

# XForms and XML Events to Support Decisions about Medication Management

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**Abstract:** Representation and presentation of information in healthcare is problematic, including issues related to common formats and accessibility. XML technology infrastructure (particularly XForms and XML events) appears promising in addressing some of these issues. These technologies were investigated in the context of decision support for medication management. XForms allows rapid prototyping of information models and interfaces. XML events are useful to model simple alerts although currently limited by some components, such as date functionality.

**Background:** Representation of patient-related information in healthcare and ability to suitably structure this for decision support is problematic. Most healthcare data is narrative text and often not easily accessible to clinicians (1). Clinical decision support tools are an important development potentially assisting clinicians to access relevant information at the point of care to improve patient safety (2). We believe that this is an emerging issue for pharmacists in Australia undertaking medication reviews or medication management. XML standards, such as XML schema, XForms and XSL, provide an infrastructure that might enable solutions (1).

**Aim:** Investigate the potential of XForms and XML events to support the development of a digital document for decision support in medication management.

**Methods:** Doctors and pharmacists were interviewed, and pharmacists observed during work practice in four adult hospitals in South Australia. Data was collected on information required for ordering and reviewing medications, and about missing information. This allowed the formulation of a preliminary model of data components considered essential to medication management. An XForms model was developed to represent the medication management user interface. XML events were investigated for their potential to trigger simple alerts.

**Results:** Data components identified included patient demographics, current medication, diagnoses and current problems, recent pathology investigations and specific medication-relevant information, such as patient weight, blood pressure and INR values. A prime intention for our model is also to indicate the currency of data components – for example if the weight value is older than 6 months then the clinician is alerted that this may not be current. The flexibility of XML and XForms technology allowed the rapid development of an information model and user interface. XML Events were used to implement simple alerts – e.g. when required data (such as weight) was missing, or when a simple “if-then” statement was required (“IF the drug name is warfarin THEN check if there is a text value=“INR” in the laboratory results). A drawback identified is that the expression of date-related criteria for triggering events is awkward and limited. This does not allow easy arithmetic. Despite this, we have avoided additional scripting (e.g. Javascript) as our intention was to represent our model as 'pure' XForms.

**Conclusion:** Although terse, XForms shows promise in the rapid development of a decision support prototype for medication management. XML events are promising for implementing simple decision support such as alerts. However, more basic functionality is required for handling common tasks, such as date arithmetic more simply.

## References

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