

A blue-tinted background image showing several people from a Disaster Medical Assistance Team (DMAT) standing in a line. They are wearing white t-shirts with 'DMAT' and state abbreviations (OH-1, TX-4, KY-1) printed on the back. The image is overlaid with a pattern of concentric circles and glowing blue dots.

THE GLOBAL CENTER FOR HEALTH SECURITY  
**Training, Simulation & Quarantine Center**  
**PROGRAM REPORT**

Funded by contract HHSO100201700005C from the Assistant Secretary for Preparedness and Response, Department of Health and Human Services.

PROGRAM REPORT BASE PERIOD 2016 – 2020

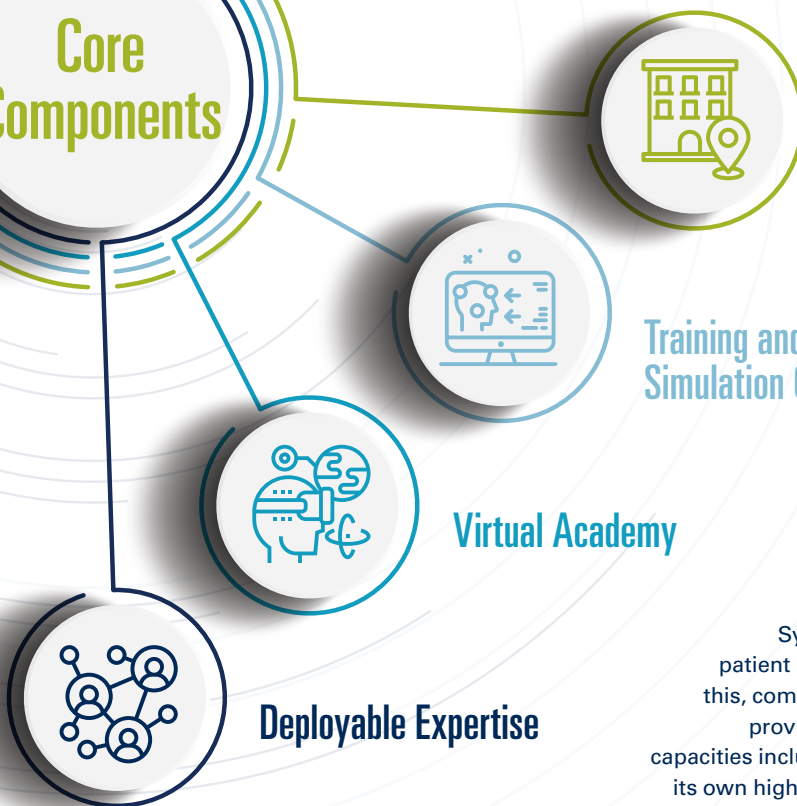
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“More than ever, our hospitals and healthcare workers must possess the necessary knowledge and skills to provide effective care for patients infected with highly communicable and highly virulent pathogens while protecting themselves and their families, their health care colleagues, and the public from the spread of infection.

— Robert Kadlec, MD  
Assistant Secretary for Preparedness and Response – HHS Office of the Secretary from August 2017 until January 2021

## Core Components



### National Quarantine Unit

### Training and Simulation Center

### Virtual Academy

### Deployable Expertise

The Training, Simulation & Quarantine Center (TSQC) is funded by the Assistant Secretary for Preparedness and Response, Department of Health and Human Services to maintain the National Quarantine Unit and to train US government personnel and other appropriate personnel including the Public Health Service and National Disaster Medical System. TSQC is arguably the most sophisticated patient biocontainment training unit in the country, and this, combined with our cadre of experienced instructors, provides unmatched training opportunities. Training capacities include six fully simulated patient rooms, each with its own high-fidelity mannequin and adjacent briefing room.

# By The Numbers

## 1,811

federal responders enrolled in the COVID-19 Mission Prep



Training through the E-learning Virtual Academy

## 90%

of **Disaster Medical Assistance Teams** were trained through the hands-on Isolation, Simulation and Quarantine course



- Nurses
- Nurse Practitioners
- CRNA
- Paramedics
- Respiratory Therapists
- Medical Officers
- Physician Assistants
- Physician

## 1,714



Disaster Medical Assistance Team members received hands-on level C personal protective equipment (PPE) training at the 2018 NDMS Training Summit

## 72%

of Isolation, Simulation and Quarantine training time spent



performing hands-on clinical skills, both with and without PPE

## 26

 federal 1st responders

deployed to Omaha for February 2020 COVID-19 quarantine mission received on-site Just-In-Time training



## 60 experts

from **8 countries, 9 federal agencies** and **8 medical response organizations**

convened to identify key knowledge gaps for NDMS infectious disease transport and mortuary care operations

## 57

 Americans from **Wuhan, China**

safely quarantined at Camp Ashland in 2020

## 15

**Diamond Princess** passengers

safely quarantined at the National Quarantine Unit



**13 passengers tested positive** for COVID-19 and safely isolated



## 2

**quarantine exercises**

conducted prior to 2020 with Office of the Assistant Secretary for Preparedness and Response, Department of Health and Human Services, Douglas County Health Department, Nebraska Medicine, and the University of Nebraska Medical Center

# Section 1 Core Programs



**20**  
Courses  
Delivered

PARTICIPANTS  
INCLUDED

**Nurses**

**Nurse  
Practitioners**

**CRNAs**

**Paramedics**

**Respiratory  
Therapists**

**Medical  
Officers**

**Physician  
Assistants**

**Physicians**



**72%**

of training is spent  
performing hands-on  
clinical skills, both in PPE  
and without PPE

## Isolation, Simulation and Quarantine

Launched on February 12, 2019, the Isolation, Simulation and Quarantine (ISQ) course is an on-site training at the University of Nebraska Medical Center (UNMC).

In total, **20 two-day courses** were held that trained a total of **359 National Disaster Medical System (NDMS) and U.S. Public Health Service (USPHS) personnel**.

The course focused on hands-on and experiential learning and consisted of the following sessions:

- Personal protective equipment (PPE) donning and doffing of two different PPE ensembles
- A skills-based session in PPE using simulated task trainers for training on performing nasopharyngeal swab collection, IV insertion and lab draw, intubation, specimen packaging, and urinary catheter insertion on a patient with a highly hazardous communicable disease
- Special considerations for managing patients with highly hazardous communicable diseases including waste management, consideration for spills, and decedent management
- Two simulated team-based culminating scenarios, one in a hospital-based setting and the other in a Base of Operations tent-based setting

“ I cannot tell you how much taking your ISQ class mattered! Everyone here who took it is so much more confident and those who didn't WISH they had!

— ISQ learner deployed to Lackland Air Force Base in early Feb. 2020 for quarantine monitoring of repatriated Americans



**90%**

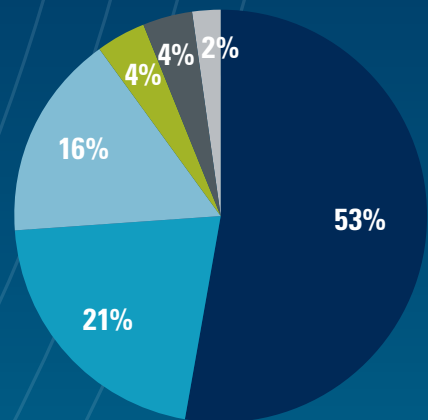
of DMAT teams had members attend the on-site ISQ course



**10 hours**

of team-based scenarios that are a culmination of skills reviewed over the course.

**Applied at least one concept, skill or technique learned from the training at workplace:**



Approximately six-months after attending the on-site ISQ course, a link for an electronic survey was emailed to ISQ participants to evaluate the application of the skills and knowledge gained through the on-site course in participants' daily jobs. The survey was administered between November 2019 and early February 2020, prior to COVID-19 deployments.

## Section 1



What I learned at University of Nebraska was instrumental in helping me manage and cope with caring for COVID-19 patients.

— Mission Prep learner as noted on six-month post-training evaluation

Excellent Information and subject matter experts!!! Like learning in this online format. Information useful both on and off a deployment.

— Mission Prep learner

This is probably some of the best online training or educational content I have ever completed.

— Mission Prep learner



## COVID-19 Mission Prep Online Training Course

Launched on March 27, 2020, the course has enrolled **1,811 participants** and **1,252 have completed** as of March 17, 2021.

The course includes interactive e-learning modules, videos, narrated PowerPoints and visualization content on:

- COVID-19 symptomatology and epidemiology
- Operational and personal protective equipment considerations for deployment
- Modes of transmission and transmission-based precautions
- PPE – Reuse
- Nasopharyngeal swab collection
- Strategies to build resilience

Based on feedback from course participants, a Disaster Mortuary Operational Response Teams (DMORT)-specific module was also developed and delivered.

## EVALUATION

The course was evaluated in two ways:

1. A short survey was distributed immediately following completion to measure learner satisfaction of the course and materials.
2. An electronic survey disseminated via email to participants six months after course completion to measure how participants used the skills and knowledge they learned from the course in their everyday job or on deployment.



85%

were "extremely satisfied" or "very satisfied" with the COVID-19 Mission Prep Course



89%

applied at least one concept or skill they learned from the course at their workplace or in their role as a federal first responder

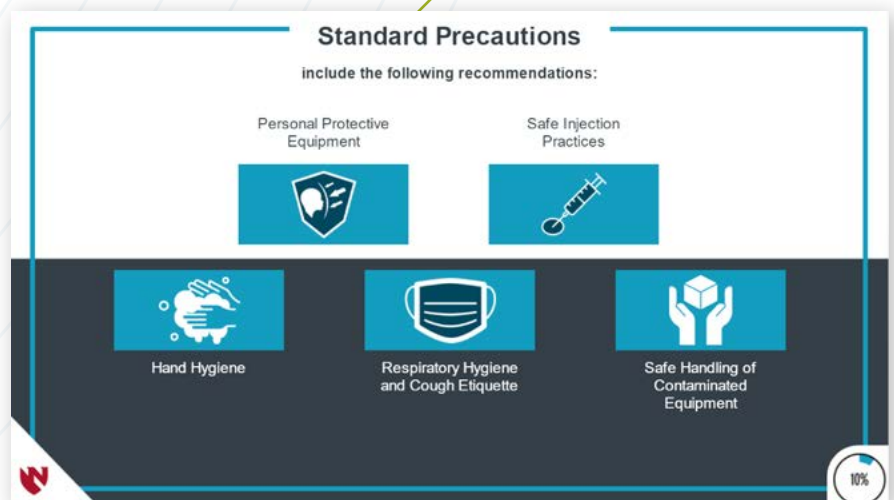


92%

reported the course increased their ability to reduce self-contamination when caring for persons confirmed with or suspected to have COVID-19

“This presentation has been both the most comprehensive and enjoyable learning experience that I have had to date. I thank you for composing this very thorough education.

— Mission Prep learner



## Section 1



The hands-on interaction and demonstrations of the skills needed to drape/undrape an ambulance and transport a patient with a highly infectious disease while in level C PPE was invaluable. Great learning experience.

— Infectious disease transport pilot participant



# 15

learners including  
**paramedics,  
firefighters and  
nurses**

## Infectious Disease Emergency Medical Services Transport (EMS) Training

Pilot course based on July 2020 workshop findings.

### FULL COURSE SET TO LAUNCH IN FALL OF 2021

Two-day program details include:

1. Donning and doffing of two different PPE ensembles.
2. Special considerations for managing patients with highly hazardous communicable diseases including regional coordination of response, transport operations, waste management, and cleaning and disinfection.
3. A hands-on, skills-based session executed in PPE performing ambulance infection control, including draping and undraping an ambulance with considerations of waste management, and cleaning and disinfection while transporting a patient in a patient isolation unit with a highly hazardous communicable disease.

## NDMS Infectious Disease Workshop | January 2020 | Savage, Maryland

### 1 TRANSPORT

A gathering of national and international experts from the Office of the Assistant Secretary for Preparedness and Response (ASPR), NDMS, and EMS organizations to identify key knowledge gaps in order to design and develop protocols for transport of patients with highly hazardous communicable disease using appropriate NDMS ground transportation resources.

Key concepts identified:

- Ambulance infection control
- Regional coordination of infection disease response
- Transport operations
- Waste streams and waste management
- Cleaning and disinfection
- Patient isolation units (PIU)

# 62

**participants in 2 workshops**

Centers for Disease Control and Prevention (CDC)  
Charite University Medical Center (Germany)  
Emory University  
The Johns Hopkins Hospital  
Johns Hopkins Lifeline  
Joint Special Operations Command (JSOC)

Indiana University  
International University of Health and Welfare (Japan)  
Ministry of Defence (Great Britain)  
The Mount Sinai Health System  
National Centre for Infectious Diseases (Singapore)  
National Institute of Environmental Health Sciences (NIEHS)



“

I really loved having the e-learning modules available in advance to best prepare for the training and the different case studies and wide variety of learners helped enhance the discussion and develop critical thinking skills related to Mortuary HID care.

— Mortuary care pilot participant

## Infectious Disease Mortuary Care (MORT) Training

Pilot course based on July 2020 workshop findings.

### FULL COURSE SET TO LAUNCH IN FALL OF 2021

Two-day program details include:

1. Donning and doffing of two different PPE ensembles.
2. Special considerations for operations, waste management, cleaning and disinfection, and packaging and transport for both human remains, as well as belongings and specimens of a decedent.
3. A hands-on, skills-based session executed in PPE performing packaging remains of a decedent with a highly hazardous communicable disease.
4. A hands-on skills-based session executed in PPE (assisted by task trainers) packaging specimens and belongings of a decedent with a highly hazardous communicable disease.

13

learners including **mortuary science students, funeral directors, embalmers, coroners, funeral service educators, and professors of mortuary science**

## 2 MORTUARY CARE

A gathering of national and international experts from ASPR, NDMS, and EMS organizations to identify key knowledge gaps in order design and develop protocols for safe handling and transport of human remains with highly hazardous communicable disease using appropriate NDMS ground transportation resources.

Key concepts identified:

- Packaging and transportation of belongings and specimens
- Packaging and transportation of human remains
- Waste streams and waste management
- Cleaning and disinfection
- Patient isolation units (PIU)

|  |                                   |
|--|-----------------------------------|
| National Institute for Infectious Disease (Italy)                      | Omaha Fire and Rescue             |
| National Medical Center (Korea)  | Oslo University Hospital (Norway) |
| National Strategic Research Institute (NSRI)                           | Phoenix Air Group                 |
| Nebraska Medicine and University of Nebraska Medical Center            | U.S. Air Force                    |
| Occupational Safety and Health Administration (OSHA)                   | U.S. Army Public Health Center    |
| Office of the Assistant Secretary for Preparedness and Response (ASPR) | U.S. Department of State          |
|  | U.S. Department of Defense        |

## Section 1



# 1,714

Attendees  
Trained

# 2

Trainers to  
10 learners

# 42

Trainers Total



## 2018 NDMS Training Summit

In response to the NDMS request, UNMC/Nebraska Medicine provided training at the 2018 NDMS Training Summit for hands-on level C personal protective equipment (PPE) donning and doffing familiarization.

### KEY OBJECTIVES:

- Describe the different levels of protection offered from various respirators and the range of PPE available as well as be able to recall the limitations of PPE and potential failure points
- Identify the correct order and process for safely donning and doffing of PAPR-level PPE
- Practice the safe donning and doffing of powered air purifying respirator level personal protective equipment with both chemical and biological protection





## What NDMS learners are saying about TSQC core programs:

**“** This was a worthwhile, rewarding, well thought out, outstanding course taught by dedicated, motivated, friendly, and welcoming professionals who represent multiple aspects of biocontainment patient care. You should all be very proud of your work here. Thank you! **”**

— ISQ learner

**“** I just wanted to thank the staff for excellent training. In addition to the applicability to my role as DMAT doc, the ISQ training has been extremely helpful in my role as a school doctor. **”**

— ISQ learner, physician with NJDMAT1

**“** What I learned at University of Nebraska was instrumental in helping me manage and cope with caring for COVID-19 patients. **”**

— COVID-19 Mission Prep learner as noted on six-month post-training evaluation

# Section 2

## COVID-19 as a Use Case Response Partnership

Oct.  
2019

Grand Opening of the TSQC in the Davis Global Center

Jan.  
2020

Feb.  
2020

28

UNMC/Nebraska Medicine receives a formal request from ASPR to provide quarantine services for Americans being evacuated from Wuhan, China

2

Federal operations response center is established in UNMC's Davis Global Center to support 70+ federal officers engaged in the quarantine effort



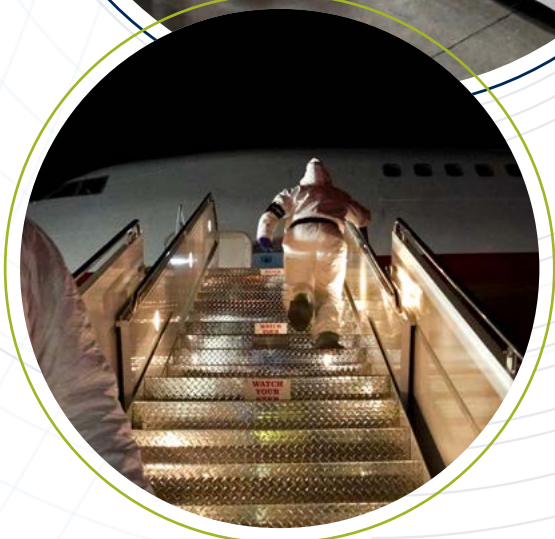
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15 Diamond Princess cruise ship passengers safely quarantined at the National Quarantine Unit and 13 passengers tested positive for COVID-19 and safely isolated

20

All 57 American Wuhan evacuees depart Omaha after quarantine is completed

The emergency operations center (EOC) is a central command and control facility for any active emergency management response. The EOC at the Training, Simulation & Quarantine Center served as a key hub for early COVID-19 federal and local response efforts.



# Mar. 2020

3

UNMC provides Just-in-Time training to 26 federal officers engaged in the quarantine effort

7

57 Americans arrive in Omaha for quarantine at Camp Ashland

14

ASPR asks UNMC to care for high-risk passengers from the Diamond Princess cruise ship, docked in Yokohama, Japan

21

UNMC/Nebraska Medicine team recognized the need for training NDMS and U.S. Public Health Service (USPHS) teams deploying for the COVID-19 response. The team proactively begins development of a COVID-19 Just-in-Time training course, in collaboration with NDMS

18

The last Diamond Princess cruise ship passenger is released and departs Omaha

30

The online COVID-19 Mission Prep training is launched for NDMS and USPHS responders.

## Section 3 Core Capacities



### National Quarantine Unit

National Quarantine Unit (NQU) designed to quarantine individuals exposed to highly hazardous communicable diseases

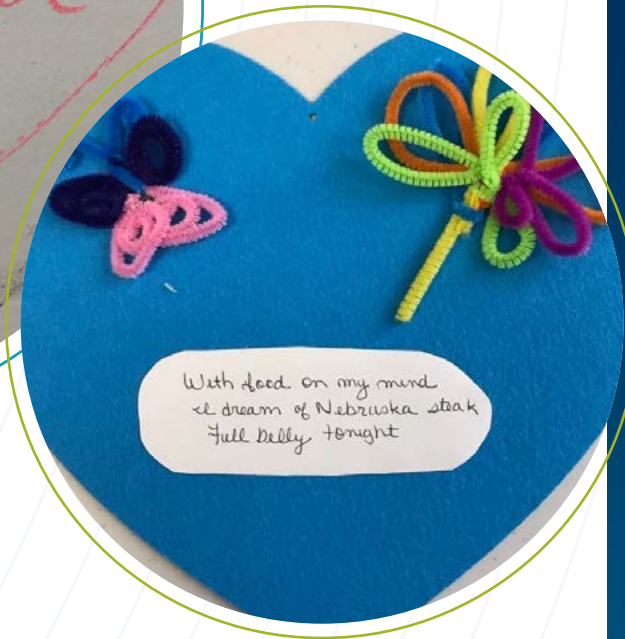
- NQU is the only federally-funded resource of its kind
- 20 quarantine rooms, divided into two secure units
- Supported by negative air pressure system, pass-through autoclave, dedicated security station, kitchenettes, and laundry facilities
- Teams of highly skilled nurses, physicians, and allied health professionals with training in infection prevention and control processes

“The medical center has experience in caring successfully for patients with highly infectious diseases, such as Ebola. Now we are calling on it to share that experience by training federal health care personnel to care for such patients effectively and to expand our country’s quarantine capability, which will help us fill national needs and broaden our ability to respond quickly in times of public health and medical crisis.

— Nicole Lurie, MD, Assistant Secretary for Preparedness and Response – HHS Office of the Secretary from August 2009 until January 2017



The 57 Americans quarantined at Camp Ashland received valentines and held a haiku-writing contest.



## Quarantine Activation and Quarantine Readiness

In preparation for the opening of the NQU, a table top exercise was undertaken in 2018. The exercise was the foundation for developing policies and procedures for quarantine operations.

### KEY OBJECTIVES:

- Increase awareness of the function and scope of operations for the National Quarantine Unit at local, state, and federal levels
- Evaluate the activation procedures for the National Quarantine Unit to coordinate, collaborate, and safely and effectively receive any person(s) for which quarantine is requested within an appropriate time frame
- Discuss the notification and communication processes, as well as media management among local/state/federal public health, EMS, Nebraska Medicine, and UNMC
- Validate the current state of readiness of all key departments to operationalize and support activation of the National Quarantine Unit

The collaboration between local, state, and federal partners on identifying key operational considerations led to a successful activation in early 2020.



## Quarantine activations at UNMC/Nebraska Medicine include:

### 2015

Quarantine and monitoring for seven repatriated U.S. health care workers with high-risk Ebola virus disease (EVD) exposure.

### 2018

Monitoring and use of temporary quarantine space for one U.S. health care worker with a high-risk EVD exposure during care of patients in the Democratic Republic of the Congo.

### 2020

Partnered with federal agencies to support federal quarantine of 57 repatriated U.S. citizens from China.

### 2020

Activated quarantine and biocontainment facilities to care for 15 U.S. citizens evacuated from Japan during the onset of the COVID-19 pandemic.

## Section 3



### Clinical Simulation

Simulation provides risk-free training environments, enabling learners to practice skills and achieve acceptable levels of competency before moving on to real patient situations, and to maintain currency of skills once they are learned.

#### HUMAN PATIENT SIMULATORS

The simulators are life-sized, high fidelity mannequins representing patients that breathe, have breath sounds, heart tones, and palpable pulses. Simulators can be paired with monitors that can display vital signs including blood pressure, pulse oximeter, and electrocardiograms (EKGs) that can be controlled remotely by instructors.

#### TASK TRAINERS

A model that represents a part or region of the human body used to train in key elements of a procedure or skill, such as IV insertion, lumbar puncture, chest tube insertion, and central line insertion.



## BASE OF OPERATIONS (BoO) TENT SIMULATION

- Train with the NDMS BoO tent
- Train with NDMS cache for familiarity with deployable supplies
- Scalable culminating events
- Control center for remote observation by instructors

## LEARNINGSPACE

Clinical simulation management platform for video and audio recordings, designed to capture team training and individual simulation practice events for review, debrief, and assessment.

### Simulation areas come equipped with:

- Control center for remote observation by instructors
- All simulation rooms can be observed and/or recorded for review, debriefing, assessment and integrated checklists using LearningSpace capture software

## HOSPITAL SIMULATION

### The clinical training center consists of:

- Six simulated biocontainment patient care rooms
- Debriefing rooms
- Three anterooms
- Control center
- Training autoclave
- Procedure room with attached control center
- Operational laboratory

## AMBULANCE AND AMBULANCE BAY

- Indoor ambulance bay
- Home care unit for training and emergency response and transfer from home to hospital
- Fully operational ambulance for training
- Control center for remote observation by instructors
- Facility enables training on:
  - » Transport readiness
  - » Cleaning and decontamination
  - » Coordination of transport teams



## Section 3



### Virtual Reality Simulation

#### 3D, AUGMENTED REALITY/ VIRTUAL REALITY, AND HOLOGRAPHIC TECHNOLOGIES

Engage learners in experiential activities like education about the life cycle of pathogens of concern.

#### HOLOGRAPHIC THEATER

- 70 seats
- Holographic stage produces extraordinary virtual images that allow for educational experience on the infectivity of highly hazardous communicable diseases among other topics.

#### HELIX

Two hundred-degree 2D curved screen is an interactive, digital iWall displaying images individually or collaboratively with other sites. Pictured is a module for learners to practice donning and doffing order prior to the hands-on PPE training.

#### LASER CAVE-5

Fully immersive, five-sided 3D laser cave can expand learning on infectious disease training by allowing for practice on concepts like cleaning and disinfection of a biocontainment patient room.



## E-learning Virtual Academy

Open access of modules on UNMC e-gallery: [unmc.edu/egallery](https://unmc.edu/egallery)



**7,980**

page views of TSQC e-modules on the e-gallery March 1, 2020 – March 15, 2021

“This is the most impressive blood-borne pathogen/PPE/isolation-type training I've seen in 20 years. Extremely well done!”  
— ISQ learner



**5**

training courses developed, supported, and updated to meet evolving training needs

### 5 Training Courses Developed and Supported

1. Isolation, Simulation and Quarantine
2. Isolation, Simulation and Quarantine – second iteration
3. COVID-19 Mission Prep Training Course
4. Infectious Disease Transport Training
5. Infectious Disease Mortuary Training

### 19 Interactive E-learning Modules Developed

1. Demonstrating Personal Protective Equipment (PPE)
2. Transmission-Based Precautions
3. Improving Critical Communication Skills
4. Recognition & Response to Exposure
5. Administrative & Engineering Controls
6. Identify, Isolate, Inform
7. Identify — updated for COVID March 2020
8. Transmission — updated for COVID-19 March 2020
9. Cleaning and Disinfection
10. Containment of Patient Remains with Ebola or Other Special Pathogens
11. Packaging & Transport of Human Remains: Laws & Regulations
12. Packaging & Transport of Belongings & Specimens: Laws & Regulations
13. Patient Isolation Units
14. Regional Coordination of Infectious Disease Response
15. Waste Handling
16. Waste Streams
17. Ambulance Infection Control (summer 2021)
18. Transport of an Infectious PT (summer 2021)
19. Infection Prevention and Control: Considerations for Creating Zones in a Long-Term Care Facility (summer 2021)

**19**

interactive e-learning modules developed

**28**

subject matter experts involved in developing modules in collaboration with the e-learning team

**2,100+**

enrolled users

**85%**

of participants were "very or extremely satisfied" with e-learning

“I think this is one of the best, most thought out, professional, online learning tools I have encountered in my 15+ years in the NDMS system.”

— COVID-19 Mission Prep learner

### ALL E-MODULES ARE:

**Accessible:** Include features for mouse free, audio, video, and closed captioning to provide all individuals equal opportunities to learn.

**Interactive:** Interactive content and cognitive questioning aim to increase retention and higher order thinking.

**Reusable:** Can be reused time and again for multiple audiences and a variety of training courses.

**Scalable:** Can be accessed remotely and used by large numbers of learners.



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FOR HEALTH SECURITY**

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