Dispatches from the Front: Virtual Care Models, Health Information Exchange, and Cancer Care During COVID-19

Clinical Informatics Responses to a Pandemic

April 9, 2020
This webinar series is designed to share informatics responses and discuss clinical informatics challenges to the COVID-19 pandemic

- In collaboration with AMIA’s Clinical Information Community of Practice, this session will feature AMIA members who are working to develop and deploy tools to manage COVID-19 patients in the local health systems, and across state-wide geographies.

- Panelists will discuss the critically important role of clinical informatics during the pandemic, including the facilitation of the rapid transition from traditional care modes to virtual care delivery, and informing the delivery and monitoring of inpatient care through the development of patient dashboards and remote monitoring.
Several additional webinars are being planned to highlight members of AMIA and the wider informatics community.

Visit AMIA.org/COVID19
The **AMIA Clinical Informatics Community of Practice** provides multiple levels of assistance to help members connect, learn, grow, and lead in the field, including:

- **Advocacy** – Official representation on the Board of Directors through appointed CI liaisons connects the CICOP community directly to the AMIA leadership.
- **Community** – The AMIA Connect online community provides access to 1000+ AMIA member diplomates as a resource for discussion, networking and peer advice. Meeting space at live events is provided for face-to-face business and social activity.
- **Educational Services** – AMIA hosts the annual Clinical Informatics Conference for 600+ practitioner attendees offering 70+ CME-eligible sessions. AMIA is ABPM’s designated partner in helping diplomates achieve continuing certification (CC) requirements.
- **Recognition and Designation** – Fellow status designation is offered to clinical informatics diplomates through the **FAMIA program** the Fellows of the American Medical Informatics Association.
- **Professional Development and Career Opportunities** – Conferences offer opportunities to present clinical informatics solutions and innovations as well as conference planning leadership roles.
- **Journals** – *ACI - Applied Clinical Informatics Journal* and *ACI Open*, the Official eJournals of AMIA and IMIA.
CME Information

Accreditation Statement
The American Medical Informatics Association is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.

Credit Designation Statement
The American Medical Informatics Association designates this live activity for a maximum of 1 AMA PRA Category 1 Credit(s)™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

The live webinar only offers CME credit. The recording on our website will be openly available for learners, but will not offer CME credit.

Check the Chat area for the link to the survey/credit claim.
Target Audience
Clinical and management-level physician informaticists and other healthcare professionals with an interest in clinical informatics.

Learning Objectives
After participating in this activity, the learner should be better able to:

● Explore colleagues’ organizational informatics responses to the COVID-19 pandemic.

● Apply relevant learnings about pandemic response to one’s own institution, including virtual care, HIE, and crowdsourcing to collect data on unique population
Disclosures

There is no commercial support for this CE activity.
All planners and presenters disclose that neither they nor their life partners have relevant financial relationships with commercial interests.
Moderator

➢ Jodi Kodish-Wachs MD, FAMIA, FAAPM&R, Physician Informaticist; Vizient; Chair, AMIA’s Clinical Informatics Community of Practice

Panelists (in order of appearance)

➢ Shaun Grannis, MD, FAAFP, FACMI, FAMIA, Vice President, Data and Analytics, Regenstrief Institute, Inc.; Professor of Family Medicine, Indiana University School of Medicine

➢ Ted E. Palen, PhD, MD, MSPH, Senior Clinician Investigator for Health Research and Manager of Clinical Reporting, Resource Stewardship, Colorado Permanente Medical Group

➢ Deepti Pandita, MD, FACP, FAMIA, Chief Medical Information Officer and Staff Physician, Hennepin County Medical Center

➢ Paul Fu, Jr., MD, MPH, FAAP, Chief Medical Information Officer at Los Angeles County Harbor-UCLA Medical Center, Clinical Professor of Pediatrics at David Geffen School of Medicine at UCLA, and Adjunct Professor of Health Policy and Management at the UCLA Fielding School of Public Health, Pediatric Hospitalist and Division Chief, Pediatric Hospital Medicine at Harbor-UCLA
Agenda

• Brief introduction to AMIA’s Webinar Series, clinical informatics, and the role of AMIA’s Clinical Information Community of Practice

• Clinical informatics during a pandemic – transitioning from traditional care delivery to virtual care modes, informing the workflow, and monitoring of inpatient care through patient dashboards and remote monitoring

• The development of structured documentation tools, tracking modules, staffing algorithms, predictive models
Health Informatics is the science of how to use data, information, and knowledge to improve human health, including the execution of scientific research, the delivery of health care services, and the promotion of public health. AMIA is the multi-disciplinary, inter-professional home for 5,400+ health informatics experts.
Shaun Grannis, MD, FAAFP, FACMI, FAMIA

Vice President, Data and Analytics
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Professor of Family Medicine
Indiana University School of Medicine

sgrannis@regenstrief.org
How HIE can support the COVID-19 response
How HIE Can Support COVID-19 Response

Shaun Grannis MD, MS, FAAFP, FACMI, FAMIA
Regenstrief Professor of Medical Informatics, IU School of Medicine
Professor of Family Medicine, IU School of Medicine
Vice President for Data and Analytics, Regenstrief Institute
sgrannis@regenstrief.org
EHR Integration: The Indiana Network for Patient Care (INPC)

**Data Management**
- Hospital
- Payers
- Labs
- Outpatient RX
- Physician Office
- Ambulatory Centers
- Public Health

**Data Repository**

**Network Applications**

**Data Access & Use**
- Hospitals
  - Results delivery
  - Secure document transfer
  - Shared EMR
  - Credentialing
  - Eligibility checking
- Physicians
  - Results delivery
  - Secure document transfer
  - Shared EMR
  - CPOE
  - Credentialing
  - Eligibility checking
- Labs
- Public Health
  - Surveillance
  - Reportable conditions
  - Results delivery
  - De-identified, longitudinal clinical data
- Payer
  - Secure document transfer
  - Quality Reporting
- Researcher
  - De-identified, longitudinal clinical data (CDM, l2b2)
  - Subject Recruitment
  - Clinical Trials
Surveillance & Predictive Modeling
Notifiable Condition Detector
Completeness

Timeliness

Table 3 Timeliness by data source

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Total N</th>
<th>Mean # days</th>
<th>Median # days</th>
<th>Max # days</th>
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<table>
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<th>Novel Coronavirus N gene</th>
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<tr>
<td>Staphylococcus aureus</td>
<td>93395-2</td>
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<td>Streptococcus pneumoniae</td>
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</tr>
<tr>
<td>Neisseria meningitidis</td>
<td>93395-1</td>
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</table>
The table below contains the results from 2020. A patient can have more than one result, and therefore can exist in this table more than once. As an example, a patient could have an Inconclusive result and a Not Detected result, and will then be counted in both areas.

Total Unique Patients represented in the table below:

<table>
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<tr>
<th>Result</th>
<th>Facilities</th>
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<td>Total Unique Patients:</td>
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<tr>
<td>NOT DETECTED</td>
<td></td>
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<tr>
<td>Total Unique Patients:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
How HIE Can Support COVID-19 Response

Shaun Grannis MD, MS, FAAFP, FACMI, FAMIA
Regenstrief Professor of Medical Informatics, IU School of Medicine
Professor of Family Medicine, IU School of Medicine
Vice President for Data and Analytics, Regenstrief Institute
sgrannis@regenstrief.org
Designing and implementing virtual care options and documentation tools during a pandemic
Dispatches from the Front During COVID-19 Pandemic
Virtual Care Models: Informatics Response

Ted E. Palen, PhD, MD, MSPH, FACP
Senior Investigator Institute for Health Research

Team:
Adam Carewe, MD, Director, Department of Medical Informatics
Dale Gold, MD, Department of Medical Informatics
Sean Riley, MD, Department of Medical Informatics

Colorado Permanente Medical Group
Why is a physician informaticist so important?
In less than a week switched from 10% of visits to 70%-90% visits virtual

Optimize Existing Virtual Modalities (infrastructure was in place)
- Telephone
- eMail
- Chat (text) with a Doc
- Video Visits (scheduled and “on-the-fly”)
- eVisits
- eConsults
Quickly Developed COVID-19 Documentation Tools

- **SmartNotes**
  - Guides clinician’s COVID-19 documentation
    - drop down check lists of symptoms
- **SmartOrders**
  - Guides who to test (based on CDC and state recs.)
  - Medication recommendations
  - Guide patients for care: home, office visit, drive through testing, urgent care, emergency department, direct admission
- **SmartPatient instructions (email, fax, patient portal)**
  - Home care instructions
  - Work excuses
Convert non-video virtual care to a Video Visit on the fly

Provider Help Text (Patient will not see this):
Optional: To Convert to an ad hoc VIDEO VISIT

Virtual Care Options for Patient Car Dispositions

- REF PC HOUSE CALL (aka REF HOME)
- E-Consult Infectious Disease
- E-Consult Pulmonary
- Appointment Desk
• Informaticians are Essential to Create and Update Tools for the EMR
  • Supports switch to modes of virtual care delivery
  • Speeds documentation
  • COVID-19 specific guidelines
  • COVID-19 specific patient instructions
  • Patient disposition to other virtual care options
  • Supports COVID-19 specific coding (ICD, CPT, internal documentation codes)
    • Enables tracking and surveillance
      • Cases
      • Diagnoses
      • Test results
      • Modes of care delivery
Thank you

Questions
Virtual Care Documentation: COVID Specific note

Chat Note

New COVID NOTE below 3/18/20
Select Chat Note or COVID Note

- CHAT NOTE

COVID CHAT NOTE updated 3/18/2020
Virtual Care Documentation: Symptoms Checklist

Symptoms: [Symptoms 255561: "Typical mild cold symptoms with NO trouble breathing"]

(Exposure to a COVID positive person - "close contact", defined as within 6 feet for more than 10 minutes in a small room:255621::"N/A - Community Exposure")

Asymptomatic

Typical mild cold symptoms with NO trouble breathing

Cold symptoms and Shortness of breath
Fever>100 F
Nausea/vomiting
Chest tightness
Other: ***
Follow up Visit for COVID symptoms
Virtual Care Documentation: Objective Findings
Yes, you can observe findings with certain virtual care
Virtual Care Documentation: Orders and Diagnoses

Smart Orders/PI

Chart Search for "COVID19 CO" Smart Set for updated CO Smart Tools Related to COVID19.

Asthma/Bronchitis/COPD Exac
Cold/URI (OTC/PI)
Flu/Tamiflu
GI (Constip / Diar / Naus)
Ob-Gyn (Vaginitis/Mastitis/OCP/Upreg)
PEDS RX Dosing (antibiotic)
PEDS Education (PI)
Physical Therapy
Pink Eye
SKIN/RASH: Allergic/Rash/Cellulitis/HSV/Zost
Sinusitis
STD Screening
UTI

Diagnosis Search:

Common Chat Diagnosis
Virtual Care Documentation:
COVID19 Specific Diagnosis Coding and Patient Instructions
Virtual Care Documentation:
KP Local, KP National, National Resources

We understand that you have concerns about Coronavirus. The situation is changing very quickly.
Coronavirus is a respiratory illness that can spread from person-to-person, just like the flu or the common cold. The symptoms and the risk of serious illness from Coronavirus are similar to influenza.
For more information, you can check the following resources:

KAISER’S CORONAVIRUS/COVID-19 E-VISIT (Use this link to get personal COVID advice 24/7 and find out your Risk, and also get specific advice on what to do):
https://healthy.kaiserpermanente.org/colorado-denver-boulder-mountain-northern/secure/appointments/e-visits

CORONAVIRUS/COVID-19 INFORMATION

CDC - What you need to Know about Coronavirus
Virtual Care Documentation: Patient Instructions
Virtual Care Documentation: Dispositions and EMS coding

Dispo: [Disposition (REQUIRED): 168120:: "Home Care ADVICE/Rx"]

Home Care ADVICE/Rx
Primary Care Appt - Routine {NON-COVID Options: 258075}
Primary Care Appt - Same Day
{NEW Virtual Advice Consult Pools Routed to: 257547}
Specialty Care Appt. (NEW. Only order E-consult for all referrals)
Urgent Care
Emergency Department
Escalate to TMC
Patient abandoned chat encounter prior to resolution and a firm decision
Confirm Existing Care Plan/Interim Advice

{VIRTUAL CODING CO: 813721}

{Telephone Time-Based Level of Service: 201360}
{Video Visit Time- Based Level of Service: 257570}

Dermatology [Must Route to Pool "P 20132"]
ENT [Must Route to Pool "P 20134"]
Gastroenterology [Must Route to Pool "P 20133"]
General Surgery [Must Route to Pool "P 20143"]
Ophthalmology [Must Route to Pool "P 20138"]
Physical Therapy [Must Route to Pool "P20786"]
Deepti Pandita, MD, FACP, FAMIA

Chief Medical Information Officer and Staff Physician

Hennepin Healthcare

Deepti.Pandita@hcmcd.org
Clinical informatics essentials during a pandemic -- an effective inpatient readiness plan, an efficient, effective dashboard and EMR indicator/alerts
AMIA WEBINAR
Deepti Pandita MD, FACP, FAMIA
Chief Health Information Officer
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Elements of Inpatient Readiness Plan

• Identification and management of ill patients with COVID-19
• Staffing and equipment
• Communication, training, change management
• Virtual care
• Surge planning and management
• Data, dashboards and analytics (Internal and External)
Identification and Management of ill patients

• Alerts, banners,BPA’s- Best Practice Alert for PUI (Patient under investigation) and COVID-positive patients (Question--How to include patients tested and positive from outside your system)

• Banner visible to ALL involved in patient care regarding the PUI or Covid positive status (don’t forget EVS, Phlebotomy, Interpreters, spiritual care, etc.)

• CDS based on above and screening criteria to suggest order sets: Separate ones for Med Surg vs ICU admission. We added medications undergoing trails in our system in our order sets, or these can be added ad hoc.

• Extend warning across ALL log in contexts-ED/OR/Inpatient/Ambulatory

• Risk Nomogram and Predictive Analytics for Deterioration-guidelines still evolving-SOFA, MEWS, Wuhan deterioration index (BMJ: https://doi.org/10.1101/2020.03.17.20037515), all acceptable
VIRTUAL CARE

- **VIRTUAL CARE FOR SAFETY OF STAFF** and Other patients and to maximize resources.

- Video communication into patient rooms

- All monitors, pumps and vent data onto a virtual display board (could be as simple as a camera pointed to the monitors feeding the display board)

- Video or audio/video communication with care teams (E-consults, Families, Interpreters)

- Time and money present hurdles, too, as tele-ICU technology can be expensive and take weeks to be delivered and installed
Analytics Components - Internal Metrics

ELT/HICS Dashboard

Demand
1. Current Demand
   - # COVID/Rule Out patient
   - Infection rate (% positive results)
   - Viral Clinic volume
2. Predicted Demand - Modeling (next 7 days/14 days)
   - Estimated vent use
   - Staffing needs
   - Equipment
   - ICU beds
   - Non ICU beds

Capacity/Supply/Resources
1. Current available/used
   - Beds (ICU vs Non ICU)
   - Vents
   - Equipment
   - Meds
   - Staffing

Preparedness
1. Surge Capacity (based on estimated ramp up curve to the peak)
   - Equipment/Staff/beds/Vent/Meds*
2. Upskilling staff in providing care (RN/MD/APP)
3. PPE Competency
4. Internal staff infection rate
5. Low need/redeployment utilization
6. Technology
7. Cycle time - presentation to diagnosis
   - Lab turnaround/backlog
8. Ideas to redesign care to minimize exposure

Outcomes
1. Recovered patients (count and percentage)
2. Deaths (count and percentage)
3. Overall quality measures
4. Financial measures

Notes:
Proposed Tier 3 items in Blue
*1 COVID ICU Patient = ?? RN's/HCA, equipment; 1 COVID Non ICU Patient = ?? RN's/HCA, equipment

Hennepin Healthcare

04/09/2020
Analytics and Data-External Components

• Registries
• Virtual Data Warehouse
• Trials (shared across systems)
• Department of Health
• Disaster management and State Incident Command
• Care systems in your region/state/nation
Staffing and Equipment

Surge Planning

• **Staffing and Equipment**
  • Show PPE and staffing data within EHR via dashboards
  • Vent capacity/availability visible in EHR

• **Surge Plan**
  • Build the overflow areas as departments into the EHR
  • Give access to employees access to these surge departments
  • Anticipate minimal documentation needed – provide templates for this (example .surgedocument)
  • Review policies around Resident supervision, verbal orders, etc.
  • Communicate with other systems in town if going to be sharing staffing. Nursing or other resources and what will that off site structure needs be for Informatics tools and resources
Communication and Change management

- Communications must successfully instruct, inform, and motivate appropriate self-protective behavior, update risk information, build trust in officials, and dispel rumors.
- Leverage your Incident command Communication channels to communicate any IT/EHR changes
- In case of surge have a plan how an “All Hands On Deck” page or other communication can be sent out.
- Review your downtime procedures
- Have a repository for any COVID-specific communication for clinical teams as a one stop shop for learning about any new training and other relevant information.
Paul Fu, Jr., MD, MPH, FAAP

Chief Medical Information Officer at Los Angeles County Harbor-UCLA Medical Center
Clinical Professor of Pediatrics at David Geffen School of Medicine at UCLA
Adjunct Professor of Health Policy and Management
UCLA Fielding School of Public Health
Pediatric Hospitalist and Division Chief Pediatric Hospital Medicine at Harbor-UCLA

quark@ucla.edu
Data and information models and architectures to support HIT-enabled evidence-based care delivery during a pandemic
Origins

#covid19nCancer
~3/16

Aakash Desai

#CCC19
Symplur
@COVID19nCCC
478 followers as of 4/8
We are creating and offering our online spiritual resources to people around the world at this time, free of charge. However, until further notice we have also suspended our residential workshops and events, which we rely on for 80% of our income. We know that many people are facing challenging situations at the moment. If you feel passionate and are able to make a donation to help the Findhorn Foundation to support people around the world, it would be a real blessing. Thank you.

Freely Available to View Here

Climate Change & Consciousness Conference
ccc19.org on March 25th

The COVID-19 & Cancer Consortium

THE COVID-19 AND CANCER CONSORTIUM

Please click the button below to report on a cancer patient with COVID-19. See below for eligibility.

ACCESS THE SURVEY
Participating Institutions April 8 (N=79)
The driving goal of the consortium is to collect prospective, granular, uniformly organized information on cancer patients infected with COVID-19 at scale and as rapidly as possible.
Data Request

• Identify and report ALL cases of COVID-19 in patients with current or prior history of invasive malignancy
  • Asymptomatic outpatients also!
• 30-day and 90-day outcomes post-infection
Institutional Participation Value Proposition

- Highly variable COVID-19 disease epidemiology by geographic area
- Unclear trends from single institution numbers (variable ‘n’)
- Unclear immediate vs long-term impact by delay of elective visits, infusions, and surgeries on overall survival
- Participating in crowdsourced data sharing may decrease translational cycle time (insight to intervention) and identification of high-risk groups
Summary:

- Data Planning (‘easy way to do the right thing’ with data capture, management, audits, security)
- Data Collection (researcher, provider, participant, patient)
- Data Export (all major statistical packages)
- Data Import (file or via API)
- Data Integration (API services)
- Consortium-wide REDCap library of shared instruments (e.g. validated scales, PROs)
- Off-Line App Version (iOS, Android)
- Text/Audio/Video capabilities
- Multi-modal (web, SMS, phone)
- RCT features – randomization, data query workflow
- Document Repository
- E-consent (new)
- MyCap Integration (new)
- EHR Interoperability - via FHIR (new)
Data Collection Schema

Patient Demographics and Predisposing Conditions
- Age, gender, race/ethnicity
- ECOG
- Smoking status
- Surgical and medical history
- Concomitant medications

COVID-19 Initial Course of Illness
- Timing
- Presenting symptoms
- Presenting labs
- Diagnostic testing
- Initial severity of illness
- Co-infections
- Complications
- Treatments including trials
- Clinical status

Cancer Details
- Cancer type, stage, status
- Treatment details: recency, modality, context, irAEs
- Transplant & cellular therapy details
- History of cardiopulmonary toxic treatment

COVID-19 follow-up & Outcomes
- Interval severity of illness
- Co-infections
- Complications
- Treatments including trials
- Interval clinical status
- Final status
- Effects on anti-cancer treatment plans

Repeatin
REDCap Survey – current status

COVID-19 and Cancer Consortium (CCC19) Registry v2

The Online Designer will allow you to make project modifications to fields and data collection instruments very easily using only your web browser. NOTE: While in development status, all field changes will take effect immediately in real time.

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<table>
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Steph Duda
TY!!!!!!!!!!!!!
Mapping to standards

**Significant comorbidities.**
Check all that apply. If you do not know specific diagnoses, ok to choose the "NOS" categories (e.g., Pulmonary disease, NOS).

Immune suppression is defined as outpatient use of prednisone (10 mg/d or greater), use of chemotherapy, use of corticosteroids, or other immunosuppressant agents.

**Terminology bindings**

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### Survey Queue

Listed below is your survey queue, which lists any other surveys that you have not yet completed. To begin the next survey, click the 'Begin survey' button next to the title.

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<tr>
<td>Begin survey</td>
<td>Respondent Details</td>
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Acknowledgments (150+ participants)

- Aurora Health Care
- Brown University
- City of Hope
- Cleveland Clinic
- Columbia University/New York Presbyterian
- Dana-Farber Cancer Institute
- Duke University
- Einstein Medical Center
- Emory University/Winship Cancer Institute
- Fred Hutchinson Cancer Research Center/University of Washington/Seattle Cancer Care Alliance
- Gundersen Health System
- Hartford HealthCare Cancer Institute
- Houston Methodist Cancer Center
- Inova Schar Cancer Institute
- Intermountain Healthcare
- Johns Hopkins University
- Karmanos Cancer Institute
- Loyola University Medical Center
- LSU Health Sciences Center
- Massachusetts General Hospital
- Mayo Clinic, Rochester
- Mays Cancer Center at UT Health San Antonio
- MD Anderson Cancer Center
- Medical University of South Carolina/Hollings Cancer Center
- Moffitt Cancer Center
- Mount Sinai/Tisch Cancer Institute
- Northwell Health
- Northwestern University/Lurie Cancer Center
- NYU Langone Health/Perlmutter Cancer Center
- Oregon Health & Sciences University/Knight Cancer Institute
- Penn State Cancer Institute
- Roswell Park Comprehensive Cancer Center
- Rutgers Cancer Institute of New Jersey
- SSM Health Cancer Care
- Stanford University
- St. Elizabeth Healthcare
- The Ohio State University/The James
- University Hospitals, Cleveland
- University of California, Davis
- University of California, San Diego
- University of California, San Francisco
- University of Chicago
- University of Colorado Cancer Center
- University of Connecticut
- University of Kansas
- University of Maryland
- University of Miami/Sylvester Comprehensive Cancer Center
- University of Michigan/Rogel Cancer Center
- University of Minnesota/Masonic Cancer Center
- University of North Carolina/Lineberger Comprehensive Cancer Center
- University of Rochester Medical Center
- Vanderbilt University Medical Center/Vanderbilt-Ingram Cancer Center
- Washington University in St. Louis/Siteman Cancer Center
- West Cancer Center
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