MEDINFO23

8 – 12 JULY 2023 | SYDNEY, AUSTRALIA

Building Research Infrastructure to Develop Greater Learning Efficiencies (BRIDGE)

Nhan Do, M.D.

Director, VA Boston Informatics Group

VA Boston Healthcare System

Boston University School of Medicine

AIDH IMIA

The Learning Healthcare System

- Goal: to improve care by delivering knowledge in real time where clinical decision making occurs

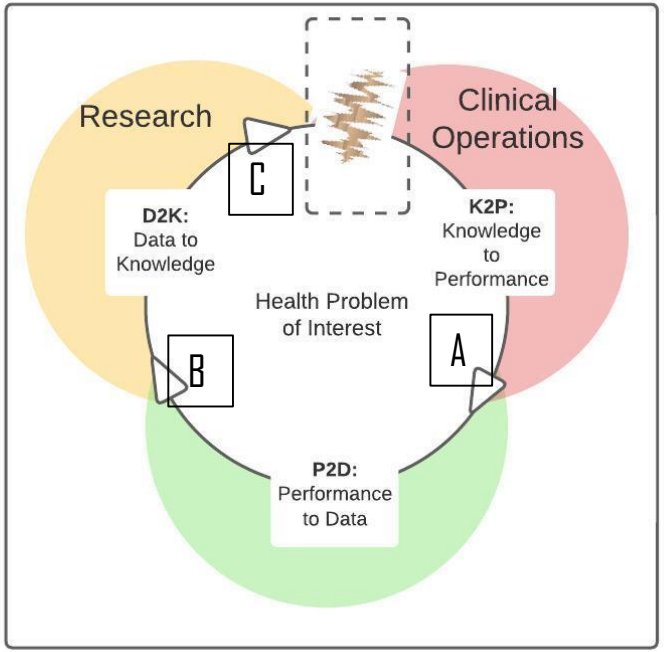
- Traditional research methods, well suited for scientific discovery and drug development, fall short of providing health care systems with pragmatic information in 2 important ways:
  - Current funding and institutions cannot support comparative effectiveness studies in sufficient numbers to answer the plethora of important clinical questions that confront health care providers (HCPs). The resultant knowledge gap manifests in treatment variability based on clinician impression rather than direct evidence.
  - Inability to make full use of the knowledge acquired in treating past patients to determine the best treatment option for the current patient.

The Learning Healthcare System

Multiple models for implementation of a LHS have been proposed to meet the mandate issued by the Institute of Medicine to transform healthcare systems, with three essential elements.

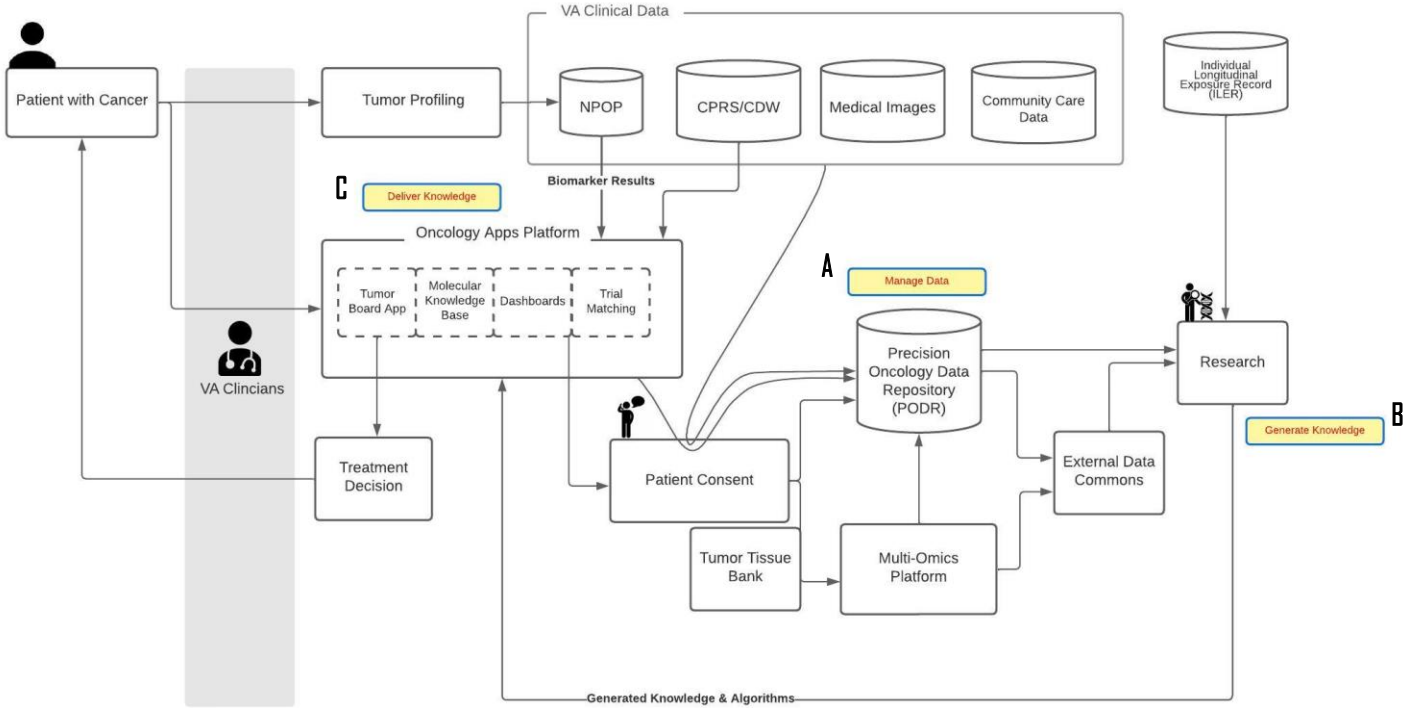
A. *the creation of clinical knowledge bases* to integrate and manage a growing volume and variety of data
B. *the generation of actionable knowledge* using real-world evidence and advanced analytics and
C. *the delivery and application of these newly discovered insights* (knowledge) to improve patient care as well as the iterative adaptation based on performance.

Friedman et al., Year Med Inform 2017



LHS Key Themes

- Not all problems need a LHS approach
- Interventions and treatment optimized for the individual
- Technology is critical
- Relevant knowledge needs to be accessible at the point of care in real time
- Integrating observational studies or clinical trials with the process of routine clinical care settings
- Establish a community of learners
- Adhere to participatory design principles
- Consider the context of the culture, resources, and population of the organization
- Implementation can be done at any level of the organization and resources
- Conduct pilots



A. *the creation of clinical knowledge bases* to integrate and manage a growing volume and variety of data
B. *the generation of actionable knowledge* using real-world evidence and advanced analytics and
C. *the delivery and application of these newly discovered insights* (knowledge) to improve patient care as well as the iterative adaptation based on performance.

NPOP: VA National Precision Oncology Program; CPRS: Computerized Patient Record System; CDW: Corporate Data Warehouse

MEDINFO 23

VA Oncology Apps

https://VAOncApps.gov

Lung Cancer Screening App

User: A.Clark Station: 552: Boston ,MA

High Benefit Patients

Privacy policy | Latest updates

- Documentation
- Features
- Getting started

SEARCH

Patient Name

Appointments in the next 7 days

High Benefit — Slide to see only these patients — Very High Benefit

Your Metrics

You have raised awareness for

35

high benefit patients

Sort by

High Benefit List

Completed | Unable to Reach

Next Appt	Patient Name	SSN	Anticipated Benefit	5-Year Lung Cancer Risk	Current or Former smoker	Alerted Patient	Date	Alerted PCP	Date	Declined Screening	Unable to reach	Ineligible for other reasons	Completed
30 Mar 2023	Bellatrix, Strange	3456	Very High	8.4%	Current		12/2/22	✓	1/5/23	✓			✓
11 Apr 2023	Felix, Kat	5665	Very High	7%	Current		2/7/23	✓					
12 Apr 2023	Olive, Kalamata	6778	Very High	6.4%	Past		1/13/23					✓	
20 Apr 2023	Mhan, Spider	8970	Very High	6%	Current		1/9/23				✓		✓
24 Apr 2023	Morell, Zhroom	0095	High	5%	Past								
11 May 2023	Rocoon, Annie	6678	High	4.2%	Past								
10 Jun 2023	Stitch, Lilo	7798	High	3.4%	Current								
12 Jun 2023	Seafarer, Ariel	4566	High	3%	Current								

8 results found: Showing page 1 of 1

1 2 3 4 5 6 ... Next >

Research

Original Investigation

Development and Validation of Risk Models to Select Ever-Smokers for CT Lung Cancer Screening

Hormuzd A. Katki, PhD; Stephanie A. Kovalchik, PhD; Christine D. Berg, MD; Li C. Cheung, MS; Anil K. Chaturvedi, PhD

Prediction-Augmented Lung Cancer Screening

Tanner Caverly, Nichole Tanner, Renda Wiener

MEDINFO23

VA Oncology Apps

https://VAOncApps.gov

Oncology Apps | User: VA User | Station: 552: Boston ,MA

Bellatrix Kats

SSN:
GENDER: M
DOB : 01/03/1938
MRN: 099782
Age: 85

Address :
103 West Broome St.
Mountainlaurelville
03476
Phone: 877-9000-1000

Back to Search

Frailty Score

3

Each of the following conditions contributes to the frailty score for this patient

Contributions to Frailty Score

Cognition (2)	Physical Function (3)	Comorbidities
Mood disorder	Fatigue	
Depression	Falls	
	Arthritis	

Acute Care Use in Since MM/DD/YYYY

Emergency Department Visits Past Year (4)	Urgent Care Visits Past Year (8)

Hospitalizations Past Year and Most Recent Note

Most recent Hospitalization January 23, 2023

Number of Total Visits in the past year. (4)

January 23,2023,
Most recent discharge note:

Recommendations

Cognition , Physical Function & Comorbididites

Patient Needs Referral to a Psychology Consult for (Cognition Mood Disorder)

Copy

Patient Requires a referral to a Cardiologist for (Comorbidity Heart Disease)

Copy

Last Update Jan 30, 2022

Advanced Care Planning

Patient needs discussion of advanced care planning.

DOI: 10.1002/cam4.4658

RESEARCH ARTICLE

Cancer Medicine — WILEY

Prognostic value of the veterans affairs frailty index in older patients with non-small cell lung cancer

David Cheng[1,2] | Clark Dumontier[2,3,4] | Ayesha R. Sheikh[5] | Jennifer La[3] | Mary T. Brophy[3,6] | Nhan V. Do[3,6] | Jane A. Driver[2,3,6,7] | David P. Tuck[3,6] | Nathanael R. Fillmore[2,3,7]

THE GERONTOLOGICAL SOCIETY OF AMERICA

Journals of Gerontology: Medical Sciences
cite as: J Gerontol A Biol Sci Med Sci, 2021, Vol. 76, No. 7, 1318–1325
doi:10.1093/gerona/glab071
Advance Access publication March 9, 2021

OXFORD

Research Article

Updating and Validating the U.S. Veterans Affairs Frailty Index: Transitioning From ICD-9 to ICD-10

David Cheng, PhD,[1,†] Clark DuMontier, MD, MPH,[2,3,4,†] Cenk Yildirim, MS,[5] Brian Charest, MS, MPH,[5] Chelsea E. Hawley, PharmD,[2] Min Zhuo, MD,[6,7,8] Julie M. Paik, MD, ScD,[2] Enzo Yaksic, BS,[5] J. Michael Gaziano, MD, MPH,[3,5] Nhan Do, MD, MS,[9,10] Mary Brophy, MD,[5] Kelly Cho, PhD, MPH,[5] Dae H. Kim, MD, MPH, ScD,[4,*] Jane A. Driver, MD, MPH,[2,3] Nathanael R. Fillmore, PhD,[5,11,*] and Ariela R. Orkaby, MD, MPH[2,3,9,1,*]

cancers — MDPI

Article

Contemporary Analysis of Electronic Frailty Measurement in Older Adults with Multiple Myeloma Treated in the National US Veterans Affairs Healthcare System

Clark DuMontier [1,2,3,†], Nathanael R. Fillmore [3,4,5,6,7,†], Cenk Yildirim [5,6], David Cheng [8], Jennifer La [5,6], Ariela R. Orkaby [1,2,3], Brian Charest [5,6], Diana Cirstea [7], Sarvari Yellapragada [9], John Michael Gaziano [2,3,5,6], Nhan Do [4,10], Mary T. Brophy [4,10], Dae H. Kim [11,12], Nikhil C. Munshi [3,6,7] and Jane A. Driver [1,2,3,*]

localhost:5099/oncology_apps_dev/biomarker_knowledgebase/report/030d3ca4-2e51-4551-9533-93c210b38648?NextURL=http%3A%2F%2Flocalhost%3A5099%2Foncology_apps_dev%2Fbiomarker_knowledgebase%2Fpatient_search%3FPatientLastNa...

Oncology Apps | Trial Matching | NCCAPS | Tumor Board | RePOP | Biomarker Knowledgebase | User: Feldman, Theodore C. | Station: 689: West Haven, CT

Molecular Oncology Almanac

Patient Report

Generated on: Feb 16 2021

Patient Information

Identifiers

Patient Name: Miles Test_Davis
Patient ID: example
Tumor Barcode: example_tumor_profile
Normal Barcode: example_normal_profile

Disease

Code: SKCM
Ontology: Cutaneous Melanoma
Stage: Metastatic

Metrics

Tumor Purity: 0.85
Tumor Ploidy: 4.02
Microsatellite Stability: MSS

Actionability Report

About: Predictive Implication | Bins | Datasources

Variants and Features associated with Therapeutic Sensitivity

Predictive Implication	Feature Type	Feature	Therapy & Rationale
FDA-Approved Putatively Actionable [More details]	Somatic Variant	BRAF p.V600E (Missense)	Dabrafenib + Trametinib The U.S. Food and Drug Administration (FDA) granted approval to dabrafenib in combination with trametinib for the treament of patients with unresectable or metastatic melanoma (MEL) with BRAF V600E or V600K mutation, as detected by an FDA-approved test. [source] [Preclinical evidence]

TECHNICAL REPORT
https://doi.org/10.1038/s43018-021-00243-3
nature cancer
Check for updates
OPEN

Integrating molecular profiles into clinical frameworks through the Molecular Oncology Almanac to prospectively guide precision oncology

Brendan Reardon[1,2], Nathanael D. Moore[1,2,3,4,5], Nicholas S. Moore[1,2,6], Eric Kofman[1,2,7,8], Saud H. AlDubayan[1,2,9,10], Alexander T. M. Cheung[1,2,11], Jake Conway[1,2,12], Haitham Elmarakeby[1,2,13], Alma Imamovic[2,14], Sophia C. Kamran[2,15], Tanya Keenan[1,2], Daniel Keliher[1,2,16], David J. Konieczkowski[2,17,18,19], David Liu[1,2], Kent W. Mouw[2,6,17], Jihye Park[1,2], Natalie I. Vokes[1,2,20], Felix Dietlein[1,2] and Eliezer M. Van Allen[1,2]

Discussion & Limitations

- Implementation of a LHS can be challenging, and application must be considered within the context of the broader institutional culture, available resources, and patient population.
- The full benefit of an LHS approach can only be achieved when new research advances become rapidly accessible at all points of patient care.
- BRIDGE ecosystem not only integrates relevant technologies but also includes a research and clinical user base committed to continual improvement and expansion of its applications.
- There is a lack of real-time data access and integration with our EHR (24-hr delay).

Conclusion

The delay between new medical discoveries and when those discoveries are put into practice at a patient's bedside is unacceptable for our Veterans with cancers. We are hopeful that our BRIDGE effort described here will provide the technologic tools necessary to unite our research and clinical communities under an LHS framework to provide the best care possible.

Acknowledgement

- VA Boston Healthcare System: Danne Elbers, Nathanael Fillmore, Jennifer La, Hannah Tosi, Samuel Ajjarapu, Danielle Valley, Colleen Shannon, Mary Brophy
- National Cancer Institute: Rupali Dhond