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Susie Aldiss ¹, Faith Gibson ^{1,2}, Cecilia Vindrola-Padros ³, Jo Wray ², Paula Kelly ²

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For numbered affiliations see end of article.

Correspondence to

Susie Aldiss;
s.aldiss@surrey.ac.uk

ABSTRACT

Objectives Despite lower rates of illness, morbidity and mortality associated with SARS-CoV-2 infection in children during the COVID-19 pandemic, their health and well-being has been significantly impacted. Emerging evidence indicates that this includes experiences of hospital-based care for them and their families. As part of a series of multisite research studies to undertake a rapid appraisal of perceptions of hospital staff, working during the pandemic, our study focused on clinical and non-clinical staff perceptions of the impact of COVID-19 on aspects of care delivery, preparedness and staffing specific to a specialist children’s hospital.

Design Qualitative study using a qualitative rapid appraisal design. Hospital staff participated in a telephone interview. We used a semistructured interview guide, and recorded and transcribed all interviews. Rapid Research Evaluation and Appraisal Lab Rapid Assessment Procedure sheets were used to share data; team-based analysis was facilitated using a framework approach.

Setting Specialist children’s hospital in London, UK.

Participants Thirty-six staff representing a range of roles within the hospital: 19 (53%) nurses, 7 (19%) medical staff and 10 (28%) other staff groups (including radiographers, managers, play staff, schoolteachers, domestic and portering staff and social workers).

Results Three overarching themes relating to staff perceptions of the impact on children and families were identified, each containing subthemes: (1) same hospital but different for everyone, (2) families paid the price and (3) the digital world. They illustrated that providing care and treatment for children and families changed profoundly during the pandemic, particularly during lockdown periods. Adaptations to deliver clinical care, play, schooling and other therapies online were rapidly put into action; however, benefits were not universal or always inclusive.

Conclusions The disruption to a central principle of children’s hospital care—the presence and involvement

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Participants included a broader range of staff than previously reported (where nurses and medical staff have dominated), including front-line experiences of porters and domestic staff, as well as staff involved in play, education and therapies that promote developmental, psychological and social well-being in children.
- ⇒ The timing of interviews spanned two key surges of COVID-19 infection with associated high rates of hospitalisation and national lockdowns in the UK, thereby including a more varied range of changes in experience than in those studies focused on data collected in the spring of 2020 only.
- ⇒ We were unable to recruit staff working in two specific areas of change: the development of services to support expansion of capacity in mental health and general paediatrics within a specialist hospital.
- ⇒ Our data were confined to single interviews with a self-selected sample; staff whose experiences were either too raw to discuss or felt they had limited experience of change at work may have been under-represented.
- ⇒ Our participants did not include any junior doctors whose experiences are likely to have offered a different perspective from the medical consultants in our sample.

of families—was of critical concern to staff, suggesting a need for the specific impact of COVID-19 on children’s services to be accounted for.

INTRODUCTION

Much has been written about the impact of the COVID-19 pandemic on well-being of hospital staff,^{1,2} particularly front-line medical

and nursing staff, and how care delivery was impacted across a range of clinical settings in a bid to reduce viral transmission rates and prioritise urgent and critical care.³ The majority of research has focused on adult settings as COVID-19 affected children far less,⁴ with lower associated morbidity and mortality.⁵ However, staff in specialist children's hospitals also faced high rates of adverse pandemic-related experiences in both their home and work-life and reported elevated levels of anxiety and depression.⁶ In the early waves of the pandemic, facilities treating both children and adults were encouraged to increase adult capacity by consolidating paediatric care in specialist children's hospitals. While many routine paediatric admissions were cancelled and there was a move to remote rather than in-person outpatient care,^{7 8} there was still a need to provide care for critically and chronically ill children requiring hospitalisation, including those with COVID-19 or paediatric inflammatory multi-system syndrome temporally associated with SARS-CoV-2 (PIMS-TS).⁹ In common with colleagues in adult settings, staff in children's hospitals also had to adopt different working patterns, including redeployment both within and outside the hospital and delivery of care in new, often unfamiliar ways.^{10 11} A qualitative rapid appraisal of healthcare workers' experiences and perceptions of delivering care to adults^{12 13} identified that structural conditions in the work environment, such as staffing levels, access to personal protective equipment (PPE) and ability to have adequate breaks, were key factors affecting well-being. Furthermore, changes in workload and responsibility have been linked to burnout and, for some staff, reductions in non-COVID services caused them to feel underused and to experience inequitable workloads.¹⁴ What has not been clearly articulated is how COVID-19 impacted aspects of care delivery, preparedness and staffing in the setting of a specialist children's hospital.

Research on the design and implementation of epidemic response efforts at a global scale has pointed to the importance of considering staff perceptions and experiences of care delivery.¹⁵ Our overall aim was to explore the perceptions and experiences of staff in a tertiary children's hospital, in relation to COVID-19, and the suitability of care delivery models and infrastructure to deal with the pandemic. We sought to elicit views from a range of staff delivering a hospital service to answer the following questions:

- ▶ What are staff's perceptions of working during the COVID-19 pandemic?
- ▶ What are their experiences of delivering care in this context?
- ▶ Do staff experience any concerns delivering care in this context?

METHODS

As part of a programme of 'COVID-19 Mirror Studies', led by the Rapid Research Evaluation and Appraisal Lab (RREAL) (<https://www.rapidresearchandevaluation.com/>), we adopted their approach to methods, data

collection and analysis.¹⁶ This involved an iterative process of collection and analysis, where 'researchers begin with information collected in advance, and then progressively learn from each other and from information provided by semi-structured interviews'.¹⁷

Setting

A stand-alone inner-city specialist children's hospital that does not have an accident and emergency department, located in London (UK). We usually treat children aged 0–18 with rare and complex long-term health conditions. Approximately 4100 staff are employed across 383 inpatient/day care beds. Prior to the pandemic we had 44 intensive care unit (ICU) beds, expanded to 50 beds early in the pandemic, with a dedicated COVID-19 ICU. We planned to admit young people up to age 25 to reduce the burden on adult centres; this did not happen. But we did admit a wider than usual range of referrals from across the region and created a new ward for acute children and young people's mental health admissions who would not previously have come to our hospital.¹⁸

Sample and recruitment

To reflect our hospital population, we revised an RREAL sampling framework.¹⁹ We used purposeful sampling across a range of staff, anticipating data saturation would be achieved with 26–30 interviews, based on the experiences of the wider RREAL teams in other UK clinical settings.

We presented the study at senior staff meetings and targeted clinical/service leads to reach out to staff using a participant information sheet. Interested participants could agree for email addresses to be provided to the lead researcher or make direct contact themselves.

Data collection

Participants took part in an in-depth one-to-one telephone interview. Informed consent was gained prior to each interview. At close of interview staff were reminded of the well-being hub and its purpose to support staff during the pandemic. The interview schedule was adapted from the version used by the RREAL team, with questions added specific to our context—for example, parental visiting and child-specific services such as play and school (see online supplemental file); the use of this schedule helped ensure consistency in interviews by different team members. Interviews were audio recorded with participant consent and transcribed verbatim. Data were collected by four female researchers (SA, FG, PK, JW), all with significant expertise in undertaking interviews; three are healthcare professionals. Three of the researchers are staff members at the study site (FG, PK, JW); as a result of their profiles and areas of research they were known to some participants—all participants were offered the opportunity to be interviewed by a researcher not employed by the organisation (SA). Immediately postinterview data were summarised using RREAL Rapid Assessment Procedure (RAP) sheets to capture emerging

findings.¹² Frequent researcher discussions of RAP sheets ensured ongoing familiarisation and engagement with the emerging data set, enabling robust decision-making on data saturation. We determined this had been reached when no new themes were being identified in the interview data.

Data analysis

Transcripts of digital audio recordings were made by Essential Secretary (<http://www.essentialsecretary.co.uk/>) under an agreed General Data Protection Regulation (GDPR) compliant contract. All were stored on a password-protected research site-specific shared drive. Anonymised interview transcripts were only accessible to our research team.

Data analysis explored the most frequent topics originating from interviews in relation to our research questions. We used team-based framework analysis^{20,21} using the process illustrated by Vindrola-Padros and colleagues.¹² Team reviews of RAP sheets led to the development of an initial coding framework by two researchers (SA, PK) which contained seven themes. This was further

developed and refined with an in-depth examination of RAP sheets and review of interview transcripts, resulting in three themes and 10 subthemes in total, supported by illustrative quotes.

Rigour and credibility in our team approach to analysis were assured through the use of RAP sheets to record and share data and the researchers meeting regularly to reflect on and discuss ongoing findings. The use of framework analysis enabled all researchers to review the coding to check for accuracy of the interpretation.

RESULTS

Participants

Details for participants are shown in [table 1](#).

Findings

Interview recordings ranged from 26 to 78 min, with most lasting around 1 hour. We identified three themes: same hospital but different for everyone; families paid the price; and the digital world ([figure 1](#)). Themes and

Table 1 Sampling framework and participant characteristics

Characteristic	Target sample (n=28–43)	Recruited, n (%) (n=36)
Redeployed staff (any staff redeployed outside the hospital)	5–7	18 (50)
Area of work during COVID-19		36 (100)
Intensive care (medical, nursing, allied health professionals, pharmacists and support staff)	5–7	17 (47)
General paediatrics—including acute mental health (medical, nursing, allied health professionals, pharmacists and support staff)	5–7	0 (0)
Support staff (security, porters, cleaning, catering staff) and teaching and play staff	5–7	11 (31)
Infection control staff	1–2	0 (0)
Laboratory staff	3–5	0 (0)
Other (palliative care, other specialty wards)		8 (22)
Professional group*		
Nurses (NHS bands 6–7)		19 (53)
Medical staff (all consultants)		7 (19)
Other staff groups (radiographers, managers, play staff, schoolteachers, domestic and portering staff, social workers)		10 (28)
Duration of employment at hospital*		Median: 11 years (IQR: 5.5–15.5 years)
Gender*		
Female		27 (75)
Male		9 (25)
Ethnicity*		
White British		25 (69)
White Irish		3 (8)
White European		3 (8)
White other		4 (11)
Black, Asian, minority ethnic		1 (3)

*We did not sample based on these criteria; data are shown to provide further descriptive information about the sample recruited. NHS, National Health Service.

Themes	1. Same hospital, but different, for everyone	2. Families paid the price	3. The digital world
Subthemes	1.1 Hospital wide preparations and personal readiness 1.2 Impact felt unevenly 1.3 Teamwork 1.4 A new disease/a different type of child	2.1 Communication changed 2.2 Visiting and social distancing 2.3 Decision-making and lack of spontaneity	3.1 Delivery of clinical care 3.2 Online hospital school, play and therapy 3.3 Professional communication via technology

Figure 1 Themes and subthemes.

subthemes are discussed in the body of the paper and linked to illustrative quotes presented in tables 2–4.

Same hospital but different for everyone

Day-to-day work changed for all staff during the pandemic. Some activities stopped or had to be performed in a different way, teamwork was impacted and there was a new disease affecting children. See table 2 for quotes.

Hospital-wide preparations and personal readiness

Views varied on the level of hospital-wide preparedness, some described it as slow, others as inevitable given the circumstances. There was a shared view of it being impossible to be well prepared as the situation was so unprecedented. There was a sense of ‘waiting’, everyone could see what was on the horizon coming fast, but central

Table 2 Same hospital but different for everyone—subthemes and illustrative quotes

Subtheme	Illustrative quote
Hospital-wide preparations and personal readiness (1.1)	Q1.1.1 ‘Infection control and national guidance fell behind changing sense of risk for staff.’ (G40, Doctor) Q1.1.2 ‘It was the sort of waiting for this thing to hit, you know, for this bomb to drop and no one quite knew what it was going to look like.’ (G10, Nurse) Q1.1.3 ‘“And coming to the hospital, or the office, full of people, none of them wearing a mask, it made me feel like we were just going like the Titanic. We were just going towards the iceberg, knowing already the iceberg was there we just, we were just doing- And there was no protection. No indication. Nothing. So I felt really uncomfortable with that for probably a couple of weeks”... I just felt that we were going towards it and people were just in denial.’ (G30, Doctor) Q1.1.4 ‘And everybody is reliant pretty well on people further upstream in making a decision. And that generally seemed to be, it was sort of Friday at half past five. And then you know, you’ve got this, I don’t know, it’s sort of this maelstrom of trying to sort out what’s, you know, what are the new guidelines for this? How can we get the posters up? How do we communicate to staff about this? You know, so it was very interesting and I think you learn a lot about yourself personally and professionally I think in those times.’ (G40, Doctor)
Impact felt unevenly (1.2)	Q1.2.1 ‘...it definitely affected efficiency especially in our areas, so where they were having, where patients were having general anaesthetics. That definitely impacted our lists because they were doing aerosol-generating procedures...you have to wait and allow the aerosols to settle and things after performing that before you can clean a room.’ (G07, Other staff) Q1.2.2 ‘it decreased the amount of public we had in, because the patient was only allowed one carer and not the whole family, so it decreased in people but it upped in cleaning, so all touch points had to be done 100%, we had people just going around wiping inside the lifts, all the doors on the lifts, on all the handles down the stairs and just stuff like that, and when you’ve got five or six people walking around the whole hospital and that’s just in one shift and then that shift is covered again to do it again, it’s a lot, and you’ve got to make sure it’s being done.’ (G47, Other staff) Q1.2.3 ‘...one weekend, we’d had a really busy weekend and then on the email, on the comms email, it sort of said “oh it’s been a quiet weekend.” ...actually, saying that makes everybody feel very... We just all felt very deflated, because it was just like “what are you talking about? It’s not been quiet. It’s been crazy”.’ (G15, Nurse)
Teamwork (1.3)	Q1.3.1 ‘We are a small team and are very much depending on the day-to-day exchange. So the corridor conversations, the bumping into each other is actually essential for our work because we keep ourselves constantly updated with the other team members. We are quite strong in that, but this was disrupted by Covid because part of us weren’t here and had to work from home, which disrupted the dynamic substantially.’ (G37, Doctor) Q1.3.2 ‘...people wouldn’t hear you. They can’t hear you because you’re wearing this massive mask. And then, for whatever the reason, when you cannot hear properly it’s, like, you stop – I don’t know how to explain – but I couldn’t hear properly either my other colleagues, but at some point even I felt that I was having a lot of tunnel vision. And obviously, you have to wear this hat, these goggles, so it felt that we were really focused on what we were doing and you will lose awareness of what was going around you. And then, that made you listen less as well, if that makes sense?’ (G11, Nurse)
A new disease/a different type of child (1.4)	Q1.4.1 ‘...felt like we were chasing our tails all the time – feeling out of our depth.’ (G03, Nurse) Q1.4.2 ‘...these children were more they were teenagers and older children than I am used to working with and I heard them screaming that they could not breathe and they had all these breathing problems, we as nurses were not able to connect with them, because we were wearing all this equipment, so they could not see our eyes, they cannot see our faces, they do not know who we are and that is hard, I was very scared for them, because they cannot see me and they are in this environment without their parents and I found that difficult...I knew how to do my job to give them medicines to keep them safe, with the monitors and everything but I didn’t know how to help them emotionally or how to talk to them, how to communicate with them.’ (G06, Nurse)

Table 3 Families paid the price—subthemes and illustrative quotes

Subtheme	Illustrative quote
Communication changed (2.1)	<p>Q2.1.1 <i>'And by now, I've learned to get a marker and to write on your shirt or on your gown who you are because nobody can hear anything.'</i> (G45, Nurse)</p> <p>Q2.1.2 <i>'you have lost all of that.'</i> (G03, Nurse)</p> <p>Q2.1.3 <i>'When you are in the room with someone, masks and social distancing, you still want to add that human element.'</i> (G03, Nurse)</p> <p>Q2.1.4 <i>'Trying to support the PICU [paediatric intensive care unit] families via telephones. That's quite different. I think I realised just how much, you know, in my role that I rely on, you know, non-verbal cues and seeing somebody's face. I mean that's really different anyway in a mask. That's been quite different but, on the phone, it was, you know, it was very different trying to sort of gage, you know, emotion and assess what help they needed.'</i> (G10, Nurse)</p> <p>Q2.1.5 <i>'I think for the children it was quite scary for them to just see people's eyes and see us all in these fully... Visors and masks and just not very friendly, they couldn't see if you were smiling, they couldn't see if you were... You know just general facial expressions. So you wouldn't have the same... Be able to have the same rapport with them that would normally.'</i> (G15, Nurse)</p>
Visiting and social distancing (2.2)	<p>Q2.2.1 <i>'Knowing that family members were torn apart, in that sense, for the whole week, was quite difficult because a dad would be away from his child for that whole week and then the mum would be away from her child the whole week and they were still, in that week, if they were with the child they had to be on it, remember everything and be here and present and they weren't allowed to have any down days on that week because they had to be here and present.'</i> (G19, Nurse)</p> <p>Q2.2.2 <i>'We ended up having a lot of end of life conversations with the father on FaceTime.'</i> (G03, Nurse)</p> <p>Q2.2.3 <i>'The stance on end of life care was changed quite quickly so that both parents could come in – so I think that was the right choice.'</i> (G03, Nurse)</p> <p>Q2.2.4 <i>'I worry about bonding I think, you know, for some of those dads that weren't able to come in. You know, a massive chunk of those first weeks in a baby's life.'</i> (G10, Nurse)</p> <p>Q2.2.5 <i>'I worry about the mental health impact on some of those mothers, you know, being separated from their [baby's] father when a lot of those mums are really vulnerable. You know, they've just had a baby and they're recovering from surgery or from giving birth and then they're there, so just having to try and look after themselves.'</i> (G10, Nurse)</p> <p>Q2.2.6 <i>'when the mother was able to come in she came in on her own, she was completely broken, she had to come in without her husband.'</i> (G03, Nurse)</p> <p>Q2.2.7 <i>'... it was like no siblings, and obviously that then broke a lot of families' hearts because obviously some kids are long term.'</i> (G42, Other staff)</p> <p>Q2.2.8 <i>'there were a lot of single parents who were desperate for their mums or dads to come in or aunties or whoever and they just weren't allowed. So, single parents definitely I think presented a very stressful time, kind of isolating for them.'</i> (G03, Nurse)</p> <p>Q2.2.9 <i>'At the beginning we would have a team that went to fetch them off the ward in full PPE [personal protective equipment] and bring them down without the parent.....We would....normally recover patients having parents by the bedside, again, (when some infection control rules had relaxed) they wouldn't be allowed down until the kids were ready to go back. And so how that impacts the parents but also the children. You know that anxiety I think for many kids was heightened even like the staff who were wearing things where you only see their eyes is very depersonalising.'</i> (G40, Doctor)</p> <p>Q2.2.10 <i>'...the inpatient's birthday, but yet siblings aren't allowed in and how do you celebrate the birthdays because siblings can't be there, because it's then, it's like one parent can come in and then they have to swap later in the day. So you can't even do a birthday cake as a family. And for them it was just a challenge and obviously I've seen parents get upset. I've seen parents finding it really hard because it has been hard for them. And like it's hard for us obviously and it's sad for us, because you have to listen to that...'</i> (G42, Other staff)</p> <p>Q2.2.11 <i>'...the domestic was getting conversations from parents, and they really interact, they're not going to, "Excuse me, can I clean the room?" "Yes all right then, no problem," and they go in and clean it, but now it's proper conversations, it was more interactive if you know what I mean.'</i> (G47, Other staff)</p>
Decision-making and lack of spontaneity (2.3)	<p>Q2.3.1 <i>'There were some families that clearly were counting on those operations to happen as soon as possible so they could plan the next level of rehabilitation, the next level of home adaptation, whatever it needed to do after the operation. And this didn't happen. So clearly we had to face some, I don't want to say complaint, but probably strong concerns from some families because things were not happening and there was no, poor communication.'</i> (G30, Doctor)</p>

government and hospital guidance was perceived to be behind the curve (Q1.1.1).

Staff watching the pandemic unfold on television and those with relatives and colleagues in Europe with prior escalation were apprehensive of forthcoming changes (Q1.1.2). Knowing change was imminent and getting

prepared as an individual was well underway for many early on. Some staff were already assessing their own risk, changing work patterns, not travelling by public transport and getting plenty of fresh air. Staff were anxious, preparing themselves for change, while waiting for guidance to mandate what they should do (Q1.1.3).

Table 4 The digital world—subthemes and illustrative quotes

Subtheme	Illustrative quote
Delivery of clinical care (3.1)	<p>Q3.1.1 <i>'The world did switch on its digital self very easily you know, and that did extend thankfully to being able to virtually see patients over Zoom...'</i> (G03, Nurse)</p> <p>Q3.1.2 <i>'A lot of patients and parents were frightened to use public transport for obvious reasons. So, they found setting up the virtual appointments obviously was really helpful to them, because obviously they could have a consultation with their consultant or a member of the team...in the comfort of their own home.'</i> (G38, Nurse)</p> <p>Q3.1.3 <i>'...probably accelerated some changes of pre-assessment that we're always going to keep, you know. If you're up in Leeds, well actually if we can do a pre-operative assessment via Zoom now, then actually that's really good. That saves you a journey down to have a pre-operative assessment.'</i> (G40, Doctor)</p> <p>Q3.1.4 <i>'(In) a lot of the outpatient clinics where we're not doing scans and stuff, we don't need them to travel in, it's unnecessary like environmentally, so people driving and stuff, ... even just the fact that stepping into a hospital isn't good for anybody. ..., so it's, yes minimising exposure to people coming into hospital is absolutely brilliant.'</i> (G05, Nurse)</p> <p>Q3.1.5 <i>'if we have say been working with them for five, six, seven years already then there was not such a disruption to then suddenly have video clinics for example. But I definitely think it was not a good environment for some of the new patients, where being together in a room, yes, being physically around the child and having the examination of the child, explaining to the parents, being close to them about things is a very different matter. And that was definitely a disadvantage during Covid.'</i> (G37, Doctor)</p> <p>Q3.1.6 <i>'We do 30,000 anaesthetics a year, that'll be you know, 4,000 patients a year will have a new behaviour that they didn't have before they came in. Now that's quite a lot...I'm hoping that the assessment clinic will be able to identify children who perhaps are anxious. We'll be able to offer some interventions and then...long term follow up.'</i> (G40, Doctor)</p>
Online school, play and therapy (3.2)	<p>Q3.2.1 <i>'...the pandemic hit and everyone went online, all these schools, so actually for children with medical needs there should have been the sense that, Oh, I'm not different anymore, I can be part of my school at home as well as having support through the hospital school, so for some children it was quite exciting that they could start to access actually their schools' online facilities.'</i> (G46, Other staff)</p> <p>Q3.2.2 <i>'We have ... a little patient....., and his sister..... the parent who's with the daughter and the parent that's with the son, they both log in, all four of them do like sessions over Zoom, like music. It's not like they're just- I mean obviously they talk every day over FaceTime, but it was nice to do like music sessions over Zoom or magic sessions.'</i> (G42, Other staff)</p> <p>Q3.2.3 <i>'I saw her twice a day on Zoom throughout lockdown. And she really took to it, she loved using Zoom. And kind of I think really found it quite funny and quite enjoyable...it seemed clear that she got a lot from the feeling of control that if she wanted to end the interaction at any point she could. I thought that must be quite a powerful feeling to say, oh actually if I'm not really enjoying this I can just press the stop button and it'll go away. And we kind of talked about that and she was like, "Yes, it's quite funny that I can do it with school".'</i> (G51, Other staff)</p>
Professional communication via technology (3.3)	<p>Q3.3.1 <i>'...talk to the people who were on the frontline, because remember I was relaying messages, they haven't got access to (hospital) emails or stuff like that, they were only hearing what I'm saying, and some of them basically just thinking I was saying it just for saying it, ... so someone from infection control talking to them would have gone down a lot better. When six months in when infection control took us in and facilities took us into the canteen, it calmed down a lot of nerves.'</i> (G47, Other staff)</p> <p>Q3.3.2 <i>'It would have made a huge difference because morale was quite bad at that point because, you know, no-one could go home for Christmas, it was a really stressful time, we were going to be redeployed again..., so it just felt quite bad. And I just thought, it's all well and good sending these emails, but you need to come and speak to staff and get a sense of what they're feeling. And, you know, I didn't understand it really because they're all sat in their office along the corridor.'</i> (G25, Nurse)</p> <p>Q3.3.3 <i>'I mean there's lots of wellbeing stuff...it's one of the things that I talk about a lot is that a lot of my staff and the cleaners and others are excluded from the wellbeing stuff because it's all online. So even today there's a dozen wellbeing messages that I've printed out and posted on the porters mess room wall. Whether they read them or not I don't know. It's difficult. They're difficult to reach.'</i> (G52, Other staff)</p> <p>Q3.3.4 <i>'....so it was just easy at the end of the day just to walk there and so, okay guys can we look at this together for five min? And that was done. While now you have to have 10 emails and do "Doodle polls", so everybody is free at the time and then organise a Teams and then technical issues. And it takes two hours to sort something that could be sorted in five minutes.'</i> (G30, Doctor)</p> <p>Q3.3.5 <i>'The remote working stuff generally has helped...trying to meet previously would have been a lot more difficult because you are trying to get people physically into a space whereas now people are a lot more willing to meet remotely and I think there is definitely a positive in clinical care....you can arrange meetings much sooner than we used to be able to.'</i> (G21, Doctor)</p>

As the volume and speed of government guidance expanded, there was additional pressure on staff to respond and cascade information quickly to all staff and patients/families (Q1.1.4). New systems were needed, with well-described cascading routes, in terms of what

needed to happen and when. Decisions focused on reducing throughput in the hospital, it quickly became a 'ghost hospital'. Everyone disappeared—siblings, parents, close family members, volunteers and staff. Changes needed to be made to what people wore (PPE),

where people worked (remote working, redeployment) and what people knew (about COVID-19). In addition, injections of equipment, education, training and support mechanisms were needed to manage and support change, with transparent decision-making at all levels. The extent and pace of change led to recognition of the need to support staff in different ways; this included establishing a well-being hub.

Impact felt unevenly

Staff workload was affected in varying ways, some had periods of less work, others had increased workload; the volume of work fluctuated as the pandemic progressed. At the start, routine surgeries were stopped, and a clinical prioritisation system was put in place. Initially, the ICU was quieter due to fewer children having surgery and a reduction in respiratory illnesses during lockdown periods when schools were closed, as children were not mixing. The delay in non-urgent surgeries had an impact later, where patients had progressed along the illness trajectory, so were 'sicker' and required longer postsurgery hospitalisations. New clinical studies were put on hold and resources focused on meeting the needs of other populations.

Porters had less workload associated with patients, fewer children needed to move around the hospital, such as to theatre/for imaging, and there were less laboratory samples to collect. Porters provided support to other teams within estates and facilities, collecting and moving supplies, such as PPE.

Although there were fewer patients in some specialities, this did not always mean less work. Staff needed to ensure patients and parents/carers had undertaken COVID-19 screening tests prior to coming to hospital, and tasks took longer due to PPE and additional infection control precautions (Q1.2.1). Some areas took patients from other hospitals, so those hospitals could focus on treating adults with COVID-19. For example, the neonatal intensive care unit (NICU) was very busy, they continued undertaking surgeries and admitted patients from elsewhere, adding more beds, which was stressful for some staff.

Cleaning work intensified for the domestic team, touch-points throughout the hospital (such as doors) were cleaned more regularly and more linens were used due to frequent changing of staff uniforms (Q1.2.2).

Areas of the hospital that focused on providing care to children with COVID-19 felt the intensity of their work was not widely recognised (Q1.2.3).

Teamwork

Teamwork was impacted; there were changes to teams due to redeployment or staff at home shielding. Staff sickness with COVID-19 and isolation policies following a contact further depleted the teams. Movement of people had a huge effect on some services; staff who remained on-site had to take on extra work, without full multidisciplinary team presence.

Social distancing meant staff could not take breaks together and teams were unable to come together for meetings in the same physical space; they had to plan who would be on-site each day and require office space. This affected how teams usually worked together, for example, ad hoc conversations could not happen (Q1.3.1).

A therapist described how they would usually receive verbal referrals but as they were working off-site this was not possible, consequently they worried about missing children who would benefit from their sessions. However, on-site clinical staff supported getting the service up and running remotely, rapidly implementing an online referral system.

Many participants felt working during the pandemic highlighted how well their team pulled together to support each other. Staff who were redeployed within the hospital spoke about how they were welcomed into new teams and supported in their new role, with staff checking on their well-being.

Wearing PPE impacted on teamwork as it made communication more difficult, it also made it harder to get to know unfamiliar staff. One participant described how they got used to the discomfort of wearing PPE but did not adjust to how it affected communication (Q1.3.2).

A new disease/a different type of child

COVID-19 posed most risk to older adults, with children and young people experiencing mild symptoms. However, a small number developed PIMS-TS a few weeks after infection, with some requiring admission to ICU. Caring for these patients was difficult as knowledge about the condition was from current patients (Q1.4.1).

Staff described how children on the 'COVID ward' were 'different' from their usual ICU patients; they were older, usually awake rather than sedated and did not always have a parent present. They were frequently distressed, although increased anxiety was not universal and some children coped well. These children needed more support from staff which, as one participant described, was not always easy due to PPE and children's distress (Q1.4.2).

Play staff were redeployed to ICU to provide activities for these children and made activity packs available for weekends. Concerns about the unknown lasting impact for these children were voiced, particularly on their mental health.

Families paid the price

Change was felt by everyone. For families, imposed restrictions on visiting, communication and interactions with staff were described. Staff articulated perceptions and concerns about the resulting longer term psychosocial impact on families. See [table 3](#) for quotes.

Communication changed

Face-to-face communication between staff and families was impacted by PPE, with communication becoming less responsive and free flowing, less collaborative with a tighter boundary (Q2.1.1).

Staff found it harder to support families when wearing face masks; non-verbal cues were often not observable, and it was more difficult to judge emotions and make connections with families (Q2.1.2). They described difficulties hearing someone when in full PPE and being unable to touch a parent or provide usual non-verbal support (Q2.1.3, Q2.1.4). PPE also impacted staff's ability to communicate with children; rapport with children was just not the same (Q2.1.5).

Visiting and social distancing

Staff highlighted their inability to care for children within a family unit in the usual way. Collaborative and family-centred decision-making was compromised; parents could not support each other in person and had to take sole responsibility when they were the resident parent (Q2.2.1). Staff described situations where parents had to receive 'bad news' on their own. Some end-of-life discussions were conducted remotely (Q2.2.2), although it was soon realised that presence of both parents should be allowed when their child was receiving palliative care (Q2.2.3).

On NICU the absence of a second parent had an impact on the parent who was present, who had to hear news or make decisions without the absent partner, and on bonding between the absent parent and the baby (Q2.2.4). Staff expressed anxieties about the longer term effects for new mothers coping on their own while still recovering from giving birth (Q2.2.5).

Staff spoke about parents missing time with their baby because of their uncertain COVID-19 status and the one-parent visiting policy (Q2.2.6). The absence of siblings, grandparents and other family members was mentioned (Q2.2.7). Single parents, who usually relied on other family members for support, were particularly highlighted (Q2.2.8).

Staff described situations where social distancing impacted the child—for example, children who had to go to theatre had a very different experience to those before the pandemic, particularly if they were COVID-19 positive, as staff would collect them in full PPE from the ward, without an accompanying parent present (Q2.2.9).

Awareness of the heightened vulnerability of children throughout this time was apparent among staff, who tried to normalise things as much as they could, such as celebrating birthdays, but even that was hard when visitors were restricted (Q2.2.10).

Staff described how, because parents were on their own and staff such as psychologists were working remotely, support from staff on-site was more 'intense', including from staff groups who might not usually have those kinds of interactions with parents (Q2.2.11).

Decision-making and lack of spontaneity

Restrictions impacted how decisions were made and, often, who was involved, for example, regarding further surgeries or making provision for a child to go home,

such as organising home adaptations and further consequences from delays in treatment (Q2.3.1).

The need for separate conversations with each parent meant decision-making could take longer and was less spontaneous; when this involved a new diagnosis or end-of-life care in particular, a difficult situation was made even more difficult for parents. Specific examples of how COVID-19 and the one-parent visiting policy impacted decision-making were given by a nurse who described a family electing not to have their child transferred between hospitals because the parents would not be able to be together when life-sustaining ventilation was withdrawn.

The digital world

The initiation and increased use of digital technologies featured prominently in interview narratives, facilitating remote working for staff, delivery of aspects of care and treatment for patients and communication with families whose presence was restricted by visiting policies. Staff communication was via email and online access/Zoom became widely used. See table 4 for quotes.

Delivery of clinical care

The use of video calls as an alternative to face-to-face outpatient appointments, including presurgery and postsurgery, and ongoing assessments in a wide range of specialties was reported as positive overall. Despite some technical and access problems for staff and families, benefits to highly vulnerable patients of the virtual consultations were perceived (Q3.1.1, Q3.1.2).

The specialised nature of the hospital meant that patients who would have endured a long journey from anywhere in the country, sometimes requiring an overnight stay, could be reviewed from home, a development predicted to continue after pandemic restrictions (Q3.1.3), with wider benefits to families and the environment (Q3.1.4).

Parental and child familiarity with video calls from homeworking and schooling was seen to build confidence. Participants expressed how these were most effective with families where there was an established relationship; for new families and children with disabilities, engaging and eliciting good quality assessments in this medium was problematic (Q3.1.5).

Benefits were identified for a hybrid model of in-person and remote assessments increasing capacity to focus attention on areas of specific need (Q3.1.6).

Online hospital school, play and therapy

Infection control regulations rapidly closed the hospital school and playrooms; staff quickly adapted to delivering sessions via Zoom to facilitate play, education and therapy for individuals and groups (Q3.2.1). For children with complex needs, hybrid models with one professional working face to face with the child and one supporting via Zoom were adopted. Nurses were reported as instrumental in facilitating online delivery of therapy and schooling, indicating recognition of the importance of

these interventions to children and families (Q3.2.2). For children confident with Zoom, participants suggested they felt an extra sense of control (Q3.2.3). Accessing and benefiting from these online services was not the same for all children, for example, neonates did not respond to music therapy as well as an in-person session, and for children with complex needs schooling was not as effective online. Despite positive feedback from families for online services, their desire to resume face-to-face services was reported as unanimous. Maintaining benefits from online learning success to extending access to education for children with health issues was highlighted as a future ambition (Q3.2.1).

Professional communication via technology

Communication between staff quickly shifted from planned and ad hoc face-to-face to digital approaches. This included remote working as part-time or full-time activity for many staff, internal and external meetings and teaching via Zoom. Email became the dominant approach to communicating with staff (Q3.3.1).

The necessity for this approach was recognised, with fast-changing regulations, rapidly informing staff groups where patients with COVID-19 were located in the hospital, availability and delivery of staff well-being support. Concerns were expressed about reach to certain staff groups and sensitivity in accounting for the different situations of staff (Q3.3.2, Q3.3.3). Digital communication could not easily replicate spontaneous and ad hoc conversations that teams had relied on to manage patient care and deliver specific services within the hospital (Q3.3.4).

Alongside more formal digital communication, participants described a range of WhatsApp groups, created as sources of valued support for teams who had little face-to-face contact. For others with management responsibilities, attending to these multiple groups became exhausting as staff expressed anxieties and concerns about hospital policies. Access to education, research meetings and conferences increased as did attendance at regular staff meetings (Q3.3.5).

DISCUSSION

We have reported experiences of a broad range of staff in a specialist children's hospital during an unprecedented period of global change and challenge to healthcare provision. Before the pandemic, this hospital's key service partnerships nationally and internationally related to provision for children with highly complex, rare and life-threatening conditions, often requiring critical care facilities. In early 2020, in response to the rapid evolving crisis, the hospital developed a further strategic role to contribute to supporting the changing needs of healthcare services within North Central London (<https://nclhealthandcare.org.uk/about/>); this expansion in focus was a further change for staff to incorporate into their working lives during the pandemic. As illustrated

within our three themes, changes that related to the COVID-19 pandemic resulted in disruption, opportunities and inequity of experience.

The restrictions placed on who could be present in the hospital were a major change to the way care for children in hospital has been managed for the past 50 years.²² Infection control rules meant no siblings or extended family could be present. In contrast to open parent visiting, with provision for overnight stays, only one parent could be designated to be with their child at any time during admission in the early months of the pandemic. This disruption to caring for children as a family unit has also been reported in other studies which have, in addition, included data from parental perspectives alongside professionals.²³ In a study from the USA, parents who were able to be with their child also reported less contact with clinical staff, reducing information exchange opportunities in comparison with their prepandemic hospital experience, a change acknowledged by clinicians. In our study, participants highlighted greater impact on three patient groups: older children in ICU who were awake and unaccompanied, children receiving palliative care and neonates. There is now a body of published evidence to support these findings related to children's intensive care²⁴ and neonatal intensive care,^{25–28} where parents echoed the views of our participants citing the isolation of being the parent in the hospital or at home during an admission. The rapid introduction of restrictions and the slow and uneven return to parental and family-centred care have implications for longer term impact on families as well as staff who provided care during these restrictions.

Digital technology use was initiated at this hospital in the context of the relatively recent introduction (March 2019) of an electronic patient record system (EPIC), acting as a hub for all information and communication relating to individual patient care and treatment.²⁹ The system includes a parent/patient portal. Linking this system securely to videoconferencing for patient consultations, with our hospital clinicians and, over time, partner clinical staff in other National Health Service trusts, became part of daily work for clinical staff.³⁰

In identifying benefits and challenges associated with these modes of clinical care and organisational management, participants showed that a blanket approach was not experienced equitably by staff groups or families. As other studies have highlighted, reduced travel, avoidance of public transport and being in familiar home settings for video consultations benefited some children and families.¹⁵ However, this mode of consultation did not work equally for all children and there was limited information provided on decision-making pathways for digital or face-to-face consultations. This may explain in part the findings of increased rates of further follow-up after these types of consultation.³⁰ Parents have also raised the need for a more negotiated approach to which consultations are prioritised as face to face.²³

Although provision of play, school and therapy services online mitigated the impact of highly restricted



face-to-face delivery of this critical provision, enabling children in hospital to continue developmental activities, a preference for returning to face-to-face interactions dominated. Alongside this is important learning about the potential benefits of virtual delivery to expand children's access to play, school, therapies and interactions with family and friends in specific circumstances where their illness circumstances may be a barrier to in-person interactions.³¹

Inequity of benefits of digital modes of communication was also experienced by staff, in particular those whose day-to-day work practices did not involve regular use or access to email, for example, porters and domestic staff. The move from all face to face, or combination of this with digital communication, to an almost exclusive reliance on digital communication with staff was highlighted as reducing access to and understanding of essential information. For some, this accentuated already felt power differentials between staff groups, leading to expressions of not being as valued by the organisation. In adult services literature this has been articulated most frequently in relation to provision of PPE, which was not a concern raised by participants in this study.^{19 32} In common with staff in adult services, some of these experiences were mitigated early in the pandemic by the overtly expressed public support for all healthcare staff.³³ Our data illustrate that for some staff, not being valued linked more explicitly to hierarchies, creating tensions and a feeling that management staff working remotely were not in tune with staff delivering care on-site.³⁴

As articulated in our first theme, staff experiences of change and disruption to their working and personal lives during the pandemic were uneven, nothing was the same; however, the impact on individuals varied. Workloads increased for some and reduced for others; inpatient populations also varied in age, diagnosis and acuity compared with the normal patient cohort. Key variations that impacted on staff were the extent to which their team was disrupted, through redeployment, remote working and on-site infection control practices and colleague illness. Although the formal infrastructure of support was recognised, the most valued and effective support was from close colleagues and family. As studies of other healthcare worker populations have demonstrated, supporting colleagues was a powerful mitigating factor within the rapid changes and disruption to staff in a specialist children's hospital during the pandemic.³⁵

Data for this study were collected from a single inner-city specialist children's hospital with a self-selected sample of staff. We were unable to recruit all our intended staff populations and recognise as such that some voices are absent, for example, junior doctors reported elsewhere³⁶ changes to workload, staffing levels, relationships with colleagues and patients, which led to uncertainty around new ways of working. The change in patient profile, the expansion to support children with mental health concerns and those requiring general paediatric care required new ways of working in our hospital.³⁷ The

absence of some staff voices is important, limiting our learning of how this change impacted on delivery of care. Staff whose experiences were either too raw to discuss or felt they had limited experience of change at work may also have been under-represented.

CONCLUSION

Providing care and treatment for children and families changed profoundly during the pandemic, particularly during lockdown periods. Adaptations to deliver clinical care, play, schooling and other therapies online were rapidly put into action; however, benefits were not universal or always inclusive. The disruption to a central principle of children's hospital care—the presence and involvement of families—was of critical concern to staff. It will be essential for organisations to learn from this and other compelling evidence to plan and manage future pandemics to reflect the different and established models of caring for children and young people.

Author affiliations

¹School of Health Sciences, University of Surrey, Guildford, UK

²Centre for Outcomes and Experience Research in Children's Health, Illness and Disability (ORCHID), Great Ormond Street Hospital for Children NHS Foundation Trust, London, UK

³Rapid Research Evaluation and Appraisal Lab (RREAL), Department of Targeted Intervention, University College London, London, UK

Twitter Susie Aldiss @AldissSusie, Faith Gibson @ProfFaithG, Cecilia Vindrola-Padros @CeciliaVindrola and Jo Wray @dr_jowray

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ORCID iDs

Susie Aldiss <http://orcid.org/0000-0002-6015-6993>

Faith Gibson <http://orcid.org/0000-0002-8125-4584>

Cecilia Vindrola-Padros <http://orcid.org/0000-0001-7859-1646>

Jo Wray <http://orcid.org/0000-0002-4769-1211>

Paula Kelly <http://orcid.org/0000-0002-0581-5474>

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Supplemental file

‘They could not see our eyes, they cannot see our faces, they do not know who we are and that is hard’: a qualitative interview study with staff caring for children and families in a UK specialist children’s hospital during COVID-19

INTERVIEW GUIDE: HEALTHCARE WORKERS (HCWs)

Date:

Respondent Information

Gender	Age	Ethnicity	How long in your professional role (years)	Highest Education level	Role/position	Follow-up?

“The interview takes about 20-25 minutes on average but it can go on longer depending on how much you want to say”

First, I want to ask you about your work and the services you provide. (This section not COVID-19 specific).

1. Background: Can you tell me about your role? (Daily tasks, where in the hospital, responsibilities)

- *Can you tell me a bit about your role?*
- *Please briefly describe your normal daily tasks/responsibilities.*
- *Do you have a carer role outside of the hospital?*

Now I want to ask you about health services during COVID-19 outbreak.

2. Have you been in contact with patients who had suspected and/or confirmed COVID-19?

Probes:

- *In what capacity?*
- *How have you found working around these patients?*
- *PPE physical effects? (E.g. dehydration, muscle ache, irritation)*
- *What psychological/emotional impact did this have on you?*

3. How has the COVID-19 outbreak affected health services in your department?*Probes:*

- *How has this affected your normal daily tasks/responsibilities? Change of role?*
- *Impact of COVID-19 on the delivery of services to non-COVID-19+ patients (i.e. cancellation of elective surgeries)*
- *Can you tell me about the impact of visiting for family members (parents, siblings, extended family)*
- *Are there any other of the routine patient services for children and families that have impacted (play services, hospital school, activities available in the hospital, access to child orientated spaces)*
- *What tasks are you able to do more or less effectively?*
- *How do you manage the isolation of suspected cases and confirmed cases?*
- *Has there been appropriate transfer of patients within and out of hospital?*
- *Has there been an impact on staff's ability to make diagnoses and act on them?*
- *Supply of drugs, equipment and PPE?*
- *Redeployment of staff from or within your health facility*
- *Motivation and capacity of staff to work? (probe: exhaustion, fear, etc.)*
- *Psychosocial and moral support – did they receive any? Enough?*

5. What were the preparedness strategies implemented locally (department, hospital or Trust)?

- *Did you feel these strategies were enough?*
- *What do you feel was particularly successful?*
- *Should the Trust have prepared differently?*
- *Did you receive any training? (including but not limited to PPE training such as mental health and well-being training)*

6. Do you currently have any concerns or fears in relation to ...

- Work
- Your personal life (personal health, family, responsibilities)
- The national effort

7. Over the past months, have you experienced any problems with:

- Hours and quality of sleep
- Eating (underrating, overeating)
- Concentration (trouble concentrating when doing simple tasks)
- Self-efficacy (believe in ability to succeed)
- Worry/anxiety (frequency in last week)
- Drinking or drug use (more or less frequent than usual)

8. Mental health support (to address risk of moral injury, trauma and developing severe mental health problems)

- Are you aware of any support available for staff wellbeing and mental health?
- Have you had the opportunity to talk about your mental health with your supervisor/team leader?
- Have you had worrying/traumatic experiences in the last week? Did you receive support after? If so, what type of support?
- Interactions between peers: Do you have time to socialise with your team? what has changed with COVID-19?

9. Are you using local data to inform response efforts?

- What type of data?
- Who normally collects the data?
- How are data shared?
- How are data used to make changes in practice?

10. How have health services been strengthened, or how could they be strengthened during the outbreak?

Probes:

- **Support to HCWs from the health system and partners?**
- **Capacity for rapid response**
- *Policies? e.g. Guidance and emergency protocols?*
- *What would help HCWs to maintain normal services as well as COVID related services?*
- *If GP: Health promotion and community engagement. How?*
- *If GP: Linkage to other support organisations, e.g. charities, schools?*

11. Is there anything you feel should be changed to make health services more effective in future emergencies?

Probes:

- **Support to HCWs? From whom and How?**
- *Coordination and official guidance of COVID-19 response.*
- **Early detection and reporting.**
- *On-going health promotion and community education. E.g. potential sources of infection, safe practice?*
- *Mobilisation? E.g. identifying and coordinating trusted community volunteers and support?*
- *Disease outbreak control activities?*
- **Testing (public and staff)**

12. Is there anything else you would like to mention that you feel is important?

Thank you for your time and for sharing your opinions and experiences with us.