Using Specific COVID-19 Targets and Patient Care Settings to Drive Global Improvements in the Evidence/Guidance Ecosystem Cycle

Jerome A. Osheroff, MD, FACP, FACMI
ACTS COVID Collaborative
February 24, 2021
Webinar Goals

• Provide an **overview** of the AHRQ Evidence-based Care Transformation Support (ACTS) Initiative’s COVID-19 Evidence to Guidance to Action Collaborative

• Discuss **synergies with COVID-END/partner efforts** and **cultivate** steps to **realize** them
What Is This All About?

Case Presentation

MB is a 38 year-old physician who was in her usual good health until 8/20; developed cough/fever, loss of taste & smell

Diagnosed with COVID-19, managed conservatively at home. Symptoms improved but experiencing continuing, debilitating fatigue

6 months after diagnosis, significant fatigue continues. Some days she's not able to work; requires help taking care of her home.

Question Sampling

What workup is appropriate? Symptom management?

Benefits/risks/costs given uncertainty?

Expected course?

Broadly supporting patient/care team decisions and actions for many COVID clinical issues given evolving evidence & guidance
ACTS and Collaborative Overview

• ACTS began January ‘19 to develop **stakeholder-driven roadmap** for making **flow from evidence to guidance to action to data and back** to evidence more:
  o **FAIR** (findable, accessible, interoperable, reusable)
  o **Computable**
  o Useful in supporting Learning Health Systems, achieving quadruple aim

• **Stakeholder Community and Workgroup efforts** produced Draft Roadmap
  o Path from Current State to shared Future Vision

• Roadmap development efforts focused on **ACTS COVID Collaborative** in 2020

• **Goal** = help participants address the pandemic while accelerating progress toward a **high functioning global evidence/guidance ecosystem cycle**.
  o COVID-END has been a participant since its inception
ACTS Stakeholder Community \( (n = 301^* \text{ as of 2/18/21}) \)

<table>
<thead>
<tr>
<th>Care Delivery Organizations (89)</th>
<th>Quality Organizations/ Consultants (45)</th>
<th>HIT/CDS Suppliers (57)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Adventist Healthcare</td>
<td>• Advanced Health Outcomes</td>
<td>• International Guidelines Center</td>
</tr>
<tr>
<td>• ASU</td>
<td>• Arizona Alliance for Community Health Centers</td>
<td>• Intersystems (2)</td>
</tr>
<tr>
<td>• Cedars-Sinai</td>
<td>• BHB Clinical Informatics</td>
<td>• Logica (2)</td>
</tr>
<tr>
<td>• Children’s Hospital of Atlanta (2)</td>
<td>• BookZurman</td>
<td>• MAGIC Evidence Ecosystem Foundation (2)</td>
</tr>
<tr>
<td>• Children’s Hospital of Philadelphia</td>
<td>• Carradora Health</td>
<td>• Medisolv Inc.</td>
</tr>
<tr>
<td>• City of Hope National Medical Center</td>
<td>• Clinical Informatics, Inc.</td>
<td>• Meditec (2)</td>
</tr>
<tr>
<td>• Emory University</td>
<td>• Constable Consulting</td>
<td>• Microsoft (6)</td>
</tr>
<tr>
<td>• George Washington University</td>
<td>• Database Consulting Group</td>
<td>• Motive Medical Intelligence</td>
</tr>
<tr>
<td>• Harvard Medical School/BWH HealthPartners</td>
<td>• EBQ Consulting</td>
<td>• Optum (2)</td>
</tr>
<tr>
<td>• Hennepin Healthcare</td>
<td>• ecGroup Inc.</td>
<td>• Semedy</td>
</tr>
<tr>
<td>• Inova Health System (2)</td>
<td>• Fusion Consulting</td>
<td>• Triostech</td>
</tr>
<tr>
<td>• Intermountain Healthcare (3)</td>
<td>• HLN Consulting</td>
<td>• ValueMomentum</td>
</tr>
<tr>
<td>• Kaiser Permanente</td>
<td>• Interoperability Institute</td>
<td>• Verily Life Sciences</td>
</tr>
<tr>
<td>• Kittitas Valley Healthcare</td>
<td>• IPO 4 Health</td>
<td>• Visible Systems Corporation</td>
</tr>
<tr>
<td>• Lehigh Valley Health Network</td>
<td>• Jodi Wachs</td>
<td>• Wolters Kluwer</td>
</tr>
<tr>
<td>• Mayo Clinic (6)</td>
<td>• KLAS</td>
<td>• ZeaMed Health</td>
</tr>
<tr>
<td>• Medical University of South Carolina</td>
<td>• Klesis Healthcare</td>
<td></td>
</tr>
<tr>
<td>• Montefiore Medical Center</td>
<td>• Mathematica</td>
<td></td>
</tr>
<tr>
<td>• Northwestern Medicine</td>
<td>• Mike Campbell</td>
<td></td>
</tr>
<tr>
<td>• Ochsner Health</td>
<td>• Overhage</td>
<td></td>
</tr>
<tr>
<td>• Oregon Health &amp; Science University (3)</td>
<td>• Perspecta</td>
<td></td>
</tr>
<tr>
<td>• Peninsula Regional Medical Center (2)</td>
<td>• Premier</td>
<td></td>
</tr>
<tr>
<td>• RWJBarnabas Health/Rutgers Health (2)</td>
<td>• Principled Strategies</td>
<td></td>
</tr>
<tr>
<td>• Sparrow Health</td>
<td>• RTI (5)</td>
<td></td>
</tr>
<tr>
<td>• Texas Health Resources</td>
<td>• sEA Healthcare</td>
<td></td>
</tr>
<tr>
<td>• Texas Tech University Health Sciences Center</td>
<td>• Stratis Health</td>
<td></td>
</tr>
<tr>
<td>• University of Arizona</td>
<td>• AgileMD</td>
<td></td>
</tr>
<tr>
<td>• University of Chicago/ Crone US Network (2)</td>
<td>• AICPG</td>
<td></td>
</tr>
<tr>
<td>• University of Connecticut</td>
<td>• Amazon Web Services</td>
<td></td>
</tr>
<tr>
<td>• University of Kansas Medical Center</td>
<td>• Apervita (2)</td>
<td></td>
</tr>
<tr>
<td>• University of Minnesota (4)</td>
<td>• Cerner (2)</td>
<td></td>
</tr>
<tr>
<td>• University of Pennsylvania Medicine (3)</td>
<td>• Clinical Architecture</td>
<td></td>
</tr>
<tr>
<td>• University of Utah (6)</td>
<td>• Clinical Cloud Solutions</td>
<td></td>
</tr>
<tr>
<td>• University of Washington</td>
<td>• Cognitive Medical Systems, Inc.</td>
<td></td>
</tr>
<tr>
<td>• VA (18)</td>
<td>• Computable Publishing (3)</td>
<td></td>
</tr>
<tr>
<td>• Vanderbilt University Medical Center (9)</td>
<td>• Crisp Health</td>
<td></td>
</tr>
<tr>
<td>• Virginia Commonwealth University (2)</td>
<td>• Decisions/UMN</td>
<td></td>
</tr>
<tr>
<td>• Virginia Mason Medical Center</td>
<td>• EHRA/Allscripts</td>
<td></td>
</tr>
<tr>
<td>• Advanced Health Outcomes</td>
<td>• Elimu Informatics, Inc.</td>
<td></td>
</tr>
<tr>
<td>• Arizona Alliance for Community Health Centers</td>
<td>• Epic (2)</td>
<td></td>
</tr>
<tr>
<td>• BHB Clinical Informatics</td>
<td>• EunoChains</td>
<td></td>
</tr>
<tr>
<td>• BookZurman</td>
<td>• EvidenceCare (3)</td>
<td></td>
</tr>
<tr>
<td>• Carradora Health</td>
<td>• GuidelineCentral</td>
<td></td>
</tr>
<tr>
<td>• Clinical Informatics, Inc.</td>
<td>• Health Catalyst (2)</td>
<td></td>
</tr>
<tr>
<td>• Constable Consulting</td>
<td>• Healthwise (2)</td>
<td></td>
</tr>
<tr>
<td>• Database Consulting Group</td>
<td>• IBM</td>
<td></td>
</tr>
<tr>
<td>• EBQ Consulting</td>
<td>• IMO (2)</td>
<td></td>
</tr>
</tbody>
</table>

\*Names in parentheses are counted elsewhere; numbers in parentheses are individuals
**ACTS Stakeholder Community**

(n = 301* as of 2/18/21)

<table>
<thead>
<tr>
<th>Informatics/Researchers (18)</th>
<th>Specialty Societies (18)</th>
<th>Patient Advocates (4)</th>
<th>Other Govt Agencies (18)</th>
<th>AHRQ (26)</th>
<th>Payers (2)</th>
<th>International/ Standards/ Other (24)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Brown University EPC (2)</td>
<td>• AAFP</td>
<td>• Engaging Patient Strategy</td>
<td>• Center for Evidence &amp; Practice Improvement (19)</td>
<td>• (CMS)</td>
<td>• (CMS)</td>
<td>• Australia Living Guideline Initiative (2)</td>
</tr>
<tr>
<td>• Duke University</td>
<td>• AAP (2)</td>
<td>• Hassanah Consulting Health-Hats</td>
<td>• Center for Financing, Access and Cost Trends (2)</td>
<td>• BCBS CA</td>
<td>• BCBS CA</td>
<td>• COVID-END</td>
</tr>
<tr>
<td>• Idaho State University</td>
<td>• ACCME (2)</td>
<td>• Patient Safety Action Network</td>
<td>• Center for Quality &amp; Patient Safety</td>
<td>• BCBS MN</td>
<td></td>
<td>• ECRI Institute</td>
</tr>
<tr>
<td>• Indiana University</td>
<td>• ACEP (4)</td>
<td>• CDC (5)</td>
<td>• Office of Management Services (2)</td>
<td></td>
<td></td>
<td>• HL7</td>
</tr>
<tr>
<td>• Johns Hopkins EPC</td>
<td>• ACP (2)</td>
<td>• CMS (5)</td>
<td>• ACTS Project (2)</td>
<td></td>
<td></td>
<td>• JBI/University of Adelaide (2)</td>
</tr>
<tr>
<td>• (Mayo Clinic)</td>
<td>• AMA</td>
<td>• Idaho Dept of Health</td>
<td></td>
<td></td>
<td></td>
<td>• L*VE/Epistemonikos (2)</td>
</tr>
<tr>
<td>• Northwell</td>
<td>• AMIA (2)</td>
<td>• NIDDK - NIH</td>
<td></td>
<td></td>
<td></td>
<td>• Librarian Reserve Corp</td>
</tr>
<tr>
<td>• Stanford University</td>
<td>• ASH (2)</td>
<td>• NLM - NIH</td>
<td></td>
<td></td>
<td></td>
<td>• McMaster (3)</td>
</tr>
<tr>
<td>• UCSF</td>
<td>• CHEST</td>
<td>• ONC (2)</td>
<td></td>
<td></td>
<td></td>
<td>• M. McGeehee</td>
</tr>
<tr>
<td>• University of Michigan (4)</td>
<td>• Society of Critical Care Medicine</td>
<td>• Pima County Health Department</td>
<td></td>
<td></td>
<td></td>
<td>• National Alliance of Healthcare Purchaser Coalitions</td>
</tr>
<tr>
<td>• University of Pittsburgh (2)</td>
<td></td>
<td>• (VA)</td>
<td></td>
<td></td>
<td></td>
<td>• OMG/BPM+</td>
</tr>
<tr>
<td>• (University of Utah)</td>
<td></td>
<td>• Washington State Dept of Health</td>
<td></td>
<td></td>
<td></td>
<td>• OHRI</td>
</tr>
<tr>
<td>• UT Health at San Antonio</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Sejong University</td>
</tr>
<tr>
<td>• UT Southwestern</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• UK National Health Service</td>
</tr>
<tr>
<td>• (Vanderbilt University)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• University of Melbourne (5)</td>
</tr>
<tr>
<td>• West Virginia University</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Names in parentheses are counted elsewhere; numbers in parentheses are individuals
Current State: Can’t Get Information or Tools When, Where, How Needed

Parts don’t connect; information doesn’t flow
Obstacles in LHS/Knowledge Ecosystem Cycle

Need **Evidence/ Knowledge Interoperability** to complement **Clinical Data Interoperability**
Future Vision Overview

- Robust stakeholder-driven Knowledge Ecosystem =>
- Enables a collaborative, virtuous improvement cycle =>
- Where stakeholder needs are met better throughout the cycle =>
- = Learning Health Systems (LHSs) Achieve the Quadruple Aim
AHRQ evidence-based Care Transformation Support (ACTS) Roadmap

A Stakeholder-Driven Plan for Enhancing Evidence-based Care Delivery and Improving Outcomes

Aim: By 2031, realize a mature healthcare knowledge ecosystem that supports Learning Health Systems (LHSs) and delivers measurable improvements in health, costs, and provider and patient experience.

1. Create/Use Governance & Collaboration
2. Enhance/Leverage Infrastructure
3. Enhance/Develop Living Computable Guidance
4. Enhance Guidance Implementation & Assessment
5. Evaluate/Plan Roadmap Execution

Phase 1: Concept Demonstrations 2021–2024
Phase 2: Pilots 2024–2027
Phase 3: Scaling 2027–2030
Phase 4: LHS/Quadruple Aim 2030–2031
Collaborative Goals

- Cross-fertilize/accelerate efforts to develop & deliver COVID-19 evidence-based guidance and tools to patients and care teams
- Measurably improve care & outcomes for selected targets & settings; support/promote scaling to many others
- Advance tools, standards, and collaborations needed for the knowledge ecosystem and LHSs

*see digital.ahrq.gov/covid-acts
Knowledge Ecosystem Cycle
Sampling of Collaborative Participants and Alignment with Ecosystem Cycle

- **Process Evidence**
  - MN EPC, SRDR+, COKA, LRC, COVID-END, VA, L*VE/Epistemonikos

- **Produce Evidence**
  - AHRQ Funded COVID-19 Health Services Research

- **People/Process/Technology**
  - Create more efficient, effective, virtuous cycle flow, scalable to other targets

- **Produce Living Guidelines**
  - ACEP, ASH, VA, AU National Living Guidelines

- **Develop CDS/eCQMs**
  - C19 Digital Guidelines WG, VA, NACHC/Health Centers, ACEP/EvidenceCare, U Melbourne, U MN, ACG, NCQA

- **Provide CDS Repository/Authoring Tool**
  - CDS Connect

- **Implement Living CDS**
  - U MN, NACHC/Health Centers, VA, ACEP/EvidenceCare, U Melbourne

- **Analyze/Use Care Results**
  - VA, U MN, NACHC/Health Centers, U Melbourne

- **Assess results**
  - NACHC/Health Centers, VA, U MN, MedMorph, NCQA, U Melbourne
Ecosystem Enhancement Deep Dive: Approach

• Focus on **specific targets** being addressed by **specific care delivery organizations** (CDOs)
  - Share strategies, learning, challenges; **mutual support**
  - Promote scaling to other targets/CDOs

• Target areas and CDOs:
  - **Anticoagulation**: University of Minnesota
  - **Long COVID**: NACHC (health centers), OHSU
  - **Severity Assessment/Triage**: VA, NACHC
Ecosystem Enhancement Deep Dive: Sharing / Collaboration Template

- Target/Organization =

- For each cycle step:
  - Major Successes
  - Pressing Needs
  - Collaborative Support Asks
  - Insights/tools/approaches by others
Sampling of Ecosystem Enhancement Activities & Potential Partners

- Identify studies
  - Librarian Reserve Corps, Epistemonikos

- Synthesize studies in living reviews
  - COVID NMA, UMN EPC (anticoagulation), AU Living Guidelines, NIH, WHO

- Make evidence executable (ultimately computable):
  - SRDR+

- Produce Living Guidelines
  - AU Living Guidelines, ASH/ACCP (anticoagulation), NIH, WHO

- Make guidelines executable (ultimately computable)
  - MAGICapp
Sampling of Ecosystem Enhancement Activities & Potential Partners, cont.

- Adapt Guidelines for local implementation
  - Clinical sites

- Express Guidelines as living CDS interventions/eCQMs
  - C19 Digital Guideline WG's CPG on FHIR-based methods, clinical sites

- Disseminate tools (CDS, eCQMs)
  - CDS Connect

- Integrate guidelines into systems/workflows; use in care
  - Clinical sites

- Gather/analyze care results data; use for QI/new evidence
  - Clinical sites
<table>
<thead>
<tr>
<th>PRINT</th>
<th>DIGITAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Familiar, conceptually organizing much of</td>
<td>Current PLATFORM for dissemination</td>
</tr>
<tr>
<td>our workflow</td>
<td></td>
</tr>
<tr>
<td>Sharable Value Unit</td>
<td>Sharable Value Unit</td>
</tr>
<tr>
<td>Physical object, a relatively large unit</td>
<td>Digital object (like a PDF), a relatively</td>
</tr>
<tr>
<td>for sharing many knowledge bits in one</td>
<td>large unit for sharing many knowledge bits</td>
</tr>
<tr>
<td>container</td>
<td>in one container</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EXECUTABLE</th>
<th>COMPUTABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Many specific software tools, but each tool</td>
<td>Widely interactive, interoperable,</td>
</tr>
<tr>
<td>limited to local execution</td>
<td>integrated possibilities - PLATFORM of the</td>
</tr>
<tr>
<td>Sharable Value Unit</td>
<td>near future</td>
</tr>
<tr>
<td>Small digital object (micro-content), but</td>
<td>Sharable Value Unit</td>
</tr>
<tr>
<td>within the constraints of the executable</td>
<td>Small digital object, enabling</td>
</tr>
<tr>
<td>environment</td>
<td>contextualized selection, customizable</td>
</tr>
<tr>
<td></td>
<td>presentation, and reusable dissemination</td>
</tr>
</tbody>
</table>

Used with permission from Brian S. Alper MD MSPH, Computable Publishing LLC
Related Effort: Evidence/Guidance Computability Tool Requirements Project

Produce for 4 tools to make evidence & guidance computable

1. Research Results
2. Systematic Reviews
3. Recommendation Rationale
4. Coded Recommendation Terminology

Use Case Data Entry Form: ACTS Evidence to Guidance Computability Tool Requirements Project

This form is designed to capture Use Case data for tools that may be developed as a result of the ACTS Evidence to Guidance Computability Tool Requirements Project. For each field in the form, please provide detailed information as guided by each question.

* = Answer Required

Computability Tools

- * Select the computability tool this use case is for

  - Research Results: Produce and Disseminate Computable Study Results
  - Systematic Reviews: Produce and Disseminate Computable Systematic Review Findings
  - Recommendation Rationale: Produce and Disseminate Computable Rationale for Recommendations
  - Coded Recommendation Terminology: Produce and Disseminate Computable Coding for Participant Intervention Factors for Recommendations

Name and Description

Create a name and enter basic information about the use case(s)

- * Enter a short, descriptive name of the use case

- * Describe the goal(s)/objective(s) of the use case
Examples of Pertinent FHIR Standards

The Digital and Trustworthy Evidence Ecosystem

- Evidence from systematic reviews
  - Evidence, EvidenceReport

What FHIR standards?

- Recommendations and Evidence
  - PlanDefinition, Evidence, EvidenceReport

- Disseminate guidance to policy makers, clinicians and patients
- Reference Tools, Education Materials, Decision Aids

Produce evidence

- Research Studies
- Tools and platforms

Produce guidance

- Guidelines, Decision Aids
- Common Methodology
- Coordination and support
- Culture for sharing and innovation
- Digitally structured data

Evaluate and improve practice

- Quality Improvement, Patient Registries
- Implement guidance and decision support
- Clinical Decision Support
- LogicRules, CarePlans, Questionnaires
- FHIRPath, CQL, Questionnaire

Source: Brian S. Alper MD MSPH, Computable Publishing LLC, based on diagram from MAGIC Evidence Ecosystem Foundation
Collaborative is Taking Steps Toward Implementing Draft Roadmap Approach to Achieve Future Vision
Collaborative Steps Toward Future Vision

• COVID-19 is 1 of 4 initial targeted conditions to demonstrate knowledge ecosystem cycle improvements

• Collaborative/Learning Community is:
  o Seeding cross-stakeholder coordination efforts
  o Laying foundation for enhanced ecosystem cycle infrastructure (best available, 2.0 requirements)
  o Concept demos for enhanced/computable evidence/guidance content & processes
  o Concept demos for enhanced guidance implementation
  o Laying foundation for evaluation, planning, piloting, scaling
Stakeholder Engagement in Draft Roadmap

Thirty-one organizations whose staff participated in Draft Roadmap Development have provided support letters indicating plans to align their efforts and investments with Roadmap execution.

Federal Agencies: 1
VHA (Nebeker)

Care Delivery Organizations: 7
VCU/ACORN (Krist)
M Health Fairview (Melton-Meaux/Tignanelli),
U Chicago Medicine (Umscheid),
Rutgers RWJBarnabas Health (Sonnenberg)
MUSC (Lenert)
Hennepin Healthcare (Pandita)
AACHC-CVN (Frick)

Professional Societies/Accrediting Bodies/Institutes: 7
American Medical Association (Rakotz)
AMIA (Dykes)
ACMQ (Casey)
ACCMC (Singer)
NCQA (Barr)
RTI (Richardson)
ACP (Qaseem)

Health IT Vendors/Initiatives: 7
Cognitive Medical Systems (Burke/Bormel)
Health Catalyst (Rimmash)
Apervita (Middleton)
U Mich/MCBK (Friedman/Richesson/Flynn)
Logica Health (Huff)
EBM on FHIR/COKA/Computable Publishing (Alper)
BPM+ Health (Rubin)
HL7 (Jaffe)

Clinical Evidence/Guidance Organizations: 7
Cochrane Collaboration
COVID-END (Grimshaw)
GIN (Harrow)
JBI (Jordan)
Epistemonikos (Rada)
MAGIC Evidence Ecosystem Foundation (Vandvik/Brandt)
McMaster University (Iorio)

Patient Advocates: 1
Hassanah Consulting (Tufte)
ACTS Collaborative and COVID-END/Partner Synergies

• Where on the Ecosystem Cycle are you concentrating?
  ○ Care delivery
  ○ Evidence processing
  ○ Guidance processing
  ○ Other?
• How can the Collaborative activities advance your efforts, and vice versa?
Do You Have Resources, Tools, Expertise, Networking, Evidence, Guidance, etc. that Can Help:

- Patients with targeted conditions?
- People that care for these patients?
- Care Delivery Organizations in which this care is delivered?
- Organizations that produce tools to help the CDOs, care teams, and patients?

What would **win-win-wins** look like for you to provide these in ways that **advance progress toward your objectives?**
Next Steps

• **Brainstorm opportunities**
  ○ Please *share thoughts in chat now!*  
  ○ Seeding discussion (David, Per, Camila)  
  ○ Open mic  
  ○ Follow-up meetings (TBD)

• **Engage in Collaborative concept demo efforts**
  ○ e.g., calls, website sharing, related projects

• **Engage in related evidence/guidance computability efforts**
  ○ ACTS Pilot to Define use cases/requirements for tools  
  ○ Related efforts (e.g., COVID Knowledge Accelerator [COKA](#))
Thank You!

Collaborative Website:  
https://covid-acts.ahrq.gov

Let’s connect:  
josheroff@tmitconsulting.com

support@ahrq-acts.org