COVID 19 at the DMC and CHM

• Early Preparation and Response
• Lessons learned from our Adult Colleagues
• Initial Pediatric Experience
• Later Experience
  o Where are all of these Kawasaki Disease cases coming from?
COVID 19
Early Preparation and Response
Early Reports: Timeline

• Dec ‘19: First cases of novel Coronavirus infections → Pneumonia in Wuhan, China.

• Jan 9, ‘20: CDC-China reports new Coronavirus-named SARS-CoV-2

  • Dr. Teena Chopra (Med Director of Infection Prevention & Hospital Epidemiology at the Detroit Medical Center) - raises concern**

• Jan 20, ‘20: 1st US case COVID 19: Washington (from Wuhan)

• Feb 3, ‘20: Planes arrive from Wuhan and arrive at Detroit Metropolitan Wayne County Airport (Romulus, MI)

• Feb 21, ‘20: First known COVID 19 case in Italy
DMC and CHM Response: Timeline

- **March 4**: DMC COVID 19 Steering Committee Formed
  - CEO, CNOs, Med Director of Epidemiology, CMO, COO

- **March 5**: COVID 19 Leadership Meeting for all DMC Hospitals

- **March 5-6**:  
  - All DMC hospitals initiate entrance restrictions and screening with respiratory mask [(+) screen] and hand sanitization  
  - Emergency tents implemented  
  - ED screening of symptomatic patients

- **March 8**: COVID algorithm **live** with criteria screening at ED  
  - First patients coming to CHM with resp Sxs and travel Hx  
  - Testing challenges early on
Screening Tool to facilitate identification of potential: Person Under Investigation (PUI)

### COVID-19 Assessment Criteria for Patient Under Investigation (PUI)

DMC Epidemiology: March 8, 2020

<table>
<thead>
<tr>
<th>ASSESSMENT CRITERIA</th>
<th>YES</th>
<th>NO</th>
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<tbody>
<tr>
<td>A) Did/Does the patient have a fever? (Fever may not be present in some patients, use clinical judgment to guide testing.)</td>
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<td>B) Does the patient have symptoms of lower respiratory illness (LRI) (e.g., cough or shortness of breath)?</td>
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<td>C) Does the patient require hospitalization for severe LRI (e.g., pneumonia, ARDS)?</td>
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<td>D) Has the patient tested negative for other common respiratory pathogens? (e.g., influenza)?</td>
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<td>E) In the 14 days before symptom onset, did the patient:</td>
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<tr>
<td>i. Have close contact with a lab-confirmed COVID-19 patient?</td>
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<tr>
<td>ii. Travel from affected geographic area? (China, South Korea, Japan, Iran, Italy, Hong Kong, Washington State, and California)</td>
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<td>CDC Coronavirus Travel Information:</td>
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**SUSPECT COVID-19 if you answered YES to:**

- A or B and Ei, OR
- A or B and Eii OR
- A and B and C and Ei OR
- A and B and C and D

*If patient does not meet case definition but there is a high index of clinical suspicion, contact local health department for testing.

- Detroit local health department: 313-876-4000 (Ask for communicable disease) AFTER 3PM: 313-590-4972
- OAKLAND Local health department for Huron-Valley: 586-469-5233 (Ask for communicable disease) AFTER HOURS: 586-296-4495
- MDHHS: 517-335-8585 After Hours: 517-335-9030
DMC COVID-19 ALGORITHM

At the ED Entry Point: Screen for respiratory symptoms (Cough, Shortness of Breath) OR travel history from China, Italy, Iran, Japan, Korea, Hong Kong, Washington State, and California

NO
Proceed to regular ED room for other clinical assessment

YES
Place a respiratory mask on the patient and accompanying personnel and perform hand hygiene with product containing 60-90% alcohol

Patient moved to a closed door room in ED

Health-care worker (HCW) assesses the patient based on Patient under Investigation (PUI) criteria by calling the patient cell phone. If the patient does not have a cell phone, talk to the patient through Walkie Talkies. "See below for walkie talkie disinfection"

Patient will stay at regular ED room for other clinical assessment

NO

Patient meets PUI criteria for COVID-19

YES

Patient transferred to an ED negative pressure isolation room

Page the Special Pathogen Pager 32652 to discuss and if PUI is confirmed then contact the local Public Health Department (Detroit: 313-876-4000, Oakland County: 517-550-4972) AFTER 5PM, 313-550-4972 (OAKLAND COUNTY: 517-465-5735/ASK for communicable disease) AFTER HOURS: 517-296-4499 MDHHS is 517-335-8165 after hours 517-335-9030

If MDHHS confirms that the patient meets PUI definition and testing is warranted, follow lab testing protocol per MDHHS and fill PUI form and obtain PUI ID
(https://www.michigan.gov/documents/mdhhs/Mdhhs_cOVID_PUI_form_and_Cover_Sheet_Fillable_4727203_72624.pdf)

If patient is not medically stable, admit to a Negative Pressure Room through an Isolated Pathway.

Medical Assessment by a Clinician (Remember to DON PPE Contact yellow gowns, gloves, N95 mask, face shield)

Obtain: Nasopharyngeal OR Oropharyngeal swab and if patient is coughing send sputum sample

Follow Influenza Protocol

Negative

Do A/B Rapid Testing (RSV). Person collecting the sample should DON appropriate PPE (Contact yellow gowns, gloves, N95 mask, face shield)

Positive

DMC Epidemiology: UPDATED MARCH 08, 2020

1Any lab testing performed on patients being suspected for COVID-19 SHOULD BE HAND DELIVERED and no presumptive tube systems should be used.
2For PUI assessment, see assessment criteria (next page)
3If we start to experience critical N95 mask shortage based on the number of cases, we will begin using surgical masks for patients suspected for COVID-19.
4Any Non-Disposable medical equipment used for a patient with suspected COVID-19 should be wiped down with PIGEON SANICLOTHS
DMC and CHM Response: Timeline

- **March 10**: First COVID 19 patients (2) identified in MI
  - One each in Wayne and Oakland County

- **March 12**: DMC visitation restrictions intensified: 1 healthy, adult visitor (age 19-59) per patient

- **March 13**:
  - Incident Command Ctr opened (all hospitals): twice daily meetings
  - M W F DMC Physician leaders meetings for input and updates

- **March 14**: Exec Order: no patient visitors (with some exceptions)
DMC and CHM Response: Timeline

- **March 15**: Elective Surgery/Procedure guidelines
  - Empowering physicians to do a Risk/Benefit assessment with their patients to guide decision making

- **March 18**:  
  - Anesthesia workgroup to standardize Anesthesia care for possible COVID 19 patients at DMC
  - Adult and Pediatric workgroups (ED, Pulmonary, Resp Therapy, Pharmacy) to develop strategies to reduce aerosol breathing treatments and convert to Metered Dose Inhalers
DMC and CHM Response: Timeline

• **March 23-24**: PPE education and operationalizing PPE conservation
  • Town Halls held with physicians (attending and resident) and nurses to establish standards and understanding on appropriate PPE usage and conservation strategies
  • Stewardship emphasized

• **March 26**: PPE education modified
  • New focus on N-95 respirator with face shield at all points of patient contact
  • N-95 reuse instituted: one per provider per shift
  • Universal surgical mask use for clerical staff in non-patient care areas and patients/families
DMC and CHM Response: Timeline

• **March 26**: High Flow Nasal Cannula (HFNC) Consensus Plan

• **March 28**: Emergent Resource Allocation Committee

• **April 3**: On site COVID testing available

• **April 8**: COVID Adult anticoagulation guidelines initiated

• **April 14**: COVID Discharge Telemedicine Clinic Launched

• **Late April**:
  • Testing all expectant mothers presenting to Labor and Delivery
  • Pre-procedural testing for patients scheduled for necessary, non-emergent surgery
  • Testing solid organ and Bone Marrow Transplant patients and those patients in need of chemotherapy
How About CHM?

- CHM staff: nurses, patient care associates, social workers, case management, assisted with care at adult facilities due to staffing shortages
  - 137 Nurses
  - 208 Employees overall
- CHM expanded care to patients up to age 21 years of age to assist adult hospitals
- Creation of Immunocompromised Clinic at CHM
  - Requested by Physicians to allow face to face visits for patients with chronic illnesses + weak immune system
  - Separate entrance; lab draws in room to minimize exposures
Appearance of a Kawasaki-like State

- In April, CHM physicians in ED, ICU, ID, and Rheumatology began to see patients that resembled Kawasaki Disease, but many were showing hypotension with cardiac dysfunction (cardiogenic shock)
What is new at CHM?

- Since late April, now seeing children with a medium vessel vasculitis that has fevers, rash, which may quickly progress to cardiac involvement
- On 5/8/20, COVID Vasculitis Cardiac workgroup meeting
  - ED, ICU, ID, Cardiology, CV surgery, & Surgery

Wednesday, May 6

Dear Health Care Partners:

In recent weeks, Michigan has seen an increase in children presenting with pediatric multisystem inflammatory syndrome, including some patients with symptoms resembling Kawasaki disease. My physician colleagues have shared that patients span the entire pediatric age range including adolescents. The younger children have more classic symptoms, but the adolescent age patients may present in a more subtle manner with fever for > 48 hours with associated Rash or GI symptoms. Unfortunately, these patients can progress quite quickly, develop myocardial involvement and require critical care monitoring and care.

<table>
<thead>
<tr>
<th>Young children with:</th>
<th>Older children with:</th>
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<tbody>
<tr>
<td>Fever</td>
<td>Fever for &gt; 48 hours with</td>
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<tr>
<td>Rash</td>
<td>Rash or GI symptoms</td>
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<tr>
<td>Redness of the palms and soles</td>
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<tr>
<td>Bright red cracked lips</td>
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<tr>
<td>Red inflamed eyes</td>
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If you recognize any of the symptoms listed above in one of your patients, call the Physician Link Line 877-994-8436 to be connected to a specialist.

Thank you for your partnership in serving our pediatric community.

Rudy

One focus. One purpose. Your child.
Children’s Hospital of Michigan ED Triaging
Pediatric Inflammatory Myocardial Syndrome (PIMS) 5/6/2020

Screening Evaluation

Non-toxic appearing
Fever for 48 hours or more plus either...
  1) Any Rash
  2) Any GI symptom

Laboratory Investigation
CBC   Ferritin
CRP   PT/PTT/INR
CMP   Troponin I (high sensitivity)
D-Dimer Fibrinogen

(if labs all negative)

Admit

Toxic Appearing, Shock, Altered Mental Status

See additional ED admission w/u and management plan

Home
Pediatric Inflammatory Myocardial Syndrome (PIMS) 5/6/2020

MANAGEMENT

Positive Lab Screening Evaluation

Toxic Appearing, Shock, Altered Mental Status

Additional Laboratory Testing
- COVID-19 In House
- Sed Rate
- Urinalysis
- Cap Gas with Lactate

Blood Culture
LDH
BNP

Imaging
- POCUS
- CXR
- ECG
- Cardiac Echo

Management
- Continuous Cardio-Respiratory Monitoring
- Tylenol for fever
- Judicious IVF (10 cc/kg bolus)
- Early vasopressors: Epinephrine/Dopamine
- Antibiotics- Ceftriaxone
- PICU Consult
- ID Consult
- Cardiology Consult

Predictors of Severe Disease
- Hyponatremia
- Elevated D-dimer
- Elevated CRP
- Increased Ferritin
- Evidence of Myocardial Injury
- Evidence of multi-organ dysfunction

** Also Obtain Initial Screening Labs
A Multi-Disciplinary Approach to a Multi-System Disease (MIS-C)

• Inpatient Care
  • ED team developed protocols to enhance early recognition
  • ID team partnered with ICU team and Pharmacy to apply an immunomodulation strategy to treat condition
  • Cardiology service: ECHOcardiography serially to track progress
  • Ancillary services: Surgery and CV surgery for ECMO consultation
  • Lab team engaged for SARS-CoV-2 Antibody testing

• Outpatient Care
  • ID and Cardiology team formed dual follow-up clinic for patients post-Discharge
Present State

• Still seeing occasional COVID 19: PCR (+) patients and occasional MIS-C patients
• Continuing to balance non-COVID care and COVID care
• Working toward more rapid turnaround of testing
• Encouraging families to pursue care if needed for vaccinations, and signs and symptoms warranting subspecialty care
Questions?