

Value of Library and Information Services in Patient Care Study

June 9, 2011

National Network of Libraries of Medicine,
Middle Atlantic Region
School of Information & Library Science, University of North

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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.

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)
 - Follow-up interviews with survey respondents (?)

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%
Bed size:	
Less than 500	45%
500 or more	54%

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

	(UNC response Rate)*	(National response rate)
• Overall response rate	13% (n=406)	(10%)
• Physicians response rate	19% (n=204)	(10%)
• Residents response rate	14% (n=110)	(12%)
• Nurses response rate	4% (n=51)	(7%)

*All data is UNC data unless identified as the national average data

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 406 because 25 respondents reported “Other” for their position and 16 did not report a position.

Respondent demographics

Gender (n=357)

- Female 50%
- Male 50%

Age (n=358)

- | | (UNC) | (National) |
|------------|-------|------------|
| • Under 25 | 1% | (1%) |
| • 25-44 | 58% | (47%) |
| • 45-64 | 37% | (47%) |
| • Over 64 | 4% | (4%) |

Interest in follow-up interview

- Yes – 38 respondents

Education

Attending & resident physicians (n=295)

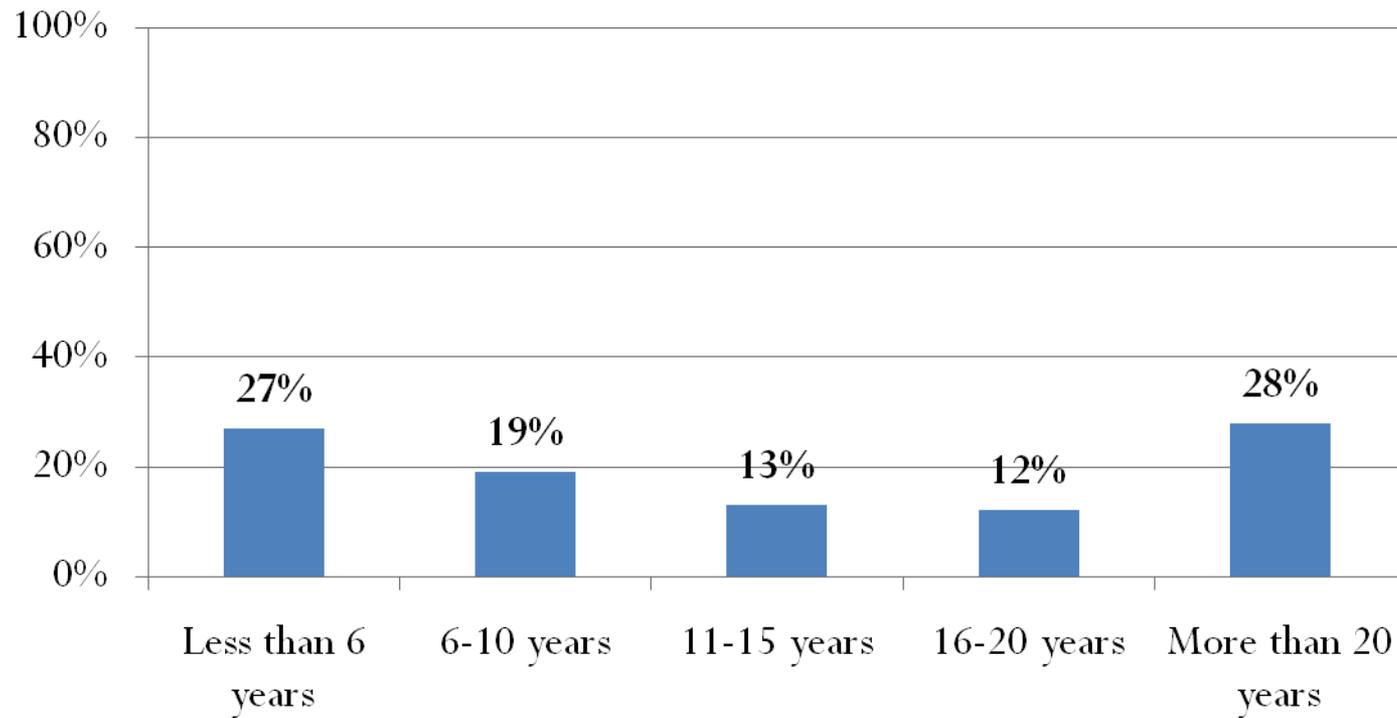
- MD 96%
- Master 16%
- PhD 5%
- DO 3%
- Other 3%

Nurses (n=40)

- Bachelor 45%
- Master 38%
- Certified Nurse Practitioner 18%
- Associate 15%
- Diploma 8%
- PhD 3%
- Other 10%

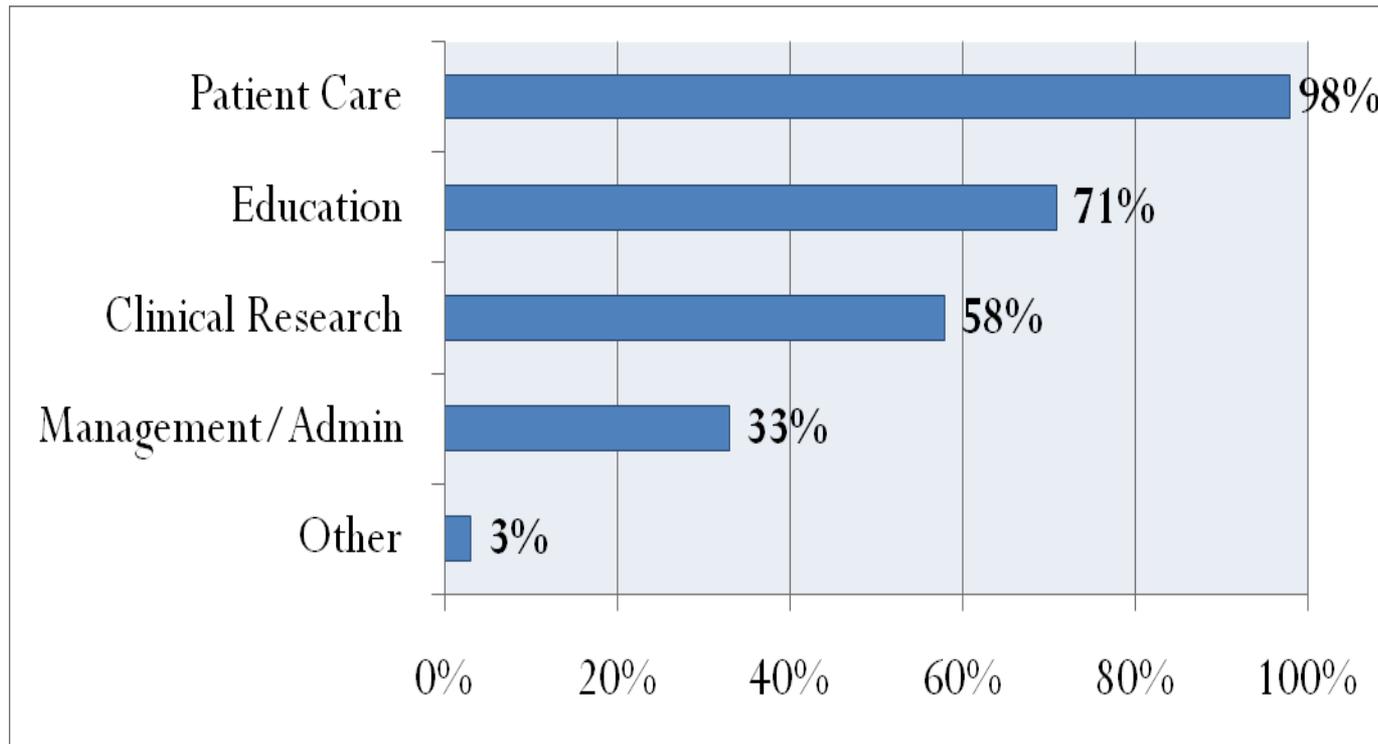
Note: For this question, respondents were able to check all that apply. The percents will not equal 100.

Years as a health care professional (n=356)



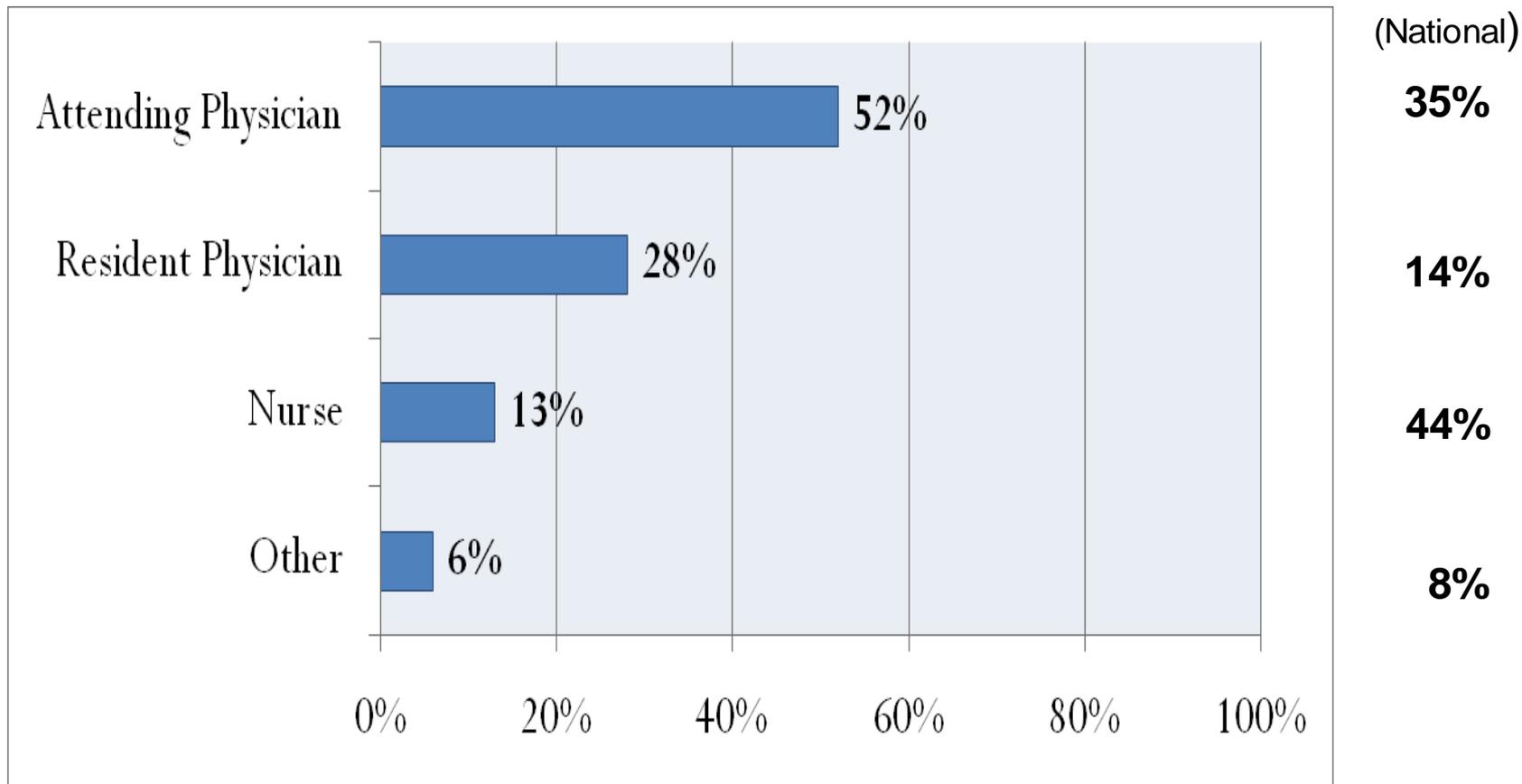
Job duties

Which of the following does your job involve?* (n=389)



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

Positions held by respondents (n=390)



Results: Value of library and information sources

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.

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

	Overall (n=371)	Attending physicians (n=197)	Residents (n=107)	Nurses (n=44)
Definitely Yes	48% (31%)*	50% (38%)	50% (38%)	32% (22%)
Probably Yes	44% (44%)	45% (47%)	42% (47%)	48% (41%)
Probably No	7% (21%)	5% (13%)	7% (13%)	18% (31%)
Definitely No	1% (4%)	0% (2%)	0% (1%)	2% (7%)

Did any of the following change in a positive way as a result of the information

Changes Reported	Overall (n=362)	Attending physicians (n=192)	Residents (n=105)	Nurses (n=42)
Advice given to patient or family	59% (48%)	60% (47%)	63% (45%)	60% (48%)
Choice of drugs	54% (33%)	59% (46%)	60% (52%)	26% (15%)
Choice of other treatments	49% (31%)	51% (42%)	57% (43%)	29% (17%)
Diagnosis	43% (25%)	50% (36%)	48% (42%)	10% (9%)
Choice of test	39% (23%)	44% (35%)	45% (40%)	12% (7%)
Post hospital care or treatment	18% (12%)	15% (12%)	31% (15%)	12% (12%)
Length of stay	11% (7%)	10% (7%)	17% (11%)	5% (6%)
Other	4%	3%	0%	12%
Not applicable	4% (16%)	1% (7%)	7% (8%)	10% (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.

Were any of the following avoided as a result of the information

Adverse Event Avoided	Overall (n=355)	Attending physicians (n=187)	Residents (n=103)	Nurses (n=42)
Additional tests or procedures	38% (19%)	42% (29%)	42% (32%)	17% (7%)
Patient misunderstanding of disease	34% (23%)	30% (19%)	40% (23%)	36% (26%)
Misdiagnosis	26% (13%)	32% (22%)	27% (23%)	2% (3%)
Adverse drug reaction or interaction	21% (13%)	24% (15%)	21% (16%)	12% (10%)
Medication error	18% (12%)	18% (13%)	23% (17%)	12% (3%)

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.

Were any of the following avoided as a result of the information

Adverse Event Avoided	Overall (n=355)	Attending physicians (n=187)	Residents (n=103)	Nurses (n=42)
Patient mortality	11% (6%)	10% (7%)	16% (10%)	10% (3%)
Language/ cultural misunderstanding	6%	7%	4%	10%
Surgery	8%	9%	11%	0%
Not applicable	29%	27%	24%	40%
Hospital admission	6%			
Hospital readmission	8%			
Hospital acquired inf	5%			
Regulatory noncompl	3%			

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

Save time? 92% said yes (N=343)

If so, how many hours?

	Overall (n=293)	Attending physicians (n=159)	Residents (n=88)	Nurses (n=32)
Mean	2.1 (2.5)	2.1 (2.6)	2.1 (2.8)	1.8 (2.0)
Median	1.0	2.0	1.0	1.25
Standard deviation	2.9	2.7	3.3	2.8
Range	.16-24	.16-24	.16-20	.16-12

Principle diagnosis of the patient to whom your situation is related

Other (please specify)	71	18.3%
Cancer	48	12.4%
Mental health	32	8.3%
Brain and nervous system	28	7.2%
Heart disease	25	6.5%
Kidney disease	25	6.5%
Reproductive health	22	5.7%
Endocrine system and hormones	21	5.4%
Autoimmune disease	18	4.7%
Infections	17	4.4%
Bones joints and muscles	15	3.9%
Skin conditions	13	3.4%
Liver disease	12	3.1%
Lung disease	12	3.1%
Allergy and asthma	11	2.8%
Blood diseases	7	1.8%
Diabetes	4	1.0%
Sleep Disorders	4	1.0%
Arthritis	2	0.5%
Eyes and Vision	0	0.0%

Participants were asked the following questions about the information they sought or used

What type of information.

What specific resource.

How/from where did you get it.

Number of resources used.

Find information needed?

Information was ... (evaluation).

Importance of information.

From where did you search for information?

What type of information did you need to answer the question?
(*Select all that apply*) N=384

Therapy information	265 (69%)
Diagnosis	267 (69%)
Clinical guidelines	246 (64%)
Drug information	228 (59%)
Prognosis (outcome)	206 (53%)
Information for patient	160 (41%)
Adverse effects	159 (41%)
Clinical procedure	131 (34%)
Patient safety	114 (29%)
Other (please specify):	19 (5%)

What resources did you use to search for the information you needed to answer your question? Select all that apply from the following choices. N=383

Books (Online/Electronic)

Journals (Print)

Books (Print)

MD Consult

CINAHL

Micromedix

Clinical Evidence (BMJ)

Nursing reference center

Consumer health resources

Ovid Medline

Dynamed

Professional association websites

eMedicine

PubMed/Medline

ePocrates

Stat-Ref

Essential Evidence Plus

UpToDate

Journals (online/electronic)

Other resource

What resources did you use to search for the information you needed to answer your question?

	Overall (n=383)	Attending physicians (n=201)	Residents (n=108)	Nurses (n=51)
PubMed/ MEDLINE	78% (42%)	85% (54%)	71% (59%)	65% (25%)
Journals (online)	75% (46%)	76% (59%)	72% (56%)	73% (30%)
UpToDate	67% (40%)	74% (53%)	82% (77%)	29% (18%)
Books (online)	38% (30%)	30% (32%)	54% (46%)	35% (22%)
Micromedex	26% (24%)	24% (14%)	22% (18%)	47% (35%)
eMedicine	25% (20%)	19% (20%)	39% (38%)	27% (15%)
ePocrates	23% (13%)	26% (18%)	26% (28%)	12% (6%)
MD Consult	19% (16%)	21% (19%)	23% (25%)	8% (10%)
Journals (print)	17% (16%)	17% (22%)	17% (12%)	18% (11%)

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

	Overall (n=383)	Attending physicians (n=201)	Residents (n=108)	Nurses (n=51)
Ovid Medline	17% (16%)	16%	19%	20%
Clinical Evidence (BMJ)	16% (10%)	13%	20%	16%
Professional assoc. website	16% (12%)	15%	11%	27%
Books (print)	14% (21%)	11%	19%	10%
CINAHL	10% (9%)	2%	3%	55%
Other (please specify)	7% (12%)			
Nursing Reference Ctr.	6% (6%)	1%	0%	41%
Consumer health resources	3%	1%	1%	12%
Stat Ref	3%			
Essential Evid Plus	2%			
Dynamed	1%			

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

For each of these resources that you used, how did you get them?

(Select all that apply from the following choices):

In your institution's library (physical space)

Other Library

On your institution's library web site

Search engine such as Google

On your institution's intranet

Bookmarked web site

Via the patient's electronic medical record

Mobile device (tablet
PC,PDA,BlackBerry)

Asked librarian or library staff

Not sure

Asked colleague

Other (please specify)

Personal/departmental subscription

Spouse/friend subscription or access

For each of these resources that you used, how did you get them (*Select all that apply*) (*Access points used*)

	Overall (n=383)	Attending physicians (n=201)	Residents (n=108)	Nurses (n=51)
On your institution's library web site	82% (50%)	87% (60%)	79% (72%)	63% (34%)
On your institution's intranet	56% (52%)	50% (48%)	64% (61%)	71% (53%)
Search engine such as Google	42% (37%)	41% (38%)	42% (39%)	47% (35%)
Personal/departmental subscription	24% (25%)	24% (36%)	29% (27%)	10% (15%)
Via patient's EMR	23% (18%)	26% (18%)	19% (16%)	22% (17%)
Mobile device	23% (16%)	25% (20%)	29% (31%)	8% (8%)
In your institution's library	16% (19%)	11% (21%)	19% (26%)	26% (14%)

(Access points used, cont.)

	Overall (n=383)	Attending physicians (n=201)	Residents (n=108)	Nurses (n=51)
Mobile device	23% (16%)	25%	29%	8%
Bookmarked website	18% (12%)	18%	15%	20%
In your institution's library	16% (19%)	11%	19%	26%
Asked librarian or library staff	7% (14%)	5%	6%	14%
Asked colleague	6% (9%)	5%	7%	14%
Other library	3%	4%	2%	6%
Spouse/friend subscription or access	3%			

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

Number of resources used

	Mean number of resources used (S. D.)
Overall (n=383)	4.6 (2.6) (3.5)
Attending physicians (n=201)	4.5 (2.5)
Residents (n=108)	4.9 (2.7)
Nurses (n=51)	5.1 (3.4)

Did you find the information you needed?

	Overall (n=371)	Attending physicians (n=197)	Residents (n=107)	Nurses (n=44)
Completely	68% (59%)	72%	65%	52%
Partially- time constraints	15% (21%)	14%	15%	27%
Partially – information incomplete	12% (16%)	10%	14%	14%
Partially- other reason	5% (4%)	4%	6%	7%
Not at all	0% (1%)	0%	0%	0%

What resources did you use to search for the information you needed to answer your question?

N=383

	Sources/ Accesses	% of all sources / access	% of accesses from library	% of lib. accesses in library	% of lib. accesses on HSLweb	% of lib. accesses asked librarian
PubMed/ MEDLINE	432	15%	53%	4%	93%	3%
Journals (online)	509	18%	52%	8%	88%	4%
UpToDate	346	12%	49%	2%	98%	1%
Books (online)	370	13%	43%	26%	75%	9%
Micromedex	136	5%	32%	5%	95%	0%
eMedicine	145	5%	37%	6%	89%	6%
ePocrates	112	4%	11%	8%	92%	0%
MD Consult	102	4%	55%	2%	98%	0%
Journals (print)	118	4%	50%	42%	57%	10%

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

What resources did you use to search for the information you needed to answer your question? N=383

	Sources/ Accesses	% of all sources / access	% of accesses from library	% of lib. accesses in library	% of lib. accesses on HSLweb	% of lib. accesses asked librarian
Ovid Medline	98	3%	60%	7%	86%	7%
Clin Evidence (BMJ)	97	3%	53%	6%	90%	4%
Professional assoc. website	86	3%	13%	9%	82%	9%
Books (print)	92	3%	46%	60%	26%	14%
CINAHL	63	2%	56%	6%	56%	9%
Other (please specify)	48	2%	46%	14%	77%	9%
Nursing Ref. Ctr.	22	1%	36%	13%	75%	13%
Consumer health resources	18	1%	17%	0%	100%	0%
Stat Ref	18	1%	56%	10%	80%	10%
Essential Evid Plus	12	0%	58%	14%	71%	14%
Dynamed	4	0%	50%	0%	100%	0%

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

Indicate whether you agree or disagree with each of the following statements about the information you used

Percent who agree that the information was...	Overall (n)	Attending physicians (n)	Residents (n)	Nurses (n)
Relevant	100% (363)	100% (195)	100% (104)	100% (41)
Accurate	100% (360)	100% (193)	100% (104)	100% (40)
Was of clinical value	100% (361)	99% (195)	100% (104)	100% (41)
Will be of use in the future	99% (361)	99% (195)	100% (103)	100% (41)
Resulted in a better informed clinical decision	99% (354)	99% (194)	100% (103)	95% (40)
Current	99% (362)	99% (195)	99% (104)	98% (40)

Indicate whether you agree or disagree with each of the following statements about the information you used

Percent who agree that the information...	Overall (n)	Attending physicians (n)	Residents (n)	Nurses (n)
Contributed to higher quality of care	98% (355)	98% (193)	100% (103)	92% (39)
Refreshed my memory of details or facts	96% (358)	95% (192)	99% (103)	98% (40)
Provided new knowledge	95% (358)	93% (190)	99% (104)	95% (41)
Substantiated my prior knowledge or belief	94% (349)	93% (189)	98% (99)	92% (39)
Having the information saved me time	92% (343)	90% (186)	96% (99)	92% (39)

Please rate the importance of the information you received from different sources in relation to this medical situation (not at all important, not very important, important, very important, not used)

Source	Overall (n)	Attending physicians (n)	Residents (n)	Nurses (n)
Information resource	98% (349) (97%)	98% (187)	98% (102)	98% (40)
Discussion with colleagues	92% (323) (92%)	88% (170)	98% (99)	97% (36)
Lab tests	91% (308) (87%)	91% (171)	96% (92)	87% (30)
Diagnostic imaging	80% (263) (80%)	78% (144)	86% (83)	77% (26)
Other				

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”.

Please rate the importance of the information you received from different sources in relation to this medical situation (not at all important, not very important, important, very important, not used)

Source	Overall Mean (S.D.)	Attending physicians Mean (S.D.)	Residents Mean (S.D.)	Nurse Mean (S.D.)
Information resource	3.7 (0.5)	3.7 (0.5)	3.8 (0.5)	3.5 (0.6)
Discussion with colleagues	3.5 (0.7)	3.3 (0.8)	3.7 (0.5)	3.4 (0.5)
Lab tests	3.4 (0.8)	3.4 (0.7)	3.6 (0.7)	3.1 (0.7)
Diagnostic imaging	3.2 (0.9)	3.1 (0.9)	3.5 (0.8)	3.0 (0.9)
Other				

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.

From what physical location did you conduct or request your search for information? (*Select all that apply*) (N=371)

In the library (the physical space)	33	(8.9%)
Office	277	(74.6)
Home	205	(55.3)
Patient care unit	232	(62.5)
Other (please specify):	15	(4%)