

# Identifying Local Barriers to Mammography in Women Served by a Rural Acute Care Hospital

Cibele Barbosa Carroll, MD, PhD<sup>1</sup>; Earlise Ward, PhD<sup>1,2</sup>; Mary F. Henningfield, PhD<sup>3,4</sup>; Alice Yuroff, PhD<sup>3,4</sup>; Deanne Boss, MS<sup>3,4,5</sup>; Cathy Bolan, RNC<sup>8</sup>; Katy Geiger, MBA, RN, BSN<sup>8</sup>; Logan Moore, BA<sup>3,4</sup>;

Shelbey Hagen, BS<sup>3,4</sup>; Lisa Sampson, MBA<sup>3,4</sup>; Sarina Schragger, MD, MS<sup>3,4</sup>; Amye Tevaarwerk, MD<sup>1,6,7</sup>

<sup>1</sup>University of Wisconsin Carbone Cancer Center, Madison, WI; <sup>2</sup>University of Wisconsin-Madison School of Nursing, Madison, WI; <sup>3</sup>University of Wisconsin-Madison Department of Family Medicine and Community Health, Madison, WI; <sup>4</sup>Wisconsin Research and Education Network (WREN), Madison, WI;

<sup>5</sup>University of Wisconsin Center for Health Enhancement Systems Studies, Madison, WI; <sup>6</sup>University of Wisconsin-Madison, Department of Medicine; <sup>7</sup>Mayo Clinic, Rochester, MN; <sup>8</sup>Prairie Ridge Health, Columbus, WI



## Background

- Cancer mortality rates are higher in rural areas than urban areas in the United States.<sup>1</sup>
- Compared with women in urban areas, women living in rural areas:<sup>2,3</sup>
  - Have lower rates of screening mammograms
  - Experience later-stage diagnoses of breast cancer
  - Have less access to medical treatment for breast cancer
- Women living in rural Wisconsin continue to experience later stage diagnoses, have less access to medical treatment, and may receive less chemotherapy compared with women living in urban areas.<sup>4,5</sup>
- Although breast cancer is the most common type of cancer diagnosed in Columbia County WI, only 40% of eligible women are being screened with mammography.<sup>6</sup>

## Objective

Understand barriers and facilitators to mammography faced by women in rural Wisconsin

## Methods

The **University of Wisconsin-Madison (UW)** collaborated with **Prairie Ridge Health (PRH)**. PRH is a rural hospital in Columbus, Wisconsin, which has a population of approximately 5,500 persons. The project qualified for an IRB exemption based on review by the UW IRB.

### Data collection

- Our community-based participatory research identified barriers to screening mammography by:
  - Virtual 1:1 interviews with clinicians and clinic staff at PRH
  - Three 60-minute virtual focus groups with women living in the same area (Held 11/2021 to 2/2022)
  - A 25-question survey (online and hardcopy) to collect insights from women at least 40 years old

### Recruitment

- **Clinicians and clinic staff interviews:** PRH team members invited their staff to participate in interviews. Suggestions of potential participants created with snowballing approach were also accepted. A list of interested participants was created and shared with the WREN team.
- **Focus groups:** Women were recruited by advertisements informing patients and community members about the study. Advertisements were distributed via social media (PRH website and Facebook page) and US mail.
- **Survey:** The anonymous Qualtrics survey link was available on the PRH website. A list of 1,800 residents within the PRH service area who were 40 years and older and eligible for mammography were mailed a paper version of the survey.

### Tools

- **Interview guide:** Questions probed on PRH practices for mammography and barriers for rural women
- **Focus group guide:** Designed to uncover attitudes towards screening mammography, including facilitators and barriers
- **Survey:** Collected demographic data, attitudes toward and barriers to breast cancer screening

## Analyses

- **Clinic and staff interviews:** Interviews with PRH clinicians and staff as well as focus groups were conducted virtually and transcribed for qualitative analysis. Three researchers independently coded responses.
- **Focus groups:** Three researchers created a codebook for responses and assigned codes for responses that were facilitators and barriers to mammography. Each researcher independently coded responses and met to finalize coding by reaching consensus on each code.
- **Survey:** Results of the online and hardcopy surveys were combined and analyzed for descriptive statistics and coded for qualitative analysis.

## PRH Staff Interview Results

11 PRH staff were interviewed :  
4 physicians, 3 mammography technicians, 2 schedulers/  
registration, 1 medical assistant, 1 advanced practice nurse

Barriers to mammography identified during interviews included:

- Lack of transportation
- Limited scheduling options for working women
- Lack of awareness of the benefits of mammography
- Financial/insurance issues
- Concern about clinic visits during the pandemic



WALK IN WEDNESDAYS!  
30 Mammogram  
7 a.m. to 5 p.m.  
Last Wednesday of each month  
Prairie Ridge Health

PRH uses strategies such as:

- Walk-in appointments
- Follow-up calls for overdue mammograms
- Having a breast health navigator on staff to help increase breast cancer screenings

## Focus Group Results

- Three focus groups were with 1, 9, and 11 participants.
- Participants in these focus groups placed high value on screening mammography. As such,
  - 82% (143/174) of quotes coded from the focus groups indicated facilitators to screening mammography

Facilitators	% of Quotes (n=143)	Barriers to Mammography	% of Quotes (n=41)
Clinician recommendation/patient education	26%	Insurance/financial	39%
Family history of breast cancer	13%	Scheduling	17%
Screening mammography (Annual)	13%	Fear of procedure (eg, pain/discomfort)	15%
Knowing somebody with breast cancer	9%	Fear of results	7%
Appointment reminders - mail	8%	Age extremes (perception of "too young" or "too old" for mammogram)	7%
Annual wellness visits	7%	Necessity of "self advocacy" to get mammogram	7%
Advertisement - mass media	6%	COVID-19	5%
Appointment reminders - EHR alert	5%	Lack of transportation	3%
Early detection	3%		
Advertisement - office	3%		
Advertisement - social media	1%		
Advertisement - print	2%		
Scheduling - positive experience	2%		
Appointment reminders - phone	0%		

"I really appreciate my medical team just reminding me"

"... and then also the fear of finding out what the answer is going to be can really put some women off on not wanting to get this done"

"People that don't have health insurance, they probably aren't going to pay for it ... if they don't think that they're sick or have any symptoms"

"I like the discussion in that my doctor always talks about the risks, the positives and negatives...of getting certain screenings or tests"

## Summary and Conclusions

- PRH staff identified barriers such as lack of:
  - ◊ Transportation
  - ◊ Scheduling options
  - ◊ Awareness of benefits of mammography
- The focus groups tended to highlight factors facilitating mammography (eg, clinician recommendation). Top barriers were insurance/financial issues, scheduling, and fear of mammography.
- Survey participants were engaged with the healthcare system with 91% reporting that they saw a health care provider in the past 12 months, which may indicate a participation bias.

Future projects should include efforts to:

- Reach rural women not engaged with the healthcare system
- Address gaps in patient education (eg, the role of mammography for women not having problems or who do not have a family history of breast cancer)
- Continue to explore strategies that address the barriers identified

## Survey Results

307 women responded to the survey (140 online and 167 paper copy)  
• 13 women were not eligible (9 were part of our focus groups; 4 were younger than 40 yo)

### Demographic snapshot

	n	Results
Previously diagnosed with breast cancer	294	4%
Mean age, y (Range)	268	58.7
Identified as White	272*	97%
Menopausal	265	62%
Anyone in your family had/had breast cancer?	270	No-57% Yes-42%
Knows someone who has/had breast cancer	270	93%

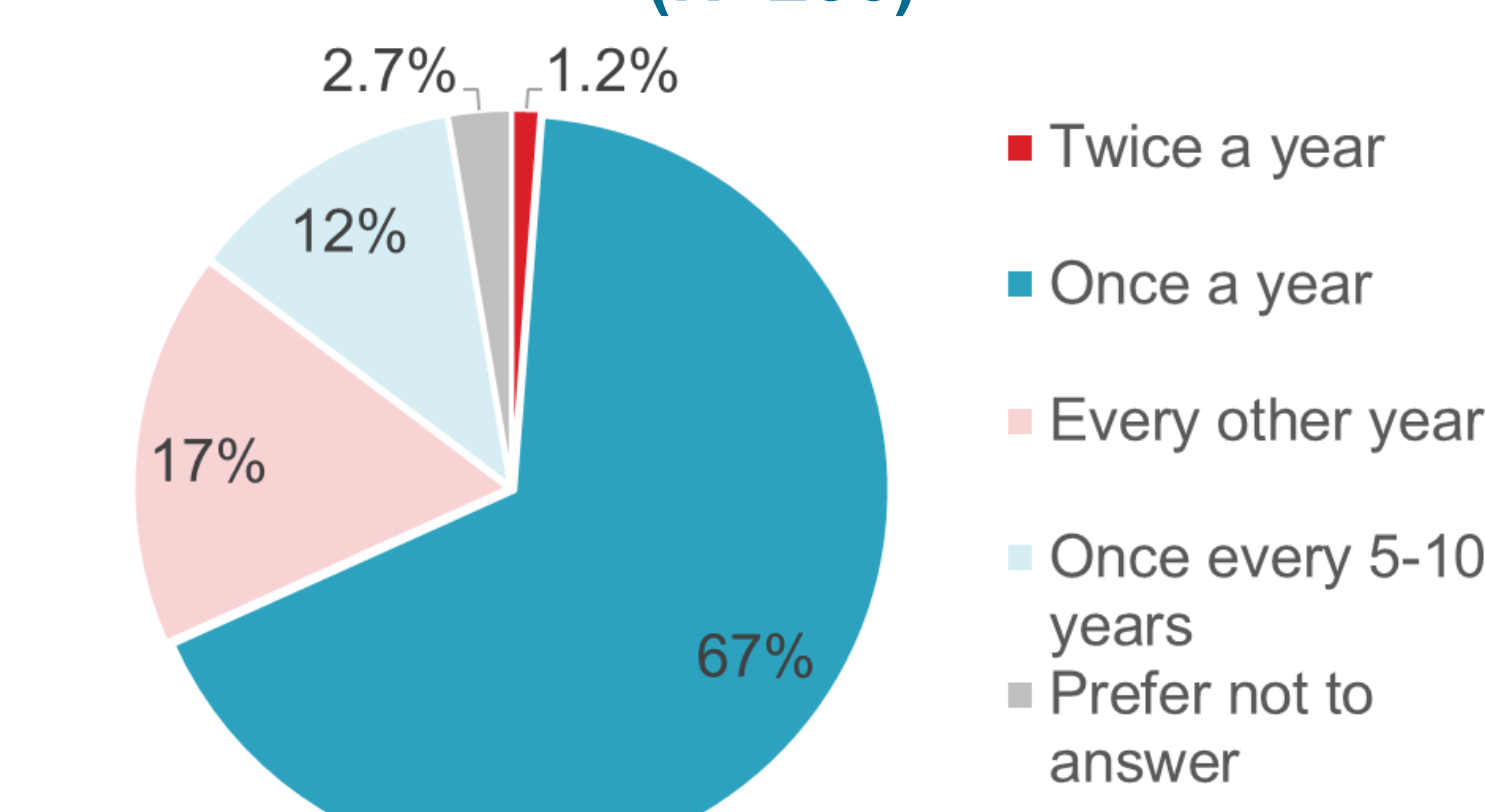
\*Includes 2 respondents who indicated "Prefer not to answer."  
Non-responses were excluded from this analysis.

### Engagement with the healthcare system

- 91% of women reported seeing a healthcare provider in the past year
- Awareness of and experience with mammography was high:
  - 99% of women indicating that they knew what a mammogram is
  - 90% of respondents reporting that they had seen or heard an advertisement that encouraged them to get tested for breast cancer
  - 85% had a healthcare provider recommend that they get screened for breast cancer
  - 79% indicated that the recommendation was communicated to them in-person
  - 97% reported ever having had a mammogram
  - 52% were between the ages of 40 and 49 when they had their first mammogram
  - 70% list referral from their doctor as a reason for having their first mammogram



### How often are you having a mammogram? (N=256)



### Reasons women did not have a mammogram annually included:\*

- 23% Put it off
- 17% Haven't had problems
- 15% The COVID pandemic
- 11% Not needed or necessary
- 10% No family history of breast cancer
- 9% Not recommended by my doctor
- 8% Painful procedure
- 6% Fear of cancer

\*Top reasons shown; Respondents could select multiple answers

## Acknowledgments

- The project was funded by the University of Wisconsin Carbone Cancer Center 2019 Rural Cancer Research Pilot award.
- We would like to acknowledge Kristi Line, Executive Director of Prairie Ridge Health, for her role in developing the proposal and for contributions to the research team.
- Our sincere thanks to the study participants for their time, engagement, and contributions to this work.

## References

1. Hanley SJ, Anderson RN, Thomas CC, Masselli GM, Peaker B, Richardson LC. Invasive cancer incidence, 2004-2013, and deaths, 2006-2015, in nonmetropolitan and metropolitan counties—United States. *MMWR Surveill Summ*. 2017;66(14):1-13.
2. Chandak A, Nayar P, Lin G. Rural-urban disparities in access to breast cancer screening: a spatial clustering analysis. *J Rural Health*. 2019;35(2):229-235.
3. Thompson JA, Chollet-Hinton L, Keighley J, et al. The need to study rural cancer outcome disparities at the local level: a retrospective cohort study in Kansas and Missouri. *BMC Public Health*. 2021;21(1):2154. Published 2021 Nov 24.
4. Onitilo AA, Liang H, Stankowski RV, et al. Geographical and seasonal barriers to mammography services and breast cancer stage at diagnosis. *Rural Remote Health*. 2014;14(3):2738.
5. Andreasson M, Zhang C, Onitilo AA, et al. Treatment differences between urban and rural women with hormone receptor-positive early-stage breast cancer based on 21-gene assay recurrence score result. *J Community Support Oncol*. 2015;13(5):195-201.
6. County Health Rankings & Roadmaps. Accessed May 10, 2022. <https://www.countyhealthrankings.org/app/wisconsin/2022/rankings/columbia/county/outcomes/>