

# Value of Library and Information Services in Patient Care

Preliminary Summary of the Pilot Study

March 24, 2011

National Network of Libraries of Medicine,  
Middle Atlantic Region

School of Information & Library Science, University of North  
Carolina at Chapel Hill



# Study overview

- The purpose of the study is to understand the value and impact of the health library, information resources and the librarian on patient care.
- The study investigated:
  - 1) the use and value of the print and electronic resources provided by the library and
  - 2) the information services (mediated or assisted information requests or searches) provided by the librarian that were used for clinical decision-making.
- The research builds on the original Rochester study:  
Marshall, JG. The impact of the hospital library on clinical decision making: the Rochester study. *Bulletin of the Medical Library Association*. 1992 Apr;80(2):169-78.

# Acknowledgments

- The Value Study was a partnership of the National Network of Libraries of Medicine, Middle Atlantic Region (NNLM/MAR) and the University of North Carolina at Chapel Hill (UNC).
- This project has been funded in part with federal funds from the National Library of Medicine, National Institutes of Health, Department of Health and Human Services, under Contract #N01-LM-6-3501 from New York University, NNLM/MAR
- Additional support was provided by from the Hospital Library Section of the Medical Library Association (MLA), the NY/NJ Chapter of MLA; the Philadelphia Chapter of MLA; the Upstate New York and Ontario Chapter of MLA; the New York State Reference and Research Library Resources Councils and the Donald Lindberg Research Fellowship from MLA.

# Study team

## **NN/LM MAR Planning Team**

- Julia Sollenberger, University of Rochester Medical Center
- Susan K. Cavanaugh, UMDNJ Camden
- Sharon Easterby-Gannett, Christiana Care Medical Libraries
- Sue Hunter, NN/LM MAR
- Mary Lou Klem, Health Sciences Library System, University of Pittsburgh
- Joanne Gard Marshall, UNC
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- Kate Oliver, NN/LM MAR
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## **UNC Research Team**

- Joanne Gard Marshall, UNC Principal Investigator
- Cheryl A. Thompson, Project Manager
- Jennifer Craft Morgan
- Amber Wells
- Marshica Stanley

# Participating pilot sites

- Edward G. Miner Library, University of Rochester Medical Center, Rochester, NY
- NYU Health Sciences Libraries, NYU Langone Medical Center, New York, NY
- Gustave L and Janet W Levy Library, Mount Sinai Medical Center, New York, NY
- Lewis B. Flinn Medical Library, Christiana Care Health System, Newark & Wilmington, DE
- Health Sciences Library System, University of Pittsburgh, Pittsburgh, PA
- Lankenau Hospital Medical Library, MainLine Health System, Wynnewood, PA
- Medical Library, AIDHC Hospital for Children, Wilmington, DE

# Methodology

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# Study design

- Pilot phase: Seven health libraries in Middle Atlantic Region
  - Survey of physicians, residents and nurses (Sept – Nov 2010)
  - Interviews with health professionals (Jan – April 2011)
- Full launch: 50 health libraries in North America
  - Survey of physicians, residents and nurses (Mar – April 2011)
  - Over 5,000 responses to the survey as of Mar 2011

# Survey methods

- Collaborative development of the survey questions and protocol
- Email survey notification to all physicians, residents and nurses
- Email invitation
- Email reminder 1
- Email reminder 2
- Email reminder 3

Note: One library used an employee portal to distribute survey announcements.

# Participating library characteristics

	Pilot libraries (n=7)
Part of a health care system	86 %
COTH member	86 %
Located in an urban area	100%
<b>Bed size:</b>	
Less than 500	29 %
500 or more	71 %

# Preliminary Results

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# Responses to the survey

- 3,666 responses to the pilot survey
- 141 did not complete a sufficient portion of the survey to be counted as a response
- 312 did not meet the study requirement that respondents be involved in patient care or clinical research
- 3, 213 total valid responses

# Pilot Response rate

- 3,213 responses from physicians, residents and nurses
- 12 % response rate for all professionals
- 23 % response rate for physicians (n=1,182)
- 11 % response rate for residents (n=500)
- 9 % response rate for nurses (n=1,214)
- Response rates for the individual libraries ranged from 1 % to 26 %.

Note: The n's reported by position do not add up to 3,213 because 207 respondents reported "Other" for their position.

# Demographics

## **Gender** (n=2569)

- Male 40%
- Female 60%

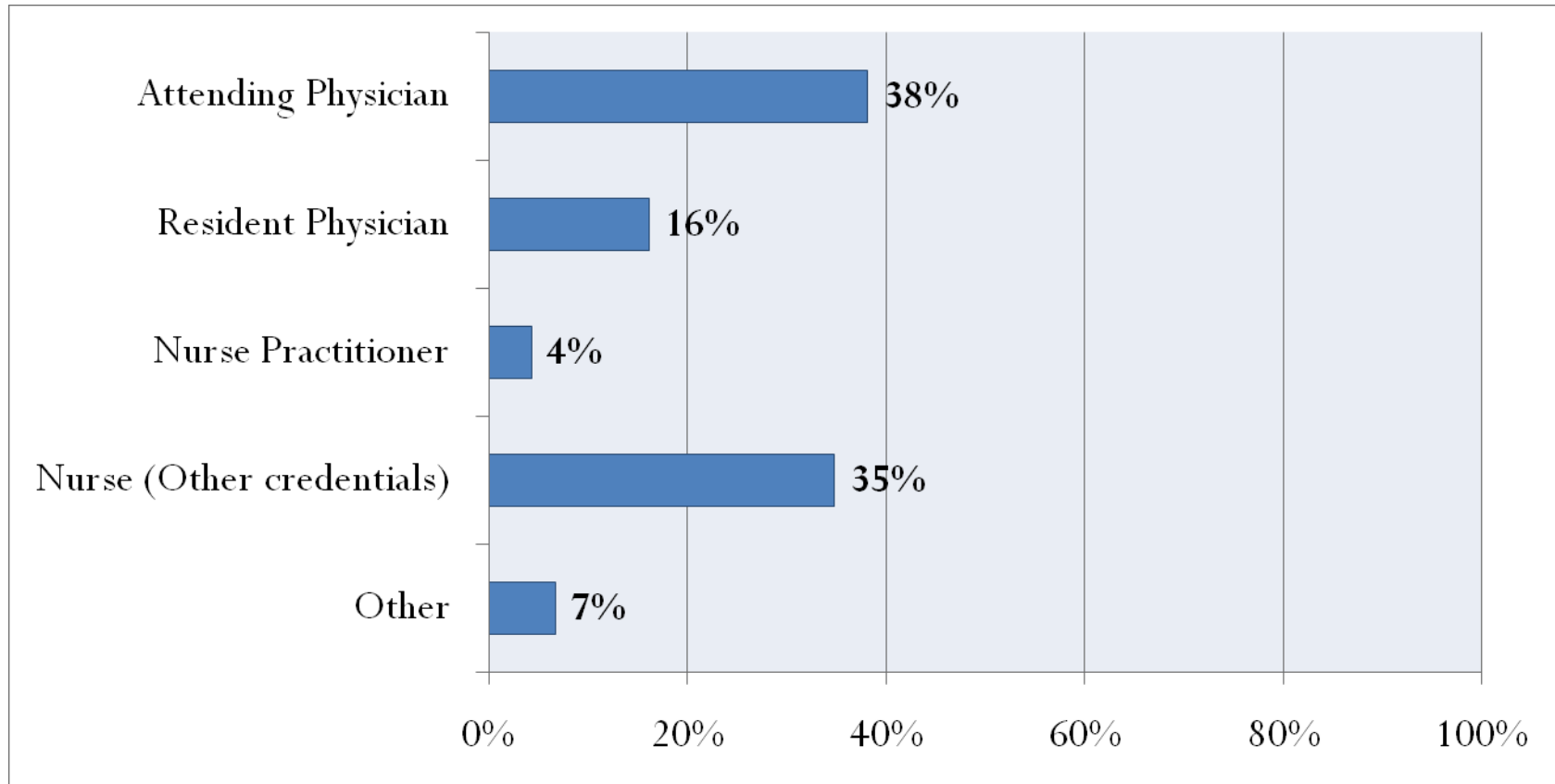
## **Interest in follow-up interview**

- Yes - 206 respondents

## **Age** (n=2573)

- Under 25 2%
- 25-44 49%
- 45-64 45%
- Over 64 4%

# Positions held by respondents (n=3107)



# Education

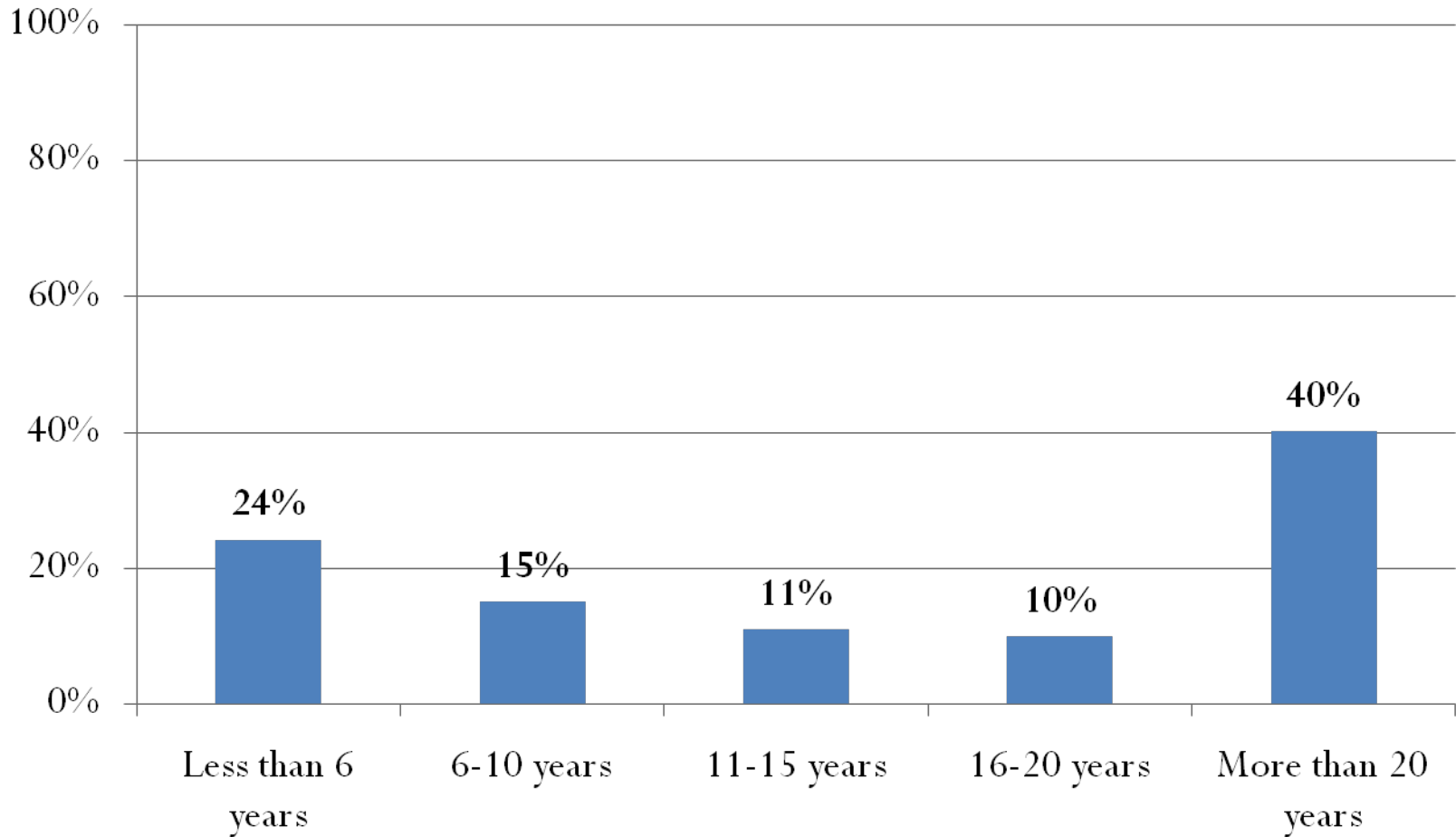
## Attending & resident physicians (n=1629)

- Bachelor 23%
- Master 11%
- PhD 8%
- MD 90%
- DO 4%
- Other 4%

## Nurses (n= 945)

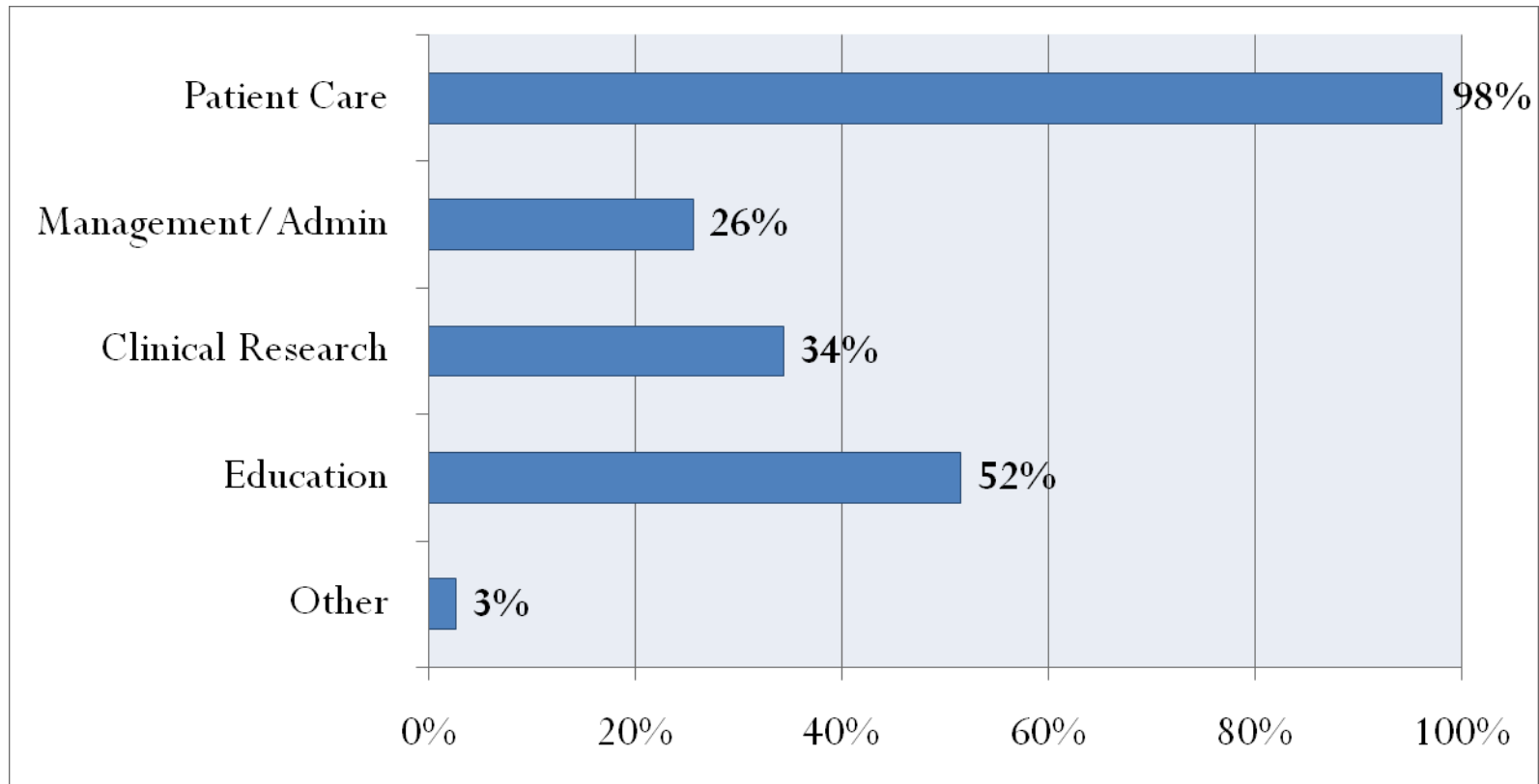
- Associate 21%
- Diploma 8%
- Bachelor 48%
- Master 25%
- Certified Nurse Practitioner 9%
- PhD 2%
- Other 4%

# Years as a health care professional (n=2,572)



# Job duties

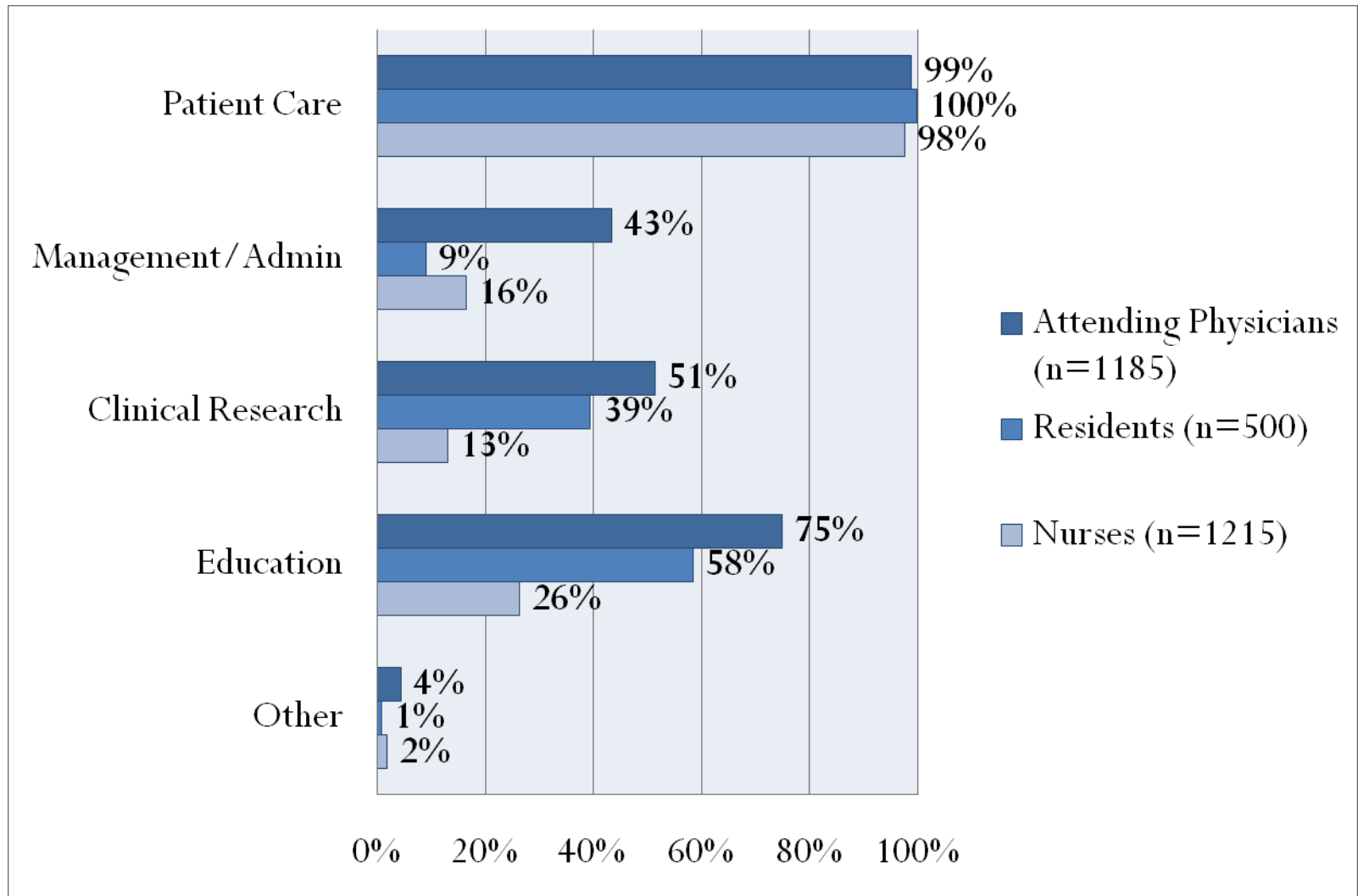
Which of the following does your job involve?\* (n=3105)



**\*Respondents had to perform patient care or clinical research to be included in the study.**

# Job duties by position

Which of the following does your job involve?



# Critical incident technique

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Respondents were asked to think about an occasion in the last six months when they looked for information resources for patient care (beyond what is available in the patient record, EMR system or lab results) and answer questions regarding that occasion.

# Community Based Collaborative Research (CBCR)

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An approach to research design that is based on active collaboration between researchers and members of the community who will benefit from the research. The approach has been used extensively in public health research (Israel, 2001).

# Critical incident

Which of the following describes the principal diagnosis to which your situation refers?

	Overall (n=3105)
Cancer	11%
Heart Disease	11%
Brain & Nervous System	7%
Kidney Disease	7%
Mental Health	6%
Bones, Joints, & Muscles	5%
Sleep Disorders	4%
Autoimmune Disease	4%
Lung Disease	4%
Liver Disease	3%

# Critical incident by position (continued)

Which of the following describes the principal diagnosis to which your situation refers?

	Overall (n=3105)
Blood Diseases	3%
Endocrine System & Hormones	3%
Reproductive Health	3%
Infections	3%
Diabetes	2%
Allergy & Asthma	2%
Eyes & Vision	1%
Skin Conditions	1%
Arthritis	1%
Other	20%

# What type of information was needed to answer the question?

	Overall (n=3021)
Drug Information	55%
Therapy Information	55%
Clinical Procedure	30%
Diagnosis	52%
Information for Patient	33%
Prognosis (outcome)	34%
Adverse Effects	30%
Patient Safety	22%
Clinical Guidelines	46%
Other	5%

# Number of resources used

	Mean number of resources used (Std. Dev.)
Attending physicians (n=1145)	3.8 (2.44)
Residents (n=474)	4.5 (2.71)
Nurses (n=1122)	2.8 (2.21)
<b>Overall (n=2926)</b>	<b>3.6 (2.49)</b>

# Top five resources used

	Overall (n=2926)
Journals (online)	48%
PubMed/ MEDLINE	45%
UpToDate	42%
Books (online)	30%
Micromedex	26%

Note: For this question, respondents were able to check all that apply so the percents will not equal 100.

# Other resources used

	Overall (n=2926)
Books (print)	20%
CINAHL	8%
Clinical evidence (BMJ)	10%
Consumer Health Resources	4%
Dynamed	11%
eMedicine	21%
ePocrates	13%
Essential Evidence Plus	2%
Journals (print)	15%

Note: For this question, respondents were able to check all that apply so the percents will not equal 100.

## Other resources used (continued)

	Overall (n=2926)
MD Consult	18%
Nursing Reference Center	5%
Ovid Medline	23%
Professional association websites	12%
Stat-Ref	2%
Not sure	3%

Note: For this question, respondents were able to check all that apply so the percents will not equal 100.

# Online journals: Top five access points

	Overall (n=1359)
On your institution's library web site	66%
On your institution's intranet	38%
Search engine such as Google	27%
Personal/departmental subscription	15%
In your institution's library	9%

Note: For this question, respondents were able to check all that apply so the percents will not equal 100.

# PubMed/MEDLINE: Top five access points

	Overall (n=1257)
On your institution's library web site	57%
On your institution's intranet	41%
Search engine such as Google	16%
Bookmarked web site	10%
In your institution's library	4%

Note: For this question, respondents were able to check all that apply so the percents will not equal 100.

# UpToDate: Top five access points

	Overall (n=1200)
On your institution's intranet	55%
On your institution's library web site	46%
Personal/departmental subscription	5%
Bookmarked web site	4%
Via the patient's electronic medical record	3%

Note: For this question, respondents were able to check all that apply so the percents will not equal 100.

# Online books: Top five access points

	Overall (n=868)
On your institution's library web site	65%
On your institution's intranet	46%
Search engine such as Google	42%
Personal/departmental subscription	22%
In your institution's library	20%

Note: For this question, respondents were able to check all that apply so the percents will not equal 100.

# Micromedex: Top five access points

	Overall (n=739)
On your institution's intranet	62%
On your institution's library web site	39%
Via the patient's electronic medical record	10%
Search engine such as Google	3%
Bookmarked web site	3%

Note: For this question, respondents were able to check all that apply so the percents will not equal 100.

# Access points used for all resources

	Overall (n=3213)
On your institution's intranet	51%
On your institution's library web site	51%
Search engine such as Google	33%
Personal/departmental subscription	21%
In your institution's library	15%
Mobile device	13%

Note: For this question, respondents were able to check all that apply so the percents will not equal 100.

# Access points used for all resources (Continued)

	Overall (n=3213)
Bookmarked web site	10%
Asked librarian or library staff	8%
Asked a colleague	8%
Via the patient's electronic medical record	7%
Other library	3%
Spouse/friend subscription or access	2%

# From what physical location was the search conducted?

	Overall (n=2819)
In the Library	11%
Office	53%
Home	36%
Patient care unit	52%
Other	3%

Note: For this question, respondents were able to check all that apply so the percents will not equal 100.

# Did you find the information you needed?

	Overall (n=2801)
Completely	58%
Partially – information incomplete	16%
Partially- time constraints	21%
Partially- other reason	4%
Not at all	1%

# If you were unable to find the information, why was that? \*

	Overall (n=22)
Ran out of time	9%
Information did not exist	9%
Could not find the information	32%
Other	50%

# Top five resources that included relevant information

	Overall Percent (n)
Journals (online)	88% (1129)
PubMed/ MEDLINE	83% (972)
UpToDate	89% (926)
Books (online)	67% (525)
Micromedex	79% (514)

Note: For this question, respondents were able to check all that apply so the percents will not equal 100.

Did you handle any aspect of the clinical situation differently as a result of having the information?

	Overall (n=2755)
Definitely Yes	19%
Probably Yes	42%
Probably No	32%
Definitely No	7%

# Value of the information

Percent who agree the information was...	Overall (n=2688)
Relevant	99%
Accurate	97%
Current	97%
Refreshed my memory of details or facts	90%
Substantiated my prior knowledge or belief	87%
Provided new knowledge	90%
Was of clinical value	97%

# Value of the information (continued)

Percent who agree the information...	Overall (n=2688)
Resulted in a better informed clinical decision	88%
Contributed to higher quality of care	90%
Will be of use in the future	96%
Having the information saved me time	74%

# If the information saved time, how many hours?

	Overall (n=1901)
Less than 1 hour	40%
1-2 hours	47%
3-5 hours	8%
6 hours or more	5%

If the information saved time, how many hours?

	Overall (n=1901)
Mean	2.5
Median	1.0
Standard deviation	11.0

# Changes in patient care as a result of the information

Changes Reported	Overall (n=2655)
Diagnosis	26%
Choice of test	23%
Choice of drugs	64%
Choice of other treatments	31%
Length of stay (reduced)	6%
Post hospital care or treatment	11%
Advice given to patient or family	46%
Handled the situation differently	20%
Other	5%
Not applicable	16%

Note: For this question, respondents were able to check all that apply unless they selected Not applicable. The percents will not equal 100.

# Avoidance of adverse events as a result of the information

Adverse Event Avoided	Overall (n=2592)
Hospital admission	2%
Hospital readmission	4%
Patient mortality	5%
Language/cultural misunderstanding	3%
Patient misunderstanding of disease	20%
Hospital acquired infection	2%
Surgery	3%

Note: For this question, respondents were able to check all that apply unless they selected Not applicable. The percents will not equal 100.

# Avoidance of adverse events as a result of the information (continued)

Adverse Event Avoided	Overall (n=2592)
Surgery	3%
Regulatory non-compliance	3%
Additional tests or procedures	18%
Medication error	12%
Misdiagnosis	13%
Adverse drug reaction or interaction	14%
Not applicable	45%

Note: For this question, respondents were able to check all that apply unless they selected Not applicable. The percents will not equal 100.

# Importance of information sources

Source	Overall (n=2523)
Library/Information resource	92%
Diagnostic imaging	54%
Lab tests	68%
Discussion with colleagues	81%

Note: For this question, respondents were able to check all that apply so the percents will not equal 100. The importance rating is based on the percentage of respondents who indicated a source was “important” or “very important”.

# Importance of information sources

Source	Overall Mean Score (Std. Dev.)
Library/Information resource	3.5 (0.6)
Diagnostic imaging	3.1 (0.9)
Lab tests	3.3 (0.8)
Discussion with colleagues	3.4 (0.7)

Note: For this question items were scored from 1 “not at all important” to 4 “very important”. “Not used” was removed from this analysis.

# Future Plans

- Full pilot study results presented at 2011 MLA Annual Meeting
- Article for JMLA
- Adding results to study website
- Other dissemination venues being considered

# Citing the Value Study

- Value study article:

Dunn K, Brewer K, Marshall JG, Sollenberger J. Measuring the value and impact of health sciences libraries: Planning an update and replication of the Rochester Study 2009, *J Med Libr Assoc* 97(4): 308-312.

- Marshall, JG. The value of library and information services in patient care: Preliminary summary of the pilot study. Presented at the NNLM/MAR RAC Meeting, New York University, March 24, 2011.

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The study planning team was led by **Julia Sollenberger**, University of Rochester Medical Center and included **Sharon Easterby-Gannett**, Christiana Care Health System; **Mary Lou Klem**, University of Pittsburgh; **Joanne Gard Marshall**, University of North Carolina at Chapel Hill; **Lynn Kasner Morgan**, Mount Sinai Medical Center; **Kathleen (Kate) Burr Oliver**, NN/LM MAR; **Karen Brewer**, New York University; **Susan Cavanaugh**, University of Medicine and Dentistry of New Jersey; **Sue Hunter**, NN/LM MAR; and **Neil Romanosky**, NN/LM MAR. The research team at University of North Carolina at Chapel Hill was led by Joanne Gard Marshall, Principal Investigator, and included Cheryl A. Thompson, Project Manager; Jennifer Craft Morgan and Amber Wells.

# Study contacts

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- Study website: <http://nnlm.gov/mar/about/value.html>