BPM+ Health Community Update

Vision, Overview, and Community Structure
The Problem

- Health processes & best practices are ever changing
- Every discipline, professional society, and organization uses their own “language”
- Adoption of best-practices is inconsistent and difficult

The Solution

- Industry convergence around a common “language” would simplify sharing, authoring, and adoption
- Need commercial tools to author, simulate, and consume workflows

Introducing BPM+ Health

- BPM+ is an open “community of practice”
- Based on industry standard languages
- Supported by commercial tools
- Focus is on advancing “sharable”, interoperable processes
What is BPM+ Health

• A member-driven community of practice
• A place to collaborate to advance the “state of the practice” with peers and competitors
• Open environment in which anyone may engage
• Standards-based (but not an SDO)
• An egalitarian, “level” playing field
• A collection of passionate, engaged, people advancing the next generation of health care and HIT
BPM+ Sub-Communities: The Value of Peer Collaboration

| Authoring                           | • Focus on writing/distributing content  
<table>
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<th>• Healthcare practice patterns</th>
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| Organizational Adoption & Change Management | • Bringing pathways into institutional use  
|                                     | • Intersect between pathways, HIT, and human resources |
| Process Automation and Enablement   | • Approaches for IT implementation (tooling and execution)  
|                                     | • Ingesting and using externally sourced pathways |
| Methodology                         | • Maintain expression formalisms        
|                                     | • Develop/maintain authoritative guidance; feedback to SDOs |
| Academic and Professional Education | • Develop curriculum for accreditation  
|                                     | • Workforce development                 |
Five Things to Know

- Accelerate focus on adoption and use of BPM+ techniques in market
- Targeting high impact pilot/reference implementations
  - Commencing project on HIE and Advanced Directives/Consent
  - Collaboration with educational institutions on BPM+ curriculum
  - Securing test sandboxes, modeling tools, etc. to enable the community
- Round out BPM+ portfolio and community responsibilities
  - Clarifying workgroup roles and their “interplay”
  - Advancing Situational Data Model and Notation, Pedigree and Provenance Modeling and Notation, Knowledge Package Model and Notation
- Transitioning out of “start-up” mode
  - New governance, bylaws, elections coming
  - Emphasis on member value proposition, modest growth
  - Advance community toward sustainability
  - Chartering BPM+ Steering Committee, Clinical Advisory Committee, “Partner” Tier of Membership
- Pro-Active engagement with peer efforts (CPG on FHIR, EBM on FHIR, ACTS)
BPM+ Health By the Numbers…

- 2700 visitors/month to the website
- 2500+ list subscribers
- 4600+ Video/ on-demand views
- 750+ downloads of the Field Guide
- 35 Member Organizations
- 17 ambassadors
- 11 Co-Chairs
- 5 Working Groups
- 2 COVID Projects
- 1 Collaborative Community
- 1 year since launch
Thank You!

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The next great disruption in healthcare is happening now.
Clinical Advisory Committee

• Aim: to provide a framework and parameters and drive BPM+ Health strategic priorities within and beyond the community.

• Answer the questions:
  • “So what?”
  • “How can BPM+ Health actually help improve healthcare?”

• Activities
  • Promoting BPM+ Health:
    • IHE & HIMSS 2021 BPM+ Health strategic planning
    • HL7 & FHIR collaboration
    • Formalizing membership and roles
How can BPM+ Health positively impact commonly accepted healthcare value metrics?

**Effectiveness**
- Do no harm
- Improve

**Efficiency (planned vs. unplanned)**
- Costs
- # visits till successful tx
- Admin

**Access**
- response times
- Patient – can get an apt?
- Providers – can get to the patients data processes?

**Satisfy**
- Providers
- Patients

BPM+ Health positively impacts healthcare metrics by:
- Better
- Faster
- Cheaper
- Feel better
Bending the cost curve: event driven systems for detect Patient Risk detection and mitigation
The Problem

• Healthcare cost increases are unsustainable and not aligned with quality increases.
• In the current state, quality outcome and risk data is at least 30 days old and extremely difficult to understand.
• 30 days is a longtime to not know about a high risk patient and the others like them in the beneficiary pool.

The Solution

• Event driven systems that detect and mitigate risk early, before costs and human suffering take hold
• Virtuous circle of identification of best practices and rapid deployment into workflows.

• Bend the cost curve
• Use BPM+, FHIR and other standards to develop reusable Public Health risk detection and stratification patterns
• Demonstrate capabilities in connectathons and in live deployments.

An open Challenge
Care without boundaries
The rate of cost increase in the US healthcare system is unsustainable. The most effective way to bend the cost curve is identify risk early and mitigate it before the bad thing happens.

In the current state, quality outcome and risk data is at least 30 days old and extremely difficult to understand.

30 days is a longtime to not know about a high risk patient and the others like them in the beneficiary pool.

The Problem: Care with Boundaries

Event driven healthcare: Near real time risk detection to drive intervention

Manage individuals and cohorts along best practice guidelines

Control costs and improve quality & consistency of care for all participants

Healthcare process automation using the leading standards (FHIR, BPM+ Health) for a cloud agnostic future

The Solution: Care without Boundaries

Bending the cost curve: making value based healthcare a reality
Academic & Professional Education Committee

JOIN THIS GROUP
SIGN UP

Co-Chairs
Dr. Anna Orlova, Tufts University
Lee Wise, Clinch Valley Medical Center

BPM+ Health Working Groups
- Authoring Working Group
- Implementer Working Group
- Methodology Working Group
- Institutional Adoption Working Group
- Academic and Professional Education Working Group

ACADEMIC & PROFESSIONAL EDUCATION WORKING GROUP

Healthcare organizations' Clinical Documentation Improvement (CDI) professionals, organizations' informatics and analytics staff, academicians, vendors' business analysts, and standards developers join the Academic and Professional Education Working Group.

This group will:
- Access best practices for academic, professional development, and vocational education in standards-based health information technology (HIT) including the use of BPM+ standards
- Develop curriculum and content for educational modules on computable clinical pathways development and adoption
- Develop tutorials and materials for educational webinars, presentations, and online training
- “Train the trainers” to use and deliver these materials in academic courses, vocational training, and conferences

With the goal of building a workforce to participate in:
- Developing standards-based computable pathways at healthcare organizations
- Building standards for computable clinical pathways at SDOs
- Implementing standardized, computable clinical pathways in HIT products

RESOURCES
Visit the Academic & Professional Education Working Group's collaboration site.

ROADMAP
- BPM+ Health educational strategy roadmap
- Curricula and content for educational modules on computable clinical pathways development and adoption for academic courses, professional certification, and vocational training
- Online tutorials and materials for educational webinars, presentations, online training, etc.
- Reference Implementation Toolkit/BPM+ Education Toolkit including inventory of content management, modeling and other software and tools.
Teaching Artifacts

1. BPM+ methodology/ IT project methodology (requirement elicitation)
2. Guidelines, best practices → Business Case
3. Clinical pathways (workflow & dataflow requirements) → Use Case
4. Computable Models (BPM+, UML, Data model(s), etc.)
5. Standards: HL7 FHIR resources, IHE Profiles, Data Standards (ICD, SNOMED, LOINC, etc.), ISO/TC215
6. Content Management Tools
Capstone Pilot Project: Summer 2020

Business Case: CHILD SEX TRAFFICKING

Katherine Ariano, Alison Lieb, Ruben Medalla

Informatics Capstone Project, Duke University School of Nursing (DUSON)

Mentors: Dr. Anna Orlova, Ms. Lee Wise, Dr. Rachel Richesson

Tufts University School of Medicine, Clinch Valley Medical Center
Human Trafficking (HT) cases in both adults and children can be identified by clinicians during patient healthcare encounters [1], such as:

- Emergency Department (ED) Visits
- Inpatient Admission
- Outpatient Visits
- Telehealth Visits

Once a victim is identified, the next steps include:

- Case investigation
- Case management and evaluation including reporting to public health and law authorities as per jurisdictional policies [2]
- Case mitigation through appropriate service coordination

Use Case (IT Solution)
Automatic case detection in Electronic Health Records (EHR) system based on
- specified triggers: visit, age, chief complaint;
- patient screening via a survey tool [3].

2. Florida: General Statutes (GS) § 39.201; Hawaii Revised Statutes (HRS) § 350-1, HRS § 577A; North Carolina: GS § 7B-301, GS § 90-21.5, GS § 14-318.6
# Identification of Child Sex Trafficking Victims in ED

## Actors

**Business Actors:** Patient, Parent/Guardian/Companion, Registration Clerk, Clinicians, Social Worker/Case Manager, Interpreter Services, Primary Care Provider (PCP)

**Technical Actors:** EHR (NOTE: ADT and Registration Document Repository could be systems that are used in addition to EHR for patient registration and legal health record), PCP EHR

## Data Categories

1. Patient, visit, clinician, facility demographics; reason for visit; consent to treat & information sharing
2. Chief complaint, weight, vital signs, medical/surgical history, allergies, current medications, acuity level; clinician discretion (of possible CST)
3. Room information, notification to clinician
4. Patient, clinician demographics; Greenbaum tool survey data; for failure to screen, eg, refusal
5. Patient, clinician demographics; Greenbaum tool survey data. 7.1 Alert for case investigation and notification to social worker/case manager; 7.2 Notification to proceed with routine care
6. Encounter data, CPOE for labs and procedures, treatment documentation, lab and imaging results, ancillary entity demographics, care plan, medications, referrals, e-signatures
7. Visit summary, continuity of care document

## Use Case

**Use Case Name:** Identification of Child Sex Trafficking Victims in ED

## Flow of Events

1. Patient with parent/guardian/companion presents to Emergency Department
2. Patient is registered by registrar and given armband information is entered in the EHR
3. Patient placed in Triage room. Clinician conducts triage, verifies/obtains patient’s information and enters information in EHR. NOTE: in the case of Live-Threatening event, critical care is provided before triage & patient registration
4. Patient is moved to treatment room, waiting room, or holding area, per facility protocol. Clinician is notified by EHR of patient location
5.1 If indication for CST based on clinician discretion in triage, EHR activates standing order for Greenbaum tool administration. 5.2 EHR generates alert to clinician to administer Greenbaum tool.
6. Clinician administers the tool according with organizational policies and enters responses into EHR.
7. Based on survey results: 7.1 If positive, EHR generates an alert to clinician for case investigation with social worker/case manager involvement. Clinician authorizes case investigation via signatures; 7.2 If negative, proceed with routine care (skip to step 10)
8. Clinician provides appropriate medical care as indicated based on patient’s chief complaint and enters information into EHR
9. EHR sends electronically visit summary/care plan to PCP to coordinate care

### Pre-Condition:

- EHR

### Post-Conditions:

- Primary Care Providers EHR
## Identification of Child Sex Trafficking Victims in ED

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### Data Categories

1-2. Patient, visit, clinician, facility demographics; reason for visit; consent to treat & information sharing

3. Chief complaint, weight, vital signs, medical/surgical history, allergies, current medications, acuity level; clinician discretion (of possible CST)

4. Room information, notification to clinician

5.1 Standing order for CST tool; 5.2 Alert to clinician with CST survey order

6. Patient, clinician demographics; Greenbaum tool survey data; for failure to screen, eg, refusal

7. Patient, clinician demographics; Greenbaum tool survey data. 7.1 Alert for case investigation and notification to social worker/case manager; 7.2 Notification to proceed with routine care

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Data Categories & FHIR Resources: Examples

Use Case: Identification of Child Sex Trafficking Victims in ED

Data Categories
1&2. Patient, visit, clinician, facility demographics; reason for visit; consent to treat & information sharing

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FHIR Resources

Patient-https://www.hl7.org/fhir/patient.html
Facility-https://www.hl7.org/fhir/organization.html
Encounter-https://www.hl7.org/fhir/encounter.html
Care team-https://www.hl7.org/fhir/careteam.html#9.7
Task-https://www.hl7.org/fhir/task.html#Task
Consent-https://www.hl7.org/fhir/consent.html

Chief complaint-https://www.hl7.org/fhir/condition.html
Practitioner-https://www.hl7.org/fhir/practitioner.html
Practitioner role-https://www.hl7.org/fhir/practitionerrole.html#PractitionerRole
Age, weight, vital signs (Observation)-https://www.hl7.org/fhir/observation.html
Questionnaire response-
https://www.hl7.org/fhir/questionnaireresponse.html#QuestionnaireResponse
Substance-https://www.hl7.org/fhir/substance.html
Allergy intolerance-
https://www.hl7.org/fhir/allergyintolerance.html#AllergyIntolerance
Adverse events-
https://www.hl7.org/fhir/adverseevent.html#AdverseEvent

https://www.hl7.org/fhir/resourcelist.html
Conditions of safety and privacy must be met before survey administration.

**Animated Diagram**

- **ED Tech**
  - Patient checks into ED
  - Patient triaged and put in care

- **Triage RN**
  - RN enters patient information in the EHR
  - CDS ALERT Administer Gremnorum Survey & consult SW/CM
  - High Risk CC?
  - PT age 10-18 yrs

- **SW/CM**
  - Notify community & public agencies
  - Provide appropriate medical care based on CC
  - Safe patient ADT planning

**Business Process (Workflow) Model**

- Patient presents to Emergency Department
- Patient is registered and given armament. Patient information is entered in ADT & EHR
- Patient placed in Triage Room. Clinical conducts logic, obtains patient’s information and enters into EHR
- Patient reviewed by treatment team, consulting, or admitting area. Clinician contacts a EHR of patients located

**Clinician contacts Gremnorum Tool and enters information in EHR.**

**CDS ALERT**

- Patient is registered and given armament. Patient information is entered in ADT & EHR
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**Clinician contacts Gremnorum Tool and enters information in EHR.**

- Conditions of safety and privacy must be met before survey administration.

- ED Provider/ RN
  - Conditions of safety and privacy must be met before survey administration.
Functional Requirement Analysis Document for Clinical Pathways Standards

USE CASE
Identification of Child Sex Trafficking (CST) Victims in the Emergency Department (Non-Life-Threatening Event)

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MSN Informatics Capstone (Graduation August 2020)

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Duke University School of Nursing
Anna Orfano, PhD and Lee Yolke, HIM
BPM+ APE WOmg Group Co-Chairs

2020
Business Cases/Use Cases Portfolio
(based on the APE Members interests/expertise)

- Patient Registration
- Revenue Integrity
- Trauma: Falls
- Trauma: Sepsis
- Immunization
- Diabetes
- Patient Access to Health Information
- Electronic Public Health Reporting
- COVID-19
Academic & Professional Education Committee

Presentations
- BPM+ Meeting Demonstrations, June 2020
- Mobilizing Computable Biomedical Knowledge (MCBK 2020), June 2020
- American Health Information Management Association (AHIMA 2020), October 2020 (in preparation)

Collaboration with Academia, Professional Associations and Healthcare Organizations
- New capstones projects (Johns Hopkins, Tufts)
- Development of educational materials
- Recruitment of new members
About OMG

- Founded 1989
- International standards development organization
- 225+ specifications
- 325+ member organizations worldwide
- 11 specifications ratified as ISO standards

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www.omg.org

Participate in BPM+ APE Group

Join APE (and other BPM+ groups):
https://www.bpm-plus.org/working-groups/sign-up-form.htm

APE Website:
https://www.bpm-plus.org/working-groups/academic-professional-education.htm