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Consuming Physicians' Non-compliance with Clinical Guidelines: Other Side of Coin

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Abstract. Despite clinical Guideline-based decision support systems have been mainly developed to improve physicians' compliance with guidelines, we look into the other side of coin to utilize the monitored non-compliance information to adapt guidelines to local care setting. The effectiveness of the approach was verified in the real system.

Keywords. Clinical guideline, decision support systems, guideline non-compliance

1. Introduction

Clinical guideline-based decision support systems have been used for decades to improve physicians' compliance with guidelines so as to improve care quality [1]. On the other hand, non-compliance always occurs if the implemented guideline does not adapt well to a local setting. As it is always costly and time consuming to adapt clinical guidelines to a local care setting where expert groups are employed to develop a clinical protocol, we look into the other side of coin to analyze the non-compliance data from practical guideline systems and automatically identify the guideline content which need to be modified to adapt to the local setting.

2. Method

We adopt a practice-based approach to evaluate the practicability of the guideline recommended decisions through analyzing the corresponding real decisions made by physicians. It implies that a guideline recommendation may not fit the local care setting if most physicians do not adopt the recommendation during their daily care practices.

We developed a guideline-based clinical decision support system for chronic disease management (CDM) where we employ a revision advisor to identify those guideline decisions that might be modified as shown in Figure 1. Let D(s,p) denote the non-compliance degree of a physician p for a specific guideline decision s which is

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computed as the proportion of his aligned clinical decisions which do not conform to the guideline recommendation. We then compute the impracticability D(s, P) of s as $D(s,P) = \sum_{p \in P} D(s,p) / |P|$ where $P = \{p\}$ *is* a given set of physicans who use the system to treat patients.

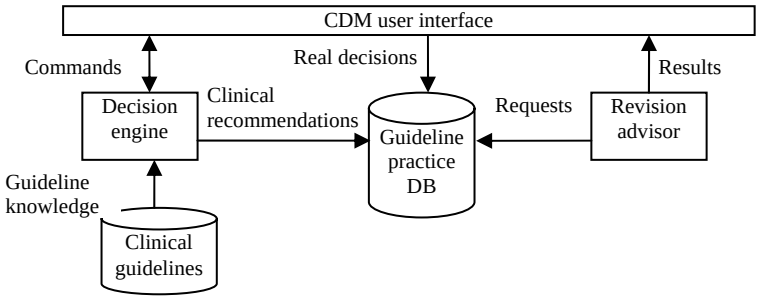

Figure 1. Practice-based system for guideline revision.

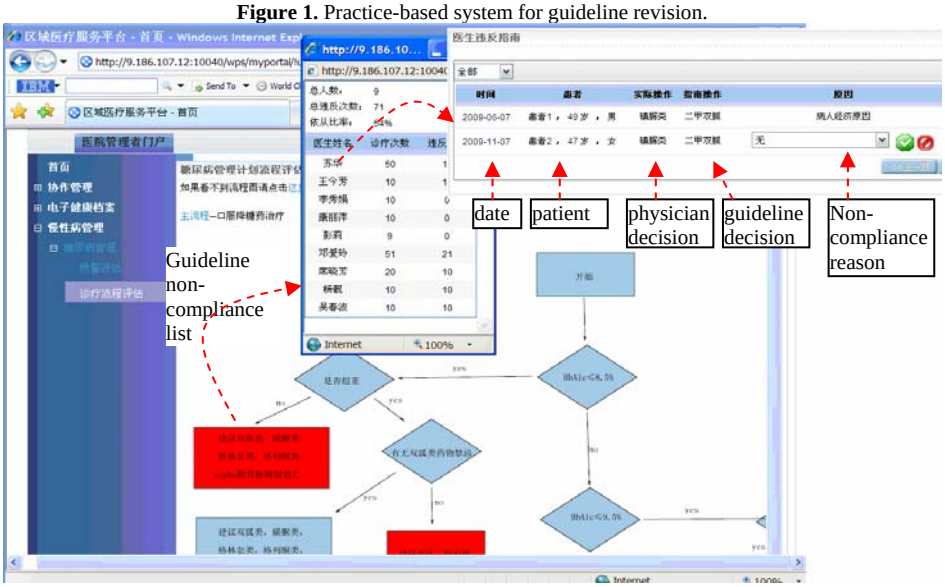

Figure 2. Visualized guideline revision suggestions.

The developed system has been deployed to manage type 2 diabetes patients in one of largest hospital in China where the underlying guideline is displayed as a flowchart to users. In the course of running the system, the potentially inappropriate guideline decisions are displayed in red rectangles (as shown in Figure 2) if their impracticability exceeds a threshold, e.g., 0.8. The details of non-compliances which result in the impracticability are also displayed where the most common decisions from the physicians lay the foundation for developing the next version of the guideline.

References

[1] Ten Teije A., Miksch S, Lucas P. Computer-based medical guidelines and protocols: a primer and current trends. IOS Press; 2008.