

Expanding Hospital Capacity during the COVID-19 Pandemic: The Family Voice Matters

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Abstract

Introduction: During the initial COVID-19 response, this children's hospital reduced its inpatient capacity by 52 beds with double rooms' conversion to single patient occupancy, causing significant capacity constraints. To solve this challenge, the family perspective was engaged to safely redouble patient rooms and expand capacity as clinical activity increased during the COVID-19 response. **Methods:** The team conducted qualitative descriptive interviews with parents of children undergoing congenital heart surgery admitted to the inpatient cardiac unit in a 404-bed free-standing children's hospital. A 2-week pilot study utilizing patient-specific inclusion criteria, newly developed patient room guidelines, universal masking, physical distancing, and inpatient room enhancements with parent COVID-19 testing was conducted. **Results:** Interviews were conducted [pre (n = 7) and post (n = 6)] regarding patient room redoubling. Participants perceived utilization of double rooms as safe with increased protection, including universal masking, physical distancing, room enhancements, and increased bathroom cleaning. However, some families verbalized anxiety regarding visitation restriction to one parent at a time at the bedside. Additional concerns were voiced around the timing of communication about the need to be placed in a double room. In response, visitation increased to 2 parents at bedside and communication of utilization of double rooms was included in preoperative preparations postpilot. Inclusion criteria were expanded to patients of all ages and included full use of shared in-room bathrooms by parents and patients. **Conclusions:** Parents perceived patient room redoubling as safe and family centered. Findings from the pilot study were used to scale broad utilization and increase access to care across the institution. (*Pediatr Qual Saf* 2021;6:e411; doi: 10.1097/pq9.000000000000411; Published online May 19, 2021.)

INTRODUCTION

Problem Description

Hospitals across the country responded to the COVID-19 pandemic through multiple changes creating complex healthcare leadership challenges with limited evidence to guide the response. During the initial COVID-19 response, this children's hospital reduced its inpatient capacity by 52 beds converting double occupancy rooms to single patient occupancy, causing significant capacity constraints. As the incidence of COVID-19 infection continues, institutions must consider how to safely reopen services. The patient and their

families' voice are essential to ensure their needs are met in the new normal that every institution faces.

Available Knowledge

The use of double rooms for cohorting COVID-19 positive patients is 1 way to enhance hospital capacity.¹⁻⁴ However, there is no published evidence to guide utilization of double rooms during the COVID-19 pandemic for non-COVID-19 pediatric patients and their families.

Rationale

To support an increase in clinical activity, utilization of double rooms is a key component to ensure patient access and mitigate hospital capacity constraints. Engaging patients and their families as essential stakeholders in the development of hospital policies and care delivery processes is well described.⁵⁻⁸

Specific Aim

To understand the family perspective regarding the safety for utilization of double rooms during the COVID-19 pandemic.

Clinical Setting

The cardiac inpatient unit is part of a large Heart Center in a 404-bed free-standing children's hospital in the northeast United States. This 44-bed inpatient unit cares



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for cardiovascular patients from premature infants to older children and adults. In the 44-bed unit, there are 10 double rooms, which equal 20-bed spaces.

In response to the COVID-19 pandemic, the hospital had implemented a policy of universal masking of patients, parents, and staff. Before hospital admission, patients underwent COVID-19 testing by hospital staff. Parents, visitors, and staff completed a daily screening and COVID-19 symptom attestation. An emphasis was placed on hand washing and physical distancing.

METHODS

Following hospital IRB policy for quality improvement activity, a Plan-Do-Study-Act (PDSA) framework guided this initiative to use double rooms (Fig. 1). During the Plan phase, congenital heart surgery patients and families currently admitted to the cardiac inpatient unit were invited to provide their perspective on utilization of double rooms during COVID-19. Using a purposive approach, prospective participants with children of various ages and length of hospital stay were identified by clinical nursing leadership and upon agreement were interviewed separately by a nurse scientist. Each of the zoom interviews was conducted in the patients’ hospital room and was guided by four questions (Fig. 2). All parents who were approached were interviewed, except 1 family due to their child being in a procedure for a large portion of the day. Content analysis was used to identify themes and summarize parent recommendations. The team presented a report summarizing findings including parent recommendations to Heart Center and hospital leadership.

In the Do phase, using the qualitative information, an interprofessional team that included nursing, medical, environmental services, infection prevention and control, engineering, safety, laboratory control, information

systems, administration, and marketing staff established patient-specific inclusion criteria, created physical distancing floor and wall decals, installed Plexiglass room dividers, developed in-room guidelines that included a restriction of one parent at a time in the room. This information was provided to parents in the form of an educational handout and video (Fig. 3). The 3-minute video gave an overview of what parents can expect if staying in a double room and describes the increased precautions to ensure patient, family, and staff safety. Images of double rooms were incorporated into the educational video. Parents received the link to the educational video and handout before hospital admission and then were asked to watch the video again before being transferred to the cardiac inpatient unit. Guidelines were developed to increase the frequency of cleaning of the patient bathroom and high-touch surfaces throughout the day. Nursing staff was trained to guide parents through a self-administered COVID-19 test that would be carried out before transfer into the double room (Table 1).

In the Study phase, families meeting inclusion criteria were admitted to a double room on the cardiac inpatient unit over a 2-week period. Following discharge, the nurse scientist interviewed each family about their experience of being admitted to a double room. Information from interviews was summarized with parent recommendations to update the Heart Center and hospital leadership. In the Act phase, pre and post parent perspectives were used to inform systems and guiding principles for use of double rooms across the organization (Table 2).

RESULTS

Demographics

Phase I Preutilization

Seven interviews were conducted via Zoom. One of 7 families had been discharged, but continues to receive

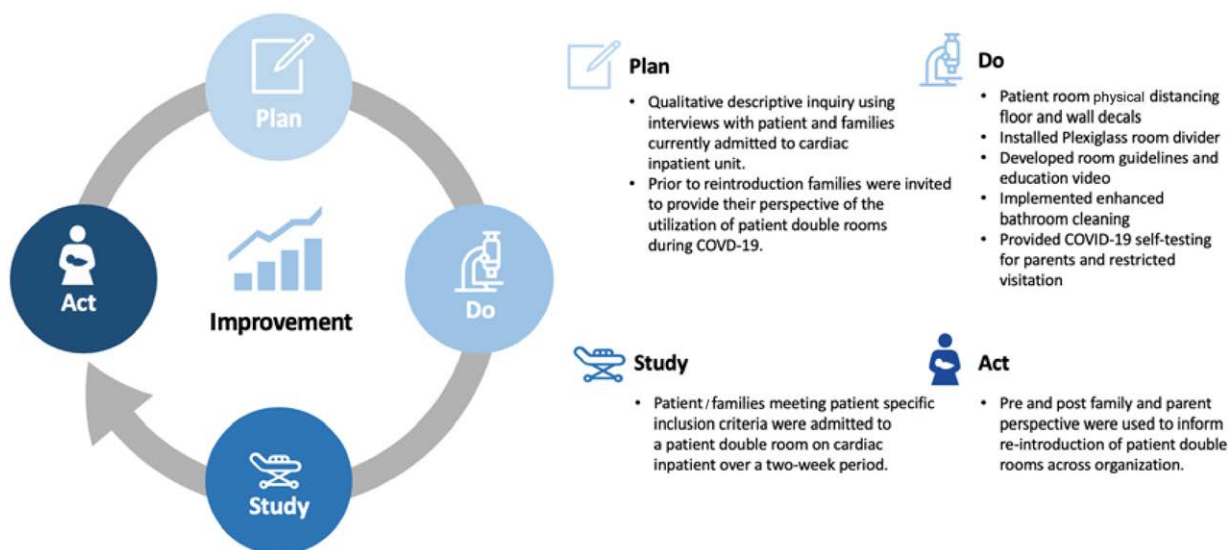


Fig. 1. PDSA cycle.

Four questions guided the pre and post utilization interview:

1. Can you tell me how you feel about the current level of COVID-19 safety measures throughout Boston Children's Hospital and more specifically on the cardiac inpatient unit?
2. Can you tell me how you would feel regarding the level of COVID-19 safety when (if) your child is admitted to a patient double room?
3. Can you describe ideas that would increase your feeling of safety in a patient double room?
4. Is there any other information that you believe is important to our discussion?

Fig. 2. Interview questions.

ongoing care in the Heart Center. The remaining 6 families were currently admitted to the inpatient cardiac unit post cardiac surgical procedure (25% of current census). One of the participants was an adult with congenital heart disease. All others were parents, with one or both parents participating in the interview. Participants identified as primarily English speaking and were both White and non-White. For most of the participants the total length of hospital stay, including the cardiac intensive care unit (CICU), was greater than two weeks. The average total length of hospital stay was 71.3 days (range: 15–155 d). The average patient age was 1 year old (range: 1 mo–58 y). Saturation of findings was achieved after interview five, an additional two interviews served as confirmatory to the findings.

Phase II Postutilization

Six interviews were conducted via phone following patient discharge. Each of the families had been admitted to a double room on the inpatient cardiac unit. The time in the double room varied between 2 hours and 4 days and each of the participants was a parent of an infant/young child postcardiac surgery. Participants identified as primarily English speaking and were both White and non-White. The average total length of hospital stay was 7 days (range: 4–15 d). The average patient age was almost 5 months old (range: 9 d–11 mo). Saturation of findings was achieved after interview 4, an additional 2 interviews served as confirmatory to findings.

Themes

Two general themes emerged from interviews: “Current Level of Safety” and “Safety with use of Patient Double Rooms.”

Preutilization “Current Level of Safety”

Overall, all participants perceived the level of safety during the time of COVID-19 throughout the hospital

and on the inpatient cardiac unit as “good” or “very good.” All believed staff caring for their child and their families prioritized safety and were consistent in providing safe care.

The feeling of safety as a priority started at the time of “pulling into hospital patient garage and having our child tested.” “Everyone seems to know what to do at the hospital making us feel very comfortable and safe.” A few of the families were admitted in early March and verbalized similarly; “in the beginning things were changing so quickly it seemed every day we and the nurses and doctors were doing something different...now it seems stable and almost routine.” All verbalized appreciation of the screening process and distribution of masks. The universal use of masks and availability of sanitizer was a key component to feeling safe.

Postutilization “Current Level of Safety”

Similar to families interviewed during Phase I preutilization, participants perceived the level of safety as “very good.” As one mother stated, “the nurses were amazing they always answered our questions constantly sanitizing their hands when touching things and our child.” Another parent verbalized, “our doctors and nurses took good care of us and made us feel safe on the floor.” Another family said, “we came for the care, there were other hospitals we could have gone to, but we came here and were not disappointed.”

Preutilization “Safety with use of Patient Double Rooms”

The utilization of double rooms on the inpatient cardiac unit from, the perspective of all participants, would still be “safe” if there was continued use of masks in rooms, hand sanitizer, cleaning supplies for shared bathroom use, and safety guidelines for patients and families.

As one parent stated, “while we would prefer a single room, we understand the need to use all beds even in double rooms.” To maintain the same level of safety,

Family Education Sheet



Staying in a Double Occupancy (Shared) Room during the COVID-19 (Coronavirus) Pandemic

What is a double occupancy (shared) room?

A double occupancy room is a shared space where two patients and their caregivers stay during a hospitalization.

Each room has a shared sink, bathroom, and shower.



How do we decide who stays in a shared room?

Most patients are eligible to stay in double occupancy room. At times, there are medical reasons when a patient requires a single or private room. Patients may need to stay in a shared room at any time.

The charge nurse makes room assignments based on age, gender, and medical considerations.

How do we prevent infection in shared rooms?

All staff practice universal precautions, including hand hygiene, before and after contact with patients.

All employees are required to wear masks at all times.

Shared rooms may only be used for patients & visitors who have tested negative for COVID-19.

All visitors and patients are required to wear masks at all times as outlined in the BCH house rules (except when eating, drinking, or sleeping).

Several **environmental enhancements** have been made to double occupancy rooms to promote safety and/or reduce the spread of COVID-19.

- Clearly outlined personal space for sleeper chairs, cribs, and personal belongings
- Two, non-permeable curtains extending the length of the room

- Plexi-glass dividers separating the shared workspace
- Access to disinfection wipes for personal use on high-touch areas within the room.

Visitation Guidelines

All visitors are screened for sick symptoms or sick contacts at the lobby entrance, prior to entering the hospital.

When entering the floor, visitors are also required to check in at the front desk

Any visitor who is sick, or has been in contact with a sick person will be asked to leave the hospital -and/or stay home.

Each patient may have 2 designated adult caregivers per hospitalization. While in a shared room, only 1 visitor is allowed at the bedside at a time. This visitor may rotate with the other approved visitor as needed.

Visitors under the age of 18—including siblings—may not visit.

We strongly discourage visitors from leaving the hospital throughout the day, after initial lobby screening.

How can I help to prevent infection while inside the hospital?

- **Maintain social distance.** This means you and your child should avoid contact with other people. Keep a distance of at least six feet between yourself and others. Adhere to the outlined spaces in the room for your child and family.
- **Wash your hands often with soap and water** for at least 20 seconds. Any kind of soap is OK, including natural soap. Or, use an alcohol-based hand sanitizer with 60-95% alcohol. Wash your hands with soap and water if they are visibly dirty. Avoid touching your eyes, nose, or mouth
- **Cover your nose and mouth** when you cough or sneeze.
- **Clean and disinfect frequently touched areas and surfaces** (i.e. toys and doorknobs).
- **Please keep your mask on, at all times** (except when eating, drinking, or sleeping).

Other questions or concerns?

Please ask any member of your child's healthcare team for assistance.

The charge nurse or nurse leader can help to answer any other questions or concerns related to rooming in shared spaces.

Thank you for help in improving patient safety and reducing the spread of COVID-19.

Fig. 3. Patient double room information sheet.

participants consistently said, “guidelines or rules that includes masks at all times, shared bathroom use, and need for social distance would be necessary.” A number of families suggested the use of a physical barrier between bed spaces “similar to Plexiglass used in the waiting rooms.” All participants believed safe shared bathroom use could be accomplished with cleaning supplies to wipe down toilet, sink and door handles.

Regarding post-CICU surgical care, all patient/families preferred continued recovery on the cardiac inpatient unit

even if there was only a double room available. Having their child cared for by cardiac staff was a priority over a single room. As one participant stated, “for me the priority is having the cardiac specialist nurses and doctors continue to care for my child after we leave the ICU even if it means sharing a room on the cardiac floor...it’s making sure we get the best outcome.” Another parent shared, “if anything goes wrong the cardiac team can get him back to the ICU quicker because they know what to look for.”

Table 1. Patient-specific Inclusion Criteria for Patient Double Room Utilization

Pilot Phase Inclusion Criteria
Bathrooms open with increased cleaning (ESD and parent protocol) but, may only be used by parents, not by patient
Prioritize diapered or nonambulatory children/infants (not needing a bathroom)
Negative COVID test for cardiac surgery patient on admission and negative COVID-19 parent test upon transfer to inpatient cardiac unit from cardiac intensive care unit
No transmission-based infection prevention precautions in place for either patient in the double room
No scheduled/required aerosol generating procedures
No immunocompromised patients (eg, asplenia/polysplenia and pre/posttransplant)
Prioritize short-term stay patients (24–72 h).
Continue daily visitor screening process on entry to the facility and for 8 East (attestation at 8N front desk)
Provide cleaning supplies (disinfectant wipes) for shared bathroom and high-touch surfaces
Encourage frequent hand hygiene by parents/visitors in the room

Table 2. Post Double Room Utilization Pilot Modified Criteria

Post Pilot Expanded Criteria
Patients and families can share in-room bathroom
Patient population expanded by age with expansion of ability to use shared bathroom
Two visitors per patient may remain at bedside with patients in double room
Length of stay requirement to short term patients removed

A few parents brought up the consideration of testing for COVID-19. One participant believed “maybe some type of testing should be considered if staying in the double room longer than a week...I understand there is testing before admission but should there be some type of weekly surveillance for the child.” Another parent verbalized, “although it would be nice to have parents tested when sharing a room this is probably not realistic given cost and limited tests.”

Parent visitation and the number of people in a double room at the same time were topics brought up by many participants. One concern was that if they were placed in a double room, would this limit visitation from 2 parents to one parent. If this were the case, participants would be uncomfortable with this change in policy. As one parent stated, “it would be very hard to not have both of us be here when we can.” Another participant believed it would be even more important to limit number of health care team members in the room at the same time; “I understand there are times when it is necessary, but the team should consider limiting the traffic especially in a double room.”

When asked about delaying surgical care due to limited single rooms, all patient/families preferred not to delay even if their child was deemed “stable,” understanding this may mean part of their recovery would be in a double room. Participants verbalized the anxiety and stress

of waiting to have their surgery. As one parent stated, “the worry of waiting and watching your child become worse is very hard especially if it comes down to sharing a room.” All families believed communicating the possibility of sharing a room up front, before admission for surgery and at time of transfer from CICU was necessary. As one participant verbalized, “we trust if the team says it’s safe to be in a double room and that everyone continues to act safely with masks and other considerations, that’s all we need.”

Postutilization “Safety with use of Patient Double Rooms”

Families continued to believe they would be safe in a double room during COVID-19. However, each of the families verbalized the initial anxiety and stress when presented with leaving the CICU and being transferred to a double room in the inpatient cardiac unit. This was largely due to the restriction of one parent at the bedside at a time. For families, this stress was not only emotional, but also financial. One family who was from out of state verbalized, “we were happy to leave the ICU as it was another step closer to home, but we then had to look for a hotel room, it was hard to be together when the doctors rounded and hear the information together.” Another parent stated, “we leaned on each other for support so to then be separated was very hard.”

Another source of stress was timing of communication regarding transfer to a double room. For one family, they recalled hearing from the nurse before admission that this may be a possibility; however, it was not until the night before they were to be transferred that they understood. “We were focused on the surgery and all the other things we had to do to get ready so we weren’t thrilled, but the team helped us get ready.” The majority of families did not remember or believe they were told “they would be in a single room the whole time.” As a result, most parents believed this information should be communicated earlier on, but realized it was difficult to know ahead of time. One family stated, “we were tired and confused, it would have been helpful to know about this sooner than when we found out, but we understand the need to use all the rooms.”

While each of the families experienced an increase in stress, all agreed on the need to use all available rooms, and after working with staff, felt it was still safe for purposes of COVID-19. As one mother said, “I was fearful but, the nurses helped me, they answered all my questions and helped me with the COVID test... Once we got to the room we saw the signs and saw that it was ok.” Another parent said, “the video about the room helped me a lot.”

Families appreciated the COVID-19 self-testing, but for some the reasons why they were being tested were not clear and it was not linked to their being transferred to a double room. It was felt the COVID-19 test should be carried out by a staff member, similar to how testing for their child is carried out. One family expressed, “We did not have as much confidence when we did the test

as compared when the team tested our son...we think it should be the nurses who do the test on the parents.”

All families reported that when sharing rooms, each family used masks and there was no problem with the space. All were glad to have access to a bathroom that was located within the room. One mother stated, “we were worried that we would have to use a public bathroom.” For one family, the use of in-room bathrooms was a concern due to not having wipes or cleaning materials in the bathroom. They also believed the bathroom should have received more cleaning than they observed. As the parent went on to state, “I did not see more frequent cleaning.”

DISCUSSION

Summary

The global COVID-19 pandemic has provided an unprecedented opportunity to enhance care through innovative care delivery models. In particular, patient safety and infection prevention implications of caring for 2 patients and their families in a double room, during a pandemic required a family-centered solution. Using the qualitative information from the families with the interprofessional team was critical to designing an effective care model before the launch of this pilot study. Confident and consistent messaging by every member of the clinical team to families was central to a positive result.

Most importantly, successful adaptation of this change process was the perspective and voice of those whom we serve. The use of private rooms increases patient satisfaction, and not surprisingly when asked, our parents preferred a single room rather than a double room.⁹⁻¹¹ However, when faced with this decision, our patients and families in partnership with hospital leaders and interdisciplinary staff were best able to design the safest and most effective systems of care.

The lessons learned from this pilot experience were shared with staff throughout the hospital system to implement redoubling of patient rooms for all medical, surgical, and specialty programs. More than 150 patients have been successfully admitted and discharged from double rooms over the subsequent 4 months with all parents testing COVID-19 negative, no subsequent hospital transmission of COVID-19 between patients in double rooms, and a high level of satisfaction from patients, families, and staff.

Implementation of innovative strategies will continue to require vision and perseverance by leaders and staff from all organization levels during this pandemic. We will continue to ensure that our institutional guidelines and policies are consistent with state guidance. We acknowledge that it may be necessary to evolve our practice accordingly. Information gained from this demonstration of change can be applied as we move forward into fall 2020-winter 2021 influenza season and the possible resurgence of COVID-19.

Interpretation

The outcomes of this partnership with families is informing the path forward to scale the use of double rooms hospital-wide to reestablish capacity and accommodate the number of patients and families that need health care services.

Limitations

This assessment was focused on patients and their families' perspective and did not include a formal assessment of the staff engaged in patient care. Participants were not required to complete a formal demographic form and as such we did not collect the specific age of parent, education, race, or ethnicity. In the postutilization phase, all families admitted to the double rooms were infants or diapered during the two-week pilot; as such we did not interview any adult patients with congenital heart disease as included in the preutilization phase. This was a single-site qualitative assessment, which should be considered when considering external transferability.

CONCLUSIONS

Overall, families' preutilization and postutilization perceived it was safe to utilize double rooms during the time of COVID-19. The greatest source of anxiety and stress was the restriction of one parent at the bedside. Families were receptive and appreciated the support received from staff during the transfer to the inpatient unit and during their stay in the double rooms. In a pediatric hospital, this approach to partner with families to create a safe hospital experience is consistent with our commitment to family-centered care.

DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

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