

# Representing clinical processes in XML process definition language (XPDL)

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## Abstract

*Sharing of decision support logic is important. We have evaluated the ability of XML process definition language to capture clinical processes. Several XPDL-compliant workflow editors were used to model 16 clinical processes. XPDL standard represents a viable cross-industry technological alternative to healthcare specific decision logic representation standards.*

## Introduction

Previous reports have noted the general lack of stand-alone, vendor-independent guideline engines [1, 2]. In addition, articles have noted that many guideline formalisms do not explicitly model relevant care participants and do not separate workflow logic from the decision logic. Outside of healthcare, workflow technology (WT) is widely used for modeling and execution of processes. XML Process Definition Language (XPDL) is a robust, 10-year old standard which has been adopted by all major WT vendors and capable of modeling complex workflow patterns and decision logic [3]. A critical question is whether XPDL-compliant workflow products are able to capture clinical processes. As a preliminary assessment of this we have evaluated the ability of several XPDL-based systems to model various healthcare processes.

## Methods

We modeled 16 clinical processes from the domains of decision support, quality improvement and medical research with three XPDL-compliant workflow editors (Enhydra JaWE, TIBCO Business Studio and Microsoft Visio extended with an XPDL plug-in). The modeled workflows were then executed retrospectively against a large clinical data warehouse (RetroGuide project [4]). A set of reports generated by our external applications during process execution reflect how well the human-modeled process models match real healthcare EHR data.

## Results

Although all editors were able to represent the processes, there were differences among the editors. Despite the existence of the XPDL standard, different workflow editors may differ in graphical presentation of the same workflow pattern. These seemingly

minor differences can have major effect on both the human readability and ease of implementation. For example, JaWE workflow editor does not require the use of additional condition nodes to implement exclusive choice pattern [3] and differs from others in implementing workflow transition conditions.

## Discussion

The XPDL workflow language has been previously shown to be adequate to represent general activity graphs [5]. XPDL directly supports modeling process participants. It can be easily extended with external technologies and employs a user-friendly flowcharting paradigm. This work confirms its ability to capture actual clinical scenarios. Major advantage of use of XPDL for representing clinical processes is its wide use outside of healthcare. History has shown (e.g., in the case of network protocols or databases) that development of interoperable healthcare systems is easier when it appropriates technology developed outside healthcare.

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