**Hackathon Background & Resources – clinical & technical**

BaCKGround information:

One of the most significant opportunities to improve clinical care and reduce unnecessary harm is the development and maintenance of an up to date, accurate and shareable medication list for patients, their families and clinical providers.

Yet, establishing a true and accurate list of medications on each patient has proven difficult as each caregiver and patient often has a different list of “current medications”.  Unfortunately, medication errors due to omission (missing medications) and commission (giving the wrong medication, duplications and mis-dosing) are all too common.

The very tools we have designed to help us make clinical care safer and more efficient such as ordering medications electronically (ePrescribing) and storing and managing clinical data in an Electronic Health Record (EHR), may have inadvertently led to another set of errors caused by information stored in different formats and locations, being difficult to access and collate appropriately.

Medication reconciliation (Med Rec) has been championed as a solution to “get everyone on the same page.”  Yet, obtaining a true and accurate list of medications remains elusive due to a multitude of problems.  Our event will bring together both experts in the field as well as students from healthcare and engineering to describe the current state of knowledge and practice and offer participants an opportunity to begin the process of developing innovative solutions to the failure points in the med rec process.

Our hope is to lay a foundation on which to build better safety, efficiency and effectiveness in medication management for us all.

Resources:

[What is Medication Reconciliation?](https://www.ncbi.nlm.nih.gov/books/NBK2648/)

Medication reconciliation is the process of comparing a patient's medication orders to all of the medications that the patient has been taking. This reconciliation is done to avoid medication errors such as omissions, duplications, dosing errors, or drug interactions. It should be done at every transition of care in which new medications are ordered or existing orders are rewritten. Transitions in care include changes in setting, service, practitioner, or level of care. This process comprises five steps: (1) develop a list of current medications; (2) develop a list of medications to be prescribed; (3) compare the medications on the two lists; (4) make clinical decisions based on the comparison; and (5) communicate the new list to appropriate caregivers and to the patient.

**State of Connecticut Medication Reconciliation Work Groups & Reports:**

[Office of Health Strategy’s Medication Reconciliation & Polypharmacy Work Group](https://portal.ct.gov/OHS/HIT-Work-Groups/Medication-Reconciliation-and-Polypharmacy-Work-Group)

At the event you will be asked to work in interdisciplinary teams comprised of those with programming, clinical and administrative skills to build a simple prototype that pulls medication information from multiple sources with the goal to facilitate reconciliation by clinicians and patients.

**Medication Reconciliation Information:**

Medication Reconciliation - You Tube Videos – Phil Smith MD, MS

* [https://www.youtube.com/channel/UCA21hSXguB8X0xmp1ETN4Nw](https://urldefense.proofpoint.com/v2/url?u=https-3A__www.youtube.com_channel_UCA21hSXguB8X0xmp1ETN4Nw&d=DwMFAg&c=EZxp_D7cDnouwj5YEFHgXuSKoUq2zVQZ_7Fw9yfotck&r=G4yoQmAwUKbO5GVHJ6Ykew&m=1UpczK6UecOf63_PaUXRXrlzr4VObH2Y55fv0fGeg78&s=b1za7q1msToKUKuIIq0yDmRcbv-R3kd1kwPA5SuBaOo&e=)

Medication Reconciliation Articles – Provide in Package (as URL’s)

* Designing a medication timeline for patients and physicians – JAMIA
  + 26(2), 2019, 95–105 doi: 10.1093/jamia/ocy143
  + Describes process of User-Centered Software Development and gives medication examples
  + <https://academic.oup.com/jamia/article-abstract/26/2/95/5260829?redirectedFrom=fulltext>
  + Also has supplementary data in zip file - <https://academic.oup.com/jamia/article/26/2/95/5260829#supplementary-data>
* Better EHR – Usability, workflow and cognitive support in electronic health records
  + Reviews Human Factors approaches to EHR design that groups can use as a set of principles
  + Downloadable PDF book - <https://sbmi.uth.edu/nccd/better-ehr/>
* Inspired EHRs: Designing for Clinicians
  + An E-Book with chapter on Medication Reconciliation and others
  + <http://inspiredehrs.org/>

Usability Definitions, Tools and Examples to consider

* National Center for Cognitive Informatics and Decision Making in Healthcare
* Funded by ONC through a SHARP grant to develop an HIT Usability Center
* <https://sbmi.uth.edu/nccd/index.htm>

**Software Examples:**

* Medication Reconciliation Algorithms
  + <https://github.com/jherskovic/MedRec>
  + Last updated in 2014 but possible help in reviewing code to distinguish differences between medication lists
* Twinlist
  + A Novel User Interface Design for Medication Reconciliation
  + <http://www.cs.umd.edu/hcil/sharp/twinlist/>
  + Developed as part of an ONC SHARP grant at the Univ of Maryland
  + Has live video demo and ideas about the challenges with Med Rec
* InfoSage
  + <https://www.infosagehealth.org/app/#/>
  + A patient-centered standards based medication tool

State level initiatives to coordinate collection of Medication History

* Nebraska PDMP – Comprehensive Medication History and HIE Integration
  + <https://greatplainsqin.org/blog/event/nebraska-pdmp-a-comprehensive-medication-history-and-hie-integration/>

[**FHIR Medication Resources**](https://www.hl7.org/fhir/medications-module.html)**:**

[What is FHIR?](https://www.hl7.org/fhir/overview.html)

[What is SMART on FHIR?](http://smarthealthit.org/wp-content/uploads/SMART-on-FHIR-White-Paper-for-HIMSS-15-06Apr2015.pdf)

[Why Use SMART?](https://smarthealthit.org/)

[What is a Health Information Exchange (HIE)?](https://www.healthit.gov/topic/health-it-and-health-information-exchange-basics/what-hie)

How SMART on FHIR can help HIEs:

[FHIR holds big promise for interoperability, but will need to coexist with other standards for the foreseeable future](https://www.healthcareitnews.com/news/fhir-holds-big-promise-interoperability-will-need-coexist-other-standards-foreseeable-future)

Using SMART on FHIR is a long-term goal for our HIE efforts

**Resources for Developers:**

We will be Using FHIR version 3.0 for our implementation – You can implement this standard in any web-capable programming language such as JAVA, JAVAScript, Python, Swift, etc.

[HL7 FHIR 3.0 Reference Standard Information](http://hl7.org/fhir/stu3/)

[Swift classes for data models of FHIR elements and resources](https://github.com/smart-on-fhir/Swift-FHIR)

[SMART Application Launch Framework Implementation Guide Release 1.0.0](http://hl7.org/fhir/smart-app-launch/)