Fellow's Column: Working to Improve Neonatal Intensive Care Unit Transport Response Times: An Ongoing Quality Improvement Project

Jill Colontuono, APN, NNP-BC, CPNP, Christine Carlos, MD, Michael D. Schreiber, MD, Brandi Parker, MSN, MBA, RN, Jaideep Singh, MD, Joseph R. Hageman, MD

Abstract:

The transport of critically ill neonates from referring hospitals requires a varied multidisciplinary team of highly qualified caretakers including nurses (flight and/or NICU staff nurses), neonatal nurse practitioners, physicians, and respiratory therapists. The process from the referring hospital contacting the transport center to picking up the infant, to the return of the team to the NICU needs to be seamless and efficient. The objective for this quality improvement (QI) project was to improve transport response times, which was defined as the time from time of the incoming call to the time the transport team leaves the center by helicopter or by ambulance to < 30 minutes after a transfer center has received and processed requests from referring physicians. Over the 6 PDSA cycles, the median transport response time has been reduced to 35 minutes; 1/3 of the transport response times are < 30 minutes. The process and reasons for delays continue to be reviewed to identify interventions needed to achieve the goal of reducing the transport response time to <30 minutes.

Introduction:

The transport of critically ill neonates from referring hospitals requires a varied multidisciplinary team of highly qualified caretakers including nurses, nurse practitioners, physicians, and respiratory therapists. Guidelines for the organization and composition of the transport team, mode of transport, and clinical criteria for the types of infants who are transported are all published and available from the American Academy of Pediatrics (1). In general, the process of organizing a neonatal transport team should be fluid and seamless and the team should be underway to the referring hospital within 30 minutes by whatever mode of transportation (ground, air) is considered best for the sick/well ratio of the infant (2). Our objective for this quality improvement (QI) project was to improve transport response time, which was defined as the time from time of the incoming call to the time the transport team leaves the center by helicopter or by ambulance to < 30 minutes after a transfer center has received and processed requests from referring physicians.

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Methods:

The Stephen Neonatal Intensive Care Unit (NICU) is a Level IV unit (ECMO, cardiac, general and neurosurgical patients) with 47 beds designated to tertiary care and 24 transitional care unit (TCU) beds in the Comer Children's Hospital at the University of Chicago in Chicago, IL. Our neonatal transport team performs about 25 transports/month. In August 2015, a new transfer center was established, and a new flow diagram was initiated to make the NICU transport process more seamless.

Jill Colontuono, NNP, has been the coordinator of the transport system. Dr. Michael Schreiber, NICU section chief, requested that Jill and Dr. Joseph Hageman, director of NICU quality Improvement, organize an ongoing QI project after a transfer center to receive and process requests for the transport of critically ill neonates from referring physicians was initiated. Data is collected by the NNPs and is stored in SharePoint in an excel spreadsheet form. The data collected includes demographics,

Table 1: Evaluation Intervals

Interval 1: 8/28/2015- 01/16/2016 (pre intervention)
Interval 2: 01/23/2016-03/26/2016, (post intervention)
Interval 3: 03/26/2016- 07/26/2016,
Interval 4: 07/26/2016-02/03/2017,
Interval 5: 2/4/2017-7/9/2017,
Interval 6: 7/10/2017-01/28/2018.

Interval	*#Transports*	*Range times (minutes)*	*# ≤ 30 mins*	*Median time*	*No Documentation*
1	42	19-191	7 (20%)	62	
2	19	23-240	6 (31%)	36.5	
3	18	20-112	5 (31%)	40	
4	50	23-95	8 (23%)	39	
5	37	22-102	9 (24%)	39	
6	74	20-276	17 (39%)	35	22 (30%)

Table 2: Neonatal Transport Response Times

time of initial call, departure time, and reasons for delays. Data are analyzed and the median response time, range of response times, percentage of response times <30 minutes are calculated. The data is then summarized and presented to nursing leadership and the neonatal section for review. With the review of each interval, the group then identifies an intervention ("PDSA") to improve response times.

Transport response times and reasons for delays have been tracked since 8/25/2015 and data has been collected during six intervals, which are presented in Table 1.

Results:

The data for the six intervals are presented in Table 2.

The documentation of reasons for delays included: personnel/communication/staffing: four transports, equipment problems two transports, inhaled Nitric Oxide preparation two transports, transportation delay four transports from 2/4/16-7/9/17.

Discussion:

In the American Academy of Pediatrics (AAP) Guidelines for Neonatal and Pediatric Transport (1), potential metrics for quality improvement including documentation of mobilization delays and patient outcomes are listed (2). In this study, transport response time and reasons for delays are measured. Response times have been reduced to a median time of 35 minutes due to the interventions of this study, but the goal of responding in < or equal to 30 minutes which has been proposed as an optimal transport response time for neonatal transports (2). In our most recent reported PDSA cycle, about 1/3 of transports leave the medical center in 30 minutes or less. The transport team is composed of a multidisciplinary group determined based on the medical and respiratory needs of the patient and the mode of transportation required (ground or air). The process of accepting the patient and assembling the team is a multi-step process which has been refined through PDSA cycles. Most recently, Dr. Christine Carlos, a former NICU fellow, and current attending neonatologists is now in charge of transport and is working to further refine the process. What is important to note is that the guidelines and metrics for measurement of the quality of neonatal transport have a limited evidence base which is based on clinical experience and is evolving (2,3,4).

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Jill Colontuono, APN, NNP-BC, CPNP
Senior Clinician Educator
Pritzker School of Medicine
University of Chicago
MC6060
5841 S. Maryland Ave.
Chicago, IL 60637

Christine Carlos, MD
Assistant Professor, Pediatrics
Pritzker School of Medicine
University of Chicago
MC6060
5841 S. Maryland Ave.
Chicago, IL 60637

Michael D. Schreiber, MD
Section Chief, Neonatology,
Professor of Pediatrics
Vice Chairman, Pediatrics.
Pritzker School of Medicine
University of Chicago
MC6060
5841 S. Maryland Ave.
Chicago, IL 60637

Brandi N. Parker, MSN, MBA, RN
Clinical Director NICU/CTCU/MTCU
UChicago Medicine Comer Children's
University of Chicago
MC6060
5841 S. Maryland Ave.
Chicago, IL 60637

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Jaideep Singh, MD
Medical Director, NICU
Professor of Pediatrics
Pritzker School of Medicine
University of Chicago
MC6060
5841 S. Maryland Ave.
Chicago, IL 60637

Corresponding Author

Joseph R. Hageman, MD
Senior Clinician Educator
Pritzker School of Medicine
University of Chicago
MC6060
5841 S. Maryland Ave.
Chicago, IL 60637
Phone: 773-702-7794
Fax: 773-732-0764
jhageman@peds.bsd.uchicago.edu

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