

Promoting Workflow Integration with Information Management Services and GEM-Encoded Guidelines

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Background

Integrating guideline knowledge with clinical workflow plays a critical role in effective guideline implementation strategies. Eight information management services promote integration of computerized systems into clinical workflow—recommendation, documentation, explanation, presentation, registration, communication, calculation and aggregation.

The Guideline Elements Model (GEM) uses XML to standardize encoding of the content of guideline documents. A guideline implementation application designed to incorporate a variety of information management services can apply components from a GEM-encoded guideline document to facilitate workflow integration.

Model Integration

We developed GEM to represent the heterogeneous information contained in practice guidelines, including both knowledge about appropriate care and metadata about the quality and sources of recommendations. The GEM hierarchy contains more than 100 elements relevant to representing guidelines. Table 1 demonstrates some examples of GEM elements that could be used by various components of the information management services model.

For example, a guideline implementation application that implements two or more

guidelines would apply documentation services to decision variables contained in multiple GEM-encoded guideline documents. A single form-generation tool might be used to collect data regarding dysuria and urinary frequency (decision variables) when implementing a Urinary Tract Infection guideline, and attentiveness and school performance when implementing a guideline that deals with Attention Deficit Hyperactivity Disorder.

Conclusion

Elements from GEM-encoded guideline documents can serve all of the eight fundamental services in the information management services model.

References

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Table 1: Use of GEM elements with the information management services model

Information Management Services	Example GEM Elements	Clinical Examples
Recommendation	Dec_Variable, Action, Algorithm	Alert: Give antibiotics if septic
Documentation	Dec_Variable, Action, Logic, Certainty	Record entry: Atrial Fibrillation with hypotension, cardioversion performed
Explanation	Evidence_Quality, Recommendation_Strength	Linked dialog: Grade 1 recommendation based on multiple trials
Presentation	Patient_Resource	Patient education handout for head trauma
Registration	Target_Population, Intended_Audience	Demographics: Mammography for women 50 years or older
Communication	Action, Tests	Serum digoxin level reported from lab
Calculation	Dec_Var_Cost, Action, Action_Cost	Weight based dosages for children with asthma
Aggregation	Health_Outcome, Exception	SF-36 for patients with diabetes

