# Schematic Framework for Clinical Language Technology Development in Intensive Care

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**Abstract**

*Fluent patient information flow is a prerequisite for clinical decision making. However, the flow is fragmented in intensive care. We identify interfaces for language technology components to support the flow. We present the components of profile-building, support-to-writing, attention-focusing, summarizing and proof-reading in a schematic framework. It covers the entire intensive care process and enables developing comprehensive software solutions by tying components together.*

***Keywords:***

Computerized patient records, Critical care, Decision making, Intensive care, Natural language processing.

## Methods

In this paper, we identify language technology components (LTCs) to address the fragmented flow of narrative information and interface them and the flow together. The components arise from our content analysis [1] of 516 Finnish intensive care narratives that was performed using statistical, semi-automated, and manual techniques. They are justified with studies related to clinical documentation and the use of LTCs.

## Results

Our schematic framework (Figure 1) supports the use of gathered information throughout a patient's stay and in this way, promotes personalized, predictive, preventive, and participatory care. This is generalized from a patient case to previous cases via a repository that captures both scientific evidence and practice-based evidence in previous patient records.

Our study supplements previous studies [2, 3] by identifying LTCs. E.g., a model for building care knowledge with data mining methods has been proposed as well as a technical framework for a patient monitoring system that supports clinical decision making. However, these studies do not identify LTC.

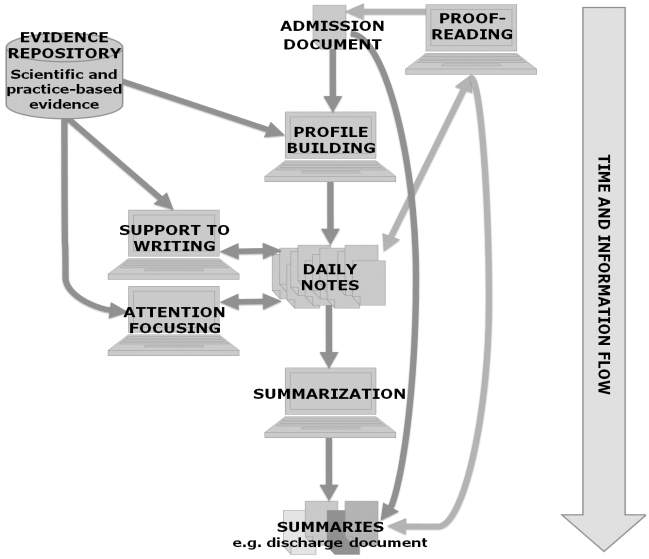


*Figure 1- Schematic framework*

## Conclusion

Regardless of its great potential to support information flow, current clinical LTCs are highly specialized, isolated from each other and rarely implemented to patient records. The significance of our schematic framework lies in better abilities to create comprehensive software solutions.

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