SARS-CoV-2: Infection Control and Cohorting Strategies for Isolation; Hospital, ICU, and Wards

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July 3, 2020
• **Conflicts of Interest:**
  • None to report

• **Disclaimers:**
  • All PPE used as per standard institutional infection prevention and control guidance whenever possible; however, due to the emergency nature of the COVID-19 pandemic, deviation from these standards was necessary at times. All care was taken in protecting patients and healthcare workers alike in considering any deviation.
Introduction

• The County of Cook in Illinois is the second most populous county in the United States.

• At the end of June, 2020, Cook County had the 2\textsuperscript{nd} highest number of COVID-19 cases by County (> 90,000) and the 3\textsuperscript{rd} highest number of deaths (> 4,500).

• While our hospital has seen a significant reduction in COVID-19 cases and hospitalizations, we remain vigilant as cases rise in other areas of the country and as we recently entered a new phase of reopening.
Infection Control and Prevention

• Healthcare System Level
  • Acute care hospital(s)
  • Outpatient clinics
  • Pharmacies
  • Same Day surgery centers

• Hospital Level
  • Emergency Department
  • Medical/Surgical Wards and ICUs
  • Diagnostic testing areas
  • Operating rooms

• Medical/Surgical Ward and ICU Level
  • COVID vs Non-COVID
Healthcare System/Hospital Level

- Routine clinic visits canceled or converted to telehealth
- Elective surgeries canceled
- Entry points limited with signage
- Universal masking – masks provided at entry points
- ED Triage and immediate isolation as previously described
- Tents for drive-up or walk-up testing
Healthcare System/Hospital Level

- Reduction in face to face consultation for hospitalized COVID/PUI patients
- Reduction in diagnostic testing for hospitalized COVID/PUI patients
- NO Visitors
- Social distancing
  - Rearrangement of seating in waiting rooms
  - Limitation of number of people on elevators
  - Meetings changed to web-based format
- Medications delivered to floor on patient discharge
- Ambulance/Medicar transport if needed
Hospital/Ward/ICU Level

• Designated unit(s) for COVID/PUI Patients
  • Dedicated nursing with strong nursing leadership
  • Familiar with geographical localization of teams
  • Telemetry capability
  • PPE supply localization

• Designated medical team
  • All staff trained on appropriate PPE donning/doffing prior to starting on COVID Team

• Designated elevator for transport

• Disposable meal trays and utensils
Med-Surg Ward Level

Pod C

Pod B

Supplies

Laundry, Dirty Equipment

Nursing Station

Nursing Station

Pod A

Pod D
Med-Surg Ward Level

• Double occupancy rooms converted to single occupancy rooms
  • Decreased ward capacity to 18 patients from usual 26 to 28 patients

• 4 Airborne isolation rooms per ward
  • Prioritized for aerosol generating procedures, nebulizers, BiPap/CPAP needs

• 2 Hemodialysis capable rooms per ward

• Medical team work rooms located just off-unit
  • Limited number of staff per room for social distancing
  • Surgical/procedure mask required
Additional Considerations

• Disposable stethoscopes placed in patient room on admission remained for entire stay

• Designation of “clean”, “contaminated”, “dirty” areas
  • Consider marking with tape or floor and wall signage

• Spotters for donning/doffing in high risk situations
  • Used for Ebola, particularly due to increased difficulty with full suit, PAPR, etc

• Extended use of PPE
  • N95 – covered with disposable surgical/procedure mask
  • Gowns – within the same “Pod” (only for confirmed COVID positive patients)
Early Challenges

• **Test turn-around time**
  • Send out test initially – up to 1 week for result
  • Difficulty with placement while awaiting test result (Nursing facility, hemodialysis, shelter)
  • Could not cohort patients in a single room efficiently

• **Community spread**
  • Change in triage questionnaire and increased PUI numbers

• **Special patient population (Cook County Jail/Cermak)**

• **Rapid opening of additional COVID wards**
Med-Surg Ward Level


Flex unit

COVID 4 (6W) 3/30/20 -> COVID 5 (6E) 4/2/20

Flex unit

COVID 3 (8W) 3/18/20

COVID 2 (8S) 3/23/20

COVID 3 (7W) 3/25/20

COVID 4 (6W) 3/30/20

COVID 5 (6E) 4/2/20
Patient Cohorting

• Severely needed option as volumes rapidly increased
  • Balancing need for non-COVID units for patient care as well

• In-house testing capability decreased turn around time to less than 24 hrs

• Able to cohort confirmed COVID positive patients in dual occupancy rooms with greater efficiency

• Eventually converted some wards to “flex” wards
  • 2 “Pods” for COVID/PUI patients and 2 “Pods” for Non-COVID patients
  • Nursing staff designated as COVID or Non-COVID
  • Medical staff could see both (Non-COVID patients prior to COVID patients whenever possible)
Transfers between COVID and non-COVID Wards

• Challenging initially due to varied patient presentation and long turn-around test

• Improved with in-house testing, BUT significant number of false negatives
  • Early presentation
  • Poor sample collection
  • Unknown test sensitivity

• Additional challenges
  • Varied duration of viral shedding
  • Unclear duration of infectivity with persistent viral shedding
  • False negative tests and ? poor sample collection
  • $7 + 3 \rightarrow 10 + 3$?

• Cautions
  • Test results must be used in conjunction with clinical judgement
Transfers between COVID and non-COVID Wards

- Non-suspect COVID hospitalized patient develops COVID symptoms
  - Immediately institute infection control precautions
  - If not in a single room, distance beds and close curtain until patient can be moved
    - Avoid aerosolizing treatments or procedures in the meantime

- Prior COVID-positive readmissions
  - Duration based ward placement?
  - Test based ward placement? 1 negative test or 2?

- Differentiation of pre-procedural/surgical screening and PUI
  - Asymptomatic COVID positive patients
Outpatient Solutions

- Convention center converted to temporary medical facility for COVID-19 patients
  - Significant restrictions
- Hotels converted to temporary housing for COVID-19 patients not needing Hospitalization but requiring transition to home
  - Significant restrictions
- YMCA and some homeless shelters converted to temporary shelters for COVID-19 patients with housing insecurity not needing hospitalization
  - Less restrictions
Conclusions

• Infection control and prevention strategies need to be addressed across multiple levels simultaneously in order to be effective.

• Strategies must take into account the particular healthcare system’s existing structure and capabilities.

• Flexibility and adaptability to a rapidly evolving situation is essential.

• Non-COVID patient care does not stop in a pandemic!
Thank You!

Questions?