

# Value of Library and Information Services in Patient Care Study

Summary Aggregate Report

April 28, 2012

National Network of Libraries of Medicine,  
Middle Atlantic Region

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



# Value of Library and Information Services in Patient Care Study

- The purpose of the study was to assess the impact of the library, information services and the librarian on patient care.
- Focus groups of librarians who had interviewed their administrators about their perceptions of the value of library services informed the study design.
- 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 and under Contract No. HHS-N-276-2011-00003-C with the University of Pittsburgh, Health Sciences Library System, (NN/LM MAR)
- Additional support was provided by 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
- Lynn Kasner Morgan, Mount Sinai Medical Center
- Kate Oliver, NN/LM MAR
- Neil Romanosky, NN/LM MAR

## **UNC Research Team**

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

# Methodology

---

# Study design

- **Total study: 56 health libraries serving 118 hospitals.**
- Pilot phase: 7 health libraries serving 19 hospitals in the Middle Atlantic Region
  - Survey of physicians, residents and nurses (Sept – Nov 2010)
  - Follow-up interviews with survey respondents (Jan – June 2011)
- Full launch phase: 49 health libraries serving 99 hospitals in the United States and Canada
  - Survey of physicians, residents and nurses (March – May 2011)
  - Interviews (June – July 2011)

# Participating sites by region

Region	Sites (n=56)
Middle Atlantic*	23
Greater Midwest	12
Southeastern Atlantic	7
Pacific Southwest	4
Pacific Northwest	3
South Central	2
Mid-Continental	1
Canada	4

# Participating site characteristics

	Sites (n=56)
Council of Teaching Hospitals member	77%
Located in an urban area	86%
<b>Bed size:</b>	
Less than 500	45%
500 or more	54%

# Survey methods

- Collaborative development of the survey questions and protocol
- Web-based survey
- Invitation from librarian and local study champion customized by site and sent via listserv or portal
- Three survey reminders

For further information see: 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. *J Med Libr Assoc.* 2009 Oct;97(4):308-12.

# Participant benefits

- Each site received its own de-identified dataset, a copy of the survey, a set of presentation-ready PowerPoint slides for use in their own institution, and a summary report of the aggregate findings.
- No identifying information about survey respondents or individual sites will be included in published results of the full study.
- A list of the participating libraries is available on the study website <http://nnlm.gov/mar/about/value.html>

# Critical incident technique

---

In the survey, 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 to answer questions regarding that occasion.

# Response rates

- Overall response rate 10% (n=16,122)\*
- Physicians 10% (n=5,379)
- Residents 12% (n=2,123)
- Nurses 7% (n=6,788)

Note: Response rates are conservative estimates using as a denominator the number of employed physicians, residents and nurses reported by each site (N= 172,463). The N's reported by position do not add up to 16,122 because 1,158 respondents reported "Other" for their position and 674 did not report a position.

# Response rates for individual sites (n=56)

- 10% or less                      38%
- 11% to 20%                      45%
- 21% to 30%                      9%
- 31% or more                      9%

# Respondent demographics

## **Gender** (n=12,826)

- Female 63%
- Male 37%

## **Age** (n=12,834)

- Under 25 1%
- 25-44 47%
- 45-64 47%
- Over 64 4%

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

- Yes – 1,123 respondents

# Education (Questions D2a-D2b)

## Attending & resident physicians (n=7,526)

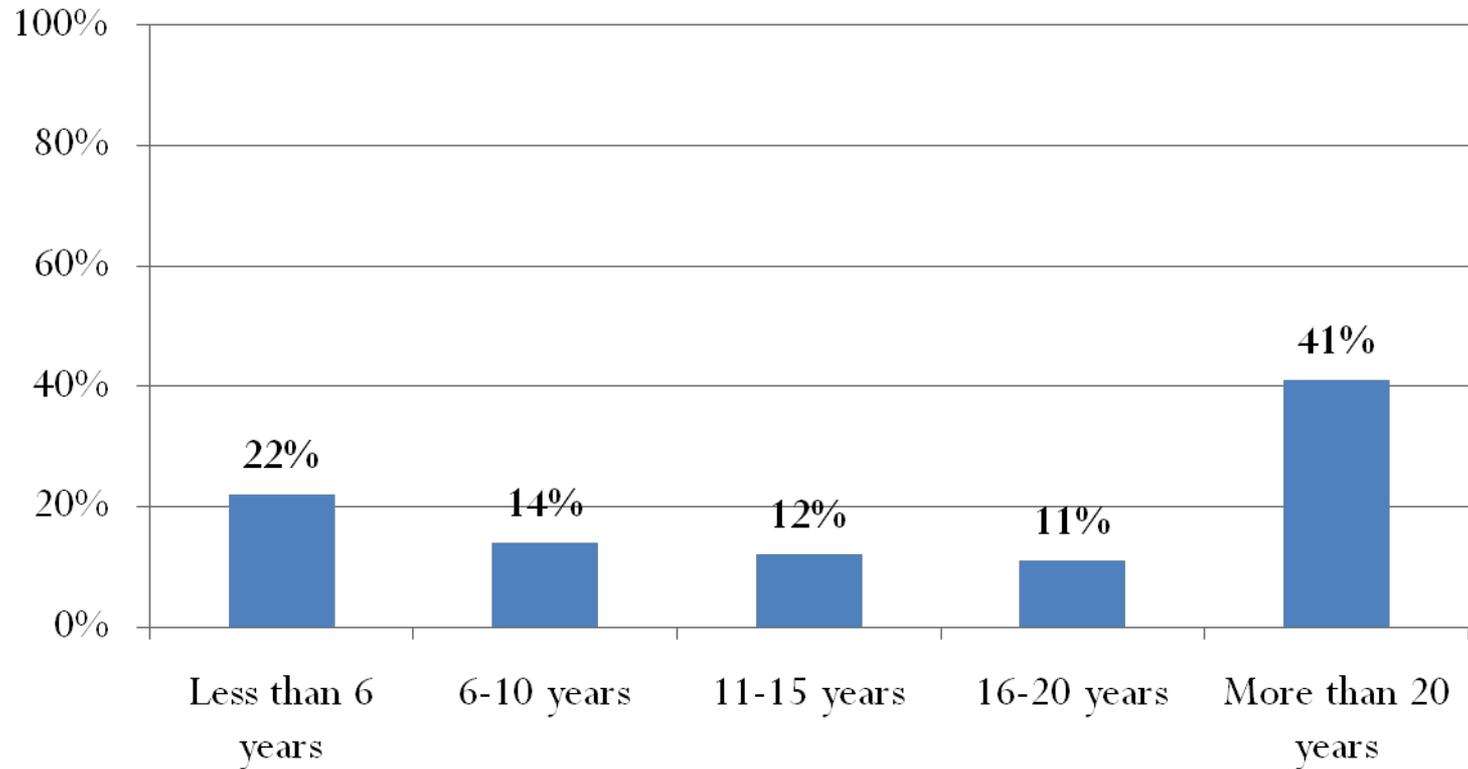
- MD 92%
- Master 9%
- PhD 6%
- DO 6%
- Other 3%

## Nurses (n=5,326)

- Bachelor 47%
- Associate 22%
- Master 20%
- Diploma 13%
- Certified Nurse Practitioner 8%
- PhD 1%
- Other 6%

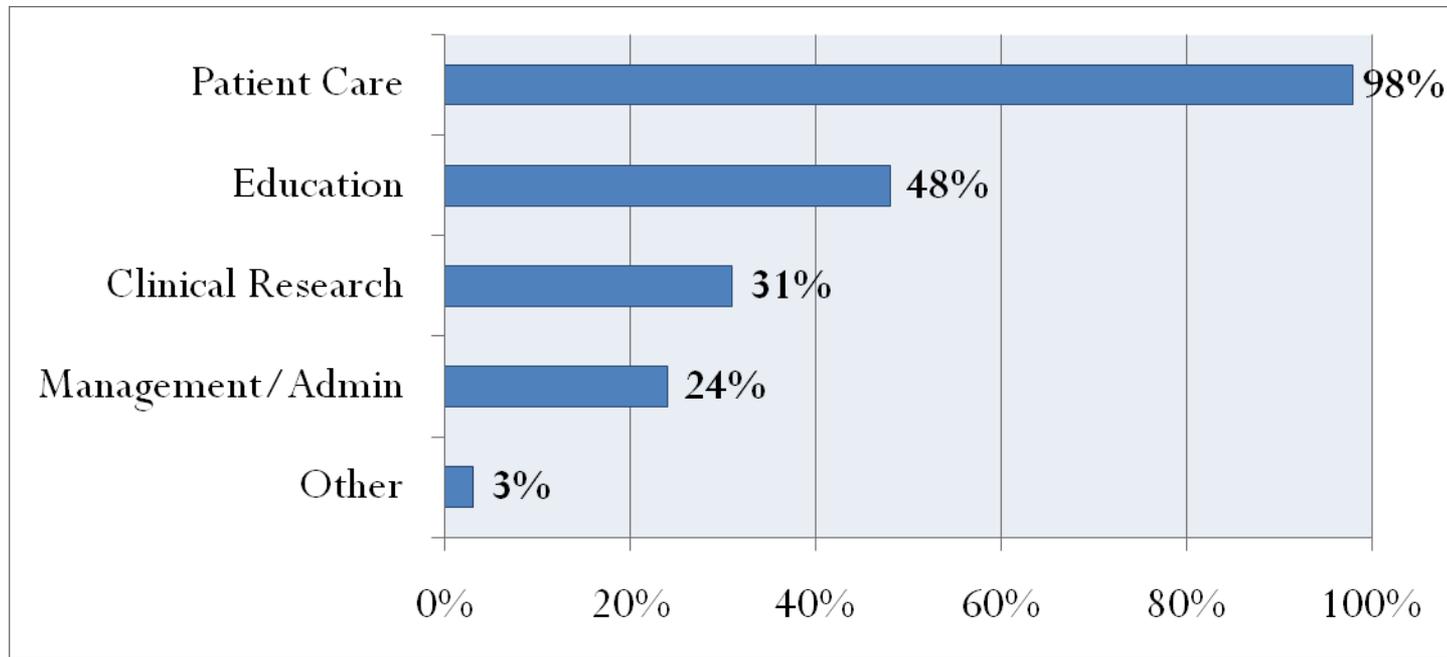
Note: For this question, respondents were able to check all that apply. The percents will not equal 100.

# Years as a health care professional (n=12,843) (Question D5)



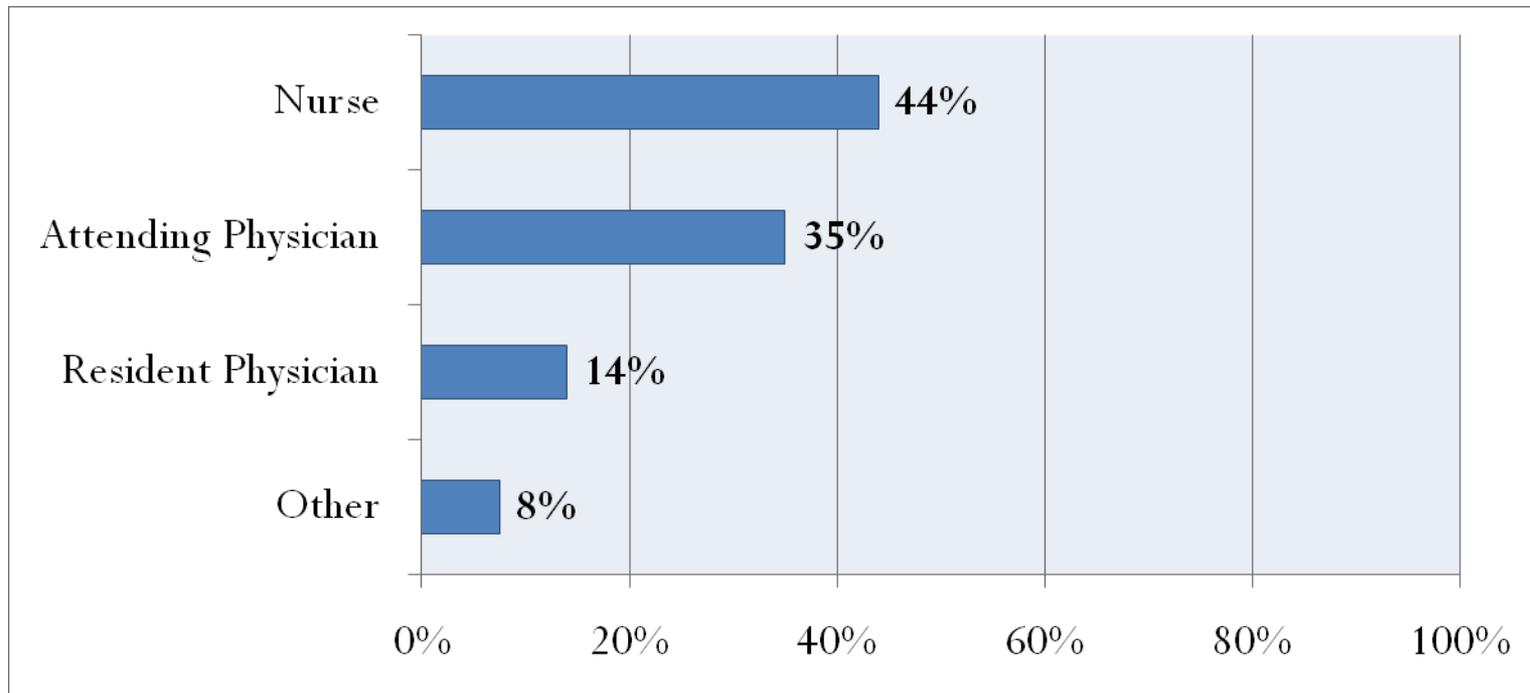
# Job duties (Question IN1b)

Which of the following does your job involve?\* (n=15,403)



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

# Positions held by respondents (n=15,448) (Question IN1)



# Results: Value of library and information resources

---

# Did you handle any aspect of the clinical situation differently as a result of having the information? (Question IN8)

	Overall (n=13,737)	Attending physicians (n=5,034)	Residents (n=1,979)	Nurses (n=5,785)
Definitely Yes	31%	38%	38%	22%
Probably Yes	44%	47%	47%	41%
Probably No	21%	13%	13%	31%
Definitely No	4%	2%	1%	7%

# Changes in patient care as a result of the information (Question V3)

Changes Reported	Overall (n=13,159)	Attending physicians (n=4,906)	Residents (n=1,890)	Nurses (n=5,467)
Advice given to patient or family	48%	47%	45%	48%
Choice of drugs	33%	46%	52%	15%
Choice of other treatments	31%	42%	43%	17%
Diagnosis	25%	36%	42%	9%
Choice of test	23%	35%	40%	7%
Post hospital care or treatment	12%	12%	15%	12%
Length of stay	7%	7%	11%	6%
Not applicable	16%	7%	8%	26%

Note: For this question, respondents were able to check all that apply unless they selected Not applicable. The percents will not equal 100. Changes included here must have had at least 10% or more of respondents in at least one of the 4 categories.

# Value of the information (Question V1)

Percent who agree that the information was...	Overall (n)	Attending physicians (n)	Residents (n)	Nurses (n)
Relevant	<b>99% (13,259)</b>	100% (4,943)	100% (1,906)	99% (5,508)
Accurate	<b>99% (13,092)</b>	100% (4,893)	100% (1,889)	99% (5,427)
Will be of use in the future	<b>99% (13,050)</b>	99% (4,882)	100% (1,897)	98% (5,384)
Was of clinical value	<b>98% (13,098)</b>	99% (4,915)	100% (1,896)	97% (5,414)
Current	<b>97% (13,141)</b>	98% (4,918)	98% (1,897)	96% (5,431)
Refreshed my memory of details or facts	<b>96% (12,522)</b>	97% (4,727)	98% (1,855)	95% (5,100)

# Value of the information (continued)

Percent who agree that the information...	Overall (n)	Attending physicians (n)	Residents (n)	Nurses (n)
Resulted in a better informed clinical decision	<b>95% (12,329)</b>	98% (4,817)	98% (1,859)	92% (4,856)
Contributed to higher quality of care	<b>95% (12,529)</b>	97% (4,796)	98% (1,848)	93% (5,059)
Substantiated my prior knowledge or belief	<b>95% (12,332)</b>	95% (4,671)	97% (1,818)	94% (5,029)
Provided new knowledge	<b>92% (12,083)</b>	92% (4,831)	97% (1,895)	91% (5,357)
Having the information saved me time	<b>85% (11,887)</b>	85% (4,523)	90% (1,768)	83% (4,819)

# If the information saved time, how many hours? (Question V2)

	<b>Overall (n=9,295)</b>	<b>Attending physicians (n=3,607)</b>	<b>Residents (n=1,482)</b>	<b>Nurses (n=3,604)</b>
Mean	<b>2.5</b>	2.6	2.8	2.0
Median	<b>1.0</b>	1.0	1.0	1.0
Standard deviation	<b>7.8</b>	8.4	8.3	5.9

# Key adverse events avoided as a result of the information (Question V4)

Adverse Event Avoided	Overall (n=12,910)	Attending physicians (n=4,801)	Residents (n=1,847)	Nurses (n=5,381)
Patient misunderstanding of disease	23%	19%	23%	26%
Additional tests or procedures	19%	29%	32%	7%
Misdiagnosis	13%	22%	23%	3%
Adverse drug reaction or interaction	13%	15%	16%	10%
Medication error	12%	13%	17%	9%
Patient mortality	6%	7%	10%	3%
Not applicable	44%	38%	35%	51%

Note: For this question, respondents were able to check all that apply unless they selected Not applicable. The percents will not equal 100. The most frequent events were included along with patient mortality.

# Importance of library and non-library sources I (Question V4b)

Source	Overall (n)	Attending physicians (n)	Residents (n)	Nurses (n)
Library/Information resource	<b>97% (12,027)</b>	98% (4,599)	98% (1,773)	96% (4,854)
Discussion with colleagues	<b>92% (11,038)</b>	87% (4,105)	97% (1,730)	94% (4,456)
Lab tests	<b>87% (9,810)</b>	86% (3,983)	90% (1,623)	87% (3,614)
Diagnostic imaging	<b>80% (8,708)</b>	80% (3,642)	86% (1,490)	76% (3,061)

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 library and non-library sources II (Question V4b)

Source	Overall Mean (S.D.)	Attending physicians Mean (S.D.)	Residents Mean (S.D.)	Nurse Mean (S.D.)
Library/Information resource	3.5 (0.6)	3.6 (0.6)	3.6 (0.6)	3.4 (0.6)
Discussion with colleagues	3.4 (0.7)	3.3 (0.7)	3.5 (0.6)	3.4 (0.6)
Lab tests	3.3 (0.8)	3.3 (0.8)	3.4 (0.7)	3.2 (0.8)
Diagnostic imaging	3.1 (0.9)	3.2 (0.9)	3.3 (0.8)	3.0 (0.9)

Note: For this question, mean scores were calculated based on 1=not at all important; 2=not very important; 3= important; and 4=very important. “Not used” was removed from this analysis.

# Results: Library resources used

---

## Number of library resources used (Question IN3)

	Mean number of resources used (S. D.)
<b>Overall (n=14,544)</b>	<b>3.5 (2.4)</b>
Attending physicians (n=5,230)	3.8 (2.4)
Residents (n=2,047)	4.5 (2.6)
Nurses (n=6,249)	2.8 (2.2)

# Top five library resources used (Question IN3)

	Overall (n=14,591)	Attending physicians (n=5,233)	Residents (n= 2,050)	Nurses (n=6,280)
Journals (online)	46%	59%	56%	30%
PubMed/MEDLINE	42%	54%	59%	25%
UpToDate	40%	53%	77%	18%
Books (online)	30%	32%	46%	22%
Micromedex	24%	14%	18%	35%

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

# Other library resources used (Question IN3)

	Overall (n=14,591)	Attending physicians (n=5,233)	Residents (n= 2,050)	Nurses (n=6,280)
Books (print)	21%	24%	25%	16%
eMedicine	20%	20%	38%	15%
Ovid Medline	16%	22%	18%	11%
Journals (print)	16%	22%	12%	11%
MD Consult	16%	19%	25%	10%
ePocrates	13%	18%	28%	6%

Note: For this question, respondents were able to check all that apply so the percents will not equal 100. Library resources included here must have had at least 10% or more of respondents in at least one of the 4 categories. Note not all libraries had all resources.

# Other library resources used (Question IN3) continued

	Overall (n=14,591)	Attending physicians (n=5,233)	Residents (n= 2,050)	Nurses (n=6,280)
Professional assoc. website	12%	12%	8%	13%
Clinical Evidence (BMJ)	10%	10%	15%	7%
CINAHL	9%	1%	1%	18%
Nursing Reference Ctr.	6%	0%	0%	14%
Other	12%	9%	6%	15%

Note: For this question, respondents were able to check all that apply so the percents will not equal 100. Library resources included here must have had at least 10% or more of respondents in at least one of the 4 categories. Note not all libraries had all resources.

# Did you find the information you needed? (Question IN6)

	Overall (n=13,986)	Attending Physicians (n=5,069)	Residents (n=1,997)	Nurses (n=5,951)
Completely	59%	64%	63%	52%
Partially- time constraints	21%	15%	19%	27%
Partially – information incomplete	16%	16%	14%	16%
Partially- other reason	4%	4%	3%	4%
Not at all	1%	0%	0%	2%

# Access points used for all resources (Question IN4\_1-IN4\_OTH)

	Overall (n=14,544)	Attending physicians (n=5,230)	Residents (n=2,047)	Nurses (n=6,249)
On your institution's intranet	52%	48%	61%	53%
On your institution's library web site	50%	60%	72%	34%
Search engine such as Google	37%	38%	39%	35%
Personal/departmental subscription	25%	36%	27%	15%
In your institution's library	19%	21%	26%	14%

Note: For this question, respondents were able to check all that apply so the percents will not equal 100. Access points included here must have had at least 10% or more of respondents in at least one of the 4 categories. Since institutions make online library resources available in different ways, options for both the library web site and the intranet were included in the survey.

# Access points used for all resources (Question IN4\_1-IN4\_OTH) continued

	Overall (n=14,544)	Attending physicians (n=5,230)	Residents (n=2,047)	Nurses (n=6,249)
Via patient's electronic medical record	18%	18%	16%	17%
Mobile device	16%	20%	31%	8%
Asked librarian or library staff	14%	15%	12%	12%
Bookmarked website	12%	17%	12%	7%
Asked colleague	9%	7%	7%	12%

Note: For this question, respondents were able to check all that apply so the percents will not equal 100. Access points included here must have had at least 10% or more of respondents in at least one of the 4 categories. Since institutions make online library resources available in different ways, options for both the library web site and the intranet were included in the survey.

# Study Acknowledgment for use in all presentations and publications

Value of Libraries and Information Services in Patient Care study 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 and under Contract No. HHS-N-276-2011-00003-C with the University of Pittsburgh, Health Sciences Library System, (NN/LM MAR). Additional support is 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.

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, Marshica Stanley and Amber Wells.

# Study contact

Joanne Gard Marshall, Principal Investigator

School of Information & Library Science

University of North Carolina at Chapel Hill

[marshall@ils.unc.edu](mailto:marshall@ils.unc.edu)

(919) 929-9162 or (919) 843-7883

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