

# Parental Perception of Care for Infants With Fever During Hospitalization

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## ABSTRACT

**Objective:** To assess parental perceptions regarding reason for and length of their infant's hospitalization and to understand family preferences for time of discharge.

**Methods:** Participants included parents of infants who were noncomplex, well-appearing infants, aged 7 to 60 days, and evaluated for fever without a source. A 5-question structured interview was administered over a 6-month period.

**Results:** Parents understood that fever necessitated admission for further diagnostic evaluation and that admissions would be no more than 48 hours if bacterial cultures were negative. Over one-third of patients' families preferred overnight discharge.

**Discussion:** Parents recognize reasons for admission and the rationale for length of stay. Preferences for time of discharge can serve as a starting point for shared decision-making between parents and providers.

## INTRODUCTION

Shared decision-making between parents and providers has been used traditionally in management of chronic pediatric illnesses, as it is effective in educating families and incorporating parents' values and preferences into care plans.<sup>1-3</sup> In recent years, there has been increasing discussion about the potential benefits of shared decision-making for the parents of acutely ill children.<sup>4,5</sup> Although there is a growing body of literature on its utility in the management of infants with fever, providers are still determining its role in this population.<sup>6</sup> There are many reasonable approaches to the diagnostic and management decisions surrounding when to hospi-

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talize a well-appearing, febrile infant, what workup to perform, and when to discharge the infant,<sup>7,8</sup> thus providing an opportunity to engage parents by incorporating shared decision-making. To do this effectively, it is essential for providers to understand parental perspectives.

Previous studies have examined febrile infants' parental preferences around parental stress, breastfeeding problems, hospital experience, perception of illness severity, and family and social impact.<sup>9,10</sup> From our literature review, it does not appear that parents of infants with fever have been asked about their understanding of the reason for hospitalization, the expected length of stay or, above all,

whether they would prefer nontraditional discharge timing. Furthermore, specific parental discharge timing preferences have not been clarified in the context of current evidence-supported guidelines, which support that neonates hospitalized for a fever with negative bacterial cultures can be safely discharged at 36 hours.<sup>7,8</sup> Consideration of these preferences in this context would allow for implementation of shared decision-making and meaningful input from parents in the discharge planning process after the workup is complete.

We aimed to evaluate parental perceptions surrounding several important decision points in the care of well-appearing, febrile infants, specifically regarding reason for hospitalization, expected length of stay, and discharge timing.

## METHODS

### Study Design

A 5-question structured interview was developed via consensus of the study group based on clinical experience, literature review,

and feedback from hospital medicine providers. Questions were formulated to investigate caregiver understanding and preferences regarding the following topics: (A) reason for hospitalization, (B) anticipated length of stay (LOS), (C) timing of discharge, (D) concerns about discharge education, and (E) impact of hospitalization on daily life. For the purpose of this brief report primarily focused on parental perceptions, we will be discussing responses regarding topics A, B, and C (see Box). The structured interview was read aloud to parents of admitted febrile infants by a single study team member at any point during the infant's hospitalization. The language spoken by the family during the interview and the time of interview administration was noted. The responses were summarized in writing during the interview, reviewed immediately after the interview by the same study member to ensure accuracy, and entered into a secure document. For each infant, charts were reviewed to identify time of admission as well as results of urine and blood cultures. These characteristics were recorded alongside parental interviewee responses in the secure document. All tasks were performed by the same study member.

### Setting

Study participants were parents of infants who were admitted to the acute care unit of a 300-bed, urban, free-standing tertiary care pediatric hospital in the Midwestern United States from June to November 2017. Our institution was participating in a national quality improvement collaborative through the Value in Inpatient Pediatrics network, Project REVISE (Reducing Excessive Variability in Infant Sepsis Evaluation). The purpose of this project was to reduce variation in the care of febrile infants in aspects ranging from appropriate work-up to reducing LOS. As an example, providers and families of hospitalized, febrile infants with negative bacterial cultures were educated on a new target discharge goal of 36 hours. Our work reported herein was performed independently of Project REVISE but utilized the same patient population.

### Caregiver Selection

A convenience sample of parents was interviewed. Participants were selected under the assumption that they all received education from their provider regarding the anticipated hospital course and LOS for febrile infants without urinary tract or invasive infections. They were selected solely based on whether their infant met inclusion criteria (previously healthy, well-appearing, and ages 7 to 60 days) and was admitted for further evaluation of fever without a source. Exclusion criteria were comorbid conditions (such as conditions predisposing to severe or recurrent bacterial illness, including genetic, congenital, chromosomal, neuromuscular, or neurodevelopmental abnormalities), positive bacterial cultures, and/or focal infection or bronchiolitis. Charts of admitted infants were reviewed each morning over a 6-month period to identify eligible infants.

#### Box. Selected Structured Interview Questions

Interviewer: What is your relationship to the baby? Interviewee: open-ended response

- A. Can you tell me why your baby is in the hospital? (YES/NO)
- If yes, what is the reason?
  - If no,
    - Were you told anything about the age of your child that led to being hospitalized?
    - Were you told anything about your child's lab work that led to being hospitalized?
- B. What were you told about approximately how long your baby (in hours) might be in the hospital?
- C. *I do not know if this is the case for you, but* if results were available and indicated that your baby could be discharged in the middle of the night, would you prefer to be discharged home at that time or would you rather be discharged home the next morning?

### Ethical Issues

This study was declared exempt by our hospital's Institutional Review Board, as it was considered within the scope of quality improvement work.

## RESULTS

### Characteristics of Patient and Caregiver Participants

All caregivers approached agreed to and completed the entire interview (N=24 caregivers of 24 admitted infants). Responses from 3 caregivers were excluded from analysis due to their infant's positive urine cultures: 2 *Escherichia coli* and 1 *Streptococcus agalactiae*, or group B Streptococcus. One parent was non-English-speaking (language: Karen); the remaining 20 were English-speaking. Eighty-one percent (17/21) were interviewed within 24 hours of their infant's admission, and 19% (4/21) were interviewed between 24 and 48 hours after admission.

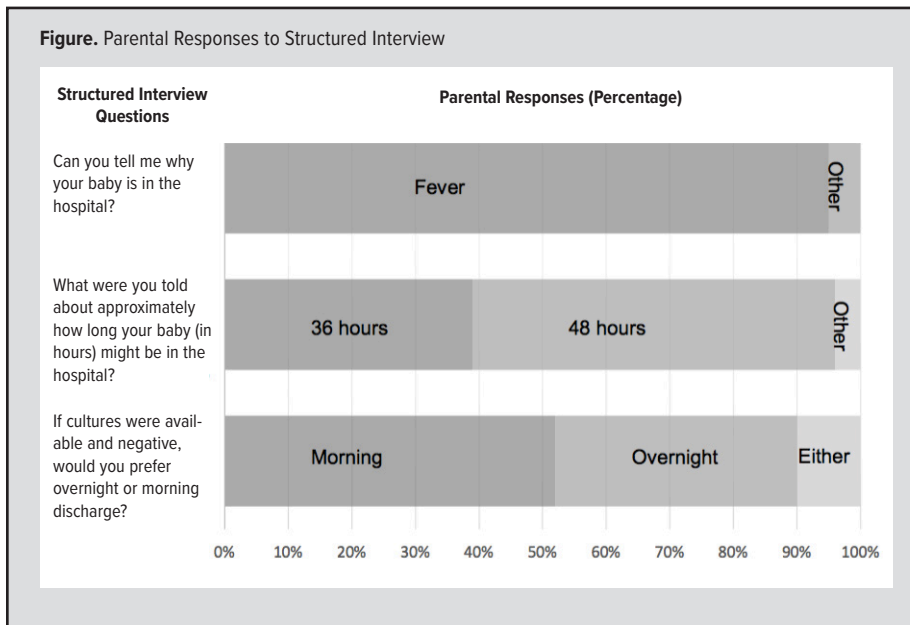
### Responses to Structured Interview

The average LOS for all infants meeting inclusion criteria was 42 hours. More specifically, the average LOS for parents who preferred overnight versus morning discharge was 39 hours versus 46 hours, respectively (see Figure). Ninety-five percent (20/21) of parents correctly identified their infant's reason for hospitalization as fever. The remaining parent (1/21) correctly provided the already established diagnosis (viral meningitis). Thirty-eight percent (8/21) of parents anticipated a 36-hour LOS, 57% (12/21) a 48-hour LOS, and 5% (1/21) "other" (response: 24 hours). Fifty-two percent (11/21) of parents preferred morning discharge, 38% (8/21) overnight discharge, and 10% (2/21) had no preference.

## DISCUSSION

Shared decision-making (SDM) with parents of febrile neonates offers the opportunity for providers to acknowledge and integrate family values into plans of care. To accomplish this goal, providers must first be able to understand the specific perceptions and preferences of parents regarding their infant's care. The diagnos-

**Figure.** Parental Responses to Structured Interview



tic evaluation of febrile neonates remains difficult and ambiguous depending on the clinical scenario, which, understandably, confuses parents and limits the utility of SDM. This study adds to the previous literature on parental preferences and perceptions regarding care of febrile infants, while providing additional insight into expected LOS and preferred discharge timing.

Our results demonstrated that parents seem to know that their infant's fever necessitates admission for further diagnostic evaluation. They also understand that their infants will remain admitted for a short amount of time—no more than 48 hours—as long as bacterial cultures are negative. In fact, over one-third of parents appropriately anticipated a 36-hour stay, having discussed with their provider at time of admission that this was a safe, evidence-based hospital duration for infants with negative bacterial cultures. As this study involved parents of well-appearing infants, we expected parents to anticipate a shorter LOS, which is also more appropriate for SDM in a nonemergent setting. Their clear understanding of reason for admission and the rationale for LOS further supports the appropriateness of SDM for this population. Lastly, more than a third of patient's families stated they would like to be discharged overnight. As seen by the differences in mean LOS between the overnight and morning preference groups (39 vs 46 hours, respectively), overnight discharge could not only enhance patient-centered care, but also could improve hospital efficiency and resource use. Providers could, thus, apply SDM by considering a nontraditional discharge time, if able, for this patient and family population. Furthermore, communication between parents and providers about discharge timing could be initiated earlier in the discharge process to accommodate parents' preferences. With that said, it would be important to evaluate for unintended consequences of nontraditional discharge times, such as caregivers feeling they were discharged too soon (if being told they need to be

discharged in the middle of the night, lack of appropriate follow-up being arranged, or readmissions).

This study contributes to the literature as an example of directly eliciting family perceptions and preferences that lend to the application of the SDM model. The knowledge about parental perceptions and preferences makes the proposed 3-step SDM framework more feasible: choice, options, and decision talk.<sup>4</sup> Preferred discharge timing, as shown by the survey results, can serve as an example of SDM implementation. To establish choice, parents can be made aware that more than one option exists, overnight versus morning discharge. The options can be weighed based on associated harms or benefits of each choice.

For instance, an overnight discharge would save costs, time, and resources from the hospital system standpoint, but would also decrease the amount of professional observation during what can be an uncertain and stressful time for parents.<sup>9,10</sup> Decision talk can then be implemented, wherein parents' values and preferences allow for a joint decision on the appropriate time for discharge. Alternatively, this model could be applied to evaluate parents' perceptions of earlier discharge criteria, allowing for the earlier discharge of more infants.

This study had certain limitations, such as small sample size and convenience sampling. An interview of caregivers for a larger and more diverse population of parents/caregivers of infants with fever would be necessary to make more global conclusions. The results were also not conducive to a thematic analysis due to limited answer choices. A future survey, however, could include questions that analyze preferences further, such as morning discharge even when discharge criteria are met overnight. Future areas of investigation also could include determining how providers in different fields apply SDM in their practices with infants and parents, such as in family medicine, obstetrics, or even various pediatric subspecialties. This could allow us to identify themes that enhance SDM as a model across pediatric medicine.

## CONCLUSION

Overall, this study provides insight into parental perspectives on essential aspects of the care of infants with fever and demonstrates the value of understanding the views of parents with whom collaboration could result in effective shared decision-making.

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## REFERENCES

1. Seymour CW, Carlbom D, Engelberg RA, et al. Understanding of sepsis among Pantell RH, Roberts KB, Greenhow TL, Pantell MS. Advances in the diagnosis and management of febrile infants: challenging tradition. *Adv Pediatr*. 2018;65(1):173-208. doi:10.1016/j.yapd.2018.04.012
2. Fried TR. Shared decision making: finding the sweet spot. *N Engl J Med*. 2016;374(2):104-106. doi:10.1056/NEJMp1510020
3. Adams RC, Levy SE, Council on Children with Disabilities. Shared decision-making and children with disabilities: pathways to consensus. *Pediatrics*. 2017;139(6):e20170956. doi:10.1542/peds.2017-0956
4. Elwyn G, Frosch D, Thomson R, et al. Shared decision making: a model for clinical practice. *J Gen Intern Med*. 2012;27(10):1361-1367. doi:10.1007/s11606-012-2077-6
5. Bae J-M. Shared decision making: relevant concepts and facilitating strategies. *Epidemiol Health*. 2017;39:e2017048. doi:10.4178/epih.e2017048
6. Aronson PL, Shapiro ED, Niccolai LM, Fraenkel L. Shared decision-making with parents of acutely ill children: a narrative review. *Acad Pediatr*. 2018;18(1):3-7. doi:10.1016/j.acap.2017.06.009
7. Lefebvre CE, Renaud C, Chartrand C. Time to positivity of blood cultures in infants 0 to 90 days old presenting to the emergency department: is 36 hours enough? *J Pediatric Infect Dis Soc*. 2017;6(1):28-32. doi:10.1093/jpids/piv078
8. Evans RC, Fine BR. Time to detection of bacterial cultures in infants aged 0 to 90 days. *Hosp Pediatr*. 2013; 3(2):97-102. doi:10.1542/hpeds.2012-0025
9. De S, Tong A, Isaacs D, Craig JC. Parental perspectives on evaluation and management of fever in young infants: an interview study. *Arch Dis Child*. 2014;99(8):717-723. doi:10.1136/archdischild-2013-305736
10. Paxton RD, Byington CL. An examination of the unintended consequences of the rule-out sepsis evaluation: a parental perspective. *Clin Pediatr (Phila)*. 2001;40(2):71-77. doi:10.1177/000992280104000202

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