

Comparison of Three Internship Training Sites for an Undergraduate Health Information Management Program in Saudi Arabia

Sulaiman Bah, PhD, Turki Alanzi, PhD

Department of Health Information Management and Technology, College of Public Health, Imam AbdulRahman Bin Faisal University, Dammam, Saudi Arabia

Objectives: While internship training is well established for medical records and for healthcare quality improvement, it is not quite so for training related to IT/health informatics. A comparison was made on the hospital-based IT/health informatics internship training received by students completing their training at the Imam AbdulRahman Bin Faisal University (IAU) in the Eastern province of Saudi Arabia. **Methods:** The three hospitals studied all have the Joint Commission International accreditation and advanced Electronic Health Record (EHR) systems. Over the period from 2011 to 2015, interns from the IAU prepared 120 reports based on their training at these three hospitals. Data abstraction was done on the internship reports, and the results were summarized and interpreted. **Results:** The study found wide differences in the training received at these hospitals. The main reason for the differences is whether or not the EHR system used in the hospital was a commercial one or developed in-house. **Conclusions:** The hospital that had developed its own EHR system made more use of health information management interns during their IT rotation in comparison to hospitals which had adopted commercial EHR systems. Recommendations are made of both local relevance and of international relevance.

Keywords: Internship and Residency, Health Information Management, Electronic Health Records, Tertiary Care Centers, Health Information Systems

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Corresponding Author

Sulaiman Bah, PhD

Department of Health Information Management and Technology,
College of Public Health, Imam AbdulRahman Bin Faisal University,
Dammam, Saudi Arabia. Tel: +966-56-281-2189, E-mail: sbah@
uod.edu.sa

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I. Introduction

Internship training in the health profession is a crucial stage in the transition from school to work. It affords an intern the opportunity to put into practice what has been learnt in the previous three or four years. It increases the intern's competencies, self-confidence and professionalism. It also increases the chances of an intern getting a job at the end of training, either at the same training site or elsewhere. On the contrary, a mismatch between an intern's expectation and the internship training offered could adversely affect the intern's competencies, self-confidence and career prospects. For these reasons, it is important for internship training to be taken seriously. Implicitly, the study of internship reports

prepared by interns is an important area of scholarship as it can be used to assess the extent to which an intern has been successful in putting theory into practice. These reports can also reflect the relevance of the internship training received to interns' career goals. As one Korean study has shown, university curricula on health administration could benefit greatly from input from health administration workers [1]. For this reason, a study of internship reports could help in revising curricula. As important as it is, work in the area of taking internship reports as units of study is very scanty. One study that used this approach was published in 2007. It was based on qualitative analysis of reports prepared by students in a summer internship program organized by the Society of Physics Students (SPS) in the United States [2].

The subject of this study is internship training in health information management and technology (HIMT). This discipline is closely related to three other disciplines, health information technology (HIT), health information management (HIM), and health informatics (HI). In the most common usage, HIT can be seen as a subset of HIM. In the United States, graduates of HIT programs apply for the professional qualification of Registered Health Information Technician (RHIT), while graduates of HIM programs apply for the more senior professional qualification of Registered Health Information Administrator (RHIA). In many settings in the United States, HIT serves as an entree into HIM. As expressed in one program, "The Health Information Technology program, with an emphasis on health record coding, prepares students for employment as health information technicians in a variety of healthcare settings" [3]. The traditional HIM program focuses on the management of hospital records, with or without Electronic Health Records (EHRs). As described in the Herzing University program on Bachelor of Science in Health Information Management (BSHIM), "A health information management professional is responsible for the management of health information systems consistent with medical, administrative, ethical, and legal requirements of the healthcare delivery system. They are experts in coding and classification systems, managing patient health information, and administering computer information systems." [4]. With the increasing shift towards electronic health records and their requirements, some programs are making changes to their traditional HIM programs. At the University of Wisconsin in the United States, this shift is clearly expressed in the introduction to their program as shown in the following statement: "New regulations and technologies are dramatically changing the roles and educational requirements of health information professionals. Traditional HIM

skills are no longer enough. That's why we created the University of Wisconsin Bachelor of Science in Health Information Management and Technology (HIMT)." [5]. The last of these related programs is in HI. The difference between HIM and HI is as follows: "HIM typically focuses on the information technology processes needed to store and retrieve patient data accurately and complying with regulations. HI, on the other hand, focuses more on applied technology by using information management and information technology to improve patient care." [6]. In summary, HIMT overlaps with HIM and HIT in areas dealing with coding and the management of medical records, while it overlaps with HI in the areas of EHRs and HISs.

While HIMT programs aim to combine both HIM and some parts of HI, there is no consensus on which of these two disciplines should weigh more heavily in their programs, as the electronic component of HIM becomes more widespread. This dilemma affects the selection of courses for HIMT programs as well as the professional practice experience and internship training that students receive. The problematic HIM/HI relationship is also manifested in hospitals. Some hospitals have 'health informatics' departments, while others have a separate department for IT and a separate one for HIM.

This paper is about internship training in the IT component of an undergraduate HIM program. The IT health informatics internship training provided at three hospitals was compared based on reports received from students completing their training at the Imam AbdulRahman Bin Faisal University (IAU) in the Eastern province of Saudi Arabia. At that university, the route chosen was that of HIMT rather than HIM or HI. The HIMT Bachelor of Science (BSc) program is the first in Saudi Arabia, and it was established in 2003. The program is 4 years long, and in addition, students complete one full extra year of internship training (the fifth year). Prior to the internship training, students take two consecutive courses on professional practice experience (PPE1 and PPE2), in which hospitals are visited for field experience. In the PPE courses, students do not undergo any hands-on training as they mostly observe professionals at work. In the internship training program, they are expected to do hands-on training.

In at least one rotation (initially four months duration but later shortened to 3 months) one or more interns would choose the IT department. Each intern has to complete one rotation in IT, another in medical records (MR), and another in quality improvement (QI). When the rotation length was shortened to 3 months, an intern had a choice in one of the

rotations. It could be in IT, MR, or QI or in a new area, such as patient relations (PR) or in research (RS). At the end of the training, each intern is expected to write a report on the training received and their reflections on the advantages and disadvantages of the training. The report is reviewed for completeness and quality before being accepted.

II. Case Description

The sources of data for this study were reports written by interns from 2011 to 2015 in three hospitals in the Eastern province of Saudi Arabia. The three hospitals compared were A (university teaching hospital), B (private specialist hospital) and C (governmental specialist hospital). All three are tertiary hospitals with full accreditation by the Joint Commission International (JCI). Hospital A is governmental and is the oldest. It was established in 1981 and has a capacity of 818 beds. Hospital B is private and was established in 2001 and has a capacity of 600 beds. Hospital C is governmental and it was built most recently. It was established in 2005 and has a capacity of 640 beds. All of them have IT departments and offer internship training to students of the HIMT program at the IAU.

Data was abstracted from the internship reports and used for the study. The data abstraction process was guided by the following points. First, for the same group of interns being trained at the same time and at the same site, the reports written were largely similar and complemented each other. Some details missing in one report could be found in another report. Second, for one of the hospitals (A), the IT trainer remained the same throughout the period of the study. For the other two hospitals (B and C), the IT heads remained the same, while some of the trainers changed over time. For these two reasons, there was lot of overlap between the reports from a hospital, either over time or at the same time. Because of this lack of independence between the reports from a given hospital, the hospital was made the unit of the analysis rather than the report. In addition, a qualitative approach was used in the study. A data abstraction form was developed comprising various topics. For each hospital, all the reports were searched for answers to the questions raised in the topics. For example, if all the reports for a hospital stated that a training plan was provided for them, the answer to the question regarding the availability of a training plan at that hospital would be 'yes.' If, on the other hand, some reports stated that a training plan was provided, while other reports (in other years) stated that none was provided, the answer to the question regarding the availability of a train-

ing plan at that hospital would be 'sometimes.' As the reports had already been written, this study was a secondary study, not a primary one. As the interns were free to choose their hospitals and rotations, issues such as 'blinding' did not play a role here. As all the IT reports were included in the study, the issue of sampling bias did not play a role here. The results will be discussed in the light of the broader context of IT internship training in HIM.

The number of IT reports prepared by interns during the study period from 2011 to 2015 was 120. Of these, 76 (63.3%) were for hospital A, 40 (33.3%) were for hospital B, and only 4 reports were prepared for hospital C. Both government hospitals use proprietary software, QuadraMed at hospital A and MedicaPlus at hospital C. At hospital C, they have technical personnel from MedicaPlus on site. They help to address problems in the system and respond to requests for changes to be made to the system. This is similar to the arrangement at hospital A. For these hospitals, changes in the hospital information system (HIS) are handled by technical staff affiliated with the software company. This limits the type of training that hospitals can offer to interns, as shown in Table 1. At hospital A, training offered is mostly in the form of lectures. At hospital C, the training offered is in the form of lectures and help desk/call center duties. There is no opportunity for hands-on training at hospital A, while at hospital C, there is limited opportunity. At hospital C, interns are given an opportunity to be involved in improvement meetings in which departments express their needs for changes in the HIS. The interns are also involved in some on-going projects.

On the other hand, the HIS at hospital B was developed in-house. This means that the IT department itself plans and implements changes to the HIS. This makes the IT department very busy because it has to attend to many projects at the same time. Interns are welcomed and appreciated for providing additional help. After orientation, interns are directly involved in on-going projects. Their involvement is real as they help in providing the solutions and, sometimes, they make presentation of their results to the top management. The IT department appreciates the work of the interns, and the interns in turn appreciate the opportunity to be directly involved in providing HI solutions to real problems. Often, the IT department requests the university to extend the stay of the interns (from 3 to 6 months) to complete the projects they are involved in. Subsequently, the IT department employs some of these interns or offers them employment.

Table 1. Comparison of internship training at hospitals A, B, and C from 2011 to 2015

Topic	Hospital A (Governmental)	Hospital B (Private)	Hospital C (Governmental)
Name of department	IT	IT	Health Informatics
Number trained from 2011 to 2015	76	40	4
Health information system used	QuadraMed	B information system (a system that was developed in-house)	MedicaPlus
Number of trainers	One main trainer and trainers in the different sections	Two main trainers	Not stated in the reports
Use of a training plan	Used	Used sometimes	No clear training plan
Consistency in training plan	The overall lectures by the primary trainer are consistently the same.	One of the trainers uses a consistent training plan	No consistent training plan
Training style	The main trainer gives lectures on the QuadraMed system and sends the intern to various sections (pharmacy, laboratory, radiology) to study the systems used.	Two approaches are used. The first approach is to give interns training on the overall SIS and then section-specific training (laboratory, pharmacy, dental) and getting them involved in an on-going project. The other approach is to give interns orientation on the SIS and then involve the interns directly in on-going informatics projects. The interns are required to complete tasks and report their results.	After training interns on the MedicaPlus system, they get involved in help-desk/call center duties. There is some opportunity in getting involved in on-going projects.
Hands-on practical training	None	Yes	Limited
Room for interns to taking part in projects	None	Yes	Yes
Interns' opinions about the relevance of the training to their specialty	Generally happy about learning about QuadraMed's features. Unhappy with the lack of hands-on experience	They find the training very relevant. Generally happy about the training	Moderately happy with the training
Employment prospects in the IT section after training	None	Very high. Some were employed and others were offered given job offers.	None

III. Discussion

HIMT combines both HIM and some aspects of HI. At the IAU the students take the following IT-related courses: Computer Fundamentals in Health Care, System Analysis and Design, Health Care Database Administration, Introduction to Health Information Applications, Electronic Health Records, and Computer Networks. These courses put them in a good position to understand the technical principles of

EHRs, the maintenance of their associated databases, and the networking of the HIS in a hospital. These courses equip them to serve in the interface between the users and the IT department. The courses do not equip them to be professional IT personnel nor to be professional programmers capable of making changes to the HIS. The students would be able to communicate with users to understand their needs and to translate these needs to programmers. They would be able to test updates in the software and train hospital person-

nel in the use of the new updates. For these reasons, the interns of the IAU are best suited to the environment in which the hospital has developed its own EHR system and makes updates to it as often as required, as is the case of B. The interns are not suited for environments in which the HIS is a proprietary that cannot be changed by the hospital IT staff, as is the case of hospital A and hospital C.

For hospitals with commercial EHR systems, the HIM graduates could play several roles, before and after a system is purchased. Before its purchase, they could advise on the functionalities of the system required for compliance to governmental or accreditation agency regulations. If a hospital system has already been bought, HIM graduates could spend time investigating the functionalities of the system and report any deficiencies found. For example, they could investigate the audit trail features of the system to improve its readiness to provide evidence in medico-legal cases. The HIM graduates could also play a role in training physicians and nurses in using new features of the system. HIM graduates could also play a role in assessing user satisfaction or dissatisfaction with the system.

Two sets of conclusions can be drawn from this study. The first is of direct local relevance for the HIMT program studied, while the second is of broader international relevance for other developing countries. Among the first set of conclusions from the study is that, of the three hospitals covered in this study, hospital B is the most suitable one for internship training of HIMT students of the IAU. The main reason for this is that they have developed their own EHR system and are continuously making updates to it (in-house) and adding modules to the system. The HIMT students have some of the skills required for testing and updating the EHR system. Also, since there is no difference between the PPE training and internship training at the A site, it should only be retained as a PPE site and not as an internship site. Lastly, the hospital C site could also be dropped out of the internship training program given their total disconnect with the HIMT program.

The second set of conclusion is that if there is any internship training site which has developed its own EHR system, that site should be prioritized for adoption as an internship training site. Further, effort should be made to translate the internship experience at that site into its affiliated HIM teaching program. The first step in doing this would be to put together a team comprising faculty members, alumni of the HIMT program who were trained at that site, and some of the trainers at the site. This team could develop a special course titled, "HIM Theory and the Practical EHR Environ-

ment." Such a course will help make the IT training in the HIMT program more relevant to HIMT graduates and industry. While less priority should be given to sites with commercial EHR systems, IT managers should be educated on the skills HIM graduates possess and how they can be used best in their hospital setting.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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