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Statewide Needs Assessment of Neonatal Readiness at Delivery Hospitals in Maine

Allison Zanno

Jay Kerecman

Ann Boomer

Leah M. Seften

Anya K. Cutler

See next page for additional authors

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Authors

Allison Zanno, Jay Kerecman, Ann Boomer, Leah M. Seften, Anya K. Cutler, Alexa Craig, and Misty Melendi

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Background

- Neonatal mortality is higher in hospitals with low birth rates
- More than two-thirds of hospitals deliver less than one neonate per day in Maine
- Identification of neonatal preparedness is lacking and will assist in prioritization of education and outreach initiatives to delivery hospitals
- Our objective was to engage stakeholders to understand current neonatal readiness at delivery hospitals across the state and identify barriers to and helpful resources for improving neonatal care delivery

Methods

1. Mixed methods design including a comprehensive survey and interviews with each delivery hospital
2. Survey included questions on neonatal statistics, infrastructure, services, personnel, training, leadership, quality improvement, policies/procedures, transport preparedness, disaster preparedness, equipment, barriers to and resources for improving neonatal care
3. Interviews were conducted with the nurse manager and/or lead pediatrician at each hospital
4. Data was stratified by state-designated level of care into three groups: Level I, Level II, and Levels III/IV

Results

- 23 delivery hospitals completed the needs assessment including 18 Level I, 3 Level II, 1 Level III, and 1 Level IV hospitals
- Data collected May 2022-September 2023
- 17% have an on-site Pediatrician and 13% have an on-site Obstetrician
- Most Level I/II hospitals do not have access to on-site pediatric specialists – most accessing specialists via phone consultation or telemedicine
- 17 hospitals reporting a policy for cord blood gases to be sent on high-risk deliveries and 16 hospitals with a process for using pre-calculated drug dosing in neonates
- Site-level qualitative data was collected via Zoom interview with clinical leads, emphasizing the need for additional educational resources and protected time to both plan and implement training opportunities.

Conclusions

- Additional support, including ongoing clinical support, for Level I/II hospitals is needed from tertiary care centers
- Since the beginning of the study, four participating hospitals have closed to deliveries, emphasizing the crisis facing rural hospitals in newborn preparedness
- Immediate educational and clinical support from teritary care centers is needed to improve preparedness for neonatal resuscitation, to retain clinicians, and keep delivery hospitals open



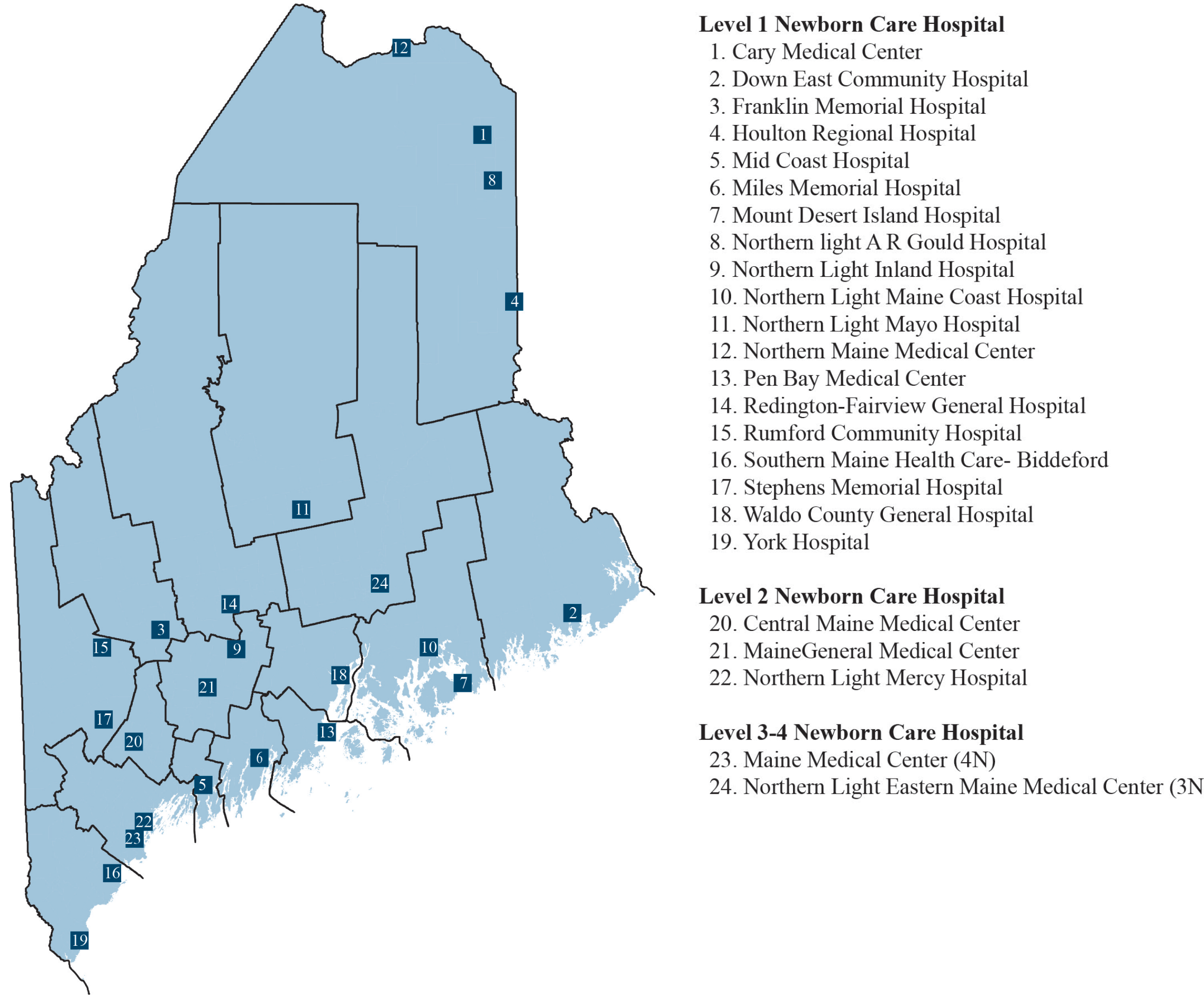
Statewide neonatal needs assessment emphasizes the need for additional support for Level I/II hospitals including: obtaining equipment, availability of teleconsultations, access to educational resources and protected time to for department oversight.

| Table 1. Subset of Requested Resources to Benefit Care Delivery | | | | |
|---|-----------------|-----------------|----------------|------------------|
| Characteristic | Overall, N = 23 | Level 1, N = 18 | Level 2, N = 3 | Level 3/4, N = 2 |
| Template for a newborn Quality Improvement Projects | 20 (87%) | 17 (94%) | 2 (67%) | 1 (50%) |
| Sample evidence-based policies and procedures for care of neonates | 20 (87%) | 17 (94%) | 2 (67%) | 1 (50%) |
| Supplementary education for all staff caring for newborns | 22 (96%) | 18 (100%) | 3 (100%) | 1 (50%) |
| Simulation/mock codes for those caring for newborns | 23 (100%) | 18 (100%) | 3 (100%) | 2 (100%) |
| Access to team training with all health care providers impacting newborn care | 23 (100%) | 18 (100%) | 3 (100%) | 2 (100%) |
| Telehealth services with a neonatal tertiary care center (choice=Yes) | 18 (78%) | 16 (89%) | 2 (67%) | 0 (0%) |



| Table 2. Subset of Clinician On-site Availability | | | | |
|---|-----------------------------|-----------------------------|----------------------------|------------------------------|
| Characteristic | Overall N = 23 ¹ | Level 1 N = 18 ¹ | Level 2 N = 3 ¹ | Level 3/4 N = 2 ¹ |
| Attending Pediatrician onsite 24/7 | 4 (17%) | 0 (0%) | 3 (100%) | 1 (50%) |
| Attending Pediatrician within 30 min | 18 (78%) | 17 (94%) | 0 (0%) | 1 (50%) |
| Obstetrician onsite 24/7 | 3 (13%) | 0 (0%) | 1 (33%) | 2 (100%) |
| Obstetrician within 30 min | 18 (78%) | 15 (83%) | 3 (100%) | 0 (0%) |
| Respiratory Therapist onsite 24/7 | 17 (74%) | 12 (67%) | 3 (100%) | 2 (100%) |
| Pediatric/Neonatal Care Nurse onsite 24/7 | 18 (78%) | 13 (72%) | 3 (100%) | 2 (100%) |

Figure 1. Participating Delivery Hospitals in Maine by Level of Care



| Table 3. Subset of Neonatal Equipment and Supplies | | | | |
|--|-----------------------------|-----------------------------|----------------------------|------------------------------|
| Characteristic | Overall N = 23 ¹ | Level 1 N = 18 ¹ | Level 2 N = 3 ¹ | Level 3/4 N = 2 ¹ |
| Standardization to estimate fetal weight | 17 (74%) | 12 (67%) | 3 (100%) | 2 (100%) |
| Narcan in Code Cart | 8 (40%) | 6 (40%) | 2 (67%) | 0 (0%) |
| <i>Not reported</i> | 1 | 1 | 0 | 0 |
| Pediatric Intra-osseous kit | 18 (78%) | 14 (78%) | 2 (67%) | 2 (100%) |
| Video Assisted Laryngoscopy | 15 (65%) | 11 (61%) | 2 (67%) | 2 (100%) |
| Ability to run blood gas | 22 (96%) | 17 (94%) | 3 (100%) | 2 (100%) |
| Gases run at the bedside | 3 (18%) | 2 (14%) | 1 (33%) | 1 (50%) |
| <i>Not reported</i> | 6 | 4 | 0 | 1 |
| Telehealth services with neonatal tertiary care center | 13 (59%) | 10 (56%) | 3 (100%) | 0 (0%) |
| ¹ n (%) | | | | |