# The Impact of Health Information Technology (I-HIT) Scale: The Australian Results

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**Abstract**. One of role of the nurse in the clinical setting is that of co-ordinating communication across the healthcare team. On a daily basis nurses interact with the person receiving care, their family members, and multiple care providers thus placing the nurse in the central position with access to a vast array of information on the person. Through this nurses have historically functioned as "information repositories". With the advent of Health Information Technology (HIT) tools there is a potential that HIT could impact interdisciplinary communication, practice efficiency and effectiveness, relationships and workflow in acute care settings [1][3].

In 2005, the HIMSS Nursing Informatics Community developed the I-HIT Scale to measure the impact of HIT on the nursing role and interdisciplinary communication in USA hospitals. In 2007, nursing informatics colleagues from Australia, Finland, Ireland, New Zealand, Scotland and the USA formed a research collaborative to validate the I-HIT in six additional countries. This paper will discuss the background, methodology, results and implications from the Australian I-HIT survey of over 1100 nurses. The results are currently being analyzed and will be presented at the conference.

Keywords: Nurses, communication, information technology, information, roles

#### 1. Introduction

Nursing is a key co-ordinator of communication flows in the clinical setting, interacting with the person, their family and care providers, and the multitude of their health care providers. As a result nurses function as "information repositories" providing the critical roles of communicating with and about the person. Health Information Technology (HIT) is designed to support the effective and efficient communication of person centric information. Organisations worldwide are embarking on major implementations of HIT. The potential impact on this central communication role of the nurse and interdisciplinary communication is not well understood [2]. In 2005 the Health Information Management Systems Society (HiMSS) Nursing Informatics Group developed the Impact of Health Information Technology (IHIT) scale tool to measure the perception of nurses of the impact of HIT to interdisciplinary communication and nurses satisfaction with HIT [2]. This tool was designed to:

- 1. To explore the impact of HIT on interdisciplinary communication, practice efficiency and effectiveness, relationships and workflow in acute care settings.
- 2. To elicit information about the experiences of nurses and interdisciplinary colleagues with regard to health information technology (HIT) in acute care settings.
- 3. To explore the degree to which HIT communication tools are used in acute care settings.
- 4. To explore the degree to which nurses and interdisciplinary colleagues are satisfied with HIT tools currently available in their practice setting.

The tool was used in the United States of America to assess the above criteria. The focus of the study was expanded to the international nursing community through the International Medical Informatics Association, Nursing Informatics Special Interest Group. To date the survey has been undertaken in USA, Ireland, Finland, Scotland and New Zealand.

This paper outlines the validation of the tool and distribution of the survey tool to assess the impact of HIT within the Australian nursing community and more specifically the acute care sector.

### 2. Material and Methods

### 2.1. Validation and conversion of the tool for the Australian environment

To validate and convert the tool for the Australian environment involved a two stage process, based on a consistent approach for each country as determined by the HIMSS nursing informatics group.

Stage 1 involved five (5) Australian nurse informaticians reviewing the tool to determine the cultural and linguistic compatibility of the tool for the Australian environment. Each reviewer determined the relevance and interpretability of the 43 items within the survey tool on a scale of 1 (not relevant / interpretable) to 4 highly relevant and interpretable and provided suggestions for modifications in language. The tool was then subsequently modified to incorporate the required language changes within the context of maintaining alignment to the original intent of the survey tool.

Stage 2 involved the conduct of two (2) focus groups (1 paediatric, 1 adult), where the focus group (consisting of 5 acute care nurses providing direct patient care) reviewed the meaning of the content. In addition one telephone review was conducted with an acute care nurse within the rural environment. The findings were submitted to the USA principal researcher to revise and develop the specific Australian HIT survey tool.

### 2.2. Distribution of Survey

The Australian version of the HIT survey tool was developed as an on line survey. The Australian Nursing Federation (ANF), the key nursing industrial and professional body in Australia was engaged for the distribution of the survey to its members working in the acute care environment through its state branches. Nurses self selected participation in the survey and due to the on line nature of the survey only those who had email and internet access were able to be advised of and complete the survey.

### 2.3. Analysis of Survey Results

The completed surveys were automatically complied by the online survey tool. This provided the Australian researchers with easy access to the survey data. 1443 participants responded to the survey however on average only 450 (31.18%) - 550 (38.11%) responded to any individual question (n=1443).

The survey consisted of questions in the following categories:

- Advantages of Health Information Technology at my workplace
- Workflow implications of Health Information Technology
- Information tools to support communication tasks

- Satisfaction with Health Information Technology
- Training for Health Information Technology
- Experience with information technology
- Participation in information technology initiatives in the workplace.

### 3. Results

The context of availability and utilization of HIT in the clinical environment has to be taken into consideration of the overall results from the survey. The results indicate that the following systems are available to the respondents; (n=332) patient administration (89.1%); order entry (61.4%); results reporting (84.9%); clinical messaging (50.6%); and Vocera (or similar) communication services (40.4%).

Advantages of HIT (n=720) included: decreased time for handover report (32.9% agreed); decreased communication regarding patient orders (37.34% agreed); better information to prepare for assigned patients (50.48% agreed); facilitates efficiency in practice (59.14% agreed); allows for family/patient participation in care (22.74% agreed); access to information has reduced multidisciplinary team face to face communication re care (53.38% agreed); nurses access to electronic information has increased independent decision making (63.56% agreed); information available within HIT at my hospital improves handover of care (38.66% agreed); task lists from HIT supports efficient patient care (38.30% agreed);

**Workflow implications** (n=570) included: HIT improves access to data (76.52% agreed); HIT depersonalizes care (55.90% disagreed); HIT provides access to information for safe patient care (77.7% agreed); electronic multidisciplinary documentation improves capacity of clinicians to work together (53.83% agreed); HIT supports the clinical decision making process (58.26%); the way information is displayed in HIT reduces duplication of care (51.66% agreed); the way HIT information is displayed facilitates multidisciplinary care planning (53.85% agreed); HIT facilitates multidisciplinary care planning (53.85% agreed). Information tools to support communication (52.76%); Supports patient tracking (75.52% agreed); HIT supports multidisciplinary communication when required (50.47% agreed); HIT supports patient care and administrative processes (69.73% agreed); HIT information assists nurses to collaborate at higher level with multidisciplinary colleagues (49.90% agreed); know how to access electronic medical record (54.24% agreed);

**Satisfaction with Health Information Technology**: (n=495) system provides electronic acknowledge so know person received information (28.26% agreed); system provides acknowledgement that person has acted on the message sent (20.20% agreed); HIT promotes two way communication between clinicians about patient status (39.51% agreed); HIT effectively communicates critical events (38.97% agreed); helps in being patient focused in communication (45.79% agreed); reduces number of questions to nurses regarding clinical details (29.76%); Overall satisfaction with HIT at facility (27.6 satisfied, 26.11 neutral, 46.28% dissatisfied)

**Training:** (n=343); Facility offers training 66.2% yes (n = 465); overall satisfaction with training (38.48% satisfied, 27.4% neutral, 34.11% dissatisfied)

**Experience with Information Technology**: (n=470) regular users of word processing (79.70%); regular users of email (93.7%); regular users of www (92.6%). **Participation in HIT planning and implementation** (n=477): Little to no participation (75% agreed)

#### 4. Discussion

The availability of specific nursing focused HIT is still not evident within the participant group. Whilst nurses have access to a range of HIT applications e.g. patient administration, order entry and results reporting functions to communicate patient information, the key systems such as clinical documentation including care planning tools, which provide nurses with more effective tools for communication and information sharing are still not available. Lack of effective tools for nurses impacts on positive perceptions nurses have of the benefits of HIT, decreases satisfaction with access to HIT and reduces positive experiences of using HIT in clinical practice (46.28% dissatisfied overall with HIT at their facility).

HIT was impacting on the role of the nurse as the central communication point with 53.38% identifying that it changes multidisciplinary face to face contact regarding patient care. In contrast nurses have access to information to better prepare to deliver care (50.48%) and HIT provides nurses with information to support independent decision making regarding care (63.56%). Nurses identified HIT's positive aspects as providing information tools that support communication including patient tracking (75.52%) and, supporting patient care and administrative processes (69.73%).

Positive benefits of HIT included access to information (76.52%) and access to information for safe patient care (77.7%). HIT also supports the clinical decision making process (58.26%), reduces duplication of care (51.66%) and facilitates multidisciplinary care planning (53.85%).

The majority of respondents are actively involved in direct patient care, and would be required to integrate HIT into their work practices, however over 75% had not participated in any implementation of HIT at their facility.

#### 5. Conclusion

Nurses are able to identify the positive aspects of HIT, but in many situations still do not have access to effective HIT tools to support nursing care. Whilst HIT changes the central communication role of the nurse, it has the positive benefits of improving access to information to support communication and increased nursing participation in the clinical care planning and decision making process. Given that nurses are required to integrate HIT into their practice it is imperative that as direct care providers that they participate and contribute to decision making for the implementation of HIT.

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