

Electronic document delivery (EDD) turnaround time and its connection to
patient care in the hospital

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Purpose

The authors present a small research study that attempts to connect electronic document delivery (EDD) turnaround time to the hospital mission of providing clinical care based on the Abels et al. (2002, *J Med Libr Assoc*, 90:276-284 (1) and 2004, *J Med Libr Assoc*, 92:46-55 (2)) taxonomy on the value of health sciences library and information services.

Setting

The authors collected data from hospital libraries in the ESE/A (E-delivery Southeastern/Atlantic) DOCLINE® group. DOCLINE® is an online document delivery program for use by medical libraries in the United States and Canada administered through the National Library of Medicine. Within DOCLINE® there are reciprocal lending groups for document delivery, of which ESE/A is one.

Methodology

The research study involved three phases. Phase 1 entailed extracting DOCLINE® data from two hospital libraries to determine a baseline turnaround time for EDD. Phase 2 replicated Phase 1 results by extracting the data from 24 libraries in the ESE/A group. Phase 3 utilized an online email-linked survey using SurveyMonkey® that requested customers to answer four questions related to turnaround time, the use made of the item, and the value of speedy delivery.

Outcomes

Survey results from Phase 3 showed that hospital library customers value the rapid delivery time of EDD. They used the materials for both patient care and education/training. Using the taxonomy provided by Abels et al., the correlations between EDD and patient care indicates that hospital library services are consistent with most hospitals' mission for clinical care. We do not determine excellence of clinical care in this study.

Discussion

Outcomes research is valid and necessary for hospital librarians to demonstrate their value to their organizations. Using available data and survey tools, the hospital librarian can show that library services contribute to the hospital mission to provide “informed and timely clinical decision making” (2).

Introduction

Hospital libraries fill a unique niche within any hospital system. The not-for-profit organization JCAHO or the Joint Commission, the Joint Commission on Accreditation of Healthcare Organizations accredits most hospitals within the United States. In order to fulfill JCAHO standards, hospitals are required to follow proscribed rules, one of which is “Management of Information.” In this section of the standards, the 2007 Standard IM 5.10 states: “Knowledge-based information resources are readily available, current, and authoritative” (3). No physical library services are required but all physicians and hospital staff must have access to information. Knowledge-based information is defined as stored information for problem solving found in the clinical, scientific and management literature (3). This standard fits in well with the goals of most hospital libraries, namely to provide accurate and authoritative medical information to their customers.

As well as following JCAHO standards, almost all hospitals within the United States and Canada have mission statements as well as vision and value statements that reinforce the mission of their particular organization. Appendix A of the Abels article (2) outlines five common organizational missions with goals. The same Appendix A lists library and information services (LIS) contributions that help achieve each specific mission statement.

Research Question

The authors both work as medical librarians in hospital settings. They both use electronic software called DOCLINE®. The National Library of Medicine (U.S.) produced DOCLINE®. The software allows participating libraries, mainly those in hospitals and academic health sciences centers, to lend and borrow journal articles and books as well as other materials. Within the DOCLINE® program, participating libraries may belong to many reciprocal lending groups.

In less than a decade, document delivery has gone from paper (and books) delivered by parcel or postal services to electronic delivery. Health professionals want to use the most currently available information for patient care. Putting these two ideas together, the authors ask the question:

Does rapid turnaround time for interlibrary loan requests facilitate patient care in the hospital setting?

Literature Review

We conducted a literature review in both PubMed (Medline) and Library Literature & Information Science Index to find articles on document delivery systems and customer satisfaction. One article by Broering and King entitled “Meeting the urgency for document delivery in clinical medicine (4),” describes a project at Georgetown University Medical Center Library to enhance the speed of document delivery and interlibrary loan services for health professionals. A study done in 1991 by Lovas et al. (5) attempts to discover how health professionals use documents that are “borrowed” for them and includes the factor of delivery time as relevant.

Several other articles touch on pieces of the document delivery puzzle. One by Fuller (6) from 2000 describes expanding patron use of online databases and details a specific library’s approach to handling increasing requests for interlibrary loan documents. Cuddy’s article (7) in 2005 and Urquhart (8) in the United Kingdom in 1996 study the uses of interlibrary loan documents in medical settings. The number one use given in both articles is for patient care. Another article chronicles one academic library’s adoption of specific software to handle EDD (9). An academic medical library tested and implemented another software program to provide Web ordering and desktop delivery of journal articles (10). Shipman’s article describes using PDF for desktop delivery (11).

Other articles have been written on aspects of librarianship in relation to critical care (12, 13, 14). The authors also found articles that reported on physicians’ information seeking paths and curbside (bedside) needs (15, 16).

In 2002 and 2004 articles, Abels et al. (1, 2) propose a taxonomy of library and information services contributions in hospitals and academic health sciences centers.

Research Methodology

Both Morton Plant Mease Medical Library in Clearwater FL and the Medical Library at Self Regional Healthcare in Greenwood SC are members of the National Network of Libraries of Medicine (NN/LM). Both hospital libraries participate in the NN/LM Region 2, the Southeastern/Atlantic Region (SE/A) based out of the University of Maryland, Baltimore.

To begin quantification of the research question, the investigators studied the information available to them through DOCLINE®, the electronic document delivery system provided by the

National Library of Medicine (NLM) for medical libraries in the United States and Canada. The DOCLINE® system allows user access to many different databases: one that lists all library users and their LIBID (library identification); one that shows serial holdings for each library user (SERHOLD); one that allows the user to establish a routing table indicating the user's specific preferences for sending interlibrary loan requests to other libraries. It is also possible to gather information on individual requests that the user's own library has made in the last 40 days. (See Table 1 for an example.)

Phase 1

The investigators used the data from DOCLINE® history that were readily available to them. Extracting the data for each of the two libraries for Phase 1, we put the data into a spreadsheet that showed the time allotted for each transaction. We tabulated mean and median turnaround times.

The researchers looked at approximately four weeks of interlibrary loan requests and selected only those that met the criteria of being electronic. This included faxes, of which few were in evidence. We did not work with data for items that libraries mailed or for requests that remained unfilled.

The authors noted some weaknesses in the data. Using the time listed as "Filled by" is not always accurate. It reflects the time that another library agrees to lend a particular item or reports to DOCLINE® that it filled the request. Actual receipt time can be different since libraries do not always fill requests for articles directly after marking them filled. In fact, libraries often deliver articles before they update DOCLINE®.

We drew the data for Phase 1 in August 2005. Graphs 1 and 2 are from the Phase 1 data based on control charts we created. The upper line is the upper control limit, the middle line the mean turnaround time, and the lower dashed line is the lower limit (just a few minutes above zero). For both libraries, there are some requests filled within minutes and some that took several days.

Graph 1 shows the mean and median times for Morton Plant Mease Medical Library for Phase 1, approximately 24 hours mean time. Graph 2 shows the same for Self Regional Healthcare Medical Library, approximately 20 hours mean time for fulfillment of an EDD.

Phase 2

The investigators repeated this same strategy for Phase 2, expanding the coverage to include 24 volunteered libraries from the reciprocal lending group called ESE/A (E-delivery Southeastern/Atlantic Region). This gave the researchers an opportunity to see if the original data was replicable. We drew Phase 2 data from three weeks in late November/early December 2005. (See Graph 3.) Mean time for Phase 2 fulfillment was 28 hours. For the 24 libraries, we tabulated the turnaround time for more than 1,000 DOCLINE transactions.

The mean turnaround time for the 24 libraries was 28 hours. The median turnaround time was 17 hours.

Phase 3

Looking at the data from the 24 ESE/A libraries, the authors asked, “How can we discover what our patrons think of EDD? How do they use the articles? Can we use an electronic survey for this process?”

The authors invited the same 24 libraries to use an online survey to ascertain the value of speedy delivery to their customers. The online survey took place during late summer 2005. The survey was sent only once to a library customer who may have received multiple EDDs. The survey was short, only four questions, and asked respondents about timeliness of receipt, use made of the article and importance of speedy delivery for clinical care. The four questions were:

- 1) In what area of the health professions are you?
Available answers were listed on the survey in alphabetical order: physician, pharmacist, nurse, administrator.
- 2) Please describe the purpose for requesting this article.
Available answers, listed alphabetically, were: clinical care, research/teaching, current awareness, or other, with space to write specific information under the “other” category.
- 3) Did you receive your requested item as quickly as needed?
Just “yes” or “no” were available to answer this question.
- 4) For use in clinical care, how important to you is the speedy delivery of this item?

Here the choices were very important, slightly important, neutral, or not important.

138 responses were received to question 1, asking respondents to identify their area of health professions: administration, nursing, pharmacy, medicine, or other allied health profession. More than one-third of respondents were physicians and more than one-third were among the allied health care providers, such as occupational or physical therapy, respiratory therapy, or dieticians.

137 responses were received to item 2, asking the purpose intended for the document. Just over 75% requested items for research or teaching (39.4%) or for clinical care (35.6%). These responses fall within several of the principal services in the taxonomy Abels (2) proposes: clinical care, education, and research.

The investigators asked about the timely receipt of an electronically delivered document. Question 3 had 136 respondents, who overwhelmingly (98.5%) answered they received the item as quickly as they needed it.

Finally, with question 4, the authors wanted to know if patrons felt speed of delivery is important to support the clinical care environment. 94% responded speedy delivery of the item was important, with 82.1% saying very important. Library customers appreciate timely delivery.

Outcomes

In the July 2002 Journal of the Medical Library Association article (1), Abels, et al. presented a preliminary taxonomy of the contributions of library and information services (LIS) in hospitals and academic health sciences centers. “The taxonomy of LIS contributions offers a framework for the collection of both quantitative and qualitative data in support of communicating the value of LIS in hospitals and academic health sciences centers.”

The authors of this research discussed with colleagues the need to show administrators clear data that supports the value of LIS. The authors have published short pieces and contributed posters as well as presentations at meetings analyzing the move away from “paper-based” document delivery (what was called interlibrary loan) to the electronic delivery of items to the library patrons (17, 18, 19, 20, 21, 22).

Many librarians recognize that library customers like the speed and quality of electronic document delivery. Librarians send documents directly to the customer's desktop. Customers request that articles be scanned and sent to them or be put on media they can play on their computers. The Abels article (2) put into a detailed taxonomy how librarians see their relationship to the parent organization.

Looking at LIS within different health care institutions, the authors agreed that Abels' 15 organizational-level concepts truly reflect those of our hospitals. The researchers can show data to support the role of LIS within the organizational goals. As mentioned in the literature review section, articles describe various technologies and programs used by libraries to provide LIS to health care providers. The Chamberlain (14) article describes a telephone survey of ten library users, asking them ten questions about how they received an item, why they requested it, whether it was helpful, and if it arrived in time to be useful. The Chamberlain article also ties library document delivery to clinical care, much as the Abels taxonomy.

In the 2004 article, Abels et al. (2) developed a taxonomy first outlined in the 2002 article. In one table, Abels demonstrates that institutional administrators and library directors (both academic health sciences center library and hospital libraries) have a high degree of agreement on organizational goals. 85% to 97% of 34 institutional administrators and 93% to 100% of 71 LIS directors agree on these goals, such as promoting clinical learning, providing resources and services necessary for teaching and learning, providing excellent educational programs, and providing excellent clinical care.

Abels outlines the seven-step approach libraries can implement to identify, measure and communicate the contributions of LIS services to the parent organization. Abels suggests performance measures libraries can take, including determining turn-around time for requests, surveying patrons with questions asking their perception of timeliness of service, authority of information provided, and satisfaction with the information provided.

Discussion

The authors realize that this small research has weaknesses. We do not draw conclusions about library and information services supporting "excellent" clinical care. The authors acknowledge several other weaknesses in this study, but future research can address each of these points.

No tracking or counting of actual numbers of sent surveys was kept. Therefore, no response rate was determined. The authors do not know what percent chose to go to SurveyMonkey® to look at the survey or what percent actually completed the survey. Even among the responses, the authors do not know which of the 138 answered question one, 137 question two, 136 question three, and 134 question four.

We did not create a blind testing and or a control group. Surveys were only electronic, so responses to turnaround times of paper copies (delivered or mailed) were not included. Respondents were a “self-selected” target audience, namely those who chose to answer an Internet-based survey.

The DOCLINE® data do not denote when the patrons actually received the items. The data give the time when a lending library says it filled the request, while the actual date and time could be anywhere from minutes to days before or after what the library reports. However, acknowledging this weakness, the authors assume that the rules of probability apply and the means and medians show us that responses now hover around a day. Only a few years ago, most document delivery through mailing would have taken several days. In fact, the authors have data from their interlibrary loan transactions that indicate such (17).

Respondents were anonymous and those who chose to respond to an electronic survey. A more complete picture of library patrons would emerge with both an electronic and a paper survey process. We asked that the same patron not receive multiple surveys. That is, if a patron replied that he had completed the survey, we did not send him another one even if he requested several more documents during the survey period.

We envision many librarians taking various pieces of the taxonomy “mosaic” and gathering survey results. The library literature would then assemble the pieces to show how hospital and health sciences libraries support the mission and goals of their institutions. No one study piece can give the complete picture, but by assembling research pieces from many librarians, we can present evidence that library and information services are relevant.

Future surveys can better track the uses made of documents and the evaluations of library services by the various hospital personnel if they make use of the electronic survey features. Surveys could ask the respondent to identify their clinical area, e.g., MD, RN, RD, PT, diabetes educator, in service or health educator, RT, so that responses are analyzed by clinical area. Physicians’ uses of documents will probably be different than nurses’. Future surveys could

track how the various respondents answer each question. It might be revealing if physicians, nurses, pharmacists, therapists, et al. think differently about items in any survey. The importance, ranking, evaluation and use of LIS may show differences between care provider groups.

This quick survey did not attempt to retrieve a sufficient number of responses from the different clinical areas to draw significant inferences from each. Additional interesting results should address the various clinical, managerial, and administrative areas of the hospital and the library's customers.

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The authors do attempt to prove several questions. DOCLINE® data are available and can be used to determine processing times for interlibrary loan requests. Hospital librarians can use an online survey product, such as SurveyMonkey®, to communicate with their patrons. The authors tested their belief that short, direct, email surveys can elicit responses. The survey responses indicate what we as hospital librarians feel: we provide electronic documents to customers who use them for clinical care and education, two of the fundamental goals of a hospital and its library.

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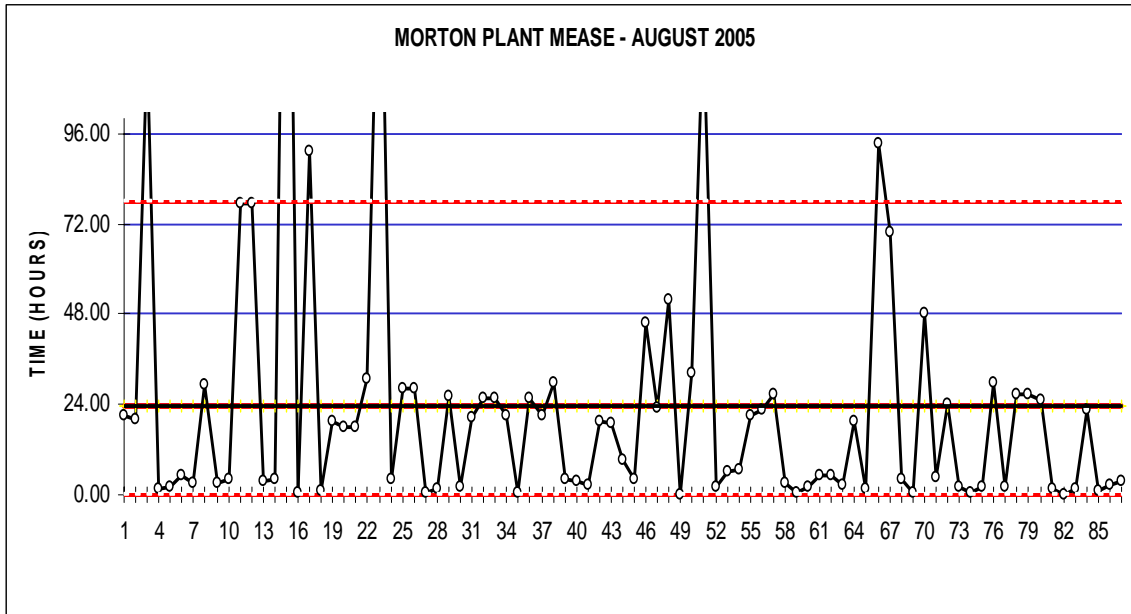
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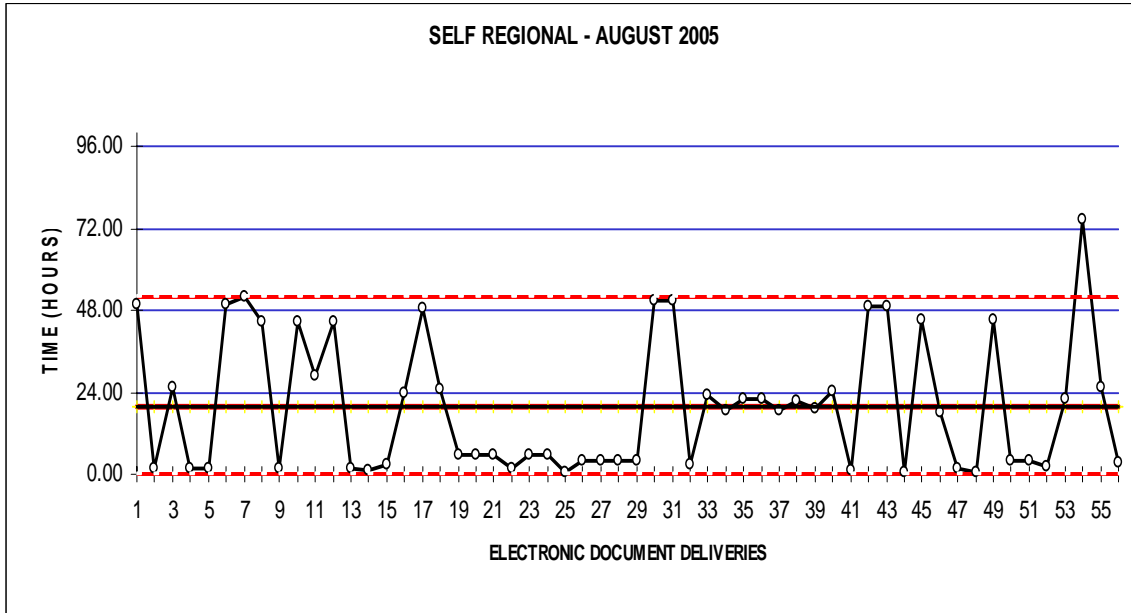
Table 1.

History of request # 21950795				
Date	<u>ET</u>	Action	<u>Reason</u>	Institution
Feb 23, 2007	11:45	Requested by .		FLUMFP : Morton Plant Mease Health Care /Clearwater
Feb 23, 2007	11:45	Routed to	Cell 1	INUBMH : Ball Memorial Hospital /Muncie
Feb 23, 2007	14:57	Received by .		INUBMH : Ball Memorial Hospital /Muncie
Feb 26, 2007	09:41	Filled by	Email(PDF)	INUBMH : Ball Memorial Hospital /Muncie

Graph 1.



Graph 2.



Graph 3.

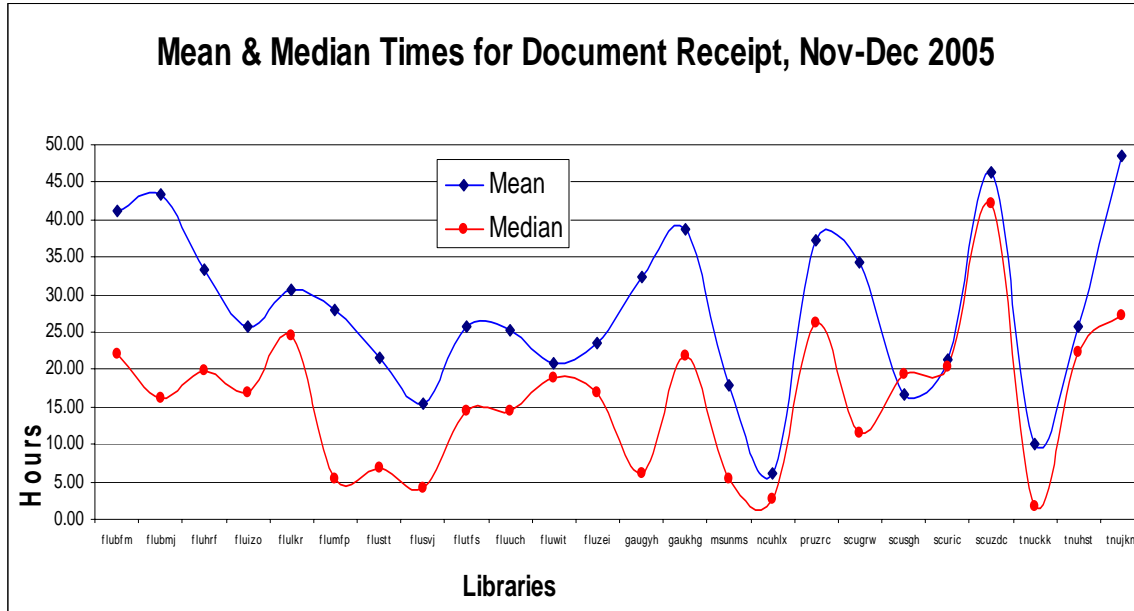


Figure 1.

Q1. In what area of the health professions are you?

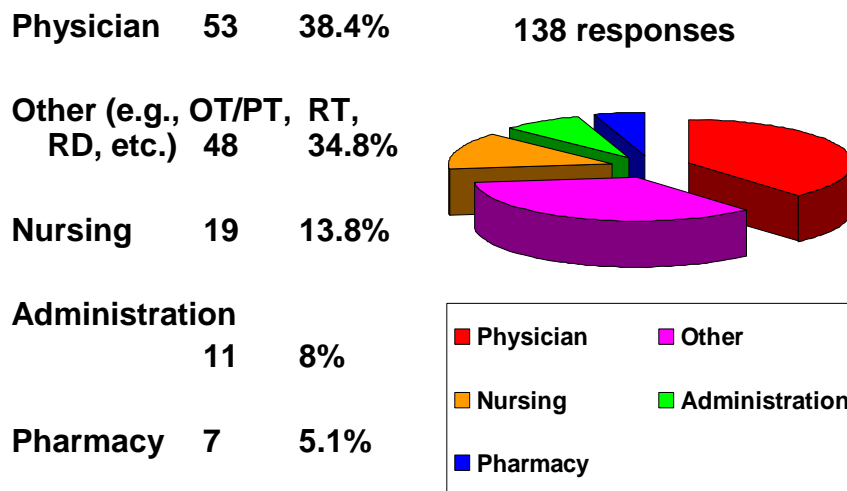


Figure 2.

Q2. Please describe the purpose for requesting this item.

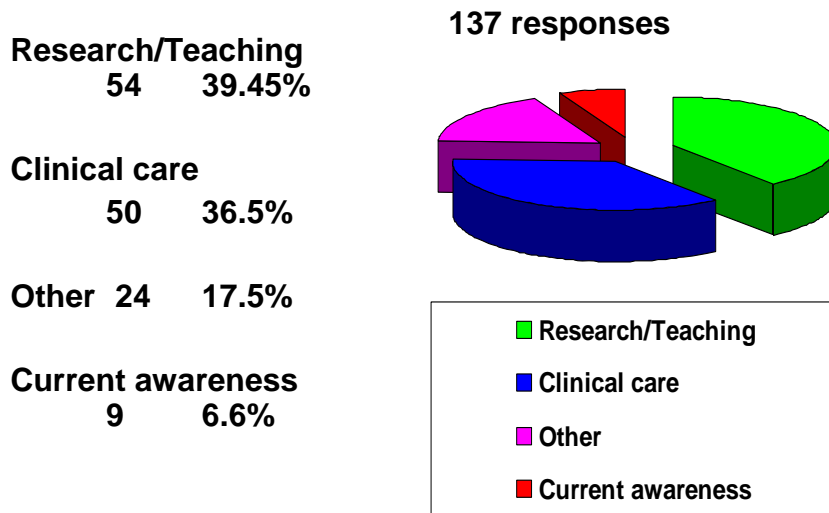


Figure 3.

Q3. Did you receive your requested item as quickly as you needed it?
136 responses

Yes 134 98.5%

No 2 1.5%

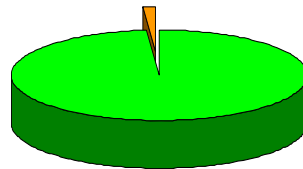


Figure 4.

Q4. For use in clinical care, how important to you is the speedy delivery of this item? 134 responses

