Apervita: Democratizing Healthcare Data and Analytics -- An Industry-Scale Platform to Build, Deliver, and Exchange Health Analytics & Data Applications

MCBK III
National Library of Medicine
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Agenda

**Summarize**

Summarize work we’ve done / are doing
- The KnowledgeBank Concept
- CDS Consortium
- The Joint Commission DDSP (Direct Data Submission Program)
- CDC CDS Research: Scalable Decision Support System

**Identify**

Identify how our work at Apervita addresses points in the draft CBK manifesto
- PaaS for Authoring Knowledge Artifacts, Acquiring and Transforming Data, Creating Applications and Services (QA, CDS, etc.), Managing Distribution,
- A Marketplace (for public and private use)
- Open Business Model

**Preview**

Preview what attendees will see in a later demo after the panel
- Orientation
- Authoring: eCQMs, CDS, ePathways
- Implementation and Execution
- Delivery Framework
- Marketplace
Use of the WWW for Distributed Knowledge Engineering for an EMR: The KnowledgeBank Concept

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**Essential Features**

- Separation of Clinical Content from Application Core Binary
- Separate Authoring Environment
- Author Recognition
- WWW for Clinical Shareware (distribution)

**CONCLUSION:**

- Our experience demonstrates that end-users of the EMR, without programming or knowledge engineering skills, using a relatively simple knowledge engineering tool, may create clinical content that is useful to other users of the EMR.
- Future analysis will evaluate the usability of end-user developed clinical content, how well it conforms with a corporate EMR style guide for clinical content, and evaluate the types of methods and controls used by end-users in creating their own clinical content.

CDS Consortium Demonstrations: 2008-13

Toward a National Knowledge Sharing Service

- Clinical Decision Support Consortium
  Middleton B, PI: 2008-13, AHRQ-funded: HHSA20020810010

- Major accomplishments:
  - Knowledge artifacts published: 11 clinical rules, 50+ classification rules and 375 immunization schedule rules
  - 8 clinical sites implemented using 5 different EHRs
  - More than 240 users utilize CDS services
  - Established legal framework for collaboration
  - Since 2010 more than 1.7M CCD transactions were processed
  - 31 entities (companies and academics) in a pre-competitive environment
  - Contributed to ONC-sponsored Health-e-Decisions efforts: KAS 1 and KAS 2

Institutions:
- Wishard Hospital
  Indianapolis, IN

- UMDNJ (GE)
  Newark, NJ

- PHSH (GE)

- Mid-Valley IPA (NextGen)
  Salem, Oregon

- Kaiser Roseville
- UC Davis
- Kaiser Sacramento
- Kaiser San Rafael
- Kaiser San Francisco
- Children's Hospital
  Colorado

- Cincinnati Children's
- Nationwide Children's
- Ohio

- PECARN TBI CDS

- NYP
  NY

- Children's Hospital
  National Medical Center

- Cincinnati Children's
  Hospital

- Nationwide Children's
  Hospital

- Kaiser Roseville
- Kaiser Sacramento
- Kaiser San Rafael
- Kaiser San Francisco

- UC Davis

- Children’s Hospital
  Colorado

- PECARN TBI CDS
A System of Insight
The platform to implement a next generation architecture

Apervita is positioned to support HCOs and business networks at scale: supporting and providing leadership in the vision, design, and deployment of advanced applications and analytics across the healthcare industry.
The Joint Commission DDSP
Case Study: Nationwide platform for Quality Reporting

WHAT WE DID?
- Enable 3,600+ hospitals nationwide to process and submit electronic Clinical Quality Measures (eCQMs) results to The Joint Commission

HOW IT WORKS?
- Standards-based clinical data ingestion and connection
- Application built in 8 weeks and provisioned on-demand to customers at on-boarding
- Direct, continuous engagement of thousands of customers across affiliation to share applications and data

WHAT MAKES THE SOLUTION COMPELLING?
- Transforms The Joint Commission to a customer-centric organization, and enables them to focus on quality improvement rather than the accreditation process
- Empowers the entire health system to better triage and diagnose data and quality challenges continuously, in time to act
- Saves health systems $100sM in vendor and internal costs
CDC Guideline Implementations: Methodology and Application Overview

- **L1** Started with paper CDS STI Guideline
- **L2** Converted Guideline to a logic flow diagram
- **L3** Built standards-compliant CQL and FHIR Resources
- **L4** Implemented real-time CDS on Apervita

Apervita Clinical ePathway
An orchestration of reusable knowledge and data assets using common architecture
Apervita Delivery Framework
Re-usable adapters and endpoints for flexible workflow integration

Population Health Dashboards on Apervita

Patient Care in EHRs

Operational Dashboards in Tableau

Financial Analysis in Excel

In a custom web app

Clinician Alerts in Mobile
STD Monitoring and Clinical Decision Support Packages

Identification of Suspected Sepsis
Motive Medical Intelligence has created evidence-based algorithms to assist in the identification of patients with sepsis. These algorithms can help providers working in hospital intensive care units (ICUs) identify patients with sepsis for early intervention. Motive provides services to support the deployment and application of its algorithms.

STD Monitoring and Clinical Decision Support Packages

These guidelines for the treatment of persons who have or are at risk for sexually transmitted diseases (STDs) were updated by CDC after consultation with a group of professionals knowledgeable in the field of STDs who met in Atlanta on April 30–May 2, 2013.

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The CBK (Computable Biomedical Knowledge) “Manifesto” Work:

+++ • Sustain the CBK ecosystem through public-private partnerships.
++ • Establish participatory governance of the ecosystem.
++++ • Enable the ecosystem with open standards.
   + • Make the ecosystem diverse and inclusive.
   + • Build and uphold trust in Computable Biomedical Knowledge through the ecosystem.
++++ • Ensure the safe and effective use of Computable Biomedical Knowledge through the ecosystem.
++++ • Explore the sciences of Computable Biomedical Knowledge collaboratively.
+++++ • Generate value for the creators of the knowledge, the users of the knowledge, and the general public.
++++ • Be agile to reflect the increasingly rapid changes in knowledge.
++++ • Engender equity in health and in knowledge accessibility.
   + • Encourage methods to support transparency and expose the validity of Computable Biomedical Knowledge.
Apervita Demo Preview

**Author**
- Early risk stratification and predictive models
- Determine when signals indicate an event in area of interest

**Implement**
- Actions taken after incident of interest in support of desired outcome

**Manage (Learn)**
- Monitor signals and trends related to path or outcome

**Execute**
- Continuous feedback and data-driven enhancement of knowledge and lifecycle

**Focus on precursors in areas of interest**
- Focus on precursors in areas of interest

**Distribute**
- Prevent
- Author

**Monitor**
- Improve
- Act

**Detect**
- Improve
- Monitor

**Predict**
- Prevent

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Thank you!
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