# Using a Web-Enabled System for Coordinating Nursing Student Clinical Placements: Two Years Post-Implementation

**by**

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## Abstract

The administrative management of clinical placements for nursing students typically uses a paper-based system that is highly dependent on year-round meetings and manual tracking between universities/colleges offering nursing programs and local/regional health care organizations, notably hospitals and community-based health centers providing clinical placements. In recent years, greater nursing enrollments, changes in curriculum and the addition of new programs have resulted in an increased need for clinical placements. In response to this situation, many nursing leaders have considered the use of shared placement information systems to improve the overall effectiveness and efficiency of coordinating clinical placements. During 2005-2006, the Southern Alberta Partnership (7 universities/colleges offering a variety of healthcare programs and 3 health regions) implemented a shared electronic database known as the Health Sciences Placement Network (HSPnet), for coordinating clinical placements. Their experience in implementing this system, changes in user practices for coordinating clinical placements in the two years following system implementation and considerations for capitalizing on the capability and potential of technology to strengthen the strategic management of clinical placements in the coming years are detailed in this article.

## Introduction

The administrative management of clinical placements for nursing students typically uses a paper-based system that is highly dependent on year-round meetings and manual tracking. Universities and colleges offering nursing programs and hospitals and community-based health centers providing clinical placements engage in iterative processes for the identification and confirmation of sites and student assignments. Typically, these are tracked and monitored in hard copies by each nursing program as well as the agency providing the clinical placement. In recent years, greater nursing enrollments, changes in curriculum and the addition of new programs have resulted in an increased need for clinical placements, thereby increasing the demand on these manual systems.

In response to this situation, many nursing leaders have considered the use of web-based systems to improve the overall effectiveness and efficiency of coordinating clinical placements. During 2005 and 2006, a partnership of 7 educational institutions offering a variety of healthcare programs and 3 health regions implemented a shared electronic database for coordinating clinical placements in southern Alberta. Their experience in implementing this system, changes in user practices for coordinating clinical placements in the two years following system implementation and considerations for capitalizing on the capability and potential of technology to strengthen the strategic management of clinical placements in the coming years are detailed in this article.

## The Use of Technology in Nursing Practice Settings

The nursing profession has increasingly embraced the use of technology in practice settings over the past 20 years. Technology is embedded in most redesign strategies

because of its potential to make nursing practice and patient care more efficient through improved work flow, enhanced staff recruitment and retention, improved communication and information flow, error reduction and the optimal placement of nurses (Courtney, Demiris and Alexander, 2005). Other examples of technology application in nursing practice include the use of staffing software to match nurses who are clinically competent in certain areas with patients whose care needs requires these particular skills (Fabre, 2006); data base systems for qualitative and quantitative research (Kanzaki, Makimoto, Takemura and Ashida, 2004); e-learning (Doster, 2004) and personal digital assistants (PDA's) for managing patient care (Carberry, 2006).

## The Use of Technology in Nursing Education

Willmer (2005, 2007) emphasized the need to develop the technological capability of nursing students given its widespread use in practice settings. The use of PDAs to facilitate student learning during clinical placements is widespread in North America (Carlton, Dillard, Campbell and Baker, 2007; Scollin, Healey-Walsh, Kafel, Mehta and Callahan, 2007). Nursing educators have also developed a wide variety of Websites to better engage practicing nurses and students in clinical learning activities (Creedy, Mitchell, Seaton-Sykes, Patterson, Purcell and Weeks, 2007; Skiba, 2006; Turner, 2001). The use of tracking technology for community-based teaching (Ndiwane, 2005) and e-nursing education to address the shortage of instructors (Neuman, 2006) provide additional examples of technology use in nursing education.

## The Use of Technology to Coordinate Clinical Placements

A search of the nursing and health care peer-reviewed literature in the ERIC, Medline and Academic Search Premier electronic databases using the key words "shared database", "nursing student clinical placement", "health care student clinical placement",

"student placement database", "clinical placements", "clinical practicum", "web-based clinical database", " electronic student placements", "clinical database", "internet use", "clinical data integration" and "clinical capacity" revealed minimal information about the use of electronic systems for organizing clinical placements.  Kline and Hodges (2006) described an initiative in which a Clinical Placement Consortium (CPC) comprised of representatives from 7 educational institutions and 51 service agencies in western Michigan used Blackboard, a readily available web-based technology to negotiate clinical placements for 1200 nursing students. The CPC met three times a year during which time the clinical placement schedules for each of the 51 service agency units were negotiated thus, eliminating much of the need for follow-up emails or telephone calls. Placement issues, including those that could not be resolved at the CPC meetings were independently handled by the involved institutions, often through e-mail. In using Blackboard, the CPC encountered challenges such as the need to accommodate differences in admission dates and placement-related nomenclature (e.g., 7 different terms were used for obstetric placements), changing requirements for numbers of clinical placements and difficulties associated with organizational re-structuring and staff turnover. The CPC was able to resolve these issues and Kline and Hodges (2006) concluded that the use of Blackboard technology improved the management of clinical placement processes through effective decision-making, efficient conflict resolution and better communication between the CPC agencies.

## The Southern Alberta Centralized Clinical Education Resource Project

In 2004, the Southern Alberta Partnership comprised of 7 universities and colleges and 3 health regions located in Calgary, Lethbridge and Medicine Hat applied for and received a grant from the provincial government to undertake the Southern Alberta

Centralized Clinical Education Resource Project (the project). The project had three purposes: a) select and implement a shared electronic database system that the placing agencies (i.e., universities/colleges requesting clinical placements) and the receiving agencies (i.e., hospitals and other healthcare centers providing clinical placements) could use to coordinate clinical placements for students enrolled in nursing, paramedic and diagnostic technology programs throughout southern Alberta; b) maintain or strengthen the highly collaborative working relationship that existed between organizations and; c) improve the overall capacity for clinical placements by increasing the number of available placements by 5 per cent.

Prior to the start of the project, the Project Steering Committee comprised of representatives from the 10 partner organizations, had identified three options for a shared database system namely; a) purchase an available web-enabled system (HSPnet) that was used by receiving and placing agencies throughout British Columbia (HSPnet-BC) and in northern Alberta (HSPnet-AB) to coordinate clinical placements; b) modify/expand an existing stand-alone database system that was used by two nursing programs in Calgary or; c) build an original customized database system.

## Project Initiation

The Project was launched in December, 2004 with the hiring of a Project Coordinator who was located in Calgary and served as a chair of the Project Team. The Project Team which included staff from the receiving and placing agencies, developed a list of needed system features to assess the three available system options. These features included real time information sharing between receiving and placing agencies, a reliable backup system, regular system upgrades and enhancements, high quality helpdesk support, affordability, vendor success with similar time-bound and limited funding projects, timely

pre-and post-implementation training, compliance with Alberta's legislated privacy requirements and post-project affordability and sustainability. In April 2005, the Steering Committee, in keeping with the recommendations of the Project Team and positive feedback from an independent technical consultant and individuals who had been using the system for several years, approved purchase of HSPnet which was being used in British Columbia and in northern Alberta.

## Project Implementation

The HSPnet Director (the Contractor) used a project management framework to guide system planning, implementation and evaluation. In spring 2005, the Contractor, working closely with the Project Team, facilitated a number of planning sessions during which time a schedule of implementation activities including system setup, data cleanup and loading, face-to-face and online training, systems testing (for sending, accepting and confirming placements) and evaluation were jointly developed. The Project was implemented in two phases. Phase 1 was completed between June and December 2005 and involved four Calgary-based placing agencies and one receiving agency a large health authority representing multiple acute care and community sites.  These agencies completed all implementation activities in the summer and fall of 2005 and the system went "live" in early December.

Phase 2, which involved the remaining four placing agencies and two health authorities in Medicine Hat and Lethbridge, took place between December 2005 and April 2006. During the Phase 2 planning sessions, the receiving agencies voiced a concern that implementation of the system could be compromised because of simultaneous involvement in an electronic patient record initiative and potentially hospital accreditation. In order to address this concern the Contractor in consultation with the Project Coordinator

and the Phase 2 receiving and placing agencies, negotiated and used a two-stage approach for system implementation. During stage one, the agencies continued to use a paper-based system for coordinating clinical placements. System implementation activities during stage one included systems set up, data upload and training. In stage two, the "historical" data (information that had been uploaded in stage one) was modified to reflect clinical placement needs at that time and subsequently the system went "live". The receiving and placing agencies embraced this two-stage approach as it substantially alleviated user anxiety about changing to an electronic system.

The Contractor published project updates on the Alberta section of the HSPnet Website and the Project Coordinator provided regular updates to the chair of the Steering Committee.

## Project Close-Out and Evaluation

The Project finished on March 31, 2006 at which time the partner organizations had been using the system for 6-12 months. As part of the project closeout activities, the Contractor in conjunction with the Project Coordinator arranged an evaluation of the system from the perspective of the users in the receiving and placing agencies. Feedback from the users indicated that the project had achieved its key deliverable, the implementation of an electronic database to facilitate the coordination of clinical placements throughout southern Alberta. There was also general agreement that HSPnet had provided or was providing the majority of system features that the Project Team had identified as essential. Help desk support was evaluated as consistently excellent. At the time of the evaluation, the members of the Project Team were not able to quantify the relative change in clinical placement capacity that had occurred during the system's first 12 months of use. There was general agreement that the number of clinical placements had

increased by at least 5 per cent, however this increase in capacity may have been primarily attributable to increased enrolments rather than to new capacity found through use of the electronic database. At the same time, users noted that the system had positively impacted clinical placement capacity by allowing individuals to view all the available clinical placements with the result that users became aware of "new to them" clinical placements, which would not have been possible with a paper-based system. Being able to view the placements also lessened the need to make phone calls and send e-mails.  The Project Team also confirmed that collaboration between organizations had become stronger during the project primarily as a result of collectively identifying and solving system-related issues and through adoption of common terminology and metrics for defining and tracking placement activities.

The project finished significantly under budget and as a result, was extended to December 2006. Between April and December 2006, project activities focused on further resolving system issues identified by the receiving and placing agencies, piloting system enhancements and identifying additional enhancements that could be funded for development by HSPnet testing the system's reporting features, system implementation in other community-based agencies, participating in face-to-face and online training updates and writing the final report for the project. The Project Coordinator finished work in January 2007.  The Project Team continued to function in anticipation of being involved in the province-wide implementation of HSPnet, an initiative that was being undertaken and funded by the provincial government. The HSPnet enhancements funded by the project became a permanent part of the system's functionality, and the enhancements are now available to users in all six Canadian provinces that now use HSPnet.

## Project Challenges

O ne of the key challenges of the project was the need for the Contractor, Steering Committee and the Project Team to understand and manage competing timelines, priorities and expectations. Other challenges included difficulties in determining an equitable cost-sharing formula that the partner organizations could use to cover post-project ongoing system implementation costs, differences between placement-related nomenclature used by receiving and placing agencies across and within British Columbia and Alberta, delays in finalizing a privacy impact statement and problems associated with having access to suitable training facilities. The Project Team and Contractor were able to jointly resolve all of these issues.

## Project Lessons Learned

The Project Team identified a number of lessons learned from their involvement in the project which included:

• Ensure the availability of well-equipped training rooms which may necessitate early booking and/or the use of external training facilities;

• Ensure that the essential features of a new system are being effectively used prior to implementing optional enhancements;

• During the project planning phase, determine if participating agencies will be concurrently involved in other major initiatives as this may compromise the ability to readily implement and use a new system;

• Establish an understanding that a system, particularly in its first year of operation is not likely to result in significant time savings and that its' use does not preclude the need for ensuring effective ongoing collaboration between organizations;

- Integrate formative and summative evaluation processes with major involvement of users;

- Establish organizational accountability for post-project funding;

- Establish a mutual understanding of accountability for post-implementation system training and;

- Ensure that the senior decision-makers in stakeholder organizations understand that a system by itself will not increase the number of available clinical placements.

Two-year Post-implementation User Survey Findings

In May 2008, the chair of the Steering Committee, in collaboration with the Contractor organized an anonymous online survey to assess users' perceptions about changes that they had made in their practices for coordinating clinical placements during the first two years following system implementation.

One hundred and forty-six users and administrative leaders from organizations that were using the system were invited to participate in the survey. Thirty-five (24%) of the 146 invited participants responded of which 24 and 11 were employed by receiving and placing agencies respectively. The respondents indicated that the system was being used to coordinate clinical placements for students in nursing, paramedic, diagnostic technology and personal support worker programs.

## Changes in Clinical Placement Practices

The participants were asked to describe changes that they had made in their practices for coordinating clinical placements during the first two years following system implementation. Particular questions focused on changes in the amount of time spent coordinating clinical placements, relative level of difficulty in coordinating clinical placements, availability of clinical placements, and working relationships with external

organizations. Participants were also asked to comment about their practices for generating system reports and the use of paper for coordinating clinical placements. Survey results are presented in Table 1 and discussed in the following paragraphs.

## Changes in Tasks Completed by Users to Coordinate Clinical Placements

In general, respondents from both the placing and receiving agencies were not able to assess the relative impact of the system on changing the amount of time spent coordinating clinical placements, since other factors, notably changes in student enrollment had also impacted the time required to coordinate clinical placements.

**Receiving agencies**. Eight of the 14 respondents from receiving agencies indicated that the tasks they did to coordinate clinical placements had not changed in the first two years following system implementation. Five respondents were not able to answer this question and 1 respondent noted that they were no longer doing certain tasks such as copying documents.  Six respondents indicated that they had started doing new tasks, notably the electronic transmission of information.

**Placing agencies**. Four of the 9 respondents from placing agencies indicated that the tasks they did to coordinate clinical placements had not changed in the first two years following system implementation.  Three respondents were not able to answer this question and 2 people reported that they had discontinued tasks such as generating word documents. Three respondents mentioned doing new tasks such as updating information and electronically tracking students' immunizations and security clearances.

## Changes in the Amount of Time Spent Coordinating Clinical Placements

### Receiving agencies. Five of the 13 respondents from receiving agencies noted that there was no change in the amount of time spent coordinating clinical placements in the first two years following system implementation while 3 people noted that they were spending less time coordinating clinical placements. One respondent reported spending more time and 4 individuals were not able to answer this question.

### Placing agencies. Five of the 10 respondents from placing agencies noted no change in the amount of time spent coordinating placements in the first two years following system implementation. Three respondents indicated that the amount of time had increased and one individual noted that the amount of time had decreased. One individual was not able to answer the question.

## Changes in the Difficulty of Coordinating Clinical Placements

### Receiving agencies. Ten of the 23 respondents from receiving agencies indicated that coordinating clinical placements had become less difficult in the two years following system implementation, while 7 individuals reported no change in the level of difficulty. Four people were unable to answer the question and 2 respondents noted that coordinating placements had become more difficult.

### Placing agencies. Four of the 11 respondents from placing agencies indicated that coordinating clinical placements had become less difficult in the first two years following system implementation and 4 individuals reported no change in the level of difficulty. One person was unable to answer the question and 2 respondents noted that coordinating placements had become more difficult. Difficulties generally related to duplication of information for community agencies not using the system.

## Changes in the Availability of Clinical Placements

### Receiving agencies.
Eleven of the 23 respondents from receiving agencies indicated that the actual number of available clinical placements had not changed in the first two years following system implementation. Six individuals reported an increase in the number of available clinical placements while 2 people indicated a decrease. Four people were not able to answer the question. Participants were also asked to comment about changes in the number of clinical placements that were potentially available.  Twelve of the 23 respondents indicated that the number of clinical placements potentially available had not changed in the first two years following system implementation.  Four individuals indicated that the number of clinical placements potentially available had increased and one individual noted a decrease. Six individuals were not able to answer the question.

### Placing agencies.
Seven of the 11 respondents from placing agencies reported that the actual number of clinical placements had increased in the first two years following system implementation while 3 respondents indicated that the actual number of clinical placements have not changed One person was not able to answer the question.  Five of the 11 respondents indicated an increase in the number of clinical placements that were potentially available while 4 people indicated no change. Two individuals were not able to answer the question.

## Changes in Working Relationships with External Organizations

### Receiving Agencies.
Sixteen of the 23 respondents from receiving agencies indicated that there was no change in their working relationships with external partners in the first two years following system implementation. Four individuals indicated that there had been a positive impact on working relationships. Three people were not able to answer the question.

Placing agencies. Five of the 11 respondents from placing agencies indicated that their working relationships with external organizations had not changed in the first two years following system implementation. Four individuals noted that there had been a positive impact on working relationships. Two respondents were not able to answer the question.

## Changes in the Use of Paper for Coordinating Clinical Placements

Receiving agencies. Ten of the 22 respondents from receiving agencies reported that they had fully discontinued the use of paper for coordinating clinical placements.  Six individuals indicated that they still used paper for certain aspects of coordinating clinical placements, while 5 respondents noted that their use of paper was much the same as prior to system implementation. One respondent was not able to answer the question.

Placing agencies. Six of the 11 respondents from placing agencies reported that they continued to use paper for certain aspects of coordinating clinical placements. Four respondents indicated that they used paper in much the same way as prior to system implementation and one person noted that they had essentially discontinued using paper. One respondent was not able to answer the question.

## User Practices for Generating System Reports

Receiving agencies. Thirteen of the 24 respondents from receiving agencies indicated that they did not generate system reports.  Nine respondents reported that they occasionally generated system reports and one respondent noted that they generated reports on a regular basis.

Placing agencies. Five of the 10 respondents from placing agencies noted that they occasionally generated system reports.  Three individuals reported that they never

generated system reports while two respondents noted that they generated reports on a

regular basis.

## Table 1 – Changes in Clinical Placement Coordination Practices Following Implementation of a Web-Enabled Database System

| Practice Area | Number of Respon-dents* | Practice Status – 2 Years Following Implementation of a Shared Electronic Database System | | | |
|---|---|---|---|---|---|
| Changes in placement-related tasks | 24** | **No change** 12 (50%) | **Tasks deleted** 3 (13%) | **Tasks added** 9 (40%) | **Not able to say** 8 (33%) |
| Time spent coordinating placements *** | 24 | **No change** 11 (46%) | **More time** 4 (17%) | **Less time** 4 (17%) | **Not able to say** 5 (21%) |
| Difficulty in coordinating placements | 35 | **No change** 11 (31%) | **More difficult** 5 (14%) | **Less difficult** 14 (40%) | **Not able to say** 5 (14%) |
| Number of placements *actually* available | 35 | **No change** 14 (40%) | **More placements** 14 (40%) | **Less placements** 2 (6%) | **Not able to say** 5 (14%) |
| Number of placements *potentially* available | 35 | **No change** 16 (46%) | **More placements** 10 (29%) | **Less placements** 1 (3%) | **Not able to say** 8 (23%) |
| Working relationships with external organization | 35 | **No change** 22 (63%) | **Positive change** 8 (23%) | **Negative change** 0 (0%) | **Not able to say** 5 (14%) |
| Use of paper-based system | 34 | **No change** 9 (26%) | **For some tasks** 12 (35%) | **Not at all** 12 (35%) | **Not able to say** 1 (3%) |
| Generation of system reports | 34 | **Regularly** 3 (9%) | **Occasionally** 14 (41%) | **Not at all** 17 (50%) | **Not able to say** 0 (0%) |

\* Respondents from the placing and receiving agencies who provided a response
\*\* Some respondents indicated that they had both stopped doing some of the tasks that were required prior to system implementation and at the same time had started doing new tasks
\*\*\* Changes in time spent coordinating placements were attributed to the system and to other factors notably changes in enrollment

## Discussion

Overall, the change from a paper-based to a web-enabled system such as HSPnet has positively impacted the efficiency and effectiveness of coordinating clinical placements throughout southern Alberta. The most significant impact associated with use of HSPnet was a decrease in the difficulty of coordinating placements, an outcome noted by 40% of the survey respondents. Implementation of the system was also associated with a decrease in the use of paper. Thirty-five percent of the people who responded to the survey indicated that they had essentially discontinued using paper to coordinate placements. As well, there was an increase in both the number of actual and potentially available clinical placements. Forty percent of the survey respondents indicated that the number of available clinical placements had increased, while 29% reported that the number of clinical placements potentially available had increased.

It is important to note that increased enrollments in education programs had a strong influence on increasing the number of clinical placements. Sixty-three percent of the respondents noted that working relationships with external organizations generally did not change, while 23% indicated that working relationships became more positive following system implementation. This outcome is important given the pre-implementation concern that changing to an electronic system for coordinating clinical placements would negatively impact the historically strong collaborative working relationships between organizations. Fifty percent of respondents indicated that they did not generate system reports or only occasionally (14% of respondents). It is possible that agencies were not generating reports, because senior administration had not requested reports or because the users have not incorporated the use of reports into their practices for coordinating clinical placements.

# Future Considerations for Using Technology to

# Coordinate Clinical Placements

The potential for technology to significantly and positively impact clinical practice placement processes is significant. The strategic use of the data from system reports will be increasingly important for leaders in Alberta's academic health care and practice settings in the coming years for a number of reasons. First, enrollment in health care programs, and by extension the requirements for clinical placements in both hospital and community-based settings, is likely to substantially increase given the current and anticipated shortage of health care practitioners.

Second, there will be a need to reconfigure clinical placements given the prevailing change towards interdisciplinary education and the shortage of placements. This will necessitate arranging clinical placements so that students from various healthcare disciplines can work together in a single or shared practice setting. Leaders will need to take full advantage of technology's capability to provide reports and use the data to inform the strategic development and increase the capacity for clinical placements.

In 2006, the Alberta provincial government embarked on an initiative to implement HSPnet on a province-wide basis. As of 2008, a framework has been put in place for province-wide system management with the formation of provincial committees for ongoing HSPnet Management and Data Stewardship. Representatives from the southern Alberta Project Team which disbanded in 2007 serve on these committees and these individuals will make valuable contributions to the provincial initiative.

Regular evaluation will be important for the users to identify the impact of system implementation on improving the effectiveness and efficiency of managing clinical placements. Also necessary will be the expansion of the system to allow healthcare

students and staff in both academic and practice settings to access and use the system to

meet their particular clinical placement needs.

## Conclusion

This project finished on time, on budget and all expected deliverables were achieved. Much of the project's success was attributable to the expertise and commitment of

the Contactor and the Project Team and as well to the consistent application of project

management principles. As of 2008, HSPnet has been well accepted in southern Alberta

and its use continues to grow and evolve. Given the successful outcomes of this project,

there is general agreement that the partnership made the right choice in selecting HSPnet.

As one respondent commented "the system definitely does what we used to do via an

archaic system - faster better and more effectively. Change is challenging, but I'm very

comfortable with the system now. Support is good. It is open to ideas and innovation which

can improve the ease and usability". Finally, and as noted earlier in this article, there are

minimal reports about the use of technology and its role in coordinating clinical

placements. The information in this article which is unique in that it reflects the perceptions

of system users and describes the changes in their practices for coordinating clinical

placements following system implementation, will partly address this knowledge gap.

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