Protecting the Healthcare Provider

University of Toronto OBGYN QuIPS COVID-19 in Pregnancy Webinar

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Objectives

1. Review COVID-19 risks for healthcare providers.
2. Discuss strategies for reducing risks for healthcare providers.
3. Develop tools and resources to support healthcare providers.
Risk of COVID-19 in HCP

• Difficult to accurately track HCP infection rate worldwide
  - Wuhan: 6.6-29%
  - China: 2.1%
  - Italy: 10.3%
  - United States (12 states): 11%
  - Ontario: 14%

• Majority (>90%) are not hospitalized

Guan W et al. (2020). NEJM.
Li D et al. (2020). NEJM.
Wang D et al. (2020). JAMA.
How are infected HCP getting exposed?

- Only healthcare exposure: 55%
- Only household exposure: 27%
- Only community exposure: 13%
- Multiple exposure settings: 5%

Healthcare providers are predominantly exposed in their work environments.

CDC COVID-10 Response Team. (2020). MMWR.
The risk of exposure for healthcare providers increase when medical emergencies occur.

Obstetrical emergencies in patients with suspected or confirmed COVID-19 are especially complex.
Donning & Doffing

• Biggest risk of infection is associated with self-contamination by inappropriate removal of PPE

• Associated with perceived delays in response time to emergencies

• Perceived inadequate training (<2h) & inconsistent use of PPE were risk factors for SARS infections in healthcare providers

• Traditional face-to-face training with an instructor is challenging during pandemics

Christensen L et al. (2020). Disas Med Pub Health
Fischer WA et al. (2014). Ann Int Med/
Lau JTF et al. (2004). Emerg Infect Dis
Donning & Doffing:
Training Methodologies

- Increased compliance & reduced errors with spoken instructions
- Reduced contamination when working in teams
- No difference between interactive or passive training
- Computer simulation reduced errors
- Video-based learning had higher test scores than lecture

Andonian J et al. (2019). Clin Inf Dis
Casalino E et al. (2015). Am J Inf Control
Curtis HA et al. (2018). Prehosp Disaster Med
Hung PP et al. (2015) CIN
Verbeek et al. (2020). Cochrane Database Sys Rev
Donning & Doffing: Tools to Improve Training & Compliance

- Instructional Videos
- Checklists or Posted Instructions
- Safety or PPE Leader
- Donning & Doffing Partners
- Drills / Simulations
Donning & Doffing: Donning Training Video
Donning & Doffing: Doffing Training Video
**Donning & Doffing Posters**

### Donning & Doffing Instructions for OBs & RNs

- **DONNING Instructions (occurs in the sterile OR corridor)**
  1. Put on **shoe covers**.
  2. Perform **hand hygiene**.
  3. If wearing glasses, remove them to put on **N95 respirator**.
  4. Put on **N95 respirator** with bottom strap on back of neck on bare skin, and top strap on crown of head.
  5. Seal respirator by placing both of your middle fingers at the bridge of your nose and your index fingers on your nose and temple areas. Put your index fingers onto your temples and perform a sealing action.
  6. Repeat with hands at side and top of respirator.
  7. Put glasses back on.
  8. Put on **full face shield** with foam band in middle of forehead.

### Donning & Doffing Instructions for N95 masks

- **DONNING Instructions (occurs in the sterile OR corridor)**
  1. Put on **glove covers**.
  2. Perform **hand hygiene**.
  3. If wearing glasses, remove them to put on **N95 respirator**.
  4. Put on **N95 respirator** with bottom strap on back of neck on bare skin, and top strap on crown of head.
  5. Seal respirator by placing both of your middle fingers at the bridge of your nose and your index fingers on your nose and temple areas. Put your index fingers onto your temples and perform a sealing action.
  6. Repeat with hands at side and top of respirator.
  7. Perform seal check by placing your hands below your chin and exhale quickly.
  8. If you feel leakage, readjust the fit of your N95 respirator and perform another seal check.
  9. Repeat with hands at side and top of respirator.
  10. Put on **glove covers**.

### Scrubbed Personnel

- You are now ready to start your surgical scrub.

### Non-Scrubbed Personnel

- In the hallway. Put on your yellow gown; ensure neck and back ties are secured. Put gloves on with gloves overlapping the gown.

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### Donning and Doffing N95 masks

- Ensure you are only using the mask for which you have been fitted tested.

### Instructions for Doffing

<table>
<thead>
<tr>
<th>Step</th>
<th>Image</th>
<th>What</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>![Hand Hygiene](Hand Hygiene.png)</td>
<td>Clean hands and fingers thoroughly with alcohol-based no</td>
</tr>
<tr>
<td>2.</td>
<td>![Preparing the mask](Preparing the Mask.png)</td>
<td>Press index fingers along edge of mask to mold the mask over lips and sides of nose and nose bridge.</td>
</tr>
<tr>
<td>3.</td>
<td>![Mask and strap placement](Mask and Strap Placement.png)</td>
<td>Pull off and place mask on face. Press chin in as far as possible.</td>
</tr>
<tr>
<td>4.</td>
<td>![Fitting mask to face](Fitting Mask to Face.png)</td>
<td>Hold mask on the middle of your face.</td>
</tr>
<tr>
<td>5.</td>
<td>![Check no folds](Check No Folds.png)</td>
<td>Check that mask is properly formed to face.</td>
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<td>2.</td>
<td><img src="Removal.png" alt="Removal" /></td>
<td>Last step; grab the bottom strap at the base of your neck and pull over the top of your head letting the strap fall below your nose. Grab the top strap at the back of your neck and pull away from your face. Take care to never touch the front of the mask.</td>
</tr>
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Approach to Preventing HCP Infections

Systems Engineering Initiative for Patient Safety (SEIPS) Model

- Work System
  - Healthcare Tasks
  - Organizational Conditions
  - Healthcare Worker
  - Tools & Technologies
  - Environmental Factors

- Outcome
  - Occupational Health
  - Occupational Safety

Gan WH et al. (2020). Saf Health Work
Approach to Preventing HCP Infections

Risk stratify tasks as high risk (full PPE) or medium risk (lower PPE).

Staff safety surveillance with availability of COVID-19 PCR testing, temperature monitoring & secure reporting.

Individual’s knowledge, attitudes, beliefs, fears, discomforts

Safety climate, clear communication & guidelines, training strategies

Keep care teams small, ensure access to handwashing facilities, PPE availability

Gan WH et al. (2020). Saf Health Work
Houghton C et al. (2020). Cochrane Database Syste Rev
Algorithms Reduce Exposure & Cross-Contamination: PPE Utilization Guidelines

IP&C Guidelines at Sunnybrook assume that all obstetrical patients are asymptomatic COVID-19 carriers at the time of delivery in cases of AGMP.
Algorithms Reduce Exposure & Cross-Contamination: Emergent Patient Transfer for General Anesthesia
Simulation Training

- Obstetrical emergency simulation training has been shown to improve neonatal outcomes during shoulder dystocia, reduce time to surgical incision and improve performance during obstetrical hemorrhage

- Emergency drills allow team members to practice effective communication in a crisis

- Barriers to efficient transport and/or management can be identified

Draycott TH et al. (2008). Obstet Gynecol
Lipman SS et al. (2011). Obstet Gynecol
Maslovitz S et al. (2007). Obstet Gynecol
Simulation Training: Lesson Learned

- PPE takes time to don
- Identified need for 2 donning stations (1 for OB/RN and another for anesthesia)
- Identified need for alcohol hand sanitizer in anteroom
- Identified need for general anesthesia kit and obstetrical hemorrhage kit
- Identified methods of communication to “outside” OR
Emergency Kits Decrease Risk of Cross-Contamination

- Obstetrical Hemorrhage Kit
- Pre-Eclampsia / Eclampsia Kit
- General Anesthesia Kit
Emergency Kits:
Obstetrical Hemorrhage Kit

COVID PPH KIT CONTENTS

- Artline Kit
- Voluven x 2
- Normal saline
- IV tubing
- Blood tubing
- Hotline tubing
- Bloodwork kit: tubes, vacutainers, needles
- IV x 2 (18G angio), normal saline flush x 2
- Plain packing strips
- Microfibrillar collagen hemostat
- Surgicel, Surgifoam
- Gauze (2x2)
- Stop cocks, dead ends, y-tubing
- Foley, urometer
- Sheets for documenting dry weights, stickers for blood, debriefing & yellow transfusion strips
Emergency Kits:
Obstetrical Hemorrhage Kit

COVID PPH MEDICATION KIT CONTENTS (REFRIGERATED)

- Bloodwork kit & Needles
- Oxytocin 10U/1mL x 5
- Ergonovine 0.25mg/1mL x 3
- Carboprost 0.25 mg/1mL x 3
- Misoprostol 200mcg tab x 4
Take Home Points

A systematic approach to obstetrical emergencies reduces exposure risk to healthcare providers

• Optimize donning & doffing training
• Utilize emergency kits
• Determine who should respond to emergencies
• Develop local algorithms and communication tools to aid work flow
“Health care workers are every country’s most valuable resource.”

- The Lancet