

# Protecting the Healthcare Provider

University of Toronto OBGYN QuIPS COVID-19 in Pregnancy Webinar

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Obstetrics & Gynaecology  
UNIVERSITY OF TORONTO

# 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

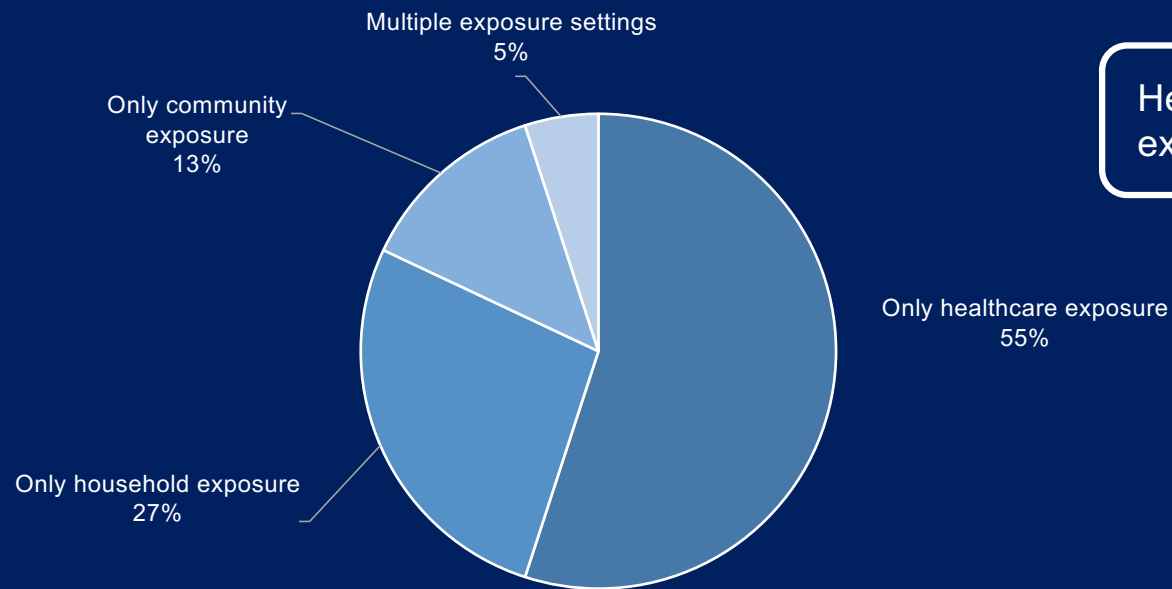
- Difficult to accurately track HCP infection rate worldwide
  - Wuhan: 6.6-29%
  - China: 2.1%
  - Italy: 10.3%
  - United States (12 states): 11%
  - Ontario: 14%
- Majority (>90%) are not hospitalized



CDC COVID-10 Response Team. (2020). MMWR. Italian Higher Health Institute. (2020).  
Donovan K (2020). Toronto Star  
Guan W et al. (2020). NEJM.  
Li D et al. (2020). NEJM.  
Wang D et al. (2020). JAMA.



# How are infected HCP getting exposed?



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

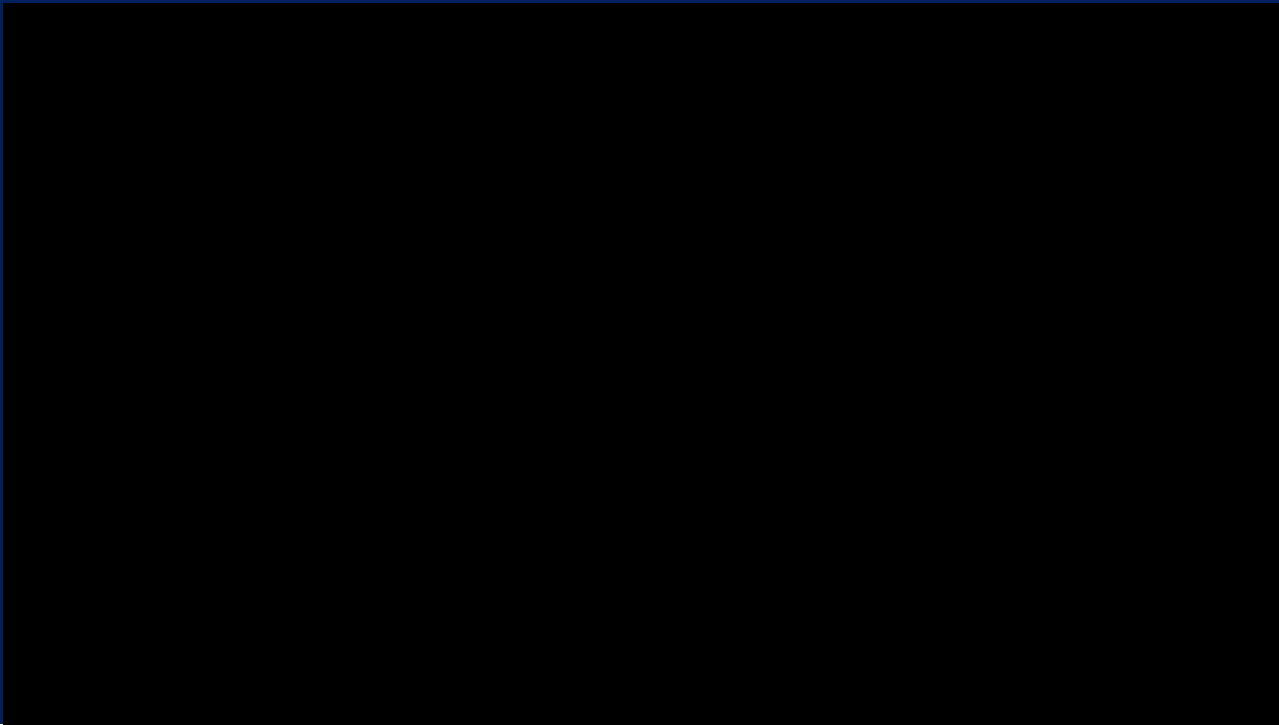


# Donning & Doffing: Tools to Improve Training & Compliance

- 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

**Precautions**



# Donning & Doffing Posters



## **Droplet & Aerosolized Precautions**

### **DONNING Instructions for OBs & RNs**

(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.
  - Hold respirator by placing both of your middle fingers at the bridge of your nose and use your index fingers to mold metal strip along the sides of nose and cheeks.
  - Perform seal check by placing your hands below your chin and exhale quickly.
  - If you feel leakage, readjust the fit of your N95 respirator and perform another seal check.
  - Repeat with hands at side and top of respirator.
5. Put glasses back on.
6. Put on **full face shield** with foam band resting in middle of forehead.
7. Don **blue bouffant** on top of existing head covering.
8. **Scrubbed Personnel:**  
You are now ready to start your surgical scrub.  
Once completed, enter the OR through the anteroom;  
if NO anteroom is present, enter the OR directly.  
When entering the OR, put on a sterile gown and double gloves (**inside the OR**).
9. **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.

PPE = Personal Protective Equipment, OR = operating room  
PR XXXXX (2020/04/23)



## Droplet & Aerosolized Precautions






- **Doffing in Anteroom is preferred**
  - **For ORs without anterooms, remove gown and gloves in the OR, and face shield and N95 respirator in designated doffing zones (in hallway).**
1. Remove **shoe covers**.
  2. Remove **outer gloves** (if applicable).
  3. Remove **gown** (surgical or yellow).
  4. Remove **goggles**. Perform hand hygiene.
  5. Remove **bouffant cap**. Perform hand hygiene.
  6. Remove **face shield**. Perform hand hygiene.
  7. Remove **glasses** (if applicable). Perform hand hygiene.
  8. Remove **N95 respirator**. Grasp back of neck strap and remove. Next, grasp top strap and remove. Do not touch the front of N95 mask. Perform hand hygiene.
  9. Replace glasses. Perform hand hygiene.
  10. Report any breaches directly to supervisor, manager and Occupational Health & Safety\*.
  11. Change scrubs and consider showering if patients' body fluids came into contact with bare skin. Keep eyes and mouth closed.

\*If any suspected or known exposure(s), notify direct supervisor and Occupational Health and Safety department immediately.







## Donning and doffing N95 masks

Ensure you are only using the mask for which you have been fit tested.  
Please note that facial hair will obstruct proper sealing of the N95 mask.

Instructions for Donning	Image	What
<b>1 – Hand Hygiene</b>		<b>Clean hands and fingers thoroughly with alcohol-based rub</b>
<b>2 – Preparing the mask</b>		a) For masks without flaps: <ul style="list-style-type: none"> <li>• Cup mask in your hands, with straps hanging underneath. Make sure the metal strip faces up towards your nose</li> </ul> b) For masks with flaps: <ul style="list-style-type: none"> <li>• Open flaps using thumbs to hold straps to each side. Form cup shape with mask.</li> </ul>
<b>3 – Mask and strap placement</b>		Lift chin to place mask on face Place chin as far as possible <b>Bottom strap first:</b> <ul style="list-style-type: none"> <li>• Place strap on neck below hairline.</li> <li>• Ensure strap is on bare skin only – no loose hairs</li> <li>• Lift long hair over strap</li> </ul> <b>Top strap next:</b> Place strap on the crown of your head.
<b>4 – Fitting mask to face</b>		Do not grasp straps Hold the material on the sides of mask located between the two straps Adjust mask so metal nosepiece is on the bridge of your nose
<b>5 – Check: no folds</b>		Check if mask is properly formed to face Ensure no folds by running fingers along edges of mask



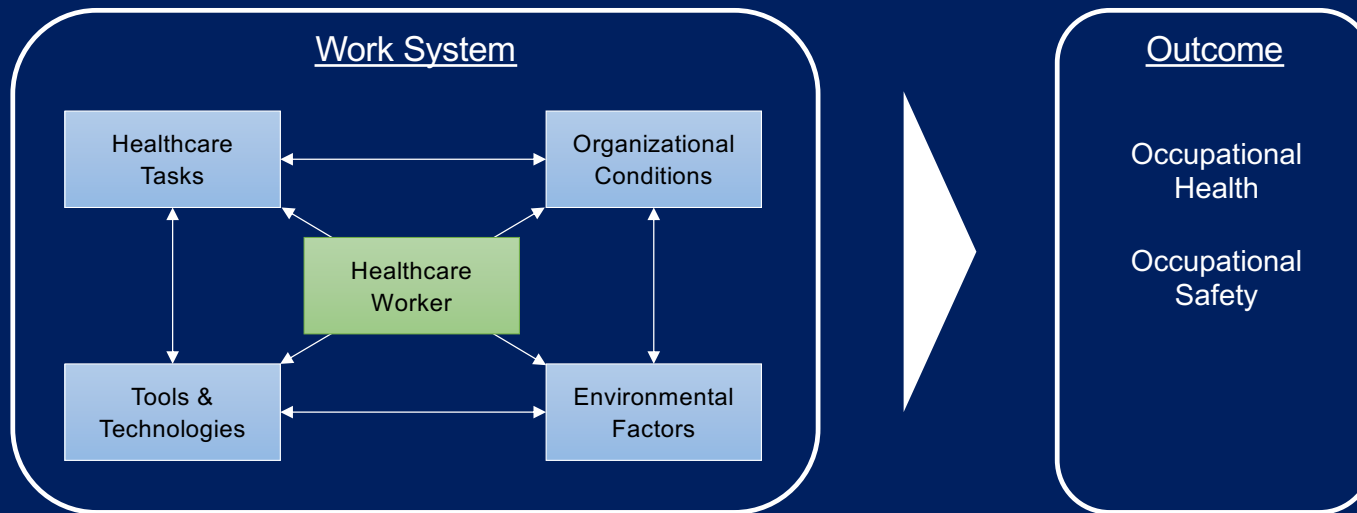
Instructions for Donning	Image	What
<b>6 – Sealing mask to face</b>		<p><b>First seal:</b> Place both middle fingers on metal nosepiece  Press index fingers along edge of mask to mould the metal nosepiece against top and sides of nose and onto cheeks.</p> <p><b>Final seal:</b> Repeat pressing index fingers with more pressure especially along side of nose</p>
<b>7 – Air seal check</b>		<p><b>First check:</b> Place both hands at eyebrow level without touching mask  Exhale quickly once If air escapes the mask and hits palm of hand, adjust the mask</p> <p><b>Next checks:</b> For sides of face and under chin, place your hands in these locations and exhale once quickly.  Adjust as necessary  Mask is sealed when air does not escape</p>

Instructions for Doffing	Image	What
<b>1 – Hand Hygiene</b>		Clean hands and fingers thoroughly with alcohol-based rub
<b>2 – Removal</b>		Lean over, grab the bottom strap at the base of your neck and pull over the top of your head letting the strap fall below your chin. Grab the top strap at the back of your head and carefully remove over your head and away from your face. Take care to never touch the front of the mask.



# Approach to Preventing HCP Infections

## Systems Engineering Initiative for Patient Safety (SEIPS) Model



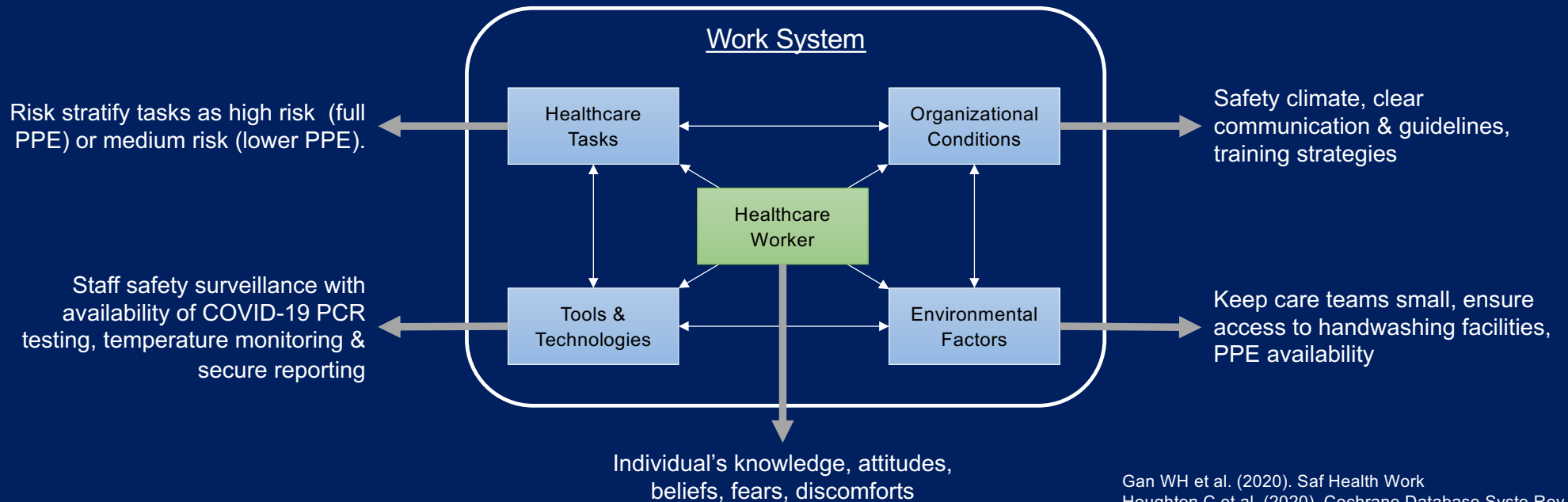
Gan WH et al. (2020). Saf Health Work





# Approach to Preventing HCP Infections

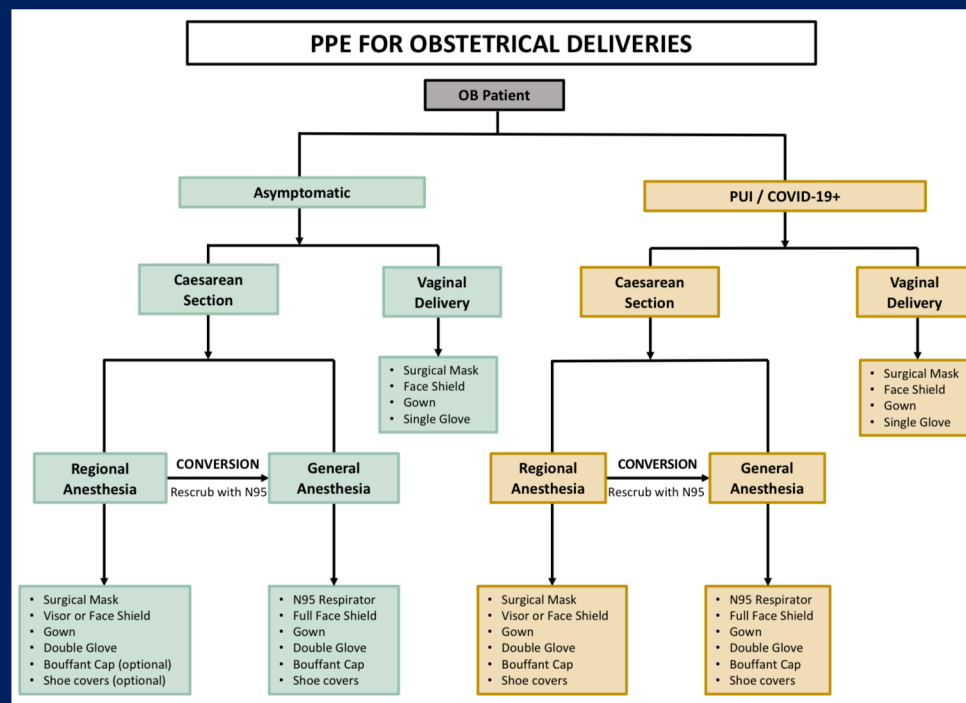
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Gan WH et al. (2020). Saf Health Work  
Houghton C et al. (2020). Cochrane Database Syst Rev



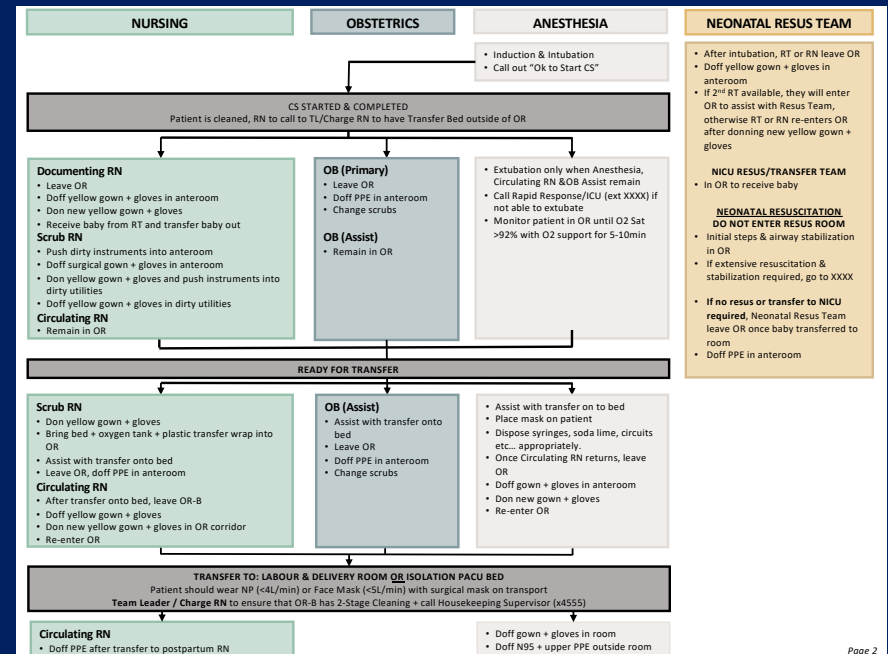
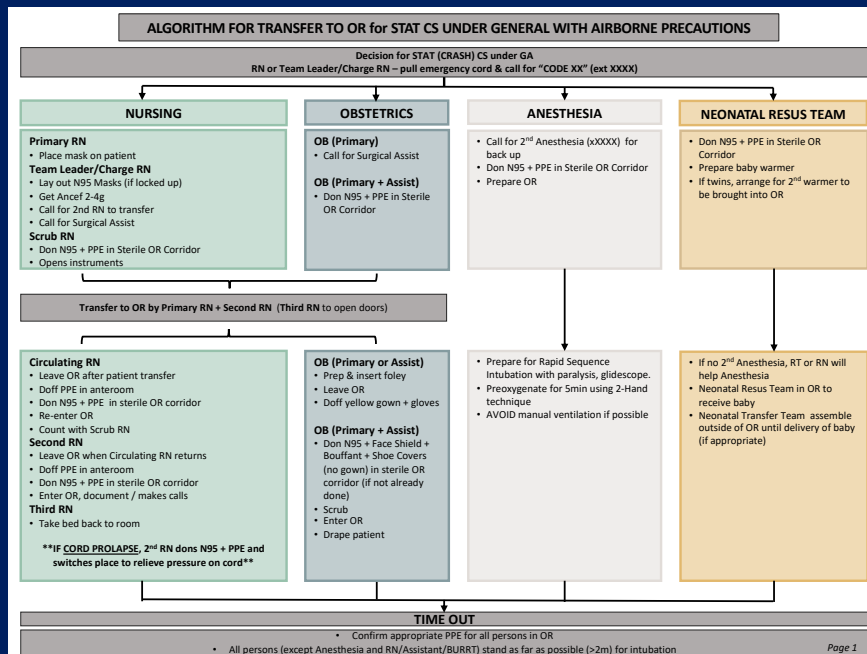
# Algorithms Reduce Exposure & Cross-Contamination: PPE Utilization Guidelines



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



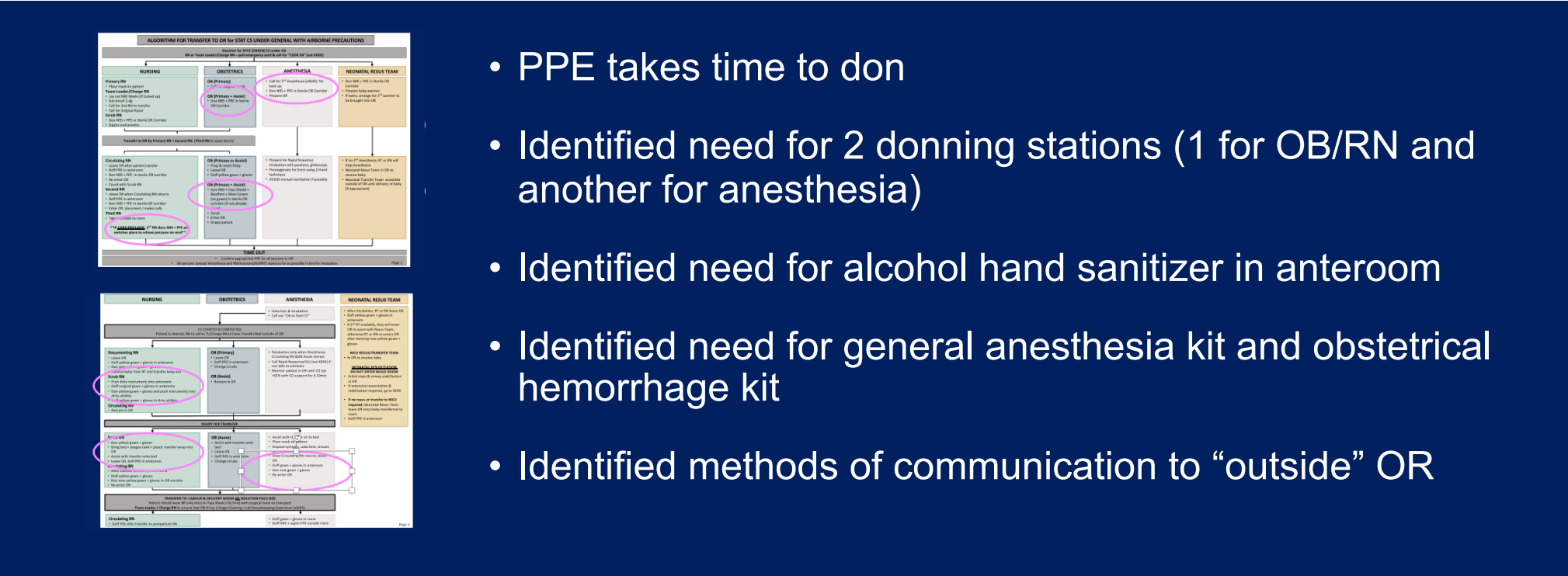
# Simulation Training

- 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. (2010). Am J Obstet Gynecol  
Lipman SS et al. (2011). Obstet Gynecol  
Maslovitz S et al. (2007). Obstet Gynecol  
Shields L. (2009). CADPH-MCAH California Maternal Quality Care Collaborative



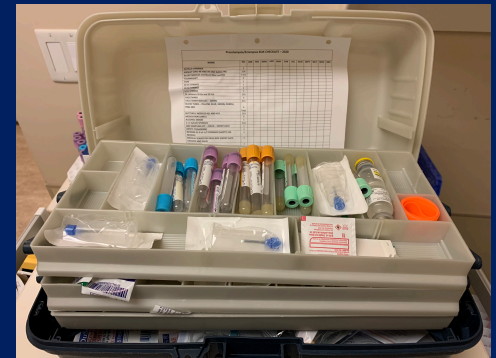
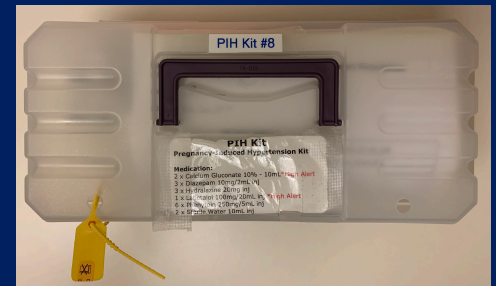
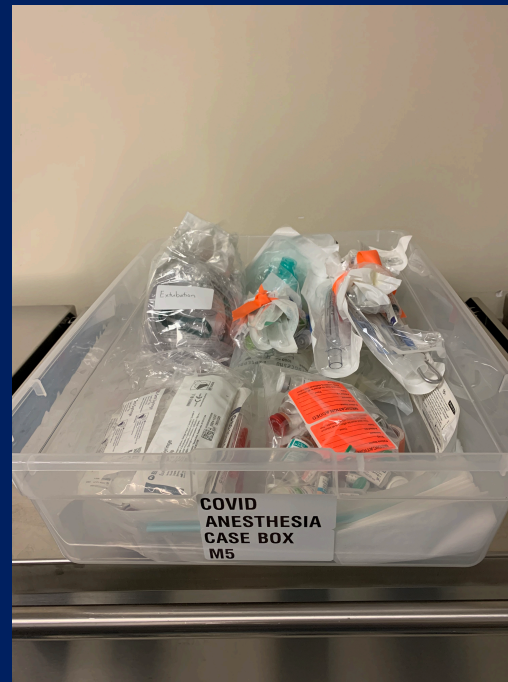
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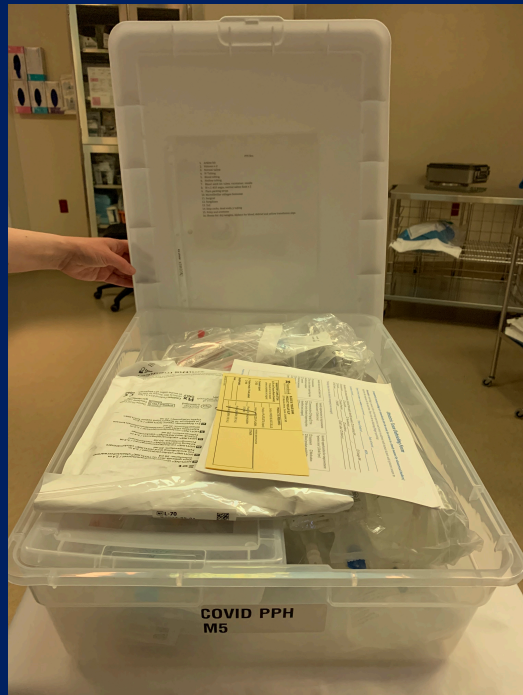
- PPE takes time to don
- Identified need for 2 donning stations (1 for OB/RN and another for anesthesia)
- Identified need for alcohol hand sanitizer in anteroom
- Identified need for general anesthesia kit and obstetrical hemorrhage kit
- Identified methods of communication to “outside” OR

# Emergency Kits Decrease Risk of Cross-Contamination

- Obstetrical Hemorrhage Kit
- Pre-Eclampsia / Eclampsia Kit
- General Anesthesia Kit



# Emergency Kits: Obstetrical Hemorrhage Kit

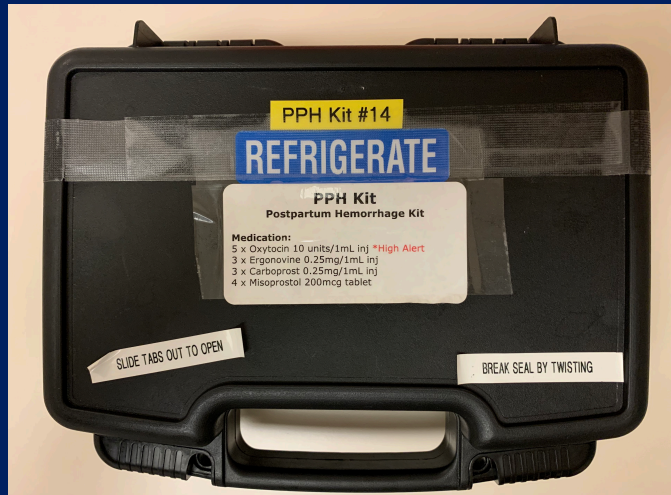


## COVID PPH KIT CONTENTS

- 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

