Principle Objectives

- Improve health equity
- Provide high quality, safe and reliable care
- Demonstrate value, adopt performance benchmarking
- Develop human capital
- **Lead in Medical Education & Clinical Investigation Relevant to Vulnerable Populations**
Legendary Health System
Risks of Research at CCHHS

• Vulnerable patient population
  – Susceptible to economic coercion
  – Language barriers
  – Low health literacy

• Study fatigue
  – Community and partner research

• May contribute to operational inefficiencies
Benefits of Research at CCHHS

• Clinical innovation – better patient care
  – HIV & cancer therapeutics
  – Introduction of information technology

• Institutional reputation
  – Critical for housestaff training program
  – Faculty recruitment and morale

• External partnerships
  – Public health agencies, foundations
Research Portfolio at CCHHS, 2015

- **IRB**
  - 242 projects reviewed

- **Extramural funding**
  - 81 funded projects: $16 million during 2015
    - Split between research (2/3) & service (1/3) grants
  - <1% of Federal funding for Chicago area
Vulnerable Patient Research at CCHHS

- **Housing for Chronically Ill Homeless**
  - Case management & housing: ↓ ED visits & hospitalizations
  - *JAMA, 2009*

- **Heroin Triggers Life Threatening Asthma**
  - Urine tox screen + for opiates, 60% vs 7%
  - *Chest, 2003*

- **Death among Women with HIV in Antiretroviral Era**
  - Depression, injection drug use, smoking increased mortality
  - *Am J Med, 2002*
HIV Care: CORE Center Funding

• Optimizes care—from rapid HIV testing through engagement in care and therapy trials
  – Reduces community transmission
  – Less toxic therapies provided for patients whose virus is resistant to available drugs
  – In the last five years, patients enrolled in therapy trials (~$1.98 million for drugs)
Pre-exposure HIV Prophylaxis: CORE

- ~1 in 4 young black men in Chicago who have sex with men are HIV infected.
- 3-7% in CCHHS community acquire HIV per year
- Pre-exposure prophylaxis (PrEP) 90% effective
  - PrEP failures due to non-adherence
    - Acceptability to high-risk individuals, including women
    - Increase adherence through social media & texting
    - Evaluate long-acting injectable PrEP (every 2 months)
    - 160 patients enrolled to date (drug costs ~$1.3million)
Hepatitis C: CORE Center

- CCHHS: 13% infected
- New agents cure disease with low toxicity
  - Twenty patients enrolled over 5 years (~$80k each), ~$1.6 million
- First use of Fibroscan in IL. Stages liver fibrosis without a liver biopsy, avoiding costs and risk to the patient
Emergency Medicine Research Program

• Asthma Action Plan
  – Partnership with undergrads as research assistant volunteers

• Expertise in bedside ultrasound
  – Leading enrollment site to evaluate use of ultrasound to diagnose kidney stones
Oncology Research: Provides State of the Art Cancer Care

• Minority Underserved Community Oncology Research Program: One of 12 sites, 2002-2019
• 1400 Patients enrolled, 80% minorities
• Current trials
  – Lung (13); Breast (10); Colorectal (4); Head & Neck (3); Prostate, Hematologic, Gyne (2); Pancreas (1)
Infrastructure for Learning Health System

In a learning health care system, research influences practice and practice influences research.

EVALUATE
Collect data and analyze results to show what works and what doesn’t.

ADJUST
Use evidence to influence continual improvement.

IMPLEMENT
Apply plan in pilot and control settings.

DESIGN
Design care and evaluation based on evidence generated here and elsewhere.

DISSEMINATE
Share results to improve care for everyone.

INTERNAL AND EXTERNAL SCAN
Identify problems and potentially innovative solutions.
Infrastructure for Learning Health System

Research Data Warehouse (RDW)

Investigators & Clinicians Committed to Underserved Populations
Homelessness, Substance Use, Detainees, HIV, Asthma, Cancer
RDW Funding: Chicago Prevention Epicenter

- CDC funded: 1999-2020
- Promote patient safety through infection prevention
Infrastructure for Learning Health System

* Augments graduate medical education
  Since 2014, the RDW provided data for >55 research requests

* Patient safety
  Bloodstream infection detection algorithm
  Algorithm to flag ventilator associated events
Infrastructure for Learning Health System

Webform Integration with RDW

Research Data Warehouse

Investigators & Clinicians Committed to Underserved Populations
Homelessness, Substance Use, Detainees, HIV, Cancer & Palliative Care
Screening, Intervention & Referral for Substance Use Disorders (SBIRT)

• Funded by Substance Abuse & Mental Health Services Administration
• Over 25,000 patients evaluated by counselors
  – Over 3k referred for specialized treatment
    • 1.4k for methadone; 1.2 for alcohol treatment
• Medication Assisted Treatment
  – Over 100 treated in house since 2/2016
Infrastructure for Learning Health System

Legacy
- Ongoing substance use evaluations, 10+ years
- Smoking cessation
  - Quit rate ~50% higher than national estimates
- Asthma evaluation & education
- Colon cancer screening: Mailed tests pre-appointment
- Stroke center certification

Webform Integration with RDW

Research Data Warehouse

Investigators & Clinicians Committed to Underserved Populations
Homelessness, Substance Use, Detainees, HIV, Cancer & Palliative Care
Infrastructure for Learning Health System

Audio Computer Assisted Self Interviews

Webform Integration with RDW

Research Data Warehouse

Investigators & Clinicians Committed to Underserved Populations
Homelessness, Substance Use, Detainees, HIV, Cancer & Palliative Care
Multilingual Audio Computer-Assisted Self Interviews

• CDC funded trial evaluated screening patients for intimate partner violence
• AHRQ funding evaluated patient-reported outcomes in complex patients
  – Quality of life & symptom burden
Infrastructure for Learning Health System

Ongoing use of ACASI
- Assessment of social support needs for cancer patients
- Symptom burden used in model to predict hospital readmission

Investigators & Clinicians Committed to Underserved Populations
Homelessness, Substance Use, Detainees, HIV, Cancer & Palliative Care
Infrastructure for Learning Health System

- Research Data Warehouse
- Webform Integration with RDW
- Multilingual Audio Computer Assisted Self Interviews
- Real-time Message Processing & Text Messaging

Investigators & Clinicians Committed to Underserved Populations
Homelessness, Substance Use, Detainees, HIV, Cancer & Palliative Care
Text Messages: Retain HIV Patients in Care

• Funder: Center for AIDS Research
  – Patients off treatment have poor outcomes and increase transmission
• Real-time messages sent to a case manager when out-of-care patients present to CCHHS

*83% of contacted patients re-engaged in care
Infrastructure for Learning Health System

Chicago Community Trust
- Funded ongoing use of system, evaluated for multicenter use

- Real-time Message Processing & Text Messaging
- Multilingual Audio Computer Assisted Self Interviews
- Webform Integration with RDW
- Research Data Warehouse

Investigators & Clinicians Committed to Underserved Populations
Homelessness, Substance Use, Detainees, HIV, Cancer & Palliative Care
Next Steps

- Research Data Warehouse
- Webform Integration with RDW
- Multilingual Audio Computer Assisted Self Interviews
- Real-time Message Processing & Text Messaging
- Patient-reported outcomes
- Predictive analytics
- Geocoding: Population health initiatives
- External partnerships

Investigators & Clinicians Committed to Underserved Populations: Homelessness, Substance Use, Detainees, HIV, Cancer & Palliative Care
PCORI & CDC: Multicenter Networks
Ethical Research

~ Subjects should not be selected due to privilege or vulnerability

Emanuel, JAMA, 2000

CCHHS IRB

• Advocates for vulnerable subjects (e.g., detainees, HIV+, impaired decisional capacity)
• Appropriate, but not coercive, compensation
• Promotes inclusion of Spanish speakers
• Jail and mental health representatives protect such populations
• No recent suspension of activities
Research challenges within CCHHS

• Research timelines require responsive entity
  – Rapid hiring, part-time & temporary workers, and no hiring freezes
  – Purchasing of supplies critical

• Fiscal intermediary
  – Difficult for system to receive funds directly and efficiently allow PIs to expend funds
    • Lost indirect cost capture

• Provision for CCHHS staff time dedicated to research
Recommended strategies

• Develop CCHHS dept. of research to support:
  – Pre-grant (application & biostatistics)
  – Post-grant (biostatistics, IRB, accounting, reporting)
  – Research compliance

• Develop capacity to receive, use and track funds in dedicated departmental research budget lines

• Employment process to hire into time sensitive positions (e.g. research assistants)

• Supply chain/purchasing solution
Recommended strategies

• Pursue extramural funding for innovative care delivery solutions (HRSA, CMS)

• Develop Innovations Center
  – Improve translation of research to provision & evaluation of high quality, safe, efficient care
  • For CCHHS as a provider & CountyCare population
Investigators & Clinicians Committed to Underserved Populations

Homelessness, Substance Use, HIV, Cancer, Asthma, Detainee Health