Perspectives on Rural Obstetric Care

Sandra Stover, MD FAAFP; Sawtooth Mountain Clinic, Grand Marais
Carrie Henning-Smith, PhD MPH MSW; Rural Health Research Center, Univ. of MN School of Public Health
Nathan Ratner, Medical Student; University of MN Medical School Duluth campus
Jennifer Pearson, MD; Department of Family Medicine, University of MN Medical School Duluth campus
Cook County, Minnesota

- Total Area: 3,339.72 sq mi – second largest county in Minnesota by total area
- Total Area (Land): 1,450.60 sq mi (43.43%)
- Total Area (Water): 1,889.11 sq mi (56.56%)
- Federal Land Ownership: 662,586 Ac (69.73%)
- State Land Ownership: 144,828 Ac (15.24%)
- Private Land Ownership: 88,109 Ac (9.27%)
- 2010 Population: 5,176 (Approx. 3.6 people per square mile; the 5th least populous Minnesota County)
- County Seat: City of Grand Marais

Highway
61
Sawtooth Mountain Clinic

• Practice begun by Dr. MacDonald in 1962
• Became a Community Health Center in 1979
• 501c3
• FQHC
• Federal Tort Claims Act
Northshore Health Hospital and Care Center

- 16 bed Critical Access Hospital
- 37 bed skilled nursing facility
- Built in 1958
- Hospital District, governed by an elected Board
Staff in our Community

Sawtooth Mountain Clinic

• Currently 6 Family Practice Physicians, one Nurse Practitioner
• Prior to closure of planned OB, 3 providers did elective deliveries
• Training: ACLS, CALS, ALSO

North Shore Health

• 15 RN’s who work ER / Floor
• 3 nurses on day-shift
• 2 nurses on night-shift
• Training: ACLS, CALS, NRP, PALS, TNCC
• EMT’s / Paramedics for transport
January, 2015 to July, 2015
“Covery’s report showed five areas that need improving:

- Quality review processes and findings
- OB credentialing, privileging, proctoring and peer review
- OB registered nurse training and competency
- Fetal monitoring; and emergency cesarean section.”
Linda Peterson, a registered nurse with 35 years working at the hospital said:

I came when we had 50 deliveries a year here and it was really fabulous. Guidelines weren’t as strict or confining as they are now. There are more responsibilities now. I love OB but having the experience of doing it for so many years, it gave us the experience and gave us confidence....We have so few births here now. I think I was in on two last year and felt fortunate to be on those...
Betsey Jorgenson said:

I gave birth to two children. I feel so grateful that they were born here. A community where you can be born and die is a richer community.”

But she expressed frustration felt by many young people living here. “Gol darn it. Can’t be born here. Can’t buy land here. I can’t buy a home here. Why am I living in Cook County? And that’s sad because it’s a wonderful place to live with wonderful people.
Medical Students were the Catalyst

Nathan Ratner with Dr. Sandy Stover in Grand Marais
Kale Siebert with Dr. Mary Bianco in Ely

Photo credit: “Medical students’ study addresses closing of obstetrics at Ely, Grand Marais hospitals,” Duluth News Tribune, 04/14/2017
National Trends in Access to Hospital-Based Obstetric Services in Rural Counties

Carrie Henning-Smith, PhD, MPH, MSW
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  - Ira Moscovice, PhD

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Access to Rural Maternity Care

- Half a million babies born in rural hospitals each year
- Declining access to obstetric services at rural hospitals
  - In 1985, 24% of rural counties lacked OB services; by 2002 this number had risen to 44%
  - Between 1985 and 2002, approximately 760 U.S. hospitals closed their OB services
- In 2007, 5.8 million U.S. women lived in a rural county without an obstetrician
Objective: Rural Obstetric Unit and Hospital Closures

- What is the scope of obstetric unit and hospital closures resulting in loss of obstetric services in rural US counties between 2004-2014?

- What are the consequences?
## Data Sources

<table>
<thead>
<tr>
<th>Level</th>
<th>Source</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital-level</td>
<td>American Hospital Association Annual Survey</td>
<td>2003-2014</td>
</tr>
<tr>
<td>County-level</td>
<td>Area Health Resources Files</td>
<td>2004, 2014</td>
</tr>
<tr>
<td></td>
<td>US Census data</td>
<td>2000, 2010</td>
</tr>
<tr>
<td>Individual-level</td>
<td>Restricted Use Natality Detail File (NDF) with county identifiers (maternal residence, hospital location)</td>
<td>2004-2014</td>
</tr>
</tbody>
</table>
Methods

- Measurement of closure status:
  - Counties without obstetric services during 2004-2014
  - Counties with continual obstetric services
  - Counties experiencing full closures of obstetric services

- Analysis:
  - County-level multivariate regression, focusing on correlates of full closures
Findings: Number of Rural Hospitals with OB Services, 2004-2014
Findings: Number of Rural Counties with OB Services, 2004-2014
Findings: Percent of Rural Counties with Hospital OB Services, 2004-2014

- Micropolitan: 82.0% in 2004, 77.9% in 2014
- Noncore: 40.4% in 2004, 30.2% in 2014
Hospital OB Services 2004-2014
Counties with Lower Birthrates Had Higher Odds of Losing OB Services

Adjusted Odds Ratio (95% CI)

<table>
<thead>
<tr>
<th>County-level Number of Annual Births</th>
<th>Adjusted Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>91-200</td>
<td>3.49</td>
</tr>
<tr>
<td>201-400</td>
<td>1.75</td>
</tr>
<tr>
<td>&gt;400</td>
<td>1</td>
</tr>
<tr>
<td>&lt;=90</td>
<td>8.32</td>
</tr>
</tbody>
</table>
Counties with More Black Residents Had Higher Odds of Losing OB Services

<table>
<thead>
<tr>
<th>Group</th>
<th>Adjusted Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Hispanic White</td>
<td>1</td>
</tr>
<tr>
<td>Non-Hispanic Black</td>
<td>4.73</td>
</tr>
<tr>
<td>AIAN</td>
<td>1.57</td>
</tr>
<tr>
<td>Asian</td>
<td>0.02</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.32</td>
</tr>
<tr>
<td>Others</td>
<td>4.06</td>
</tr>
</tbody>
</table>
Variability Across States

• As of 2014, more than two-thirds of rural counties in FL (78%), NV (69%), and SD (66%) had no in-county hospital obstetric services.

• Rural counties in SC (25%), WA (22%), and ND (21%) experienced the greatest decline in access 2004-2014.

• ND (15%), FL (17%), and VA (21%) had the lowest percentage of rural counties with continual hospital obstetric services.
## Minnesota Hospital OB Services, 2004-2014

<table>
<thead>
<tr>
<th></th>
<th>No OB</th>
<th>Continual OB</th>
<th>Full Closure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All Rural Counties</strong></td>
<td>20.0%</td>
<td>66.7%</td>
<td>13.3%</td>
</tr>
<tr>
<td><strong>Micropolitan Counties</strong></td>
<td>11.8%</td>
<td>82.4%</td>
<td>5.9%</td>
</tr>
<tr>
<td><strong>Non-Core Counties</strong></td>
<td>23.3%</td>
<td>60.5%</td>
<td>16.3%</td>
</tr>
</tbody>
</table>
Next Steps: Causes and Consequences

• Need more research on WHY hospitals are closing OB units (e.g., costs, provider availability, difficulty maintaining skills, malpractice insurance, etc.)

• Need more research on outcomes from OB unit closures – stay tuned!
The Goal for Rural Communities

- Ultimately, we need workable solutions to the challenges that rural communities face to ensure maternity care access and quality.
Objectives

To explore choices and opinions about obstetric care services among patients living in Grand Marais and Ely areas who gave birth between 1990 - 2016.
Methods

- Cohort: prenatal care patients from Sawtooth Mountain Clinic in Grand Marais who gave birth between 1990-2016 or Essentia Health Ely Clinic who gave birth between 2006-2016
- Recruitment materials produced by University of Minnesota Medical School Duluth campus team with letters included from local clinics
- The Rural Obstetric Minnesota Patient (ROMP) Survey was developed using Qualtrics, survey period between Nov. 30th, 2016 and Jan. 31st, 2017
- 681 total recruitment letters sent by clinics
- Respondents accessed Qualtrics survey by URL provided
- Data was underwent both quantitative and qualitative statistical analysis
Community Driven Research

"They're harmless when they're alone, but get a bunch of them together with a research grant and watch out."
Results

Sample:
• N=201 participants
• N=355 deliveries
• Response rate 31.6%
• 73% reported at least 2 deliveries
• 93% White
• 64% College graduates
• 65% Income above $50,000
• 65% were between 21 and 30 years old at time of first delivery
• 71% of respondents lived within 20 min of local hospital at time of delivery

Distance to Local vs. Regional Hospital
Results

Figure 2. Planned Delivery Location by Year of Birth
Local* vs. Regional†

<table>
<thead>
<tr>
<th>Year</th>
<th>Local Hospital</th>
<th>Regional Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990-93 (n=36)</td>
<td>83%</td>
<td>17%</td>
</tr>
<tr>
<td>1994-97 (n=41)</td>
<td>90%</td>
<td>10%</td>
</tr>
<tr>
<td>1998-2001 (n=39)</td>
<td>77%</td>
<td>23%</td>
</tr>
<tr>
<td>2002-05 (n=25)</td>
<td>60%</td>
<td>40%</td>
</tr>
<tr>
<td>2006-2010 (n=71)</td>
<td>70%</td>
<td>30%</td>
</tr>
<tr>
<td>2011-14 (n=79)</td>
<td>62%</td>
<td>38%</td>
</tr>
<tr>
<td>2015-2016 (n=38)</td>
<td></td>
<td>26%</td>
</tr>
</tbody>
</table>
Results

Figure 3. Reasons for Choosing Delivery Location by Year of Birth

- Convenience (closest to home)
- Familiarity with hospital and/or clinical staff
- Ability to have the type of birth/experience desired
- Ability to perform cesarean section
- Referred to that hospital due to complications
- Ability to provide epidural anesthesia
- Specialty services to handle complications
## Results

### Figure 4. Overall Experiences with Pregnancy and Birth

<table>
<thead>
<tr>
<th>Year</th>
<th>Positive or Extremely Positive Overall Birth Experience</th>
<th>Anxious or Very Anxious about Getting to Birth Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990-93</td>
<td>84%</td>
<td>5%</td>
</tr>
<tr>
<td>1994-97</td>
<td>88%</td>
<td>10%</td>
</tr>
<tr>
<td>1998-2001</td>
<td>74%</td>
<td>17%</td>
</tr>
<tr>
<td>2002-05</td>
<td>82%</td>
<td>6%</td>
</tr>
<tr>
<td>2006-2010</td>
<td>84%</td>
<td>13%</td>
</tr>
<tr>
<td>2011-14</td>
<td>89%</td>
<td>26%</td>
</tr>
<tr>
<td>2015-16</td>
<td>82%</td>
<td>51%</td>
</tr>
</tbody>
</table>
Results

Figure 5. Patient response to question: “I have concerns about the lack of local labor and delivery services and the need to travel elsewhere for delivery”

- Strongly Agree/Agree: 88%
- Neutral: 6%
- Strongly Disagree/Disagree: 6%
Qualitative Data
“A pain in the night and a harrowing drive: A crisis in rural health care puts mothers-to-be on a risky road” by Casey Ross
STAT News
Published: 04/17/2017

“Medical students’ study addresses closing of obstetrics at Ely, Grand Marais hospitals”
By John Lundy
Duluth News Tribune
Published: 04/14/2017
Challenges for Medical Communities Doing Low-Number Obstetrical Care

- Provider competency
- Anxiety
- Transfer potential: cost and training for transport teams
- Cost of training
- Experience / skill development
- Post delivery competencies and patient teaching
- Loss of continuity of care
Problems for Communities when Delivery Services are Terminated

- Attracting young families to live in the community
- Attracting physicians to work in the community (Mayo system experience, Lake City, MN)
- “Community Connectedness”
- Re-looking at skills needed for emergency staff – who does the emergency deliveries and who transports laboring mothers?
- Sustainability for hospital

Photo credit: “A pain in the night and a harrowing drive: A crisis in rural health care puts mothers-to-be on a risky road,” STAT News, 04/17/2017
Making a Successful Rural OB Program

- Physicians who want to provide the service
- Medical training centers who teach the skills for the service
- A hospital administration, and care-givers on staff, who are committed to supporting that service
- A community who believes in the service and uses it
- Policy makers who can set Public Health goals to include local provision of those services
- Societal prioritization: how/who/what decisions are made
What have we learned in Cook County?

- Babies continue to be born
- Community members need to be invited and engaged in the conversation
- Our community needs to respect and plan for the costs and risks now assumed by the patient
- We need to look at our outcomes and add our voice to the national conversation
- Collaboration can enhance that voice
QUESTIONS?
THANK YOU!