxygenation. *JAMA*, doi:10.1001/jama.2020.2342 (2020).
- 4 Sinha, I. *et al.* Guidance for the clinical management of children admitted to hospital with suspected COVID-19. (2020).