# Clinical Informatics Fellowship Overview for AMDIS

Karl Kochendorfer, MD
Natalie Pageler, MD
Tushar Patel, MD

June 14th, 2022

Lucile Packard Children's Hospital Stanford | Stanford Children's Health

UI Health | UIC

# OBJECTIVES

- Landscape Overview of CI programs
- Understand the structure of a CI program
- Review challenges and successes from early programs

# OVERVIEW

- What do you hope to gain from our session?
- Introduction and Potential CI Partners
- Career Opportunities of Grads
- CI Program at UI Health
- Early data of national survey
- CI Program at Stanford

# EARLY PROGRAMS

Longhurst C. A., *et al.* J Am Med Inform Assoc 2016;23:829–834. doi:10.1093/jamia/ocv209, Case Report

Table 1: Summary of first four accredited clinical informatics fellowship programs

| Program | Founding leadership | ACGME accreditation | Launched (first fellows) | No. of fellows/year | Sponsoring residency program |
|---|---|---|---|---|---|
| Stanford University | Christopher A Longhurst (PD) | July 2014 | 2014 | 2 | Pediatrics |
| | Natalie M Pageler (APD) | | | | |
| | Jonathan P Palma (APD) | | | | |
| OHSU | William R Hersh (PD) | September 2014 | 2015 | 2–4 | Internal medicine |
| | Vishnu Mohan (APD) | | | | |
| | Thomas R Yackel (APD) | | | | |
| UIC | Bruce P Levy (PD) | September 2014 | 2015 | 2 | Pathology |
| Regenstrief Institute | John T Finnell (PD) | October 2014 | 2015 | 2 | Emergency medicine |

ACGME, Accreditation Council on Graduate Medical Education; APD, associate program director; OHSU, Oregon Health & Science University; PD, program director; UIC, University of Illinois at Chicago.

See https://www.amia.org/programs/academic-forum/clinical-informatics-fellowships for the current list of all ACGME-accredited clinical informatics fellowship programs and links to individual program websites.

# >12-FOLD EXPANSION

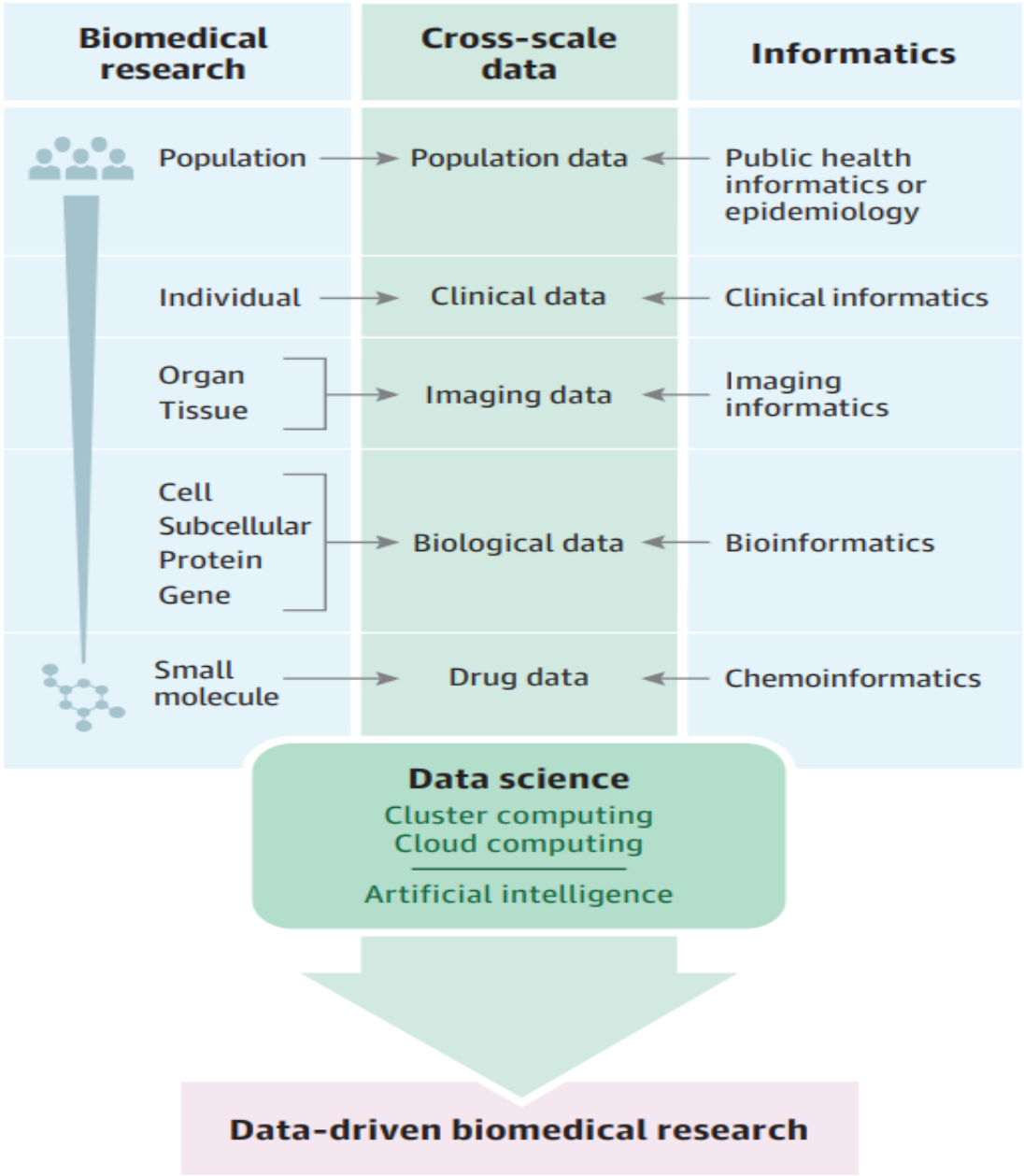
## # of Accredited CI Fellowship Programs

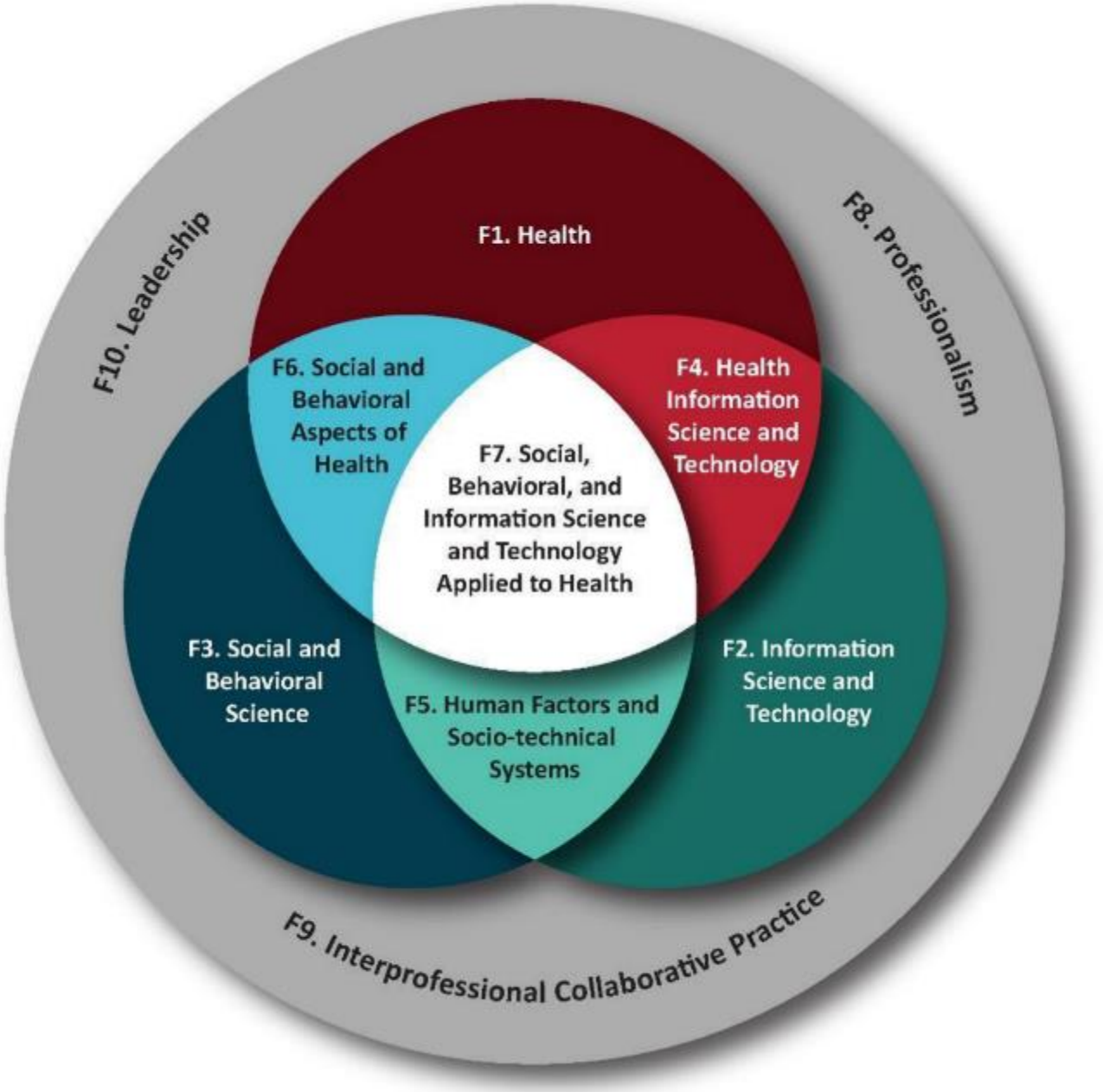
| 4 | 24 | 40 | 47 | 53 |
|---|---|---|---|---|
| (2015) | (2017) | (2019) | (2021) | (2022) |

# CI FELLOWSHIP PROGRAMS

# CI FELLOWSHIP PROGRAMS

**Figure 1. Biomedical Research and Informatics Approaches in Artificial Intelligence**






From: AMIA Board White Paper: AMIA 2017 core competencies for applied health informatics education at the master's degree level. J Am Med Inform Assoc. Published online October 26, 2018. doi:10.1093/jamia/ocy132

# INFORMATICS OVERALL AT UIC

# MISSION AND VISION

The **University of Illinois System** is among the preeminent public university systems in the nation and strives constantly to sustain and enhance its quality in teaching, research, public service, healthcare, and economic development.

**Office of the CHIO Vision:**

*"Transforming the patient care delivered at UI Health and beyond through disruptive innovations in health informatics operations, research, education and commercialization opportunities"*

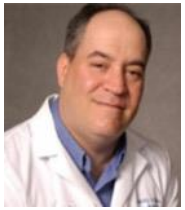
# UI HEALTH CHIO TEAM

Karl Kochendorfer

Shane Borkowsky
Operations

Tushar Patel
Education

Andy Boyd
Innovation & Research


Bill Galanter
Research

Bhrandon Harris

Hernan Sierra

Dave Chestek

Manmeet Singh

John Zulueta

Sagar Harwani

Jai Nebhrajani

Ashish Ansal

Bertha Wheaton

Zelda Canete

Abigail Goben

## CI Fellows

Sean Huang

Jorge Rodriguez

Anwar Jebran

Kunal Patel

11 Clinical Informatics board certified or eligible physicians

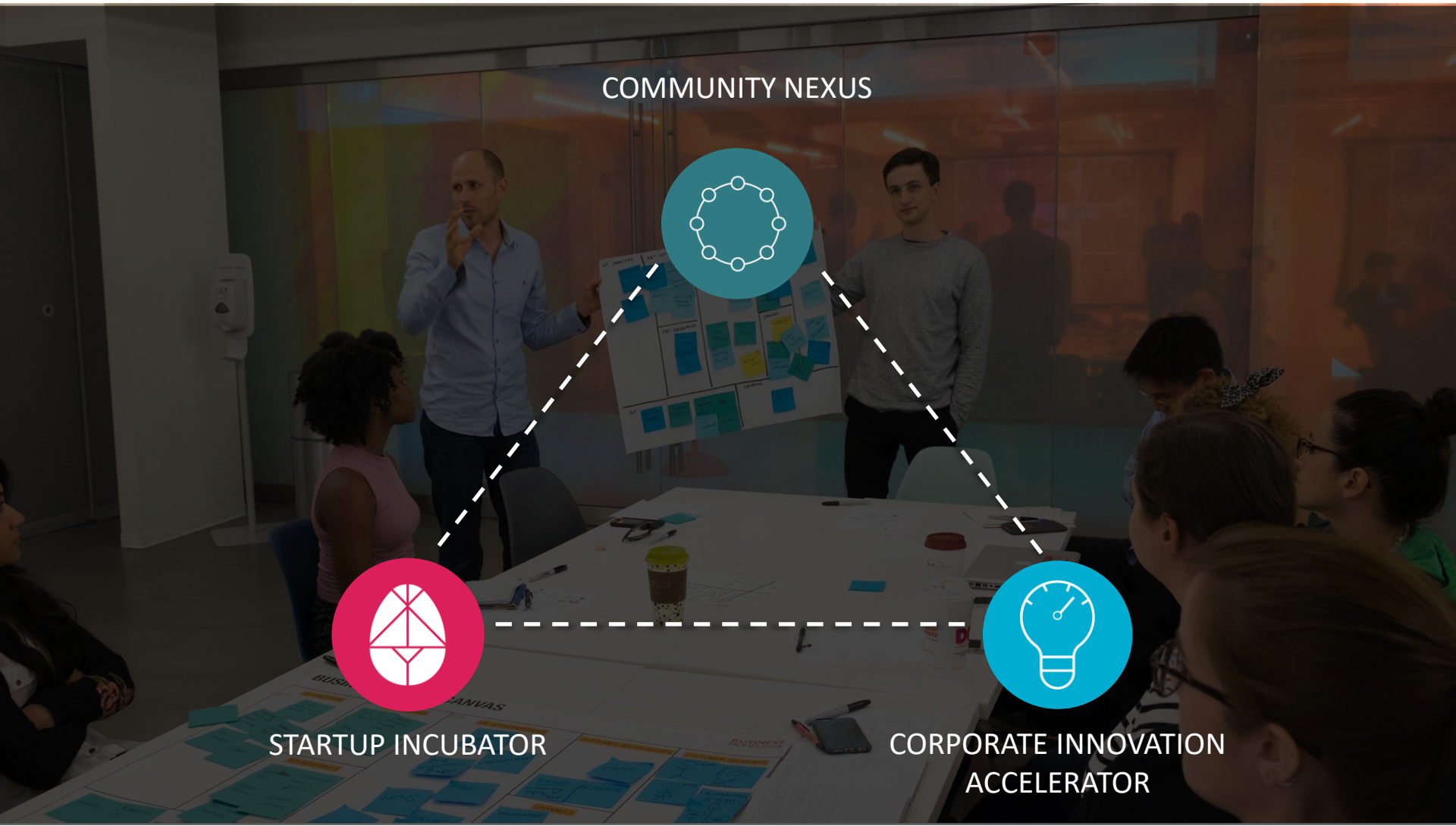
# WORKING WITH OTHERS IN CHICAGO

MATTER

# MISSION:

To help people and organizations transform ideas into solutions that improve the healthcare experience.

# MATTER


COMMUNITY NEXUS
STARTUP INCUBATOR
CORPORATE INNOVATION ACCELERATOR

DISCOVERY
PARTNERS
INSTITUTE
TOGETHER WE ARE COMMITTED TO
CHANGING THE WORLD.

# Innovation Hub at the 78

November 18, 2020

## Pritzker Administration Releases $142 Million in Capital Funding for Discovery Partners Institute, Illinois Innovation Network Hubs

*World-Class Centers to Help Promote Tech Innovation, Job Creation and Economic Growth Across the State*

www.dpi.uillinois.edu

# INFORMATICS CAREERS BEYOND ACADEMIA

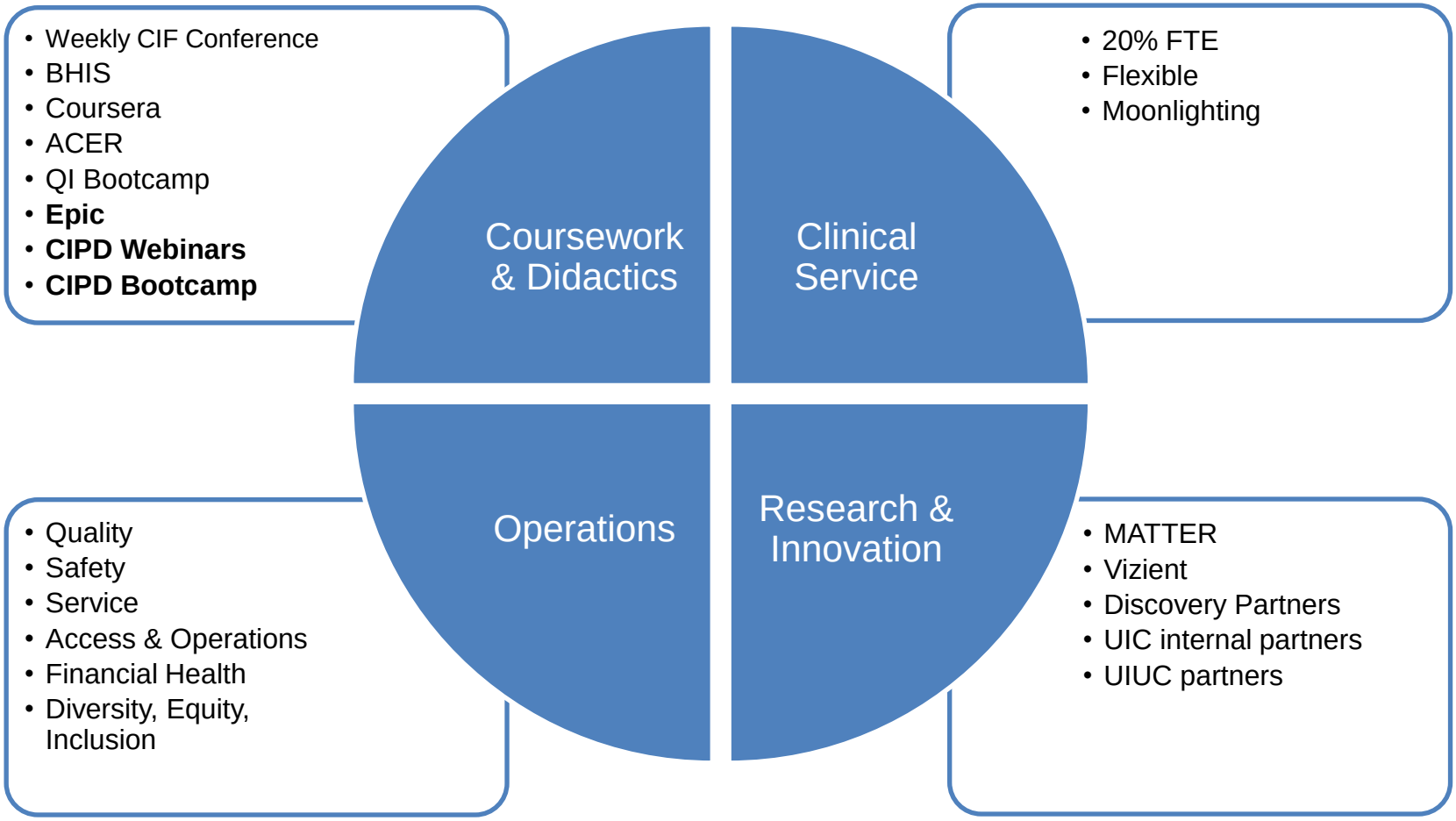
**Industry** (Baxter, IBM, Google, JP Morgan)

**Associations** (Vizient, AMA, AAFP, IHA)

**Community Hospitals** (DuPage Medical Center or Edwards-Elmhurst, etc…)

# INFORMATICS FELLOWSHIP AT UIC

# CI FELLOWSHIP: CURRICULUM



# OPERATIONS

## MANAGEMENT PERFORMANCE IMPROVEMENT MEASUREMENT

### QUALITY

- Reduce Sepsis Mortality Index
- Reduce Postoperative Blood Clots
- Reduce 30-day Readmission Rate
- Meet ICU Physician Staffing
- Improve Documentation & Coding Performance

- Install and iteratively **improve on Epic's Sepsis Machine Learning Algorithm**
- Work with VTE committee to add Caprini Scoring BPA and order sets for VTE
- COVID+ Outreach Project, specific outreach to patients to s/p COVID discharge. Has **reduced readmission rate over 50%.**
- **Appropriate use criteria in radiology tests** (collaboration with DMG)
- Sepsis Quality Measures Review

### SAFETY

- Reduce Adverse Patient Safety Events
- Reduce Adverse Employee Safety Events
- Mitigate Staffing Shortfall Events
- Continue Two Patient Identifier Adherence

- Implement SOFA score report within Cerner to prioritize ventilator allocation
- Implement the MEWS, PEWS, and SOFA patient acuity and deterioration scoring systems
- **Work with Risk Management on RCA's regarding specimen labeling and bar-coding**
- **Clinical Decision Support and Best Practice Advisories**

### SERVICE

- Improve Inpatient HCAHPS
- Improve Outpatient CAHPS
- Improve Clinician Engagement
- Improvement Employee Engagement

- Built No-show predictor for the Psychiatry clinic and sent to clinicians before their session
- Signal operationalizing use of the data to improve provide wellbeing
- **Implement Power Users at UI Health with IS Education**
- **Physician Builder Pilot**

### ACCESS & OPERATIONS

- Improve Patient Access
- Reduce Hospital Length of Stay (LOS)
- Improve ED Throughput

- **Telemedicine and home monitoring for vulnerable populations**
- Acquisition and deployment of FDA approved AI camera to detect diabetic retinopathy
- **COVID vaccination and data collection efforts**

### FINANCIAL HEALTH

- Improve Net Revenue
- Reduce Operating Cost
- Increase Strategic Market Share
- Improve Value-Based Care Performance

- **Procured over $1.1M in 2020 in additional funds by engaging borderline performing clinicians to add to the already over $37M of funds earned for the Meaningful Use and Promoting Interoperability programs**

### DIVERSITY, EQUITY, & INCLUSION

- Grow Diversity Throughout Organization
- Improve Inclusion Throughout Organization
- Increase Equity in Procurement Efforts

- **Lead the BCBS Data Team for Health Equity Pilot Program**

# AI IN NEUROSCIENCES (2019)

Karl Kochendorfer, MD

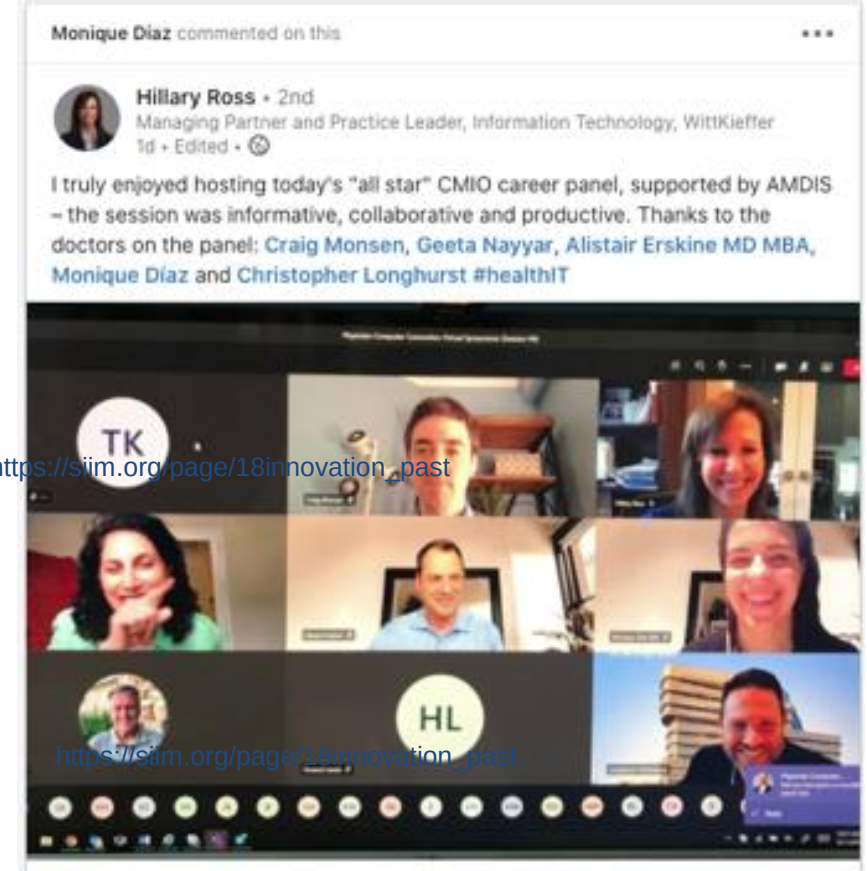
John Zulueta, MD

# BLOCKCHAIN IN HEALTHCARE (2018)

https://matter.health/posts/the-future-of-blockchain-in-healthcare/

Monique Diaz, MD

# LEADERSHIP & INNOVATION




Monique Diaz, MD
CMIO Career Panel
AMDIS sponsored

Sean Huang, MD (2nd year)

FOR IMMEDIATE RELEASE
September 21, 2021

Contact: HHS Press Office
202-690-6343
media@hhs.gov

## HHS Announces Synthetic Health Data Challenge Winners

The U.S. Department of Health and Human Services' (HHS) Office of the National Coordinator for Health Information Technology (ONC) today announced $100,000 in total awards to six winners of the Synthetic Health Data Challenge (Challenge). Synthetic health data (i.e., data that is artificially created to mimic real-world data), is important to researchers, health IT developers, and informaticians, among others, who need data to test new ideas until access to secure and actual clinical data is available.

**Third Place (three winners; the award for third place is $10,000 each)**

- Category II: Novel Uses of Synthea™ Generated Synthetic Data
- UI Health: Arash Jalali (team leader) and Sean Huang

**2018 SIIM Innovation Challenge People's Choice Award Winner**

**University of Illinois Hospital**
***Diagnosis Protocol - Using Blockchain to Accelerate Artificial Intelligence in Medical Imaging***
Roger Boodoo, MD

https://siim.org/page/18innovation_past

# INTERNATIONAL COLLABORATIONS

- University Mohammed First partnership
- in Morocco
- CI Fellow Led
- 120 students, 15 UIC faculty participated
- Faculty-Student exchange; MOU signed
- Consulting on improving their EHR rollout

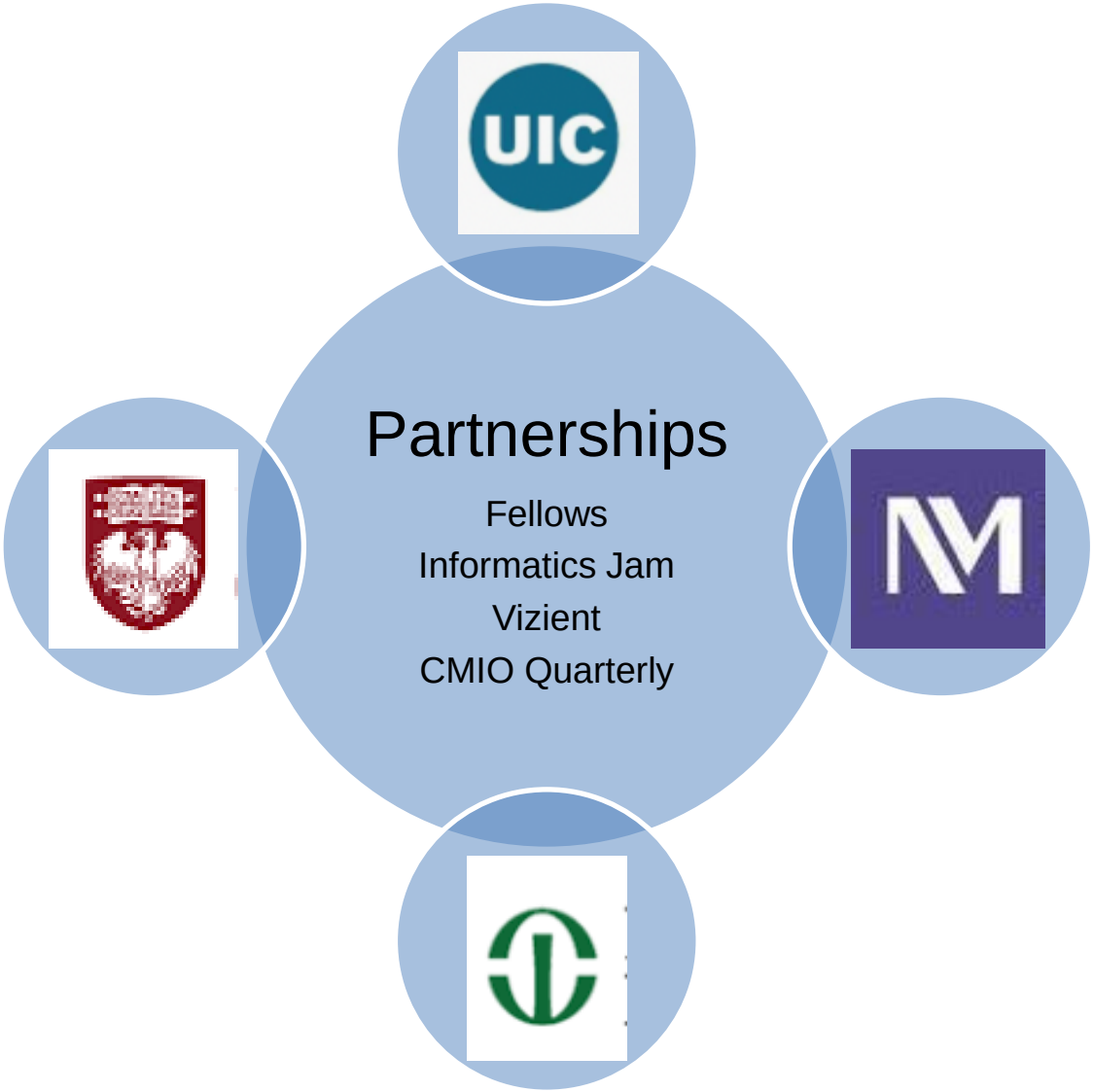
Anwar Jebran

Karl Kochendorfer

Andy Boyd

Andy Boyd
Innovation & Research

# OTHER CONNECTIONS




Advocate Health Care

NorthShore University HealthSystem

LOYOLA UNIVERSITY HEALTH SYSTEM

COOK COUNTY HEALTH

UIC

# CURRENT CI FELLOWS

**Sean Huang, MD**
Internal Medicine,
Geriatrics

Vanderbilt University
Geriatrician

**Jorge Rodriguez, MD**
Neurology

UTMB-Galveston
Assoc CMIO

**Anwar Jebran, MD**
Internal  Medicine

**Kunal Patel, MD**
Emergency Medicine

# CI FELLOWSHIP ALUMNI (RETAINED FELLOWS)

## 2014

**Tushar Patel**
Asst Professor
Program Director
UI Health
(non-ACGME)

## 2017

**Manu Singh**
Asst Professor
Pathology
UI Health
(non-ACGME)

**Irushi Dissanayake**
Pathology Dept Head
Informatics Researcher
VCOM of Louisiana
(non-ACGME)

**John Manning**
Director of Clinical Informatics
Carolinas Medical Center

## 2018

**Roger Boodoo**
Radiology Solutions Owner
Defense Health Agency

**Dave Chestek**
Director of EM Informatics
Co-CMIO
UI Health

**Bhrandon Harris**
Director of Primary Care Informatics
UI Health

**Zach Sonnier**
CMIO
US Air Force

## 2019

**Al Alsadi**
Director of Clinical Informatics
UW Madison

**Monique Diaz**
CMIO, Dignity Health

## 2020

**Kamel Azhar**
Family Physician & Informaticist
Inland Behavioral Health (FQHC)

**John Zulueta**
Assistant Professor of Clinical Psychiatry
UI Health

## 2021

**Sagar Harwani**
Assistant Professor of Clinical Medicine
Associate Chief Medical Officer
Physician Advisor

**Jai Nebrajani**
Assistant Professor of Family Medicine
Physician Advisor

# PRELIMINARY RESULTS FROM NATIONAL CI PROGRAM FUNDING & RESOURCES SURVEY

# CI FELLOWSHIP RESOURCES & FUNDING

- 45 question survey to all ACGME accredited CI programs (as of 5/2022)
- Focusing on administrative structure, funding support, and expenses.
- Led by myself, John Finnell, Joseph Kannry, Karl Kochendorfer, Chris Lehmann, Bruce Levy, Vishnu Mohan, and  Natalie Pageler.
- 17 respondents so far but aiming for many more.

# CI FELLOWSHIP SURVEY(N=17)

## Administrative setup:

- Administratively housed in:
  - IM (7), Peds (5), FM (3), Path (2)
- Most programs (12) take 2 fellows/year; [1-5]
  - Salaries generally in the range of $65-70K/year
- Avg PD FTE = 25%; Avg PC FTE = 30%
  - Professors (9), Asst Prof (4), Assoc Prof (2), Other (2)
- Most programs (11) have an APD [10-25% FTE]
- Most programs (11) have clinical practice requirement

# CI FELLOWSHIP SURVEY(N=17)

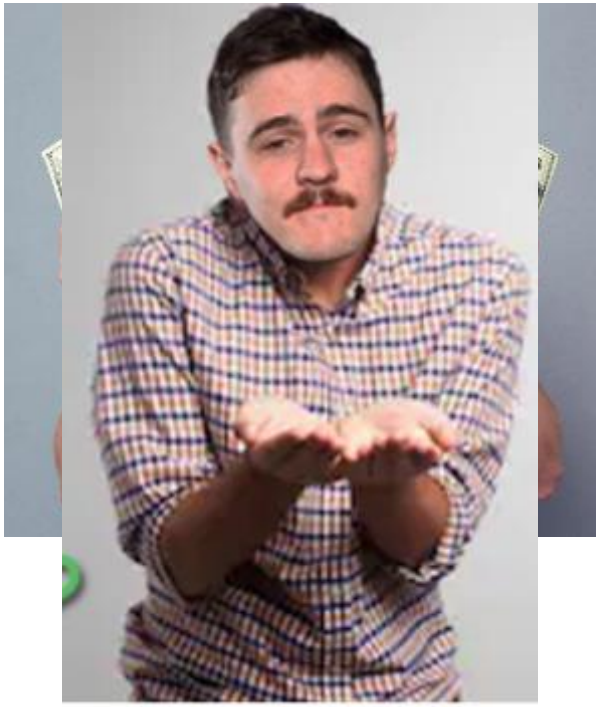
## Annual Expenses (non-salary)

| Annual Expenses | N | Average ($) | Range ($) |
|---|---|---|---|
| Educational programs (MS, Online cert) | 11 | $32,000 | $400 - $112,000 |
| Travel (conferences, registration, etc) | 15 | $7,673 | $1800 - $40,000 |
| EHR training | 11 | $3,200 | $1,000 - $5,000 |
| Computers/Workstations | 13 | $3,800 | $600 - $9,500 |
| Recruitment – Team building | 12 | $2,000 | $600 - $4,400 |
| Books, Journals, educational material | 8 | $1,370 | $100 - $3,000 |
| Recruitment – Graduation | 12 | $1,000 | $200 - $5,000 |
| Moving/Relocation | 4 | NA | $1,000 - $17,400 |
| External Speakers | 3 | NA | $2000 - $12,000 |

# CI FELLOWSHIP SURVEY(N=17)

## Funding Sources

- Hospital Administration
- Clinical Department
- Hospital IT
- Others
  - Research Department
  - Informatics department/CHIO Office
  - School of Medicine
  - Philanthropic donations



# THANK YOU

Questions?

kkoche1@uic.edu

tpatel78@uic.edu

npageler@stanfordchildrens.org