

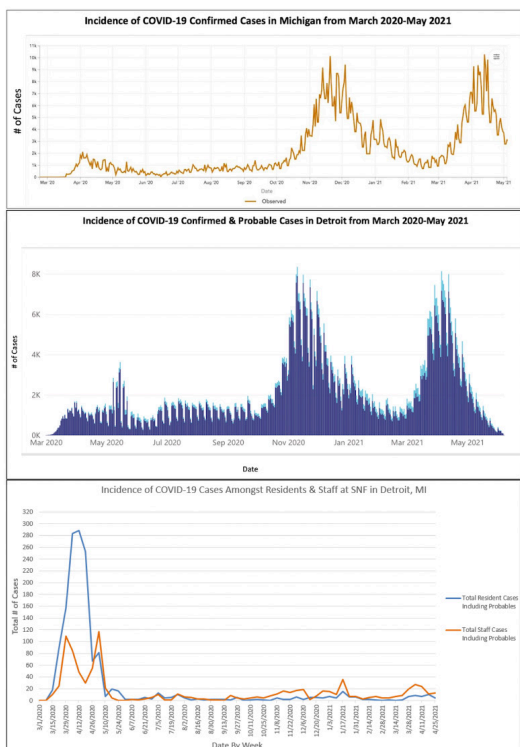
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**Session: P-19. COVID-19 Infection Prevention**

**Background.** Nursing home residents, a vulnerable population, experienced an extraordinary surge of COVID-19 cases and deaths at the beginning of the pandemic. Multidisciplinary collaboration from the Detroit Health Department (DHD), academic centers, along with interim guidance from the CDC provided a structured approach to control SARS-CoV-2 in Detroit skilled nursing facilities (SNF). We aim to describe this model.

**Methods.** There were 26 SNF prioritized by the DHD over a 13-month period from 3/2020 - 4/2021. Testing for SARS-CoV-2 occurred biweekly, on average, at each facility for staff and residents. Any staff or resident cases were investigated by a specialized investigations team to determine outbreak status. Any resident that was identified as positive for SARS-CoV-2 was moved to a designated in-house quarantine unit or specific COVID-19 designated nursing homes within the City of Detroit, and cohorting guidance was provided. Facilities were evaluated for environmental controls, PPE provided as needed and infection prevention guidance was provided. COVID-19 vaccination was conducted by pharmaceutical chains or the DHD and vaccine education sessions were conducted for nursing home staff and residents.

**Results.** On average, SNF facilities served a total of 2,262 residents (2031-2367 range) and employed a total of 2,965 staff (1034-3124 range) during the period from 7/2020 - 4/2021. SARS-CoV-2 cases overall for Michigan and Detroit are shown in Figure 1. In SNF facilities, cases ranged from zero to 279 cases in residents and zero to 115 cases per week in staff (Figure 1). Beginning 3/2020, the majority of cases were residents, whereas after 10/2020, staff cases exceeded resident cases. Immunization rates were 63% (partial) and 58% (complete) for residents, and 26% and 23% for staff, respectively. Measures to reduce vaccine hesitancy included organized education sessions, messaging from trusted leaders and organized mass vaccination schedules.



**Figure 1:** (Top figure) Incidence of COVID-19 confirmed cases in Michigan, (Middle figure) Incidence of COVID-19 confirmed and probable cases in the City of Detroit, (Bottom figure) Incidence of COVID-19 confirmed and probably cases amongst residents and staff at nursing facilities in Detroit, Michigan

**Conclusion.** We describe the effectiveness of multidisciplinary interventions to control dissemination, morbidity and mortality of SARS-CoV-2 amongst SNF residents in Detroit. We emphasize the continued need to address vaccine hesitancy and importance of this model as successful interventions to decrease infection rates.

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**426. COVID-19 Infection Prevention Practices That Exceed CDC Guidance:**

**Balancing Extra Caution Against Impediments to Care**

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CDC Epicenters

**Session: P-19. COVID-19 Infection Prevention**

**Background.** At the outset of the COVID-19 pandemic, healthcare workers (HCWs) raised concerns about personal risks of acquiring infection during patient care. This led to more stringent infection prevention practices than CDC guidelines during a time of uncertainty about transmission and limited U.S. testing capacity. Hospitals were challenged to protect against true COVID-19 exposure risks, while avoiding use of unproven measures that could interfere with timely, high quality care. We evaluated hospital experiences with HCW COVID-19 exposure concerns impacting clinical workflow/management.

**Methods.** We conducted a 32-question structured survey of hospital infection prevention leaders (one per hospital) from CDC Prevention Epicenters, University of California (CA) Health system, HCA Healthcare, and the Southern CA Metrics Committee between May-Dec, 2020. We assessed facility characteristics and COVID-19 exposure concerns causing changes in respiratory care, procedure delays/modifications, requests to change infection prevention processes, disruptions in routine medical care, and health impacts of PPE overuse. Percentages were calculated among respondents for each question.

**Results.** Respondents represented 53 hospitals: 22 (42%) were small (< 200 beds), 14 (26%) medium (200-400 beds), and 17 (32%) large (>400 beds) facilities. Of these, 11 (21%) provided Level 1 trauma care, and 22 (41%) provided highly immunocompromised patient care; 75% had cared for a substantial number of COVID-19 cases before survey completion. Majority reported changes in respiratory care delivery (71%-87%), procedural delays (75%-87%), requests to change infection prevention controls/protocols (58%-96%), and occupational health impacts of PPE overuse including skin irritation (98%) and carbon dioxide narcosis symptoms (55%) (Table).

**Conclusion.** HCW concerns over work-related COVID-19 exposure contributed to practice changes, many of which are unsupported by CDC guidance and resulted in healthcare delivery delays and alterations in clinical care. Pandemic planning and response must include the ability to rapidly develop evidence to guide infection prevention practice.

**Table: Precautions Applied to Patient Care Practices and Workflow During the COVID-19 Pandemic in Excess of CDC Guidance**

| Total Participants (N) = 53  | Ever <sup>1</sup> | A Few Times (1-2x) | Sometimes (3-5x) | Often (>5x) | Never |
|--|-------------------|--------------------|------------------|-------------|-------|
| <b>During the COVID pandemic, how often did you hear about concerns from your healthcare workers about aerosol-generating procedures (AGPs) resulting in avoidance of:</b>   |                   |                    |                  |             |       |
| Nebulizers (e.g., preference for inhalers)   | 87%               | 6%                 | 13%              | 68%         | 13%   |
| BIPAP/CPAP <sup>2</sup>  | 79%               | 19%                | 12%              | 46%         | 21%   |
| High flow nasal cannula  | 72%               | 14%                | 20%              | 38%         | 28%   |
| Intubation   | 71%               | 10%                | 23%              | 38%         | 29%   |
| <b>During the COVID pandemic, how often did you hear about the following occurring due to healthcare worker concerns about COVID transmission:</b>   |                   |                    |                  |             |       |
| Procedure delay due to request for pre-procedural COVID-19 testing   | 87%               | 38%                | 13%              | 36%         | 13%   |
| Non-OR procedure delays (e.g., bronchoscopy, IR, cardiac catheterization, TEE, EGD)  | 77%               | 33%                | 21%              | 23%         | 23%   |
| Delays in surgery requiring general anesthesia in OR (e.g., CABG, vascular surgery, biopsy, ex-lap)  | 75%               | 28%                | 19%              | 28%         | 25%   |
| Early intubation instead of high flow nasal cannula or other non-invasive positive pressure ventilation  | 49%               | 21%                | 17%              | 11%         | 51%   |
| <b>How often did you encounter modifications in usual clinical/infection prevention workflows due to concerns about COVID transmission?</b>  |                   |                    |                  |             |       |
| Request to allow time for air exchanges between patients (e.g., in OR, ED <sup>3</sup> )   | 96%               | 15%                | 28%              | 53%         | 4%    |
| Requests for or inquiries into changing OR from positive to negative air pressure  | 64%               | 27%                | 17%              | 19%         | 37%   |
| Procedure modifications (e.g., Bovie cauterization not allowed/discouraged due to AGP concern)   | 58%               | 27%                | 19%              | 12%         | 42%   |
| Use of extra PPE affecting surgical procedure times (e.g., double PPE, body suits/PAPRs <sup>4</sup> requiring extra time for donning and doffing)   | 24%               | 29%                | 11%              | 30%         | 29%   |
| Difficulty with a procedure due to double-gloving (e.g., IV insertion, central line insertion, etc.)   | 19%               | 11%                | 4%               | 4%          | 79%   |
| Delay in pre-operative nasal decontamination due to concerns about interference with COVID testing.  | 17%               | 7%                 | 6%               | 4%          | 83%   |
| <b>Does your facility use Intubation boxes (clear plastic box placed around patient's head as an extra barrier against airway secretions)?</b>   |                   |                    |                  |             |       |
| Not for any patients   | 56%               |                    |                  |             |       |
| Yes, for COVID patients only   | 22%               |                    |                  |             |       |
| Yes, universally for all patients  | 22%               |                    |                  |             |       |
| <b>If your facility uses intubation boxes, how often have you heard about the following?</b>   |                   |                    |                  |             |       |
| Difficulty with intubation (e.g., multiple attempts)   | 48%               | 45%                | 3%               | 0%          | 52%   |
| Difficulty responding to code blue while using intubation box  | 13%               | 7%                 | 3%               | 3%          | 87%   |
| <b>How often have you heard about the following occurring in workers using personal protective equipment?</b>  |                   |                    |                  |             |       |
| Facial skin irritation due to mask (contact dermatitis, skin breakdown)  | 98%               | 26%                | 40%              | 32%         | 1%    |
| CO2 narcosis (e.g., headache, lethargy, dizziness while wearing N95 or double masking) <sup>5</sup>  | 55%               | 26%                | 17%              | 11%         | 45%   |
| Falling or tripping while wearing multiple layers of PPE (goggles plus face shield)  | 14%               | 10%                | 4%               | 0%          | 86%   |
| <b>Difficulty completing a procedure due to:</b>   |                   |                    |                  |             |       |
| Reduced visibility from face shields/goggles   | 25%               | 17%                | 23%              | 36%         | 25%   |
| Double gloving   | 12%               | 10%                | 2%               | 0%          | 88%   |
| <b>How often have you heard about patients with chronic diseases requiring an ED visit due to disruption in routine medical management (e.g. worsening diabetes or hypertensive urgency, high-risk prenatal visits, seizures)?</b> |                   |                    |                  |             |       |
| In hospital care leading to longer hospital stays?   | 71%               | 31%                | 17%              | 23%         | 29%   |
| <b>How often have you heard about delays or changes in hospital care leading to longer hospital stays?</b>   |                   |                    |                  |             |       |
|  | 79%               | 21%                | 24%              | 34%         | 21%   |

<sup>1</sup>Ever<sup>1</sup> = composite calculated as sum of response selections of "A few times", "Sometimes", and "Often".  
<sup>2</sup>Percentages calculated among total respondents for each question.  
<sup>3</sup>Abbreviations: BIPAP=Bi-level positive airway pressure, CPAP=continuous positive airway pressure; ED = Emergency Department; OR = Operating Room; PAPR = Powered air purifying respirator; CO2 = carbon dioxide

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#### 427. Healthcare Personnel Perceived Benefit of Infection Prevention Strategies during COVID

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**Session:** P-19. COVID-19 Infection Prevention

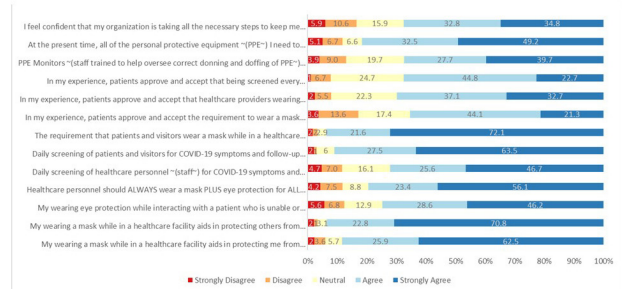
**Background.** During the COVID-19 pandemic, many infection prevention policy and practice changes were introduced to mitigate hospital transmission. Although each change had evidence-based infection prevention rationale, healthcare personnel (HCP) may have variable perceptions of their relative values.

**Methods.** Between October-December 2020, we conducted a voluntary, anonymous, IRB-approved survey of UNC Medical Center HCP regarding their views on personal protective equipment (PPE) and hospital policies designed to prevent COVID acquisition. The survey collected occupational and primary work location data (COVID unit or not) as well as their views on specific infection prevention practices during COVID. Chi squared tests (two tailed) were used to compare differences in the proportions.

**Results.** The overall results are displayed (Figure). Among the 694 HCP who responded to the survey, we found HCP were largely (68%) satisfied that the

organization was taking all the necessary measures to protect them from COVID-19. A significantly greater proportion (14% more) of HCP (81.7% compared to 67.6%; 95% CI of difference 9.4-18.5%,  $P < 0.0001$ ) agreed that all PPE was available to them compared to those who were confident that the organization was taking necessary steps for protection, highlighting that safety is more than simply availability of supplies. More than 90% felt that daily screening of patients/visitors and patient/visitor mask requirements were important for protecting them from acquiring COVID in the workplace and that wearing a mask themselves was a key intervention for protecting others. Fewer HCP (72-80%), although still a majority, perceived that eye protection and daily symptom screening for HCP were beneficial. Symptom screening for patients/visitors was perceived by 19% more HCP (90.9% compared to 72.2%; 95% CI of difference 15-23%) to be beneficial than symptom screening of HCP ( $P < 0.0001$ ).

Figure. HCP Perceived Benefit of Infection Prevention Strategies during COVID



**Conclusion.** Although infection prevention strategies were implemented based on evidence and in alignment with CDC recommendations, it is important to acknowledge that the perception and acceptance of these recommendations varied among our HCP. Compliance can only be optimized with key interventions when we seek to understand the perceptions of our staff.

**Disclosures.** David J. Weber, MD, MPH, PDI (Consultant)

#### 428. Assessing the Confidence, Knowledge and Preferences of Hospital Staff with Regards to Personal Protective Equipment (PPE) Practices During the COVID-19 Pandemic

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**Session:** P-19. COVID-19 Infection Prevention

**Background.** Effective use of personal protective equipment (PPE) by hospital staff is critical to prevent transmission of COVID-19. This study examines hospital staff confidence in and knowledge of effective PPE use, and their preferences for learning about PPE practices.

**Methods.** Three isolation precautions signs were created for use in the care of those with or under investigation for COVID-19 infection: first, a special respiratory precautions sign designed by infection control; and next, two signs outlining proper donning and doffing practices – one created internally with the support of health literacy, and another developed with a design firm (IDEO) using principles of human-centered design (Figure 1). All signs were used for  $\geq 10$  weeks prior to distribution of a questionnaire (REDCap) to clinical and non-clinical hospital staff. Those who had not worked on hospital units during the pandemic (after March 15, 2020) were excluded. The 38-item survey was sent by supervisors over email between July 14-31, 2020, and examined demographics, confidence in and knowledge of PPE best practices, and preferences for each precaution sign with regards to trustworthiness, ease of following, informative content, and clarity of image/layout. Responses were reported using descriptive statistics. A non-parametric test of trends compared staff preferences across signs. Logistic regression examined the association between answering all knowledge-based questions correctly and staff role and confidence in PPE practices (Stata).