Physicians’ Information Needs and Information Seeking

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Introduction
Physicians will be the subject of this presentation. According to the American Medical Association Physician Masterfile (2012), active physicians range in age from their twenties to their nineties and are composed of many ethnic origins and sexual orientations. Many people see physicians from the first moments of their lives, indeed many even before they are born, all the way through their end of life experiences. Physicians are responsible for the care and treatment of these people, including themselves, and must provide the best care possible.

Physicians have a need for information to help them diagnose and treat patients. In an educational environment, physicians must also teach residents, and other healthcare professionals along with treating patients. An understanding of what information physicians need, what methods physicians use to obtain this information, and what sources physicians use is important for this community resource audit. Traditionally this need has been met through their attained knowledge, conferring with colleagues, reading articles in journals, and reading paper charts. With the advancement of technology, including electronic health records, physicians have additional tools at their disposal to help them in their quest. The questions remain: how do physicians search for information and what information do they seek. Each of these questions will be addressed in turn.
Information Needs

Before examining the methods or sources physicians use to seek out information, it is important to identify the information that physicians seek out. Gorman (1995) described the information needs of physicians in categories encompassing: patient data (e.g. patient history, physical exam), population statistics (e.g. recent patterns of illness, public health data), medical knowledge (e.g. textbooks, research), logistic information (e.g. form requirements, preferred consultant), and social influences (e.g. local practice patterns). These broad categories can further be broken down. According to Clarke and colleagues, physicians have information needs for diagnosis, drug, treatment, epidemiology, prognosis, and etiology (2013). Also, patient related information can be further identified as symptoms, lab results, demographic data, orders, and other empirium (Kannam-pallil et al., 2013).
Each of these information needs has differing relevancies depending on the urgency of the situation and/or the general health of the patient. For example, if a physician is presented with a healthy 20 year old male with no symptoms in for a general wellness visit will have lesser need for labs or drug information and the situation is obviously not urgent. On the other hand, a physician in an emergency department is presented with a 55 year old male who complained of chest pain before becoming unresponsive will need that symptomatic information, labs, drug information, as well as the demographic information in order to provide the most appropriate emergent treatment.
Resources Used
The sources physicians use to seek out information is another important area. Gorman (1995) described the usual sources for the five categories he mentioned: patient data – patient, family, friends, or medical records; population statistics – recent memory or public health departments; medical knowledge – textbooks, journals, or colleagues; logistic information – policy and procedures manuals or managed health organization; social influences – colleagues. Kosteniuk, Morgan, and D’Arcy (2013) found that physicians tended to use textbooks more for clinical decision making and journals more for increasing general medical knowledge. In their work, Clarke et al. found several sources that were used by physicians: colleagues, medical libraries, textbooks, journals, drug compendiums, internet, and professional websites. Interestingly, Osheroff et al. (1991) noted that half of the information needs of physicians can met by referring to the patients’ medical records with the remainder coming from other sources.
With the advancement of electronic resources available to physicians, many of the above named sources can be accessed electronically. MEDLINE and PubMed are two of many readily available databases that can be searched for medical information. Studies indicate that increased use of quality, currently available electronic information leads to better patient outcomes, aids in clinical decision making, and can save physicians time (Marshall et al., 2013). In some states, there are even specialized electronic resources exclusively for physicians to research as needed (Kouame, 2014). Access to high quality, evidence based medical knowledge and research has never been more available.
Even with this increased availability of electronic information, many physicians will rely on print media rather than use the electronic versions (Younger, 2010). Younger and Clarke et al. (2013) suggest that one of the reasons for this could be a lack of online searching skills. While this is likely true, it does not tell the whole story. Brennan et al. (2014) suggest that a physician’s fear of not appearing knowledgeable plays a role as well. In their study, Kahane, Stutz, and Aliarzadeh (2011) found that patients generally did not perceive physicians any less if they conducted research while in the room with the patient. This indicates that while physicians may feel that they would be seen as deficient in their knowledge this fear is actually not founded in the current research.
Situations can play an important role in what sources physicians choose to use in their information seeking. In their study in a critical care environment, Kannampallil et al. (2013) noted that physicians used both electronic sources and print sources depending on the specific information they were seeking. Dawes and Sampson (2003) noted that easy access, high quality, and quick use all led to possible use by physicians for information seeking use. As indicated in several sources, physicians tend to use textbooks and colleagues the most for their information seeking (Clarke et al., 2013; Dawes et al., 2003; Dwairy, Dowell, and Stahl, 2011; Kosteniuk et al., 2013; Younger, 2010). Interestingly, Clarke et al. (2013) noted that textbooks were not used often in their study, due possibly to a feeling of outdatedness of the material.
<table>
<thead>
<tr>
<th>Information resource</th>
<th>Overall (n=14,591)</th>
<th>Physicians (n=5,233)</th>
<th>Residents (n=2,050)</th>
<th>Nurses (n=6,280)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Journals (online)</td>
<td>6,687 (46%)</td>
<td>3,105 (59%)</td>
<td>1,143 (56%)</td>
<td>1,882 (30%)</td>
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<tr>
<td>PubMed/MEDLINE</td>
<td>6,160 (42%)</td>
<td>2,848 (54%)</td>
<td>1,217 (59%)</td>
<td>1,577 (25%)</td>
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<tr>
<td>UpToDate</td>
<td>5,776 (40%)</td>
<td>2,785 (53%)</td>
<td>1,570 (77%)</td>
<td>1,121 (18%)</td>
</tr>
<tr>
<td>Books (online)</td>
<td>4,356 (30%)</td>
<td>1,696 (32%)</td>
<td>939 (46%)</td>
<td>1,372 (22%)</td>
</tr>
<tr>
<td>Micromedex</td>
<td>3,474 (24%)</td>
<td>735 (14%)</td>
<td>376 (18%)</td>
<td>2,170 (35%)</td>
</tr>
<tr>
<td>Books (print)</td>
<td>2,993 (21%)</td>
<td>1,264 (24%)</td>
<td>515 (25%)</td>
<td>982 (16%)</td>
</tr>
<tr>
<td>eMedicine</td>
<td>2,923 (20%)</td>
<td>1,035 (20%)</td>
<td>779 (38%)</td>
<td>926 (15%)</td>
</tr>
<tr>
<td>Ovid MEDLINE</td>
<td>2,400 (16%)</td>
<td>1,127 (22%)</td>
<td>371 (18%)</td>
<td>706 (11%)</td>
</tr>
<tr>
<td>Journals (print)</td>
<td>2,308 (16%)</td>
<td>1,147 (22%)</td>
<td>256 (12%)</td>
<td>714 (11%)</td>
</tr>
<tr>
<td>MD Consult</td>
<td>2,266 (16%)</td>
<td>1,003 (19%)</td>
<td>509 (25%)</td>
<td>598 (10%)</td>
</tr>
<tr>
<td>ePocrates</td>
<td>1,960 (13%)</td>
<td>939 (18%)</td>
<td>564 (28%)</td>
<td>349 (6%)</td>
</tr>
<tr>
<td>Professional association websites</td>
<td>1,794 (12%)</td>
<td>642 (12%)</td>
<td>171 (8%)</td>
<td>801 (13%)</td>
</tr>
<tr>
<td>Clinical evidence (BMJ)</td>
<td>1,466 (10%)</td>
<td>548 (10%)</td>
<td>308 (15%)</td>
<td>463 (7%)</td>
</tr>
<tr>
<td>CINAHL</td>
<td>1,327 (9%)</td>
<td>45 (1%)</td>
<td>16 (1%)</td>
<td>1,149 (18%)</td>
</tr>
<tr>
<td>Nursing Reference Center</td>
<td>917 (6%)</td>
<td>11 (&lt;1%)</td>
<td>0</td>
<td>849 (14%)</td>
</tr>
<tr>
<td>Consumer health resources</td>
<td>520 (4%)</td>
<td>107 (2%)</td>
<td>21 (1%)</td>
<td>330 (5%)</td>
</tr>
<tr>
<td>Dynamed</td>
<td>399 (3%)</td>
<td>105 (2%)</td>
<td>172 (8%)</td>
<td>86 (1%)</td>
</tr>
<tr>
<td>StatRef</td>
<td>361 (2%)</td>
<td>126 (2%)</td>
<td>69 (3%)</td>
<td>127 (2%)</td>
</tr>
<tr>
<td>Essential Evidence Plus</td>
<td>170 (1%)</td>
<td>64 (1%)</td>
<td>41 (2%)</td>
<td>48 (1%)</td>
</tr>
<tr>
<td>Other</td>
<td>1,688 (12%)</td>
<td>478 (9%)</td>
<td>131 (6%)</td>
<td>934 (15%)</td>
</tr>
<tr>
<td>Not sure</td>
<td>477 (3%)</td>
<td>37 (1%)</td>
<td>7 (&lt;1%)</td>
<td>395 (6%)</td>
</tr>
</tbody>
</table>

(Marshall, et al., 2013)
## Importance of the information received from different sources in relation to this medical situation*

<table>
<thead>
<tr>
<th>Source</th>
<th>Overall</th>
<th>Physicians</th>
<th>Residents</th>
<th>Nurses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information resources</td>
<td>11,663</td>
<td>4,484 (98%)</td>
<td>1,730 (98%)</td>
<td>4,668 (96%)</td>
</tr>
<tr>
<td>Diagnostic imaging</td>
<td>6,937</td>
<td>2,899 *</td>
<td>1,279 (86%)</td>
<td>2,339 (76%)</td>
</tr>
<tr>
<td>Lab tests</td>
<td>8,516</td>
<td>3,407 (86%)</td>
<td>1,466 (90%)</td>
<td>3,147 (87%)</td>
</tr>
<tr>
<td>Discussion with colleagues</td>
<td>10,155</td>
<td>3,589 (87%)</td>
<td>1,370 (97%)</td>
<td>4,195 (94%)</td>
</tr>
</tbody>
</table>

* Respondents were asked to rate the importance of the information received from different sources on the following scale: 1 = not at all important; 2 = not very important; 3 = important; and 4 = very important. Numbers and percentages are based on the number of respondents who rated a given source as "important" or "very important." Not all respondents to the survey used all sources.

† Percentages show the percent of those who used a given source who rated that source as "important" or "very important." Not all respondents to the survey used all sources.

(Marshall, et al., 2013)
Conclusion
Physicians have a wide array of information needs. These needs can and are met through many possible sources. It is clear from the research that some physicians are comfortable and even skilled at using newer technology as sources of information which will provide them with the best evidence based decision making information. It is also clear that there are many physicians who are not as comfortable or skilled with these newer tools.
Proposed Further Research
It is easy to see that while there is a great deal of research available on the subject, more needs to be learned about the information seeking of physicians. With this information in mind, a proposed needs assessment survey is provided for examination today. This survey would provide a valuable insight into the information needs and information seeking behavior of physicians. With the results of this research it is hoped that useful, quick, and easy to use tools could be developed to aid physicians in their information seeking.
Needs Assessment Survey

1. What is your occupation?
   a. Physician
   b. Resident
   c. Medical Student
   d. Other (Please specify)

2. What type of work does your position involve? (Select all that apply.)
   a. Patient care
   b. Education
   c. Clinical Research
   d. Administration/Management
   e. Other (Please Specify)

3. In what area are you based?
   a. Hospital
   b. Private Practice
   c. Other (Please Specify)

4. Please provide your age for demographic/statistical purposes only.

5. When researching information do you prefer:
   a. Printed Material (Textbooks, Journals, etc.)
   b. Online Material (Online Journals/Databases, Google Scholar, etc.)
   c. Other (Please Specify)

6. When researching information using printed materials do you prefer:
   a. Textbooks
   b. Journals
   c. Other (Please specify)
7. In a typical week, how many times do you use printed materials to help you make clinical decisions?
   a. One or two times per week
   b. Three or four times per week
   c. Daily
   d. Multiple times per day (Please specify)

8. In a typical week, how many times do you use printed materials to increase your general medical knowledge?
   a. One or two times per week
   b. Three or four times per week
   c. Daily
   d. Multiple times per day (Please specify)

9. When researching information online do you prefer:
   a. Online Journals/Databases
   b. Google Scholar
   c. Other Internet Search Engine (Please specify)
   d. Other (Please specify)

10. In a typical week, how many times do you use electronic materials to help you make clinical decisions?
    a. One or two times per week
    b. Three or four times per week
    c. Daily
    d. Multiple times per day (Please specify)

11. In a typical week, how many times do you use electronic materials to increase your general medical knowledge?
    a. One or two times per week
    b. Three or four times per week
    c. Daily
    d. Multiple times per day (Please specify)
12. In a typical work week, how many times do you consult with a colleague to help you make clinical decisions?
   a. One or two times per week
   b. Three or four times per week
   c. Daily
   d. Multiple times per day (Please specify)

13. Please rate your skill level from 1 to 10 (1 being novice, 10 being expert) finding needed information using the following tools:
   a. Textbook
   b. Journal
   c. Physicians’ Desk Reference
   d. Online Journal/Database
   e. Electronic Health Records
   f. Google Scholar
   g. Other Internet Search Engine

14. Thinking of a recent case in which you needed to research information, what type of information did you need to research? (e.g. medical knowledge, logistical information, medication information) Also, what method did you use for your research? (e.g. textbook, PDR, journal, colleague) (Please list all that apply)

15. Thinking of a recent case in which you needed to research information, was/were the source(s) you used electronic or printed materials? What drove your decision to use that version? (Please be specific)
16. Have you ever researched further information (regardless of the source referred to) to help you make a diagnosis, recommend a plan of treatment, etc. while still in the room with a patient? Why/Why not? (Please be specific)

17. What would influence you to use electronic information resources more in the future? (Please be specific)
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