Update on Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

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DISCLAIMER:
This is a rapidly evolving situation

Information presented here is as accurate as possible, but specific numbers and assumptions may change rapidly as we gain new insights

There still are many unknowns
What is MERS-CoV?

- Viral respiratory illness caused by Middle East Respiratory Syndrome Coronavirus (MERS-CoV)
- First reported in Kingdom of Saudi Arabia (KSA) in Sept 2012
- What is the origin? Unclear
Symptoms/ Signs

- Fever, cough, shortness of breath
- Severe acute respiratory illness, including pneumonia
- Gastrointestinal symptoms, including diarrhea
- Kidney failure
- Spectrum of illness is incompletely defined
Incubation Period for Secondary Cases (human-human)

- Median: 5 days (range: 2-13 days)
MERS-CoV: CXR & CT scans
Beware!!

- CXR may be normal
Treatment & Mortality

- Supportive treatment only
- No vaccine
- No specific antivirals

- Case fatality among confirmed cases 28-30%
Major Increase in MERS-CoV

May 22, 2014 (WHO):
Confirmed cases: **632** (total)
Deaths: **193**

- Kingdom of Saudi Arabia (KSA)
  - 551 cases, 177 deaths

- United Arab Emirates (UAE)
  - 67 cases, 9 deaths
Confirmed Cases of MERS-CoV
3/2012- 5/16/2014, N=621

* Where the month of onset is unknown, the month of reporting has been used
** The data for May 2014 is incomplete
Confirmed Cases of MERS-CoV by Reporting Country and Date
April 1, 2014- May 15, 2014
Confirmed Cases of MERS-CoV by Reporting Country and Date
April 1, 2014 - May 15, 2014

INDIANA
FLORIDA
Reason for Increase Unclear

- Seasonality
  - Coronaviruses; young camels
- Nosocomial transmission
  - Hospitals: major amplification
- Better case detection
- More testing in KSA
- Changes in virus?
  - No evidence so far based on genetic sequencing data
Transmission Occurs When There is a **Failure** to:

- **Recognize** cases of MERS-CoV
- **Implement** appropriate **infection control** measures to prevent spread
  - Need to know what to do (Guidelines, Policy)
  - Need to do it (Adherence/Compliance)
Useful Resources (Internet Search Terms)

“CDC MERS”
http://www.cdc.gov/CORONAVIRUS/MERS/INDEX.HTML

“TNHAN” (Tennessee Health Alert Network)
https://tnhan.tn.gov

This is a rapidly evolving situation. ALWAYS check these websites for most up-to-date information.
Useful Resources
(Internet Search Terms)

“CDC MERS”
http://www.cdc.gov/CORONAVIRUS/MERS/
INDEX.HTML

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Information for Specific Groups

People Who May Be at Increased Risk for MERS
Information for people who have recently traveled from the Arabian Peninsula, had contact with a recent traveler from this area, or had contact with a confirmed or probable case of MERS...

Healthcare Providers
Interim guidance, case definitions, infection prevention and control recommendations, home care guidance, preparedness checklists, clinical features of MERS...

Health Departments
Interim guidance, case definitions, tools to collect data on patients under investigation, and home care guidance...

Laboratories
Guidelines for collecting, handling and testing clinical specimens, and lab biosafety guidelines...

Travelers & Airline Crew
Guidelines for travelers and guidance for airline crew on flights arriving to the U.S...

http://www.cdc.gov/CORONAVIRUS/MERS/INDEX.HTML
Information for Healthcare Providers

Interim Guidance For Health Professionals
CDC interim guidance for evaluating patients, close contacts and clusters, reporting patients under investigation (PUIs), testing specimens, and infection control.

Infection Prevention and Control
Interim recommendations for managing hospitalized patients with known or suspected MERS-CoV infection.

Clinical Features
CDC interim information for clinicians on human infections with MERS-CoV.

Preparedness
Checklists and resources to help healthcare providers and facilities enhance preparedness for MERS-CoV infection control.

Case Definitions
CDC case definitions for patient under investigation (PUI), confirmed case, and probable case.

Interim Home Care and Isolation Guidance
CDC interim guidance to prevent MERS-CoV from spreading in homes and communities in the U.S.

http://www.cdc.gov/coronavirus/mers/hcp.html
Useful Resources (Internet Search Terms)

“TNHAN” (Tennessee Health Alert Network)
https://tnhan.tn.gov

This is a rapidly evolving situation. ALWAYS check this website for most up-to-date information
Welcome to the Tennessee Health Alert Network (TNHAN)

Registered users of TNHAN who have forgotten their password can use the "Forgot Password?" link on the left to reset their password.

Password Requirements: Password must be a minimum of 8 characters in total length, and contain 1 character from at least 3 of the 4 following options:

1. 1- uppercase character (A through Z)
2. 1- lowercase character (a through z)
3. 1 -Numerals (0 through 9)
4. 1 -Non-alphabetic characters (~ ! @ $ % ^ * & _ - + = ` | \ ) { } [ ] ; : " ' < , > . ? /)

More than 10 unsuccessful login attempts within 30 minutes will lock your account. Wait 30 minutes and your account will automatically unlock.

https://tnhan.tn.gov
MERS-CoV Screening Form
MERS-CoV Specimen Submission

BOTH NEWLY UPDATED 5/16/2014

https://tnhan.tn.gov
Please Help Us to Detect and Protect Against MERS-CoV

Partnership
Clinicians & Public Health
Detect

1) Recognize potential cases by implementing screening questions
2) Notify Public Health
3) Laboratory testing

Protect

1) Implement infection control measures
2) Manage persons exposed before implementation of infection control
3) Contact tracing and monitoring
Detect

1) Recognize potential cases by implementing screening questions
2) Notify Public Health
3) Laboratory testing

Protect

1) Implement infection control measures
2) Manage persons exposed before implementation of infection control
3) Contact tracing and monitoring
Travel Question #1

During the 2 weeks before you got sick, did you visit any countries outside of the US?

Yes ➔ Which countries did you visit?

- Arabian peninsula or neighboring countries ➔ MERS-CoV screening form
- China ➔ H7N9 screening form
Countries in the Arabian Peninsula and neighboring countries

- Bahrain,
- Iran,
- Iraq,
- Israel,
- Jordan,
- Kuwait,
- Lebanon,
- Palestinian territories,
- Oman,
- Qatar,
- Saudi Arabia (KSA),
- Syria,
- United Arab Emirates (UAE),
- Yemen
Travel Question #2

*During the 2 weeks before you got sick, did you have any close contact with anyone who was sick and who travelled overseas?*

Yes → *Which countries did they visit?*

- Arabian peninsula or neighboring countries → MERS-CoV screening form
- China → H7N9 screening form
If Positive on Screening Questions in Triage

- Place facemask on patient (if tolerated)
- Patient placement (negative pressure airborne infection isolation room if possible, otherwise closed room with door)
- Review MERS-CoV Screening Form in detail
- Contact Infection prevention and public health
MERS-CoV Screening Form

https://tnhan.tn.gov
TN Department of Health Middle East Respiratory Syndrome Coronavirus (MERS-CoV) Screening Form

<table>
<thead>
<tr>
<th>Date of First Symptom Onset</th>
<th>MM</th>
<th>DD</th>
<th>YY</th>
<th>Medical Record # or Other Patient Identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Birth</td>
<td>MM</td>
<td>DD</td>
<td>YY</td>
<td>Patient Name</td>
</tr>
</tbody>
</table>

1. EPIDEMIOLOGIC CRITERIA

1a. Travel Exposures

- In the 14 days prior to symptom onset, did the patient live in or travel to the Arabian Peninsula or neighboring country? Countries in the Arabian Peninsula and neighboring countries: Bahrain, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Palestinian territories, Oman, Qatar, Saudi Arabia, Syria, the United Arab Emirates (UAE), and Yemen.

- In the 14 days prior to symptom onset, did the patient have close contact with a symptomatic traveler who developed fever and acute respiratory illness (not necessarily pneumonia) within 14 days after traveling from countries in or near the Arabian Peninsula (listed above)? “Close contact” is caring for or living with a person with a flu-like illness.

Country/Area/City visited within 14 days of illness onset:

<table>
<thead>
<tr>
<th>Start</th>
<th>MM</th>
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1b. Close Contact with confirmed/probable MERS/Coronavirus Case

- In the 14 days prior to symptom onset, did the patient have close contact with a confirmed or probable MERS/Coronavirus case while the affected person was ill? “Close contact” is caring for or living with a person with a flu-like illness.

2. CLINICAL CRITERIA

2a. Fever

- During this illness, has patient had a temperature of >100°F?
  - Yes
  - No
  - Unknown

2b. Respiratory Illness or Abnormal CXR or Chest CT or ARDS

- (Check all that apply)
  - Symptoms of Respiratory Illness
  - Abnormal Chest Radiograph (CXR) or Chest CT scan or Pneumonia
  - ARDS (Acute Respiratory Distress Syndrome) or other severe respiratory illness

If patient met one of the epidemiologic criteria (1a. Travel or 1b. Close Contact with MERS case) AND one of the clinical criteria (Fever (2a) or Respiratory Illness or Chest X-Ray/CT scan or ARDS (2b)), then IMMEDIATELY NOTIFY your infection control AND PUBLIC HEALTH, 24/7. The Tennessee Department of Health (TDH) central office phone number is (615) 741-7247.

To improve the ability of TDH to detect any unusual cause of severe acute respiratory infection (SARI, defined as fever and cough requiring hospitalization) in TN, please notify public health of:

1. Clusters of SARI [fever and cough requiring hospitalization, cause unknown]. “Cluster” is defined as 2 or more patients with onset of disease within a 2-week period among people linked by a specific setting (e.g., hospital, workplace, household, classroom, extended family, camp, barracks, dormitory)

2. Healthcare workers who have cared for patients with SARI, particularly patients requiring ICU care

TDH staff will assess and provide guidance on further evaluation, such as testing.
1. EPIDEMIOLOGIC CRITERIA

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1b. Close Contact with confirmed/probable MERS/Coronavirus Case

- **In the 14 days prior to symptom onset, did the patient have close contact with a confirmed or probable MERS/Coronavirus case while the affected person was ill?** “Close contact” is caring for or living with a person with a flu-like illness.
Note: increased from 10 days to 14 days
### 1. EPIDEMIOLOGIC CRITERIA

#### 1a. Travel Exposures

- **In the 14 days prior to symptom onset, did patient live in or travel to the Arabian Peninsula or neighboring country?** Countries in the Arabian Peninsula and neighboring countries: Bahrain, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Palestinian territories, Oman, Qatar, Saudi Arabia, Syria, the United Arab Emirates (UAE), and Yemen.

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<tbody>
<tr>
<td>Country/Area/City visited within 14 days of illness onset:</td>
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#### 1b. Close Contact with confirmed/probable MERS/Coronavirus Case

- **In the 14 days prior to symptom onset, did the patient have close contact with a confirmed or probable MERS/Coronavirus case while the affected person was ill?** “Close contact” is caring for or living with a person with a flu-like illness.

**NOTE:** KSA refers to MERS-CoV as “CORONAVIRUS”
2. CLINICAL CRITERIA

<table>
<thead>
<tr>
<th>2a. Fever</th>
<th>Condition Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>During this illness, has patient had a temperature of &gt;100°F?</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2b. Respiratory Illness or Abnormal CXR or Chest CT or ARDS</th>
<th>Condition Met</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Check all that apply)</td>
<td></td>
</tr>
<tr>
<td>Symptoms of Respiratory Illness</td>
<td></td>
</tr>
<tr>
<td>Abnormal Chest Radiograph (CXR)/ or Chest CT scan or Pneumonia</td>
<td></td>
</tr>
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<td>ARDS (Acute Respiratory Distress Syndrome) or other severe respiratory illness</td>
<td></td>
</tr>
</tbody>
</table>

- Can have symptoms of respiratory illness without radiographic evidence
ONE Epi Criteria  PLUS ONE Clinical Criteria
(i.e., DON’T need both Fever and Resp Illness)
→ Contact Infection Control & Public Health
(even if in doubt)
To improve the ability of TDH to detect any unusual cause of severe acute respiratory infection (SARI, defined as fever and cough requiring hospitalization) in TN, please notify public health of:

1. **Clusters of SARI** [fever and cough requiring hospitalization, cause unknown]. “Cluster” is defined as 2 or more patients with onset of disease within a 2-week period among people linked by a specific setting (e.g., hospital, workplace, household, classroom, extended family, camp, barrack, dormitory).

2. **Healthcare workers** who have cared for patients with SARI, particularly patients requiring ICU care.

*TDH staff will assess and provide guidance on further evaluation, such as testing.*

- Clusters of Severe Acute Respiratory Illness (SARI)
- Healthcare workers who have cared for patients with SARI (especially patients requiring ICU care)
Implement Infection Prevention and Control *(airborne, contact, droplet)*

- **Source Control** - Facemask on suspect patient
- **Patient placement** - Negative pressure airborne infection isolation room
- **Personal protective equipment** for HCP (gowns, gloves, eye protection plus N95 respirator or above)
- **Hand Hygiene**
- **Aerosol Generating Procedures**
Refer to CDC guidance for additional details

http://www.cdc.gov/coronavirus/mers/hcp.html

This is a rapidly evolving situation. Always check CDC website for most up-to-date IC information
Call Public Health

Category 1A
IMMEDIATE TELEPHONIC NOTIFICATION
(24 hours a day, 7 days a week)

Tennessee State Health Department
Number: (615) 741-7247

After hours, listen to the message & call the number provided
Tennessee Department of Health
Reportable Diseases and Events

The diseases and events listed below are declared to be communicable and/or dangerous to the public and are to be reported to the local health department by all hospitals, physicians, laboratories, and other persons knowing of or suspecting a case in accordance with the provision of the statutes and regulations governing the control of communicable diseases in Tennessee (T.C.A. §68 Rule 1200-14-01-.02). See matrix for additional details.

Category 1A: Requires immediate telephonic notification (24 hours a day, 7 days a week), followed by a written report using the PH-1600 within 1 week.

- Anthrax (Bacillus anthracis)
- Botulism-Foodborne (Clostridium botulinum)
- Botulism-Wound (Clostridium botulinum)
- Disease Outbreaks (e.g., foodborne, waterborne, healthcare, etc.)
- Hantavirus Disease
- Measles-Imported
- Measles-Indigenous
- Meningococcal Disease (Neisseria meningitidis)
- Middle East Respiratory Syndrome (MERS)
- Novel Influenza A
- Pertussis (Whooping Cough)
- Rabies: Human
- Ricin Poisoning
- Severe Acute Respiratory Syndrome (SARS)
- Smallpox
- Staphylococcal Enterotoxin B (SEB) Pulmonary Poisoning
- Viral Hemorrhagic Fever

Category 1A
IMMEDIATE TELEPHONIC NOTIFICATION
(24 hours a day, 7 days a week)

http://health.state.tn.us/ReportableDiseases/Common/ReportableDiseasesList.pdf
Requests for Testing for MERS-CoV (Use Submission Form on TNHAN)

- TDH State Public Health Lab in Nashville, performs PCR test
  - Test is NOT commercially available
- Requires approval by TDH Central Office
  - Drs. Kainer, Jones, Dunn, Moore

https://tnhan.tn.gov
**SPECFICM</p>**

- Lower respiratory specimens are preferred specimens and should be collected within 7 days after illness onset and before antiviral medications are administered. However, if more than a week has passed and the patient is still symptomatic, respiratory specimens should still be collected.

- Collecting nasopharyngeal and oropharyngeal (NPOB), stool, and serum specimens strongly recommended depending on the length of time between symptom onset and specimen collection. Serum specimens should be collected during the first week after symptom onset, preferably within 3-4 days.

- All specimens should be collected with appropriate infection control precautions (gowns, gloves, eye protection, N95 respirator or higher): [http://www.cdc.gov/coronavirus/mers/index.html](http://www.cdc.gov/coronavirus/mers/index.html)

**Lower Respiratory Tract:** (preferred)

- Bronchial lavage, tracheal aspirate, pleural fluid
- Collect 2-5 mL into a sterile, leak-proof, screw-cap specimen collection cup or sterile dry container.

- Sputum
- Have the patient rinse the mouth with water and then expectorate deep cough sputum directly into a sterile, leak-proof, screw-cap specimen collection cup or sterile dry container.

**Upper Respiratory Tract:**

- Nasopharyngeal and oropharyngeal swabs (NPOB swabs):
  - Use only synthetic fiber swabs with plastic shafts. Do not use calcium alginate swabs or swabs with wooden shafts, as they may contain substances that inactivate some viruses and inhibit PCR testing. Place swabs immediately into sterile tubes containing 2-3 mL of viral transport media. NPOB specimens can be combined, placing both swabs in the same tube.
  - Nasopharyngeal (NP) swabs -- insert a swab into the nostril parallel to the palate. Leave the swab in place for a few seconds to absorb secretions. Swab both nasopharyngeal areas.
  - Oropharyngeal (OP) swabs -- swab the posterior pharynx, avoiding the tongue.

- Nasopharyngeal wash/aspirate or nasal aspirates
  - Collect 2-5 mL into a sterile, leak-proof, screw-cap specimen collection cup or sterile dry container.

**Blood Components:**

- Serum (for RT-PCR Testing)
  - Children and adults: Collect 1 tube (5-10 mL) of whole blood in a serum separator tube. Allow the blood to clot, centrifuge briefly, and separate sera into sterile container. The minimum amount of serum required for testing is 200 μL. Refrigerate the specimen at 2-8°C and ship on-ice pack. Freezing and shipment on dry ice is permissible.
  - Infant: A minimum of 1 mL or whole blood is need for testing for neonates. Possess, collect 1 mL in an EDTA tube and in a separator tube. If only 1 mL can be obtained, use a separator tube.

- EDTA blood (plasma)
  - Collect 1 tube (10 mL) of heparinized (green-top) or EDTA (purple-top) blood. Refrigerate specimen at 2-8°C and ship on ice-pack; do not freeze.

**Stool:**

- Collect 2-5 grams of stool specimen (formed or liquid) in sterile, leak-proof, screw-cap specimen collection cup or sterile dry container. Refrigerate specimen at 2-8°C up to 72 hours; if refrigerating 72 hours, freeze at -70°C and ship on dry ice.

**Storage and Shipping Specifics:**

- All respiratory and stool specimens should be refrigerated at 2-8°C for up to 72 hours; if exceeding 72 hours, freeze at -70°C and ship on dry ice.

- For serum specimens, refrigerate the specimen at 2-8°C and ship on ice pack; although freezing at -70°C and shipping on dry ice is permissible. For EDTA blood specimens, refrigerate at 2-8°C and ship on ice-pack, and do not freeze.

**CDC Recommendations Against the Following:**

- Do not place any dry ice in the Primary Container or Secondary Container, foam envelopes, ziplock bags, cryovial boxes, or hermetically sealed containers.

- Do not place Primary Containers sideways or upside down in ziplock bags.

- Do not place any paperwork in the Secondary Containers or ziplock bags, so as not to damage the paperwork.

- Do not use the brown/automatic bags to prepackage your materials due to the inadequate seal of these bags.

**Additional Information:**

MERS-CoV Specimen Submission Form

Public health will ask these questions when you contact them—obtain this information and start filling out the form!

<table>
<thead>
<tr>
<th>MEDICAL HISTORY*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Symptom Onset: <em><strong>/</strong></em>/___</td>
</tr>
<tr>
<td>Have the patient’s symptoms resolved?  □ No  □ Yes  □ Unk.</td>
</tr>
<tr>
<td>Signs and Symptoms: (check all that apply) □ Feverish □ Fever (&gt;38°C, 100.4°F) □ Dry cough □ Productive cough □ Chills □ Sore throat □ Headache □ Muscle aches □ Shortness of breath □ Vomiting □ Abdominal pain □ Diarrhea</td>
</tr>
<tr>
<td>□ Clinical signs of Pneumonia or ARDS □ Other ________________</td>
</tr>
<tr>
<td>CXR: □ Abnormal Chest X-Ray (CXR) consistent with (c/w) Pneumonia □ CXR c/w Acute Respiratory Distress Syndrome (ARDS)</td>
</tr>
<tr>
<td>Concurrent risk factors: (check all that apply) □ Immunocompromised □ Pregnant □ Renal failure □ Other ________________ □ Unk.</td>
</tr>
<tr>
<td>Was the patient hospitalized for this illness?  □ No  □ Yes  □ Unk.</td>
</tr>
<tr>
<td>If yes, was the patient admitted to the intensive care unit?  □ No  □ Yes  □ Unk.</td>
</tr>
<tr>
<td>Did patient die from this illness?  □ No  □ Yes (Date: <em><strong>/</strong></em>/___) □ Unk.</td>
</tr>
</tbody>
</table>

Date of symptom onset very important…
<table>
<thead>
<tr>
<th>MERS CORONAVIRUS EPIDEMIOLOGY</th>
<th>MUST ANSWER “YES” TO AT LEAST ONE.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. * Patient traveled within 14 days of onset to an area reporting human MERS Coronavirus: □ No □ Yes □ Unk. If Yes: Name of Countries visited in the Arabian Peninsula* ______________________ Dates of travel to/from the Arabian Peninsula* or neighboring countries: To: <em><strong>/</strong></em>/_______ From: <em><strong>/</strong></em>/_______</td>
<td></td>
</tr>
<tr>
<td>2. * In 14 days before symptom onset, patient was a close contact with an ill person with a history of recent travel to the Arabian Peninsula or neighboring countries: □ No □ Yes □ Unk.</td>
<td></td>
</tr>
<tr>
<td>3. * Patient was a close contact to a known or suspected case of MERS Coronavirus: □ No □ Yes □ Unk.</td>
<td></td>
</tr>
<tr>
<td>4. * Patient is a healthcare worker who has cared for patients with Severe Acute Respiratory Illness [SARI], particularly patients requiring ICU care □ No □ Yes □ Unk.</td>
<td></td>
</tr>
<tr>
<td>5. * Patient is part of a cluster of SARI [fever and cough requiring hospitalization, cause unknown]. “Cluster” is defined as 2 or more patients with onset of disease within a 2-week period among people linked by a specific setting (e.g., hospital, workplace, household, classroom, family group, camp, dormitory) □ No □ Yes □ Unk.</td>
<td></td>
</tr>
<tr>
<td>* Is the patient (check all that apply): □ Health care worker □ US military □ Flight crew □ Other __________________</td>
<td></td>
</tr>
<tr>
<td>* During Illness, was patient associated with any of the following (check all that apply) □ Flight □ Childcare/daycare Facility □ Long-term Care Facility □ Correctional Facility □ Hospital □ School Please provide name(s): __________________________________________</td>
<td></td>
</tr>
</tbody>
</table>
Laboratory Testing

Specimens:

- Lower respiratory tract specimens (e.g., sputum, BAL, ETA)
- NP/OP swab
- Stool
- Blood

See CDC guidance for collecting, handling and testing clinical specimens, including infection prevention

Refer to CDC guidance for additional details

http://www.cdc.gov/CORONAVIRUS/MERS/INDEX.HTML
If patient does not require hospitalization—review guidance, assess if suitable for home care & provide instructions on prevention steps
Prevention Steps: Home Isolation

- Stay home
- Separate yourself from other people in your home
- Call ahead before visiting your doctor
- Wear a facemask
- Cover your coughs and sneezes
- Wash your hands
- Avoid sharing household items

Review checklists for healthcare providers or healthcare facilities to make sure you are ready for any patients that may present with MERS-CoV.
If Have a Positive MERS-CoV Case

- Public Health will work with you
- Be prepared for media attention
  - Contact TDH Director of Communications
  - Tel: (615) 741-3446
  - Woody.McMillin@tn.gov

- Contact investigations: flights, exposures of HCP and others
- TDH has tools to assist in monitoring of contacts including exposed HCP
Take Home Messages

- **Search terms:** “CDC MERS” & “TNHAN”

- **Key Elements for Control:**
  - Detect and Protect
    - Screening questions: Travel, Contact-14 days
    - Infection Control
  - Call Public Health 24/7 even if in doubt
    - (615) 741-7247 for central office TDH

- This is a rapidly evolving situation, there are still many unknowns