Inspired by research. Driven by compassion. Inspiré par la recherche. Guidé par la compassion.

# A&F METALAB

JEREMY GRIMSHAW
SENIOR SCIENTIST AND PROFESSOR

The Ottawa Hospital RESEARCH INSTITUTE | L'Hôpital d'Ottawa INSTITUT DE RECHERCHE

jgrimshaw@ohri.ca
@GrimshawJeremy

# CURRENT STATE OF IMPLEMENTATION SCIENCE – AUDIT AND FEEDBACK

- Cochrane 2012 review – 140 trials of audit and feedback, median absolute improvement +4%, interquartile range +1% to +16%
- Larger effects were seen if:
  - baseline compliance was low.
  - the source was a supervisor or colleague
  - it was provided more than once
  - it was delivered in both verbal and written formats
  - it included both explicit targets and an action plan

Ivers (2012) *Cochrane Library*

# IMPLEMENTATION LABORATORIES TO OPTIMISE AUDIT AND FEEDBACK

RESEARCH AND REPORTING METHODOLOGY

OPEN ACCESS

## Reinvigorating stagnant science: implementation laboratories and a meta-laboratory to efficiently advance the science of audit and feedback

JM Grimshaw,[1,2] Noah Ivers,[3,4] Stefanie Linklater,[1] Robbie Foy,[5] Jill J Francis,[6] Wouter T Gude,[7] Sylvia J Hysong,[8,9] on behalf of the Audit and Feedback MetaLab

For numbered affiliations see end of article.

**Correspondence to**
Dr JM Grimshaw, Clinical Epidemiology Program, Ottawa Hospital Research Institute, Ottawa ON K1Y 4E9, Canada; jgrimshaw@ohri.ca

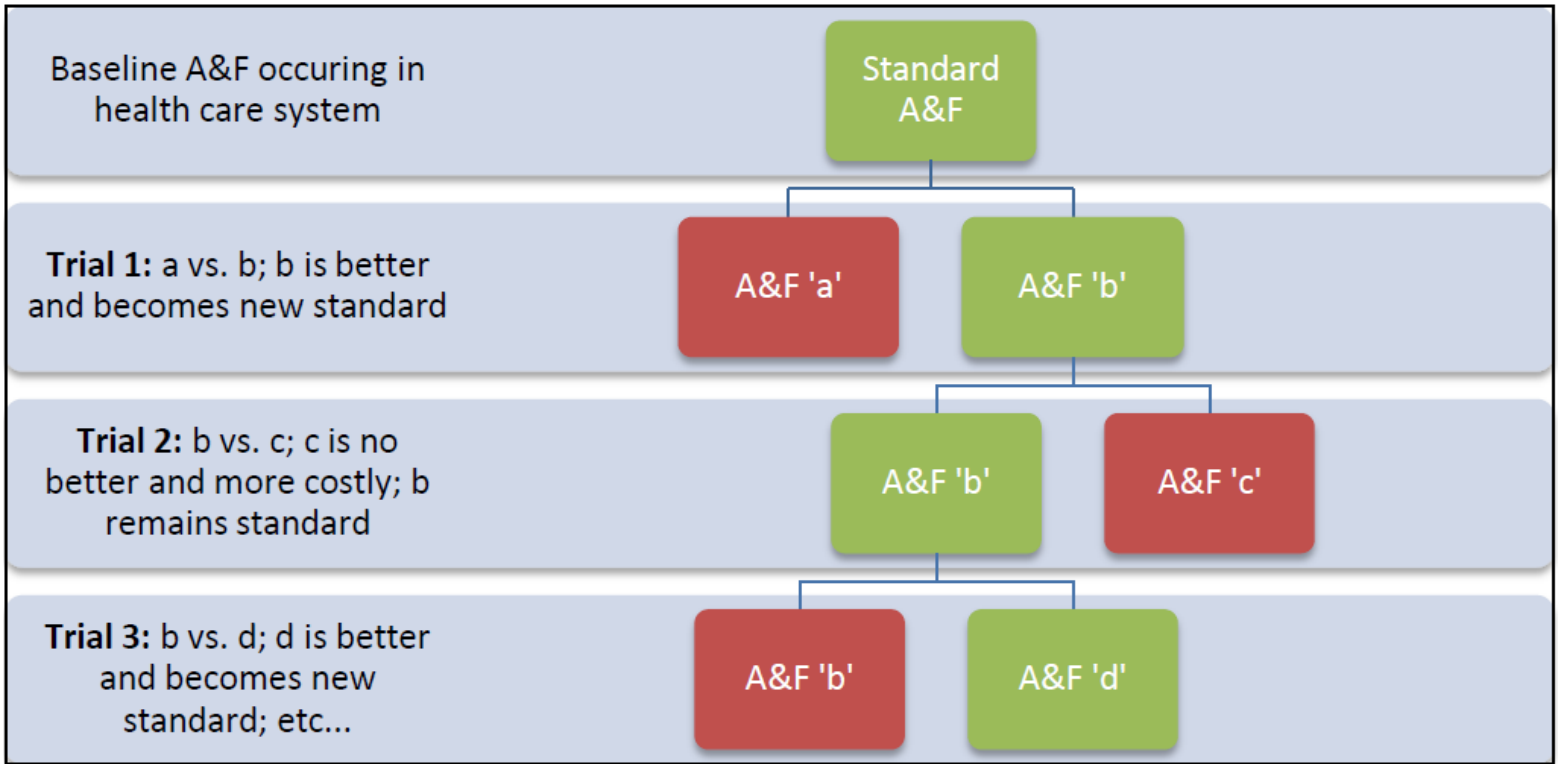
Received 18 May 2018
Revised 8 January 2019
Accepted 12 February 2019

**ABSTRACT**

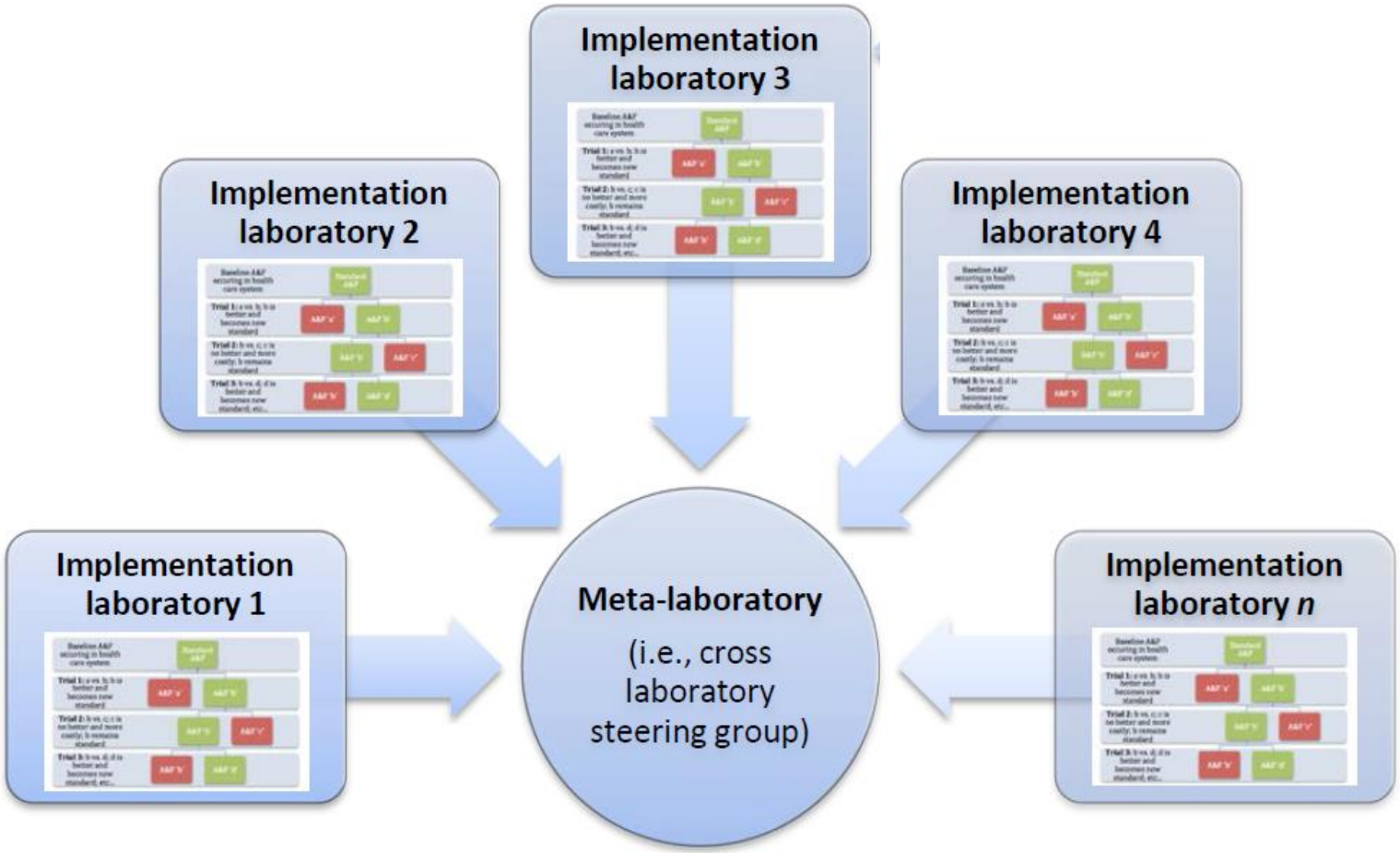
Audit and feedback (A&F) is a commonly used quality improvement (QI) approach. A Cochrane review indicates that A&F is generally effective and leads to modest improvements in professional practice but with considerable variation in the observed effects. While we have some understanding of factors that enhance the effects of A&F, further research needs to explore when A&F is most likely to be effective and how to optimise it. To do this, we need to move away from two-arm trials of A&F compared with control in favour of head-to-head trials of different ways of providing A&F. This paper describes implementation laboratories involving collaborations between healthcare organisations

additional trials of A&F against control were published that did not substantially advance our knowledge. Furthermore, many of these trials did not incorporate A&F features likely to enhance the effectiveness, leading to the suggestion that we have a stagnant science despite growing literature. As Ioannidis *et al* point out 'although replication of previous research is a core principle of science, at some point, duplicative investigations contribute little additional value'.[3]

# IMPLEMENTATION LABORATORIES TO OPTIMISE AUDIT AND FEEDBACK



# IMPLEMENTATION META-LABORATORIES



# WEBSITE + SOCIAL MEDIA


http://www.ohri.ca/auditfeedback/

@afMetaLab

slinklater@ohri.ca

http://www.ohri.ca/auditfeedback/

@afMetaLab

jgrimshaw@ohri.ca

@GrimshawJeremy

# PPE Safety Observations for COVID Safety in Acute Care Setting

## Collaboration between QI and Research in clinical practice

Samantha Hamilton, Director, Quality, Patient Safety & IPAC,
The Ottawa Hospital

Metalab presentation Aug 20, 2020

# A Problem to be Solved

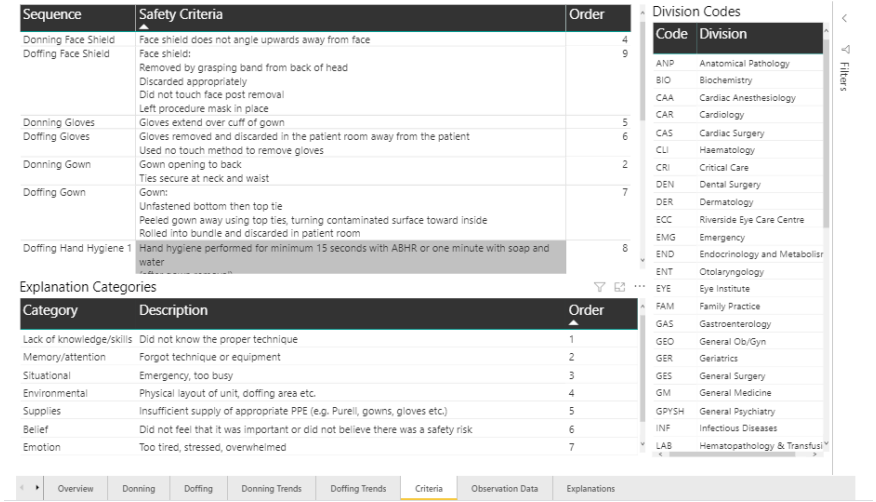
- Education and communication provided for Covid safety (i.e. demo's of proper Personal Protective Equipment (PPE) and donning and doffing of that PPE), however -
- Concern by executives that healthcare workers (HCWs) may not be acting in accordance with Infection Prevention & Control (IPAC) instructions for their safety and patient safety
- Desired approach (for assurance & 'in-the-moment coaching'):
  - Individually → supportive, encouraging versus compliance oriented
  - In aggregate → formative


# Audit & Feedback Intervention

- ‘Safety Observations’ performed by ‘Safety Champions’ providing:
  - in the moment coaching and education
  - generating assurance in the form of a ‘Safety Rate’
  - real-time feedback by unit, role
  - ability to monitor trends week over week
  - providing aggregate input to areas of need (i.e. gaps in doffing gowns)

# Audit & Feedback Intervention – the How

- Use of modified ‘Hand Hygiene App’ to incorporate additional PPE and full donning & doffing sequence
- IPAC Infection Control Practioners (ICPs) and selected RNs seconded to perform Safety Observations designated to specific COVID positive units
- Consistent education on criteria
- Creation of real-time dashboard
- Emergency, Intensive Care Units, designated COVID positive units



| Sequence | Safety Criteria | Order |
|---|---|---|
| Donning Face Shield | Face shield does not angle upwards away from face | 4 |
| Doffing Face Shield | Face shield:<br>Removed by grasping band from back of head<br>Discarded appropriately<br>Did not touch face post removal<br>Left procedure mask in place | 9 |
| Donning Gloves | Gloves extend over cuff of gown | 5 |
| Doffing Gloves | Gloves removed and discarded in the patient room away from the patient<br>Used no touch method to remove gloves | 6 |
| Donning Gown | Gown opening to back<br>Ties secure at neck and waist | 2 |
| Doffing Gown | Gown:<br>Unfastened bottom then top tie<br>Peeled gown away using top ties, turning contaminated surface toward inside<br>Rolled into bundle and discarded in patient room | 7 |
| Doffing Hand Hygiene 1 | Hand hygiene performed for minimum 15 seconds with ABHR or one minute with soap and water | 8 |

Division Codes

| Code | Division |
|---|---|
| ANP | Anatomical Pathology |
| BIO | Biochemistry |
| CAA | Cardiac Anesthesiology |
| CAR | Cardiology |
| CAS | Cardiac Surgery |
| CLI | Haematology |
| CRI | Critical Care |
| DEN | Dental Surgery |
| DER | Dermatology |
| ECC | Riverside Eye Care Centre |
| EMG | Emergency |
| END | Endocrinology and Metabolism |
| ENT | Otolaryngology |
| EYE | Eye Institute |
| FAM | Family Practice |
| GAS | Gastroenterology |
| GEO | General Ob/Gyn |
| GER | Geriatrics |
| GES | General Surgery |
| GM | General Medicine |
| GPYSH | General Psychiatry |
| INF | Infectious Diseases |
| LAB | Hematopathology & Transfusi |

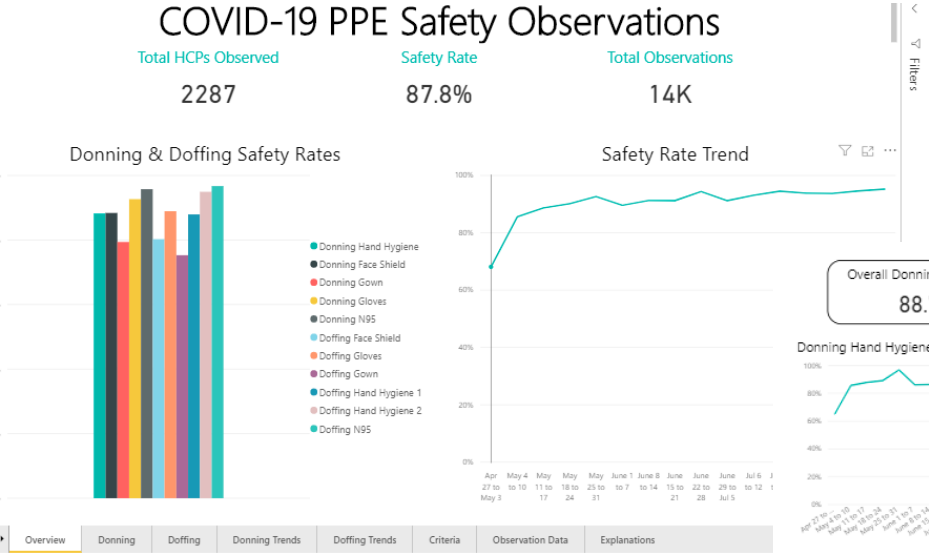
Explanation Categories

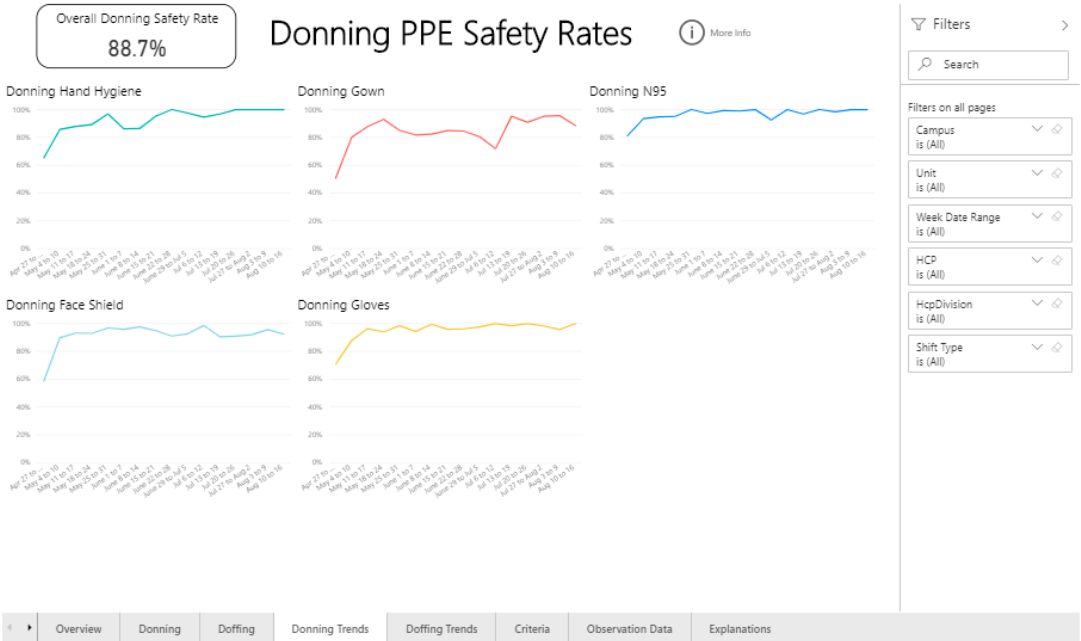
| Category | Description | Order |
|---|---|---|
| Lack of knowledge/skills | Did not know the proper technique | 1 |
| Memory/attention | Forgot technique or equipment | 2 |
| Situational | Emergency, too busy | 3 |
| Environmental | Physical layout of unit, doffing area etc. | 4 |
| Supplies | Insufficient supply of appropriate PPE (e.g. Purell, gowns, gloves etc.) | 5 |
| Belief | Did not feel that it was important or did not believe there was a safety risk | 6 |
| Emotion | Too tired, stressed, overwhelmed | 7 |

Overview | Donning | Doffing | Donning Trends | Doffing Trends | Criteria | Observation Data | Explanations

Filters

# Feedback – Real-time, filterable dashboard

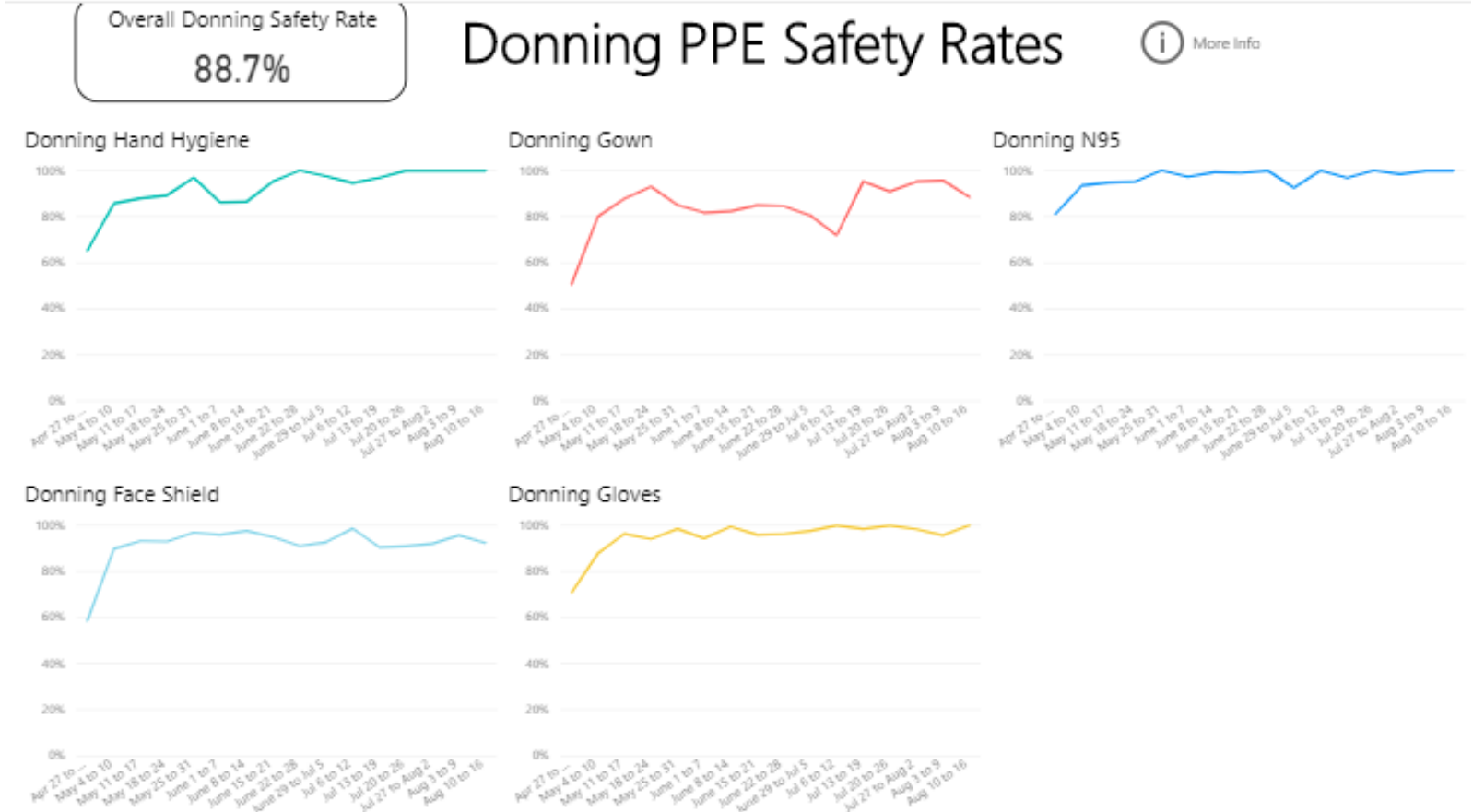


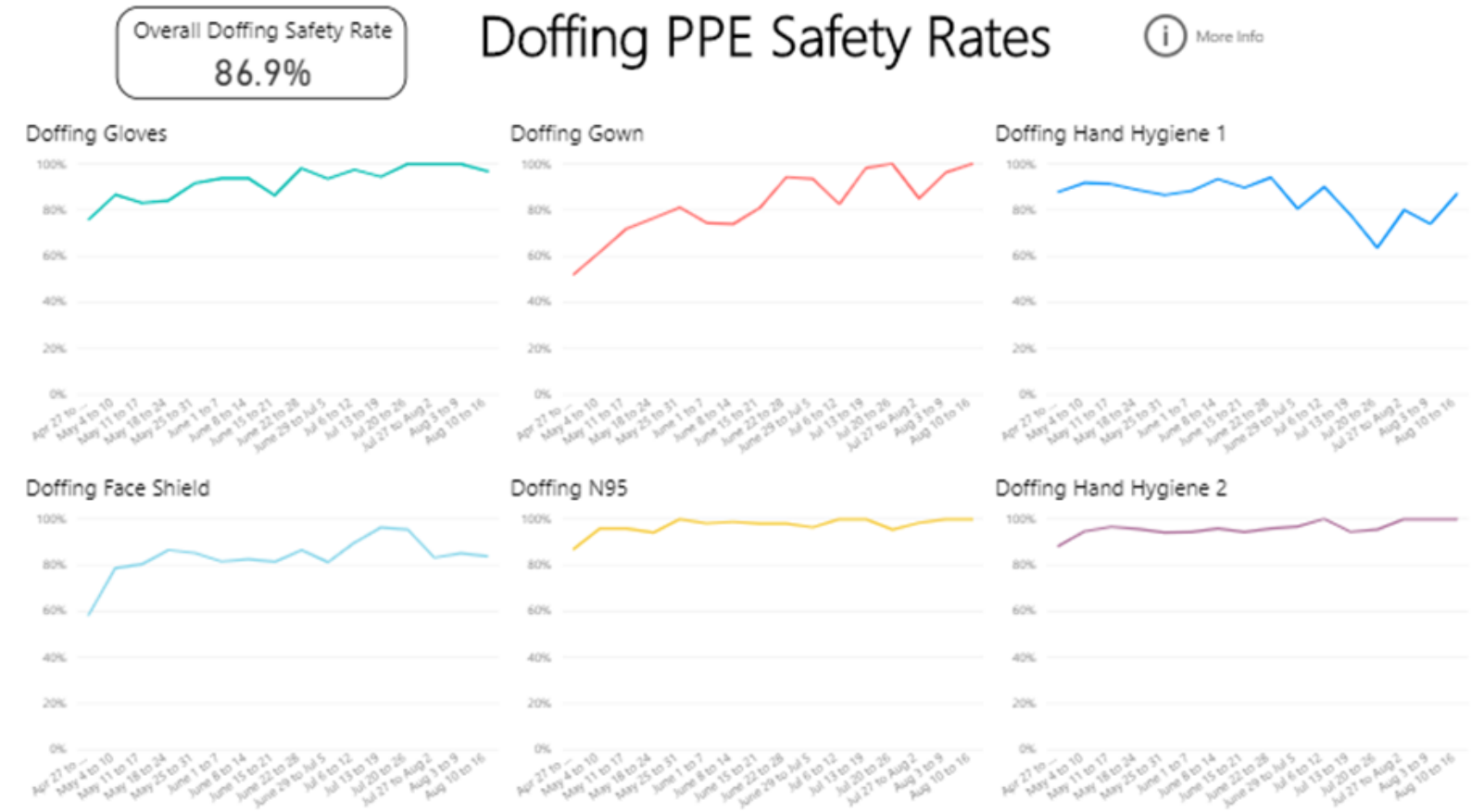
# Broad Communications Strategy

- CEO All Staff updates
- Medical Advisory Committee
- Executive Committee
- Unit-based (Clinical Directors, Physician Leads, unit managers)

# Improvements noted week over week - Donning

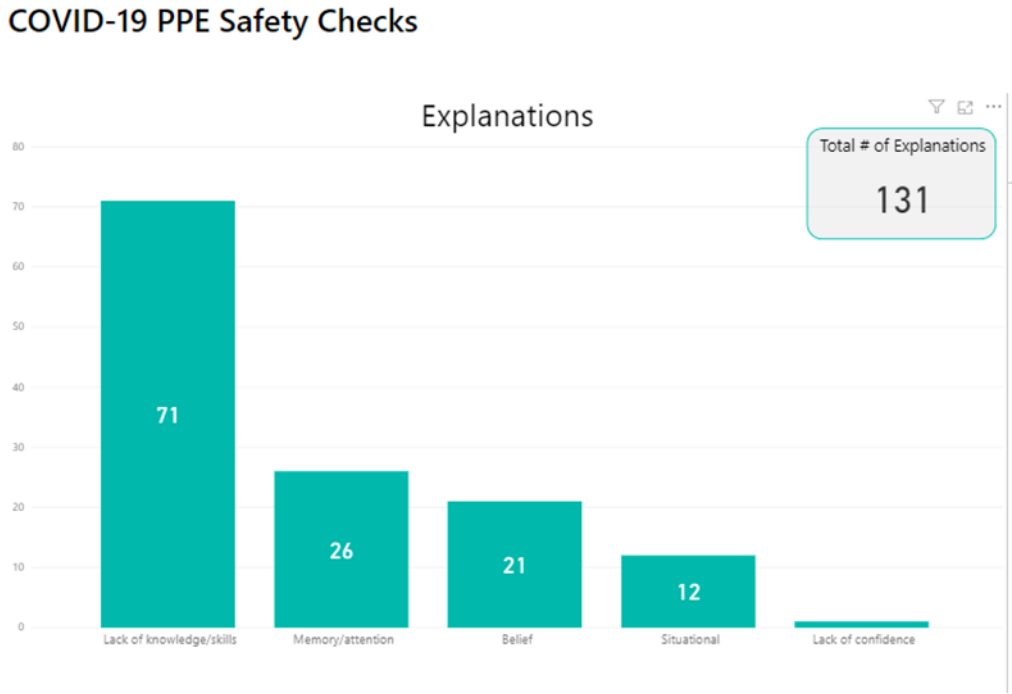


# Improvements noted week over week - Doffing



# Barriers to High Safety Rates

- Tactical (access to, location of PPE)
- Behavioural (beliefs, skills, confidence)
- Collaboration with Centre for Practice Changing Research – TDFs:
  - strategies to address behaviours observed
  - ‘tool-up’ the Safety Champions in their real-time coaching



# Challenges to Sustaining the Effort

- Availability of resources (pulled to support long-term care, non-urgent surgery resumed)
- When numbers of COVID-positive patients declined, number of observations similarly declined
- Government guidance on atypical symptoms and ‘asymptomatic’ testing served to ‘dilute’ the need for droplet/contact precautions
- ***What keeps us awake at night (besides the obvious!)***

# Adding value to A&F on PPE using behaviour change approaches

Dr. Nicola McCleary

Postdoctoral Fellow, Centre for Implementation Research & Eastern Ontario Regional Laboratory Association

Deputy Lead, Psychology and Health Research Group

The Ottawa Hospital Research Institute | L'Hôpital d'Ottawa Institut de recherche

**Inspired** by research. **Driven** by compassion. **Inspiré** par la recherche. **Guidé** par la compassion.

Affiliated with Affilié à uOttawa

# Team members involved

The Ottawa Hospital
Centre for Implementation Research

**Dr. Jeremy Grimshaw**, Senior Scientist (OHRI)
Full Prof (uOttawa)

**Dr. Andrea Patey**, Senior Research Associate (OHRI)
Adjunct Prof (Queen's)

**Dr. Jacob Crawshaw**, Postdoctoral Fellow (OHRI, uOttawa)

**Dr. Nicola McCleary**, Postdoctoral Fellow (OHRI, uOttawa)

**Psychology and Health Research Group (PaHRG)** http://ohri.ca/pahrg/

# Why a behaviour change approach

Guideline

Technique

Medication

Intervention

Policy

Technology

Someone in the healthcare system's **behaviour** need(s) to change

- Donning & doffing PPE, and providing coaching, are sets of behaviours
- Encouraging appropriate practice = supporting behaviour change
- This framing allows us to draw on decades of research in psychology

# Our overall process

- **Immediate aim:** Establish what champions are currently doing, what challenges they face, then suggest strategies for supporting them to increase their effectiveness
- Initial ‘interviews’ with champions & team debrief
- Further ‘focus groups’ with champions & team debrief
- Suggest strategies for optimization

# The audit and coaching process

1. As part of shift huddles, champions did demos, informed staff they would be doing ‘safety checks’, and answered questions
2. Observations sometimes silent, other times introduced non-threateningly with emphasis on staff safety
3. If see suboptimal practice, usually spot correct at end…

Next time…

4. … but interrupt if big issue with key phrases

Just for safety’s sake…

# What is working well

1. Non-punitive, non-threatening communication is key



2. Relating to staff on a collegial level when providing coaching

3. Highly experienced Nurse Educators – experts in building rapport, providing feedback, relating on a human level

# Challenges experienced

1. Perception that champions are ‘the police’
2. Some staff not receptive to/dismissive of feedback (particular issue with physicians), some avoidance

Physicians didn’t tend to attend ward huddles

Variation in how initiative discussed by ward leaders at huddles

3. Seconded champions – uncertainties around which approaches/phrasing will elicit positive vs defensive reactions

# Instances and drivers of suboptimal practice

Observed suboptimal practice across a range of specific donning and doffing behaviours, but suboptimal doffing generally more common (and poses greater safety risk)

1. Space/layout limitations
2. Challenging situations: time, emergency
3. Inconsistent types of PPE
4. Not knowing how to do it
5. Low risk perceptions balanced with desire to preserve PPE

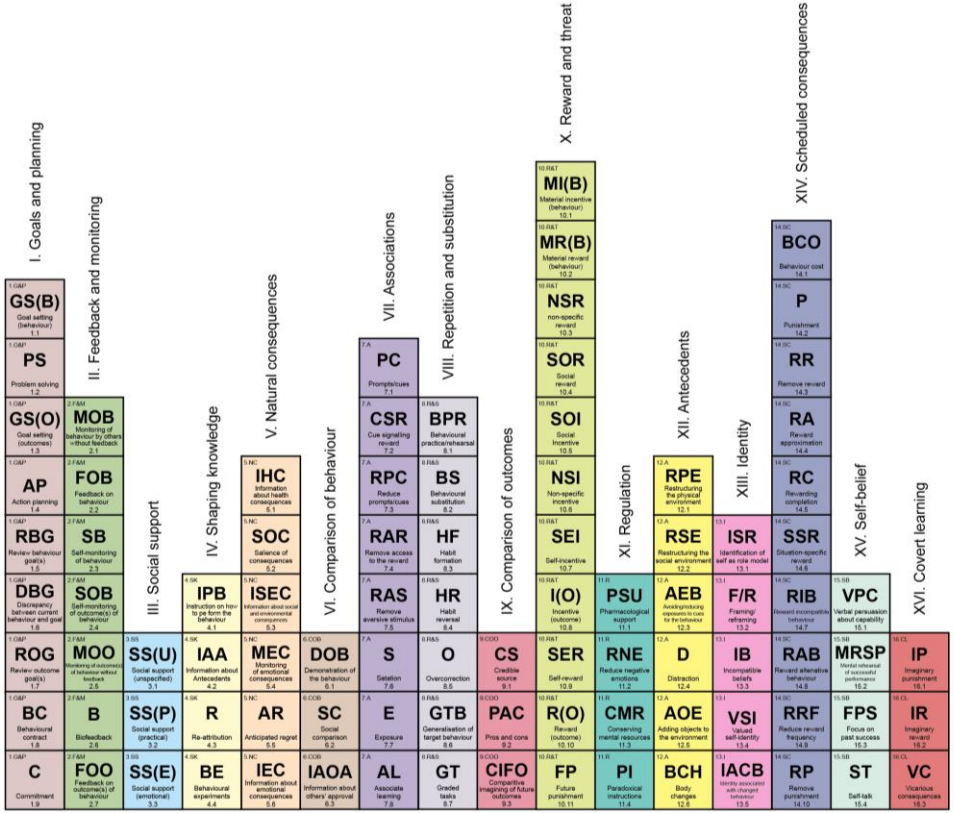
# Drawing on behaviour change expertise to map key challenges to solutions

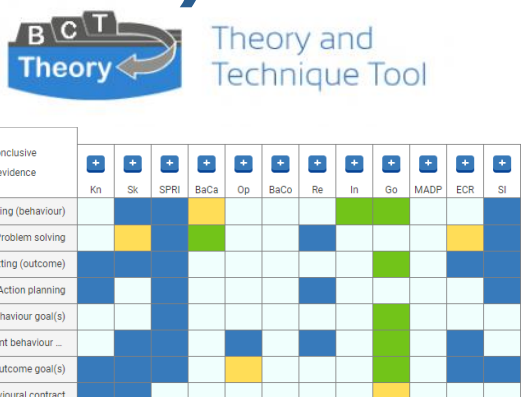
Theoretical Domains Framework (TDF)

Which domains do these drivers of suboptimal practice fall under?

| TDF domain | Description |
|---|---|
| Knowledge | An awareness of the existence of something |
| Skills | An ability or proficiency acquired through practice |
| Social/professional role and identity | A coherent set of behaviors and displayed personal qualities of an individual in a social or work setting |
| Beliefs about capabilities | Acceptance of the truth, reality, or validity about an ability, talent, or facility that a person can put to constructive use |
| Optimism | The confidence that things will happen for the best, or that desired goals will be attained |
| Beliefs about consequences | Acceptance of the truth, reality, or validity about outcomes of a behavior in a given situation |
| Reinforcement | Increasing the probability of a response by arranging a dependent relationship, or contingency, between the response and a given stimulus |
| Intentions | A conscious decision to perform a behavior or a resolve to act in a certain way |
| Goals | Mental representation of outcomes or end states that an individual wants to achieve |
| Memory, attention and decision processes | The ability to retain information, focus selectively on aspects of the environment, and choose between two or more alternatives |
| Environmental context and resources | Any circumstance of a person's situation or environment that discourages or encourages the development of skills and abilities, independence, social competence, and adaptive behavior |
| Social influences | Those interpersonal processes that can cause an individual to change their thoughts, feelings, or behaviors |
| Emotion | A complex reaction pattern, involving experiential, behavioral, and physiological elements, by which the individual attempts to deal with a personally significant matter or event |
| Behavioral regulation | Anything aimed at managing or changing objectively observed or measured actions |

# Mapping drivers of suboptimal practice to behaviour change techniques (BCTs)




Which BCTs are best suited to address these drivers of suboptimal practice?



Cane et al. (2015)

# Mapping drivers of suboptimal practice to potential solutions

| Drivers of suboptimal practice | Potential TDF Domains | Potential BCTs |
|---|---|---|
| Not ‘knowing’ how to do it<br><br>Challenging situations: time, emergency | Knowledge | Instruction on how to perform behaviour; Demonstration of the behaviour; Behavioural practice/rehearsal |
| | Skills | |
| | Beliefs about capabilities | |

# Mapping drivers of suboptimal practice to potential solutions

| Drivers of suboptimal practice | Potential TDF Domains | Potential BCTs |
|---|---|---|
| Not ‘knowing’ how to do it<br><br>Challenging situations: time, emergency | Knowledge | Instruction on how to perform behaviour; Demonstration of the behaviour; Behavioural practice/rehearsal |
| | Skills | |
| | Beliefs about capabilities | |
| Low risk perceptions & desire to preserve PPE | Beliefs about consequences | Information about health consequences; Information about social and environmental consequences |

# Mapping drivers of suboptimal practice to potential solutions

| Drivers of suboptimal practice | Potential TDF Domains | Potential BCTs |
|---|---|---|
| Not ‘knowing’ how to do it<br><br>Challenging situations: time, emergency | Knowledge | Instruction on how to perform behaviour; Demonstration of the behaviour; Behavioural practice/rehearsal |
| | Skills | |
| | Beliefs about capabilities | |
| Low risk perceptions & desire to preserve PPE | Beliefs about consequences | Information about health consequences; Information about social and environmental consequences |
| Space/layout limitations<br><br>Inconsistent types of PPE | Environmental context and resources | Restructuring the physical environment; Adding objects to the environment |

# Mapping drivers of suboptimal practice to potential solutions

| Drivers of suboptimal practice | Potential TDF Domains | Potential BCTs |
|---|---|---|
| Not 'knowing' how to do it<br><br>Challenging situations: time, emergency | Knowledge | Instruction on how to perform behaviour; Demonstration of the behaviour; Behavioural practice/rehearsal |
| | Skills | |
| | Beliefs about capabilities | |
| Low risk perceptions & desire to preserve PPE | Beliefs about consequences | Information about health consequences; Information about social and environmental consequences |
| Space/layout limitations<br><br>Inconsistent types of PPE | Environmental context and resources | Restructuring the physical environment; Adding objects to the environment |
| Perception that champions are 'the police'<br><br>Staff not receptive to/dismissive of feedback (particularly physicians), some avoidance | Social influences | Social support; Information about others' approval; Social reward |

# Suggested solutions

**Involvement of and reinforcement from individuals at different 'levels' (champions, ward leadership, physician leadership, hospital leadership)**

Provide opportunities to practice, generally & in mock challenging situations;
Focus demos on key areas where improvement needed (and key challenges);
Demos for physicians at their meetings

Add more Purell stations where needed

Streamline which types of PPE go to which depts

Not 'knowing' how to do it

Challenging situations: time, emergency

Space/layout limitations

Inconsistent types of PPE

Hospital & physician leadership communications
- Introduce program & nurses, emphasize importance & safety, highlight infection consequences (staff, families, teams, patients), reassurance re. PPE levels

Ward meetings & physician meetings
- Emphasize importance & safety, discuss audit results, 'well done', note areas for improvement, highlight infection consequences (staff, families, teams, patients), messaging re. champions are part of our team and are here to help

Champions continue with safety framing;
At ward huddles, demo the audit & coaching process with a senior staff member

Low risk perceptions & desire to preserve PPE

Perception that champions are 'the police'

Staff not receptive to/dismissive of feedback (particularly physicians), some avoidance

# Audit & feedback on PPE use: key conclusions

- Safe use of PPE important to control pandemic and protect staff and patients
- TOH developed an audit and feedback initiative to support healthcare professionals with PPE donning and doffing
- Dramatic improvement initially, but still areas for improvement
- Behaviour change approach provided new insights and opportunities to enhance the initiative
- Ongoing challenge to maintain behaviours as cases reduce (important for ensuring staff ready for 2nd wave)

# Protecting healthcare workers during the COVID-19 pandemic:

# Improving safe usage of Personal Protective Equipment by remote feedback

Co-Principal Investigators:
Sylvain Boet, MD, PhD
Nicole Etherington, PhD

The Ottawa Hospital Research Institute | L'Hôpital d'Ottawa Institut de recherche

**Inspired** by research. **Inspiré** par la recherche.
**Driven** by compassion. **Guidé** par la compassion.

Affiliated with Affilié à uOttawa

# Background

- High rate of infection among HCWs
- PPE donning/doffing mistakes are common
- Feedback is critical for improving practice
- Remote feedback has proven to be effective in many other contexts, including resident education during COVID-19
- Proposed intervention: remote video feedback through existing smart phone technology

# Intervention

No Feedback

Secure Transfer

Feedback

# Advantages of remote feedback

- Flexibility: time and location chosen by participant
- Customization in content and delivery of feedback
- Anonymity
- Less resource-intensive
- Wider reach
- Safety of assessors
- Individual accountability
- Continuous practice

# Disadvantages of remote feedback

- May not be possible during all clinical situations
- Potential for distraction
- Feedback may be ignored
- Requires a second team member to record participant
- Voluntary

# Approach

- Pilot before and after cohort study at The Ottawa Hospital (~n=730)
- Primary outcomes:
  - **Effectiveness**: # donning and doffing errors per HCW and across departments
  - **Feasibility**: # unique HCWs who participate, # HCWs who submit >1 video, # video recordings received
  - **Acceptability** (rated by HCWs)

# Approach

- Secondary outcomes:
  - **HCW absenteeism**
  - **HCW COVID-19 infection rate**
- Poisson regression adjusting for:
  - Clustering of multiple observations on the same HCW
  - HCW profession, years of experience, sex

# Next steps

- Training session by IPAC team with assessors
- “Soft launch” with operating room HCWs
- Roll-out across all TOH departments

# Project team:

Sylvain Boet, MD, PhD
Joseph K. Burns, MSc
Warren Cheung, MD
Nicole Etherington, PhD
Glenn Posner, MD
Jeremy Grimshaw, MD, PhD
Gregory Bryson, MD
Colin McCartney, MD, PhD
Virginia Roth, MD
Mohamed Gazarin, PharmD
Monica Taljaard, PhD
Jamie C. Brehaut, PhD
Louise Sun, MD, MSc