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Complex Clinical Communication Practices: How Do Information Receivers Assimilate and Act Upon Information for Patient Care?

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Abstract. Improving clinical communication is imperative to improving the quality and safety of patient care. Significant efforts have been made to improve clinical communication and patient safety, guided by the mantra of "the right information, to the right person, in the right place, at the right time". The design and implementation of information communication technologies (ICTs) has been considered as one of the major developments in improving patient care. Clinical communication in today's clinical practice is complex and involves multi-disciplinary teams using different types of media for information transfer. This paper argues that traditional communication theories fail to adequately capture and describe contemporary clinical communicative practices or to provide insight into how information transferred is actually assimilated and/or utilised for patient care. This paper argues for the need to more fully consider underlying assumptions about the role of information in clinical communication and to recognise how the attributes of information receivers, especially where ICTs are deployed influence outcomes. The paper presents a discussion regarding the need to consider information receivers as the foundation for clinical communication improvement and future design and development of ICTs to improve patient care.

Keywords. Patient safety, clinical communication, communication theory

1. Introduction

Poor clinical communication often leads to adverse events and medical errors [1]. Significant attention and efforts have been devoted to improving clinical communication in recent years [1]. Many of these strategies have been adopted from other industries like aviation and the military, where communication failure is less common [2]. Improvement strategies have mainly focused on the sender of the information and the way in which that information is delivered.

The mantra behind clinical communication improvement has thus far been "the right information, to the right person, in the right place, at the right time" [3]. Strategies to improving clinical communication to date can be viewed primarily as efforts focused

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on standardising the process of sending information (and therefore receiving information) and promotion of the use of information communication technologies (ICTs) to improve information delivery [4].

These improvement strategies focus primarily on the sender of information as being the key to information delivery and therefore the primary user of the ICT. While the sender is essential to improving clinical communication and patient care, it is only one side of the coin. This paper argues that it is also important to consider the receiver of information in attempts to improve clinical communication. This paper presents the complexities of clinical communication practices from the perspectives of the receivers of information, focusing on assimilation and action. This paper provides the background to a study in progress, which examines the issues encountered by the receivers of information, how they assimilate and act upon this information and how this relates to clinical communication, patient care and the adoption and use of health information systems.

2. Clinical communication, patient safety and ICT

Evidence validates that the delivery of medical care is often associated with medical errors and adverse events [5]. Poor clinical communication is one of the major factors in error causation [1]. As such, intervention strategies to improve clinical communication can ultimately lead to improvement in patient safety.

Many strategies have been trialed to improve clinical communication and therefore patient safety. These strategies involve attempts to standardise the content of information transfer and the development and implementation of ICTs for information transfer [4].

Using ICTs to improve clinical communication has produced mixed results in enhancing patient care and improving patient safety [6]. It has been suggested that socio-technical factors particularly problems associated with human-computer interactions are the main cause for the varied outcomes [7]. As such, various strategies which include user-centred design and participatory design have been suggested, to take into account socio-technical factors in designing and implementing ICTs [8]. It is thought that in addressing this, the use of ICTs will have the potential to transform patient care through the delivery of "the right information, to the right person, in the right place at the right time".

The literature has reported some studies that investigate using ICT to enhance team-based care. A team based at Netherland has discussed the possibility of development of RAP-TEAM based ICT application to support team-based care and design principles [9]. The complexity of using ICT to assist in healthcare communication has also been discussed in, suggesting the need to consider cognitive, social and organizational aspect of communication [10]. The use of ICT technology in multi-disciplinary setting, however, has not often taken into consideration the complexity and different level of communication among different healthcare professionals [11]. This is in part attributable to the lack of conceptual discussion regarding the communication needs of various healthcare professionals looking after the same patient, in particular, the information extraction, analysis and display requirements. This paper therefore aims to examine this particular aspect of communication practices, emphasizing the user of information as the focus. This paper

provides a conceptual model to discuss ICT and multi-disciplinary care requirement to support future research in this area.

3. Information delivery

The most common strategy and intervention to improve clinical communication is attempts to standardise the process and contents. This is particularly the case whereby an ICT is deployed to improve clinical communication and patient care. While there are numerous theories that model and describe the complexities of clinical communication, the standardisation of clinical communication assumes that the information is delivered as a code that the receiver of information can act upon. Using ICTs to improve clinical communication appears to be guided by two primary communication models developed by 1) Shannon and Weaver and 2) Wilbur Schram.

Shannon and Weaver's model consists of a sender (primary role), a message, a channel, interference and a receiver (secondary role). Communication failure occurs when the receiver does not receive the same message that the sender has encoded and sent through using the appropriate channel. Shannon and Weaver do not consider the receiver's feedback as important [12]. Wilbur Schram suggests that communication is a meaningful interaction between senders, receivers and the message [13]. As such, considering interpersonal relationships is important in understanding the message. Wilbur Schramm suggests that context and relationships should be taken into account in the communication model.

Figure 1 provides an illustration of the combination of these two communication models. The sender of the message, after considering noise, context and relationship, delivers the message to the receiver to act upon. It appears that ICT designs for clinical communication improvement often focus on the message and the channel itself as a direct communication between one healthcare professional (or one group of healthcare professionals) to the other. These theories, however, consider that communication is between two individuals using one preferred channel. In today's healthcare system, there are significant variations to this model that needs to be considered and addressed.

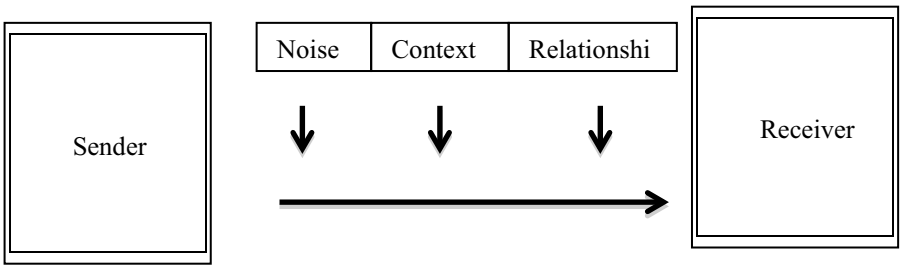

Figure 1: Communication theories guiding ICT design.

With advancements in medical care and an ageing demographic population, clinical communication needs to occur across several disciplines to provide the necessary patient care. There are four important aspects to consider in clinical communication which is demonstrated in Figure 2.

Firstly, the sender of the message often directs the information to multiple different receivers. For example, a doctor (Sender A) communicates the diagnosis to a nurse (Receiver A) and a pharmacist (Receiver B).

Secondly, the sender might choose to send a similar message but encode it differently to cater to the needs of different receivers. For example, a speech pathologist (Sender C) might send a variation of a message highlighting a patient's problems with swallowing to the nurse (Receiver A) and the pharmacist (Receiver B).

Thirdly, the sender of the message considers the context and the receiver in order to achieve shared objectives for patient care. The literature often describes the concept of a shared mental model to improve communication across different disciplines [14]. In today's clinical practice, a shared mental model might not serve the purpose for the delivery of safe patient care. This is because different healthcare professionals deliver different elements of patient care and have different communication needs. For example, a doctor might communicate with another doctor about the projection of care requirements and uncertainty in the diagnosis. The tasks to be carried out in order to care for the patient is often mutually understood without the need for explicit narrations. When the doctor communicates with a nursing staff, the focus of that communication relates to explicitly stating the tasks that need to be carried out to care for the patient but at the same time acknowledging the uncertainty in diagnosis.

Finally, the channel of communication used might be different. Many healthcare organisations use electronic forms of communication (eg. e-prescribing) together with a paper-based form to document their communication. However, a lot of clinical communication occurs verbally without clear documentation of what has been said.

These aspects challenge traditional communication theories between two parties. More importantly, this creates challenges for interventions and strategies aimed at improving communication, especially with the implementation of ICTs. In considering the model presented below, it becomes apparent that while it is important to deliver "the right information to the right person in the right place at the right time", clinical communication is complex and user dependent. While it is important to consider the sender of the message, the message itself and the channel used, the receiver of that information should be the focus as their actions upon receiving that message is ultimately what impacts the delivery of clinical care and ultimately, patient safety.

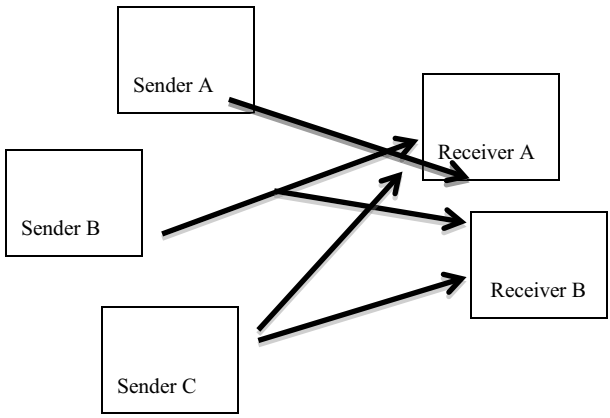

Figure 2: Complex clinical communication practice.

4. What about the receiver of information?

This paper argues that we need to consider the receiver of information as important if not more important than the other elements in improving clinical communication. The right information when delivered to the right person in the right place and at the right time still requires understanding and interpretation by the receiver and prioritised and acted upon.

The complexity between sender and receiver in communication has been described in speech act theory [15]. The speech act theory, however focuses on the speech and assumes and language use and suggest that this is associated with certain action. The speech act theory acknowledges the receiver in information utilisation. When apply in healthcare, especially with ICT involvement, the receiver of information is more complexity. The receiver of information might have different level of knowledge and skills and therefore might interpret the action associated with communication different.

The receiver of information often gets inundated with information from various senders. Each sender has a different level of expectation regarding what the receiver does with that information. The information is often delivered through different channels and documented differently. The receiver of information needs to assimilate all the information that they receive and act upon the information. It is through their actions upon the received information that will lead to clinical outcomes.

This paper therefore argues that ICT while assist in the delivery of information, it might impact on the receiver and actions achieved. Firstly, ICT delivers a lot of information to a lot of receivers. The design of ICT has been "more information means better communication". It is important to note that information overload affects how information is used. Secondly, ICT takes away the inter-personal relationship that modifies the message sent. The receiver and the sender will need to rely on the message itself. Finally, various ICT systems within the same clinical practice often interact with each other. When the messages delivered by different senders and different channels achieve harmony, the information receiver could act upon it. When the messages delivered by different senders and different channels are in conflict, however, this creates great confusion and has the potential to distract information receiver from the task at hand. This paper, therefore suggests that ICT design and implementation within clinical practice must also consider the receiver of the information.

5. Conclusion

Clinical communication is integral to the delivery of patient care. Improvements made in clinical communication will likely improve the delivery of patient care and patient safety. Current clinical communication improvement strategies focus on the sender of the information and the message itself. ICTs have been implemented with an aim to improving clinical communication. This paper has argued that clinical communication is a complex process and suggests that focusing on the receiver of information also forms an important part of clinical communication improvement efforts. This paper has also provided the rationale for an ongoing research project which focuses on the receiver of information in order to improve clinical communication particularly through the design and implementation of an ICT.

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