What are the Implications of our "Innovations?"

Regis College President's Lecture Series

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Currently
- CEO - Results International Research, Consulting & Solutions
- External Relations Chair, Board of Directors - Workplace Fairness
- Board of Directors - YMCA Virginia Beach, VA

Projects/Clients/Previous Activities
- Environmental/Public Health Research Assistant - WHO
- Environmental Health Epidemiology Fellow at the U.S. EPA
- Cyber Security Statistician - US Marine Corps Operational Testing
- Senior Managing Epidemiologist - Armed Forces Health Surveillance Division; Defense Health Agency
- Sr. Scientist - Atlantic Fleet, US Naval Medical Public Health Ctr
- STEM Education Analyst - the National Science Foundation
- Dengue Fever Vector Capacity Modeler - Colorado State University
- Biostatistician - Vaccine Testing Ctr at Fletcher Allen Hospital

Education
- B.A in mathematics from Colorado Mesa University
- M.S in Biostatistics from Univ. of Vermont
- Graduate Institute for Public Health from Johns Hopkins School of Public Health
- M.S in Public-Environmental Health Epidemiology from Colorado State University
- MLS/LLM in International Environmental Law from the Univ. of Auckland
- M.A in International Science and Technology Policy from The George Washington Univ.
- PhD in Ecology with Chemical/Biological Engineering from Colorado State University

Key Informing Insights

➢ COVID-19
  ○ Sr. Bioinformatics Coordinator State of Maine
  ○ Directing Epidemiologist of Rural Response
  ○ External Consultant Colby College's COVID Task Force
➢ World Health Organization & IHME
  ○ Global Burden of Disease
➢ US Navy Jet-Fuel Contamination/Exposure at Joint Base Hickam-Pearl Harbor

__Theme:__ Innovation Tools for
Data Capture, Data Monitoring, Data Quality-Security

What are the cybersecurity issues? (part 1)

- Important to keep in mind throughout the discussion-- what is
  - Cyber
  - Security
  - Cybersecurity in healthcare

- ….and …what do we actually mean when we say
  - 'Safe'
  - 'Secure'
  - 'Resilient'

How is it all paid for?

- Will insurance continue to pay for virtual visits/home visits
    - do they really increase access?
    - are some left behind?

- Yes…and No
    - Depends

What about the policy changes that are necessary for providing care across state lines?

- Are there changes necessary in the ACA?
  - Affordable Care Act…revisions?

- ACA and US Healthcare is like a patient in pre-hospital care --- we in the industry must
  - Check-Call-Care…. & monitor/re-assess/adjust
  - Airway-Breathing-Circulation…. & monitor/re-assess/adjust

What is the cost of the new technologies – they are very expensive.

- Are they widening the health care gap or promoting equity?
  - The challenge of R&D, Capitalism and Policy in Healthcare
  - US Healthcare [policy] often conflates equity and equality and what it means to 'have access'

A Federal to State to County/Community Perspective

Recall Presentation 'Theme':

Innovation Tools for Data Capture, Data Monitoring, Data Quality-Security

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Innovation Tools for Data Capture, Data Monitoring, Data Quality-Security

- Again, like a patient:

  - We can't monitor what we can't measure

  - We can't fix what we aren't monitoring

  - …we can't do anything with data we don't know we're missing

CDC's Data Modernization Initiative (DMI)

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CDC Data Modernization Initiative | A Roadmap of Activities and Expected Outcomes

ACTIVITIES	SHORT-TERM OUTCOMES	INTERMEDIATE OUTCOMES	LONG-TERM OUTCOMES
If we (CDC and partners) do this ...	... then we expect these changes to occur ...	... which will lead to ...	... our ultimate goals.
COORDINATE PEOPLE AND SYSTEMS			
Create interoperable systems: federal, state, local, and healthcare	**Increased collaboration, communi-nication, and messaging** among CDC and partners	**Effective coordination** on complex health and emergency response challenges	**CDC can rapidly identify and effectively mitigate emerging threats**
Coordinate investments, decisions, and policies across CDC and with partners	**Reduced data collection and reporting burden** at state, tribal, local, and territorial levels	Timely and complete **data reporting to CDC**	
Make data sharing easier through common policies, practices, and standards	Improved **data sharing and interoperability** through common standards like HL7® FHIR®	Efficient, secure **data access and exchange between systems** across the country	**Trusted data promotes evidence-based behaviors, interventions, and solutions to protect health**
Advance academic and private partnerships	Increased capacity to **quickly analyze, interpret, and act on data**	**A more comprehensive picture** to improve decision-making and protect health for all	
ACCELERATE DATA FOR ACTION			
Identify data for priority public health needs	**Increased electronic reporting** and specific enhancements to flagship CDC surveillance systems	Real-time, linked systems that **recognize threats early** to inform timely response	**Every American has equal opportunity to attain the highest level of health possible**
Upgrade and modernize IT infrastructure	**Stronger workforce** in data science, analytics, modeling, and informatics	**A highly skilled workforce** that applies state-of-the-art data skills and tools	
Strengthen the data science workforce	**Targeted real-time communication** of data and results	**High-quality information and guidance** to protect people's health	
Adopt open standards and tools while protecting data security			
Translate data into evidence-based recommendations			**All people have the right information at the right time to make decisions**
SUPPORT STRATEGIC INNOVATION			
Seek partner-driven data solutions	Integration and use of data from **new or non-traditional sources**	**Open-source, enterprise-level technologies** and coordinated systems	
Develop next-generation tools (e.g., modeling, visualization, predictive analysis, machine learning)	Improved pathways to explore, develop, and **deploy next-generation technologies**	New approaches to **address present and future threats**	**Our country is better prepared for, and protected from, all types of public health threats**
Strengthen predictive analytics and forecasting	Quick, continued data analysis with adjustment of modeling in real time		

CDC's Data Modernization Initiative (DMI)

- Multi-year, billion-plus dollar effort to modernize core data and surveillance infrastructure across the federal and state public health landscape.

  - Not just about technology, putting the right people, processes, and policies in place to help us solve problems before they happen

  - reduce harm caused by problems that do happen

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What are the cybersecurity issues? (part 2)

- Systems are only a strong as the weakest link
  - VPN's help, but how is the patient/customer and 3rd-party securing their data?

- Value is just a Cost-Benefit Analysis
  - Is the pay-off worth it? To the Ransomware creators/users - yes!

- Time is never on our side
  - With time, motivation, opportunity and pay-off, security-breaches are a matter of when not if
    - OPM Federal breach

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What are the ethical issues

- How is personal data collected being used
  - is it sent to pharmaceutical companies for research – is it used for advertising?
- Is it in some massive database that can be hacked?
- Is the data being used in research to improve the public's health?

Questions?

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