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Rural Obstetric Care

- Childbirth is the most common and costly reason for hospitalization in the US
  - Half a million babies are born each year in rural hospitals
  - Total costs of $27 billion annually for hospital care; half of births covered by Medicaid
- Decline in access to obstetric services at rural hospitals
  - More than half of rural counties have no obstetric services
- Among rural hospitals that do provide obstetric services, there a need for data on patterns of care, quality of care, and workforce.

Overview: Three Studies

- Relationship Between Birth Volume and Quality in Rural Hospitals
- Rural Obstetric Workforce Challenges and Opportunities
- Childbirth in Non-Local Hospitals Among Rural Women
Data and Study Population

Included: all hospital births to rural women in nine states in 2010 and 2012.

N=111,764 births (2010)
104,312 births (2012)

Total = 216,076 births
Data=HCUP SID

Hospital Survey

• Telephone survey of all 306 rural hospitals in these 9 states with at least ten births in 2010
  • Advisory Committee of rural obstetric nurse managers
  • Content: closed and open-ended questions on delivery volume, types & numbers of attending clinicians, staffing challenges & changes
  • Timeline: November 2013 – March 2014
  • Response rate 86% (n=263)
Research Question #1

- What is the relationship between hospital birth volume and obstetric care quality among rural hospitals?

Methods and Measurement

- Birth volume quartiles
  - low (10-110); medium (111-240); medium-high (241-460); high (>460)

- Quality and safety outcomes
  - Low-risk cesarean
  - Cesarean without medical indication
  - Labor induction without medical indication
  - Episiotomy (vaginal deliveries)
  - 3rd/4th degree lacerations (vaginal deliveries)
Study Results

- **Low-risk cesarean and cesarean without medical indication:** low-volume hospitals had higher (worse) rates than medium-high and high-volume hospitals, no significant differences vs. medium volume.
- **Induction without medical indication:** low-volume hospitals had higher (worse) rates than medium-volume hospitals, no significant difference vs. medium-high or high-volume hospitals.
- **Episiotomy:** low-volume had lower (better) rates than medium-high and high-volume hospitals.
- **3rd/4th degree lacerations:** no significant differences by birth volume.

Findings

- Obstetric quality and safety outcomes vary significantly across rural hospitals by birth volume.
- Better performance is not consistently associated with lower or higher birth volume.

So....what does this mean for maternity care quality improvement in rural settings?
Research Question(s) #2

Who attends births in rural hospitals?

• What types and combinations of clinicians are delivering babies in rural hospitals?
• What is the relationship between hospital birth volume and staffing models?
• What staffing challenges are rural hospitals facing?

Methods and Measurement

• Hospital annual birth volume quartiles:
  – low (10-110), medium (111-240), medium-high (241-460), or high (> 460)
• Multivariable regression analysis of associations between hospital birth volume and obstetric workforce
• Qualitative analysis of workforce changes and staffing challenges
Average Number of OBs/FPs in Surveyed Rural Hospitals, by Birth Volume

- Obstetricians
- Family Physicians

Percent of OBs/FPs Employed by Surveyed Rural Hospitals, by Birth Volume

Study: Obstetrics Workforce
Intra-Hospital Relationships

Census Fluctuation

Recruitment and Retention

Training

Scheduling

Percent of Surveyed Rural Hospitals (n=244)
Citing OB Staffing Challenge

Findings

- Hospitals with lower birth volume (< 240 births per year) are more likely to have family physicians and general surgeons attending deliveries, while those with a higher birth volume more frequently have obstetricians and midwives attending deliveries.

- General surgeons perform cesarean deliveries in 58.1 percent of lowest-volume (<110) hospitals, but in none of the high-volume (>460) hospitals surveyed.

- Workforce challenges reported by surveyed hospitals are related to their rural location and low birth volume.
Research Question(s) #3

- What are the local hospital characteristics and maternal diagnoses present at childbirth that are associated with non-local childbirth for rural women?

Context: Regionalization and Maternal Levels of Care

- In 2015, ACOG/SMFM consensus statement encourages clarity around the specific capacities available in facilities that provide obstetric care.
- Pregnant women in rural and remote areas receive particular attention in discussions of regionalization and levels of care, owing to the challenges in assuring local access to high-acuity services when necessary.
Methods and Measurement

- **Outcome:** childbirth in a non-local hospital
  - Local hospital is any hospital <30 road miles from ZIP centroid, or nearest hospital
- **Predictors:**
  - Clinical diagnoses
    - diabetes, hypertension, hemorrhage, placenta problems, malpresentation, multiple gestation, preterm, prior cesarean
  - Composite of conditions that may require MFM
  - Age, race, payer, rurality
  - Local hospital characteristics

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**Study: Non-Local Childbirth**

**Non-Local Delivery Rate Among Women with Selected Characteristic**

- Maternal Fetal Medicine
  - Yes: 28.6%  No: 23.1%
- Multiple Gestation
  - Yes: 47.1%  No: 25.1%
- Delivery Before 37 Weeks
  - Yes: 43.5%  No: 24.1%
- Primary Payer
  - Unknown: 29.2%  Medicaid: 22.5%  Private: 28.6%  Self: 28.0%  Other: 25.5%
### Distribution of Delivery Hospital Characteristics by Rural Women’s Delivery Hospital (Local or Non-Local)

<table>
<thead>
<tr>
<th>Hospital Type</th>
<th>% of All</th>
<th>Non-local</th>
<th>Local</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Rural Women (n=216,076)</td>
<td>100%</td>
<td>25.4%</td>
<td>74.6%</td>
</tr>
<tr>
<td>Critical Access Hospital</td>
<td>16.9%</td>
<td>7.2%</td>
<td>20.2%</td>
</tr>
<tr>
<td>Rural Non-CAH</td>
<td>57.9%</td>
<td>28.4%</td>
<td>68.0%</td>
</tr>
<tr>
<td>Urban Hospital</td>
<td>25.2%</td>
<td>64.4%</td>
<td>11.9%</td>
</tr>
</tbody>
</table>

### Neonatal Care Capacity

<table>
<thead>
<tr>
<th>Neonatal Care Capacity</th>
<th>% of All</th>
<th>Non-local</th>
<th>Local</th>
</tr>
</thead>
<tbody>
<tr>
<td>NICU</td>
<td>31.2%</td>
<td>60.6%</td>
<td>11.3%</td>
</tr>
<tr>
<td>NINT Only</td>
<td>10.6%</td>
<td>11.1%</td>
<td>10.4%</td>
</tr>
<tr>
<td>Neither</td>
<td>58.2%</td>
<td>28.4%</td>
<td>68.3%</td>
</tr>
</tbody>
</table>

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### Study: Non-Local Childbirth

**Findings**

- About 75% of rural women gave birth at local hospitals
- More likely to deliver at non-local hospitals:
  - Rural women with preterm births and clinical complications
  - Rural women without local access to higher-acuity neonatal care
- Less likely: rural Medicaid beneficiaries
  - Indicates potential access challenge
Consolidation of findings and implications for rural communities

Data come from 9 states, not all rural areas

Limits of hospital discharge data: do not contain clinical notes or information on prenatal care, parity, birth weight, or gestational age at birth

Other factors that may be important were not observable in our data, including:
  - Maternal education, income, and willingness to travel
  - Rural women’s perceptions regarding the quality of care in rural (local) and urban (non-local) hospitals
  - Referral patterns by clinicians
  - Health care marketplace influences
  - Influence of friends and family

A note about all the studies:
Volume-outcome Study Implications

- Quality improvement strategies must account for the rural context
- Example: Addressing “relentless rise” of cesareans poses rural-specific challenges
  - Specialized personnel
  - Flexibility in surgical staffing
  - Recruitment (Ob/Gyn, Anesthesia, General Surgery)

Workforce Study Implications

- Individual hospitals working in isolation may struggle to address staffing challenges.
- Need for collaboration
  - across disciplines
  - across healthcare delivery systems
- Possible solutions may include telehealth, simulation training, and interprofessional education.
Non-local Childbirth Study Implications

• Implementing maternal levels of care will help clarify to patients and clinicians the types of obstetric services available in different facilities.

• Use of these care-level designations may improve triage and referral of rural pregnant women.

• Low-income rural Medicaid beneficiaries face access barriers for maternal care which warrant attention.

A New Policy Context? Trump’s Health Care Strategy

• End of Obamacare?
• It’s likely that
  – “Value” will be increasingly important in policy decisions
  – People will keep giving birth
  – Costs of childbirth will be shared by families, employers, and – importantly - taxpayers
The Way Forward – Federal Policy

• Federal policy efforts to address workforce shortages.
  – Improving Access to Maternity Care Act
• Federal policy efforts to improve maternity care quality
  – Quality of Care for Moms and Babies Act

The Way Forward – State Policy

• Medicaid policy
• State scope of practice laws
• State and local efforts
  – Subsidies; “home-grown” rural workforce
  – Education and training; rotations that include obstetrics in rural areas
  – Capacity building/training: CME support
  – Collaboration between clinicians, health care systems
  – Continuous quality improvement
The Goal for Rural Communities

• Workable solutions to the challenges that rural communities face to ensure
  – Maternity care access
  – Maternity care quality

For Additional Information


Thank You!

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