

Impact of Notebook Computers on Pharmacists Providing Direct Patient Care

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Background

- Pharmacists must have timely, accurate data to insure patients receive high quality, cost-effective care.
- Since the 1970's health information systems have provided pharmacists reports (patient profiles, labs, culture results, IV-to-PO, etc.) that could be printed daily by pharmacists.
- Use of these paper reports was less than ideal because:
 - Time was required to print and gather these reports,
 - Information became quickly outdated and inaccurate as additional results/changes became available, and
 - These reports consumed reams of paper.
- Wireless technology allows pharmacists to access patient health information remotely through notebook computers.
- This poster will describe how we integrated notebook computers into our direct patient care activities and its impact on staff satisfaction and paper utilization.

Methods

- In August 2009 the Pharmacy Department worked with the hospital's Paper Reduction Task Force to examine ways to reduce paper consumption and improve efficiency.
- In October 2009 we collaborated with the hospital's Market Research Department to develop a survey tool (Likert scale-based) to assess pharmacist satisfaction with our existing paper-based system for managing patient information.
- Initial estimate by Task Force estimated paper use could be reduced by 1,200 pages/day with implementation of notebook computers.
- Proposal to purchase two notebook computers to conduct pilot project approved in early October 2009.
- Pilot project conducted on two practice sites (Coronary Care Unit and Nephrology/Renal Transplant) in October-November 2009.
- Positive feedback from pilot project led to approval of purchase of notebook computers for all patient care teams. Additional notebooks were deployed in early January 2010.
- Post-notebook computer implementation staff satisfaction survey conducted in April 2010.
- Additional notebook computers purchased for pharmacy practice residents in May 2010.

Results

Table 1: Impact of Notebook Computers on Time Spent Preparing for Rounds

Time in Minutes	Pre-Notebook October 2009 (n =32)	Post-Notebook April 2010 (n = 30)
≤ 10 minutes	0 (0%)	16 (51.6%)
11 – 30 minutes	15 (46.3%)	10 (34.4%)
≥ 30 minutes	17 (53.7%)	4 (13.7%)

Table 2: Frequency Pharmacist Must Leave Rounds

How many times do you leave rounds to obtain.....	Pre-Notebook (n = 32)		Post-Notebook (n = 30)	
	≤ 1 time per day	≥ 2 times per day	≤ 1 time per day	≥ 2 times per day
Additional information (lab results, culture results, medication hx, etc.)?	7 (22.6%)	25 (77.4%)	28 (92.9%)	2 (7.1%)
Additional information from outside sources like Up-to-Date or primary literature?	13 (41.9%)	19 (58.1%)	28 (92.9%)	2 (7.1%)
To address medication distribution-related issues (STAT med request, missing dose, etc.)>	3 (9.6%)	29 (90.4%)	23 (75.9%)	7 (24.1%)

Table 3: Pre- vs Post-Notebook Computer Paper Utilization

	2009 Impressions	2010 Impressions	Change
Total	644,701	354,215	290,486

Table 4: Impact of Notebook Computers on Staff Satisfaction

Question	Pre-Notebook % agree/ strongly agree (n = 32)	Post-Notebook % agree/ strongly agree (n = 30)
I am satisfied with the process of preparing for rounds?	9 (28.1%)	26 (86.7%)*
Our process is convenient to optimally prepare for rounds?	8 (25%)	24 (80%)*
Our process provides up-to-date information to optimally care for patients?	9 (28.1%)	30 (100%)*
Our process provides enough thorough information to optimally care for patients?	14 (43.8%)	28 (93.3%)*
Our new process allows for improved communication/continuity of care between pharmacists?	--	23 (76.7%)
Our new process improves the quality and timeliness of care?	--	21 (70%)
Our new process assists in the teaching of students/residents?	--	15 (50%)
The notebook is easy to learn to use?	--	24 (83.3%)
The notebook is easy to handle and operate?	--	23 (76.7%)
I prefer our old monitoring process using paper?	--	5 (16.7%)

Discussion/Conclusion

- Pharmacist's understanding of optimal use of these devices evolved over time. Besides assessing current med profiles/labs other benefits realized included:
 - Ability to communicate patient care issues shift-to-shift using Microsoft™ Office OneNote,
 - Accessing medical literature electronically through our medical library,
 - Ability to quickly process urgent new medication orders while rounding, and
 - Access to electronically archived medical records.
- Reduction in paper consumption resulted in a cost savings of \$4,938.
- In conclusion, implementation of notebook computers led to measurable decreases in the time pharmacists spent preparing for rounds and the number of times they had to leave patient care rounds. This resulted in improved pharmacist satisfaction and a significant decrease in paper consumption.