



HEALTHTRUST®

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Beaumont's Response to COVID-19 & Lessons Learned

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| Presenters



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| Speaker Disclosures

- The presenters have no real or perceived conflicts of interest related to this presentation.
- Note: This program may contain the mention of suppliers, brands, products, services or drugs presented in a case study or comparative format using evidence-based research. Such examples are intended for educational and informational purposes and should not be perceived as an endorsement of any particular supplier, brand, product, service or drug.

| Learning Objectives

At the completion of this activity, the participant will be able to:

1. Describe two key elements to improving the supply chain for pandemic preparedness
2. Identify areas of improvement for pandemic and disaster preparedness plans
3. Apply the experiences of the presenters' medical facilities to develop post-pandemic strategies for their own facilities

| Agenda

- Overview of Beaumont Health
- COVID-19 at Beaumont and in Michigan
- Significant Challenges Faced
- Our Response
- Review Lessons Learned
- Share COVID 2.0 Journey













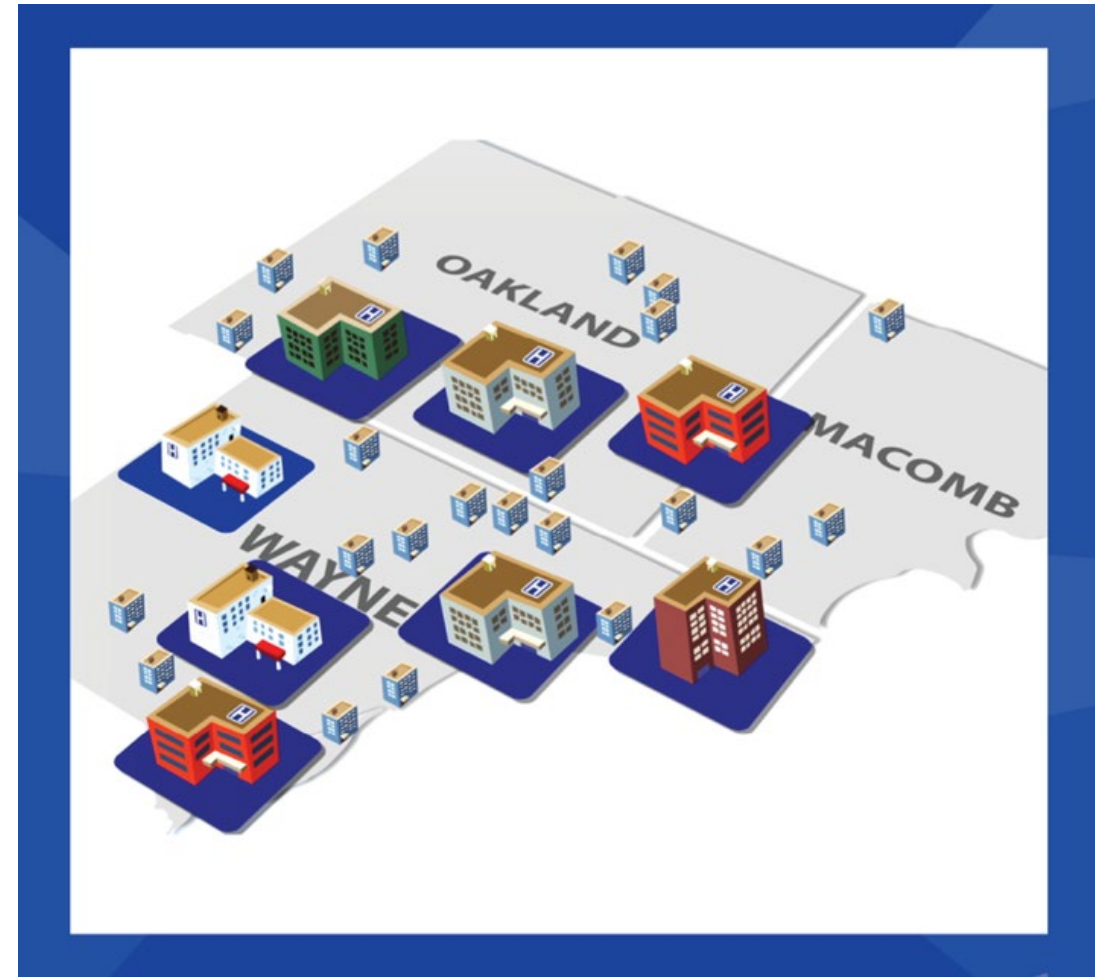
Overview of Beaumont Health

Beaumont: The Facts

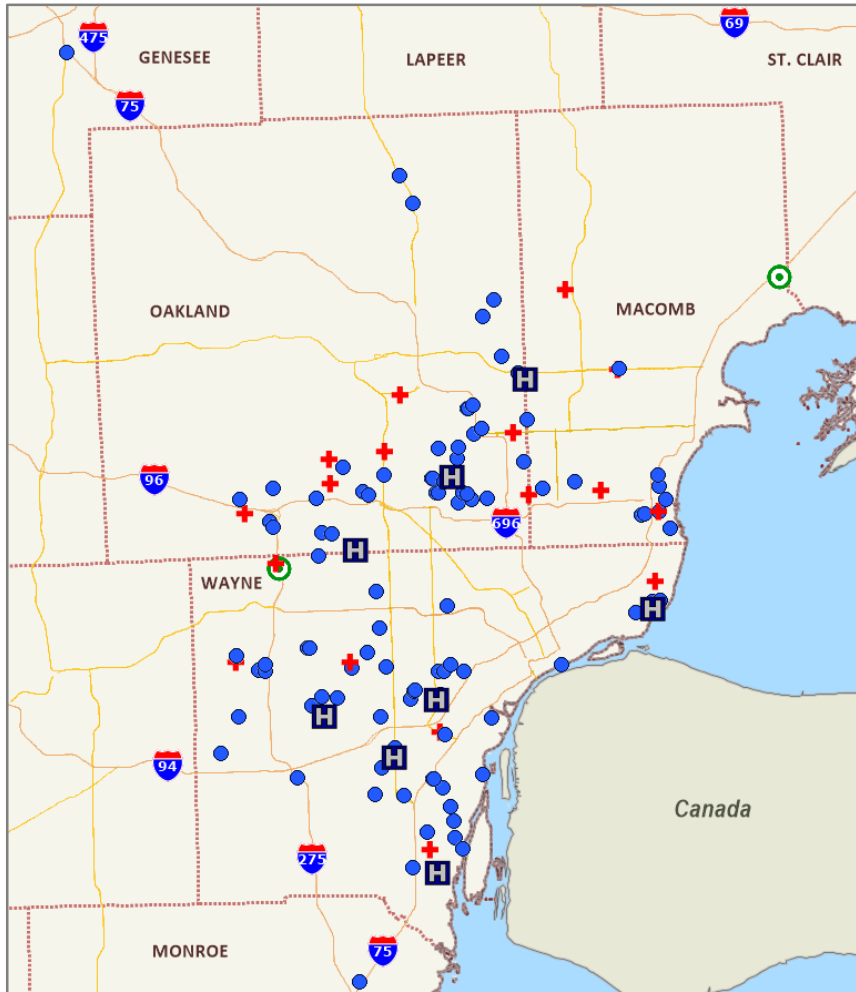
- **Leading health system** in Michigan for inpatient discharges and ER visits
- Highest **number of deliveries** in the state with ~18,000 babies delivered each year
- **Clinical innovations:**
 - First operational **proton beam** radiation program in Michigan
 - First oncology **rehab residency** program in U.S. to receive full accreditation
 - First in U.S. to replace an **aortic** valve with a catheter (**TAVR**) through a small incision in the leg

Beaumont: The Numbers





-  **8** acute care campuses
-  **167** outpatient locations
-  **3,375** beds
-  **38,000** employees
-  **4,800** physicians
-  **\$4.7B** net revenue
-  **179,000** inpatient discharges
-  **577,000** emergency room visits
-  **18,000** births
-  **14** non-acute pharmacy locations



Beaumont in the Community



LEGEND

-  Acute Care Campus
-  Outpatient Location
-  Future Outpatient Location
-  Urgent Care

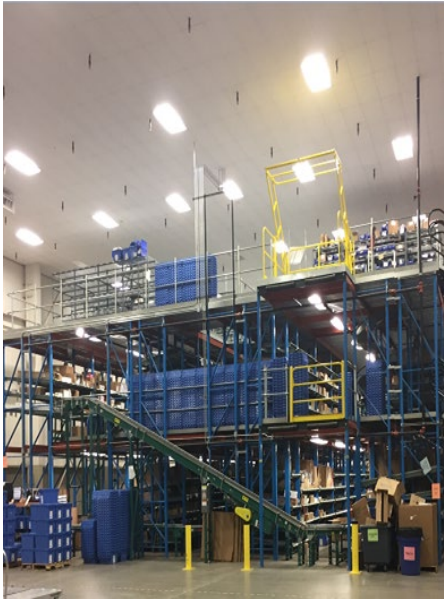


Beaumont Health – Self Distribution Overview

- Opened in 2014 initially to serve 3 hospitals
- Partnered with Tecsys as our Warehouse Management System (WMS)
- Servicing Acute and Non-Acute Locations
- Ability to pick both Bulk and LUM
- Medical surgical distribution including IV solutions and contrast media



Consolidated Service Center (CSC) Inventory Locations



Pick Mod



Pallet Area



Bulk Area



Very Narrow Aisle
Hand Stack Area

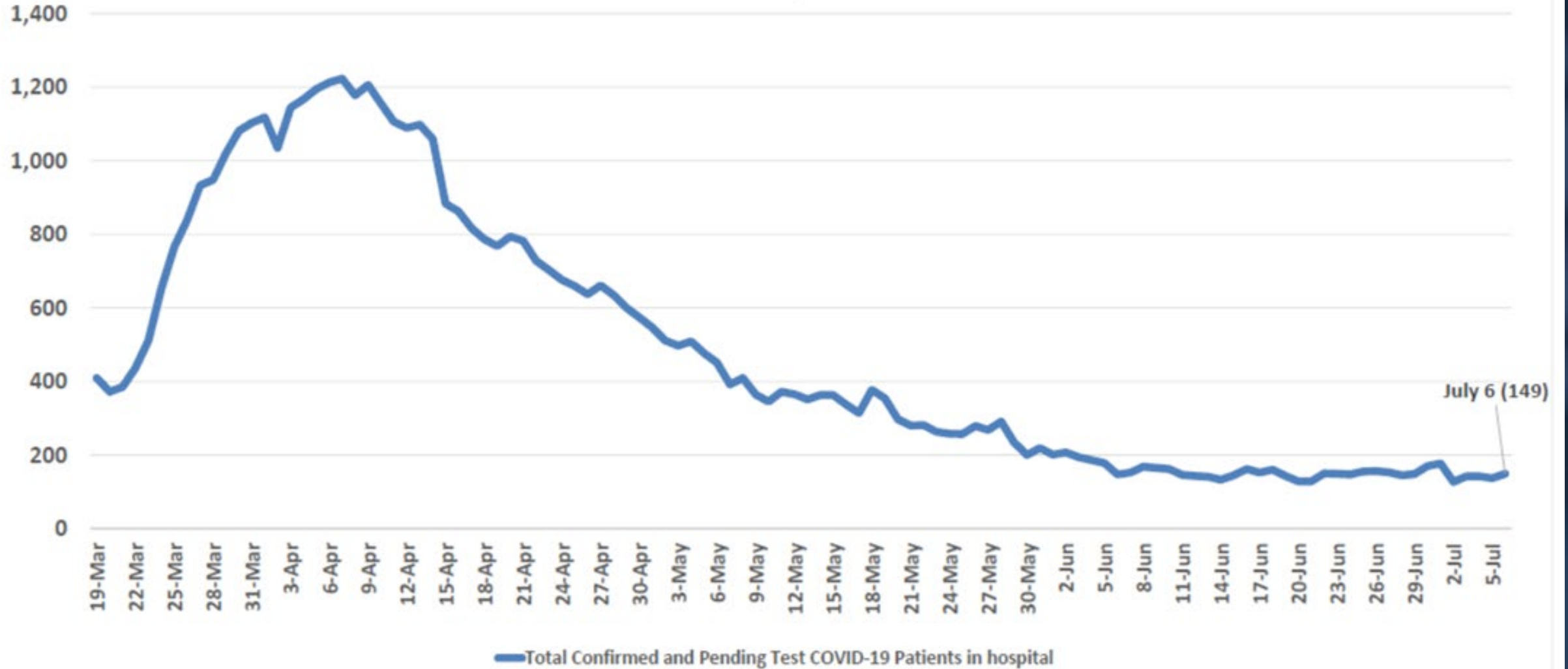


COVID-19 at Beaumont and in Michigan

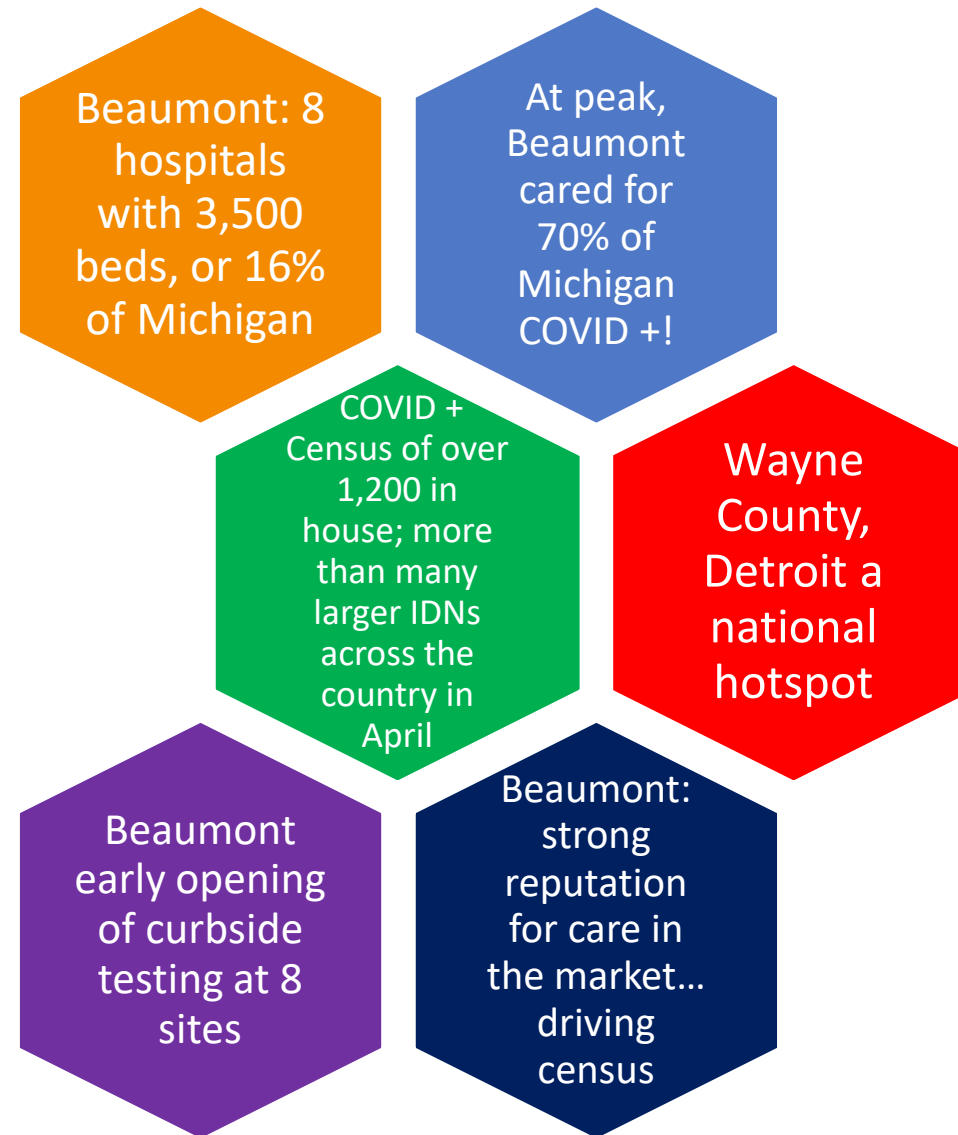
<https://www.youtube.com/watch?v=JJzIXhXrD7I>

Beaumont

Patients with Confirmed and Pending COVID-19 Tests currently in Beaumont hospital as of July 6, 2020



Beaumont – Highly Impacted by COVID-19





Significant Challenges Faced

Significant Challenges



| Our Responses...

Emergency Operations Center

Allocation and Conservation

Collaboration Efforts

Creative Sourcing

Hospital Capacity Management

Equipment Inventory and Capability

| Our Responses...

Emergency Operations Center

- Established Emergency Operations Center
 1. Comprehensive organizational reporting with Section Chiefs: Operations, Logistics, Planning
 2. Site specific EOCs reporting to central organization
 3. Cadence of calls: 8AM and 4PM, 7 days week
 4. Supply Chain – 24/7 coverage
 5. Pharmacy – members of Operations and Supply Chain
 6. Real Time Census information from EPIC
 7. Ability to be “nimble” with decisions due to structure in EOC

Beaumont Health COVID Impact: Peak – April 8

COVID-19 EOC Trackboard

SUCCESS STORIES AS OF 4/8/2020

Total IP Discharges	IP Discharges Yesterday	Total Off Vents	Off Vents Yesterday
1,249	94	75	14

ICU BED OCCUPANCY - SYSTEM OCCUPANCY: 76.3%

Royal Oak 117/...	Troy 53/67	Grosse Pointe 2...	Farmington 5...
Occupancy 80.1%	Occupancy 79.1%	Occupancy 68.6%	Occupancy 89.8%
<i>Beds Available: 29</i>	<i>Beds Available: 14</i>	<i>Beds Available: 11</i>	<i>Beds Available: 6</i>
Dearborn 81/87	Wayne 18/42	Taylor 2...	Trenton 2...
Occupancy 93.1%	Occupancy 42.9%	Occupancy 48.9%	Occupancy 74.4%
<i>Beds Available: 6</i>	<i>Beds Available: 24</i>	<i>Beds Available: 23</i>	<i>Beds Available: 10</i>

VENTS. & ANES. MACHINES (INCLUDES BIPAPS) - SYSTEM UTILIZATION: VENTS. 47.7% ANES. 4.3%

Royal Oak 75/...	Troy 50/89	Grosse Pointe 2...	Farmington 2...
Anesthesia Machines: 0/90	Anesthesia Machines: 8/44	Anesthesia Machines: 0/17	Anesthesia Machines: 1/23
Ventilators 54.3%	Ventilators 56.2%	Capacity 43.5%	Capacity 37.2%
Anesthesia 0.0%	Anesthesia 18.2%	Anesthesia 0.0%	Anesthesia 4.3%
Dearborn 65/...	Wayne 17/58	Taylor 1...	Trenton 2...
Anesthesia Machines: 0/38	Anesthesia Machines: 0/12	Anesthesia Machines: 1/12	Anesthesia Machines: 1/18
Capacity 53.3%	Capacity 29.3%	Capacity 35.7%	Capacity 53.2%
Anesthesia 0.0%	Anesthesia 0.0%	Anesthesia 8.3%	Anesthesia 5.6%

SUCCESS STORIES DEFINITIONS:

Discharged Patients: Alive patients who tested positive or have a pending result and were admitted as inpatient and have been discharged

Off-Vents: Alive patients who tested positive and no longer have an active ventilator order

BED OCCUPANCY DEFINITIONS:

The number of available beds shows all physical beds, without staffed bed adjustments. Numbers might not match the Capacity Management dashboard as bed changes are constantly

POSITIVE PATIENTS

Total Patients	In Hospital	Inpatient	Not Inpatient	Discharged
4,442	1,071	1,071	0	3,371

PATIENTS PENDING RESULTS

Total Patients	In Hospital	Inpatient	Not Inpatient	Discharged
399	124	96	28	275

NEGATIVE PATIENTS

Total Patients	In Hospital	Inpatient	Not Inpatient	Discharged
5,931	603	557	46	5,328

SUPPLY UTILIZATION

	Supply Type	Status Date	Last Update
■	Extraction Supplies	4/7/2020	4/7/2020 5:21:00 PM
■	NP Collection Kits	4/9/2020	4/9/2020 7:16:00 AM

| Our Responses.....

Allocation and Conservation

- Formal Control, Allocation, and Conservation efforts
 1. Reprocessing of N95 masks inhouse late March; over 50,000 completed. 8 campus approach
 2. Reprocessing of Reusable Isolation Gowns through current partner and new relationship with a dry cleaner
 3. Eliminated “Rag out” policy on chipped Isolation Gowns
 4. Manual process for all PPE out of CSC
 5. Daily Burn Rate report created to document use by campus of key PPE

High
 Performing
 Team with
 one goal:
 Do not run
 out of
 inventory...
 Simple Math

¹⁹⁶
 50K/yr 2019
 150K/yr post-COVID
 2x/yr Spring/Fall
 Mar/Sept
 Vaccin 2021
 [4/9 455,500] - CSC OHI
 9,600 OAM 8511 (100%)
 ,000 Handle KN95?
 87,000 KN95 (SB good) + table
 2,800 Medline 8210 (1860)
 674,900
 T reuse $\approx 1000 \text{ day} \times 30 = 30,000$
 30,000
 704,900
 150,000 FEMA $\approx 7000/\text{day}$
 854,900 122 days OHI FEMA \$/ML
 * Reprocessing KN95?
 * Reprocessing Masks?

30 days 7K/day = \$210K
 Safety Stock
 Dr Wood
 Dearborn
 Pny
 Canceled X Sam
 Med
 HAT
 Ind
 Split
 Med
 Mark/Mark FCA
 Kun
 950
 TIC
 HAT?

Positives Inbound
 3M
 Medline + true 3M
 OAM

Adding
 - DMG
 - Nursing Commons
 - Reprocessing
 - Long Term use
 - Serology Testing
 $\approx 25/\text{day}$
 - Dearborn Pny $\approx 10,000$

<https://www.youtube.com/watch?v=h1lqmHOUsU4&feature=youtu.be>

| Our Responses...

Collaboration Efforts

- Collaboration
 1. HealthTrust, Other Michigan IDN's, Other HealthTrust IDN's, Government Agencies (National Guard, Admiral, Local Senators)
 2. Defining unprecedented policies
 3. Donors wanting to help
 4. Vendor "relationship" leveraging
 5. Outside Industry discussion—Ford, GM, FCA, others
 6. Single Donation Point

| Our Responses.....

Collaboration Efforts Continued

➤ Collaboration and Transparency

1. Guidelines committee

- Reviewed medical evidence for rapidly changing therapeutic recommends
- Managed implementation of guideline changes

2. Predictive modeling and inventory management

- Daily inventory tracking
- Daily calls with Pharmacy, Infectious Disease and Intensivists to review current patient drug consumption and inventory needs

3. Vendor relations

- All vendor meeting held April 2, 2020
- Shared Beaumont COVID experience including drug consumption and surge projections



TCF FEMA Hospital Preparation



National Guard...Learning from
Beaumont Supply Chain at the CSC

| Our Responses...

Creative Sourcing

- Creative Sourcing
 1. Alternative global supply sources
 2. Automotive local engagement
 3. Staff redeployed to help where needed
 4. Assigned leads to 12 PPE categories as well as Respiratory and Ventilators
 5. Vetting reliable sources and associated financial demands
 6. Expedited vendor “onboarding”=additional 200+ vendors



Local
“Engineers”
sampling
Ford Pink
Gowns



CORONAVIRUS

FORD DELIVERS 40,000 N95 MASKS TO BEAUMONT



TOP STORIES

IF RELEASED, SENTENCING JUDGES HAVE THE FINAL SAY



FLINT'S MAY

6:09

38°

A CUF



Auto
Manufacturer
Petoskey
Plastic new
Isolation
gown on a...
ROLL!

| Our Responses...

Hospital Capacity Management

Collaboration

- Hospital Capacity Management
 1. ICU Beds
 2. Cohorting patients
 3. COVID hospital
 4. Mortuary constructed to manage capacity

| Our Responses...

Equipment Inventory and Capability

➤ Equipment Inventory & Capability

1. Assessed future needs through CHIME model
2. Placed large supplemental equipment orders (vents and Continuous Renal Replacement Therapy [CRRT]); Requested loaner and demo units
3. Developed process for movement of equipment to include clinical leaders in Operations and Logistics capabilities
4. Refined equipment tracking to include key capabilities...vents

Bring us
your tired
and
hungry!





Our Community Support



The background of the slide is a blurred photograph of a hospital hallway. In the foreground on the left, there is a close-up of an IV drip chamber and tubing. The overall color scheme is a monochromatic blue. The text "Lessons Learned" is centered in the middle of the image.

Lessons Learned

Lessons Learned



Self Distribution

1. Understand what “allocation” means
2. Leverage storage space and transportation
3. Maximize key vendor relationships
 - Request prioritization
 - Understand capabilities outside normal use
4. Overcommunicate
5. Seek domestic partnerships
6. Improve dashboards
7. Understand Cohorting / COVID only hospital (best use of people and supplies to narrow focus)
8. Equipment lead times and capabilities



COVID 2.0 Journey

COVID 2.0

Planning

Understand your COVID plans for 2.0 alongside leaders throughout organization—ELT, Phy., etc. Seek alignment on 2.0 or peaks and valleys?

Continuity

Use “downtime” to develop Business Continuity Plans

90 Day Stock

Develop what is needed based on your “COVIDING” to include 2 weeks prior, 30 days during, 2 weeks post. Space allocation for pallets, rotation of stock, financial burden/risk

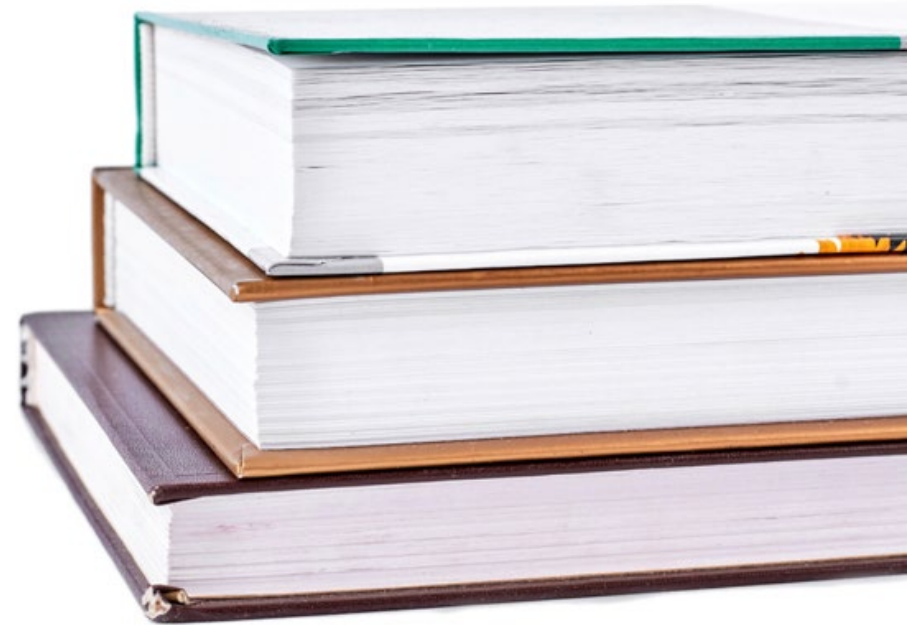
Burn Rate

Closely monitor your burn rate daily and add new items/remove items from your radar to focus on what is key (outside top 5 PPE items of N95/Iso Gown/Gloves/Masks/Faceshields). Ensure appropriate use of PPE by patient/procedure type

Assessment Question 1

Based on the experience at Beaumont Health, the following elements to improving supply chain are recommended for pandemic preparedness EXCEPT which one?

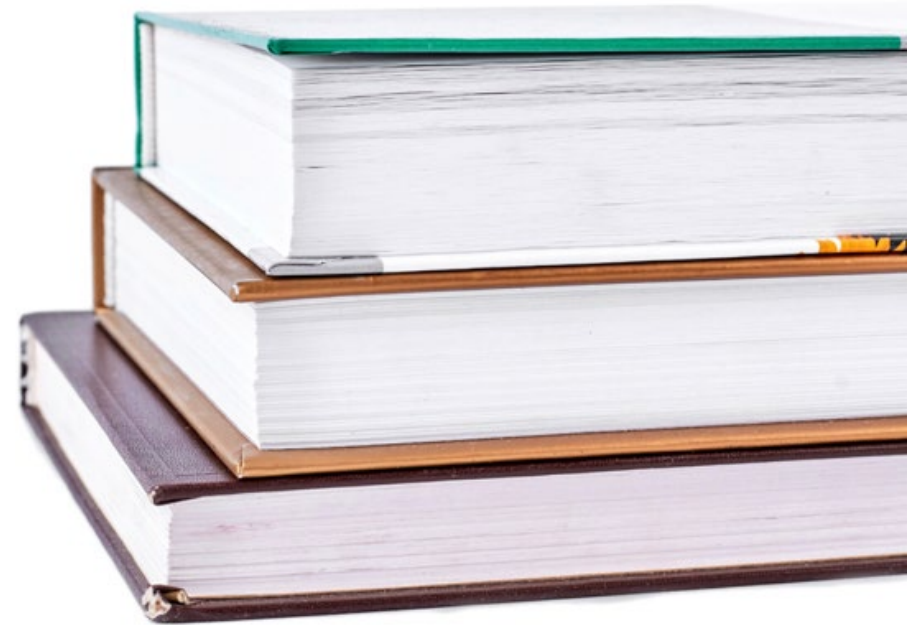
- a. Development of conservation strategies
- b. Ensure clinical protocols are in place for appropriate PPE use
- c. Collaboration with vendors to help mitigate disruption
- d. Work in a silo to be focused only on Supply Chain



Assessment Question 2

Recommended areas for improvement for pandemic and disaster preparedness planning include all of the following EXCEPT:

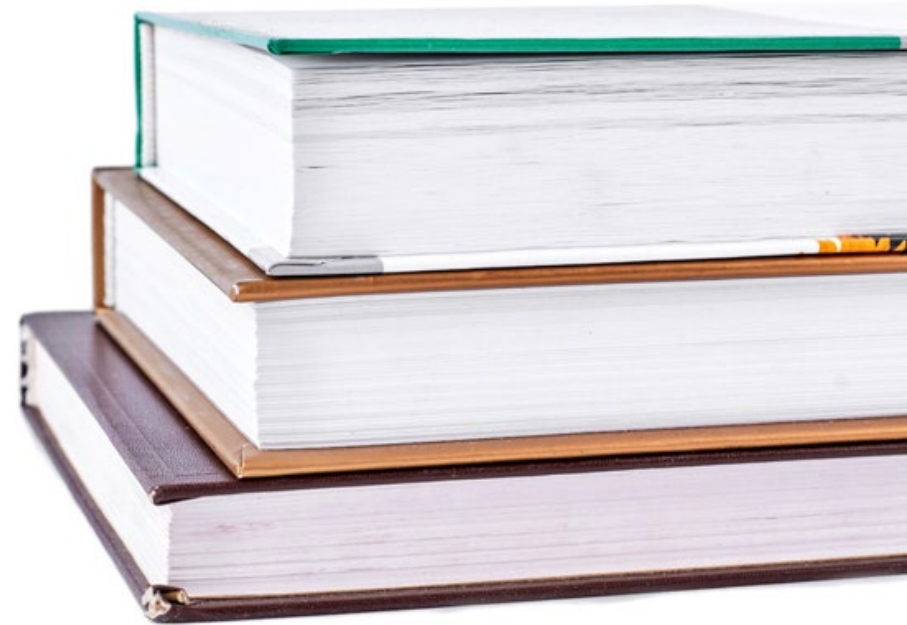
- a. Standing up an EOC with clinical and site level support
- b. Ability to determine PPE levels across the system only every 60 days
- c. Visibility to equipment functionality and need by location
- d. Test functionality of remote work from home ability



Assessment Question 3

Which of the following is not a strategy recommended for developing post-pandemic plans in healthcare facilities?

- a. Improvement of dashboards to include accurate information around equipment location and functionality
- b. Understanding OEM offshore and domestic production capabilities
- c. Change EMR
- d. Active inventory management to allow for additional space to store targeted PPE



References

1. ECRI. COVID-19 resource center. <https://www.ecri.org/coronavirus-covid-19-outbreak-preparedness-center/>. Accessed July 23,2020.
2. State of Michigan. Statewide available PPE and bed tracking. <https://www.michigan.gov/coronavirus/0,9753,7-406-98159-523641--,00.html>. Access July 23, 2020.

Reference note: The core content of this presentation reflects the internal workflow and thought processes of Beaumont Health during the COVID-19 pandemic.

Thank You...

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