

Use of unannounced “mystery patient drills” to assess hospital Emergency Department preparedness for communicable diseases of public health concern in New York City, 2016



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BACKGROUND

- Rapid globalization is leading to more frequent and wide-spread epidemics
- Frontline hospitals are vulnerable points of entry
 - During the 2014-2015 W. African Ebola epidemic and 2003 SARS outbreak → non-recognition of cases led to **nosocomial** and **community transmission**
- Healthcare system needs to improve **rapid recognition** and **isolation** of patients with severe infections
- Unannounced mystery patient drills have been used previously to evaluate hospital protocols and staff members' ability to identify and manage potentially infectious patients

OBJECTIVES

1. Determine time required to *identify* a potentially infectious patient with Middle East Respiratory Syndrome (MERS) or measles *and* *begin exposure mitigation* in Emergency Departments (EDs)
 - Time to masking
2. Determine time required to *isolate* patient
3. Assess adherence to key *infection control measures*

Figure 1:

Simulated measles rash using a commercial moulage kit



METHODS

Recruitment

- Fifty 911-receiving hospitals participating in NYC's Hospital Preparedness Program (HPP) invited to participate → **49 accepted**

Exercise Development

- Designed according to Homeland Security Exercise and Evaluation Program
- Scenarios described → **walk-in patient with recent fevers** and either
 1. respiratory symptoms and recent travel to the Middle East (i.e., MERS)
 2. rash after traveling to Europe (i.e., measles)
- Measles rash simulated using commercial moulage kit (Fig 1)

Exercise Conduct

- Each ED had **2 unannounced** drills
 - 1 business hours + 1 off-shift
- Players included
 - Controller → simulated patient
 - Evaluator → situated in ED to collect data
 - 1-2 hospital employees → ‘trusted agents’
- No other staff informed of drill
- Drill terminated after initial clinical evaluation *or* if wait time to triage >30 min
- Post-drill debrief held with all participants

Evaluation

- Standardized exercise evaluation guide (EEG) captured
 1. Compliance with key infection control measures
 2. Association between screening interventions and implementation of infection control measures
 3. Times from patient entry to triage, donning mask and placement into isolation
- Post-drill narratives reviewed to identify strength and challengers
- 3 pilot drills excluded from analysis

RESULTS

- December 2015–May 2016
 - **95 no-notice MPD drills at 49 hospital EDs**
- Exercise considered successful if the patient was **given a mask** and **isolated** from other patients and staff
 - **Overall ‘pass’ rate = 78%**
 - **39% (19/49) of hospitals failed at least one drill**
- Hand hygiene compliance = **36%**
- Isolation precaution signage use = **70%** (53/76)
- Use of recommended PPE in isolation room = **74%** (56/76)

RESULTS

Figure 2: Adherence to mask use and isolation protocols

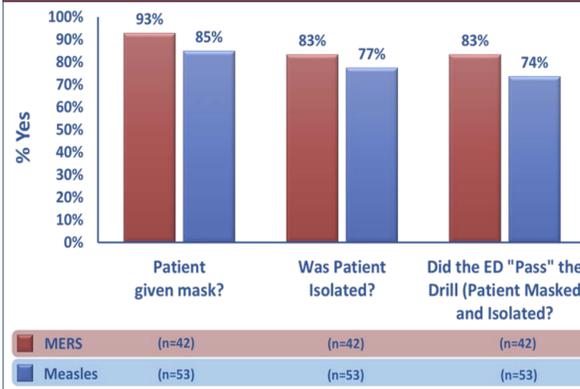


Figure 3: Use of screening questions at triage

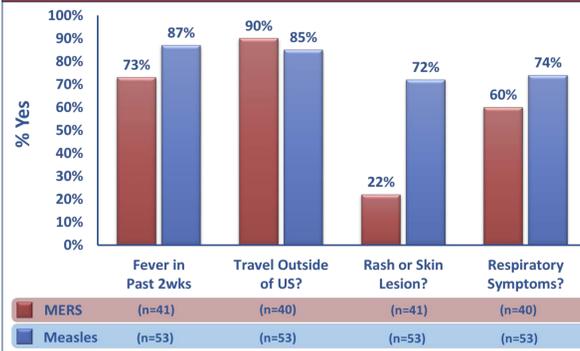
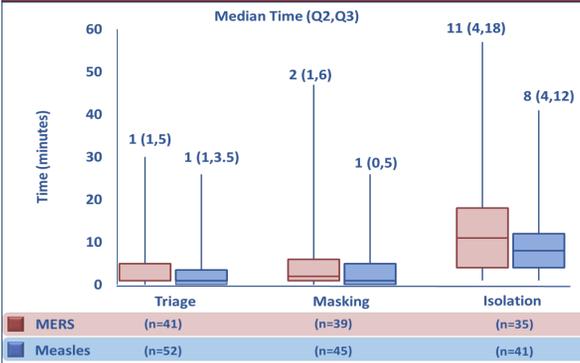


Figure 4: Time measures recorded during drills



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KEY QUALITATIVE RESULTS

Arrival/Screening

Strengths

- Mask often provided by first staff point of contact (POC)
- Use of standard screening questionnaires
- Use of rapid registration protocols

Areas for Improvement

- Obtaining travel history consistently

Infection Control and Isolation

Strengths

- Patient masking by staff
- Hand hygiene supply availability

Areas for Improvement

- Mask availability in waiting areas for self-masking
- Hand hygiene compliance
- Posting of isolation room signage

KEY RECOMMENDATIONS

1. Reinforce hand hygiene
2. Implement standardized ‘fever + travel’ screening questionnaires
3. Utilize protocols to guide masking and isolation when screen is positive
4. Identify and train staff likely to be first point of contact with patients
5. Post isolation precaution signage to avert unnecessary staff exposures

CONCLUSIONS

- MPDs are a useful tool to **evaluate screening and isolation capabilities** in acute care settings
- Hospitals varied in their ability to identify infectious patients and implement infection control measures
- Use of standardized tools allow:
 - Healthcare facilities to **evaluate protocols** and identify **areas for improvement**
 - Public health to compare across the system to **identify gaps** and **guide interventions**

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Toolkit available at: <http://on.nyc.gov/site/IDPrep>