Clinical Response through Emerging Technology (CRET)

An Integrated Health IT Tool for Providers to Respond to Public Health Hazards

Rachel Abbey; ONC; rachel.abbey@hhs.gov

Jim Daniel; OCTO; james.daniel@hhs.gov

January 28, 2020
Interactive Discussion

Go to www.menti.com and use the code 82 99 72

1. Grab your phone
2. Go to www.menti.com
3. Enter the code 82 99 72 and vote!
What is CRET?

The Clinical Response through Emerging Technology (CRET) program is an HHS initiative to improve clinical response to emerging public health hazards using EHRs and IT tools and infrastructure.

**Purpose:**
CRET’s goal is to provide clinicians with near-real-time updates to information and best practices to improve their medical response to a broad range of natural and manmade hazards.
The Need for CRET

When health hazards occur, each response is slightly different. CRET addresses the critical in-the-moment information needs of the medical community:

• Immediate access to the latest science about response without the need for extensive research when time is of the essence
• Translation of public health agency guidance into computer-readable information that can be shared with computer systems (including EHRs and clinical decision support) to deliver needed information to doctors at the point of care.

CRET provides clinicians with the latest science and response protocols from federal, state, tribal, local, and territorial public health communities by delivering critical knowledge to clinical decision support tools within existing clinical workflows.
Common Hazards Requiring CRET Response

- Infectious diseases
- Environmental, chemical, and biological hazards
- Events based on (intentional or unintentional) human behavior
- Natural events such as extreme weather
CRET is adaptable for different audiences (e.g., clinicians, clinical software vendors, average citizens). It addresses:

- **Risk Identification**: Exposures (e.g., travel, residence, occupation, recreational activities), symptoms, physical findings, and diagnostic tests (e.g., laboratory, imaging and pathology)
- **Risk Reduction and Mitigation**: Isolation, personal protective equipment, exposure avoidance, treatment and supportive care
- **Education**: Recommendations for individuals at risk (patients, caregivers, employment sites)
Currently, IT professionals “translate” — interpret and implement — many clinical guidelines into EHR-based decision support.

- Ad-hoc dissemination of updated science
- Information delivered without definitions and data standards
- Lack of flexibility to re-use logic to rapidly address new threats

The diagram illustrates the current manual process for information distribution, highlighting issues such as slow, idiosyncratic, manual processes at each site, and inconsistent info delivery.
CRET: Changing The Picture

CRET framework and tools = an approach to share information on evolving threats

- Rapid dissemination of the most updated, accurate science
- Information delivery using clear data standards and definitions
- Flexibility and re-use of logic to rapidly address new threats
Emerging Infectious Diseases: 2019nCoV Coronavirus

**Guidance With CRET**

**SYMPTOMS:**
FEVER AND SYMPTOMS OF LOWER RESPIRATORY ILLNESS (COUGH, DIFFICULTY BREATHING)

**EXPOSURE:**
- IN THE LAST 14 DAYS BEFORE SYMPTOM ONSET, A HISTORY OF TRAVEL FROM WUHAN, CHINA, OR
- IN THE LAST 14 DAYS BEFORE SYMPTOM ONSET, CLOSE CONTACT WITH A PERSON WHO IS UNDER INVESTIGATION FOR 2019-CoV WHILE THAT PERSON IS ILL

**SYMPTOMS:**
FEVER OR SYMPTOMS OF LOWER RESPIRATORY ILLNESS (COUGH, DIFFICULTY BREATHING)

**EXPOSURE:**
- IN THE LAST 14 DAYS BEFORE SYMPTOM ONSET, CLOSE CONTACT WITH AN ILL, LABORATORY-CONFIRMED 2019-CoV PATIENT

**RECOMMENDATIONS:**
- NOTIFY INFECTION CONTROL AND LOCAL HEALTH DEPARTMENT
- HEALTH DEPARTMENT WILL COLLECT, STORE AND SHIP SPECIMENS TO CDC
- AIRBORNE ISOLATION ROOM – STANDARD, CONTACT AND AIRBORNE PRECAUTIONS AND EYE PROTECTION.

Clinicians must understand complex and rapidly evolving guidelines

- Currently, IT professionals “translate” — interpret and implement — many clinical guidelines into EHR-based decision support
- This process can lead to inconsistent and inaccurate implementation

Let’s consider an example and its implications: ACUTE LYME
• After tick bite, some patients present with erythema migrans (EM) rash.
  • The rash is diagnostic for Lyme disease, unlike non-specific symptoms, which are inconclusive
• Do all clinicians know this?
Acute Lyme: A Dangerous Reality

Wasted Steps Without CRET

- Observation/Symptom Confirmation: EM Rash
- Laboratory Testing: ELISA Test
- Laboratory Testing: Western Blot
- Treatment: Antibiotics

Accurate Guidance With CRET

- Observation/Symptom: EM Rash
- Treatment: Antibiotics
## CRET For Acute Lyme: Take-aways

<table>
<thead>
<tr>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Legacy IT without shared standards or interpretation</td>
<td>• Flexible, scalable platform (extendable to many hazards) with shared standards</td>
</tr>
<tr>
<td>• Complex guidelines “translated” by IT professionals</td>
<td>• Complex guidelines “translated” by SMEs</td>
</tr>
<tr>
<td>• One-way communication</td>
<td>• Bidirectional communication</td>
</tr>
<tr>
<td>• EHR updates fail to keep pace with evolving state of science</td>
<td>• EHR updates are rapid with near-real time information</td>
</tr>
</tbody>
</table>
CRET Parent Algorithm

CRET emphasizes traits critical to rapid response to health threats:
- Flexibility
- Diversity of experiences
- Ability to handle uncertainty
## CRET Scenario Matrix

<table>
<thead>
<tr>
<th>Investigative Use Cases</th>
<th>Directly Conducive to CRET Algorithms</th>
<th>CRET Algorithms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ebola virus</td>
<td></td>
<td>CDS available in other projects</td>
</tr>
<tr>
<td>Zika virus</td>
<td></td>
<td>CDS available in other projects</td>
</tr>
<tr>
<td>Tick-borne disease</td>
<td></td>
<td>CDS available in other projects</td>
</tr>
<tr>
<td>Meningococcal disease</td>
<td></td>
<td>CDS available in other projects</td>
</tr>
<tr>
<td>Substance use and opioid disorders</td>
<td></td>
<td>CDS available in other projects</td>
</tr>
<tr>
<td>Anthrax post-exposure prophylaxis</td>
<td></td>
<td>CDS available in other projects</td>
</tr>
<tr>
<td>Earthquake preparedness (PULSE)</td>
<td></td>
<td>CDS available in other projects</td>
</tr>
<tr>
<td>Boston marathon management</td>
<td></td>
<td>CDS available in other projects</td>
</tr>
<tr>
<td>Massachusetts surveillance system</td>
<td></td>
<td>CDS available in other projects</td>
</tr>
<tr>
<td>Flint, Michigan water-related lead exposure</td>
<td></td>
<td>CDS available in other projects</td>
</tr>
</tbody>
</table>
Q&A Discussion
Go to www.menti.com and use the code 82 99 72
Go to www.menti.com and use the code 82 99 72

What are the challenges in implementing ever-changing clinical guidelines available at the Federal level?
Go to www.menti.com and use the code 82 99 72

What standards and services should be used to help you implement guideline information?
Contact ONC

Rachel Abbey (Rachel.Abbey@hhs.gov)

Phone: 202-690-7151

Health IT Feedback Form: https://www.healthit.gov/form/healthit-feedback-form

Twitter: @onc_healthIT

LinkedIn: Search “Office of the National Coordinator for Health Information Technology”

Subscribe to our weekly eblast at healthit.gov for the latest updates!