COVID-19 Emergency Department Response Strategies

03/11/2020

COVID19: The Triage and Isolation Problem

- Only 41% had fever on presentation to hospital
- Symptoms may be very mild or asymptomatic (like a mild cold)
- Viral shedding (most contagious) during early, mild phase
- PCR lab testing is imperfect, 71% sensitive
- Critical illness begins in second week of infection

Triage screening needs to be sensitive but will not be specific →
Many must be isolated upon entry to healthcare setting to prevent
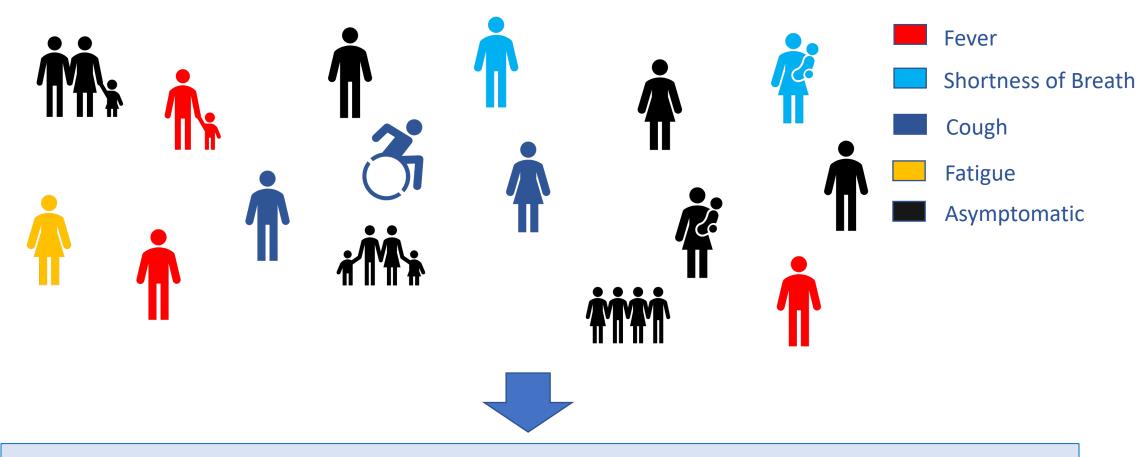inadvertent healthcare worker infection and nosocomial spread

Window for Action in the ED is NOW

- Screen with a broad net to identify patients that require isolation
- Healthcare workers use PPE & sanitation measures to prevent personal infection
- Isolate potential COVID-19 patients from others to prevent nosocomial spread
- Critical illness develops in 2nd week = 7 days of community COVID-19 spread
- Imperfect lab test: infections will be missed when the local infection rate is high

NOW this is a public health emergency
NOW is the time to prevent spread to frontline healthcare workers
This CANNOT business as usual in the ED

COVID19: Triage and Isolation Problem

Legend:
- Fever (red)
- Shortness of Breath (light blue)
- Cough (dark blue)
- Fatigue (yellow/orange)
- Asymptomatic (black)

How can we tell who is infected with SARS-CoV-19?

COVID19: Resource Constraints

- High need for PPE and anticipated shortages as supply is ramped up

- Community centers with capacity are unable to screen patients due to lack of N95 masks protection (required for testing)

- Patients must be isolated upon entering a building to prevent potential spread. Construction of isolation rooms is very costly and does not take place overnight

- If healthcare providers become ill, they will need to isolate themselves for at least 14 days to prevent spread—our workforce is already understaffed, this will devastate it

Our ability to address COVID-19 spread is limited by: physical plant constraints, PPE shortages, and our ability to keep healthcare providers well and safe.

COVID19: Risks

46% Chance of Self-Contamination Every Time Gloves Removed

EBOLA PREPAREDNESS: PPE GUIDELINES

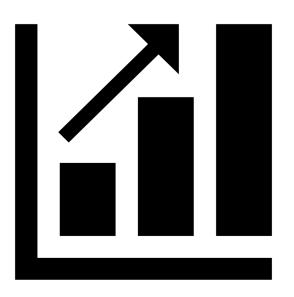Produced in collaboration with: APIC · SHEA · MIAMI UNIVERSITY

- Using tracers, healthcare workers were found to self-contaminate 46% of the time when they removed gloves
- Doffing (taking off) PPE is the most likely time to be contaminated
- Decreasing the number of times PPE is doffed decreases risk (e.g. dedicated containment unit, wear suit all day)

Decreasing the number of times a health care worker changes in and out of PPE will decrease risk of self-contamination and spread
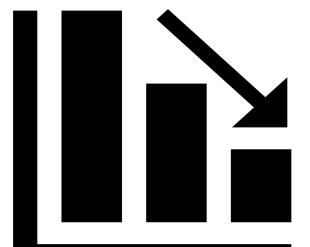
3/14/20
Source: https://www.ncbi.nlm.nih.gov/pubmed/26457544?dopt=Abstract

Operational Changes to Address Constraints/Risk

Increase Supply/Treatment

- More staff to screen, care and clean
- More PPE/safe reuse
- More equipment such as ventilators
- More equipment
- Treatments

Decrease Demand/Risk

- Reorganize to decrease exposure
- Change operational practices to concentrate/decrease exposure
- Utilize video intercom to decrease touches → decreased risk and conserve PPE
- Public health to "flatten the curve"

We should address these constraints by both:
1. **Increasing supply and treatments and**
2. **Decreasing demand and risk**
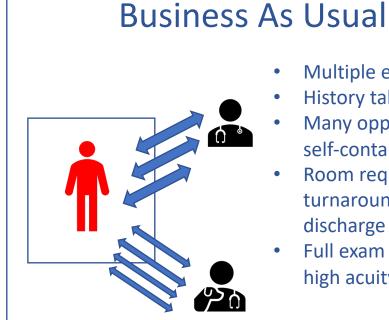
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COVID19: Minimizing Risks by Minimizing Touches

Business As Usual

# of Episodes of Donning and Doffing/Patient Encounter	**5**
# of Patients	100
Risk of Contamination/Episode	46%
Possible Contaminations	**230**

Decreased Physical Encounters

# of Episodes of Donning and Doffing/Patient Encounter	**0.5**
# of Patients	100
Risk of Contamination/Episode	46%
Possible Contaminations	**23**

Opportunity to decrease health care worker infection and PPE usage by an order of magnitude by minimizing unnecessary exposures
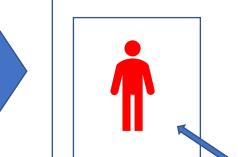
Video Intercom in Hospital: Decrease risk and conserve PPE

Business As Usual

- Multiple entries by team
- History taken in room
- Many opportunities for self-contamination
- Room requires 2+ hour turnaround after discharge
- Full exam required for high acuity patients only

Video Intercom in Room

- History taken via room video intercom
- "Doorway" exam may be sufficient to establish acuity, stability (no entry)
- Coordination with staff to minimize exposures,
- Fewer healthcare worker infections, decreased nosocomial spread
- Greatly decreased PPE use

Changing our practice to incorporate use of video intercom and limited physical exam could decrease healthcare worker infections and greatly decrease our use of PPE

Checkpoint Triage and Disposition

Could be a tent, video kiosk, drive through, etc.

Business As Usual

Triage Screening

Positive Screen Pathway

- Physical isolation/space
- Masking
- PPE use with every physical visit
- 2+ hour room clean

Neg Screen Pathway

- Normal operations
- Dependent on screening to protect against exposure
- Long TAT from positive screen pathway rooms leads to long waits

A triage checkpoint outside of the building <u>and</u> flexibility to operate under "crisis standard of care" can limit exposure and decrease demands on limited resources (PPE, rooms, staff)

Checkpoint Triage

Triage Screening, Testing & Discharge

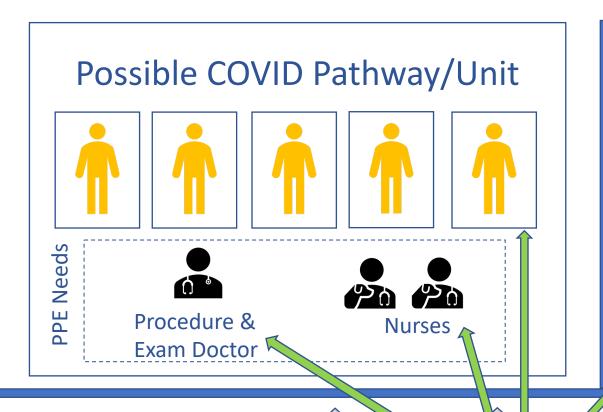**Positive Screen AND Sick**

- Isolation pathway
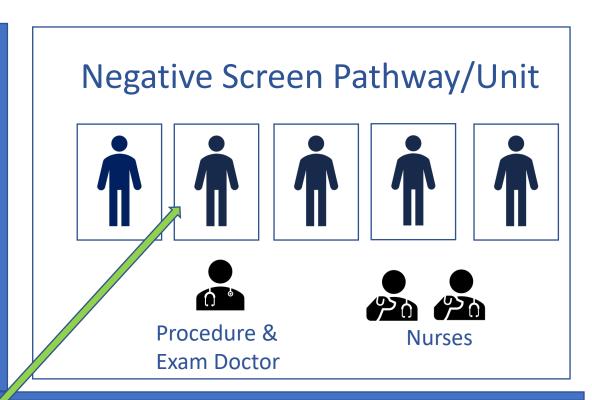
Positive Screen & NOT Sick

- Discharge from checkpoint
- Minimal staff & patient exposure
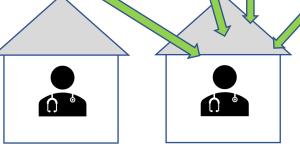- No use of PPE and room resources

Neg Screen

- Normal operations
- In situations of very high demand or risk e.g. asymptomatic infection, patients who do not need stabilizing care discharged from checkpoint

Reorganizing Work + Video Telemedicine to Decrease Risk and Enable Physicians on Isolation to Work Remotely

Possible COVID Pathway/Unit

Negative Screen Pathway/Unit

PPE Needs

Procedure & Exam Doctor

Nurses

Procedure & Exam Doctor

Nurses

Physicians In Performing Work Remotely

Changing organizational practices could limit the risk to a smaller subset of the healthcare workforce, conserve PPE and extend physician workforce

What we need to do NOW:

Video intercom to eliminate risk of unnecessary exposure, conserve PPE and allow isolated or infected physicians to work from home

Checkpoint triage, screening and disposition to minimize exposure and to discharge potentially infected but well directly from tent/car OUTSIDE of building

Changes to organization of work to concentrate risk

Implementation of "Crisis Standards of Care" to allow us to discharge patients from triage if they do not need stabilization and we do not have necessary resources to care for higher acuity patients

Significant Barriers to Quickly Implementing Practices We Know Can Mitigate Disaster and Need to Be Implemented NOW:

- Concerns about EMTALA compliance ($104K personal fine to physician per violation): *Reinforces "business as usual," which places HCW at risk*

- Concerns about crisis standards of care and subsequent malpractice liability: *Prevents development of innovative, safer approaches to care*

- HIPAA and security regulatory compliance concerns on the part of hospitals prevent speedy implementation of technology: *Reinforces "business as usual" and prevents IT departments from quickly implementing solution that isn't fully "vetted"*

Opportunities That We Need to Leverage

- Concerns about EMTALA compliance ($104K personal fine to physician per violation): *Reinforces "business as usual," which places HCW at risk*

- Concerns about crisis standards of care and subsequent malpractice liability: *Prevents development of innovative, safer approaches to care*

- HIPAA and security regulatory compliance concerns on the part of hospitals prevent speedy implementation of technology: *Reinforces "business as usual"*