NETEC

Healthcare Facility Readiness and Expectations

EMORY MEDICINE

UNMC Nebraska Medicine

NYC HEALTH+ HOSPITALS | Bellevue

Welcome

Objectives

- Define tiered structure network for emerging infectious diseases
- Highlight expectations for each designation

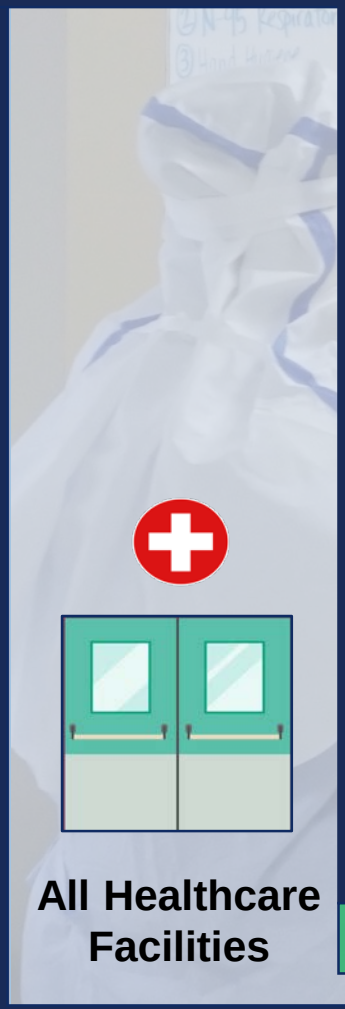
Ebola in the United States

Gaps Identified in the US Healthcare System

- August 2014: An American infected with Ebola virus disease was flown to Georgia for treatment
- This was followed by several other patients being medically evacuated to Georgia and Nebraska
- Confirmed positive cases occurred in Dallas and New York
- The Dallas incident led to 2 RN's becoming infected with the Ebola virus.

December 2014: Congress appropriated emergency supplemental funding to build a health care system adequately prepared to respond to future patients with Ebola

Current State: A Tiered Approach to Ebola In the US



All Healthcare Facilities

Frontline Healthcare Facility

- Quickly identifies and isolates patients with possible Ebola
- Notifies facility infection control and state and local public health officials
- Has enough Ebola personal protective equipment (PPE) for at least 12–24 hours of care

Prepares for patient transfer, if needed

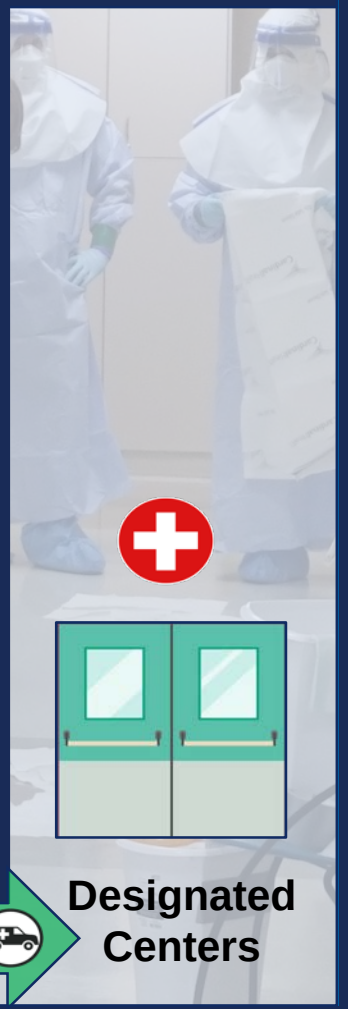
Ebola Assessment Hospital

- Safely receives and isolates a patient with possible Ebola
- Provides immediate laboratory evaluation and coordinates Ebola testing
- Cares for a patient for up to 96 hours (including evaluation and management of alternative diagnoses) until Ebola diagnosis is confirmed or ruled out
- Has enough Ebola PPE for up to 96 hours of care

Transfers a patient with confirmed Ebola to an Ebola treatment center in consultation with public health officials

Ebola Treatment Center

- Safely receives and isolates a patient with confirmed Ebola
- Cares for patients with Ebola for duration of illness
- Has enough Ebola PPE for at least 7 days of care (will restock as needed)
- Has sustainable staffing plan to manage several weeks of care
- CDC experts are ready to deploy to provide assistance as needed

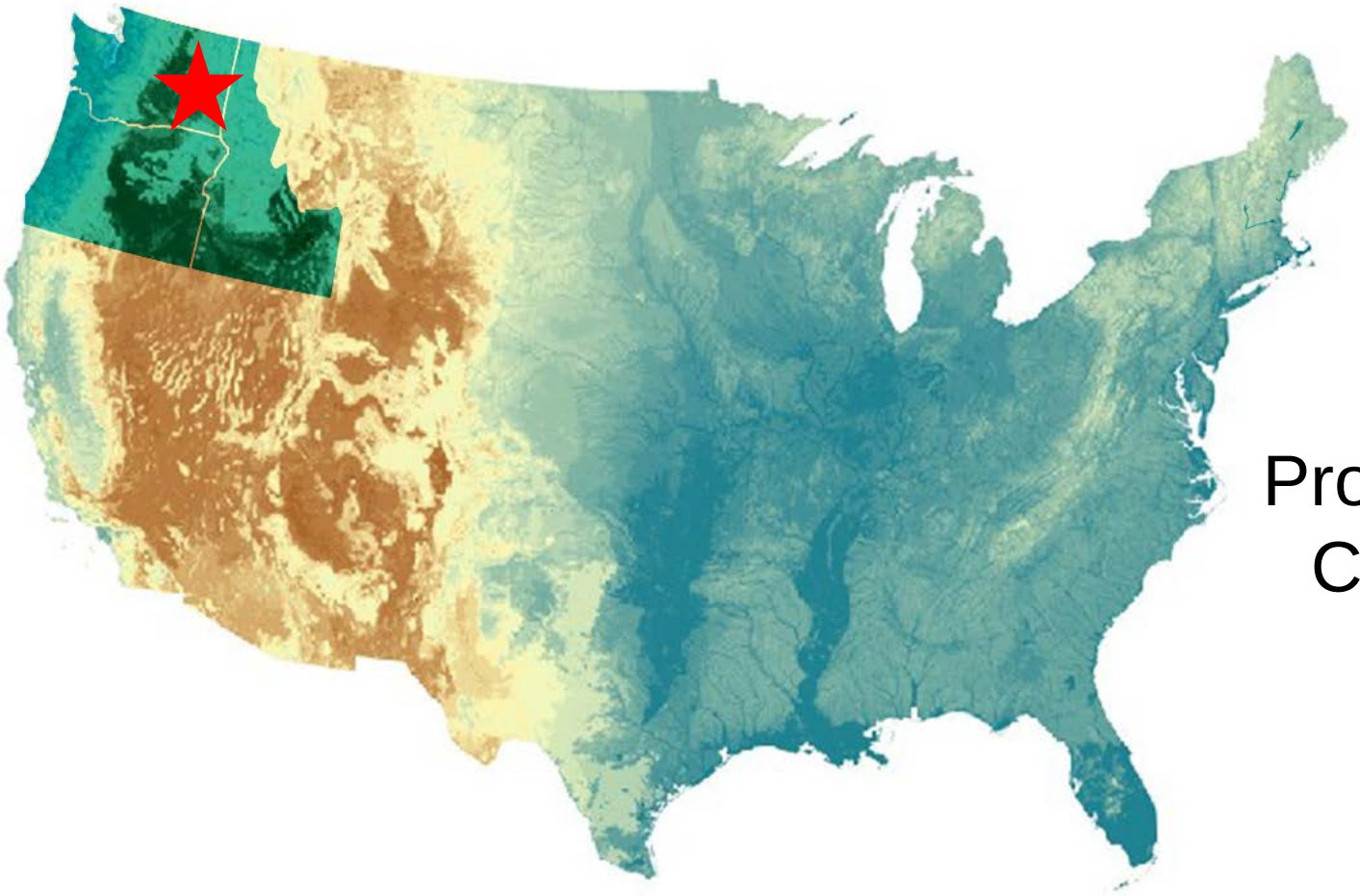


Designated Centers

https://www.cdc.gov/vhf/ebola/healthcare-us/preparing/hospitals.html

Regional Preparedness

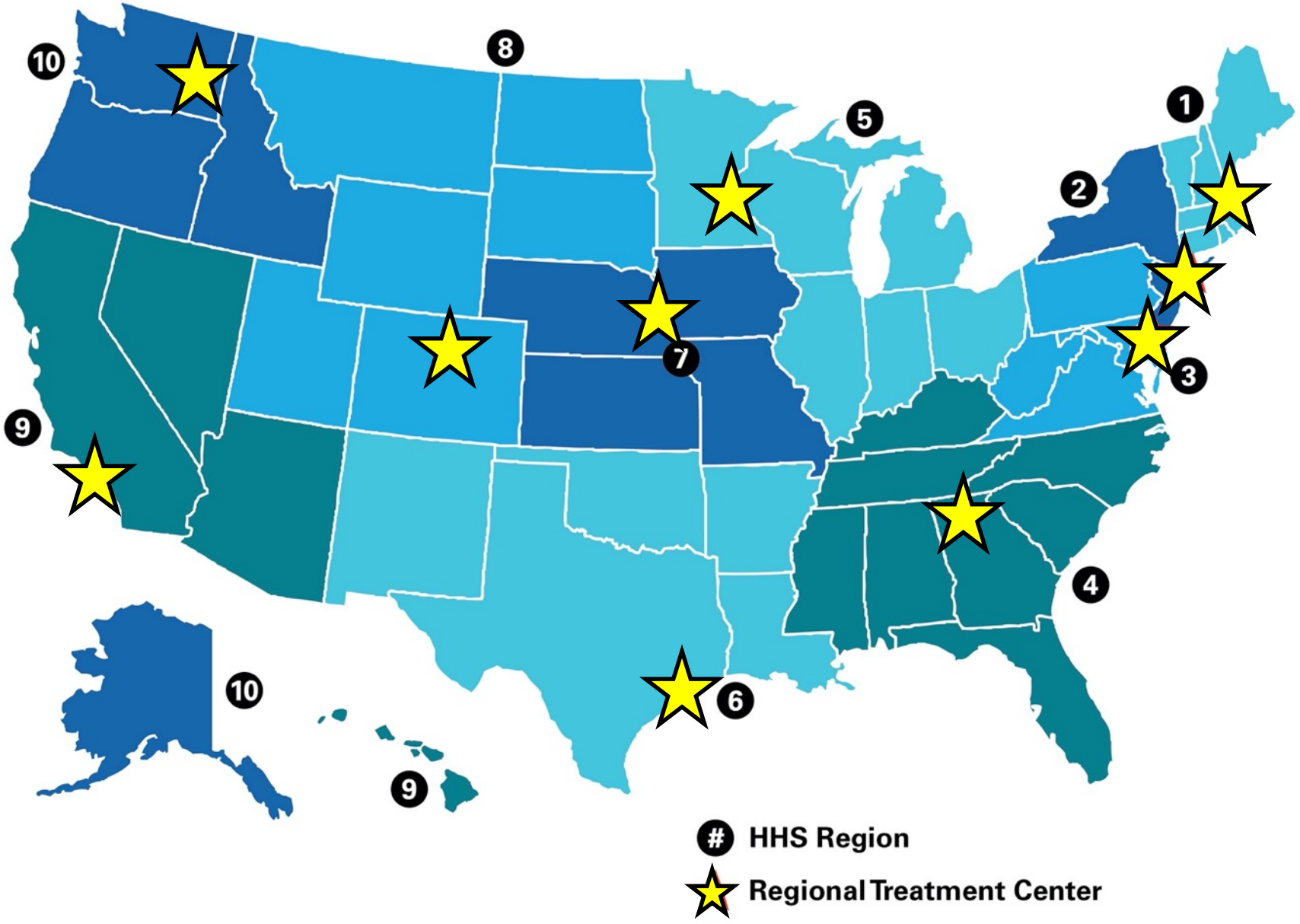
Region 10



Regional Treatment Center
at

Providence Sacred Heart Medical Center and Children's Hospital

Regional Ebola and Other Special Pathogen Treatment Centers

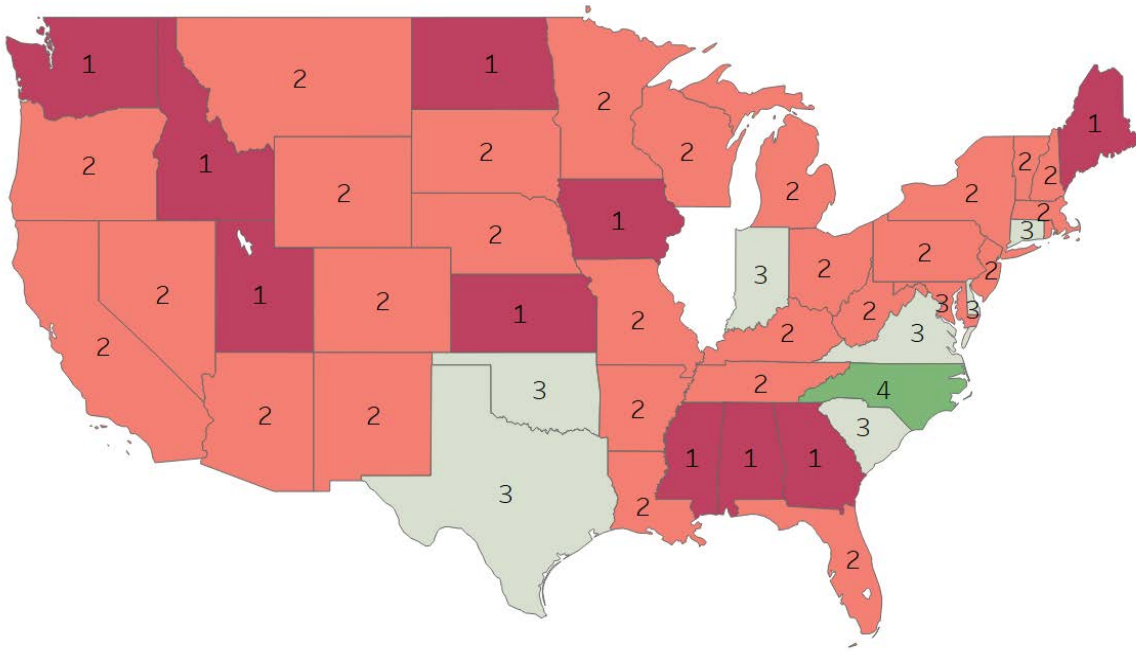


Regional Treatment Centers

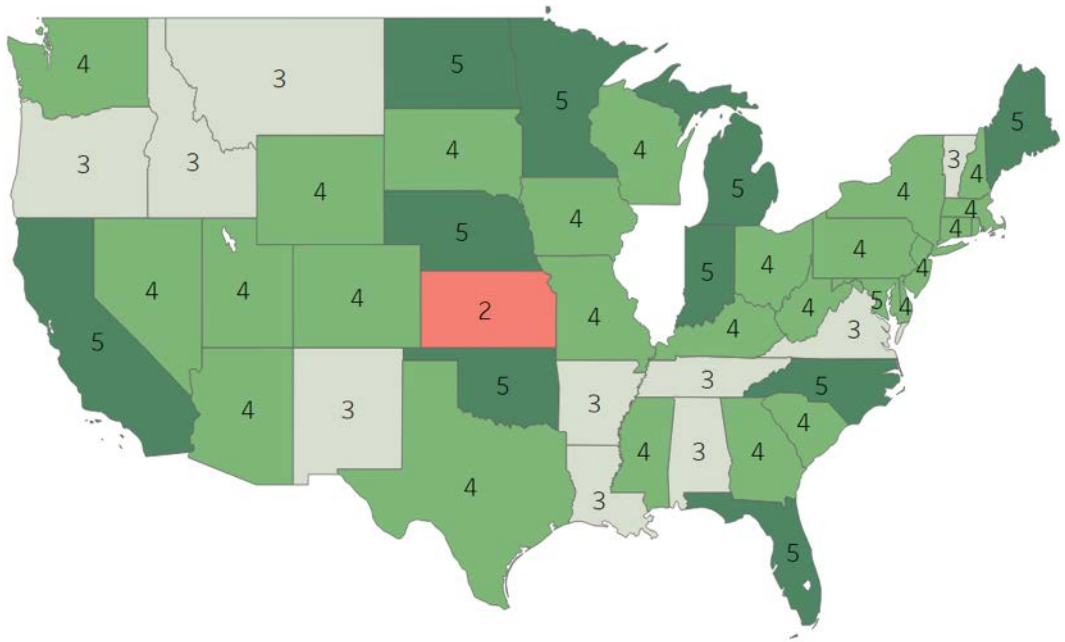
1: Massachusetts General Hospital
2: NYC Health + Hospitals - Bellevue
3: Johns Hopkins Hospital
4: Emory University Hospital and Children's Healthcare of Atlanta-Egleston Hospital
5: University of Minnesota Medical Center
6: University of Texas Medical Branch at Galveston
7: University of Nebraska Medical Center/ Nebraska Medicine
8: Denver Health Medical Center
9: Cedars-Sinai
10: Providence Sacred Heart Medical Center and Children's Hospital

Increasing Preparedness for Ebola and Other Highly Infectious Diseases

States/jurisdictions, including coalitions, frontline health facilities, and inter-facility transport providers, that are **prepared for an Ebola event**, on a scale from **1 (lowest) to 5 (highest)**



During or prior to July 2014



After July 2014

https://asprtracie.s3.amazonaws.com/documents/netec-aspr-tracie-highly-infectious-disease-webinar-12june2018-508.pdf

ASPR
ASSISTANT SECRETARY FOR PREPAREDNESS AND RESPONSE

TRACIE
HEALTHCARE EMERGENCY PREPAREDNESS INFORMATION GATEWAY

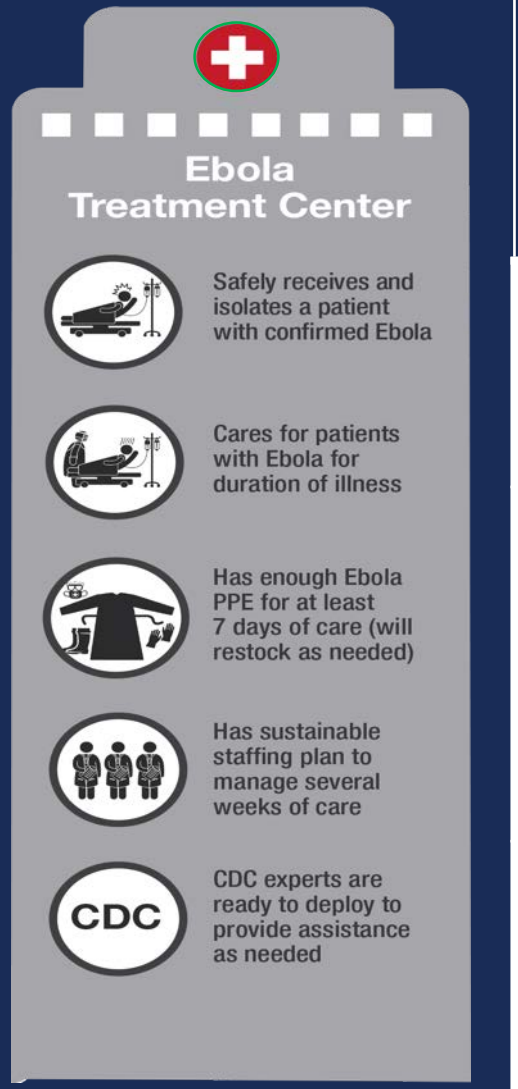
Frontline Healthcare Facilities

Frontline Healthcare Facilities	Respiratory Pathogens	Ebola virus disease or other VHFs
Patients	1 patient 24 hours *may vary by state	1 patient 24 hours *may vary by state
Capabilities	• Identify, Isolate, Inform and provide Care for up to 24 hours • Some may arrange for Ebola testing at nearest Laboratory Response Network (LRN) • Prepare for transport according to state plan	
PPE and Training Requirements	• Enough PPE on hand for 24 hours of patient care • Staff trained to don and doff PPE, specimen collection/ transport, waste management, infection control *there is no scheduling requirement for Frontline Facilities – suggest annually	

Ebola Assessment Hospital

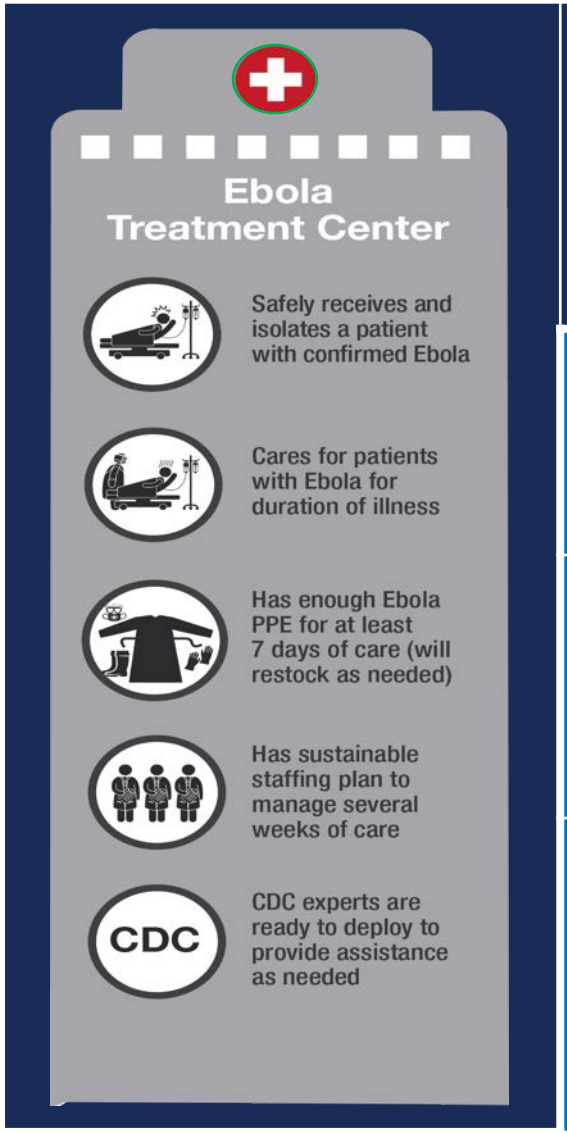
Ebola Assessment Hospital	Respiratory Pathogens	Ebola virus disease or other VHFs
Patients	1 patient 96 hours *may vary by state	1 patient 96 hours *may vary by state
Capabilities	**In addition to Frontline Capabilities**: • Evaluate the patient and provide care • Coordinate Ebola testing at nearest Laboratory Response Network (LRN) • Coordinate with PH to secure transportation to a Treatment Center	
PPE and Training Requirements	• Enough PPE on hand for 96 hours of patient care • *Staff trained to don and doff PPE and Infection Control measures. • Annual training * but this may vary by state	

State Designated Ebola Treatment Center



Ebola Treatment Hospital (State Designated)	Respiratory Pathogens	Ebola virus disease or other VHFs
Patients	1 patient Duration of illness *may vary by state	1 patient Duration of illness *may vary by state
Capabilities	• Provide Care for the duration of the illness	
PPE and Training Requirements	• Enough PPE on hand for duration illness with the ability to restock as required (should have 5 days on hand) • Staff must be trained on PPE procedures annually, • Annual training on infection control measures for unstable patients	

Regional Ebola Treatment Center



Ebola Treatment Hospital (State Designated)	Respiratory Pathogens	Ebola virus disease or other VHFs
Patients	• 10 patients • Duration of care	• 2 patients • Duration of care
Capabilities	• Provide Care for the duration of the illness	
PPE and Training Requirements	• Enough PPE on hand for duration illness with the ability to restock (5 days on hand) • Staff trained on PPE procedures **quarterly**, • **Quarterly** training on infection control measures	

CDC PPE Calculator

Outputs and Team configuration

Please complete yellow cells

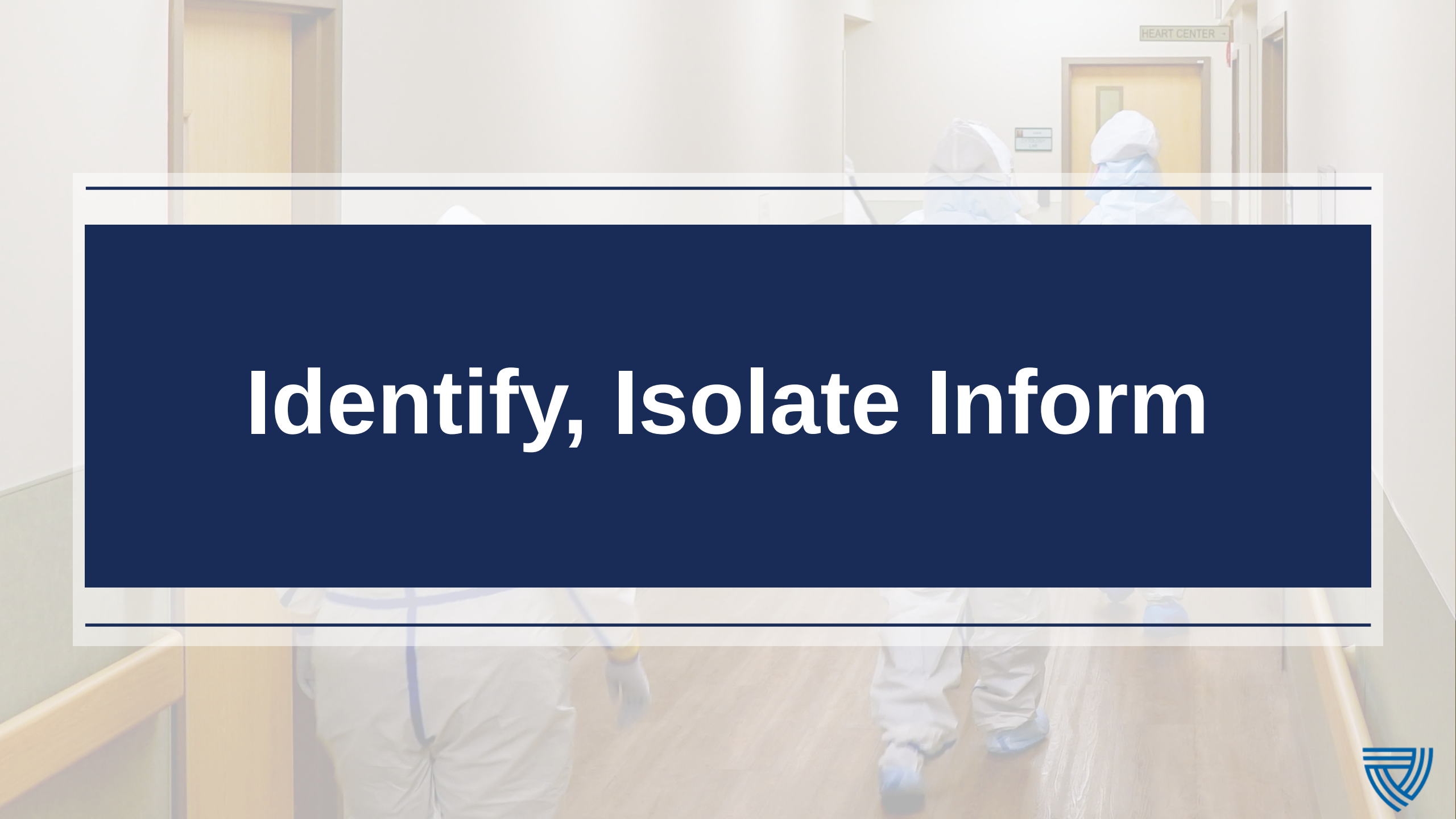
	Persons/ shift	Shifts per day	Persons per day
Nurses - with patient contact	2	2	4
Doctors - with patient contact	2	2	4
Trained Observer	2	2	4
Env Services	1	2	2
Lab Tech	1	2	2
Total Team	8		16

Projection 1- Total days	1

			Either Gowns or Coveralls Needed^		All needed				Either PAPRs or N95 Respirators Needed^						
Totals days: 1		Total staff for total days	Gown Disp Impervious	Coverall	Glove, ex cuff	Glove Exam	Boot/shoe cover	Plastic Apron	PAPR^^	PAPR Shroud	PAPR Battery	PAPR Filter#	N95	Surgical Hood	Face Shield
	Nurse	4	8	8	48	16	16	8	4	8	NA	8	8	8	8
	Doctors	4	4	4	8	8	8	4	2	4	NA	4	4	4	4
	Trained Observer	4	8	0	8	8	8	0	0	0	NA	0	0	0	8
	Env Services	2	4	4	24	24	24	4	2	4	NA	4	4	4	4
	Lab Tech	2	4	4	8	8	8	4	4	4	NA	4	4	4	4
									1.5x total for 1 shift						
	Total PPE needed for total days		24	16	88	56	56	16	18	16	36	16	16	16	24

* Quantity of product per shift may vary based on multiple factors including patient acuity, length of shifts, breaks etc. Estimates in table assume 3-4 hour shift.
**Hospitals may have additional roles that need to be considered. Roles in the table are defined above under "Healthcare Team Roles and Descriptions"
^ Either of these products may be used per CDC PPE guidance
^^ Powered air purifying respirator (PAPR) blower units/system s may be reused post decontamination. Therefore, the quantity of PAPRs needed per shift and per day should be based on the number of persons that may be using a PAPR and the time needed to decontaminate and ensure that these products are ready for use. One PAPR will be needed for each staff member per shift who will be in direct contact with the patient. Should consider having 1.5 to 2 shifts worth of PAPR blower units/systems on hand to account for changing of staff and decon time.
# Follow the manufacturer's guidance to determine the need to replace/dispose of a filter during PAPR decontamination. Several manufacturers have added specific instructions for cleaning, disinfecting, and

https://www.cdc.gov/vhf/ebola/healthcare-us/ppe/calculator.html



Identify, Isolate Inform

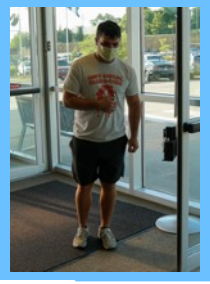
Patient Arrival

Know the points of entry at your facility

Potential Points of Entry

- Emergency department
- Clinics
- Ambulatory care centers

Walk-ins



- Arrive by themselves
- Brought in by another person(s)

By Ambulance

- Preidentified as a PUI
- Identified en route as a PUI
- May not be identified as a PUI until arrival

Patient Condition

- Non-Emergent
- Emergent
- Critical
- Expired

Early Recognition

- **Visual cues of a potentially infectious person**
  - Facial cues:
    - Puffy face
    - Droopy eyes
    - Dark eyes
    - Red nose
  - Body language:
    - Posture
  - Skin:
    - Pale/ flushed
    - Diaphoretic

Take measures to prevent the spread of infection

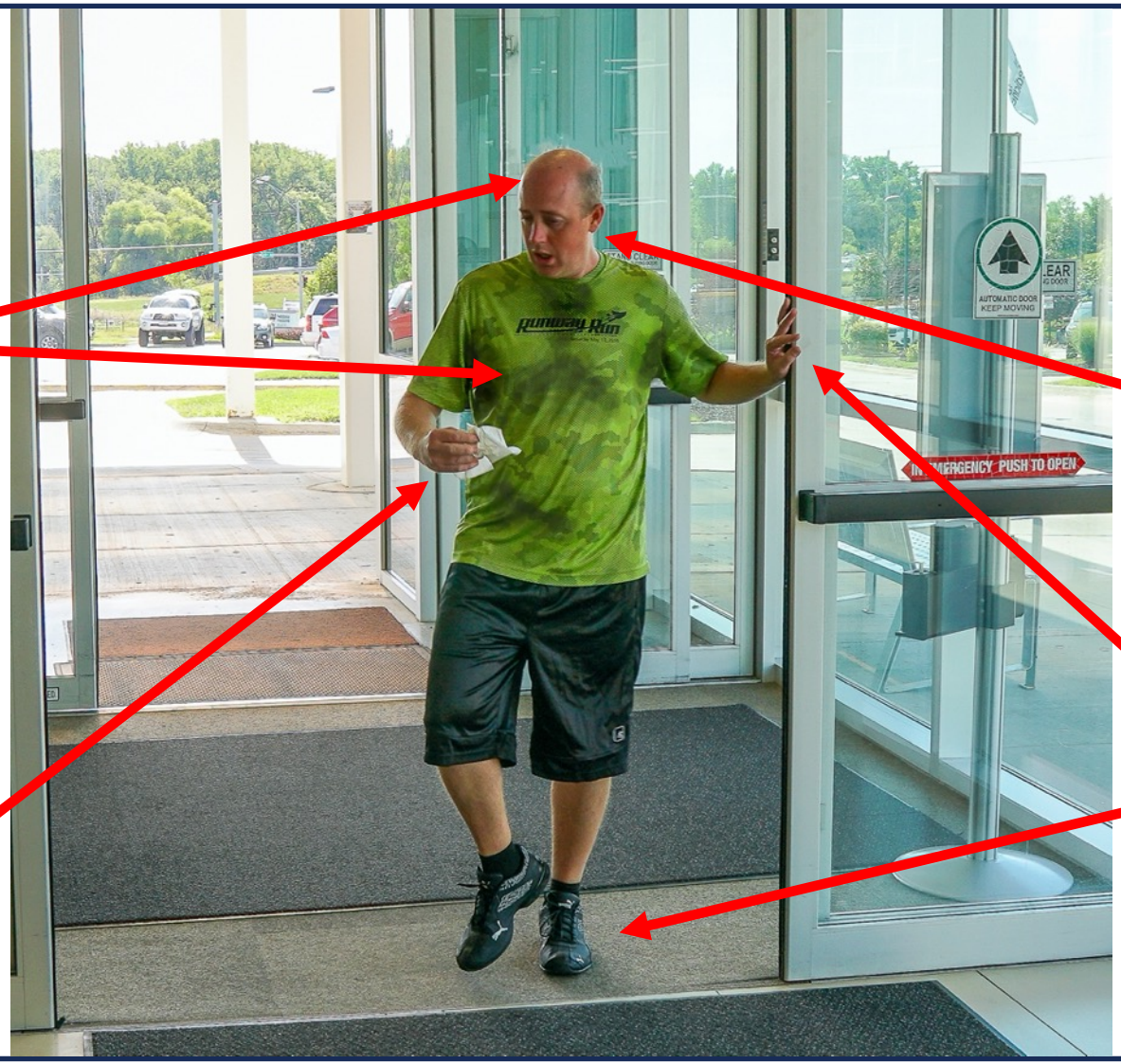
Does This Person Look Infectious?

Fever?

Sweat on skin and clothing

Runny nose?

Facial tissue in hand



Labored breathing?

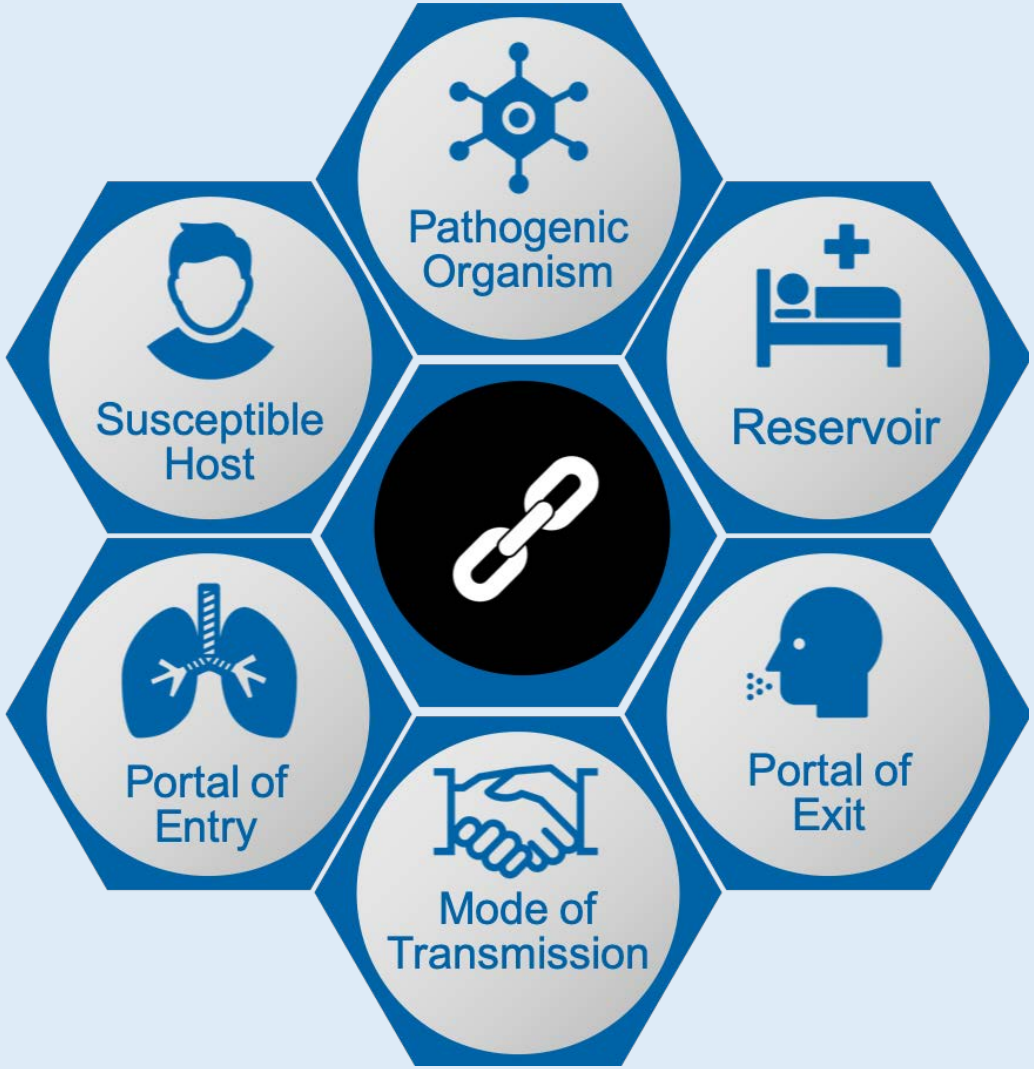
Breathing through mouth, coughing

Fatigue?

Difficulty standing

Chain of Infection

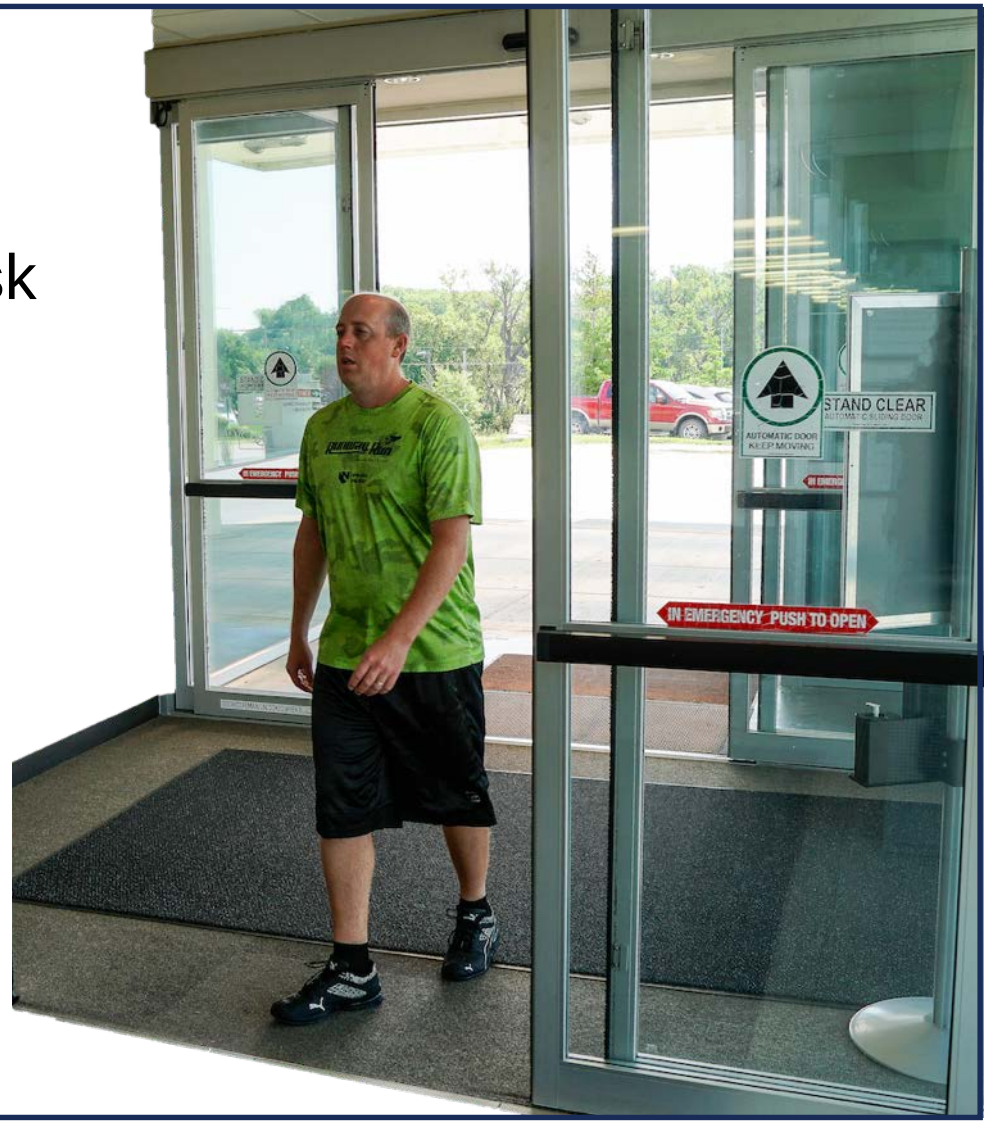
- Ebola Virus
- The Patient
- Bodily Fluids
- Contact
- Broken Skin
- Perhaps you?



Person Under Investigation

What is a PUI?

- **A PUI**: Person who has signs, symptoms and risk factors of a disease of concern
- **A PUI**: Needs to be isolated promptly to prevent transmission of the disease to staff and others
- **A PUI**: Will undergo further investigations in isolation to rule-in or rule-out the disease



“I Have a Headache, Fever and Rash”

What Makes a PUI Recognizable?

- **Case definition**: a set of uniform criteria that defines a disease
  - Clinical Criteria
    - Signs
    - Symptoms
  - Epidemiological Risk Factors
    - Travel (within known incubation period)
    - Exposure

Self Screening

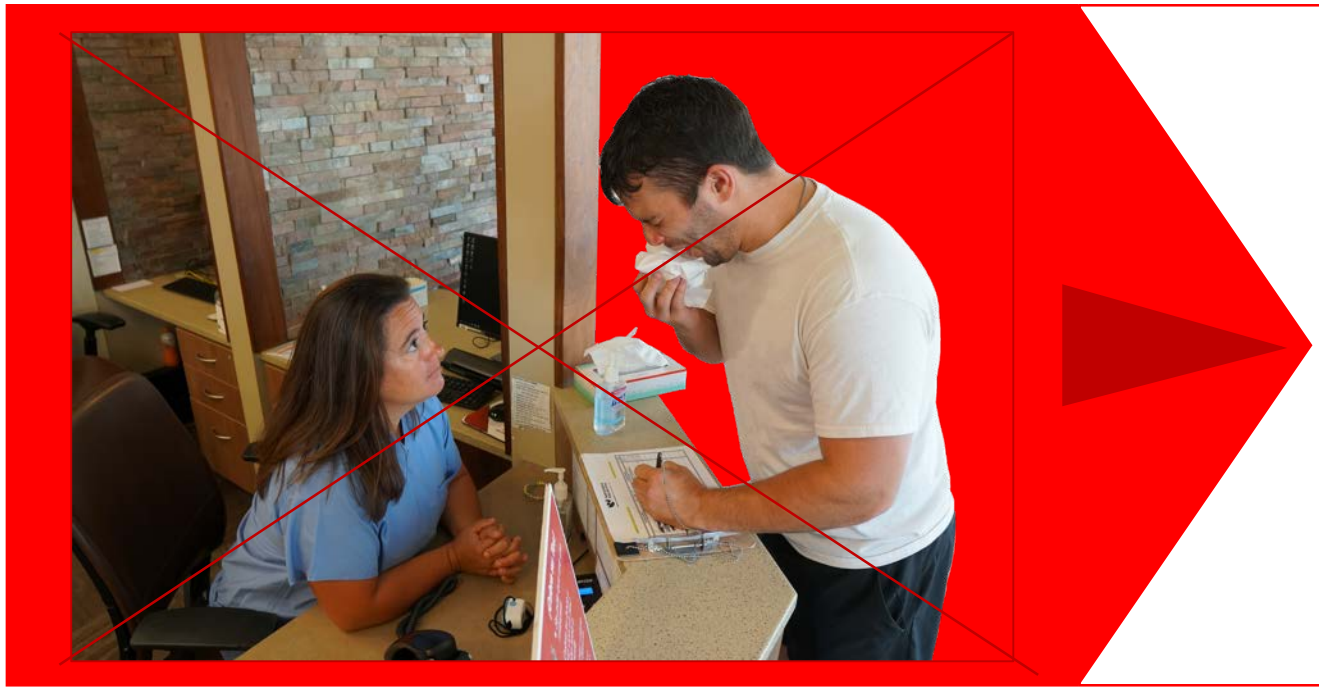
Screening: Signage

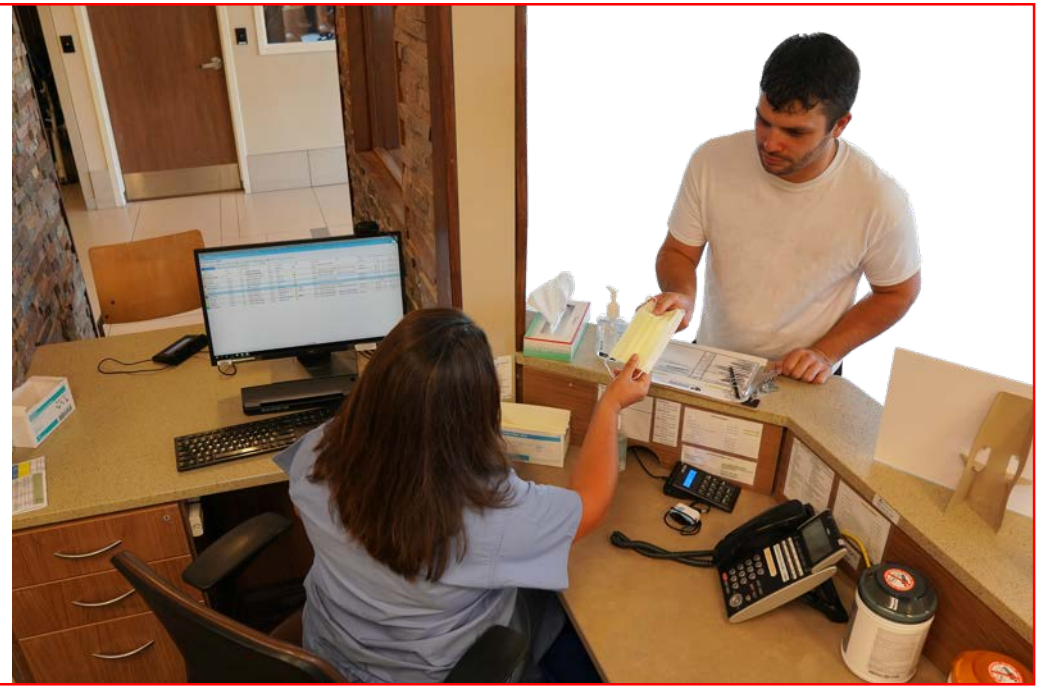
- Signage enables patients to self identify
- Signage needs to be:
  - Positioned prominently so as to be easily seen
  - Easily understood, with simple to follow directions
  - Written in languages representative of the community
  - Created with pictograms that are easy to follow

Detecting a PUI

Screening

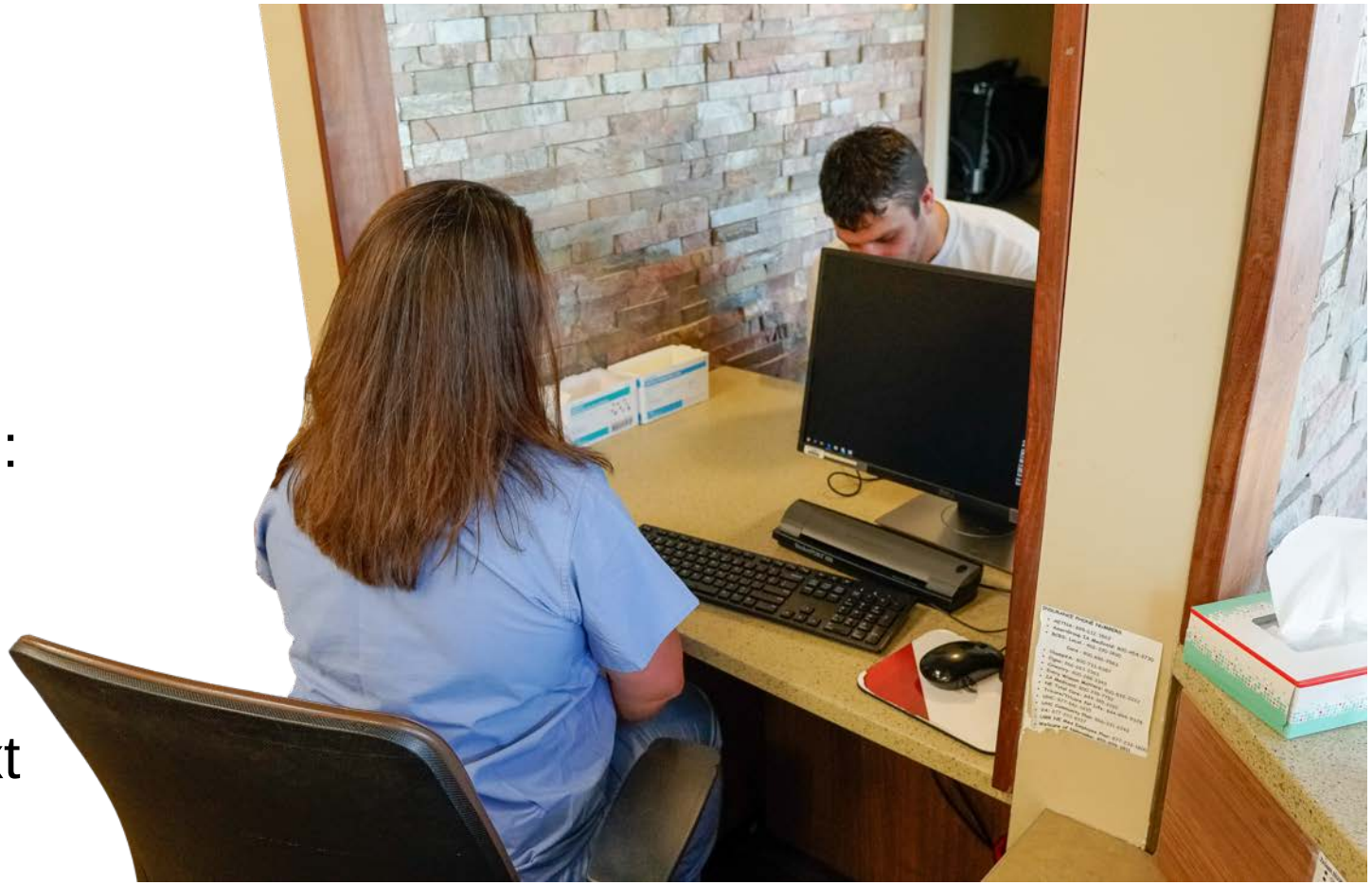
- Screening all patients for infectious diseases immediately upon arrival is crucial to reducing the risk of transmission



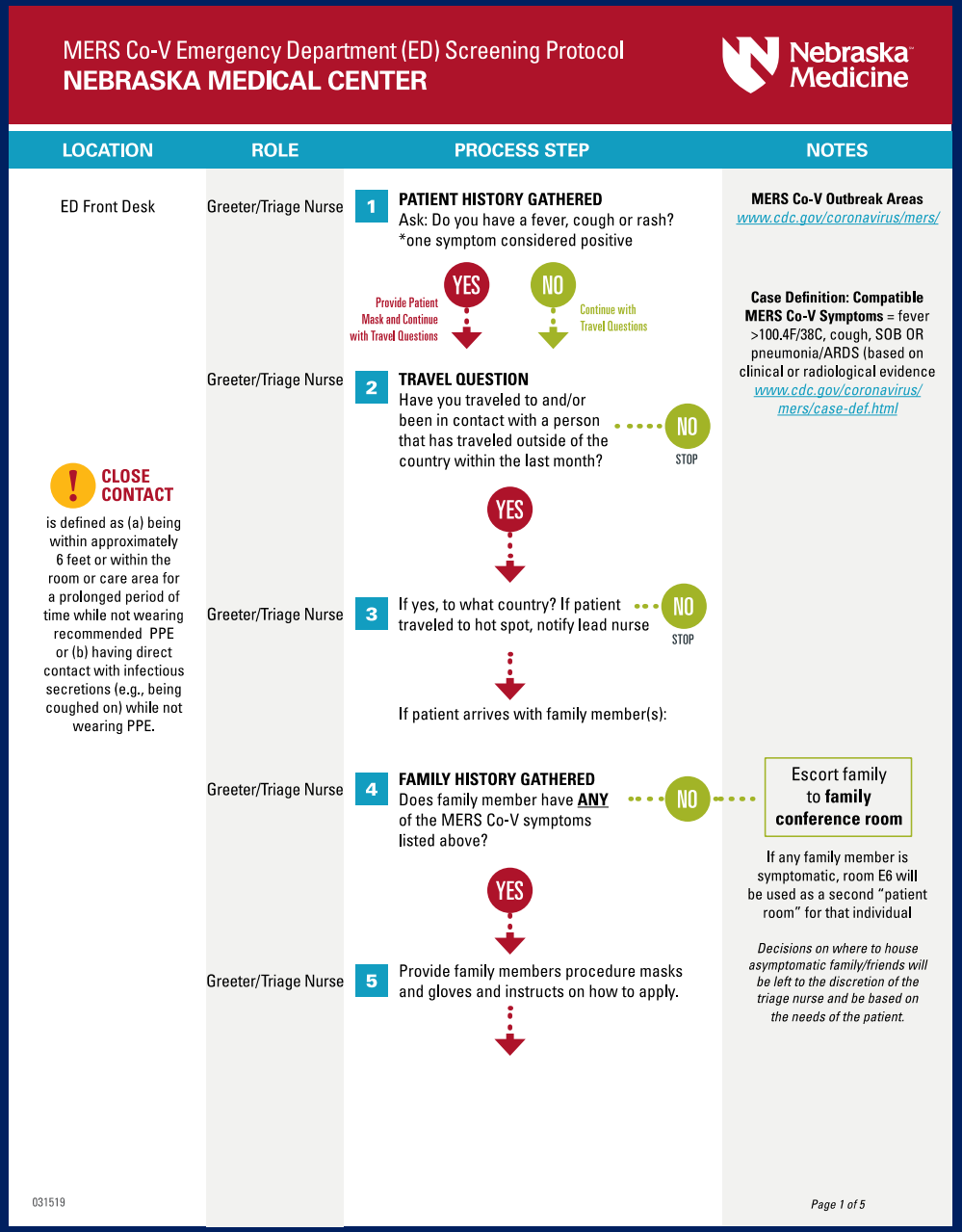


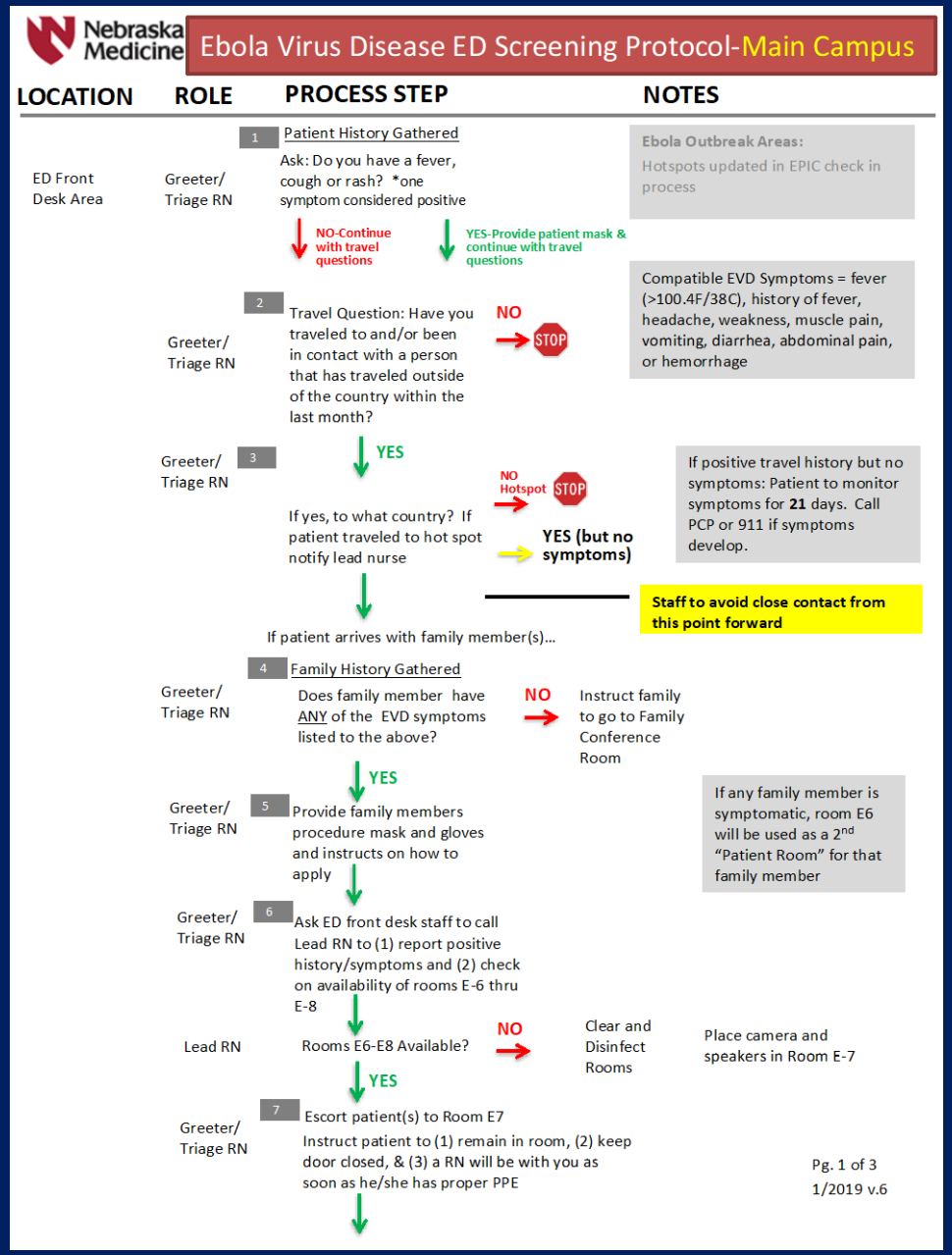
First Contact

- Screening at the front desk:
  - Electronic or manual
  - Systematic approach
  - Algorithm with directions and guidance that include:
    - Actions to be taken
      - PPE to be worn
      - Persons to inform
      - Information on next steps

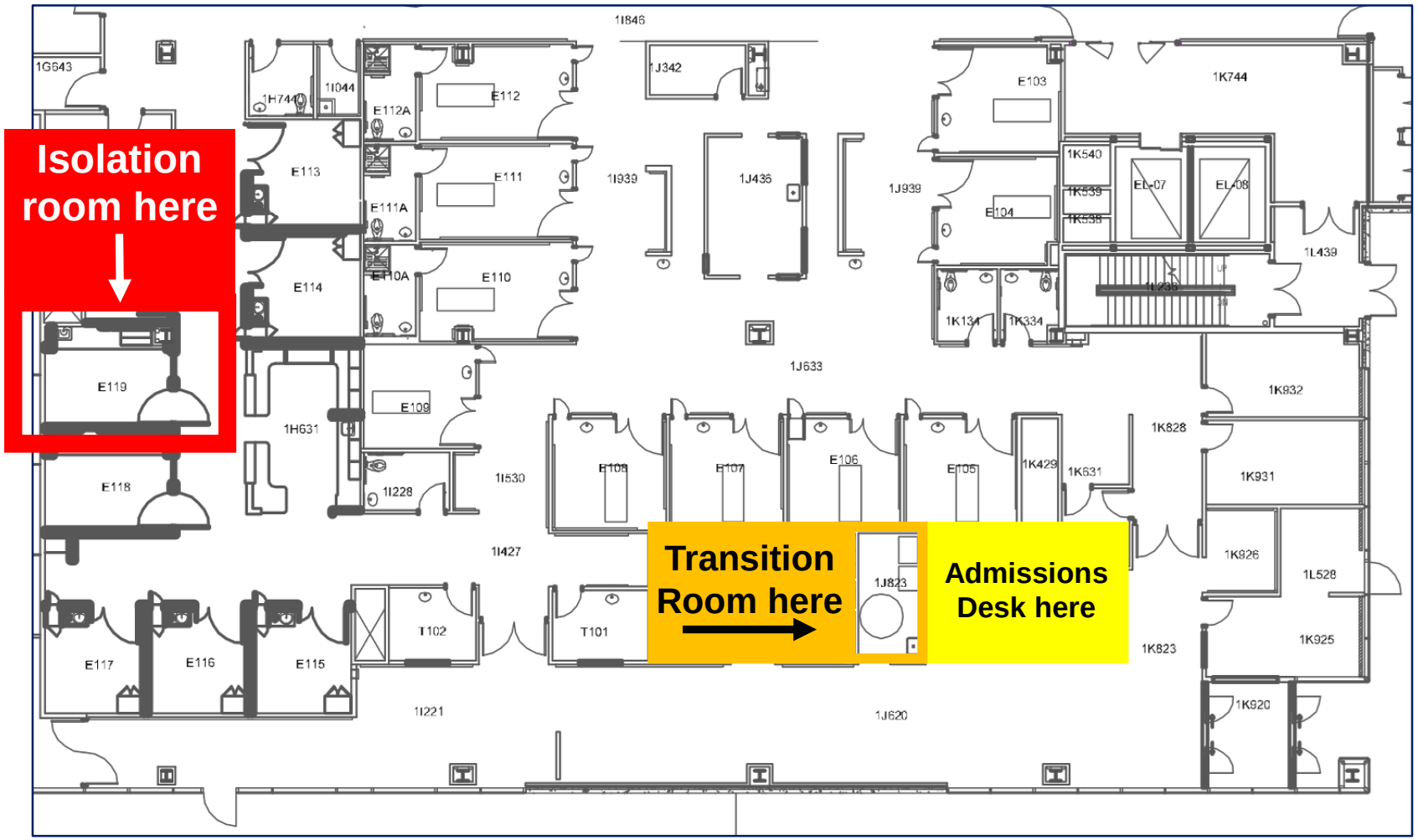


Screening Algorithm Example





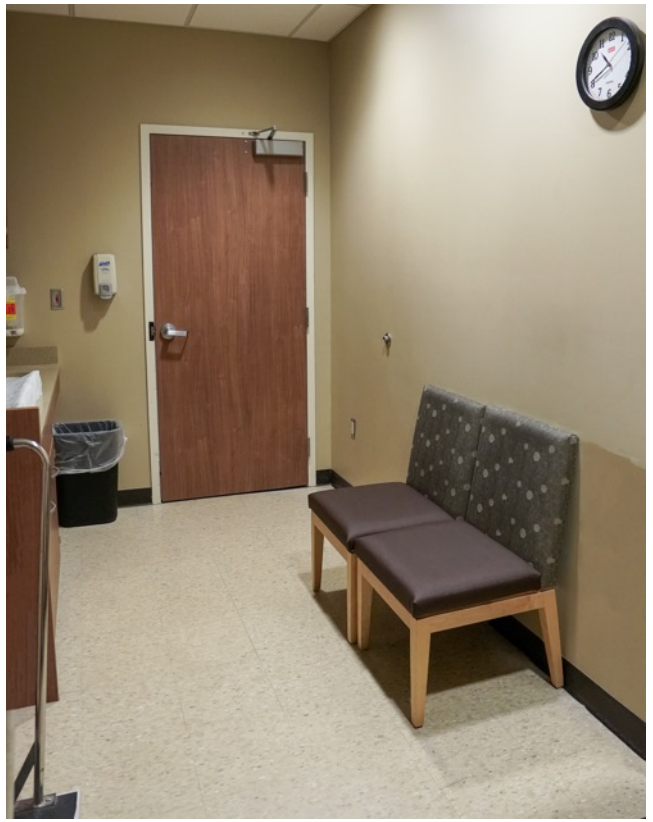
Isolate


Isolation room here
E119
Transition Room here
Admissions Desk here
1G643
1H744
1I044
E112A
E112
E113
E111
E111A
E110A
E110
E114
1I939
1J436
1J342
1I846
1J939
E103
1K744
E104
1K540
1K539
1K538
EL-07
EL-08
1L439
1K134
1K334
1J633
1K932
1K828
1H631
E109
E108
E107
E106
E105
1K429
1K631
1K931
E118
1I228
1I530
1I427
1J823
1K926
1L528
1K925
T102
T101
1K823
E117
E116
E115
1I221
1J620
1K920


What happens now?

Isolate

Starting with the Basics



Isolate

Isolation Room Setup and Preparation

BEFORE

AFTER

Isolate

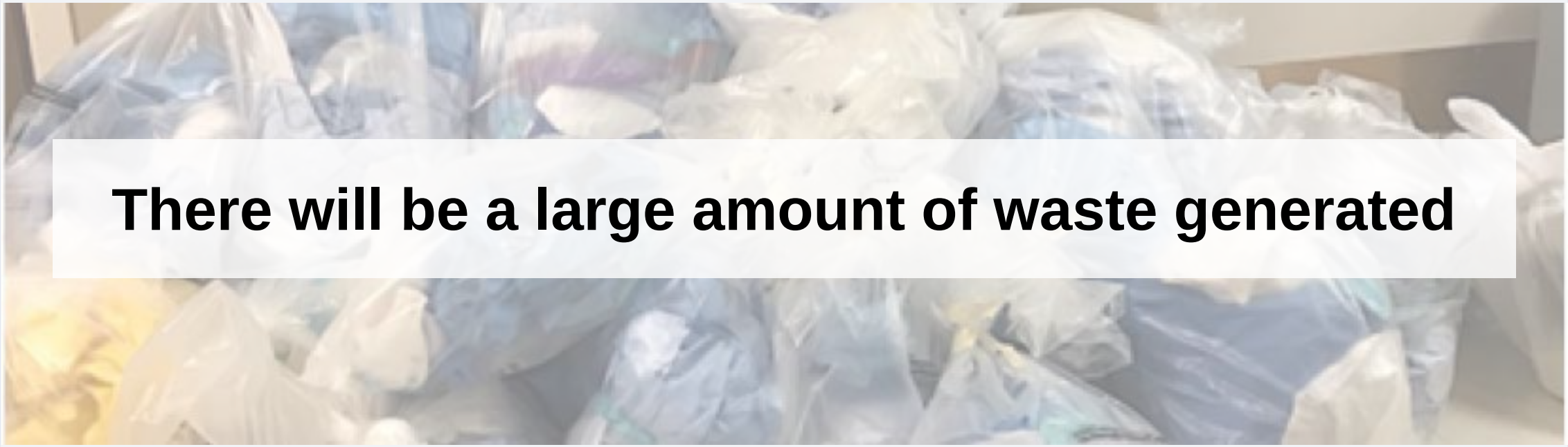
Checklist for Room Preparation

- ☑ PPE/equipment cart in front of room
- ☑ Remove all extra equipment
- ☑ Check hand hygiene stations to ensure they are full and operating correctly

Move Patient Into the Room

- ☑ Commode
- ☑ Additional waste bins
- ☑ Isolation sign
- ☑ Log sheet

Waste Generation and Removal

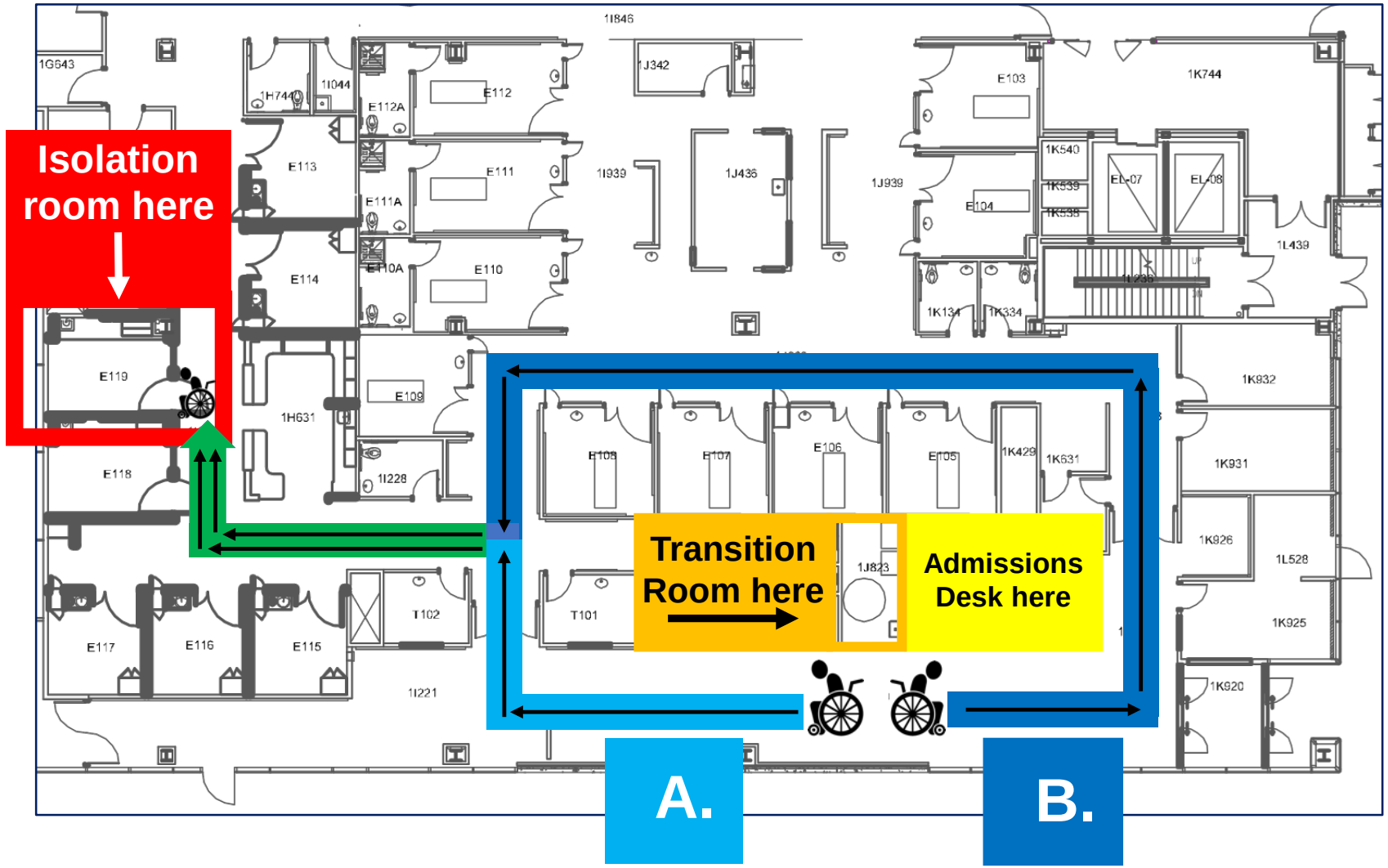


Isolate

What is the ”Safe” Route?

Fred is now complaining of an increased feeling of nausea

Isolate



In transport to the isolation room

Isolate

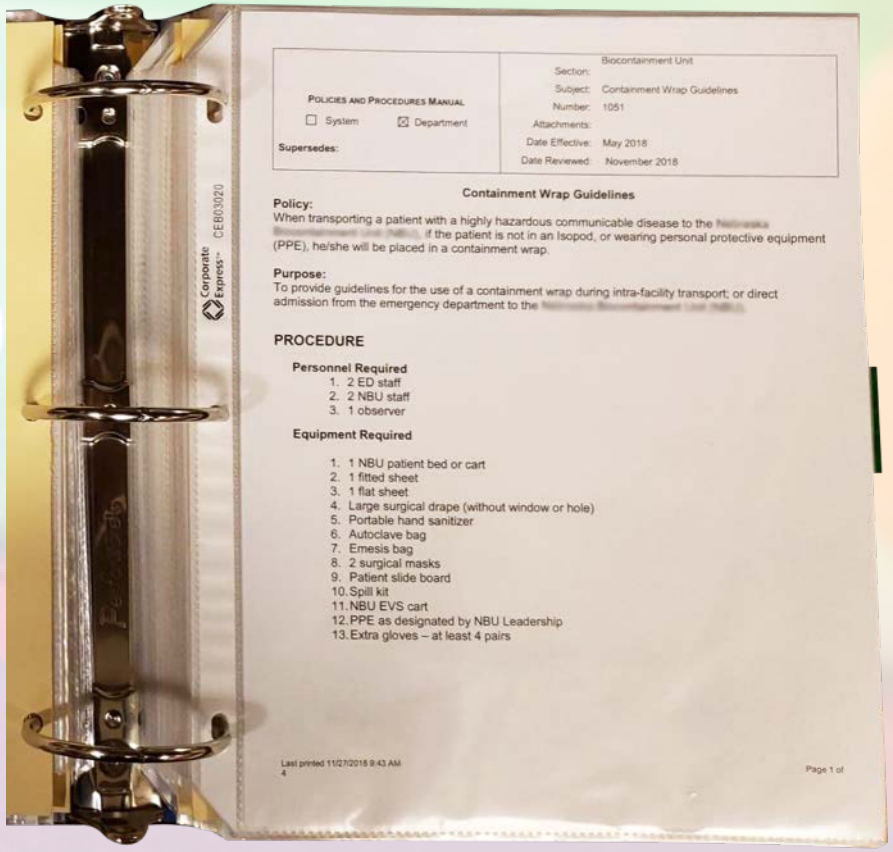
Who Will be Taking Care of Fred?

- Who will be taking direct care of Fred?
  - Nursing
  - MD
  - Consulting MD
  - Respiratory Therapist
- Who will be taking indirect care of Fred?
  - Dietary
  - Administrators
  - Pharmacists
  - EVS
  - Laboratorians

Isolate

Lists and References for the Team

- Resource/Reference binder
  - Current SOPs
  - Current PPE checklists
  - Room setup
  - Log sheet for isolation room ”in & out”
  - Stakeholders to be notified
  - Supply lists
  - Locations of supplies



Isolate

Checklist for Room Preparation

- ❑ PPE/equipment cart in front of room
- ❑ Remove all extra equipment
- ❑ Check Hand hygiene stations to ensure they are full and operating correctly

Move patient into room

- ❑ PPE is available for all health care workers
- ❑ Commode if no private bath room
- ❑ Additional waste bins
- ❑ Open package of EPA disinfectant wipes
- ❑ Working communication system
- ❑ Instructions how to use the phone or communication system
- ❑ Instructions how to take your own temperature
- ❑ Isolation sign
- ❑ Log sheet

NETEC

In-room Log Sheet

NETEC In Room Log Sheet

Patient Sticker	Date: ______________	Location: ______________	☐ VHF ____________ ☐ Respiratory Pathogen __________ ☐ Other __________

Directions: Staff members entering the isolation room will sign in and out.
All possible breaches should also be documented.

Employee Name	Department	PPE Worn (Check all used)	Time In	Time Out	Infection Control Breaches
		☐ Inner Glove ☐ Surgical Gown ☐ N-95 ☐ Face Shield ☐ Outer Glove			
		☐ Inner Glove ☐ Surgical Gown ☐ N-95 ☐ Face Shield ☐ Outer Glove			
		☐ Inner Glove ☐ Surgical Gown ☐ N-95 ☐ Face Shield ☐ Outer Glove			
		☐ Inner Glove ☐ Surgical Gown ☐ N-95 ☐ Face Shield ☐ Outer Glove			
		☐ Inner Glove ☐ Surgical Gown ☐ N-95 ☐ Face Shield ☐ Outer Glove			
		☐ Inner Glove ☐ Surgical Gown ☐ N-95 ☐ Face Shield ☐ Outer Glove			

Inform

Obtaining Assistance

- Inform occurs from the moment there is a suspicion a patient meets clinical criteria
- Informing the necessary personnel will ensure you receive the help, and support needed to move forward

Inform

Communication: Internal and External

Placing communications in two buckets, internal and external helps ensure you have all the right pieces in place and no one is left out of the communication loop

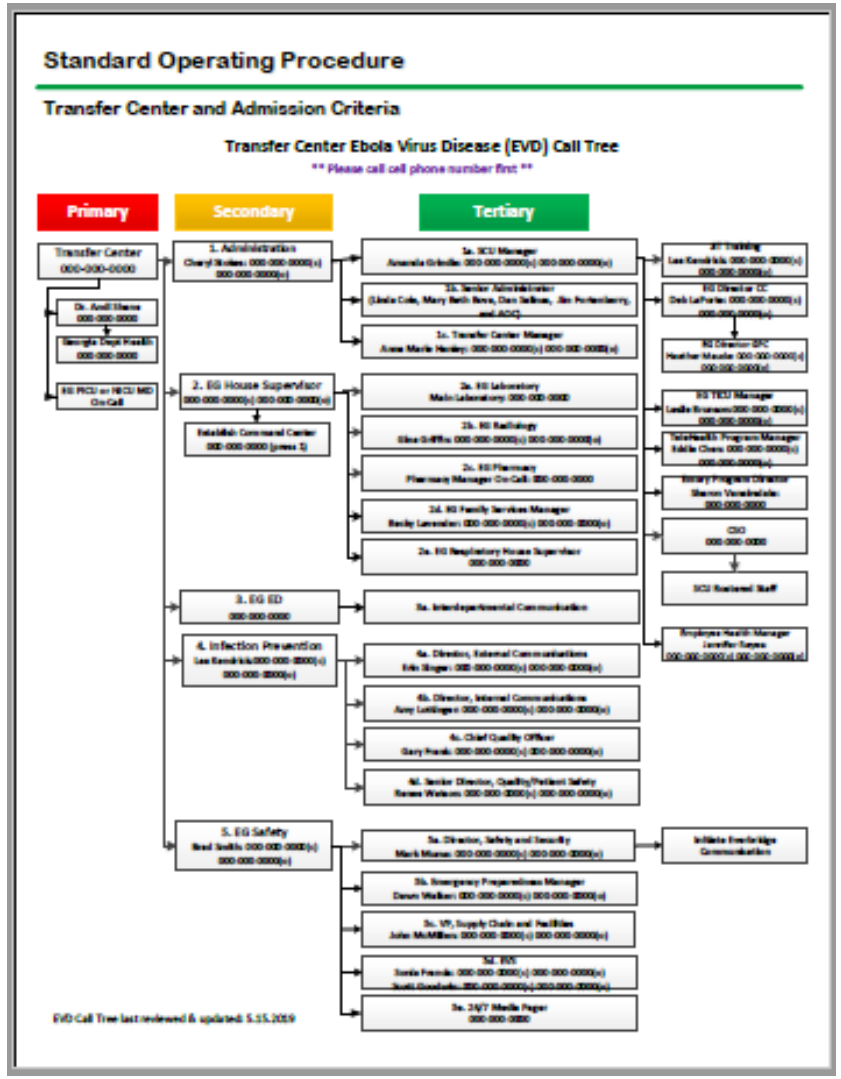
- Your Institution may dictate who gets called first or in what order

Inform

Internal Communication

People you may want to have on your list?

- Charge RN
- ED (or place where pt is located) MD
- Infectious Disease
- Infection Prevention/Epidemiology
- ED (or place where pt is located) leadership
- Staffing
- Safety
- Security
- Environmental Services
- Supply chain
- Emergency Management
- Laboratory
- Public relations team
- Administration



Inform

External Communication

- Who outside your organization needs to be called?
- People you want to make sure are on your list:
  - Public health (local/state)
  - EMS/transport
  - Specialty services not available at your facility
    - For example, pediatrics, labor & delivery, etc.
  - Other resources specific to your institution, region or CONOPS plan?
  - CDC
- Who makes those phone calls?

Inform

Practice, Practice, and More Practice

Communication Drills

Mystery Patient Drills

Special Pathogen Mystery Drill Toolkit

Special Pathogen Mystery Drill

Toolkit Drill

Functional & Full-Scale Template

Why be Prepared

Ongoing Outbreak in the Democratic Republic of the Congo

World Health Organization Surveillance Dashboard October 29, 2019

- 3264 Total Cases
- 2181 Total Deaths
- 1046 Survivors

https://www.who.int/emergencies/diseases/ebola/drc-2019/

"It was the view of the Committee that this event still constitutes a public health emergency of international concern"

Statement on the meeting of the International Health Regulations for EVD in the DRC 18 October 2019

https://www.who.int/news

Middle Eastern Respiratory Syndrome

Case Study-(August–September 2015) King Abdulaziz Medical City

A 940-bed tertiary-care hospital in Riyadh, Saudi Arabia

- **Sporadic cases of MERS cases had been managed in the ICU since February 2013**
- **63 MERS patients were admitted to 3 MERS-designated ICUs**
  - Airborne and contact isolation for confirmed and probable MERS cases
- **Patients were managed with a nurse-to-patient ratio of 1:0.8**

(Dorzi et al., 2016; Balkhy, Perl, Arabi, 2016)

- **Hospital mortality of ICU MERS patients was 63.4 %**
  - Most patients had multiorgan failure
- **Eight HCWs had MERS requiring ICU admission (median stay = 28 days)**
  - 7 developed acute respiratory distress syndrome
  - 4 needed continuous renal replacement therapy
  - 4 were treated with prone positioning
  - 1 had extracorporeal membrane oxygenation (ECMO).

Preparedness Challenges

Potential Challenges

- Challenges implementing symptom and travel screening in EMRs
- Delayed identification and isolation at points of entry
- Lack of compliance with infection control standards
- Staffing - concerns/ fear
- “It won’t happen here” mentality

SARS?

Variola?

XDR-TB?

MERS?

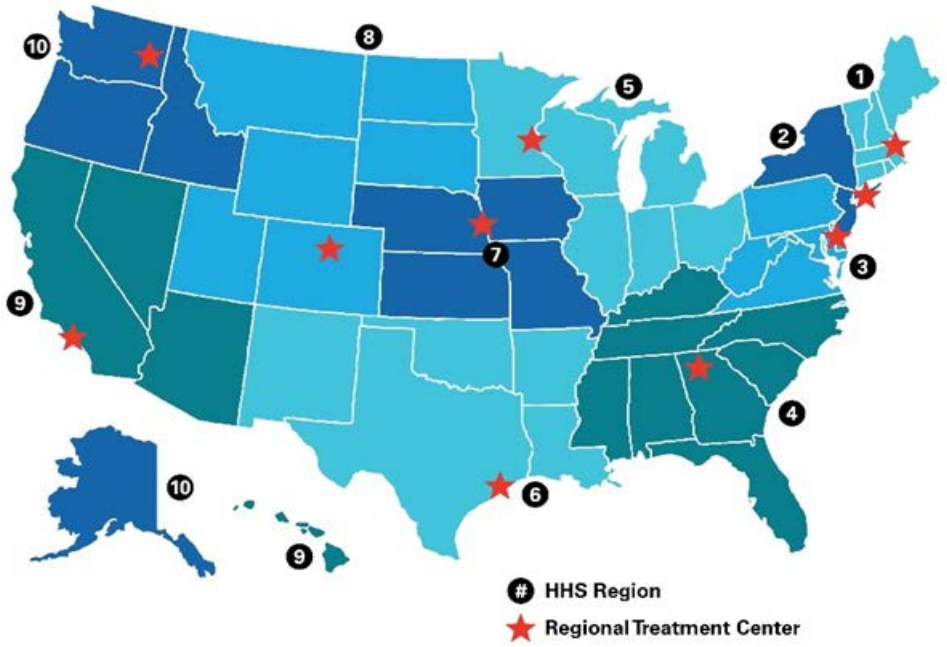
- There is no “List”, strategies for airborne pathogens vary across the regions

NETEC

Support

Through the 5 year project period and in collaboration with ASPR, CDC and other stakeholders, the NETEC will

- Create readiness metrics
- Conduct peer review readiness consultations of regional and state ETCs as well as assessment centers as requested by facilities and state health departments



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Readiness Consultations

- Facility Capabilities Assessment
  - 12 Domains
  - 31 Capabilities
- Initially solely focused on VHF
- Comprehensive review completed 2017-2018
  - SMEs from NETEC, CDC, ASPR, Regional Ebola and other Special Pathogen Treatment Centers
- Updated capabilities to include considerations for airborne transmissible pathogens

NETEC Facility Readiness Assessment

Facility Capabilities Assessment Domains and Capabilities

2017-2018 Update

- Physical Infrastructure Domain
  - P1. ESP Isolation Unit Capability
  - P2. ED and Other Points of Entry Capability
- Infection Control Domain
  - IC1. Environmental Infection Control Capability
  - IC2. Personal Protective Equipment Capability
  - IC3. PPE Utilization Capability
- Training & Exercises Domain
  - TE1. Rostered Staff Training Capability
  - TE2. Personnel Training Capability
  - TE3. Just-In-Time Training Capability
  - TE4. Exercises Capability
- Emergency Management Domain
  - EM1. Emergency Management Capability
- Pre-Hospital Domain
  - PrH1. Internal Processes Capability
  - PrH2. External processes Capability
- Intake and Internal Transport Domain
  - IIT1. Identify Capability
  - IIT2. Isolate Capability
  - IIT3. Inform Capability
  - IIT4. Internal Transport Capability
- Treatment and Care Domain
  - Tx1. Adult Care Capability
  - Tx2. Labor and Delivery Care Capability
  - Tx3. Neonatal Care Capability
  - Tx4. Pediatric Care Capability
- Personnel Management Domain
  - PM1. Staffing Capability
  - PM2. Occupational Health Capability

Readiness Consultations

Hospital Type	Areas of Strength	Opportunities for Growth
Assessment Hospitals	• Emergency management • PPE • Inform • Occupational health	• Specialty treatment and care • Decedent management • Laboratory testing • Just In Time training • Physical infrastructure
Ebola Treatment Centers	• Emergency management • Inform • Physical Infrastructure • Occupational health • Rostered staff training	• Patient treatment and care • Decedent management • Waste management • Laboratory testing • Just In Time training • Staffing
RESPTCs	• Training and exercises • Adult treatment and care • Research • Pre-hospital	• Specialty treatment and care • PPE utilization • Lab specimen handling: Transport • Decedent management

NETEC Resources

Resources

NETEC

Assessment

Empower hospitals to gauge their readiness using
Self-Assessment

Measure facility and healthcare worker readiness using
Metrics

Provide direct feedback to hospitals via
On-Site Assessment

Education

Provide self-paced education through
Online Trainings

Deliver didactic and hands-on simulation training via
In-Person Courses

Technical Assistance

Onsite & Remote Guidance

Compile
Online Repository
of tools and resources

Develop customizable
Exercise Templates
based on the HSEEP model

Provide
Emergency On-Call Mobilization

Research Network

Online Repository
Built for rapid implementation of clinical research protocols

Develop Policies, Procedures and Data Capture Tools
to facilitate research

Create infrastructure for a
Specimen Biorepository

Cross-Cutting, Supportive Activities

Contact

NETEC eLearning Center	NETEC Skill videos
courses.netec.org	YouTube: The NETEC

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