2018 Patient-Centered Clinical Decision Support Learning Network Annual Meeting
Welcome!
Logistics

WiFi Access:
• Network Name: @Hyatt_meeting
• Access code: pccds2018 (case sensitive)

Bathroom Access:
• Bathrooms are located on this level

Breaks:
• Light refreshments will be served during the break in the hall

Lunch:
• Lunch will be served in the hall at 12:00 this will be an opportunity to network with colleagues.
• The Mayo Clinic (one of our sponsors) will be hosting a discussion – look for the identified table

Links:
• Conference materials: https://pccds-ln.org/2018conference
• Conference Evaluation form: https://docs.google.com/forms/d/1PAPLYjjpMwNGBjalVe55w9KkxyugPc8yQWanGWMsUD4/edit

Photographs:
• A photographer (Yuxiang Lai) will be taking pictures for internal use (not press related). Please let us know if you if prefer not to be included in any photos
Thank You to Our Platinum Level Sponsor!

Look for the Mayo Discussion Table at Lunch!
Thank you to our Gold Level Sponsor

RTI International is an independent, nonprofit research institute dedicated to improving the human condition. We combine scientific rigor and technical expertise in social and laboratory sciences, engineering, and international development to deliver solutions to the critical needs of clients worldwide.
HLN Consulting is a leading Open Source software developer in the area of clinical decision support in various domains including immunization evaluation and forecasting, and electronic case reporting. While it's major focus has historically been on public health, many of its projects involve and apply equally to other participants in the healthcare ecosystem. Increasingly, patients are accessing systems that directly use the output of HLN's CDS algorithms.

Contact info@hln.com or @HLNConsulting.

MCG Health, part of the Hearst Health network, helps healthcare organizations implement informed care strategies that proactively and efficiently move patients toward health. Evidence-based guidance empowers care teams with the clinical wisdom they need to feel confident in their care management decisions and do what's right for the patient. MCG's clinical decision support, data analytics, and software solutions support the delivery of appropriate and effective care across the entire patient journey, from inpatient and ambulatory to behavioral and chronic, long-term care.

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  • Peer review provided by wide-range of leaders in the field

• Get visibility for your work
  • Published work promoted to 20,000 followers on social media, a half million website visitors annually, and mailing lists of more than 20,000

• Be featured on the AcademyHealth blog
  • Recently named a “must-read” health IT blog by HealthTech magazine

• Grab the attention of the media
  • eGEMs papers routinely covered by outlets such as Healthcare Informatics and Patient Engagement HIT
- Factors to Consider in Managing Chronic Pain: A Pain Management Summary

- A SMART on FHIR app for a pain management “dashboard” – open source and newly listed on CDS Connect!


- See Ed Lomotan (AHRQ) or Sharon Sebastian (MITRE) for more info
The Patient Centered Clinical Decision Support Learning Network

- AHRQ grant 1U18H5024849-01 : 4/2016 – 1/31/2020

Mission....

“To create an ecosystem that allows all stakeholders to reduce the friction of turning Research Evidence into Patient Centered CDS-enabled actions that produce better care and outcomes”
CDS that supports individual patients and their approved care givers and/or care teams in health-related decisions and actions by leveraging information from evidence-based research and/or patient-specific information.

Patient factors are used to personalize the PCCDS, including:

- Personal belief structures and values
- Personal preferences
- Personal utilities (quantified values)
The AFA creates a way of thinking about the full process of PCCDS creation and use, from the conduction of Evidence-Based Research, through the dissemination of that research into PCCDS, to the incorporation of new knowledge gained from experience in use.
Today’s Focus: PCCDS to Address the Opioid Crisis

- In 2016, 11.5 million Americans aged 12 and older used pain relievers for nonmedical uses. (SAMHSA)

- In 2016, more than 115 Americans died every day as a result of an opioid overdose. (AHRQ)

- Nearly 125,000 hospitalizations and more than 36,000 emergency department visits among older Americans involved opioid-related diagnoses in 2015. (AHRQ)

- $504 Billion – the estimated economic cost of the opioid crisis in 2015, equal to 2.8% of GDP (CEA)

- As many as 6 million people in the U.S. are experiencing opioid use disorder, nearly three times higher than the federal government's estimate of 2.1 million (McKinsey)
The Opioid Action Plan (OAP)

- We are putting our efforts into a meaningful initiative that should be broadly applicable to PCCDS across all use cases.

- The Opioid Action Plan details the steps necessary to broadly deliver PCCDS targeting the Opioid Crisis.

- A key deliverable will be a published roadmap and plan detailing scenarios, high value interventions, recommendations, and describing the coordinated actions being taken by our Stakeholders.
As a result of the Patient-Centered CDS Learning Network’s OAP, our community aspires to deliver PCCDS interventions that improve pain management and opioid use outcomes for 2 million patients by 2021.
Workgroups Exploring key Sub-Areas

“Technical Framework”

“Trust Framework”
Plan for the the Day: Morning

- **Introduction to the Opioid Action Plan:**
  - Jerome Osheroff

- **Keynote Speakers:**
  - David Bates, MD, MSc, FACMI
  - Christopher Harle, PhD, MS

- **Presentations from Workgroups:**
  - Trust Framework
  - Technical Framework

- **Putting the “Patient” in PCCDS:**
  - Danny Van Leeuwen, MPH, RN

- **Networking lunch**
Plan for the Day: Afternoon

- **Plenary on Opioid Action Plan:**
  - Jerome A. Osheroff, MD, FACP
  - Barry H. Blumenfeld, MD, MS

- **Breakout discussions:**
  - Opioid Action Plan
  - Technical Considerations
  - Learning Network Sustainability

- **Wrap-up and Report Outs:**
  - Jerome A. Osheroff, MD, FACP
  - Barry H. Blumenfeld, MD, MS
  - Blackford Middleton, MD, MPH, MSc
  - Kensaku Kawamoto, MD, PhD, MHS
The Opioid Action Plan (OAP) as a Scalable Model for Learning Network Value

Jerome A. Osheroff, MD – TMIT Consulting, LLC
A Replicable Learning Network Model?

Urgent Improvement Imperative (Opioid Crisis)

Current Care Processes and Outcomes

Widespread PCCDS Implementation

Better Patient Care Processes and Outcomes

Stakeholder Driven Action Plan
The OAPWG’s Aspirational Goal

As a result of the Patient-Centered CDS Learning Network’s Opioid Action Plan, our community aspires to deliver PCCDS interventions that improve pain management and opioid use outcomes for 2 million patients by 2021.
OAPWG and Other Engaged Stakeholders

- **Patient Advocates**
  - van Leeuwen network

- **People/Patients**
  - see Advocates

- **Providers/CDOs**
  - KP, HCA, VA, Mayo, HealthPartners, Penn

- **Payers**
  - CMS

- **Standards Organizations**
  - IHE, HITAC

- **HIT Supports w/PCCDS Interventions (e.g., EHRs/PHM, CDSS)**
  - Epic, MEDITECH, Allscripts, EBSCO, CDS Connect

- **Continuing Ed. Providers** (Pain/opioid focus)
  - Conjoint Committee for CE

- **Health IT associations/orgs**
  - CHIME, EHRA, KLAS

**Cross-Cutting**
- Other Federal Agencies: AHRQ, ONC
- PCCDS Learning Network
- NAM Opioid Action Collaborative

**Guidelines**
- CDC
Today’s OAP-related Activities

1-1:45: **Plenary: OAP Overview/Discussion**
• Process, Future Vision Scenarios, Current State, Actions
• Discuss: Feedback, Potential wins for you, additional actions

2-3:15: **Breakout: Advancing OAP (Deeper Dive)**
• Validate/refine/prioritize PCCDS future vision; enhance stakeholder action list to get there
• Deepen attendee OAP engagement and value
Today’s Goal

Deliver and Increase Learning Network Value

For pain/opioids and beyond:
• How could this work to improve PCCDS use/value drive **big win-win-wins** for you and your organization/constituents?
• What **additional steps** could deliver these benefits?
• How can your engagement today be a **springboard for these actions**?
OAPWG Contact Information to Get Involved

For materials and updates please check out our website at:

www.pcorcds-ln.org/oapwg

OAPWG Contact Information:

- Jerry Osheroff, MD - Chair - josheroff@tmitconsulting.com
- Barry Blumenfeld, MD, MS - Co-chair - bhb@rti.org
- Beth Lasater, MSPH - Manager - boverman@rti.org
- Joshua Richardson, PhD, MLIS, MS - Lead - jrichardson@rti.org
Keynotes
The Evolution of Medication-related Decision Support in the Era of Opiate Abuse

David W. Bates, MD, MSc
Chief, Division of General Medicine, Brigham and Women’s Hospital
Medical Director of Clinical and Quality Analysis, Partners Healthcare
Overview

- Prevalence of medication-related harm
- Medication-related decision support
  - Early evidence
- Evolution over time
- Current state, cautionary tales
- Making it patient-centered
- Best practices
- Role in opiate use/abuse
- Conclusions
EARLY RESULTS
ADE Prevention Study: Key Results

- 6.5 ADEs/100 admissions
  - 28% preventable
  - 3 potential ADEs for every preventable ADE
  - 62% of errors at ordering and transcription stages

_Bates et al, JAMA 1995;274:29-43_
# ADE Rate By Site in Massachusetts Community Hospitals

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Site 1</th>
<th>Site 2</th>
<th>Site 3</th>
<th>Site 4</th>
<th>Site 5</th>
<th>Site 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADE Rate*</td>
<td>15</td>
<td>19.5</td>
<td>11</td>
<td>15.5</td>
<td>17</td>
<td>15</td>
<td>12.5</td>
</tr>
<tr>
<td>% Prev</td>
<td>75</td>
<td>72</td>
<td>82</td>
<td>71</td>
<td>85</td>
<td>73</td>
<td>68</td>
</tr>
</tbody>
</table>

*Per 100 admissions

Range: 11-19.5 for rate
68-85 for percent preventable
CORE PRINCIPLES
Types of Decision Support

- Structuring
- Information display
  - Generic across patients
  - Patient-specific
- Calculations
- Reminders
- Alerts
- Guidelines/Algorithms
Functions of CDSSs

- Alerting--high lab value
- Reminding--mammogram
- Critiquing--rejecting an order
- Interpreting--interpreting an ECG
- Predicting--risk of mortality using severity score
- Assisting--tailoring antibiotic choices
- Diagnosing--ddx in CP
- Suggesting--for adjusting mechanical ventilator

*Randolph et al, JAMA 1999, from Pryor, 1990*
Underpinnings

- Alerts, reminders, critiques often simple if-then rules
  - (sometimes other Boolean operators)
  - Alerts use event monitors, evaluate streams of data
    - Finding right person hard
  - Reminders notify patients of tasks to be done before event occurs
  - Critiques--alternative suggestions, evaluate plan after started
- Interpreting/predicting/diagnosing/assisting and suggesting are higher order
  - Harder to program, require more data
Key Infrastructure

- Event monitor
- Rules editor
- Tool for determining who is responsible
  - “Coverage list”
- Tools for contacting providers
EVOLUTION, KEY LEARNINGS
Impact of CPOE and Bar-Coding on Serious Med Errors

Transcription Errors (11%)

Medication Admin Record

Order Entry & decision support - 55% reduction

Pharmacy Barcoding - 67% reduction

Dispensing Errors (14%)

Dispensing

- eMAR/barcoding at bedside - 51% reduction

Administration Errors (26%)

Administration

Patient

Ordering Errors (49%)
In most systems most alerts get overridden

We identified a highly selected set of drug alerts for the outpatient setting

Over 6 months, 18,115 alerts
  - 12,933 (71%) non-interruptive
  - 5,182 (29%) interruptive
    - Of interruptive, 67% were accepted

Shah, JAMIA 2006
Impact of Tiering on Inpatient DDI Alerts

- Two academic medical centers
- Same knowledge base
  - Site A used 3 tiers
  - Site B had all of the alerts as interruptive (Level 2)
- Results
  - 100% of most severe vs. 34% at non-tiered
  - Overall alert acceptance higher at tiered site (29% vs 10%, p<.001)

Paterno, et al, JAMIA 2009
15 drug-class pairs endorsed as highly clinically significant DDIs
  - Should never be co-prescribed
  - Candidates for “hard-stop” alerts
  - Checking completeness would require further research, but represents best available consensus

Less-significant DDIs are still significant
  - Much more prevalent and probably cause much more harm
  - Tend to depend on patient characteristics, drug dosages and timing, concomitant conditions such as hypokalemia, etc.

To improve sensitivity and specificity of DDI warnings:
  - Need much more investment in evidence review and generation
  - Methods to make DDI alerts conditional on other patient data

*Phansalkar et al, JAMIA 2012*
Low-Priority DDIs

- Alert fatigue is a serious problem
- Used consensus approach to identify low-yield DDIs
  - Used data from several sources to identify potential candidates
- Created a list of 33 DDIs that do not warrant interruptive status
  - Account for many of the DDIs displayed in some systems
- A consortium to maintain this list would be helpful

*Phansalkar, JAMIA, 2013*
CURRENT STATUS
Medication-related Decision Support at BWH

- Have implemented Epic
- Getting one alert for every two medication orders
  - Over 95% are overridden (appropriately)
  - Serious warnings being overridden at same rate as less important
  - Can’t deliver some of the clinically most important suggestions for technical reasons
    - Renal dosing, age-related dosing
Reduced Effectiveness of DDI Alerts After Conversion to Commercial EHR

- 3,277 clinicians getting a DDI alert in outpatient setting
- Overall alert burden increased by a factor of 6
  - Acceptance for most severe fell from 100% to 8.4%
  - From 29.3% to 7.5% for medium (p<0.01)
- After disabling least severe alerts fell 50.5% but acceptance for most severe increased only from 9.1 to 12.7%
- Text is in 20 point Verdana

Wright A, J Gen Int Med 2018
Safety Results of CPOE Decision Support Among Hospitals

- 62 hospitals voluntarily participated
- Simulation detection only 53% of orders which would have been fatal
- Detected only 10-82% of orders which would have caused serious ADEs
- Almost no relationship with vendor

*Metzger et al, Health Affairs 2010*
43% relative reduction for every 5% increase in Leapfrog score (p=0.01)
4 fewer preventable ADEs/100 admissions for every 5% increase in score
Number of Hospitals Taking Test

Number (N) of Hospitals


Number of Hospitals: 214, 288, 455, 931, 1238, 1580, 1689, 1691
Average Percent Correct

Average % Correct


51.8 56.1 55.9 57.5 57 58.6 59.9 57.9

Average % Correct
MAKING PATIENT-CENTERED
NEPHROS Study

- Effect of real-time decision support for patients with renal insufficiency
- Of 17,828 patients, 42% had some degree of renal insufficiency

<table>
<thead>
<tr>
<th></th>
<th>Interv</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dose</td>
<td>67%</td>
<td>54%</td>
</tr>
<tr>
<td>Frequency</td>
<td>59%</td>
<td>35%</td>
</tr>
</tbody>
</table>

*Chertow et al, JAMA 2001*

- LOS 0.5 days shorter
Future in Patient-Centeredness

- Considering more data, including genetic information, patient preferences
- Sharing information with patients, making joint decisions about therapy of choice
- Enroll patients in portals, make it easy to contact practices
- Consider sending some directions directly to patients—has worked very well for health maintenance
BEST PRACTICES
Content—Which Alerts

- Interrupt with only most important warnings and tier
  - Jury still out regarding non-interruptive warnings
- Have regular review
- Track how providers are responding as practices change
- Sharing regarding this would help
  - Would be a common good
  - Could be international

Kesselheim et al, Health Affairs, 2011
Management—How to Deliver

- Follow human factors principles
  - Tier
  - Uniform
  - Placement
  - Different levels of warning should appear different
  - Use color wisely
  - Succinct textual information
Which Is More Important, Content or Management

- Content is more generalizable
- Management may have an even bigger impact
  - Can have great content and no impact
  - Management has at least two dimensions
    - Attention to human factors issues in delivery, display
    - Implementation
- Have to get good score on all of these right to get benefit!
Ten Commandments for Effective Clinical Decision Support

1. Speed is everything
2. Anticipate needs and deliver in real time
3. Fit into the user’s workflow
4. Little things can make a big difference
5. Physicians resist stopping
6. Changing direction is fine
7. Simple interventions work best
8. Asking for information is OK—but be sure you really need it
9. Monitor impact, get feedback, and respond.
10. Knowledge-based systems must be managed and maintained.

Bates DW et al, JAMIA 2003
Improving Antibiotic Prescribing for Acute Respiratory Infections using Behavioral Economic Principles: A Randomized Trial

Society of General Internal Medicine
April 26, 2014
Jeffrey A. Linder, Daniella Meeker, Mark W. Friedberg, Stephen D. Persell, Craig R. Fox, Noah J. Goldstein, Alan F. Rothfeld, Joel Hay, Jason N. Doctor
Background: Changing Behavior

- **Implicit model**: clinicians reflective, rational, and deliberate
  - Informational interventions

- **Behavioral model**: decisions fast, automatic, influenced by emotion and social factors
  - Nudges
  - Social motivation
Interventions

1. Suggested Alternatives
2. Accountable Justification
3. Peer Comparison
Intervention 1: Suggested Alternatives

<table>
<thead>
<tr>
<th>Over-the-counter medications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Decongestants</strong></td>
</tr>
<tr>
<td>Oxymetazoline HCL (0.05% SPRAY)</td>
</tr>
<tr>
<td>2 SPRAY (0.05% SPRAY) NAS BID or PRN but no more frequently than every 6 hours. Do not use more than 3 days. Dispense: 1 Bottle(s) Refills: 0</td>
</tr>
<tr>
<td><strong>Pseudoephedrine (30 MG TABLET)</strong></td>
</tr>
<tr>
<td>60 MG (30 MG TABLET Take 2) PO Q6H PRN as needed for nasal congestion. Dispense: 50 Tablet(s) Refills: 0</td>
</tr>
<tr>
<td><strong>Antihistamines</strong></td>
</tr>
<tr>
<td>Diphenhydramine ORAL (25 MG TABLET)</td>
</tr>
<tr>
<td>25 MG (25 MG TABLET Take 1) PO Q6H PRN not to exceed 6 doses in 24 hours. Dispense: 24 Tablet(s) Refills: 0</td>
</tr>
<tr>
<td>Loratadine (10 MG TABLET)</td>
</tr>
<tr>
<td>10 MG (10 MG TABLET Take 1) PO QD PRN Dispense: 30 Tablet(s) Refills: 0</td>
</tr>
</tbody>
</table>
Intervention 2: Accountable Justification

Patient has asthma.
Intervention 3: Peer Comparison

"You are a Top Performer"
You are in the top 10% of clinicians. You wrote 0 prescriptions out of 21 acute respiratory infection cases that did not warrant antibiotics.

"You are not a Top Performer"
Your inappropriate antibiotic prescribing rate is 15%. Top performers' rate is 0%. You wrote 3 prescriptions out of 20 acute respiratory infection cases that did not warrant antibiotics.
ROLES OF CDS IN OPIATE MANAGEMENT
Roles of CDS in Opiate Management

- Even before crisis opiates were a leading cause of ADEs
- Make it easy to get to state data (PMPs)
  - We have direct link
- Encourage prescribing of small amounts
- Identify people who are at risk of dependency
- Make it easy to access opiate-related resources
CONCLUSIONS
The Future of Decision Support

- Should be able to implement much more complex rules
  - Take into account wide array of factors
  - Leverage analytics
- “Think along” with provider, interrupt ONLY when really helpful
- Eventually be more directive in certain situations
  - E.g. considering an antibiotic for pneumonia treatment
- Get patients involved!
- May be collective repositories to draw from
  - Treat as web services
Conclusions

- Medication-related decision support can deliver great value, improve safety/efficiency
- Getting benefit requires picking good rules, delivering well, and maintaining the CDS
- Not doing well at all now—need to implement what has been learned previously
- Should also learn from behavioral economics
- Should be able to do much more downstream, considering patient factors
- CDS is very appropriate for opiate management but has to be done well
"I don’t want to make the wrong mistake."
Yogi Berra
The Uses of CDS in the Opioid Crisis

Chris Harle, PhD
Associate Professor, Health Policy and Management
IU Richard M. Fairbanks School of Public Health
Research Scientist, Regenstrief Institute

charle@iu.edu
Portions of the research in this presentation were supported by grant number R01HS023306 from the Agency for Healthcare Research and Quality (AHRQ) and by the National Institute On Drug Abuse of the National Institutes of Health under Award Number R21DA046085. The content is solely the responsibility of the authors and does not necessarily represent the official views of AHRQ or NIDA.

Past research grant funding from Pfizer, Inc. related to chronic pain.
Outline

- Three takeaways
- Background
- Research findings and CDS designs
- Three takeaways
Takeaways

- Make CDS easy, convenient, and relevant for clinicians & patients.
- Design and implement CDS faster.
- Make sure CDS actually works.
How to overcome the enormous primary care challenge of relieving chronic pain while keeping patients and the public safe from opioid-related risks?

Institute of Medicine 2011
Background

- 100+ million Americans with chronic pain
- Pain costs ~$600 billion annually
- Tens of million misuse opioids
- Millions have opioid use disorder
- 72,000 drug overdose deaths in 2017

Sources: Gaskin 2012; IOM 2011; Han et al. 2017, CDC
Background

- 28,000+ patients per pain specialist (IOM 2011)

- Information Chaos (Beasley et al. 2011)
  - Information overload
  - Information underload
  - Information scatter
  - Erroneous information
“I would say the vast majority of people I think I get a good feel for it. But I’ve been snagged so many times. I could have sworn this person was being straight with me [in reporting their pain]. ... 

I would imagine you’re not 100 percent right all the time. ... 

So sometimes you’re probably erring in ... not giving somebody pain medications when they truly do need it. And you’re gonna err sometimes in giving patients medications when they don’t need it.”

Source: Harle et al. 2015
“I did a couple of urine screens and things like that. I was a little uncomfortable, **but she was a patient for a long time.** ... If I didn’t give her pain medicine, she’d end up in the emergency room. Anyway, just recently I found out that she came into the hospital and she was positive for cocaine a couple of times. I was like, oh. You know, sometimes I don’t know how to manage them effectively ... 

I mean she's been my patient a really long time. We've kind of been through a lot of things together.”

Source: Harle et al. 2015
“I did a couple of urine screens and things like that. I was a little uncomfortable, **but she was a patient for a long time.** ... If I didn’t give her pain medicine, she’d end up in the emergency room. Anyway, just recently I found out that she came into the hospital a couple of times and was positive for a couple of times. I was like, oh. You know, sometimes I don’t know how to manage them effectively ... I mean she’s been my patient a really long time. We’ve kind of been through a lot of things together.”

How can we help clinicians make sense of patients in this environment?

Source: Harle et al. 2015
Research objectives

- To identify information needs and decision requirements for assessing, diagnosing, and treating chronic noncancer musculoskeletal pain in primary care.

- To develop prototypes for user-centered clinical decision support in electronic health records (EHRs).
User-centered decision support

Designed “... based upon an explicit understanding of users, tasks, and environments; is driven and refined by user-centered evaluation; and addresses the whole user experience, including user needs, value, abilities, limitations, and organizational goals and objectives.”
User-centered decision support

Designed “... based upon an explicit understanding of users, tasks, and environments; is driven and refined by user-centered evaluation; and addresses the whole user experience, including user needs, values, abilities, limitations, and organizational goals and objectives.”

Designing CDS based on systematic understanding of how clinical work happens
Design, setting, and sample

- Qualitative observational study
- 3 health systems in the Midwest United States
- 12 primary care clinics
- Urban and rural
- EHRs: G3 (Homegrown), Epic, GE Centricity, Cerner
- Primary care visits by patients with chronic noncancer musculoskeletal pain
Translation to decision support prototypes

Critical Decision Method interviews

Thematic analysis and prioritization to identify key *decision requirements* for chronic pain care

Multidisciplinary design workshop

Refined *decision requirements; information needs*

*Design seeds*

Decision support *sketches*

High-fidelity interactive prototypes
22 primary care clinicians
   - 11 male, 11 female
   - 2 – 34 years in practice (mean 14)
   - 18 Physicians, 2 NPs, 1 PhD, 1 LCSW

93 primary care clinician interviews
   - 63% female, 38% male
   - 26 – 91 years old (mean 56)
   - 67% White, 33% Black/African-American
“It would be super nice if INSPECT [PDMP] available just in the EMR because, I mean, INSPECT is a great thing, and I wish that I had more time to use it, but the fact that I'm the only one that can log in and it's you know kind of time consuming and cumbersome to put all the patient's information in...

if it's one more thing that you have to do, you tend to not to do it.”
One physician described a situation where upon reviewing the patient’s history in the EHR they

“saw hydrochlorothiazide last night or early this morning when I was looking at it and when I look at the printout, it's not there. So, I don't know if they removed it... when the nurse was doing the interview, but it took me five minutes to individually go through the 20 or 30 medications that are here because there's no hierarchy. It's alphabet... Well, it's not even alphabetical actually.”
“If we had **one sheet** or something that wrapped all these things together. If I had a sheet that showed me last INSPECT [PDMP], this date, good. Last UDS, done. ... last imaging of their x-ray of the area that’s involved, last physical therapy visit. If I had shots to their knees. If I had a **summary of the things we're having to process in one sheet**, someone has already looked up the UDS for me, somebody has already looked up the last INSPECT and we're good, it would be a glance... physical therapy last done. Shots...never. Orthopedic, last visit, done. Surgery offered, yes/no/declined. ... Reasons why they could not use alternative medications.... **because the information is there electronically, it’s just that I have to fight to get it, one by one...** ”
1. Safely and efficiently manage chronic opioids

2. Understand current treatment plan, medications

3. Identify treatment options

4. Manage cases involving physical/mental health co-morbidities

5. Manage cases involving unmet social needs (e.g., housing, transportation)
<table>
<thead>
<tr>
<th>Information needs</th>
<th>Details</th>
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<tbody>
<tr>
<td>Medications</td>
<td>Past and current medications relevant to pain</td>
</tr>
<tr>
<td>Urine drug screen results</td>
<td>Date and results of most recent urine drug screen; interpretation of results</td>
</tr>
<tr>
<td>PDMP results</td>
<td>Date and report of controlled substances dispensed; Interpretation of results</td>
</tr>
<tr>
<td>Imaging</td>
<td>Recent imaging related to pain; organized by body part</td>
</tr>
<tr>
<td>Specialty utilization</td>
<td>Referrals to pain-related specialist; recent specialist appointments; missed appointments/referrals</td>
</tr>
<tr>
<td>Outcomes and goals</td>
<td>Current pain-related health outcomes</td>
</tr>
<tr>
<td>Treatment options</td>
<td>Listing of pain treatment options</td>
</tr>
<tr>
<td>Social determinants</td>
<td>Insurance status, transportation options, housing, food access, and patients’ preferred language</td>
</tr>
</tbody>
</table>
**Past and current medications**

<table>
<thead>
<tr>
<th>Pain-Related Diagnoses</th>
<th>Current Opioid/Benzo Rx</th>
<th>Current Naloxone/Suboxone Rx</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Past Opioid/Benzo Rx</strong></td>
<td><strong>Current Opioid/Benzo Rx</strong></td>
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</tr>
<tr>
<td><strong>Prescription medications as of 10/16/18</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ALPRAZolam (Xanax) 0.25mg tab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HYDROcodone-acetaminophen 325mg tab</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 tab by mouth 3 times per day as needed for anxiety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 tab by mouth every 6 h as needed for pain</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Patient has the following qualifying diagnoses*
- Chronic pain (G89.29)
- Chronic foot pain (M79.673)
- Pain in joint, ankle and foot (M25.579)

*Current Opioid/Benzo Rx*

- Prescription medications as of 10/16/18
  - ALPRAZolam (Xanax) 0.25mg tab
  - HYDROcodone-acetaminophen 325mg tab
  - 1 tab by mouth 3 times per day as needed for anxiety
  - 1 tab by mouth every 6 h as needed for pain

*Current Naloxone/Suboxone Rx*

- Prescription medications as of 10/16/18
  - No qualifying medications

*Past Opioid/Benzo Rx*

- Discontinued prescription medications as of 10/16/18
  - HYDROcodone-acetaminophen 500mg tab *(disc. 3/15/17)*
  - HYDROcodone 325mg tab *(disc. 9/5/16)*
**Chronic Pain OneSheet**

**Test, Patient**

Male, 29y, 5/9/1989

---

### Chronic Pain OneSheet

**Pain-Related Diagnoses**

- Chronic pain (G89.29)
- Chronic foot pain (M79.673)
- Pain in joint, ankle and foot (M25.579)

**Current Opioid/Benzo Rx**

- ALPRAZolam (Xanax) 0.25mg tab
  - 1 tab by mouth 3 times per day as needed for anxiety
- HYDROcodone-acetaminophen 325mg tab
  - 1 tab by mouth every 6h as needed for pain

**Current Nalox/Suboxone Rx**

No qualifying medications

**Past Opioid/Benzo Rx**

- HYDROcodone-acetaminophen 500mg tab (disc. 3/15/17)
- HYDROcodone 325mg tab (disc. 9/5/16)

**Past Opioid/Benzo Rx**

- HYDROcodone-acetaminophen 325mg tab (disc. 9/5/16)

**PDMP Access**

- Link to PDMP

**Default Orders**

- Ambulatory referral to integrative pain
- Ambulatory referral to physical therapy
- Drug screen, pain management, urine
- Urine toxicology confirmation, opiates

**Chronic Pain Summary**

**Open Summary (more data may exist)**

**Chronic Pain Labs**

- No data to display

**Chronic Pain Meds**

- HYDROcodone-acetaminophen 325mg tab

**Use, Abuse, & Overdose Hx**

- Patient has the following qualifying diagnoses
  - No qualifying diagnoses

**Urine Drug Screen Results**

- Lab resulted components
  - Amphetamine, urine: NEG (8/1/18)
  - Hydrocodone, urine: POS (8/1/18)

---

**uds, pdmp, risk information**
Test, Patient  

Male, 29y, 5/9/1989

**Patient Information**

- **MRN:** 000000001
- **Case No.:** 99992348
- **PCP:** Test, Doctor, D.O.
- **Insurance:** Anthem BCBS
- **Language:** English
- **Height:** 72.5" (184.2 cm)
- **Weight:** 174.0 lb (78.9 kg)
- **BMI:** 23.3
- **MRN:** 000000001
- **Case No.:** 99992348
- **PCP:** Test, Doctor, D.O.
- **Insurance:** Anthem BCBS
- **Language:** English
- **Height:** 72.5" (184.2 cm)
- **Weight:** 174.0 lb (78.9 kg)
- **BMI:** 23.3

**Allergies:** Bad Science

**Adv Dir:** None on file

**Notes**

- **Order:** Ambulatory referral to integrative pain
- **Order:** Ambulatory referral to physical therapy
- **Order:** Drug screen, pain management, urine
- **Order:** Urine toxicology confirmation, opiates

**PDMP Access**

- **Link to PDMP**

**PDMP Check**

- **Default Orders**
- **Chronic Pain Summary**
- **Use, Abuse, & Overdose Hx**
- **UDS**
- **Tx**

**Chronic Pain OneSheet**

**Pain-Related Diagnoses**

- Patient has the following qualifying diagnoses
  - Chronic pain (G89.29)
  - Chronic foot pain (M79.673)
  - Pain in joint, ankle and foot (M25.579)

**Current Opioid/Benzo Rx**

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**Current Nalox/Suboxone Rx**

- Prescription medications as of 10/16/18
  - No qualifying medications

**Past Opioid/Benzo Rx**

- Discontinued prescription medications as of 10/16/18
  - HYDROcodone-acetaminophen 500mg tab  (disc. 3/15/17)
  - HYDROcodone 325mg tab  (disc. 9/5/16)

**Chronic Pain Labs**

- No data to display

**Chronic Pain Meds**

- HYDROcodone-acetaminophen 325mg tab

**Use, Abuse, & Overdose Hx**

- Patient has the following qualifying diagnoses
  - No qualifying diagnoses

**Urine Drug Screen Results**

- Lab resulted components
  - Amphetamine, urine: NEG (8/1/18)
  - Hydrocodone, urine: POS (8/1/18)

**Default Orders**

- Ambulatory referral to integrative pain
- Ambulatory referral to physical therapy
- Drug screen, pain management, urine
- Urine toxicology confirmation, opiates

**Accept & Sign**
Chronic Pain OneSheet prototype

Test, Patient
Male, 29y, 5/9/1989
MRN: 00000001
Case No.: 99992348
PCP: Test, Doctor, D.O.
Insurance: Anthem BCBS
Height: 72.5" (184.2 cm)
Language: English
Adv Dir: None on file

Chronic Pain OneSheet

Pain-Related Diagnoses
Patient has the following qualifying diagnoses:
- Chronic pain (G89.29)
- Chronic foot pain (M79.673)
- Pain in joint, ankle and foot (M25.579)

Current Opioid/Benzo Rx
Prescription medications as of 10/16/18:
- ALPRAZolam (Xanax) 0.25mg tab
  1 tab by mouth 3x times per day as needed for anxiety
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No qualifying medications

Past Opioid/Benzo Rx
Discontinued prescription medications as of 10/16/18:
- HYDROcodone-acetaminophen 500mg tab (disc. 3/15/17)
- HYDROcodone 325mg tab (disc. 9/5/16)

Treatment Tracker

Medications (oral)

**NSAIDs**
- No benefit @ therapeutic dose
- Side effects @ therapeutic dose
- Lack of patient adherence
- Did not reach therapeutic dose

**Acetaminophen**
- No benefit @ therapeutic dose
- Side effects @ therapeutic dose
- Lack of patient adherence
- Did not reach therapeutic dose

**Topical Anesthetics**

**Lidocaine**
- No benefit @ therapeutic dose
- Side effects @ therapeutic dose
- Lack of patient adherence
- Did not reach therapeutic dose

**NSAID**
- No benefit @ therapeutic dose
- Side effects @ therapeutic dose
- Lack of patient adherence
- Did not reach therapeutic dose

Treatment options
Outcomes and goals
**Chronic Pain OneSheet**

**Test, Patient**
- MRN: 00000001
- Case No.: 99992348
- Bed: none
- PCP: Test, Doctor, D.O.
- Insurance: Anthem BCBS
- Language: English
- Height: 72.5" (184.2 cm)
- Weight: 174.0 lb (78.9 kg)
- BMI: 23.3
- Allergies: Bad Science
- Adv Dir: None on file

**PDMP View**

**Test, Patient**
Age: 29
Data as of: 10/10/18

Last reviewed by You on 10/11/18 at 3:54 p.m.

**Summary**
- Total Prescriptions: 1
- Total Prescribers: 1
- Total Pharmacies: 1

**Narcotics (excluding buprenorphine)**
- Current Quantity: 1
- Current MME/day: 55.0
- 30 Day Avg MME/day: 55.0

**Buprenorphine**
- Current Quantity: 0
- Current MME/day: 0.00
- 30 Day Avg MME/day: 0.00

**Prescriptions**

<table>
<thead>
<tr>
<th>Fill Date</th>
<th>ID</th>
<th>Written</th>
<th>Drug</th>
<th>Qty</th>
<th>Days</th>
<th>Prescriber</th>
<th>Rx#</th>
<th>Pharmacy</th>
<th>Refill</th>
<th>Daily Dose</th>
<th>Pmt Type</th>
<th>PMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/1/18</td>
<td>1</td>
<td>9/12/18</td>
<td>HYDROcodone-acetaminophen tab</td>
<td>30</td>
<td>30</td>
<td>Dr. Test</td>
<td>A1004</td>
<td>ALI (ZZ12)</td>
<td>1</td>
<td>325mg</td>
<td>Private</td>
<td>State</td>
</tr>
</tbody>
</table>

**Providers**

- Name: Doctor Test
  - Address: 123 Fake St
  - City: Indianapolis
  - State: IN
  - ZIP: 46202
  - DEA: BR11111111

- Name: Test Pharmacy
  - Address: 241 Fake St
  - City: Indianapolis
  - State: IN
  - ZIP: 46202
  - DEA: ZZ1234567

**PDMP report**
Takeaway 1 of 3

Make CDS easy, convenient, and relevant for clinicians & patients...

- Patients are in pain... if not opioids, then what?
- Put relevant information in a single place
- Be thoughtful about risk prediction and communication

“You have the patients who definitely need the medications. You have the patients who definitely don’t need the medications. Then you have the really tough management cases of the ones in between that are difficult to assess whether or not they truly do need the medication.”

[Harle et al. 2018 working]
Design and implement CDS faster...
Faster, collaboratively and evolving with the problem

Yearly correlation b/w opioid Rx rates and overdose death rates
Takeaway 3 of 3

Make sure CDS actually works...
Need for rigorous health services research that estimates the impact of CDS on important processes and health outcomes

- Is the CDS getting used and improving quality?
- Are patient experiences and outcomes any better?
- Is CDS delivering value to the healthcare organization?

charle@iu.edu
Morning Sessions
Recommendations for Trust in Clinical Decision Support Knowledge Artifacts

Trust Framework Work Group
Acknowledgements
Thank you to the TFWG members

<table>
<thead>
<tr>
<th>Member</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
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<td>AHRQ/CEPI</td>
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<td>HLN Consulting, LLC</td>
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<td>Centers for Medicare &amp; Medicaid Services</td>
</tr>
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<td>Andrew Hamilton, RN, BSN, MS</td>
<td>AllianceChicago</td>
</tr>
<tr>
<td>Vojtech Huser, MD, PhD</td>
<td>NIH, National Library of Medicine (Lister Hill Center)</td>
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<td>Jodyn Platt, PhD, MPH</td>
<td>University of Michigan Department of Learning Health Sciences</td>
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<td>Mayo Clinic-Center for Translational Informatics and Knowledge Management</td>
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<tr>
<td>Christopher W. Shanahan, MD, MPH, FACP</td>
<td>Boston University School of Medicine</td>
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<tr>
<td>Julia Skapik, MD, MPH</td>
<td>Cognitive Medical Systems</td>
</tr>
<tr>
<td>Danny van Leeuwen, MPH, RN</td>
<td>Health Hats</td>
</tr>
<tr>
<td>Michael A. Witte, MPH</td>
<td>Office of the National Coordinator for Health Information Technology</td>
</tr>
</tbody>
</table>
Thanks to the Agency for Healthcare Research and Quality for its support via a Cooperative Agreement (U18 HS024849).
Why Trust Matters
To Build Trust In Artificial Intelligence, IBM Wants Developers To Prove Their Algorithms Are Fair
You know how you can trust your car’s brakes to work? Researchers want you to trust AI like that.

U.S. Preventive Services Task Force
STANDARDS FOR GUIDELINE DEVELOPMENT

GUIDES CHECKLIST
A tool to assist professionals when implementing guidelines with computerised decision support (CDS)

Successful implementation of guidelines with CDS requires:

- Enabling CDS context
- Appropriate CDS content
- Effective CDS system
- Effective CDS implementation

CLINICAL PRACTICE GUIDELINES WE CAN TRUST

The Precision Medicine Initiative: Privacy and Trust Principles

Success of AI in Healthcare Relies on User Trust in Data, Algorithms

artificial scientists
Trust matters
Trust for CDS

• Trust is inherently relational
  • Needed in contexts of vulnerability or uncertainty (Hall et al, 2002)
• Legal frameworks are new and governance is unclear (Hongsermeier et al 2010)
• Ethics of care focuses on relationships (Pols, 2014)
• CDS ecosystem involves people with diverse roles
  • Technical development of PCCDS artifacts and platforms
  • Clinical care
  • Patient experience
Developing Trust Recommendations for CDS Knowledge Artifacts
The TFWG was chartered to make recommendations

**Goal**
Address the AFA’s external factors regarding trust barriers and facilitators for the exchange of clinical knowledge and use of CDS

**Key Deliverables**
One or more use cases identifying the barriers and facilitators to operationalizing a trust framework

A white paper with recommendations for achieving fair, equitable, transparent, and trustworthy operations for contributing to and managing CDS repositories, including CDS Connect.
The work was carried out in six stages

|   | Research | Develop a shared understanding in trust and CDS | Present background webinar (Dr. Platt)  
|   |          |                                             | Developed an online bibliography |
|   | Roles    | Define Actors within a CDS ecosystem | Conducted group discussions  
|   |          |                                             | Surveyed TFWG members  
|   |          |                                             | Presented to CDS Connect WG |
|   | Relationships | Describe relationships between actors | Conducted group discussions  
|   |          |                                             | Completed matrix exercise |
|   | Define trust attributes among actors | Perform content analyses  
|   |          |                                             | Conducted group discussions |
|   | Recommend | Develop recommendations to address trust attributes | Perform content analyses  
|   |          |                                             | Surveyed TFWG members  
|   |          |                                             | Conducted group discussions |
|   | Map recommendations to CDS functions (not covered) | Conducted group discussions |
Recommendations for trust were applied to four “Functional Use Cases”:

- Authoring and uploading CDS content
- Inspecting and comparing CDS content
- Downloading and using CDS content
- Providing feedback on CDS use

CDS Connect
Recommendations for Trust
We identified 12 actors in a CDS ecosystem
We identified 9 “trust attributes” in a CDS ecosystem

<table>
<thead>
<tr>
<th>Competency</th>
<th>Compliance</th>
<th>Consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discoverability and Accessibility</td>
<td>Evidence-based</td>
<td>Feedback and Updating</td>
</tr>
<tr>
<td>Organizational Capacity</td>
<td>Patient-centeredness</td>
<td>Transparency</td>
</tr>
</tbody>
</table>
1. Competency

An actor is deemed to be competent in the role they play in the CDS ecosystem. For example, an author of a knowledge artifact should be judged competent, qualified, and an appropriate authority to develop the artifact based on factors such as past performance, professional qualifications, or certifications.
1.1 - Authors have descriptions with background information including affiliations, years participating, and frequency of participation.

1.2 - Authors promote respect and dignity when providing feedback.

1.3 - Authors are credentialed by an agreed upon entity through education or training, experience, and dependability.

1.4 - Knowledge professionals are certified that they are competent in the knowledge lifecycle, competently interpret and execute knowledge, and are competent of issues in conflict of interest.

1.5 - Competency should apply to both individuals and organizations.
2. Compliance

A knowledge artifact should conform to defined standards and criteria including copyright and intellectual property.
Recommendations

2.1 - Knowledge artifacts provide human-readable and machine-readable forms (whenever applicable) as well as supporting references.

2.2 - Knowledge artifacts are implemented in compliance with best-practices for safe and effective implementation.

2.3 - Knowledge artifacts are encoded using current standards for controlled medical terminologies, value sets, clinical data models, and knowledge representation formalisms.
3. Consistency

A knowledge artifact should repeatedly generate expected results over time when given requisite inputs (e.g., patient data or supporting CDS triggers).
Recommendation

3.1 - Authors take on responsibility of ensuring accurate knowledge translation and specification of a knowledge artifact.
4. Discoverability and Accessibility

The evidence behind an executable knowledge artifact is documented (discoverable) from metadata associated with the artifact. Artifacts and their contents have clear and appropriate reasoning for recommendations available to the end users. Artifacts are accessible to potential users, including patients and policy makers.
4.1 - Knowledge is made accessible through search technology in conjunction with effective and helpful key terms.

4.2 - Knowledge can be reliably searched for and found over time, so that users can find the same knowledge across successive versions.

4.3 - References to supporting evidence are clearly labeled and linked (preferably deep linked) to relevant supporting information.

4.4 - Data that inform an artifact can be found and accessed.
5. Evidence-based

The evidence instantiated within an artifact must apply to the clinical condition that it is meant to support. Limitations are stated clearly, and the evidence supporting the clinical guideline/predictive model, etc. in an artifact is substantiated and has clear clinical appropriateness.
5.1 - Metadata indicate the date that evidence was originally published, and the date that evidence was last reviewed.

5.2 - Metadata state any known limitations, restrictions, or exclusions to any given evidence.

5.3 - Artifacts contain references to the evidence base on which they are based, including both narrative guidelines and the data supporting those guidelines.

5.4 - Artifacts include metadata for all supporting citations.

5.5 - Artifacts include evidence about its method (e.g., order set v. alert), usage history, and available outcomes.
6. Feedback and Updating

Stakeholders have the functional ability to provide timely feedback and suggest improvements to a knowledge artifact. Feedback may be directed to diverse actors in the ecosystem (Knowledge Implementers, Knowledge Engineers, Knowledge Authors, etc.).
Recommendations

6.1 - Systems capture error logs and feedback about an artifact within the context of its use (e.g., EHR system, clinical setting, crash data etc.).

6.2 - Systems provide feedback mechanisms including means for users to ask questions about an artifact’s context of use.

6.3 - Metadata capture the dates an artifact was first and last published, with update dates in between.

6.4 - Artifacts contain a auditable records of updates and changes over time.

6.5 - Artifacts are updated based in part on feedback from operational performance over time.

6.6 - Authors provide bi-directional feedback to one another so to rate (and improve) each other’s work.
7. Organizational Capacity

An organization that sponsors knowledge artifact development or implementation (or both) should have the necessary funding, staffing, and resources to maintain a knowledge artifact and measure its effect(s).
Recommendations

7.1 - Develop skills and capacity of staff, systems, and resources that support implementation, ongoing evaluation, feedback, communications, and governance. Include implementation guidance with artifacts that conveys the necessary resources to implement that artifact.

7.2 - Knowledge artifacts include implementation guidance that conveys the necessary resources to implement that artifact.
8. Patient-centeredness

A knowledge artifact should whenever possible leverage patient-centered outcome research findings and/or patient-specific information (e.g. the patient’s clinical data, patient-generated health data, patient-reported outcomes) to support decisions by individual patients, their approved caregivers, and/or their care teams.
Recommendations

8.1 - Requirements for patient-level or patient-generated data input are clearly indicated.

8.2 - Evidence that accounts for patient-level or patient-generated data is clearly indicated.

8.3 - Consent for use of patient-level or patient-generated data is clearly indicated.
9. Transparency

A knowledge artifact should be applied and used ethically clearly convey all potential conflicts of interest and disclosures of interest related to its development or recommendation so to detect bias or discrimination in its use.
9.1 - Clearly indicated policies describe the procedures for implementing, updating, revising, and removing artifacts.

9.2 - Clearly indicated policies address Conflict of Interest.

9.3 - Knowledge artifacts are consistently implemented with licensing agreements and any secondary use rights are explicit.

9.4 - Knowledge artifacts are consistently implemented in ways that support equity in health and healthcare.
We applied recommendations to the four use cases

Full Results Available at pccds-ln.org/tfwg

<table>
<thead>
<tr>
<th>Trust Attribute</th>
<th>Authoring and Uploading CDS Content to CDS Connect</th>
<th>Inspecting and Comparing CDS Content on CDS Connect</th>
<th>Downloading and Using CDS Content on CDS Connect</th>
<th>Providing Feedback on CDS Use in Practice</th>
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| Evidence-based  | • Metadata indicate the date that evidence was originally published, and the date that evidence was last reviewed. (5.1)  
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• Artifacts contain references to the evidence base on which they are based, including both narrative guidelines and the data supporting those guidelines. (5.3)  
• Artifacts include metadata for all supporting citations. (5.4)  
• Artifacts include evidence about its method (e.g., order set v. alert), usage history, and available outcomes. (5.5) | | | |
Discussion
• Explicitly addressing trust in knowledge artifacts is a novel effort
• Trust matters for promoting knowledge sharing
• Trust attributes and recommendations provide stakeholders with discussion points, and can be the foundation for future work
  – Checklists, ‘Trust’ measures
  – Establishing governance for trust
Future Efforts

- Applying in practice
  - Develop a “Product Information Label” for knowledge artifacts
  - Experiments in crowdsourcing, e.g. Cochrane Crowd
- Engaging stakeholders
  - AHRQ CDS Connect and other Repositories
  - FDA on Certification of Software as a Medical Device
  - MCBK
  - PCCDS Learning Network stakeholders
  - Vendors
- Develop and disseminate the work for academic consideration
Limitations

- Opportunistic sample of stakeholders, potential bias
- Trust Attributes not validated beyond development
- Nor prospectively assessed in practice to assess impact prospectively on sharing
- Future work to further define methods to support trust
Conclusions

- Trust is essential for the sustainability of shareable CDS within a CDS ecosystem
- Considering actors and their relationships inform matters of trust within the CDS ecosystem
- TFWG recommendations provide “trust attributes” that actors can use to engage in discussions for sharing CDS artifacts (and knowledge)
Questions

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- Jodyn Platt, PhD, MPH - Co-chair - jeplatt@umich.edu
- Joshua E. Richardson, PhD, MS, MLIS - Co-chair – jrichardson@rti.org

www.pcorc ds-ln.org/tfwg
Findings from Technical Framework WG
TechFWG Members

Led by Kensaku Kawamoto and Laura Marcial

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- Alison Cassels, DSS, Inc.
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- Anna Dover, First Databank Health
- Barry Blumenfeld, RTI International
- Bryn Rhodes, HarmonIQ Health Systems
- Carmen Smiley, ONC
- Charles Lamb, Horizon Medicon
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- Jiang Bian, University of Florida
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- Jonathan Teich, Intersystems/Harvard
- Judith Steinberg, HRSA
- Kalyani Yerra, Premier, Inc.
- Kathryn Kuttler, Intermountain Healthcare
- Lisa Schilling, University of Colorado
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- Margeaux Akazawa, ONC
- MaryAnn Connor, Memorial Sloan Kettering Cancer Center
- Michael Blackman, Allscripts
- Michael Fadden MD, Cerner
- Michael Veronin, The University of Texas at Tyler
- Michelle Keller, Cedars-Sinai Medical Center
- Murat Sincan, Sanford Health, Imagenetics
- Mustafa Ozkaynak, University of Colorado
- Naresh Sundar Rajan, Utah Department of Health
- Patrick O’Connor, HealthPartners Institute and HealthPartners Medical Group
- Pedro Caraballo, Mayo Clinic
- Reem Mohamed, FDB Health
- Robert Anthony, ONC
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- Roshni Ghosh, Premier Healthcare, Inc
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- Scott MacDonald, UC Davis Health
- Shafa Al-showk, AHRQ
- Stan Rankins, Telligen
- Steven Labkoff, Labkoff & Associates Healthcare Informatics
- Stijn van de Velde, GUIDES
- Susan Robilotto, HRSA/HAB
- Thankam Thyvalikakath, Regenstrief Institute
- Victor Lee, Clinical Architecture
- Victoria Bradley, Retired
- Vivek Narra, UC Davis Health
- Xia Jing, Ohio University
- Zhen Lin, Independent
TechFWG initial steps

- Broad, multi-stakeholder engagement
- Review OAP scenarios and HIT interventions
- Identify barriers, facilitators, remaining challenges, required actions
- Refine matrix on barriers and facilitators
- Focus especially on needed actions
- Prioritize next steps, seek stakeholder commitment
TechFWG deliverables

- Matrix of barriers, facilitators, and remaining challenges
- Needed actions → to feed into OAPWG action plan
- Development of a white paper based on these recommendations
Further Action Needed to Implement CDS

Six categories for further action to implement CDS

- Regulatory Environment
- Data Integration
- Scalability
- Business Case
- Effective & Useful CDS
- Care Planning & Coordination
Regulatory Environment

- **Barriers:**
  - Federal, state, and at times even institutional regulations and/or limitations on prescribing, confidentiality, and PDMP data

- **Facilitators:**
  - Initiatives that connect PDMPs from across states (e.g. PMP InterConnect) and state regulations requiring e-prescribing of controlled substances can facilitate access to PDMP information

- **Needed Actions:** Advocate to address conflict and overlap between federal, state, and local regulations regarding controlled substances
  - Federal: unify regulations on a national level according to the evidence base
  - State: encourage voluntary coordination
  - Local: define and share cohesive evidence-based guidelines that incorporate federal and state regulations
Data Integration and Summarization

- **Barriers:**
  - Capture, availability, format, matching, access to (both read & write), capture, visualization, and quality of relevant source data can be restrictive or limited

- **Facilitators:**
  - Opioids are an important use case with sufficiently constrained scope to be achievable and serve as a guide for other areas

- **Needed Actions:** Define data needs and interoperability requirements with achievable goals tied to clinical needs
  - Federal: fund the development of a set of data needs and a set of consolidated requirements specifications for interoperability (e.g. use a process like IHE) and research on visualization best practices
  - Providers and patients: facilitate improved data quality by giving patients access to update their own data
  - Vendors: test and verify architecture and standards for semantic interoperability in an iterative fashion
Scalability

- **Barriers:**
  - Assuming data are available, tools to scale (e.g. SMART on FHIR or CDS Hooks) are nascent and need to be localized

- **Facilitators:**
  - Emerging repositories to support the availability of CDS artifacts (e.g. CDS Connect), as well as ongoing maturation of relevant standards and their support

- **Needed Actions:** Reach agreement on desired CDS at scale and develop specifications and implementations accordingly
  - Federal: need an authoritative body agree to and to promote human-readable and computer-interpretable guidelines; fund research on best implementation strategies for desired CDS
  - Professional societies: develop and provide clinical endorsement of guidelines on opioid use and pain management and encourage widespread adoption of technical framework to support this
  - Vendors: support approaches for centrally managed CDS that ensures trust attributes are adhered to
Business Case

- **Barriers:**
  - Incentives of today are not aligned with needs and cost/ROI has yet to be clearly established for CDS

- **Facilitators:**
  - Value-based care initiatives (across all stakeholders) may provide needed incentives

- **Needed Actions:** Establish and promote business case including through incentives across stakeholder groups to improve pain & opioid management
  - CMS and other payers: incentivize achievement of quality goals and best practices while mitigating unintended consequences
  - Federal or state: support and incentivize the implementation of CDS solutions
  - All stakeholders: improve performance and cost of CDS
Effective and Useful CDS

- **Barriers:**
  - How to make effective CDS in general and specifically for opioids still requires more insights

- **Facilitators:**
  - There is significant knowledge regarding CDS and usability best practice approaches
  - Simple behavioral nudges may be effective as well

- **Needed Actions:** Identify CDS success factors
  - Government: fund research
  - Researchers: continue research on the most effective approaches to improving care using CDS
  - Users: provide the necessary input to ensure that CDS platforms meet user-centered design goals
  - Vendors: identify effective CDS and best practices and share broadly
Care Planning and Coordination

- **Barriers:**
  - The complexity of patient care requires a shared understanding (and modeling) of the care planning process, including any integrated data available, among all care providers

- **Facilitators:**
  - The scale and impact of the opioid crisis could enable agreement on common approaches to coordination and treatment

- **Needed Actions:** *Develop an approach to cross-institutional care planning to facilitate coordination*
  - Federal: provide funding for cross-institution demonstration projects; incentivize value-based care
  - Researchers: develop a body of evidence to guide the dynamic care planning process
  - Standards: develop, pilot, and refine standards for care planning and coordination
Next Steps and Breakout

- Breakout: **refine analysis** and recommendations for action
- **Harmonize** with OAPWG findings
- Finalize and publish **white paper**
- Potentially submit peer-reviewed **manuscript**
- Overall direction beyond above steps to be determined by **Patient-Centered CDS Learning Network Steering Committee**
Summary for SC

- **Actions needed in six areas**
  - Advocate to address conflict and overlap between federal, state, and local regulations regarding controlled substances
  - Define data needs and interoperability requirements with achievable goals tied to clinical needs
  - Reach agreement on desired CDS at scale and develop specifications and implementations accordingly
  - Establish and promote business case including through incentives across stakeholder groups to improve pain & opioid management
  - Identify CDS success factors
  - Develop an approach to cross-institutional care planning to facilitate coordination

- **What will it take to pursue these?**
For more on the TechFWG, please contact Kensaku Kawamoto at kensaku.kawamoto@utah.edu and/or Laura Marcial at lmarcial@rti.org.

For updates on future events and activities of the PCCDS-LN please check out our website at www.pccds-ln.org

Project Team Contact Information:

- Principal Investigator: Barry Blumenfeld, MD, MS (bhb@rti.org)
- Better Decisions Together and TFWG: Joshua Richardson, PhD, MS, MLIS (jrichardson@rti.org)
- Collaboration Hub and Evaluation: Laura Marcial, PhD, MLIS (lmarcial@rti.org)
- Project Manager: Beth Lasater, MSPH (boverman@rti.org)
One Patient’s Point of View

DANNY VAN LEEUWEN

Empowering people as they travel together towards best health
An action catalyst empowering people traveling together toward best health, wears many hats in healthcare:

- **patient** with Multiple Sclerosis,
- **care partner** for several family members’ end-of-life journeys
- a **nurse** for 40 years
- an **informaticist**
- a **QI leader**
- a **mentor** to leaders and advocates
- A **patient/caregiver activist**

Writing, speaking, and advising on learning what works for people in their health journey: informed decision-making, patient-centered research, communication at transitions of care, and technology supporting solutions created by and for people.

Danny van Leeuwen OPA
RN MPH
https://www.healthhats.com/
@healthhats
Determinants of Health

Individual Behavior 38%
Social Circumstances 23%
Genetics & Biology 21%

Medical Care 11%
Physical Environment 7%

To Read the Care Map in more detail, go to Health-Hats website:
Shared

Informed

Choices

Decision Making
Fundamental to Making Decisions

- Decisions take **time**
- Many decisions occur **outside** the office and away from the bedside
- A decision is just the **beginning**
- Clinical decisions are made in the context of a **trusting** relationship
- Decisions imply a balance of **power**
- Grease or sandpaper? **Technology** is not a substitute for time and relationship
I’m the child, Custodian and Healthcare Proxy of my 89-year-old mother, Alice. I live in a different state. My mother has diabetes and is depressed. Her care team, besides herself and me, includes medical providers in various health settings, community support agencies, and a full-time caregiver that helps her schedule and get to health-related services. My problem is to understand what my mother wants for herself and to track who says they’re doing something for her (including my mother and me), what they’re doing, and when they’re doing it. I want to know what it takes to do it (Can she afford it? Can she get there? Does it agree with her? Who will be with her? etc.). I want to know if the actions have the effects we thought they would. I want to know what her risks are and how we plan to prevent or respond to them. I want to able to keep track of all this and keep it current. I want to share it or have it shared from day-to-day and from setting to setting even if I’m not present. I want answers to my questions about what’s going on and how she’s doing when I have them.
Information People Need to Make Choices

- Care Team
- Personal goals
- Plan Who, What, When
- What does it take?
- Did it work?
- Risks – Prevent and Respond
- Up-to-date tracking
- Share day-to-day, setting to setting
- Answer questions when we have them
CDS Five Rights
 ✓ Deliver the right information
 ✓ To the right people
 ✓ Through the right formats
 ✓ Via the right channels
 ✓ At the right times

Thanks to Jerry Osheroff
# One Size Does Not Fit All
People at the Center of Care Vary

## Patients
(and those that support them)

I’m the CEO of my Health Team  
Help me find several solutions to my pain, so I can live the best life possible

## Clinicians
(and those that support them)

The relationship with my patients is most important to me  
I want to know what works for my patients so I can share solutions widely.

<table>
<thead>
<tr>
<th>More Engaged</th>
<th>Less Engaged</th>
</tr>
</thead>
</table>
| I’m the CEO of my Health Team  
Help me find several solutions to my pain, so I can live the best life possible | Just give me a pill to eliminate the pain.  
There’s nothing else I can do |
| Just get me through the day, I’m so tired  
I’ll write that script | The relationship with my patients is most important to me  
I want to know what works for my patients so I can share solutions widely. |
Advice From Patients Making Health Choices

- **Imagine** that you have **all the information** you need to make decisions about your medical treatment including cost of those choices.
- **Imagine** that you can talk about your **life's goals and challenges** and that your doctor can hear you.
- **Imagine** that you have **time to talk** and share with your doctor without distractions.
- **Imagine** that your doctor **trusts you to be the expert** about you.
- **Imagine** that you have a **care partner** who goes to doctor visits with you, listens and advocates for you.
- **Imagine** that you have **access to medical advice** and can get questions answered when you need it, in a manner that you can digest.
- **Imagine** that if you try something and it doesn't work, you can **adjust quickly** with your health team to try something else.
Advice from Patients Managing Pain

- Discuss **pain goals and concerns**, including financial & emotional
- **Describing pain** is frustrating and limiting
- Use **palliative care** experts
- **Compensate providers** for pain decision discussions
- Refer to **local non-medications** resources
- **Pay post-op patients** $200 to spend on a Pain Plan approved intervention if they don't fill an opioid prescription.
- Give a **list of evidence based non-pharm options** to every pre-op patient, and with every new opioid script
- Refer patient to **integrated BH support** to address coping skills
- Design usable pain **eJournal**
- Pain management is a **continual experiment**. Nothing works every time you’re in pain, including medication
Some people want drug free relief

Where is the evidence?

Some want a silver bullet
Expertise and Evidence

Patient Expertise

Life Goals
- Stay Well
- Get Over It
- Live Best Life
- Function
- Milestone
- Safety
- Relationships
- Spiritual

Making Choices
- Individual Behavior
- Social Circumstances
- Physical Environment

Research-Based Evidence

Medical Issues
- Cure
- Treat
- Prevent
- Drugs
- Procedures
- Therapy

How
- Team
- Decisions
- Plans
- Share
- Learn
- Adjust

Clinical Decisions
- Medical Care
- Genetics and Biology
What does the CDS Industry Need to Do?

1. **Step out** of the clinical, academic, technology frame
2. Promote **time** for and **trust** in clinical relationships
3. Listen for and study **non-medical, non-biological solutions** that work for somebody
4. Influence those allocating $$ to pay for **non-medical, non-biological solutions**
5. Everyone at the Center of Care needs **just-in-time information**
6. **Invite** people at the center of care to sit at the tables of governance, design, operations and learning
7. **Design for variation** in people, life flow, and workflow
8. **Enable** personal, clinical, and technological **continual learning**
You have all experienced pain.

What would you want your professional selves and colleagues to know as they design pain management clinical decision support?
THANK YOU

MORE RESOURCES:

DANNY VAN LEEUWEN
Empowering people as they travel together towards best health

https://www.health-hats.com/pccds-In-annual-meeting-2018/
Lunch Break
Plenary Session
Improving Pain Management and Opioid Use Through Broad and Effective PCCDS

A Stakeholder-driven Action Plan
Plenary Overview

**Goal:** increase your understanding of and *engagement with* the PCCDS Opioid Action Plan

- Acknowledgements
- Opioid Action Plan (OAP) overview
- How you can engage
- Discussion: feedback, synergies with *your* efforts
Acknowledgements
Thank you to the OAPWG members

<table>
<thead>
<tr>
<th>Megan Affrunti</th>
<th>Patrick Burns</th>
<th>Danny van Leeuwen</th>
<th>Blackford Middleton</th>
<th>Rebecca Rossom</th>
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<tbody>
<tr>
<td>Shafa Al-Showk</td>
<td>Evan Crawford</td>
<td>David Little</td>
<td>Karla Miller</td>
<td>Sharon Sebastian</td>
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<tr>
<td>Brian Alper</td>
<td>Janet Desroche</td>
<td>Hongfang Liu</td>
<td>Kara Murray</td>
<td>Daniel Seltzer</td>
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<tr>
<td>Robert Anthony</td>
<td>Spenser Duehr</td>
<td>Ed Lomotan</td>
<td>Jonathan Nebeker</td>
<td>Carmen Smiley</td>
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<tr>
<td>Margeaux Azakawa</td>
<td>Christopher Harle</td>
<td>Jan L. Losby</td>
<td>Patrick J. O’Connor</td>
<td>JoAnn Sperl-Hillen</td>
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<tr>
<td>Bryan Bagdasian</td>
<td>Molly Jeffrey</td>
<td>Laura Marcial</td>
<td>George Reynolds</td>
<td>Jackson Tate</td>
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<tr>
<td>Gavin Bart</td>
<td>Jim Jirjis</td>
<td>Alexander McIntosh</td>
<td>Richard Ricciardi</td>
<td>Upendra Thaker</td>
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<tr>
<td>Leigh Burchell</td>
<td>Ken Kawamoto</td>
<td>Zachary Meisel</td>
<td>Joshua Richardson</td>
<td>Devon Trolley</td>
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<tr>
<td>Maria Michaels</td>
<td>Craig W. Robbins</td>
<td>Jon Wald</td>
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</table>
Thank you to AHRQ

Funded by the Agency for Healthcare Research and Quality for its support via a Cooperative Agreement (U18 HS024849).
PCCDS Opioid Action Plan Overview
The Need for Action: PCCDS to Address the Opioid Crisis

- 115 US Opioid Deaths/Day
- 11.2% Chronic Pain
- 17.6% Severe Pain

Release Stakeholder-driven OAP January 2019
Change Model

Urgent Improvement Imperative (Opioid Crisis)

Current Care Processes and Outcomes

Widespread PCCDS Implementation

Better Patient Care Processes and Outcomes
Aspirational Goal (Working)

As a result of the Patient-Centered CDS Learning Network’s Opioid Action Plan, we aspire to deliver PCCDS interventions that improve pain management and opioid use outcomes for 2 million patients by 2021.
OAPWG Methods
## OAPWG Has Worked For 6 Months

| Moderated Discussions and Effort | 1. Engage stakeholders; **leverage current initiatives**  
2. Generate **consensus future vision**  
3. Scan ‘current state’  
4. **Foster** stakeholder actions to **close gap** ‘**win-win-win puzzle self-assembly**’ |
<table>
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<tr>
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<tbody>
<tr>
<td>Meetings</td>
<td>15 bi-weekly from April - October 2018</td>
</tr>
<tr>
<td>Broad representation</td>
<td>43 members (24 from Learning Network) - see diagram</td>
</tr>
<tr>
<td>LN Synergies</td>
<td>TrustFWG, TechFWG, website</td>
</tr>
<tr>
<td>Drafting Action Plan</td>
<td>Shared Google doc to iterate deliverable</td>
</tr>
</tbody>
</table>
Results to Date
Engaging Stakeholders/Change Agents/Initiatives to Drive Action

Patient Advocates
van Leeuwen network

People/Patients
see Advocates

Providers/CDOs
KP, HCA, VA, Mayo, HealthPartners, Penn

Payers
CMS

Standards Organizations
IHE, HITAC

HIT Supports w/PCCDS
Interventions (e.g., EHRs/PHM, CDSS)
Epic, MEDITECH, Allscripts, EBSCO, CDS Connect

Continuing Ed. Providers (Pain/opioid focus)
Conjoint Committee for CE

Health IT associations/orgs
CHIME, EHRA, KLAS

Cross-Cutting
- Other Federal Agencies AHRQ, ONC
- PCCDS Learning Network
- NAM Opioid Action Collaborative

Guidelines
CDC
Consensus Vision for PCCDS-enabled Pain/Opioid Management

- Alternatives to Opioids
  - Scenario 1: Chronic Knee Pain
  - Scenario 2: Acute Kidney Pain
  - Scenario 3: Opioids for Chronic Pain
- Short-term Opioids
  - Scenario 4: Post-surgical Pain
- Long-term Opioids
  - Scenario 5: Opioid Use Disorder

For full scenarios see: https://pccds-ln.org/scenarios#S1
<table>
<thead>
<tr>
<th></th>
<th><strong>PCCDS Interventions Underpin Scenarios</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td><strong>Patient information</strong> on treatment options/results</td>
</tr>
<tr>
<td>2.</td>
<td>Pain/function <strong>tracking journal</strong></td>
</tr>
<tr>
<td>3.</td>
<td>Pain management <strong>shared decision making tool</strong></td>
</tr>
<tr>
<td>4.</td>
<td><strong>Pre-visit questionnaire</strong></td>
</tr>
<tr>
<td>5.</td>
<td>Visit/procedure <strong>documentation template</strong></td>
</tr>
<tr>
<td>6.</td>
<td>Pain-related <strong>care plan creation/tracking tool</strong></td>
</tr>
<tr>
<td>7.</td>
<td><strong>Symptom evaluation tool</strong></td>
</tr>
<tr>
<td>8.</td>
<td><strong>PDMP Tool</strong></td>
</tr>
<tr>
<td>9.</td>
<td>Opioid use disorder <strong>screening/assessment tool</strong></td>
</tr>
<tr>
<td>10.</td>
<td>Condition-specific pain-related <strong>order set</strong></td>
</tr>
</tbody>
</table>

*For full intervention list see: [https://pccds-ln.org/scenarios#T1](https://pccds-ln.org/scenarios#T1)*
<table>
<thead>
<tr>
<th>Priority Clinical Need</th>
<th>PCCDS Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Empower patients to address new findings/conditions outside office encounters</td>
<td>Topic-specific, <strong>evidence-informed information on treatment options and results</strong> - especially concerning pain management</td>
</tr>
<tr>
<td>Evidence-informed <strong>shared patient-clinician decision making</strong> on pain evaluation and treatment</td>
<td>Tool that helps patients and clinicians <strong>compare options</strong> in a patient-relevant manner; selected treatments authorized by payer</td>
</tr>
<tr>
<td>Document and guide shared goals, actions, monitoring for managing condition</td>
<td>Condition-specific <strong>pain-related care plan</strong> creation/tracking tool:</td>
</tr>
<tr>
<td></td>
<td>*pain agreement/ <strong>opioid use contract</strong></td>
</tr>
<tr>
<td></td>
<td>*follow-up visit timing (e.g., monthly)</td>
</tr>
<tr>
<td></td>
<td>*urine drug screens</td>
</tr>
<tr>
<td></td>
<td>*tapering plan</td>
</tr>
<tr>
<td></td>
<td>*printable version</td>
</tr>
</tbody>
</table>
Scenario 1: PCCDS for Opioid Naive Patient

Bothered by osteoarthritic knee pain for years. She checks the portal...
Example Scenario: PCCDS for Opioid Naive Patient

Scenarios:
- Cross settings (home, encounter)
- Focus on patients/teams/both
- Reference interventions
- ~1 page

The portal includes background information about osteoarthritis [1], function/pain evaluation tool (severity, alleviating/exacerbating factors, effects on daily life) [2], evidence on treatment options (effectiveness and potential harms) - and related decision guide [3]. Patient completes evaluation and decision guide tool (results recorded in portal [1], [13]), schedules PCP appointment using portal [1], [13] to discuss with PCP and take next steps. The portal guides her to fill in a previsit questionnaire regarding her reason and goals for the visit [4], [13].

At Home:
Example Scenario: PCCDS for Opioid Naive Patient (@Home)

The portal includes background information about osteoarthritis [1], function/pain evaluation tool (severity, alleviating/exacerbating factors, effects on daily life) [2], evidence on treatment options (effectiveness and potential harms) - and related decision guide [3]. Patient completes evaluation and decision guide tool (results recorded in portal [1], [13]), schedules PCP appointment using portal [1], [13] to discuss with PCP and take next steps. The portal guides her to fill in a previsit questionnaire regarding her reason and goals for the visit [4], [13].

**Topic-specific evidence-informed information on treatment options and results.**

**Pain/Function tracking journal**

**Shared pain management decision making tool;** helps patients and clinicians compare options in a patient-relevant manner.

**Pre-visit questionnaire** summarizes patient data, visit goals

**Portals and websites** for patient education/support/communication
**During PCP huddle on the morning of patient visit**, the MA and provider review the pain evaluation and decision tool results and tee the tool up for further review and discussion with the patient during the provider visit [3]. They also consult the Health Information Exchange to validate previous diagnostic studies and treatment plans performed at other health care organizations [8]. Patient previously had orthopedic consultation and was not considered a surgical candidate. Minimal therapeutic options were tried, leaving open the possibility of non-opioid alternatives to pain management which have not previously been attempted.
Example Scenario: PCCDS for Opioid Naive Patient (@Huddle)

During PCP huddle on the morning of patient visit MA and provider review the pain evaluation and decision tool results and tee the tool up for further review and discussion with the patient during the provider visit [3]. They also consult the Health Information Exchange to validate previous diagnostic studies and treatment plans performed at other health care organizations [8]. Patient previously had orthopedic consultation and was not considered a surgical candidate. Minimal therapeutic options were tried, leaving open the possibility of non-opioid alternatives to pain management which have not previously been attempted.

PDMP Tool with results that can be shared between a provider and patient to discuss previous, current or overlapping prescriptions for controlled substances and to develop a shared care plan.
When rooming the patient, **MA confirms/updates information in these tools** [3], **confirms/refines patient expectations for the visit** (including questions or information needs from the patient) **from the pre-visit questionnaire** [4], and migrates this information into the EHR visit note, which is generated using a documentation template optimized for this purpose [5].
When rooming the patient, MA confirms/updates information in these tools [3], confirms/refines patient expectations for the visit (including questions or information needs from the patient) from the pre-visit questionnaire [4], and migrates this information into the EHR visit note, which is generated using a documentation template optimized for this purpose [5].
During provider encounter, patient and PCP review/use shared decision making tool to support therapy selection [3]. After tool-supported evidence-informed discussion of risks/costs/benefits of different approaches, patients values/expectations [3] they agree a trial of topical diclofenac (a non-opioid medication) is the best approach, which is prescribed electronically and documented in a care plan [6].
Example Scenario: PCCDS for Opioid Naive Patient (@Encounter)

During provider encounter, patient and PCP review/use 
*shared decision making tool to support therapy selection* [3]. After *tool-supported evidence-informed discussion of risks/costs/benefits of different approaches, patients values/expectations* [3] they agree a trial of topical diclofenac (a non-opioid medication) is the best approach, which is prescribed electronically and documented in a *care plan* [6].

**Condition-specific pain-related care plan tool**

Components include (as pertinent):
* pain agreement/opioid use contract
* follow-up visit timing (e.g., monthly)
* urine drug screens
* tapering plan
* printable version for receiving clinician signed by primary treating clinician (with contact information)
Example Scenario: PCCDS for Opioid Naive Patient (@Home)

After visit, patient uses mobile (smartphone or tablet) versions of tools to document progress (e.g., function/pain/activity levels) [2], support adherence to plan [6], and address questions and issues that arise [1]. These tools interact seamlessly with the practice portal and EHR so the PCP and team AND the patient each have easy methods to communicate without “extra” effort to use the system selected by the other [1], [13].

4 additional scenarios bring to life the 19 total PCCDS interventions
Current State: Foundations for Achieving Vision

- Preliminary scan (leveraged CDS Connect ES, OAPWG)
- 2 Components: by intervention, cross-cutting
- Opportunistic additions
- Being uploaded to LN Resource Center
- Continue refining collaboratively after OAP release (?)
- OAPWG: ‘burning platform’ (e.g., OUD Rx)
# PCCDS Intervention | Resources¹ | Clinical Implementations²
--- | --- | ---
1 | **Cross-cutting:**  

- Topic-specific (e.g., chronic knee pain, renal colic), evidence-informed *information on treatment options and results* - especially concerning pain management; related portal functionality (e.g., upload data to provider and patient <=> provider messaging)  

- *Patient information from NLM* on opioids - see specially opioids part 2, 3, 4 [suspect there are much more robust resources than these]  

- CDC patient-focused resources:  
  https://www.cdc.gov/drugoverdose/patients/materials.html  

- A *decision aid* for hip or knee osteoarthritis that includes many options and engages patients in answering what they are doing now and what their symptoms are, developed by Cochrane but not updated since 2011  
  https://integrationacademy.ahrq.gov/about/opioids-substance-use  

- **Patient Information**  
  - *handout from American Academy of Orthopaedic Surgeons* or in *Spanish*  
  - *handout on treating osteoarthritis of the knee from American Academy of Family Physicians* or in *Spanish*  
  - *handouts on osteoarthritis from*  
    - American College of Rheumatology or in *Spanish*  

| JN - Intermountain has open website for clinical pathways...have monographs on key process. Initially designed for HELP. URL link to sample:  
  https://intermountainhealthcare.org/ext/Dcmnt?ncid=529301997  

JL - Michigan OPEN (Opioid Prescribing Engagement Network) resources for surgical procedures. Link added:  
http://michigan-open.org/
# Current State: Cross-Cutting (excerpt)

<table>
<thead>
<tr>
<th>Clinical Implementations</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Kaiser Permanente Adult and Family Medicine Pain/Opioid Training Slides:</strong> [VA, Kaiser, other leading efforts by site and EHR vendor]</td>
<td>AHRQ <a href="#">FOA</a> on “Advancing Evidence into Practice through Shared, Interoperable Clinical Decision Support Resources (U18)”</td>
</tr>
<tr>
<td><strong>Riverside University Health System:</strong> implemented several interventions from table above pertinent to opioids for chronic pain</td>
<td></td>
</tr>
<tr>
<td>Intermountain Healthcare <a href="#">Care Process Model for Opioid use in Chronic Non-cancer Pain</a></td>
<td>ONC Health IT Playbook: Section 4: <a href="#">Opioid Epidemic and HealthIT</a></td>
</tr>
<tr>
<td><strong>Mercy Health wins 2018 HIMSS Davies Award</strong> of Excellence for applying health IT (including items related to PCCDS interventions) to opioid use.</td>
<td>CMS <a href="#">Proposed rule</a> for Physician Fee schedule 2019 adds an “Improvement Activity” to MIPS (page 1467): “Use of CDC Guideline for Clinical Decision Support to Prescribe Opioids for Chronic Pain via Clinical Decision Support”</td>
</tr>
<tr>
<td></td>
<td>AHRQ/CDS Connect Environmental Scan: <a href="#">Pain Management Resources to Support</a></td>
</tr>
</tbody>
</table>
Critical Stakeholder Group Actions

For List of Critical Actions and Other Recommendations see:
https://pccds-ln.org/scenarios#C1
Example Steps/Recs: Providers/Care Delivery Organizations

• **Critical Step**
  • Deploy/use PCCDS interventions to realize future vision

• **Other Recommendations**
  • Orgs having success share strategies/tools (e.g., Resource Center)
  • Others earlier in process leverage these
  • Measure/share results from strategies/tools
  • Collaborate on “most important problems to solve”
Example Steps/Recs: Healthcare IT Vendors

**Critical Step**

- Systems provide interventions, ensure providers/patients can use

**Other Recommendations**

- Describe how offerings realize scenarios
- Make opioid-specific interventions widely available
- Evolve offerings to better address scenarios
- Cultivate cross-fertilization within client base
- Collaborate to make interventions more interoperable
Socializing Scenarios to Foster Stakeholder Org. Action

- **EHR vendors**: use cases for product development, deployment
- **Provider organizations**: progress toward ‘aspirational goal’
- **EHRA**: Exploring interplay w/their Opioid CDS Implementation Guide
- **CHIME**: Exploring interplay with their Opioid Playbook
- **Conjoint Committee CE**: influence CE roadmap/activities?
- **Danny van Leeuwen**: outreach/engagement w/patient advocates
OAP-driven Actions (Sampling, cont.)

Sharing Tools/Strategies to Achieve Vision

- **KP**: intervention details, training resources

Fostering Other Collaborations to Implement OAP

- **KP, Epic EBSCO**: exploring joint scenario pilot implementation
- **CDC/ACG**: OAP rec and use case for planned ‘test bed’
- **NAM Opioid Action Collaborative**: exploring OAP interplay
- **Chris Harle**: research outreach to OAPWG
# Key Gaps to Achieving Aspirational Goal

<table>
<thead>
<tr>
<th>Ongoing OAP Collaboration/Implementation</th>
<th>Identify an entity to <strong>implement/coordinate</strong> efforts. Create/leverage a <strong>forum for ongoing stakeholder dialog</strong> and resource sharing</th>
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</thead>
<tbody>
<tr>
<td>OAP Dissemination/Consideration</td>
<td>Stakeholders widely <strong>circulate OAP, build on actions</strong> begun during its development</td>
</tr>
<tr>
<td>Intervention Testbed</td>
<td><strong>Develop testbed</strong> for multiple clinical organizations and EHR platforms to test interventions and foster scalability. (CDC is pursuing; OAP could be test case)</td>
</tr>
<tr>
<td>Evaluation</td>
<td>Articulate more specific <strong>success metrics, and measure/report on progress</strong></td>
</tr>
</tbody>
</table>
Opportunities to Engage
How Can You Join the Fun?

• Contribute to discussion!
• Participate in the OAP breakout session
• Provide feedback on scenarios/interventions/actions
  • https://pccds-ln.org/scenarios
• Engage in OAPWG
  • contact info on last slide
Discussion

• OAP questions/comments
  • What resonates? What’s missing? Pearls for success?

• How might you/your organization engage?
  • Win-Win-Wins re: aspirational goal?

• For those on OAPWG:
  • Comments on how OAP adds value to your org/efforts?
Thank You!

For materials and updates please check out our website at:

www.pcorcds-ln.org/oapwg

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Break Outs
Report Out
Thank you for a Great Meeting!

For updates on future events and activities please check out our website at [www.pccds-ln.org](http://www.pccds-ln.org)

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