

FHIR in the Research Community @UW

September 12, 2020

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Chief Research Information Officer
UW Medicine

Professor
Biomedical Informatics and Medical Education



Welcome!



The University of Washington

\$1.579 billion in research awards in 2019 from more than 5,400 awards

In 2017, the UW ranked fifth overall nationally in research expenditures

Ranked 10th overall by US News and World Best Global Universities and the world's most innovative public university by Reuters in 2019



Patient care comprises half of UW business

Four hospitals, 60+ primary care clinics, cancer center, level one trauma center, Airlift NW, School of Medicine

Greater than 600,000 patients seen in 2019

Greater than 28,000 faculty and 4,600 trainees

Enterprise electronic health record system going live in October 2020

Forward thinking enterprise analytics data platform with more than 30 years of data comprising nearly five million patient lives

		Total	2019
	Count patients	4,981,278	608,727
Age	0-20	663,436	63,719
	21-30	495,870	92,564
	31-40	574,132	98,882
	41-50	580,900	83,788
	51-60	632,476	94,027
	61-70	649,187	93,367
	71-80	459,552	56,554
	81-90	268,389	20,858
	Over 90	608,479	4,938
Gender	Male	2,231,714	273,579
	Female	2,277,872	334,854
Race	African American	132,401	43,554
	American Indian	40,465	8,048
	Asian	257,707	58,503
	Caucasian	2,223,450	365,985
	Hispanic/Latino	79,493	123
	Other	81,363	28,778
	Pacific Islander	94,130	4,835
	Unknown	1,585,666	88,434

Goals of the presentation

Give perspective of academic health system and preparing to enable next generation of research, investigation and tech development

Communicate our strategy and how we are addressing challenges of translation of research using technologies like FHIR to enable investigators

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The UW FHIR Community

Universities have great ability
to convene communities

Started by bright graduate
students and interested faculty

Included previous workshop,
monthly meet ups (largely pre
Covid) and this workshop



Building an ecosystem of developers

Hannah Burkhardt

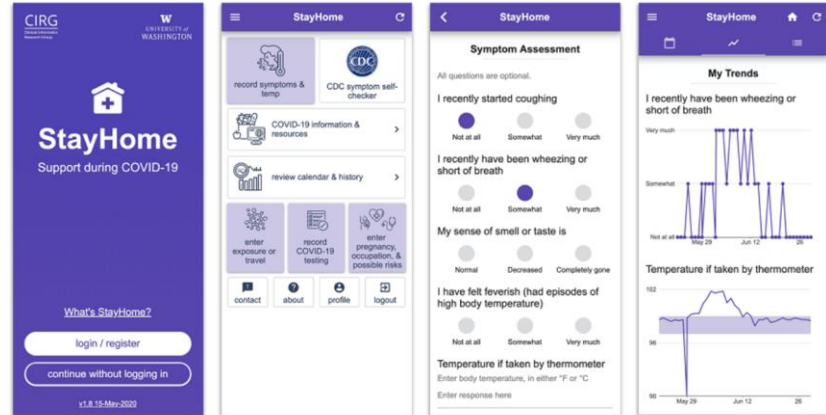


Our self organizing community of developers brings a 'bottom up' approach to innovation

Hear more about the
StayHome App at Panel
Session 3 at 1:15pm Pacific

Seeing many successes during Covid-19
working with UW Medicine and other
entities

A **reusable, mobile-friendly, FHIR-native** consumer health application for collecting patient-reported outcomes (PROs) and experiences to support the need for COVID-19 symptom self-monitoring and data sharing with appropriate public health agencies.

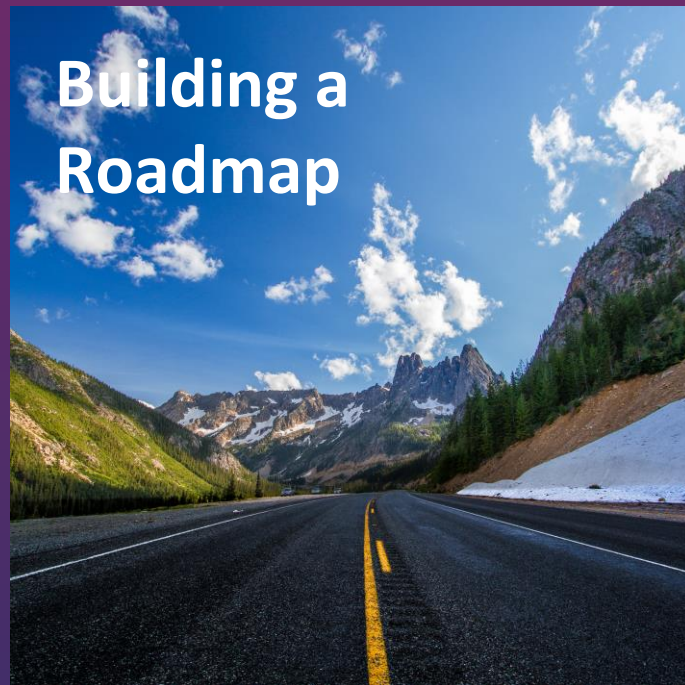


Our Strategy

Investigators are always thinking about what's possible 5 years from now

At the UW, we are constantly approached by developers who want to pilot apps, machine learning and other tools that require interfaces to operational systems

Has led to us (research informatics) focusing on a strategy of building in *people/resources*, *technology* and *governance*



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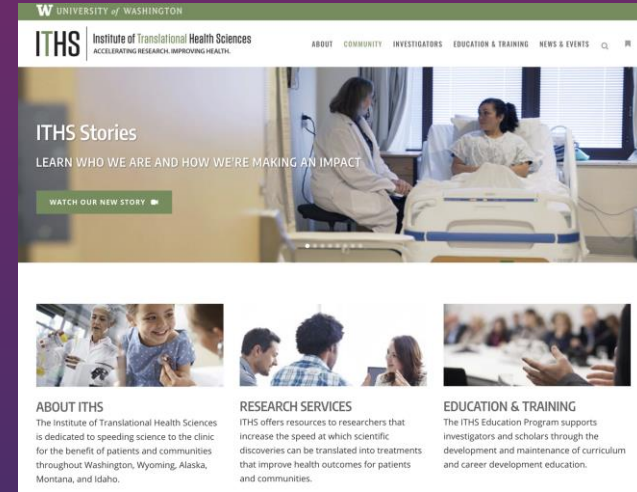
UW SCHOOL
OF MEDICINE

BIOMEDICAL INFORMATICS
AND MEDICAL EDUCATION

The 'people' resources

The Institute of Translational Health Sciences (ITHS) provides services to investigators in the WWAMI region and is largely funded by NCATS and the Clinical and Translational Sciences Award Program

ITHS, UW Medicine and Biomedical Informatics and Medical Education (BIME) have built a Research IT team to serve investigator needs



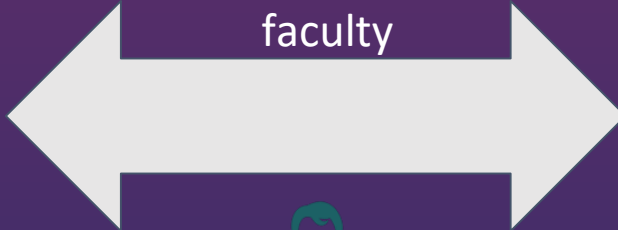
Institute of Translational Health Sciences



Melissa 'Mel' Habrat, Director of Research IT UW Medicine

Research Information Technology

We sit between the health
system and innovative
faculty



UW and other
University
Faculty



Health System Clinical Systems
and Healthcare Delivery

UW Medicine Research IT



Research in the
EHR(s)

*NLP, Machine
Learning, etc.*

Research
Analytics on
Clinical Data



Access to data
for research



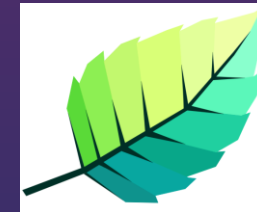
Management
of Enterprise
Systems
(CTMS, etc)



Support for
REDCap and
EDC



Advanced
Computing on
Clinical Data



Leaf Self
Service Query
Tool



Nationally and locally, research is increasingly targeting the EHR

Research in the EHR(s)

Increasing interest on leveraging APIs to deploy investigational apps and other tools including SMART on FHIR apps



We are supporting proposal development and helping shepherd projects through governance

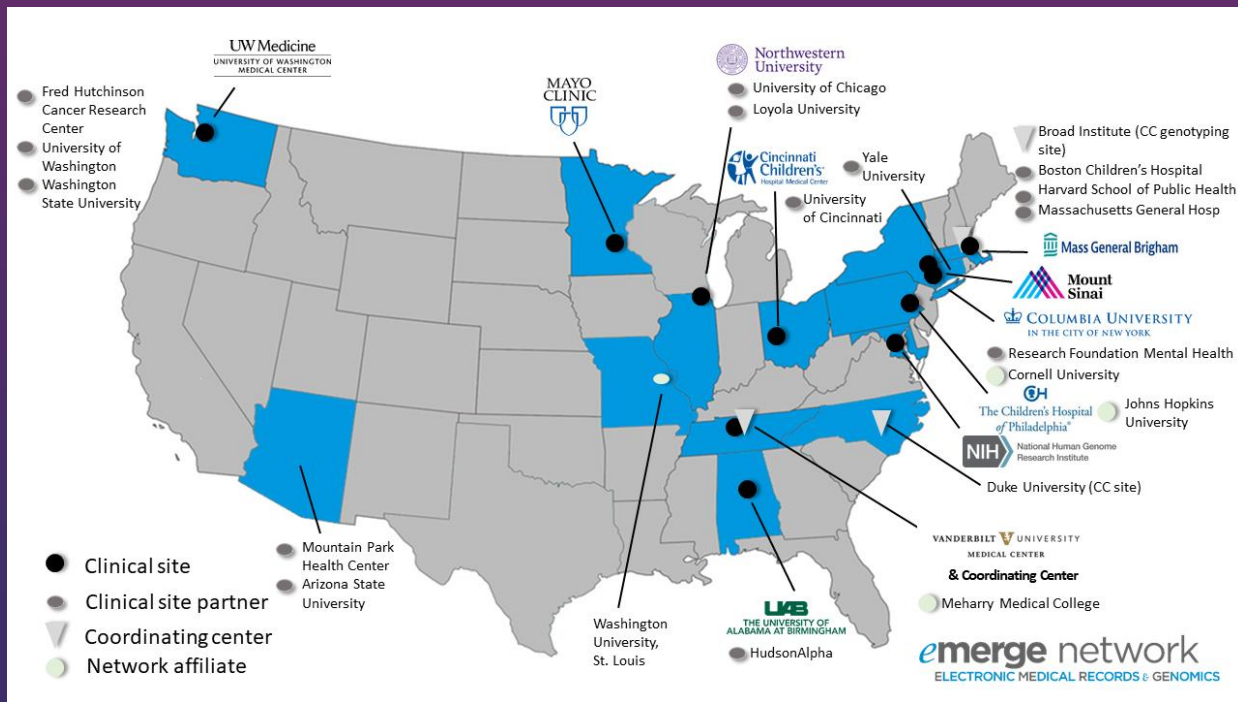
Interest area focuses on apps, decision support and machine learning

NHGRI eMERGE Phase IV (<https://emerge-network.org/>)

Research in the EHR(s)

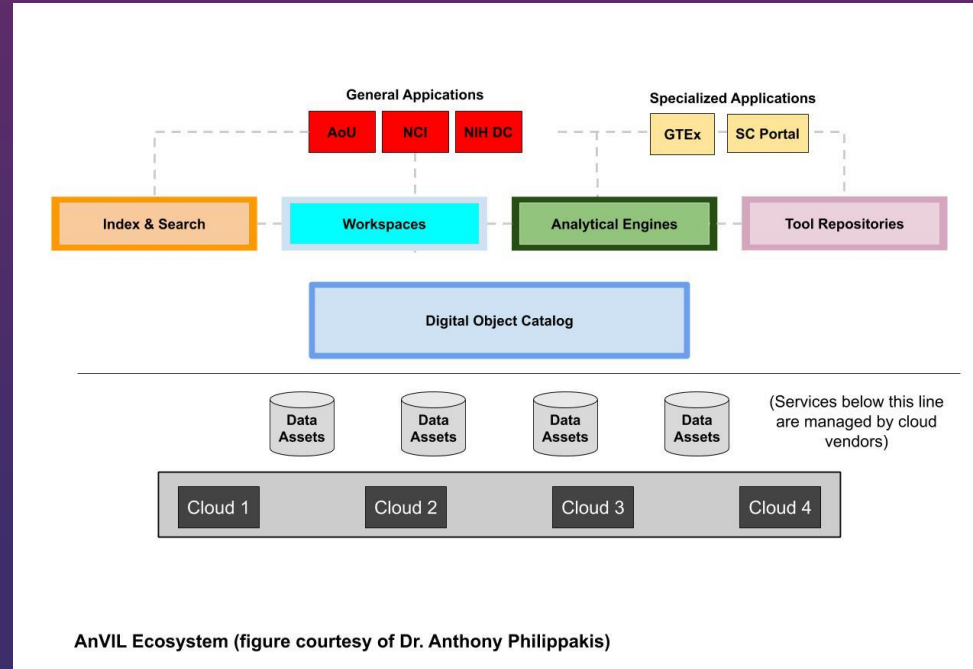
Example, the eMERGE Consortium (from RFA funded by NHGRI):

“The eMERGE Genomic Risk Assessment and Management Network will incorporate genotyping information into EMRs using the Fast Health Interoperability Resource (FHIR) standard”



NHGRI Genomic Data Science Analysis, Visualization and Informatics Lab-space (AnVIL)

- Cloud-based repository to allow access and computing with genomic data sets
 - To replace dbGaP
- **AnVIL Phenotyping Working Group**
 - Tasked with mapping phenotype data across multiple studies to standards, *including FHIR*
- Includes the Electronic Medical Records and Genomics (eMERGE) Genomic Risk Assessment and Management Network



FHIR is being leveraged as a data model

Access to data for research

National consortia are leaning on FHIR as a data model standard to facilitate data harmonization and sharing

For example, the Clinical and Translational Sciences Awards and their informatics Coordinating Center CD2H are focusing heavily on leveraging FHIR as a data model (https://cd2h.org/data_sharing):



NATIONAL CENTER
FOR DATA TO HEALTH

ITHS

Institute of Translational Health Sciences
ACCELERATING RESEARCH. IMPROVING HEALTH.



National Center
for Advancing
Translational Sciences

FHIR can interface to enterprise applications

Support for REDCap and EDC

- REDCap (Vanderbilt) is widely used nationally for electronic data capture. Epic FHIR / REDCap interface available
- Some sites are leveraging FHIR to support clinical trials such as OnCore CTMS



ITHS

Institute of **Translational** Health Sciences
ACCELERATING RESEARCH. IMPROVING HEALTH.

[AMIA Jt Summits Transl Sci Proc.](#) 2019; 2019: 54–63.

Published online 2019 May 6.

PMCID: PMC6568121

PMID: [31258956](#)

FHIRCap: Transforming REDCap forms into FHIR resources

[Alejandro Metke-Jimenez](#), PhD and [David Hansen](#), PhD

Governance

1. Developed enterprise research informatics governance committee
 - a. Multi-stakeholder with faculty and executive representation
 - b. Provides input on data governance, processes and research integration
 - c. Identifies challenges, discusses solutions, escalates complex solutions to other stakeholder leadership

1. Embed faculty in BIME associated with Research Informatics in operational governance including patient portal, security, enterprise analytics, IT oversight and other informatics governance.

Last thought: The idea file

I spend about 20% of my time as focused on consulting with investigators both at the UW and externally on their challenges

Every time I hear a problem I don't know how to solve, I put it a personal journal (powerpoint slide) of *"things we should be able to do but I don't know how to do"*

Use Case 1: Investigator wants to integrate social determinants of health with EDW

❖ Proposed Solution

❖ Data:

❖ EHR:

❖ Resources/Who:

❖ Governance:

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Final thoughts

Enjoy the meeting

My advice is that aspiring organizations to support researchers:

- Build a community
- Set a strategy
- Address people/resources
- Address technology capability
- Address governance

**THANK
YOU!**