



**Telemedicine Opportunities to
Improve Childbirth Care
In
New Hampshire**

Center for Evaluative Clinical Sciences
MPH Field Experience Report

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Field Experience Preceptor/Site:

- Anne Conner, MLS, AHIP, Workforce and Education Program Manager
- Northern New Hampshire Area Health Education Center (AHEC) was established in 1999 as a program of the North Country Health Consortium “to promote excellence in the health care system of northern New Hampshire through support of community and academic partnerships for training, continuing education and access to information resources.” The Endowment for Health is currently funding New Hampshire Telehealth Program planning activities.
- Through Discretionary Grant funding by the Endowment for Health, the North Country Health Consortium and Northern New Hampshire AHEC formalized a New Hampshire Telehealth Planning Committee which published its white paper, *Planning and Implementing a Statewide Telehealth Program in New Hampshire* in 2004. One of the goals for this student’s field experience was to provide research and background material for including childbirth services in the NH Telehealth planning activities.

Introduction

Ensuring the quality, accessibility, and accountability of health services, as one of the six categories of programs defined by the Public Health in America statement, is focusing an increasing interest on rural medical services. In the 2004 Institute Of

Medicine Quality Chasm report: Quality Through Collaboration – The Future of Rural Health, five recommendations were underscored:

1) adopting an integrated approach to addressing both personal and population health needs;

2) establishing a stronger health care quality improvement support structure to assist rural health systems and professionals;

3) enhancing the human resource capacity of health care professionals in rural communities, and the preparedness of rural residents to actively engage in improving their health and health care;

4) assuring that rural health care systems are financially stable; and

5) investing in an information and communications technology (ICT) infrastructure, which has enormous potential to enhance health and health care over the coming decade.

Access to local hospital-based childbirth services has become threatened in various areas of the United States in the past five years. General public and policymaker expectations of patient safety have combined with escalating malpractice liability insurance premiums to close or limit childbirth services in many states, including New Hampshire (see Key Determinants and Contributing Factors Chart, p. 16). When local hospitals discontinue obstetrical care, women are required to travel greater distances and face childbirth outcomes that worsen with the distance traveled. Telemedicine—the ability to access medical consultation across a broad geography via the use of various electronic communication technologies—offers meaningful opportunities to disseminate specialty medical expertise across a region, including rural areas with limited healthcare

infrastructure. The availability, affordability and feasibility of telemedicine support for obstetrics in New Hampshire was unknown at the beginning of this field experience project.

Project Overview

The goals for the field experience project were to:

- identify threats to hospital-based childbirth services in New Hampshire;
- delineate the support that telemedicine could provide to directly address these threats;
- identify the resources available to implement an Obstetrical Telemedicine program in New Hampshire;
- research available telemedicine technology for meaningful obstetrical applications;
- consult with active obstetrical telemedicine programs; and
- provide needed background for including obstetrics in the NH Telemedicine Planning Committee activities.

Project Activities and Results

- Review of medical literature on quality improvement/preventable intrapartum fetal injury and
- Review of legal and insurance industry studies on primary contributing factors in obstetrical litigation
 - Both Quality Review and Risk/Claims data identified the same factors in the most frequent obstetrical patient injuries and large malpractice losses:
 - Failure to use or interpret fetal monitoring; failure to respond to fetal distress.
 - Failure to communicate concerns among caregivers, including failure to seek and obtain appropriate consultation.
 - Failure to monitor Pitocin use to avoid persistent or recurrent uterine hyperstimulation.
 - Failure to anticipate and respond promptly and effectively to shoulder dystocia.
- Survey of telemedicine programs in North America
 - Only two telemedicine programs use real-time transmission of fetal monitoring information
 - University of California, Davis: started in 1996 when loss of practicing obstetricians closed childbirth services in adjacent county. UCD Program designed for “sidewalk consult” with no transmission of patient identifiable information, no documentation and no review/quality monitoring capability. Equipment used: GE

- fetal monitoring with PC Anywhere computer program for remote link-up.
- Ste Justine Hospital, Montreal, Canada, started in 2003 to provide obstetrical specialty consultation to remote areas without obstetricians. SJ Program designed for “virtual transfer” of patient for the duration of the remote consultation with full documentation, capability for review/quality monitoring not currently implemented. Equipment used: LMS CALM (Computer Assisted Labor Management).
 - Research on IT infrastructure in rural New Hampshire
 - Use of standard electronic fetal monitoring equipment with PC Anywhere for remote link-up as well as the LMS CALM system (which only requires T1 capability—the same as used for remote educational programs for hospitals within New Hampshire) are available and technically feasible. Rates/cost for use would need further research.
 - Interviews with medical, legal and malpractice insurance experts
 - Any meaningful telemedicine program to improve obstetrical care and reduce liability exposure must include:
 - real-time fetal monitoring.
 - protocols which direct appropriate provider response.
 - Careful consideration and review by defense attorneys and claims experts to avoid creating a process which increases liability where no violation of the standard of care occurred (e.g. fetal monitoring with low-threshold alarms which do not correlate with injury but leave a track-record of apparent injury exposure).
 - Site visits with the two obstetrical fetal monitoring telemedicine programs in North America.
 - UC Davis has a longstanding telemedicine program but the Obstetrical program is functioning “off the map.” There is no documentation at the UC Davis site when a consultation is requested or provided, no transmission of patient-specific information, no storage of the transmissions, and no review of cases. In fact, the program manager could not give even a rough estimate of the number of consultations sought by the three community hospitals in the next county over the previous year. To date, the manager is unaware of any litigation involved in any case using the UC Davis obstetrical telemedicine program and their “sidewalk consult” approach has not been tested in court.
 - The Ste Justine Hospital obstetrical telemedicine program is considered to accomplish a “virtual transfer” of the patient from the remote community hospital to the tertiary hospital for the duration of the remote consultation and has full storage of the patient-identifiable information, the fetal monitoring recordings and recommendations provided. The program has completed less than two dozen of these consultations, well under the number anticipated for the two linked community hospitals. Informal phone contacts with program management staff have indicated that additional remote on-site training, review and monitoring is needed.

- Attempted Needs Assessment included the use of provider survey material to provide supportive data for anecdotal concerns about loss of obstetrical providers, sites and services in New Hampshire (see Reflections below). Loss of hospital-based childbirth sites and services were confirmed as two facilities, Upper Connecticut Valley Hospital and New London Hospital have discontinued childbirth services since 2000, citing professional liability coverage and ability to ensure a cesarean section in under thirty minutes if necessary. VBAC (Vaginal Birth after Cesarean Section) trials of labor have been discontinued at the majority of hospitals in New Hampshire following a \$9 million jury award in a Maine emergency cesarean section case involving a 38-minute lapse from “decision to incision” and a \$10 million demand malpractice case in Southern New Hampshire which eventually resulted in a defense verdict, but was considered a “close call” and involved a 17-minute time-frame from recognizable crisis to delivery of a severely damaged baby. The ability to obtain emergency consultation with real-time electronic fetal monitoring review is increasingly seen as critical support for keeping smaller community hospital childbirth services available.

Reflections

The most unexpected challenge in this field experience was the difficulty in establishing a structured Needs Assessment. “Everyone knows” that New Hampshire has lost childbirth facilities, providers and services and the past 3-5 years and efforts were already underway to document the changes through the New Hampshire Medical Society’s survey of their obstetrical providers (copy of survey results in Appendix A, p.12). As often happens, the form and detail of the survey questions became much clearer as the surveys were reviewed and conclusions about net loss of providers could not be drawn. The provider survey only supported the anecdotal references but did not confirm in any quantitative way, that New Hampshire has less professional coverage for childbirth services throughout the state in 2005, compared with any prior year.

For a provider survey to offer useful conclusions, it appears now that the survey should be supported by the New Hampshire Hospital Association with managers of childbirth units queried about the current FTE’s (full-time employees and their

professional designations of obstetrician, family practice and certified nurse midwife) allocated specifically to labor and delivery and comparison of these levels to prior years. Any serious effort will have to include dedicated time to re-survey for conclusive data. The New Hampshire Medical Society only received 85 responses out of 195 solicited, and the informal nurse-manger survey through the Northern New England Perinatal Quality Improvement Network (NNEPQIN), attempting to supplement the physician survey, received only six responses.

An attempt to assess the need for remote obstetrical consultation based on variation in birth outcomes throughout the state was equally inconclusive. The most accurate proxy measure of birth outcome would likely be APGAR scores—the assessment of Activity (muscle tone), Pulse, Grimace (reflex irritability), Apppearance (skin color) and Respiration. A score is given for each sign at one minute and five minutes after the birth. If there are problems with the baby an additional score is given at 10 minutes. Roughly, a score of 7-10 is considered normal, while 4-7 might require some resuscitative measures, and a baby with APGARS of 3 and below requires immediate resuscitation. APGARS are reported to the Department of Health and Human Services but in New Hampshire, as in many states, facility and provider specific information about APGAR scores is unavailable except for research purposes under strict confidentiality agreement.

As a substitute measure of childbirth outcome variation in New Hampshire, the Medicaid reimbursement data is not confidential and suggests variation by the significant differences in numbers of severe birth asphyxia cases by county. The following table summarizes the Medicaid data with inclusion of total births by county and offers insight

for regional quality improvement that could find meaningful assistance through remote telemedicine consultation.

2002 - 2003	2002 - 2003	2002 - 2003	Combined ICD codes		
County	# of births (NH DHHS)	% Medicaid (NH Medicaid)	Birth Asphyxia - Medicaid Claims		
			12 mo/2004	8 mo/2005	Total
Belknap	1,125	29.9%	1		1
Carroll	813	37.1%			
Cheshire	1,457	29.1%	5	2	7
Coos	596	47.0%	1		1
Grafton	1,607	27.5%	3	2	5
Hillsborough	9,919	18.4%	4	2	6
Merrimack	3,025	21.5%	2	1	3
Rockingham	6,602	15.1%	1		1
Strafford	2,714	26.3%	5	2	7
Sullivan	950	34.1%	1	1	2
NH Totals	28,808	22.4%	24	10	34

Conclusion

The apparent need, technology and communications infrastructure exist in New Hampshire to pursue funding for an Obstetrical Telemedicine program to improve consistent availability and expertise in childbirth care consistent with the IOM recommendations for rural health. In addition to the more reliable and conclusive survey of hospital-based childbirth providers needed in the state referenced in the Reflections section, further research is also needed to address health insurance billing for remote consultation, cross-state licensure, and professional liability insurance coverage clarification for the community hospital as well as the consulting facility.

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