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Obstetric Care Quality and Access for Rural U.S. Women

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Webinar Presentation:
Rural Health Research Gateway
January 11, 2017

RHRC
Rural Health Research & Policy Centers
Funded by the Federal Office of Rural Health Policy
www.ruralhealthresearch.org

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Acknowledgements

- Our OB advisory group, and my colleagues at RHRC:
  - Michelle Casey, MS
  - Peiyin Hung, MSPH
  - Carrie Henning-Smith, PhD, MSW
  - Shailey Prasad, MBBS, MPH
  - Ira Moscovice, PhD
- This research was supported by the Federal Office of Rural Health Policy (FORHP), Health Resources and Services Administration (HRSA), U.S. Department of Health and Human Services (HHS) under PHS Grant #5U1CRH03717.
  The information, conclusions and opinions expressed are those of the authors and no endorsement by FORHP, HRSA, or HHS is intended or should be inferred.

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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.

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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

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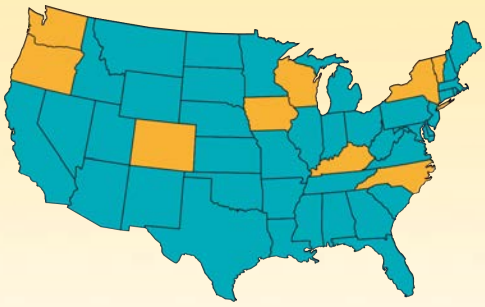
Data and Study Population



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

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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)

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Research Question #1

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

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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)

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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

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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?

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Study: Obstetrics Workforce

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?

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Study: Obstetrics Workforce

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

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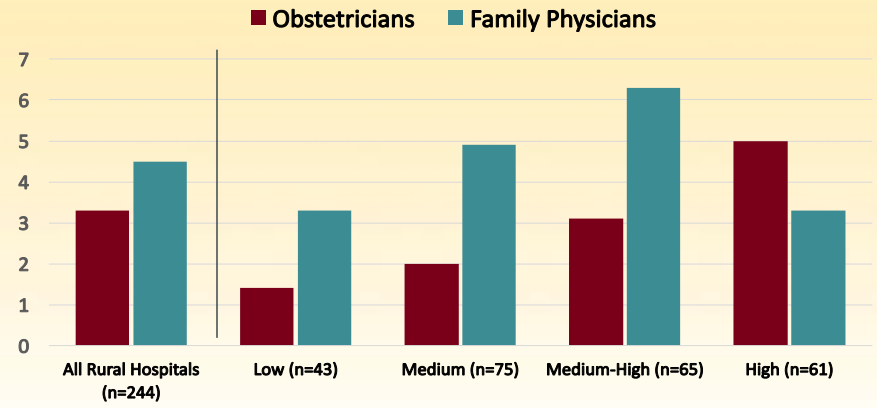
Study: Obstetrics Workforce

Average Number of OBs/FPs in Surveyed Rural Hospitals, by Birth Volume



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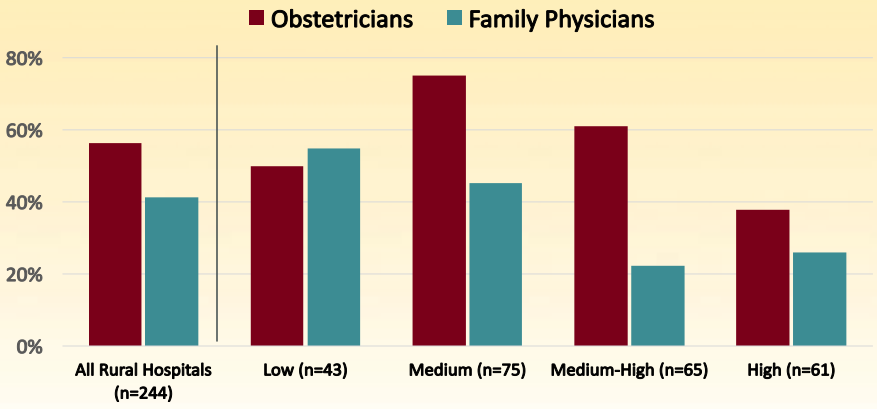
Study: Obstetrics Workforce

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



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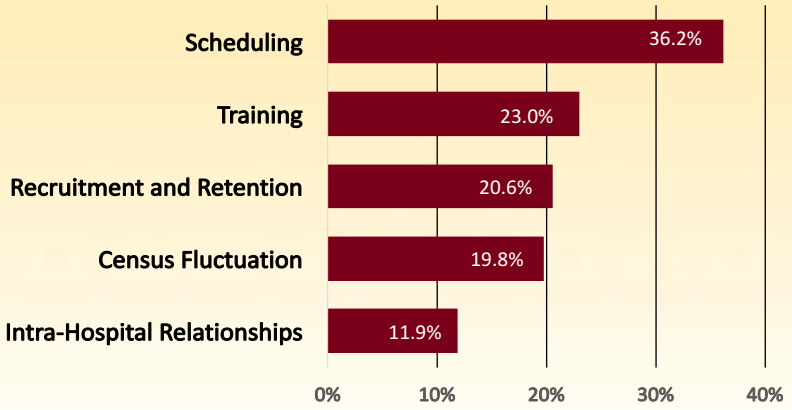
Study: Obstetrics Workforce

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



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Study: Obstetrics Workforce

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.

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Study: Non-Local Childbirth

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?

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Study: Non-Local Childbirth

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.

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Study: Non-Local Childbirth

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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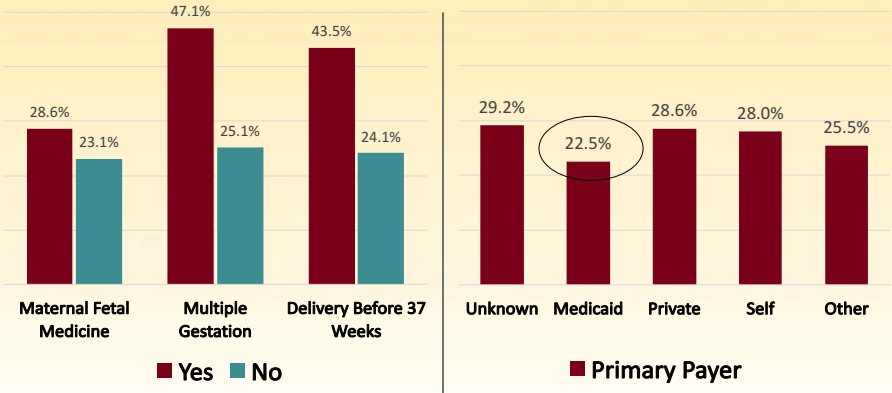
Study: Obstetrics Workforce

Non-Local Delivery Rate Among Women with Selected Characteristic



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Study: Non-Local Childbirth

Distribution of Delivery Hospital Characteristics by Rural Women's Delivery Hospital (Local or Non-Local)

All Rural Women (n=216,076)	% of All	Non-local	Local
	100%	25.4%	74.6%
Hospital Type			
Critical Access Hospital	16.9%	7.2%	20.2%
Rural Non-CAH	57.9%	28.4%	68.0%
Urban Hospital	25.2%	64.4%	11.9%
Neonatal Care Capacity			
NICU	31.2%	60.6%	21.3%
NINT Only	10.6%	11.1%	10.4%
Neither	58.2%	28.4%	68.3%

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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

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Consolidation of findings and implications for rural communities

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A note about all the studies:

Limitations

- 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

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Study: Birth Volume & Quality

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)

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Study: Obstetrics Workforce

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.

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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

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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

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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

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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

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The Goal for Rural Communities

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

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For Additional Information

Kozhimannil KB, Hung P, Prasad S, Casey M, McClellan M, Moscovice IS. **Birth Volume and the Quality of Obstetric Care in Rural Hospitals**. *Journal of Rural Health*, 1 Feb 2014. doi: 10.1111/jrh.12061. http://rhrc.umn.edu/2013/06/ob1/

Kozhimannil KB, Casey M, Hung P, Prasad S, Moscovice IS. **Rural-Urban Differences in Obstetric Care, 2002-2010, and Implications for the Future**. *Medical Care*. 2014 Jan;52(1):4-9. doi: 10.1097/MLR.0000000000000016.

Kozhimannil KB, Casey M, Hung P, Prasad S, Moscovice IS. **The Obstetric Care Workforce in CAHs and Rural Non-CAHs.** University of Minnesota RHRC Policy Brief, December 2014. http://rhrc.umn.edu/2014/12/ob-workforce/

Kozhimannil KB, Casey MM, Hung P, et al. **The Rural Obstetric Workforce in US Hospitals: Challenges and Opportunities**. Journal of Rural Health, 23 Mar 2015. doi: 10.1111/jrh.12112.

Kozhimannil KB, Casey M, Hung P, Prasad S, Moscovice IS. **Rural Women Delivering Babies in Non-Local Hospitals: Differences by Rurality and Insurance Status**. University of Minnesota RHRC Policy Brief, June 2015. http://rhrc.umn.edu/2015/06/non-local-ob/

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Thank You!

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