BCM Infectious Disease COVID19 Literature Review Newsletter: WEEK 13
June 22nd-June 26th, 2020

Week 13 Newsletter Prepared by:
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<table>
<thead>
<tr>
<th>Data Source</th>
<th>Last Updated</th>
<th>COVID-19 cases in Texas</th>
<th>COVID-19 cases in Harris County</th>
<th>COVID-19 related deaths in Texas</th>
<th>COVID-19 related deaths in Harris County</th>
<th>Total tests performed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Texas DSHS a</td>
<td>June 25, 2020, 3:00 PM</td>
<td>131,917 (Active cases: 55,125)</td>
<td>25,786</td>
<td>2,296</td>
<td>322</td>
<td>1,875,197 Texas</td>
</tr>
<tr>
<td>2. Johns Hopkins b</td>
<td>June 26, 2020, 10:33 AM</td>
<td>134,558 (Active cases: 60,062)</td>
<td>27,016</td>
<td>2,317</td>
<td>N/A</td>
<td>1,659,340 Texas</td>
</tr>
</tbody>
</table>

aDSHS updated the method of reporting COVID-19 cases in Texas on March 24, 2020 to provide the public with more timely information. The DSHS daily case count now includes all cases reported publicly by local health departments around the state.
bData sources from WHO, CDC, ECDC, NHC, DXY, 1point3acres, Worldometers.info, BNO, state and national government health departments, and local media reports.

Data represents viral and antibody total tests from private and public labs in Texas, unless otherwise stated. N/A = not available.
COVID-19 Literature Review Newsletter Volume #33
Infectious Disease Fellows: Manny Guajardo, MD
Faculty: Jill Weatherhead MD
June 22nd, 2020

In the News:

Articles:
1. Yuan-Po, Tu et al. Swabs Collected by Patients or Health Care Workers for SARS-CoV-2 Testing. NEJM. Published June 3rd, 2020. DOI: 10.1056/NEJMc2016321

Background:
- Nasopharyngeal (NP) swabs are standard for COVID testing, but they carry risk of viral aerosolization
- Other sampling sites (tongue, T; nasal, N, mid-turbinate, MT) are more easily obtained and conserve personal protective equipment (PPE) when samples are obtained by the patient

**Methods:**
- Cross sectional study, Pugent Sound region, Washington
- Collected NP swab in clinic and swab of T, N, MT by patient, in 530 symptomatic patients
- Exclusion criteria: recent nosebleed, nasal surgery, facial trauma, chemotherapy, thrombocytopenia

**Results**
- N = 530, aged 15 months to 94 years. 449 subjects obtained all 4 swabs, the rest obtained 2-3 swabs.
- 501 patients had both T and NP swabs collected: T sensitivity compared to NP: 89.8%
- 498 had both N and NP: N sensitivity compared to NP: 94%
- 504 had both MT and NP: MT sensitivity compared to NP: 96.2%
- Ct values from T, N and MT PCRs compared to NP PCRs demonstrated Pearson correlations of 0.48, 0.78, and 0.86, respectively

**Conclusion**
- Sensitivities for N and MT samples were >90%, but all 3 samples types had wide confidence intervals
- N and MT samples collected by patients may be an acceptable alternative to administering NP swab in a health care setting for diagnosis of COVID-19
- Limitations: single geographic region, cross-sectional study, limited analysis due to single sample comparison at each sample location


**Background:**
- Racial/ethnic minorities represent a disproportionate number of hospitalizations and death in the US due to COVID-19
- Beliefs and behaviors regarding COVID may differ by race/ethnicity, SES, and political affiliation and these differences may contribute to disease incidence.

**Methods:**
- Nationwide survey conducted via Internet from March 29 – April 13
- Survey performed by Dynata Corporation -> refusal rates were unable to be calculated
  - Questions about reported prevalence of COVID-19, knowledge of COVID-19, beliefs about coronavirus and behaviors associated with spread
- 80% of respondents were sampled according to general population representation, 20% were sampled from COVID “hot spots” (New York, New Orleans, Detroit, Seattle)
- Linear regression calculations done to determine associations

**Results**
- N = 5198 individuals, mean age 48, 45% male, 72% non-Hispanic white, 16% non-Hispanic black, and 12% Hispanic
- Survey sample was similar to US population
- Compared to White respondents, Black respondents were...
  - More likely to report COVID infection (3.5%, 95% CI 1.5 to 5.5)
  - More more likely to know someone with COVID (7.2%, 95% CI 3.4 to 10.9)
  - Less likely to be aware of fomite spread (9.4%, 95% CI -13.1 to -5.7)
  - Less likely to know the 3 cardinal COVID symptoms (10.8%, 95% CI -14.1 to -7.5)
  - More likely to wash hands
  - More likely to leave the house (0.93 times, 95% CI 0.5 to 1.4)
- Hispanic respondents were also less likely to be aware of fomite spread (4.8%, -8.9 to -0.77) but more likely to wash their hands
- Compared to women, men were...
  - Less likely to be aware of fomite spread (5.1%, 95% CI -7.4 to -2.9)
  - Less likely to wash their hands (3.8 times fewer per 24hr, 95% CI -4.6 to -3)
  - More likely to leave the house frequently (0.74 times, 95% CI 0.5 to 1)
- Those who identified as Republican were...
  - 2.6% more likely to report infection than independents (95% CI 1.2 – 4)
  - 3.3 % less likely to be aware of fomite spread than independents (95% CI -5.8 to -0.64)
  - As likely as Democrats to know someone with COVID
- Compared to older people, young people (< 30 years old) were...
  - More likely to know someone with COVID (11.6%, 95% CI 7.5 to 15.7)
  - Less likely to be aware of fomite spread (10.3%, 95% CI -14.1 to -6.5)
  - Less likely to know the 3 cardinal COVID symptoms (17.2%, 95% CI -20.4 to -14.1)
  - Less likely to wash their hands (4.4 times fewer per 24hr, 95% CI -5.7 to -3.2)
- People with higher incomes (income >100k) were...
  - More likely to know someone with COVID (12.3%, 95% CI 8.7 to 15.8)
  - More likely to be aware of fomite spread (4.2%, 95% 0.78 to 7.7)

**Conclusion**
- Differences in knowledge and behaviors related to COVID-19 were present within the compared groups and may reflect lack of access to health care or appropriate health care messages and inability to telecommute for work
- Public health campaigns, availability of testing sites and health care access should exist for all community members in order to reduce COVID-19 cases, hospitalizations, and deaths.
- Limitations: risk of non-response bias (unknown response rates), recall bias (COVID+ status was self-reported), knowledge and behaviors regarding COVID have changed since the beginning of the pandemic

**COVID-19 Literature Review Newsletter Volume #34**
Infectious Disease Fellows: Denise Francisco MD  
Faculty: Jill Weatherhead MD  
June 26th, 2020


**ARTICLES:**

**Background:**
- In the light of the global pandemic, the practice of medicine has changed in many ways and one of them includes organ transplantation. There is the possibility of loss of life-saving organs for transplantation which then leads to increased waitlist mortality.
The goal of the paper is to standardize an approach to evaluating donors and recipients with possible SARS CoV-2 infection.

Methods:
- Donor Assessment:
  - Donor Exposure Assessment
    - Low Risk
      0: Donor has not traveled to CDC high risk area (level 2-3) in past 21 days and has had no contact with either PUI or confirmed case
    - Moderate to High Risk
      1: Donor has been in an area deemed as a CDC high risk area (level 2-3) in the preceding 21 days, and exposures are unknown
      2: Donor had direct unprotected contact with a PUI for COVID-19 in the last 21 days
      3: Donor had direct unprotected contact with a confirmed case of COVID-19 in the last 28 days
  - Donor Clinical Risk Assessment
    - All donors = SARS CoV2 RT PCR Testing + Non Contrast Chest CT
    - Lung donors = Bronchoscopy including SARS CoV2 RT-PCR testing
      - Category 0: Asymptomatic
        - Negative RT-PCR for SARS-CoV-2
        - CXR and CT Chest without signs of COVID-19
      - Category 1: Symptomatic (LRTI, fever, anosmia)
        - Negative RT-PCR for SARS-CoV-2
        - CXR and CT Chest without signs of COVID-19
      - Category 2: Symptomatic (LRTI, fever, anosmia)
        - Negative RT-PCR for SARS-CoV-2
        - CXR or CT chest concerning for COVID-19
      - Category 3: Symptomatic (LRTI, fever, anosmia)
        - Positive RT-PCR for SARS-CoV-2
        - CXR or CT chest concerning for COVID-19
  - COVID 19 Risk Categorization for LUNG Donors
    - Low Risk
      0: Accept
    - Moderate
      1-2: Consider (if negative COVID Testing and CT chest without signs of COVID and based on risk/benefit)
    - High
      3: REJECT
- COVID 19 Risk Categorization for HEART, LIVER and KIDNEY Donors
  - Low Risk
    0-3: Accept
  - Moderate
    0-3 1-2: Consider (if negative COVID Testing and CT chest without signs of COVID and based on risk/benefit)
  - High
    0-3 3: REJECT
- **Transplant Candidate Assessment**
  - **Outpatient Screening Algorithm**

  ![Outpatient Screening Algorithm Diagram](attachment:outpatient_diagram.png)

  - **Inpatient Screening Algorithm**

  ![Inpatient Screening Algorithm Diagram](attachment:inpatient_diagram.png)

**Results:**
- A prospective chart review was done
- The protocol was implemented on March 24, 2020 and chart review ended on May 11, 2020
<table>
<thead>
<tr>
<th>Organ</th>
<th>Decision</th>
<th>Exposure Category</th>
<th>Clinical Risk Category</th>
<th>Risk Category</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEART</td>
<td>7 Primary Offers</td>
<td>Transplanted</td>
<td>Donor 0</td>
<td>0</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Candidate Check</td>
<td>Check</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 Primary Offer</td>
<td>Not Transplanted</td>
<td>Donor 0</td>
<td>3</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Candidate Check</td>
<td>Check</td>
<td></td>
</tr>
<tr>
<td>LUNG</td>
<td>3 Primary Offers</td>
<td>Transplanted</td>
<td>Donor 0</td>
<td>0</td>
<td>Low</td>
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<tr>
<td></td>
<td></td>
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<td>Candidate Check</td>
<td>Check</td>
<td></td>
</tr>
<tr>
<td>KIDNE</td>
<td>2 Primary Offers</td>
<td>Transplanted</td>
<td>Donor 0</td>
<td>0</td>
<td>Low</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Candidate Check</td>
<td>Check</td>
<td></td>
</tr>
<tr>
<td>LIVER</td>
<td>15 Primary Offers</td>
<td>Transplanted</td>
<td>Donor 0</td>
<td>0-1</td>
<td>Low</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Candidate Check</td>
<td>Check</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 Primary Offer</td>
<td>Not Transplanted</td>
<td>Donor 3</td>
<td>1</td>
<td>Moderate</td>
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<tr>
<td></td>
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<td>Candidate Check</td>
<td>Check</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Donor 0</td>
<td>0</td>
<td>Low</td>
</tr>
</tbody>
</table>
Candidate was found to have CT Chest imaging with ground glass opacities concerning for infectious etiology. Transplant was deferred, and repeated RT-PCRs were negative. The candidate later proceeded to transplant with a different donor organ.

At the time of submission, all of the 27 patients transplanted have survived, and none in this cohort have tested positive for SARS-CoV-2 since transplantation with the implementation of this algorithm.

Conclusions:
- This protocol helps to standardize donor and candidate screening for solid organ transplant patients during the COVID pandemic with 100% survival and no evidence of SARS-CoV-2 infection.


Background: High case fatality rate in patients requiring invasive mechanical ventilation from COVID-19
- Host immune response thought to play a key role in the pathophysiology of organ failure

Methods:
- Randomized, controlled, open-label, adaptive study to evaluate potential treatments in patients hospitalized with COVID-19
- 176 NHS hospitals in the UK
- Eligibility: clinical suspected or laboratory confirmed SARS-CoV-2 infection
  - Children, pregnant women and breast-feeding women were enrolled in the RECOVERY TRIAL
- Randomized 2:1 to standard of care or standard of care + dexamethasone 6 mg daily for up to 10 days
- Single online follow up form was completed when participants were discharged, had died or at 28 days after randomization whichever occurred earlier
- Primary outcome: all-cause mortality within 28 days of randomization

Results:
- From March 19th-June 8th, 11,320 patients were randomized and 9355 were eligible to receive dexamethasone (ie dexamethasone was available in the hospital at the time)
  - N = 2104 standard of care + dexamethasone
  - N = 4321 standard of care
- 82% had laboratory confirmed SARS-CoV-2
- Follow up was completed on 95% (N=6119)

- Primary Outcome: 21.6% dexamethasone vs 24.6% standard of care 28-day mortality (rate ratio 0.83, Confidence interval 0.74-0.92)
  - Greater absolute and proportional benefit was among patients receiving invasive mechanical ventilation, reduced 28-day mortality by 35% on mechanical ventilation (rate ratio 0.65, Confidence interval 0.51-0.82) and 20% on non-invasive oxygen (rate ratio 0.80, Confidence interval 0.70-0.92)
  - No benefit among patients who were not receiving respiratory support
- The risk of progression to invasive mechanical ventilation was lower in the dexamethasone group (rate ratio 0.76, Confidence interval 0.61-0.96)

**Discussion:**
- Dexamethasone 6 mg per day for up to 10 days reduces 28-day mortality in COVID-19 patients receiving invasive mechanical ventilation
- The greater mortality benefit of dexamethasone in patients with COVID-19 who required respiratory support and those recruited after first week of illness suggest patients were at the immunopathology stage of illness
- Limitations: no data collected on physiological, laboratory or virologic parameters