

# Value of Library and Information Services in Patient Care Study

Summary Report

All participating Mid-Continental & Greater Midwest Sites

April 28, 2012

National Network of Libraries of Medicine,  
Middle Atlantic Region

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



UNC  
SCHOOL OF INFORMATION  
AND LIBRARY SCIENCE

# Study overview

- The purpose of the study was to understand the value and impact of the information resources and services provided by the library 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 built 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
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## **UNC Research Team**

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

# Methodology

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# Full study design

- **Total study: 56 health libraries serving 118 hospitals.**
- Pilot phase: 7 health libraries serving 19 hospitals in 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)

# 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

	All Sites (n=56)	Middle Continental & Greater Midwest Region Sites (n=13)
Council of Teaching Hospitals member	77%	54%
Located in an urban or suburban area	86%	85%
<b>Bed size:</b>		
Less than 500	45%	58%
500 or more	54%	42%

# Survey methods

- Collaborative development of the survey questions and protocol
- Web-based survey
- Invitation customized by sites 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://nmlm.gov/mar/about/valueparticipate.html>

# Critical incident technique

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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.

# Regional results for Mid- Continental and Midwest sites

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# Response rates

- Overall response rate 10.3% (n=3543)
- Physicians response rate 12.8% (n=1317)
- Residents response rate 11.9% (n=436)
- Nurses response rate 7.0% (n=1453)

Note: Response rates are conservative estimates using as a denominator the number of employed physicians, residents and nurses reported by each site. The Ns reported by position do not add up to 3543 because some respondents reported “Other” for their position and some did not report a position.

# Participating libraries

Library Name	
Loyola Health Sciences Library Loyola University Maywood, IL	Borgess Library Borgess Medical Center Kalamazoo, MI
Health Sciences Library Iowa Health-Des Moines Des Moines, IA	Allina Library Services Allina Hospitals and Clinics Minneapolis, MN
McLaren Medical Library McLaren Regional Medical Center Flint, MI	Mulford Health Sciences Library University of Toledo Toledo, OH
Lake Health Resource Center Lake Health Concord Township, OH	Health Sciences Resource Center MacNeal Hospital Berwyn, IL

Note: Response rates are conservative estimates using as a denominator the number of employed physicians, residents and nurses reported by each site. The Ns reported by position do not add up to “overall” Ns1 because some respondents reported “Other” for their position and some did not report a position.

## Library Name

Kevein F. O'Brien Health Sciences Library  
Marquette General Health System  
Lansing, MI

Sparrow Health Sciences Library  
Sparrow Health System  
Lansing, MI

Saint Francis Hospital Library  
Saint Francis Hospital/Resurrection Health Care  
Evanston, IL

Detroit Medical Center Library Services  
Detroit Medical Center  
Detroit, MI

Bernard Becker Medical Library  
Washington University School of Medicine  
St. Louis, MO

# Respondent demographics

## **Gender** (n=2783)

- Female 61%
- Male 39%

## **Age** (n=2786)

- Under 25 1%
- 25-44 44%
- 45-64 51%
- Over 64 4%

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

- Yes – 223 respondents

# Education (Questions D2a-D2b)

## Attending & resident physicians (n=1535)

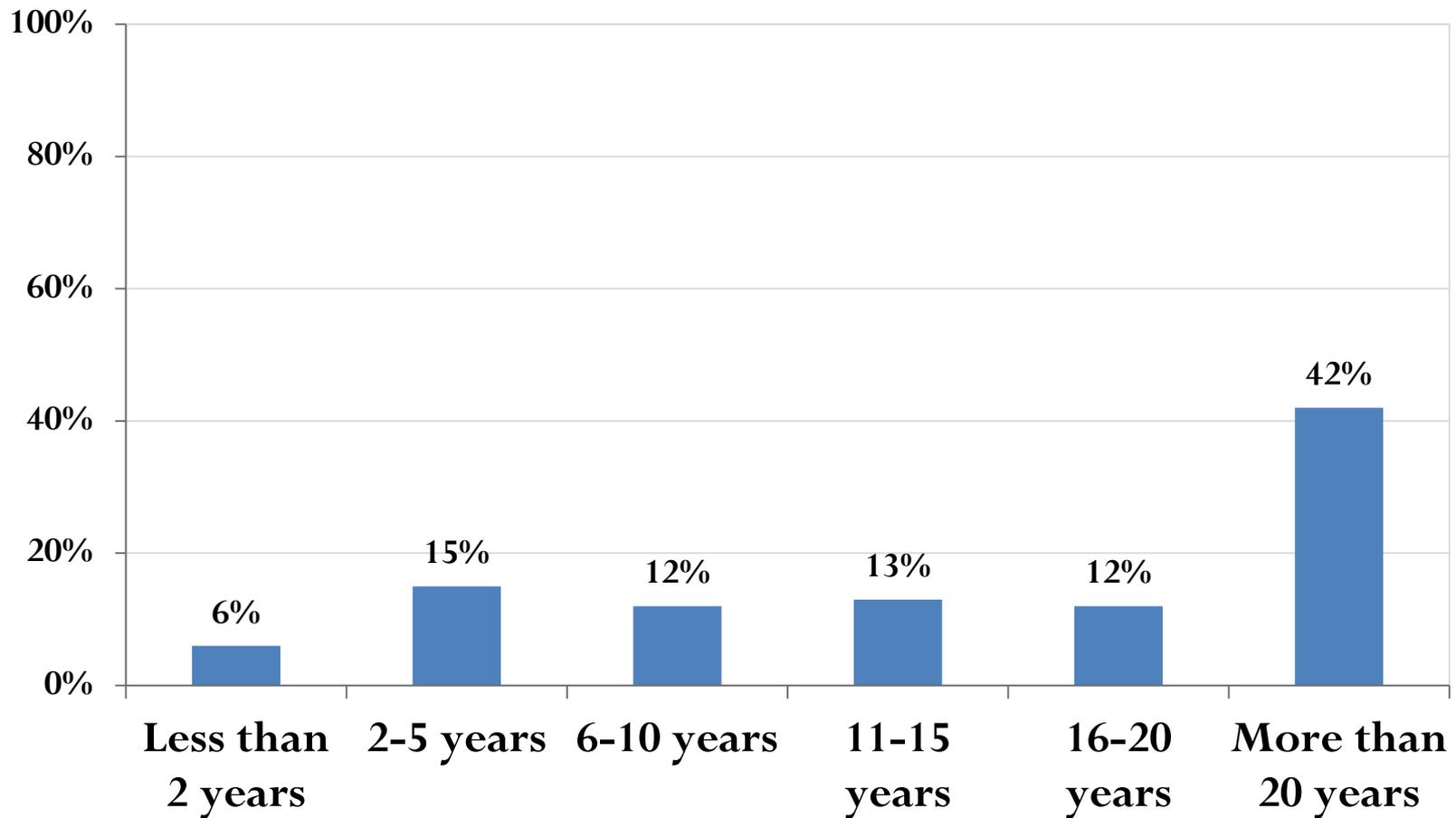
- MD 88%
- Master 8%
- PhD 6%
- DO 10%
- Other 3%
- Bachelor 19%

## Nurses (n=1114)

- Bachelor 46%
- Diploma 10%
- Master 14%
- Certified Nurse Practitioner 7%
- PhD 1%
- Associate 32%
- Other 5%

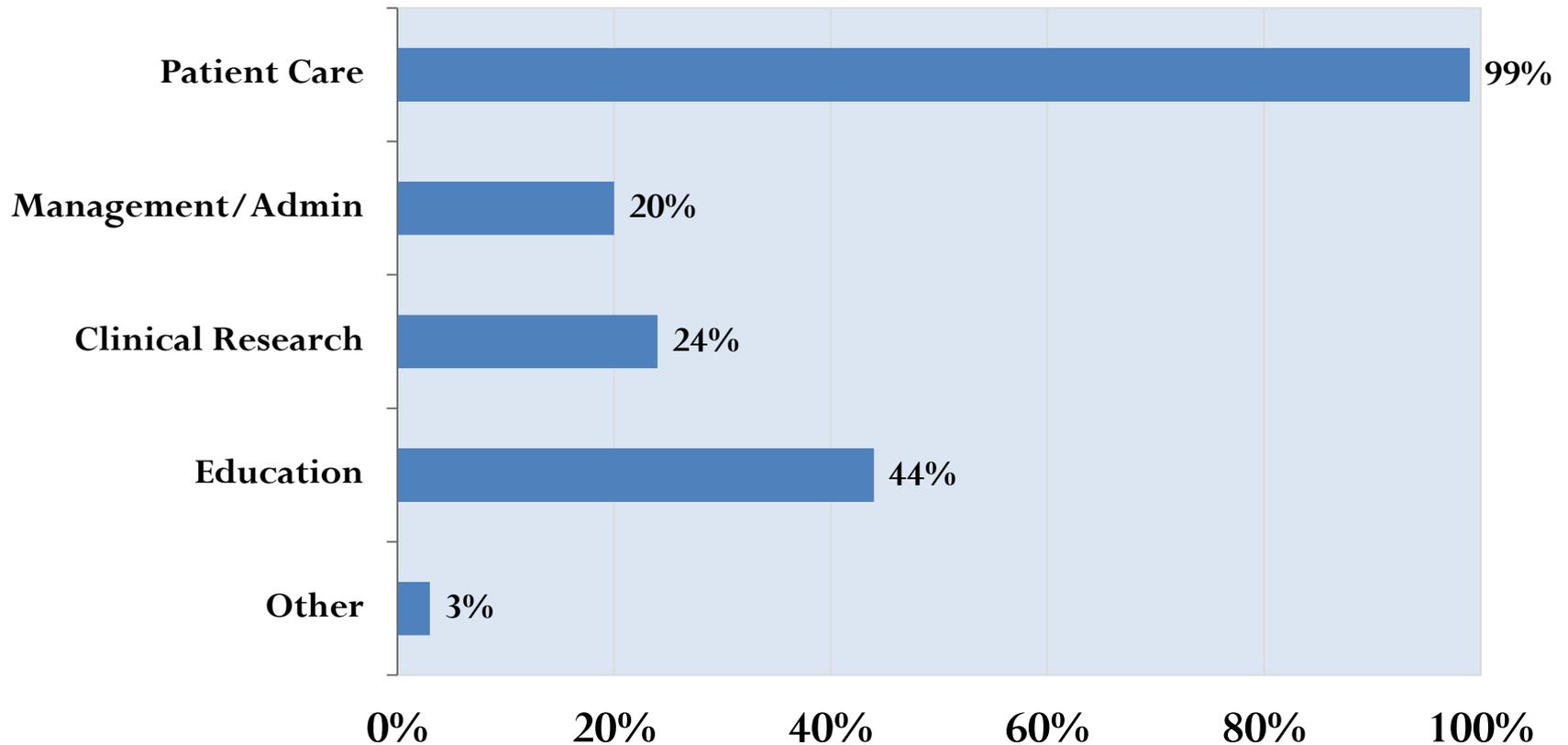
Note: For this question, respondents were able to check all that apply. The percents will not equal 100.

# Years as a health care professional (n=2789) (Question D5)



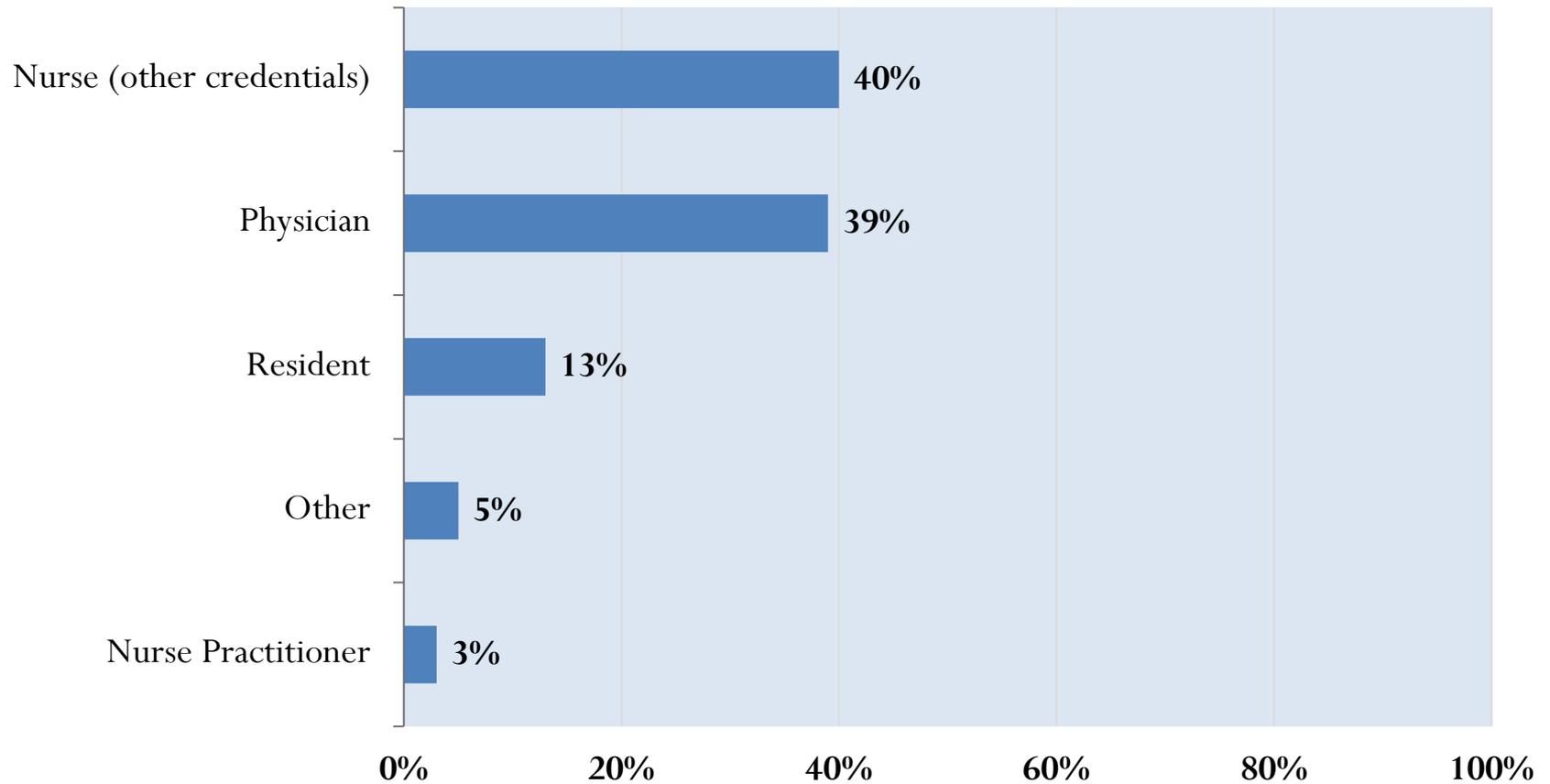
# Job duties (Question IN1b)

Which of the following does your job involve?\* (n=3376)



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

# Positions held by respondents (n=3386) (Question IN1)



# Results: Value of library and information sources

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

	Overall (n=3005)	Attending physicians (n=1219)	Residents (n=409)	Nurses (n=1227)
Definitely Yes	31%	37%	36%	23%
Probably Yes	43%	48%	48%	37%
Probably No	22%	14%	14%	33%
Definitely No	4%	2%	2%	7%

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

Changes Reported	Overall (n=2877)	Attending physicians (n=1190)	Residents (n=391)	Nurses (n=1151)
Advice given to patient or family	46%	46%	41%	49%
Choice of drugs	31%	44%	52%	12%
Choice of other treatments	31%	44%	43%	15%
Diagnosis	24%	34%	43%	9%
Choice of test	23%	35%	40%	6%
Handled situation differently	19%	18%	18%	19%
Not applicable	17%	8%	10%	27%
Post hospital care or treatment	12%	12%	14%	13%
Length of stay	7%	7%	13%	6%

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% (2868)</b>	100% (1187)	100% (397)	99% (1144)
Accurate	<b>100% (2833)</b>	100% (1178)	100% (389)	99% (1128)
Was of clinical value	<b>99% (2802)</b>	99% (1176)	100% (392)	97% (1103)
Will be of use in the future	<b>98% (2791)</b>	99% (1165)	100% (392)	97% (1098)
Current	<b>98% (2790)</b>	98% (1160)	99% (389)	97% (1106)
Resulted in a better informed clinical decision	<b>95% (2545)</b>	97% (1124)	99% (377)	91% (923)

# Value of the information (continued)

Percent who agree that the information...	Overall (n)	Attending physicians (n)	Residents (n)	Nurses (n)
Refreshed my memory of details or facts	<b>97% (2642)</b>	97% (1106)	99% (377)	96% (1033)
Contributed to higher quality of care	<b>95% (2601)</b>	97% (1119)	98% (370)	92% (987)
Substantiated my prior knowledge or belief	<b>95% (2538)</b>	95% (1064)	97% (365)	94% (991)
Provided new knowledge	<b>92% (2579)</b>	91% (1057)	98% (384)	90% (1012)
Having the information saved me time	<b>84% (2175)</b>	85% (938)	91% (336)	80% (807)

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

	Overall (n=1989)	Attending physicians (n=861)	Residents (n=319)	Nurses (n=724)
Mean	2.2	2.1	3.3	1.8
Median	1.0	1.0	1.0	1.0
Standard deviation	6.5	5.3	9.7	5.3

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

Adverse Event Avoided	Overall (n=2822)	Attending physicians (n=1161)	Residents (n=385)	Nurses (n=1135)
Patient misunderstanding of disease	22% (611)	19% (216)	22% (85)	25% (283)
Additional tests or procedures	20% (553)	29% (336)	34% (129)	6% (70)
Misdiagnosis	13% (359)	21% (244)	21% (79)	2% (22)
Adverse drug reaction or interaction	10% (287)	12% (134)	13% (51)	9% (96)
Medication error	10% (269)	11% (132)	15% (56)	6% (73)

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% (2532)</b>	97% (1080)	97% (347)	97% (977)
Discussion with colleagues	<b>91% (2111)</b>	85% (823)	97% (333)	94% (847)
Lab tests	<b>86% (1807)</b>	84% (805)	93% (307)	87% (625)
Diagnostic imaging	<b>80% (1491)</b>	80% (710)	88% (267)	76% (450)

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	<b>3.5 (0.6)</b>	3.6 (0.6)	3.5 (0.6)	3.4 (0.6)
Discussion with colleagues	<b>3.3 (0.7)</b>	3.2 (0.8)	3.5 (0.6)	3.4 (0.7)
Lab tests	<b>3.3 (0.8)</b>	3.2 (0.8)	3.4 (0.7)	3.2 (0.8)
Diagnostic imaging	<b>3.1 (0.9)</b>	3.2(0.9)	3.3 (0.7)	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

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## Number of library resources used (Question IN3)

	Mean number of resources used (SD)
<b>Overall (n=3192)</b>	<b>3.2 (2.3)</b>
Attending physicians (n=1278)	3.5 (2.3)
Residents (n=425)	4.2 (2.5)
Nurses (n=1329)	2.6 (2.1)

# Top five library resources used (Question IN3)

	Overall (n=3200)	Attending physicians (n=1279)	Residents (n=427)	Nurses (n=1332)
Journals (online)	41%	54%	48%	26%
PubMed/MEDLINE	37%	48%	50%	20%
UpToDate	32%	47%	68%	8%
Books (online)	28%	30%	47%	20%
eMedicine	20%	19%	40%	16%

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=3200)	Attending physicians (n=1279)	Residents (n=427)	Nurses (n=1332)
Micromedex	25%	11%	15%	42%
Books (print)	21%	25%	24%	16%
Other	12%	10%	4%	15%
Journals (print)	18%	25%	12%	12%
Clinical Evidence (BMJ)	9%	9%	14%	7%
Professional assoc. website	12%	12%	6%	12%

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.

# Other library resources used (Question IN3) continued

	Overall (n=3200)	Attending physicians (n=1279)	Residents (n=427)	Nurses (n=1332)
Ovid Medline	13%	18%	14%	8%
MD Consult	12%	17%	21%	6%
CINAHL	8%	1%	1%	16%
Nursing Reference Center	7%	<1%	0%	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.

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

	Overall (n=3069)	Attending physicians (n=1231)	Residents (n=415)	Nurses (n=1268)
Completely	59%	64%	68%	52%
Partially- time constraints	20%	15%	19%	26%
Partially – information incomplete	16%	16%	12%	16%
Partially- other reason	4%	5%	2%	4%
Not at all	1%	<1%	<1%	2%

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

	Overall (n=3192)	Attending physicians (n=1278)	Residents (n=425)	Nurses (n=1329)
On your institution's library web site	43%	45%	62%	33%
On your institution's intranet	49%	44%	56%	52%
Search engine such as Google	36%	39%	39%	32%
Personal/departmental subscription	26%	39%	29%	14%
In your institution's library	22%	24%	33%	15%
Via patient's electronic medical record	19%	20%	16%	20%

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=3192)	Attending physicians (n=1278)	Residents (n=425)	Nurses (n=1329)
Mobile Device	16%	21%	39%	5%
Asked a librarian	16%	19%	18%	13%
Bookmarked website	12%	18%	12%	5%
Asked Colleague	8%	6%	6%	10%
Other library	6%	6%	8%	5%

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

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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, Marshica Stanley and Amber Wells.

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