JAMIA Journal Club

• May 14, 2020
• 3:00 – 4:00 PM, ET
How to Participate

• Speaker and Moderator converse for 35 minutes
• 25 minutes Q&A

• Submit questions:
  – Throughout webinar, type questions into question box on lower right of screen
• Complete evaluation through link in chat box
Disclosures

The following speakers and planners, and their life partners, have no relevant financial or non-financial relationships with commercial interests or other entities:

Speaker: Jeff Reeves

JAMIA: Michael Chiang, Yizhen Zhong, Maryam Zolnoori

AMIA: Susanne Arnold, Pesha Rubinstein
Webinar Objectives

After this live activity, the participant should be better able to:

• Leverage the capabilities of the EHR to support outbreak management

• Anticipate implementation challenges required by pandemic management while maintaining high-quality non-pandemic related services to the community
Maryam Zolnoori is a Postdoctoral Research Fellow in the department of Health Sciences Research at Mayo Clinic. She is interested in development and evaluation of text mining and machine learning algorithms, and their applications in promoting patient-centered care, specifically for patients with mental disorders.

Her current research is on developing machine learning algorithms to identify patients with depression who are the high risk of emergency department visit and hospitalization.
Yizhen Zhong is a PhD student in Biomedical Informatics at Northwestern University. Her research focused on pharmacogenomics in minority populations.

She previously characterized the role of local ancestry in gene expression regulation in admixed populations and currently works on using machine learning methods to identify biomarkers that are predictive of drug response variability.
Q&A

• Type your Q into the question box on lower right of screen within GoToWebinar

We encourage you to send questions during the presentation!
JAMIA Journal Club Selection

Author Bio

J. Jeffery Reeves, MD

• Physician Lead for Perioperative Improvement and Informatics at UC San Diego Health
• General Surgery Resident at UCSD
• Interests: utilizing big data and clinical informatics to improve healthcare delivery and reduce costs with a focus on the surgical environment.
Introduction

December, 2019

A Novel Coronavirus from Patients with Pneumonia in China, 2019

Na Zhu, Ph.D., Dingyu Zhang, M.D., Wenling Wang, Ph.D., Xingwang Li, M.D., Bo Yang, M.S., Jingdong Song, Ph.D., Xiang Zhao, Ph.D., Baoying Huang, Ph.D., Weifeng Shi, Ph.D., Roujian Lu, M.D., Peihua Niu, Ph.D., Faxian Zhan, Ph.D., et al., for the China Novel Coronavirus Investigating and Research Team

March 11, 2020


March 13, 2020

Proclamation on Declaring a National Emergency Concerning the Novel Coronavirus Disease (COVID-19) Outbreak

Issued on: March 13, 2020
Introduction

• Faced new cases of COVID-19
• In addition to new operational processes needed informatics infrastructure
• >95% of US health systems have an EHR
• All phases of care interface with EHR
• Opportunity to leverage technology to enhance patient care
Prior Literature

Perspective

Virtually Perfect? Telemedicine for Covid-19

Judd E. Hollander, M.D., and Brendan G. Carr, M.D.

An interactive web-based dashboard to track COVID-19 in real time

Ensheng Dong • Hongru Du • Lauren Gardner

Published: February 19, 2020 • DOI: https://doi.org/10.1016/S1473-3099(20)30120-1
Lessons from Ebola?

Viewpoint
December 17, 2014

Ebola in the United States
EHRs as a Public Health Tool at the Point of Care

Kenneth D. Mandl, MD, MPH¹,²

• “What if, in the midst of a crisis in which workflows, policies, procedures, and operations must be altered, the Centers for Disease Control and Prevention (CDC) could distribute an app to emergency departments as easily as a software developer submits an app to the Apple App Store?”

• “Public health data resources—in this case, for example, geomapped Ebola incidence that could be used in a clinical decision support system to update the prior probability that a patient is at risk.”
Objective

• To describe the implementation of technological support important for optimizing clinical management of the COVID-19 pandemic.
Methodology

Setting: University of California, San Diego Health

• Regional academic medical center
• 2 acute care hospitals, 2 EDs, several urgent care centers
• Full complement of ambulatory services
• Utilizes Epic (Verona, WI)
• Hosts UCI, UCR, Student Health and 300+ affiliate physicians
Methodology

• Local Situation:
  – San Diego County served as quarantine site for Chinese expatriates and cruise ship passengers
  – Experienced early community spread

• Incident Command Center established on February 5, 2020

San Diego Declares Coronavirus Emergency, U.S. Case on 2nd Cruise Ship

— Also, Africa has its first case, as WHO cautions against use of 'pandemic'

by Molly Walker, Associate Editor, MedPage Today
February 18, 2020
Incident Command Center

- “Designed to enable effective and efficient incident management by integrating a combination of facilities, equipment, personnel, procedures, and communications.”

- Our structure includes:
  - Alternating commanding operator
  - Physician leaders
  - Administration
  - Facility manager
  - Information services

- Identified technological and electronic health record-related needs to support the crisis

### Health IT Needs Identified

<table>
<thead>
<tr>
<th>Electronic Health Record Tools for Managing a Pandemic</th>
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</thead>
<tbody>
<tr>
<td><strong>Screening Protocols</strong></td>
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<tr>
<td>Triage of Patient Phone Calls</td>
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<td>Required Registration/Check-In Screening Questions for All Patients</td>
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<tr>
<td><strong>System Level EHR-Templates</strong></td>
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<tr>
<td>Updated with Current Infection Control Specialist and Command Center Information</td>
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<tr>
<td><strong>Inpatient, Emergency Department and Ambulatory Order Panels</strong></td>
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<tr>
<td>Decision support for testing protocol</td>
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<tr>
<td>Embedded modifiable required isolation orders</td>
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<tr>
<td>Detailed personal protective equipment needs for providers</td>
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<tr>
<td>Detailed instructions for proper specimen collection</td>
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<tr>
<td><strong>Reporting and Analytics</strong></td>
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<tr>
<td>COVID-19 Operational Dashboard</td>
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<tr>
<td>Tracking of COVID-19 and Personal under Investigation (PUIO) in EHR embedded database</td>
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<tr>
<td><strong>Communication Channels</strong></td>
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<tr>
<td>EHR-integrated secure messaging</td>
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<tr>
<td><strong>Artificial Intelligence</strong></td>
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<td>Real-time algorithm to assist in diagnostic imaging</td>
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<td><strong>Patient Facing Technology</strong></td>
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<td>Telemedicine – Video Visits for Outpatient Clinic Encounters</td>
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<tr>
<td>Smart tablets in patient rooms w/ video capabilities</td>
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</tbody>
</table>
Figure 1. Travel and symptom screening. The above screenshot demonstrates the required screening, as viewed by front desk staff, that was added to the registration/check-in process for all patients.
EHR Based Templated Phrases

.UCSDCOVID19AMBULATORY

Ambulatory COVID-19 Evaluation
(last updated 4/9/2020)

GUIDANCE EVOLVES AS OUR TESTING CAPACITY EVOLVES AND THE COVID-19 OUTBREAK EVOLVES. THANK YOU FOR WORKING WITH US AND UNDERSTANDING GUIDANCE IS CHANGING QUICKLY.

Check-in
1. All patients with symptoms of an acute respiratory viral infection and personnel evaluating should be given a surgical mask as soon as they enter the clinic (give at front desk or front door). Make sure the patient is instructed to wear over their nose and mouth and asked to use an alcohol hand rub on their hands.

2. Patients who have respiratory symptoms (fever, cough, shortness of breath) should be placed immediately in a private room, alert physician. Any patient companion should also wear a surgical mask. All staff interacting face to face with patient (i.e. vitals, exam, testing, etc) should be instructed to wear a surgical mask, eye protection, gown, and gloves when interacting with the patient.

Evaluation of patient:
Does patient have a fever, a new cough or shortness of breath (SOB) {Yes / No:63} 
Other symptoms seen in COVID 19 patients include NEW chest tightness, anosmia
## EHR Based Templated Phrases

<table>
<thead>
<tr>
<th>Smart phrase</th>
<th>Setting of use</th>
<th>Description of content</th>
</tr>
</thead>
<tbody>
<tr>
<td>.UCSDCOVID19TRIAGE</td>
<td>Phone or in person patient triage</td>
<td>Updated travel and symptom screening, testing criteria, and clear guidance on best setting and location of patient care</td>
</tr>
<tr>
<td>.UCSDCOVID19PATIENTCONCERNS</td>
<td>Phone or in person patient encounter</td>
<td>Detailed information on frequently asked questions concerning COVID-19</td>
</tr>
<tr>
<td>.UCSDCOVID19HOMEISOLATION</td>
<td>When instructing patients on home isolation</td>
<td>Isolation information for patients, including the discontinuation of home isolation</td>
</tr>
<tr>
<td>.UCSDCOVID19AMBULATORY</td>
<td>Ambulatory screening or testing</td>
<td>Clinical decision support on testing criteria, recommended additional work-up, admission criteria/protocol, and discharge information</td>
</tr>
<tr>
<td>.UCSDCOVID19URGENTCARE</td>
<td>Urgent Care/ED screening or testing</td>
<td>Clinical decision support on testing criteria, recommended additional work-up, admission criteria/protocol, and discharge information</td>
</tr>
<tr>
<td>.UCSDCOVID19VISITORSCREENING</td>
<td>Clinics or inpatient units</td>
<td>Standard documentation of any screening of patient visitors for symptoms of infection</td>
</tr>
<tr>
<td>UCSD COVID-19 WORK EXCUSE</td>
<td>Work excuse letter</td>
<td>Templated excuse letter for providers to recommend working from home</td>
</tr>
</tbody>
</table>
Order Panels

COVID-19 Coronavirus Diagnostic Testing and Isolation Orders

This COVID-19 order is intended to be used in patients with symptoms suggestive of novel coronavirus infection.

It includes contact and droplet isolation orders, and the patient will be labeled as "Rule Out COVID-19" in Epic.

Do NOT use this order option for pre-operative or pre-procedural screening of asymptomatic patients.

COVID-19 Coronavirus Diagnostic Testing and Isolation Orders

Given the increased capacity for testing, an ID approval code is no longer required to obtain this test.

Note: If the patient is in the ICU, or is receiving aerosol-generating procedures, airborne isolation is required in addition to the standard contact and droplet isolation. Select the airborne isolation order below if that is the case. The critical care attending will determine whether an airborne isolation room is clinically indicated.

To conduct testing for COVID-19, only a single nasopharyngeal specimen needs to be obtained.

The lab is no longer automatically running a respiratory pathogen nucleic acid (RPNA) panel when a COVID-19 test is ordered. If also you wish to order an RPNA, select the RPNA order as well.

COVID-19 Coronavirus Detection Assay at UCSD Labs
Routine, ONCE, First occurrence today at 1015

☐ Upper Respiratory Pathogen Nucleic Acid Detection Test
This RPNA test is being ordered in conjunction with a COVID-19 test. Both tests can be run by the laboratory with only a single nasopharyngeal swab specimen.

© 2020 Epic Systems Corporation. Used with permission
Daily COVID-19 Dashboard
Dashboard Additions
Patient Facing Technology (TeleHealth)

- Outpatient encounters transitioned from in person to video visits
- Multi-provider capable
- Use expanded to inpatient
Rapid Expansion of TeleHealth Capabilities

UCSD Daily Ambulatory Patient Encounters

- In-Person
- Telemedicine

All Specialties
TeleHealth eConsent

Non-Patient Signature Information

Patient signing for self?
- Yes
- No - Signed by other

Relationship to Patient:
- Telehealth - Video Visit

Signed by (if other than Patient):
- Signature Not Applicable

Date:

Reason, if not signed by patient:

Telemedicine Video Visit - Telehealth Consent by Patient. This agreement was witnessed by the healthcare provider listed below.
EHR-Integrated Secure Messaging

Chat Securely in Hyperspace

Chat securely with your colleagues from your computer. Please refer to UCSD Health Medical Center Policies (MCP’s) on the appropriate use of Epic Secure Chat.
Artificial Intelligence in Diagnostic Radiology
Challenges and Limitations

• Usual process out the window
• Bandwidth of Information Services department put to the test
• Approval from multiple stakeholders
  – Daily engagement system
• Maintaining attention on non-COVID care
  – Usual projects put on hold
Updates Since Publication

- Continual additions to templated phrases and order sets
- BPA alerts for testing orders prior to procedures
- Order integration with transferring patients
- Improved result routing and auto-release
- Resource allocation triage scoring
- Data sharing across UC – System
Implications of the Findings

• Serve as a framework for health systems across the world
• Highlights the importance of investment in information services
• Alignment between operational and information teams
• Enable preparedness for future surges or yet unknown challenges
What’s Next?

https://coronavirus.jhu.edu/us-map
Next Steps for Health IT in COVID-19

• Data sharing across health systems, regions, states, and countries
• TeleHealth – finding the appropriate balance

Interoperability of healthcare data is essential to a Learning Healthcare System.
TeleHealth vs In-Person

UCSD Daily Ambulatory Patient Encounters

Medical Specialties

Gastroenterology

Cardiology

Neurology

Medical Oncology

Obstetrics/Gynecology

Surgical Specialties

Surgical Oncology

Urology

Minimally Invasive Surgery (Bariatric)

Orthopaedic Surgery

Breast Surgery
Next Steps for Health IT in COVID-19

• Enabling return to work/school/life
• 3T Stategy – Testing, tracing, and treatment

Introducing the UC San Diego Return to Learn Program

Program makes COVID-19 testing available to thousands of students in effort to track the novel coronavirus and better position the campus to resume in-person activities in the fall.

1. San Diego Health & Human Service Agency (HHSA) Director Nick Macchione
Health IT and Contact Tracing

Published online 2008 Mar 26. doi: 10.1016/j.ajic.2008.01.002

Opportunities and challenges in utilizing electronic health records for infection surveillance, prevention, and control

Ashish Atreja, MD, MPH, a, * Steven M. Gordon, MD, a Daniel A. Pollock, MD, b Russell N. Olmsted, MPH, CIC, c Patrick J. Brennan, MD, d and Healthcare Infection Control Practices Advisory Committee

Fig 3
The shifting paradigm from current manual surveillance strategies to automated surveillance strategies with a focus on education and interventions. Image adapted with courtesy of Healthcare Purchasing News and Cardinal Health. 20
Health IT and Contact Tracing

• Case identification and remote monitoring
• Government database w/ access granted to hospitals, clinics, and pharmacies
• Centralized versus decentralized tracing through use of smart phones
Key Points/Lessons Learned

• COVID-19 required unprecedented response
• The EHR can be your friend, use it well
• Overview of specific EHR-based tools
• Strong relationship between clinicians and analysts is the most important aspect to successful integration of EHR-based tools
  – Clinical informatics!
Q&A

• Type your Q into the box on the lower right of screen

...  

• At end of webinar, please complete evaluation showing in the side panel
Upcoming JAMIA-JC

• Today’s webinar and slides archived at [https://www.amia.org/COVID19](https://www.amia.org/COVID19)
• The next JAMIA-JC will be on Thursday, June 11, 2019, 3:00 – 4:00 ET
JAMIA Journal Club is organized by JAMIA’s Student Editorial Board.

Of interest: Next week’s *Virtual Clinical Informatics Conference*

- **Student member rate:** $95
- **Student non-member rate:** $145

Webpage: [https://www.amia.org/cic2020](https://www.amia.org/cic2020)
This JAMIA Journal Club has now concluded.

www.amia.org