REVIEW OF TRAFFIC CONTROL BUNDLING & IMPLEMENTATION USE CASE

PRO|CV™ SERVICE
PROCESS REDESIGN & OPTIMIZATION FOR CARDIOVASCULAR SERVICE
INTRODUCTION

THIS OVERVIEW AND CORRESPONDING PLAYBOOK WERE DESIGNED FOR HEALTHCARE LEADERS FOCUSED ON PREPARING PATIENT CARE PATHWAYS IN RESPONSE TO COVID-19.

IMPORTANT

This Guide has been developed by Medtronic based on information and experience available at the time of publication and is subject to change rapidly as we continue to learn more about the current COVID-19 pandemic. You should continue to review all relevant resources as they become available. This Guide is provided for general information purposes only and should not be considered the exclusive source for this type of information. The ultimate responsibility for controlling the risks associated with patient, visitor and employee traffic patterns rests with your facility, and outcomes will depend on each facility’s own circumstances, including physical layout, resources, and policies. At all times, it is the professional responsibility of providers to exercise independent clinical judgment in a situation. Medtronic makes no guarantee that the use of strategies outlined in this Guide will prevent exposure to any pathogen, reduce the use of PPE, or result in minimizing any other negative outcome. MEDTRONIC DISCLAIMS ANY REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WHETHER AS TO MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ANY OTHER MATTER.
MEDTRONIC PRO|CV™ SERVICE  
PROCESS REDESIGN AND OPTIMIZATION FOR CARDIOVASCULAR CARE

Medtronic’s Healthcare Optimization Consultants collaborate with healthcare providers to help position them for future success. Combining proven methodologies with extensive change management expertise, our consultants deploy our PRO|CV service to help you address your current challenges by redesigning processes and helping you to operationalize them within your health system. In the end, better equipping you to navigate our ever-evolving healthcare environment—an environment that is demanding increased accountability for patient outcomes, coordination of care, and cost containment. To learn more, contact us at procv@medtronic.com

CONTRIBUTORS

Medtronic collaborated with the Minnesota Emergency Physicians Professional Association (EPPA) through the COVID-19 pandemic to redesign a COVID-19 care pathway and define an implementation plan for the local hospital systems to rapidly adopt and deploy. In addition to their own free-standing Urgency Room facilities, EPPA physicians and advanced practice clinicians staff several hospital emergency rooms (ER) within local health systems across the State of Minnesota including Allina Health, CentraCare, Park Nicollet Methodist Hospital, North Memorial Health. We recognize their collaboration with EPPA and Medtronic to operationalize many of the concepts shared in this document.

ACKNOWLEDGEMENTS

We acknowledge Dr. Muh-Yong Yen, Director of Diseases Control and Prevention, Taipei City Hospital, and his many co-authors, for their contributions to the medical and infectious disease literature on Traffic Control Bundling. Our contribution includes how to modify and implement this model for use in the USA for COVID-19 response. Our interactions with Dr. Yen and his team helped us better understand the TCB model. This contribution is based on published work.
BACKGROUND
COVID-19 IS SPREADING AT AN ALARMING RATE.

Hospitals are at risk of rapidly reaching capacity and they will be unable to treat all patients in need of critical care. The Emergency Department (ED) readiness to manage incoming patients is concerning. Our public systems and processes have been paralyzed and are in need of support to manage this on a local scale. Provision is needed at the system level and changes deployed consistently across sites.
PROBLEM STATEMENT + PROJECT GOALS

PROBLEM STATEMENT

Workflows are not well defined for the management of coronavirus or COVID-19 within the acute care setting.

1. Patient care pathways are not optimized for easily identifying and separating suspected or confirmed COVID-19 patients.
2. Healthcare workers (HCW) are at high risk for contracting COVID-19 and spreading the virus to co-workers and patients.
3. Personal protective equipment (PPE) is being used at an alarmingly high rate. PPE usage guidelines have been dynamic, and at times dependent on supply.

PROJECT GOALS

There are 3 key project goals:

1. **Containment**: Reduce risk of self-contamination and nosocomial infection/illness in HCWs.
2. **Consistent Use/Preservation of PPE**: Rethink use/re-use, access, distribution, volume of PPE.
3. **Shared Learnings**: Implement changes. Collect and rapidly disseminate best practices.
CONSIDERATIONS, CONSTRAINT + ASSUMPTIONS

INTAKE
1. PHYSICAL FLOW – Current physical flow of EDs and flow of patients from ED to inpatient and ICU areas was not designed with pandemic conditions in mind.
2. VISUAL DIAGNOSIS DIFFICULTIES – Visual differentiation between COVID-19 vs. influenza or other respiratory diseases is difficult.
3. TESTING DIAGNOSIS – COVID-19 testing is largely unavailable, has a sizeable error rate/inconclusive rate and delay in receipt of results.
4. LACK OF VACCINE – A COVID-19 vaccine is currently unavailable.

INPATIENT
5. TRAINING & COMMUNICATION – Training and communication systems for HCWs are anticipated to be inadequate because of the rapidly evolving knowledge base and conditions surrounding COVID-19.
6. TEAM STRUCTURE – Current team structures may be unable to adapt fast enough to reduce transmission of the virus among staff leading to potential HCW shortages.
7. PERSONAL PROTECTIVE EQUIPMENT – PPE are in limited supply. Cleaning and reuse of PPE are anticipated to be needed to overcome shortages, but practices in this area are not yet widely known.
8. BED CAPACITY – Hospitals have limited bed capacity and it is assumed persons under investigation (PUI) will need to be sent home (or elsewhere nearby such as converted schools, community buildings, etc.).

DISCHARGE
9. PATIENT EDUCATION – Education for discharged patients may not be adequate and frequent updates are anticipated.
10. PATIENT MANAGEMENT & CONTACT TRACING – Management of patients post-discharge regarding treatment plans, quarantine/isolation guidance and contact tracing systems (the practice of identifying and testing every person that an infected person came into contact with after they themselves contracted the virus) may not be adequate to track discharged patients.
11. CLEANING OF ROOMS AND PASSAGeways (HALLS, ELEVATORS) – Cleaning of rooms and patient areas is anticipated to become increasingly important both for effectiveness and speed of room-turns.
ACCELERATING CHANGE THROUGH COLLABORATIVE PROBLEM SOLVING

COLLABORATIVE PROBLEM SOLVING

Working together to find a way forward when the path is not clear by:

- Visualizing the problem
- Seeing the flow
- Making decisions using data
- Applying lean and six sigma principles
- Working through a structured, facilitated process with a cross-functional team
DYNAMIC LEARNING ENVIRONMENT

Representatives from several Medtronic groups came together to create a dynamic learning environment.

Leveraging the expertise and resources of several multidisciplinary teams, we were able to move with speed and rigor while ensuring continuity across hospital sites.

Key learnings were shared in rapid learning cycles in order to validate usefulness of the model in these hospitals preparing for an effective COVID-19 crisis care response plan.

The strategies identified by the team:

1. Redesign the care pathway and work-flows based on an evidence-based infection containment model
   - Redesign flow for Patients
   - Redesign flow for Health Care Workers
   - Redesign flow for PPE

2. Define an implementation plan for several healthcare systems to rapidly adopt and deploy within their institutions.
It is recommended to involve the following personnel and roles when preparing to deploy the model:

- System and Hospital executives (CEO, CNO, COO, CMO, CIO)
- ED Physician Group Administrator (if managed externally)
- Hospital-site senior leader
- ED Medical Director
- ICU medical director and ICU nursing leader
- In patient COVID unit nursing leader
- Incident Command
- Infection Prevention
- Quality
- Operations / Facilities
- Information Technology
- Marketing / Communications
- Process Improvement Team

One key component to this project was identifying the right hospital and system-level administrative teams from the start.

Early alignment was critical.

This project would not have been successful without the contribution and support of the practitioners, administrators and staff from EPPA and within the MN health systems.
TRAFFIC CONTROL
BUNDLING AND
RISK ZONES
TRAFFIC CONTROL BUNDLING (TCB)

Definition of Traffic Control Bundling (TCB) as implemented in Taiwan:

1. Triaging and dispatching patients before they enter the hospital or facility.
2. Clear delineation of zones of risk between contaminated and clean zones.
3. Confining confirmed patients in a contamination zone.
4. Clear signage reminding you that you are in one zone, or are transitioning to another, and what precautions you must take.
5. Gloves-on hand disinfection at checkpoints between zones of risk.
6. Installing dispensers with 75% alcohol for gloves-on hand sanitization in all zones and at checkpoints so as to increase the pervasiveness of handwashing.

SOURCE:
TCB + RISK ZONES – VISUAL MODEL FROM TAIWAN

<table>
<thead>
<tr>
<th>Zone Color</th>
<th>Zone Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GREEN</td>
<td>Clean zone where healthy people are located</td>
</tr>
<tr>
<td>YELLOW – Quarantine</td>
<td>Patient areas for those under quarantine.</td>
</tr>
<tr>
<td>YELLOW – Hallways &amp; Zone Transitions</td>
<td>Passage ways for HCW linking green and red zones.</td>
</tr>
<tr>
<td>RED</td>
<td>Contamination zone where all confirmed COVID-19 patients are isolated and treated.</td>
</tr>
</tbody>
</table>

In this model – the authors use Green, Yellow, and Red to describe the zones. This can be effective when there is rapid testing available.

SOURCE:
CONSIDERATIONS WITHIN TRAFFIC CONTROL BUNDLING

In support of Traffic Control Bundling, there are other considerations regarding transmission of disease via PPE:

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

SLIDE CONTENT: Provided courtesy of Dr. Amy Cho.

46% Chance of Self-Contamination Every Time Gloves Removed
OUTCOMES OF TRAFFIC CONTROL BUNDLING

In review of SARS response in Taiwan, implementing TCB in hospitals dramatically reduced HCW and patient infections:

1. In the 18 hospitals implementing TCB, zero (0) healthcare workers and only two (2) patients developed nosocomial SARS infection.

2. In contrast, in the 33 control hospitals, 115 HCWs and 203 patients developed SARS.

SOURCES:
The benefits of adopting TCB/Risk Zone Strategy:

1. All diagnosed COVID-19 patients are housed in the defined contamination zone rather than being scattered throughout different areas of the hospital.
   - Reduces risk of initiating hospital outbreaks.
   - Encourages seeing the whole facility, not departments or patient rooms as separate parts; all spaces including hallways and elevators must be considered in this design.
   - Patient routing to rooms is separate from HCWs routes when entering facility and giving care.

2. Clear delineation of zones increases efficient use of PPE.
   - Because the various zones are stringently delineated, once you enter the clean zone you do not need to wear PPE or N95 masks. (In Taiwan, wearing a surgical mask is mandatory still in green zones.)

3. Enables HCWs to increase trust in working conditions.
   - Emotional toll of working in known contaminated zones can be mitigated with clear safe zones, clear visual reminders, and consistent work instructions for PPE use and patient care.
   - May address anticipated absenteeism of HCWs.
TRAFFIC CONTROL
BUNDLING AND
RISK ZONES
ENHANCED MODEL
## DESCRIPTION OF ZONES

**Modifications due to current lack of COVID-19 testing availability**

### Original Zones for Sites **with** functional COVID-19 testing capability

<table>
<thead>
<tr>
<th>Zone Color</th>
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<tr>
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### Modified Zones for Sites **without** COVID-19 testing capability

<table>
<thead>
<tr>
<th>Zone Color</th>
<th>Zone Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GRAY</strong></td>
<td>Areas where HCWs are entering site who are healthy/not showing symptoms. Neither patients nor general public are in this area. Social distancing, handwashing, etc. still necessary.</td>
</tr>
<tr>
<td><strong>YELLOW</strong></td>
<td>Areas for those possibly contaminated. Patient area for those with possible COVID-19. Additional quarantine area may be set up off-site.</td>
</tr>
<tr>
<td><strong>YELLOW</strong> – Hallways &amp; Zone Transitions</td>
<td>Passage ways for HCW linking grey and red zones. Note: This area is possibly contaminated.</td>
</tr>
<tr>
<td><strong>RED</strong></td>
<td>Contamination zone where all probable COVID-19 patients are isolated and treated.</td>
</tr>
</tbody>
</table>

In the enhanced model – we have modified and chosen gray (instead of green) to describe one of the zones. This can be helpful when rapid testing is NOT available. Consider what naming makes sense in your institution (i.e. hot, warm, cold).

**Source:**

### Modified Zones for Sites without COVID-19 testing capability

<table>
<thead>
<tr>
<th>Zone Color</th>
<th>Zone Description</th>
<th>PPE Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRAY</td>
<td>Presumed clean zone for healthy people</td>
<td>Surgical mask (not N95)</td>
</tr>
<tr>
<td>YELLOW</td>
<td>Possible contaminated area.</td>
<td>Gown, gloves, eye protection, and N95 mask.</td>
</tr>
<tr>
<td>RED</td>
<td>Probable COVID-19 contaminated area.</td>
<td></td>
</tr>
</tbody>
</table>

### EXAMPLE SIGNAGE to support HCW Transitions

- You are transitioning from a **GRAY** to a **YELLOW** zone, where there may be possible contamination. All workers must adhere to the following procedure before continuing:
  1. Remove mask
  2. Hand hygiene
  3. Put on Gown
  4. Put on N95/PAPR/CAPR; Perform fit check for leaks
  5. Put on eye protection (if you have glasses for vision you must place eye protection over)
  6. Put on gloves
PHYSICAL FLOW CONSIDERATIONS

Visualizing Core Hospital Flows
1. Flow of Patients – into appropriate zones as described in Traffic Control Bundling.
2. Flow of Healthcare Workers – initiating work in gray zones and proceeding as staffed by cross-functional teams into other zones.
3. Flow of PPE – for donning, doffing, cleaning, “curing,” and eventual transport back to donning area (assumes reuse of PPE is required).

Visualizing Other Important Flows
1. Flow of Food – distribution of meals to patients in red and yellow zones.
2. Flow of Medication – from pharmacy area to patient areas.
3. Flow of Supplies/Equipment – including identification of equipment that might be considered contaminated and should stay in red zone as well as motion of staff who restock and remove waste.
ANTICIPATED MODES OF TRANSMISSION

Anticipated modes of transmission where HCW are vulnerable to COVID-19 infection include:

1. The period between patients’ arrival for care and when they are classified as possible or probable COVID-19 cases.
2. Casual contact with fomites (objects or materials which are likely to carry infection, such as clothes, utensils, and furniture).
3. Exposure particularly when doffing PPE.
4. Assumptions of GREEN or GRAY zone when zone is actually YELLOW or RED.
5. Contamination by fellow team members by not delineating clear boundaries between teams for both physical work areas and shift scheduling.
HCW MOVEMENT WHEN CROSSING OVER ZONES

HCW Movement When Crossing Over Zones

1. When crossing over into a zone of risk from a **GREEN** zone or **GRAY** zone, HCW must change clothing and don PPE while still in the **GREEN** zone or **GRAY** zone.

2. When crossing over from a **RED** or **YELLOW** zone into the **GREEN** zone or **GRAY** zone, individuals must undergo a decontamination and doffing process in the **YELLOW** zone which is immediately adjacent to a **GRAY** zone.

3. Handwashing stations are set up between **GREEN** or **GRAY**, **YELLOW**, and **RED** zones.

4. Possible Staffing Approach:
   - Some HCWs designed to work in shifts in various zones of risk.
   - Remaining HCWs work in **GREEN** or **GRAY** zones to support those HCWs in other zones.
   - Zoning allows for HCW teams to don one set of PPE and work for an extended period of time in **YELLOW** or **RED** zones safely while minimizing # of times doffing and re-donning.
DOFFING STATIONS WITH DECONTAMINATION

Doffing Stations located in **YELLOW** zones adjacent to **GRAY** zones

1. Increasing prominence of color-coded zones
2. Ensuring availability of handwashing / hand sanitizer in doffing zone
3. Outlining disposal bins locations
4. Providing mirrors to detect possible self-contamination
5. Providing hand rails to assist with doffing
6. Restricting the space to doff
SUPPORTING HEALTHCARE WORKERS

Independent Teams

1. Cross-Functional teams work independently of one another through smaller team size in different specific areas.
2. If one team needs to be quarantined due to an exposure, other teams can continue to work on-site with reduced disruption of care and reduced risk to broader staff of HCW.

Screening HCWs

1. Mandatory daily monitoring of HCWs; report any symptoms for investigation by hospital to determine documented or suspected cases of COVID-19.
2. Prevent infected staff from working (except with COVID-19 patients) by tracking staff who are sick and testing for COVID-19, if possible, and keeping a log of staff who have had confirmed COVID-19.
3. Create contact tracing of infected staff to control infection spread both outside and within the hospital.
CHALLENGES + BARRIERS TO ADOPTING SITE-WIDE TCB

Problems facing early adoption of countermeasures such as TCB and zones of risk

1. Lack of interorganizational coordination
2. Unclear chain of command
3. Inefficient resource allocation
4. Poor communications
5. Disrupted information flows
REFERENCES


MINNESOTA
USE CASE
IMPLEMENTATION PATH

EXECUTION STEPS

1. Identify Triad Leadership (MD, RN, Operations) or create site-wide leadership team to establish Traffic Control Bundling (TCB) and Risk Zones.
2. Schedule meeting with Triad Leadership team to understand Current State and Literature Review TCB (slides and video).
3. Interview key roles to gather info, data, background, flows.
4. Current State: Assess floor plan map (where are the Red Zones, Yellow Zones, Green Zones, Gray Zone)
5. Recommend Changes to Adopt TCB & Risk Zones
6. Future State: Design updated floor plan maps with color Zones
7. Identify needs for Signage /Visual Management
8. Clarify sourcing of supplies
9. Define staffing structure and scheduling
10. Implement plans in ED, ICU, and in-patient

IMPLEMENTATION EXAMPLE

- Documented current state
  - Current COVID19 rooms
  - Patient path from arriving on grounds to room
- Collaborated on future state
  - Improved patient flow separation
  - Defined zone transition
  - Supporting visual management
- Implemented plans
  - Erected temporary walls
  - Moved suspected COVID patient entrance
  - Located hand sanitizing to zone PPE donning/doffing zones

The following slides illustrate the process in one Minnesota Health System – Allina Health.
DEFINITIONS OF ZONES:

- **Gray Zone**: Clean zone where healthy people are located.
- **Yellow Zone**: Transitional area that is potentially contaminated.
- **Red Zone**: Probable contamination zone where COVID-19 patients are isolated and treated.
Green path, cleared as low risk, no sign of COVID, given passport to enter routine entrance, drives around to front and parks +/- valet

Red path, COVID PUI but not critically ill, EMS or ambulatory.

Red discharges depart through same path to prevent mixing and use different path to radiology.

Signs to direct driving up to new ED entrance

1. Routine Entrance

2. EMS access

3. Back ED Door

 EMS Traffic Unchanged
DEFINITIONS OF ZONES:

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- **Gray Zone** – clean zone where healthy people are located.
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- **Red Zone** – probable contamination zone where COVID-19 patients are isolated and treated.
ALLINA HEALTH SITE #2 EMERGENCY ROOM – IMPLEMENTED STATE.V1
PROPOSED NEW RISK ZONES – CAMBRIDGE MEDICAL CENTER
ALLINA HEALTH SITE #2 SUMMARY
RISK ZONES – CAMBRIDGE MEDICAL CENTER

ED – Baseline

ED – New Format COVID-19
DOFFING ROOM
INITIAL PLACEHOLDER SIGNAGE
ENTERING THE CO-ZONE
INITIAL PLACEHOLDER SIGNAGE + VISUAL ZONE TRANSITIONS WITH TAPE

Entrance into COZone, separate ED entrance goes directly through this area. Signs taped to the entrance and egress of every door. Hand hygiene at each stop.

Yellow is considered potentially dirty. We have a small antechamber, opens into an area with a donning station, then enter into RED zone.

Tape on the floor and walls to establish clear visual transition into each zone.
PATIENT ENTRANCE
NEW POSTED SIGNAGE

‘Walking well’ entrance – screened non-respiratory

New entrance for patients screened with respiratory symptoms / COVID-19 PUI

EMS garage entrance
ZONE TRANSITIONS
FINAL SIGNAGE TEMPLATES

Zoning for COVID-19 care areas

- **Non Zoned**: All areas outside COVID-19 care zones. General Public and Non-COVID Patients.
- **Gray Zone**: Presumed COVID-19 clean zone for healthy people.
- **Yellow Zone**: Possible COVID-19 contaminated area, transition zone.
- **Red Zone**: Probable contaminated area, where COVID patients are treated.

Zones will be indicated through signage and colored floor markings. Refer to your hospital’s COVID Zone map to view designated care areas.

Version # / Updated 04.01.2020
PPE INSTRUCTIONS
EXAMPLE SIGNAGE

COVID-19 CONTAINMENT STRATEGY

UNIVERSAL MASKING GUIDELINES
for all ALLINA HOSPITALS

All Allina HCWs will be provided 1 mask per shift and are required to follow uninterrupted use & reuse.

Uninterrupted donning/dismasking is required continuously without touching between patients.

Nose wire masks must be removed and replaced between patients. See instructions per reusability info.

PPE should only be

No direct contact with PUI
Patients, and are working in a
GRAY ZONE and/or a
YELLOW ZONE

Required PPE: Droplet Mask

Direct contact with PUI or COVID+ patients during Non-Aerosolized procedures and are working in a
YELLOW ZONE and/or a RED ZONE

Required PPE: Droplet Mask + Face shield

Direct contact with COVID+ Patients during Aerosolized procedures and are working in a
RED ZONE

Required PPE: N95 Mask + Face shield

DO NOT use Homemade Masks

STAFF should not use a homemade mask. All hospital staff must use Allina health-provided PPE. Homemade masks will be utilized for patients.

You are transitioning from a GREY to a YELLOW zone, where there may be possible contamination. All workers must adhere to the following procedure before continuing:

1. Remove mask
2. Hand hygiene
3. Put on Gown
4. Put on N95/PAPR/CAPR; Perform fit check for leaks
5. Put on eye protection (if you have glasses for vision you must place eye protection over)
6. Put on gloves

Remove surgical mask
and clean hands before donning PPE

1. Put on Gown
2. Put on N95 Respirator and perform fit check for leaks
3. Put on eye protection (if you have glasses for vision you must place eye protection over)
4. Put on gloves

Version: #000 Updated DATE

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ASSESSING PPE AVAILABILITY AND USAGE
SURVEY FOR PROVIDERS

SUMMARY

- A Qualtrics survey was developed to assess PPE usage and availability and allow providers to report concerns at the end of each shift.
- Results were compiled daily and sent to ED medical director. Any identified PPE concerns escalated to the site for attention and resolution. An additional weekly report is compiled to see trends over the week.
- Since its launch one week ago, the survey has just over 200 responses with 89% of providers indicating they felt they could protect themselves from COVID-19 their entire shift.
- Survey questions are on the right. Basic demographics such as medical center and specific site are captured in order to identify where a PPE issue may exist. Providers have the option of being contacted about the concern they voice.

EPPA PPE Survey

This survey is an informal effort by EPPA to capture your feedback on the usage and availability of PPE. It does not replace any formal reporting effort by the facility in which you work.

Q1 At which health system did you work today? [drop down option for systems]
Q2 At which medical center did you work today? [drop down options for sites]
Q3 What is your clinical role? [Physician, APC, Nurse, Paramedic]
Q4 Did you feel that you could protect yourself from COVID-19 for your entire shift?
   Yes (skip to end of survey)
   No (complete remaining questions)
Q5 Why did you feel that you could not protect yourself?
   Unsure which PPE to wear
   Inappropriate overuse/reuse of PPE
   Appropriate PPE was unavailable (complete Q5a and Q5b)
   My PPE did not protect me from an incorrectly intubated patient
   I was not given warning that a patient was high risk for COVID-19
   Another healthcare worker contaminated an area
Q5a Where in your department was there a lack of PPE?
   Gloves
   Gowns
   Face shield/safety protection
   Surgical mask
   N95 mask
   PAPR/CAPR
Q6 Are you willing to be contacted regarding the issue you reported?
   Yes (complete next question)
   No (end of survey)
Q6a If yes, please provide your contact information [Name, Email, Phone Number]
MEDTRONIC HEALTHCARE OPTIMIZATION CONSULTANTS

COLLABORATIVELY SOLVING PROBLEMS AND ACCELERATING CHANGE WITH HEALTHCARE SYSTEMS ACROSS THE US