FIRST WATCH
Every Record. In Real Time. Automatically.

Emergency Medical Services (EMS) and Ebola

Todd Stout & Alex Garza, MD, MPH

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Agenda

- EMS Overview
- Ebola Timeline
- EMS-specific Best Practices & Recommendations
- Working Approaches to EMS Data
- Influenza Surveillance & Future Emerging Infectious Diseases
- EMS-specific Online Resources

EMS Overview

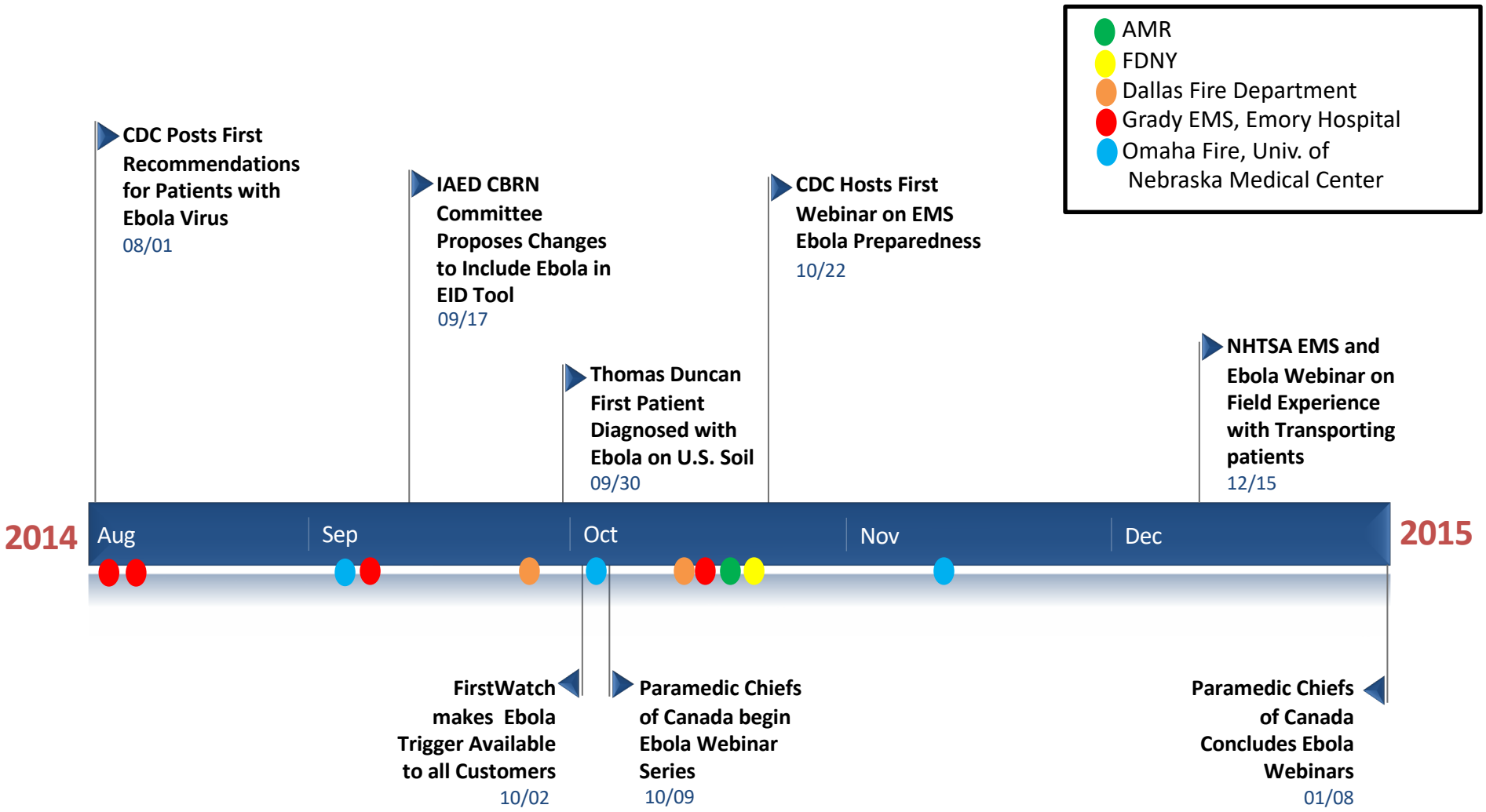
- Why is EMS important?
  - For disease tracking
  - For emerging infectious diseases

EMS Data Source Comparison

	9-1-1 Primary PSAP*	Dispatch Secondary PSAP	Structured Call-Taking (EMD**)	Electronic Patient Care Record
Initial patient complaint		X	X	X
Medic impression(s)				X
Near-Real-Time***	X	X	X	
Location	?	X		
Transport info		X		X
Pt. Assessment				X
Past Medical Hx			?	X
Treatment/Meds				X

* PSAP = Public Safety Answering Point
** EMD = Emergency Medical Dispatch
*** Near-Real-Time = Within a few minutes – while the call is occurring

Ebola in the U.S. Timeline



Learning Objective 1

Learn EMS-specific best practices & recommendations for treatment and transport of suspected or confirmed Ebola patients shared by EMS Agencies with Ebola patient transport experience

International Ebola Working Group Overview

- Webinars held Oct. 9 – Jan. 8
- Total # of speakers: 15
- Recorded & viewed later by many

Paramedic Chiefs of Canada
Chefs Paramédics du Canada

Thank you to the Paramedic Chiefs of Canada, participants, guest speakers, moderators (**Michael McKeage, Ken Luciak and Randy Mellow**), and partners who made these webinars possible.

In association with

NATIONAL EMS MANAGEMENT ASSOCIATION
IAED International Academies of Emergency Dispatch
IAEMSC International Association of Emergency Medical Services Chiefs
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International Ebola Working Group Overview

October:

October 9, 2014
Chief Norman Seals, **Dallas Fire Department** experience transporting Thomas Duncan

October 16, 2014
Chief Lloyd Rupp & Dr. John Lowe, **Omaha Fire & Univ. of Nebraska Medical Center** (multiple patients)
Dr. Fivaz & Dr. Clawson, IAED

October 23, 2014
Wade Miles, Aaron Jamison &
Dr. Alexander Isakov, **Grady EMS & Emory Hospital** (multiple patients)

October 30, 2014
Dr. Russell MacDonald, Ebola 101

November:

November 6, 2014
Peter Simpson & Catherine Jackson-Cole, **Sierra Leone** Experience

November 20, 2014
Dr. Richard Alcorta, Maryland's statewide implementation of the
IAED Emerging Infectious Disease Tool

December:

December 4, 2014
Chief Bergamini & Captain Miano, **FDNY**'s experience transporting
Dr. Craig Spencer

December 18, 2014
Dr. Edward Racht, **AMR**'s approach to transporting Ebola patients in Dallas

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International Ebola Working Group Overview

International Ebola Working Group Overview

International Ebola Working Group Overview

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Best Practice Examples

- Emotional & educational support for responders and family immediately
- Full coverage, enclosed hoods & facemasks rather than shields
- PAPRs, rather than N95 masks when possible
- Inside the ambulance draping: smooth vs. textured

FAQs Examples

Personal protective equipment

- 1. How does your EMS staff feel about the difference in the level of PPE between 911 crews and inter-facility or special operations crews? How is that issue perceived by the public?
- 2. What is the cost of the PPE? Are you disposing of all equipment after each transport (including PAPR)?
- 3. Do they have specific equipment lists and links to maybe You Tube videos showing how they do their training or draping?
- 4. Strong contrast to the Dallas story re: PPE – what caused you to use the level of PPE you chose? How does that square with CDC recommendations?
- 5. Is the use of PAPR purely above and beyond? CDC is still suggesting use of N95 masks. Are those sufficient?

Dr. Isakov (October 23, 2014): The special team dedicated to transport of **confirmed Ebola** patients uses hooded PAPR, Tyvek suits, and head-to-toe skin covering. CDC guidelines to date have been for in-hospital setting. The illness goes through a spectrum that begins with fever and progresses to vomiting and other bodily fluid emissions and an altered state where the patient may not be able to follow commands so well. The CDC guidelines address this later state where the patient is very ill. Not every patient requires this level of PPE.

Chief Rupp (October 16, 2014): The PAPR is not necessary; it was used for the comfort of the medics. With the first patient, Omaha used the mask and goggles but after a time it was not comfortable. The goggles were fogging up. With suspected patients, Omaha may hold off on decontamination until patients are confirmed to have EVD. The Biocontainment Unit can get test results for EVD within four hours.

Dr. Lowe (October 16, 2014): For suspected patients, Omaha limits the number of care providers that interact with a suspected patient. PPE includes Tyvek suits, N95 masks and goggles. For the first EVD positive patient, that level of PPE was sufficient; however, it was not comfortable. The use of the PAPR is for patients that meet the case definition or known patients, and was implemented to keep the paramedics comfortable and better able to work. Medics may be standing by waiting for the patients to come off the plane for some time, and Omaha wants them ready, with PPE donned, while waiting. The PAPR makes this wait much more comfortable.

FAQs

Care and Treatment

▲ 1. Do you suspend use of ALS procedures if you find a patient in the pre-hospital environment that positively screens and switch to BLS in order to reduce exposure opportunities?

Dr. Isakov (October 23, 2014): "My evolution on the ALS BLS question has changed… I encourage everyone to consider their duty to treat." Patients in North America with Ebola have been successfully treated. It is due to much better resources and expertise. One thing learned is that potassium gets dangerously low due to diarrhea, and managing electrolyte levels can help these patients. Grady/Emory has ALS equipment on board.

Chief Rupp (October 16, 2014): Known Ebola patients are a no-code situation for Omaha. The medical direction is currently assessing whether ALS will be used.

▲ 2. What if any interventions did the paramedics provide to the patient during transport?

Chief Rupp (October 16, 2014): The only treatment provided was oxygen. The patient did have a saline lock in, under the Tyvek suit.

▼ 3. Are there any demographic indicators of success against Ebola?

▼ 4. In screening for Ebola in the dispatch environment, if the patient has had positive exposure to someone with flu/flu-like symptoms and then deteriorates to cardiac arrest, what is the recommendation for administering CPR in this situation?

FAQs

Training

▲ 1. What training was provided to your 911 and inter-facility or special operations teams?

Chief Seals (October 9, 2014): After the transport, Dallas brought the supervisors in first to give them information. This was done to combat fear and the lack of adequate information.

Dr. Isakov (October 23, 2014): Emory identified a knowledge gap around serious pathogens like Ebola among EMS special teams. Our training for the Grady EMS Biosafety transport team has included education on serious pathogens. This has focused on the nature of these diseases, routes of transmission, infection control, prophylaxis and immunization when it exists, post-exposure prophylaxis and methods of treatment. This education helps special teams care providers understand what they are dealing with. It eliminates misconceptions and contributes a needed comfort level for these paramedic care providers.

The training of our special teams includes competency based training on proper donning and doffing of PPE. Routinely EMS providers do not apply PPE meticulously. In the case of serious pathogens this cannot be tolerated. The preparation of the ambulances is also covered in training.

▼ 2. When you rolled this out, did you have any challenges getting people to go through it? Did you offer statewide web-based training or did every agency do their own training?

▼ 3. How are your regular EMTs reacting to the level of PPE and level of training they have received? Do they want or need more training, ongoing practice?

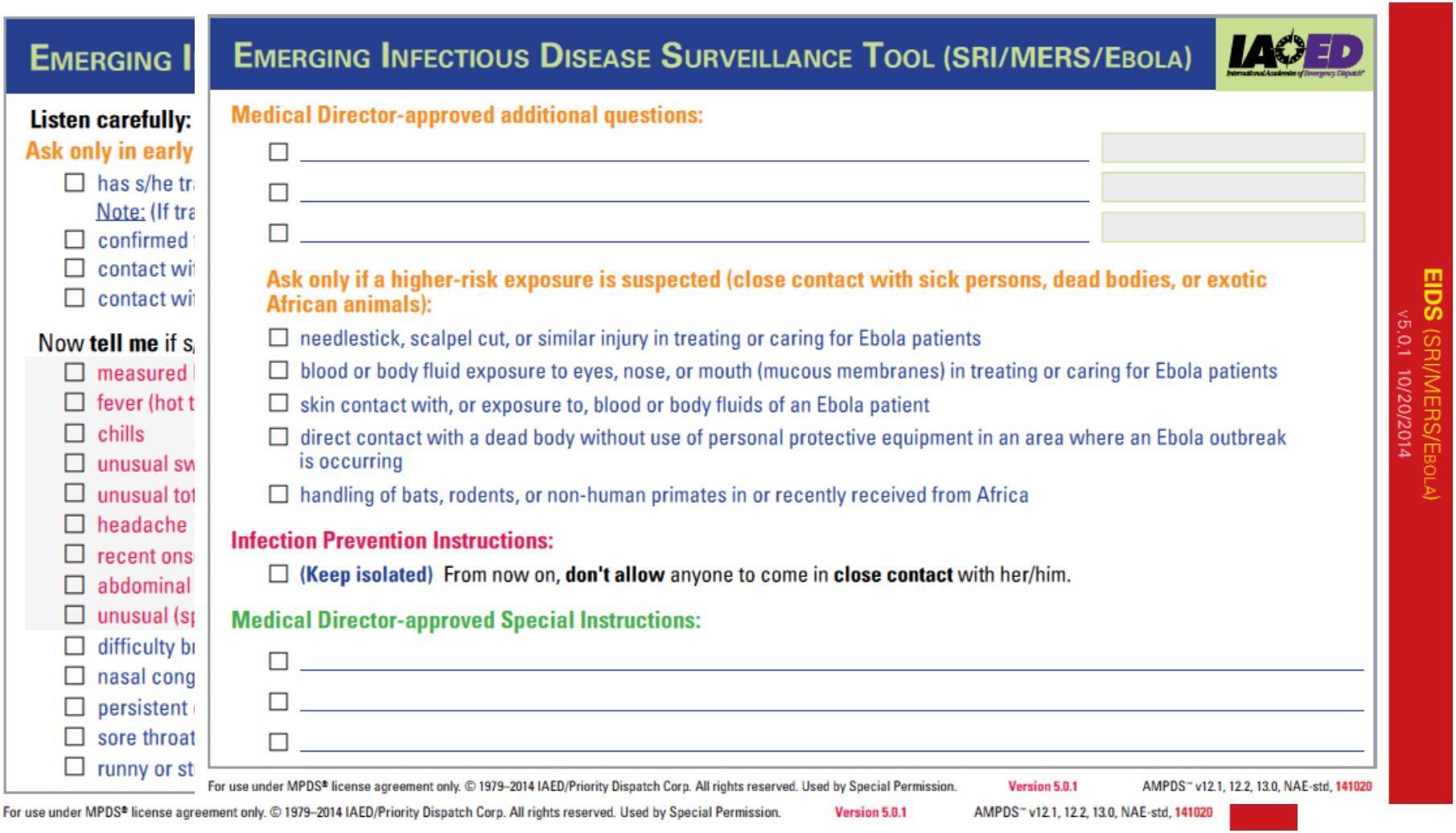
Webinar Stats

- Attendees
  - Approximately 200 EMS agencies
  - Approximately 1,000 EMS professionals
- Initial Survey Results
  - 90% found the webinars “Extremely Useful”
  - 10% found them “Somewhat Useful”
  - 100% found them “Much better” than others
  - 100% said they are “doing something differently in their organizations due to these webinars”

Learning Objective 2

Learn specific, working approaches to EMS data surveillance for suspected Ebola patients

IAED EIDS Tool



EMERGING I

Listen carefully:

Ask only in early

- ☐ has s/he tr
  Note: (If tra
- ☐ confirmed
- ☐ contact wi
- ☐ contact wi

Now **tell me** if s

- ☐ measured
- ☐ fever (hot t
- ☐ chills
- ☐ unusual sw
- ☐ unusual tot
- ☐ headache
- ☐ recent ons
- ☐ abdominal
- ☐ unusual (sp
- ☐ difficulty br
- ☐ nasal cong
- ☐ persistent
- ☐ sore throat
- ☐ runny or st

EMERGING INFECTIOUS DISEASE SURVEILLANCE TOOL (SRI/MERS/EBOLA)

IAED

Medical Director-approved additional questions:

- ☐ _____
- ☐ _____
- ☐ _____

Ask only if a higher-risk exposure is suspected (close contact with sick persons, dead bodies, or exotic African animals):

- ☐ needlestick, scalpel cut, or similar injury in treating or caring for Ebola patients
- ☐ blood or body fluid exposure to eyes, nose, or mouth (mucous membranes) in treating or caring for Ebola patients
- ☐ skin contact with, or exposure to, blood or body fluids of an Ebola patient
- ☐ direct contact with a dead body without use of personal protective equipment in an area where an Ebola outbreak is occurring
- ☐ handling of bats, rodents, or non-human primates in or recently received from Africa

Infection Prevention Instructions:

- ☐ **(Keep isolated)** From now on, **don't allow** anyone to come in **close contact** with her/him.

Medical Director-approved Special Instructions:

- ☐ _____
- ☐ _____
- ☐ _____

EIDS (SRI/MERS/EBOLA)
v5.0.1 10/20/2014

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FIRST WATCH

EMS Ebola Triggers

Ebola Trigger Implementation

- FirstWatch Staff Involved
  - Debbie Gilligan
  - Dr. Alex Garza
  - Pam Farber
  - Ryan Maloney
  - Bernie Horak
  - John Selters
  - Jim Veskerna
  - Kevin Lee
  - Ed Chiu
  - Israel Cintora
  - Francis Chue
  - Stephen Wong
  - Zian Choy
  - Todd Stout

Ebola Triggers

- If symptoms, ask travel/contact, fever
  - Avoid similar positive & negative documentation
- 27 ePCR/RMS-based
  - Combination of impressions, temp, custom questions/surveys, free-text
- 16 ProQA/Paramount (EMD)
  - Emerging Infectious Disease (EID) Form
    - Codes, free text for travel or contact w/traveler
- 36 CAD-based
  - Combination of chief complaint, user-fields & free-text
- 1 Hospital Emergency Dept-based

Ebola Trigger Definition: CAD

- **Free-Text Travel Category:** Abidjan, Accra, Africa, Banjul, Benin, Bissau, Conakry, Dakar, Foreign Travel, Freetown, Gambia, Ghana, Guinea, Ivory Coast, Lagos, Liberia, Lome, Monrovia, Nigeria, Overseas, Port Hartcourt, Porto Novo, Senegal, Sierra Leone, Togo, West Africa
  (Now, limited to the affected nations and variations)

- **Problem Category:** 26A01n-Sick Person, 26A02n-Sick Person, 26A03n-Sick Person, 26A04n-Sick Person, 26A05n-Sick Person, 26A06n-Sick Person, 26A07n-Sick Person, 26A08n-Sick Person, 26A09n-Sick Person, 26A10n-Sick Person, 26A11n-Sick Person, 26A12n-Sick Person, 26A13n-Sick Person, 26A14n-Sick Person, 26A15n-Sick Person, 26A16n-Sick Person, 26A17n-Sick Person, 26A18n-Sick Person, 26A19n-Sick Person, 26A20n-Sick Person, 26A21n-Sick Person, 26A22n-Sick Person, 26A23n-Sick Person, 26A24n-Sick Person, 26A25n-Sick Person, 26A26n-Sick Person, 26A27n-Sick Person, 26A28n-Sick Person, 26B01f-Sick Person, 26B01n-Sick Person, 26C01f-Sick Person, 26C02f-Sick Person, 26C03f-Sick Person, 26D01f-Sick Person, 18A01n-Headache, 18B01f-Headache, 18B01n-Headache, 18C01f-Headache, 18C02f-Headache, 18C03f-Headache, 18C04f-Headache, 18C05f-Headache, 18C06f-Headache & 18C07f-Headache

- **Free-Text Symptoms Category:** Fever, Abdominal Pain, Blood Diarrhea, Blood Stool, Blood Vomit, Bodywide Pain, Coughing Blood, Diarrhea, Flu, Gastrointestinal, Headache, Hematemesis, Hematemesis, Hematochezia, Muscle Pain, Nausea, Tarry Stool, Upper/Lower GI bleed, Vomiting

  Must have a valid on scene time

Ebola Trigger Definition: ProQA

- Includes Priorities: Only.
- Trigger Criteria Include the Following Problem/Nature Codes: RAA - Ebola Screening (ProQA EID)
- Include calls based on Problem ONLY.
- Other Information: DRAFT
- **Travel Question:** Traveled in the last 21 days (if so, where?) Note:?(If travel timeframe questionable) Was it roughly within the past month? *followed by text entry
- **Symptom List 1:** Difficulty breathing or shortness of breath, Persistent cough, Measured body temperature > 101.5? f (38.6? c), Chills, Unusual sweats, Hot to the touch in room temperature, Unusual total body aches, Headache, Sore throat, Nasal congestion (blocked nose), Runny or stuffy nose, Recent onset of any diarrhea, vomiting, or bloody discharge from the mouth or nose, Abdominal or stomach pain, Unusual (spontaneous/non-traumatic) bleeding from any area of the body, Contact with someone with the flu or flu-like symptoms (if so, when?) *followed by text entry
- **Symptom List 2:** Needlestick, scalpel cut, or similar injury in treating or caring for Ebola patients, Blood or body fluid exposure to eyes, nose, or mouth (mucous membranes) in treating or caring for Ebola patients, Skin contact with, or exposure to, blood or body fluids of an Ebola patient, Direct contact with a dead body without use of personal protective equipment in a country where an Ebola outbreak is occurring, Handling of bats, rodents, or non-human primates in or recently received from Africa

Ebola Trigger Definition: ePCR

- **Trigger Criteria Include the Following Categories** (with Matching Free-Text Entries within Call Comments): EBOLA Symptoms, EBOLA Travel
  - (Drill down into each call's detail to see which free-text words or phrases were found in the call comments and had a corresponding Category.)

- **Other Information:** Free-Text Travel Category: Guinea, Conakry, Senegal, Dakar, Gambia, Banjul, Liberia, Monrovia, Ivory Coast, Abidjan, Bissau, Nigeria, Lagos, Ghana, Accra, West Africa, Port Hartcourt, Sierra Leone, Togo, Lome, Freetown, Benin, Africa **(Now, limited to the affected nations and variations)**

- **Free-Text Travel Symptoms:** Blood Stool, Blood Diarrhea, Blood Vomit, Tarry Stool, Hematemesis, Flu, Hematochezia

- **Temperature:** Temperature > 101.5 **(Lowered to 100.4)** or skin temperature of "hot"

- **Chief Complaint:** Abdominal Pain, Atraumatic Bleeding, Flu-Type Symptoms ? Fever, Flu-Type Symptoms ? Headache, Flu-Type Symptoms - Muscle Cramps, Flu-Type Symptoms ? Nausea, Flu-Type Symptoms ? Vomiting, Flu-Type Symptoms ? Weakness, General Illness - GI Bleed/Problem, General Illness ? Headache, General Illness ? Nausea, General Illness ? Vomiting, General Illness ? Weakness, Headache, Pain ? Abdominal, Sick Person

- **Primary & Secondary Impressions:** Abdmnal Pain Epigastric, Abdmnal Pain Generalized, Abdmnal Pain Rt Upr Quad, Abdmnal Rgdt Rt Upr Quad, Abdmnal Tndr Epigastric, Abdmnal Tndr Generalized, Abdmnal Tndr Rt Upr Quad, Blood In Stool, Diarrhea, Fever, Gastrointest Hemorr Nos, Headache, Hematemesis, Hematuria, Hematuria, unspecified, Hemoptysis, Hemorrhage Nos, Malaise And Fatigue Nec, Muscle Weakness, Nausea With Vomiting

Free text trigger example: ePCR

Free Text

I: EMS UNIT 42 DISPATCHED TO A MALE WITH FLU LIKE SYMPTOMS. N/V/D. BODY ACHES. FEVER. TRAVEL TO GHANA AND MONROVIA IN THE LAST 2 1/2 WEEKS. UPON EMS ARRIVAL STAGED WHILE CREW AND AMBULANCE PREPARED FOR TRANSPORT. PERSONEL GOWNED AND TRUCK SEALED. UPON MAKING PT CONTACT PT IS SITTING ON THE BENCH. PT C/O NOT FEELING WELL.C: POSSIBLE EBOLA. H: THE PT WENT TO GHANA TO VISIT A FRIEND. HE SPENT 3 DAYS IN ONE COUNTRY AND 2 DAYS IN THE OTHER. HE IS UNSURE OF HIS RETURN DATE. HE SAYS HE CAME BACK 2 TO 2 1/2 WEEKS AGO. 2 DAYS AGO HE BEGAN HAVING N/V/D. HE REPORTS POSSIBLY HAVING BLOOD IN HIS VOMIT. HE ACHES ALL OVER AND IS WARM TO THE TOUCH. A: 35 Y/O MALE PRESENTS WITH FEVER, NAUSEA, VOMITING AND DIARRHEA. PT MEETS THE

This patient was tested and did not have Ebola

(Heavily edited for HIPAA)

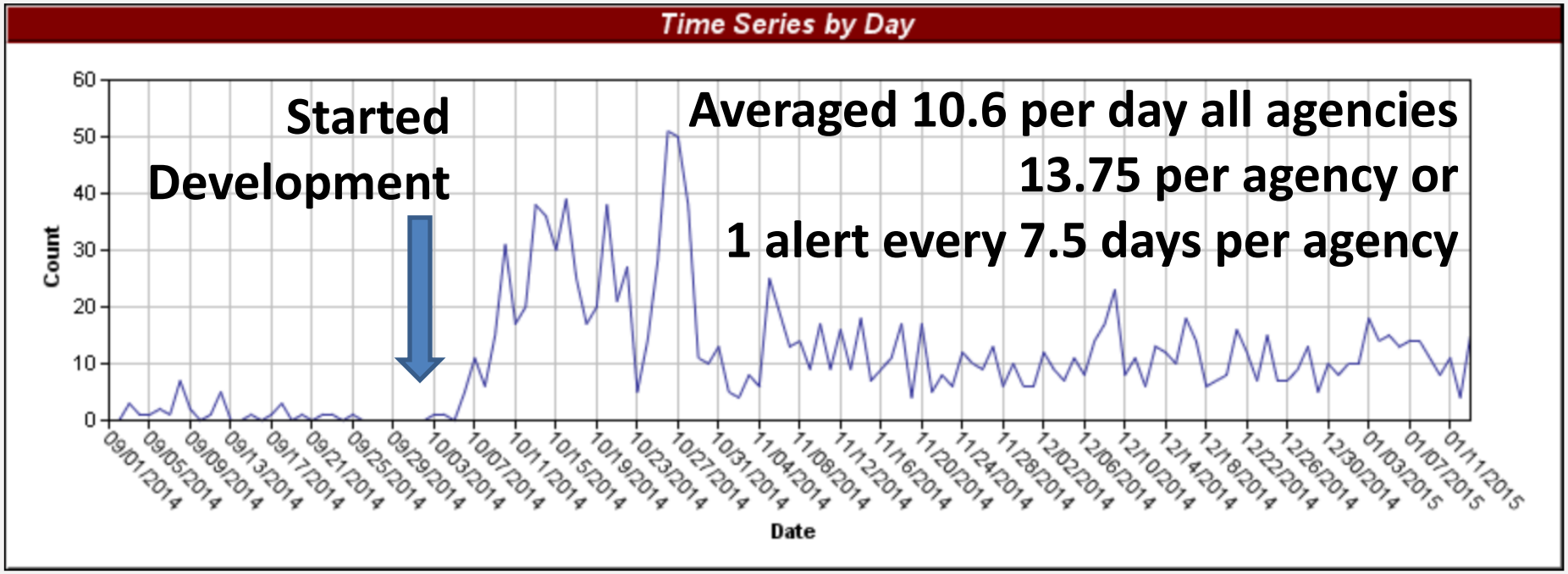
FIRST WATCH

EMS Ebola Trigger Activity

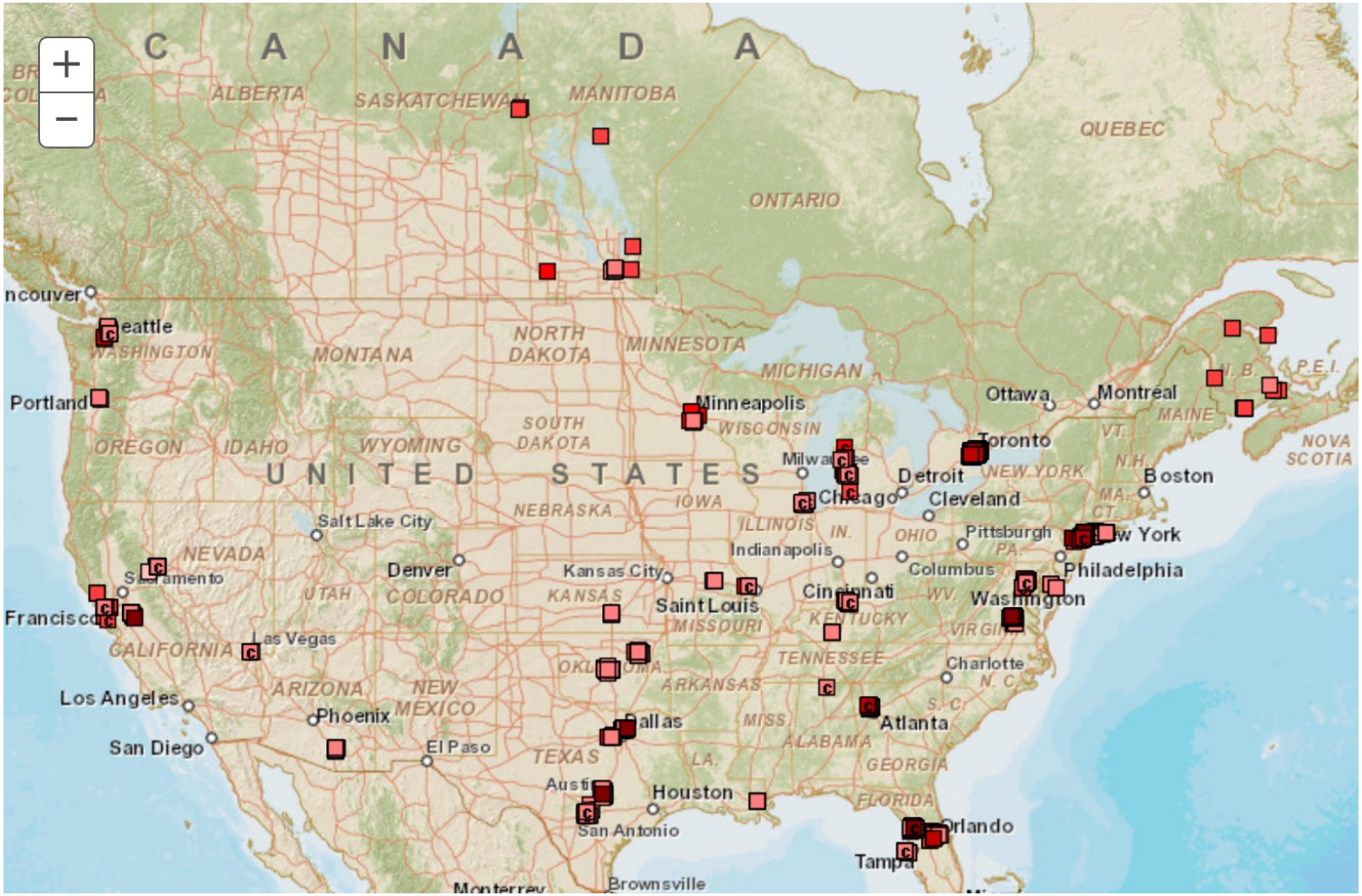
53 Agencies, 77 triggers, 1,100 alerts in 105 days

Aggregated Ebola/EID Screening Time Series

Graphs represent in queue, active or completed calls between the hours of 9/1/2014 and 1/14/2015 11:59:59 PM



EMS Ebola Trigger Alert Map



Learning Objective 3

Learn the applicability of this approach to influenza surveillance and future emerging infectious disease outbreaks

Real-time Influenza Surveillance

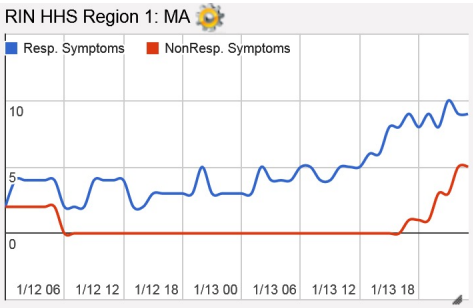
Regional Influenza Network (RIN)

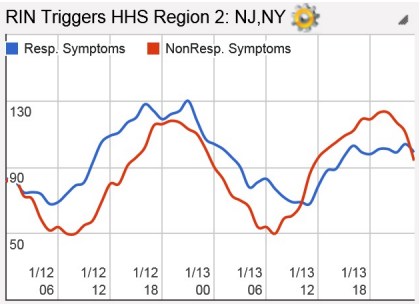
- Early warning for local, regional and national areas
- Protection of the Workforce
- Alternative Planning
  - assessment, pickup and delivery models
  - providing a resource (Card 36)
- Respiratory vs. Non-respiratory symptoms
- Similar to MERS & Ebola, without travel criteria

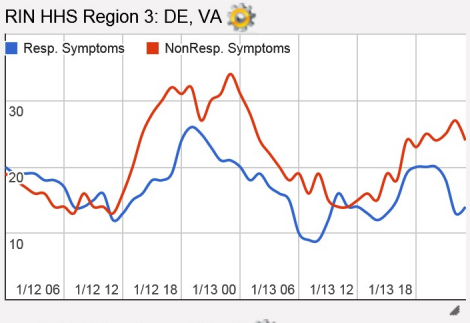
80

member agencies across North America

Regional Influenza Network



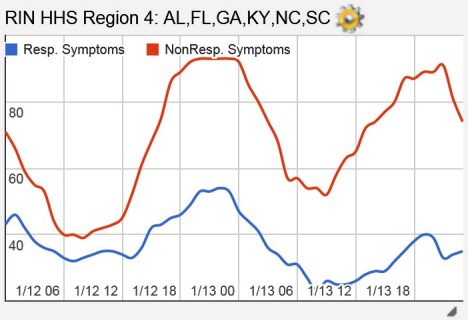


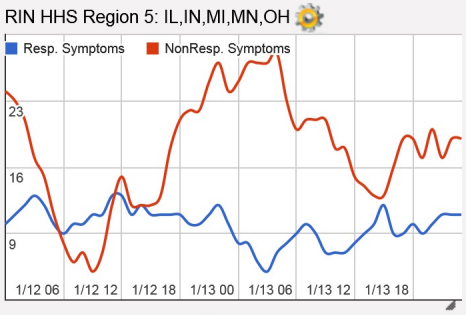


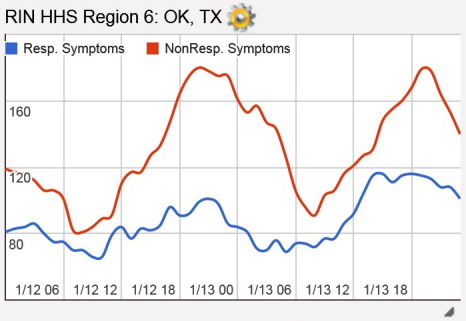
Recent Alerts

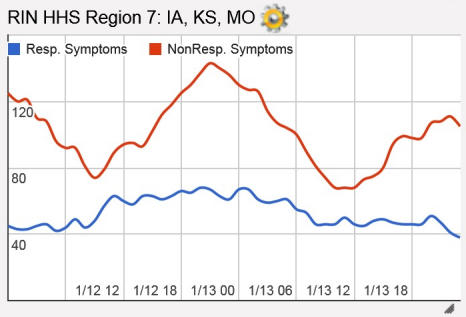
Trigger	Sent	Address	Problem
Aggregated Ebola/EID Screening	1/13/2015 8:20:00 PM	[*****]	Chest Pain (non traumatic)
Aggregated Ebola/EID Screening	1/13/2015 8:19:58 PM	[*****]	Chest Pain (ALS) D 10
Toronto - Custom Ebola Free Text (CAD)	1/13/2015 8:12:40 PM	[*****]	Chest Pain (ALS) D 10
MVEMS - Ebola Free Text (CAD)	1/13/2015 8:10:04 PM	[*****]	Chest Pain (non traumatic)
Aggregated Ebola/EID Screening	1/13/2015 7:59:43 PM	[*****]	Sick Person (spec diag) A 26

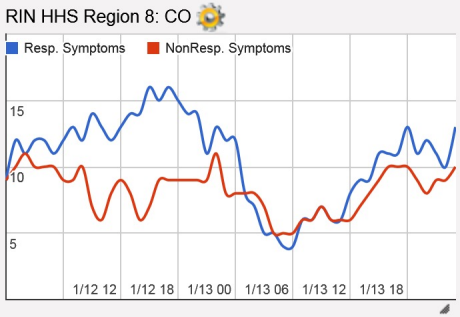
◀ ▶ 1 2 3 4 5 6

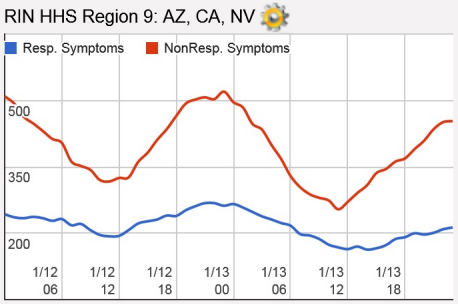


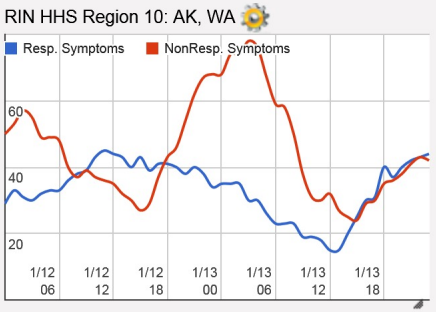












FIRST WATCH

MERS

- First MERS EMS Trigger for Louisville, KY
  - Kentucky Derby
- Second MERS trigger for Orange County, FL
  - Heavy tourism due to Disney World
- Provider training /retraining to capture travel information from caller and/or patient

Future EID Outbreaks

- Previous experiences have prepared EMS
  - SARS
  - H1N1
  - MERS-CoV
  - Ebola
- Leverage systems and training to get up to speed quickly for surveillance and treatment

Learning Objective 4

Learn what EMS-specific online resources are available, for Ebola and future emerging infectious diseases to share with your local EMS partners

Ebola Resources

- General information:
  http://www.cdc.gov/vhf/ebola/

- For a complete list of Questions and Answers from PCC webinars, see:
  www.paramedicchiefs.ca/faqs-ebola

- EMS-specific resources:
  www.paramedicchiefs.ca/eid
  www.firstwatch.net/hi
  www.iaemsc.org
  www.nemsma.org
  www.emergencydispatch.org

Thank You!

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