## Reference of the Week

- AbdelMueller A and Fernandez L. Assessment of Fabric Masks as Alternatives to Standard Surgical Masks in Terms of Particle Filtration Efficiency. medRxiv. 04.24.2020 (pre-print).
 https://www.medrxiv.org/content/10.1101/2020.04.17.20069567v2.full.pdf pdf

  Methods: 1. The effectiveness of eliminating particles from inhalation by custom and commercial products is determined. **2.** A standard particle generator and particle counter were used. **3.** 13 commercial and sewn fabricated masks were tested. **4.** Particle concentration inside the mask and outside the mask was determined and efficiency calculated using an N-95 mask as a check on the methodology.

  Findings: 1. Standard surgical masks removed 75% of particles 0.02um to >1um. **2.** Sewn masks were gnerally less efficient removing 60% of particles. **3.** The N-95 mask when properly fit removes almost 100% of particles. **4.** A nylon screen (from stocking material) fashioned to cover both surgical masks and sewn masks removes particles as efficiently as an N-95 mask.

Figure 1. Highly efficient particle removal by an N-95 mask
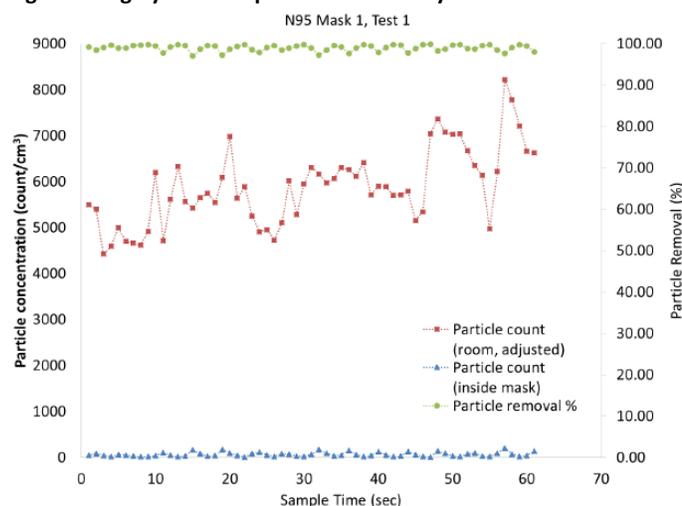
Figure 2. Less efficient particle removal by surgical and sewn masks.
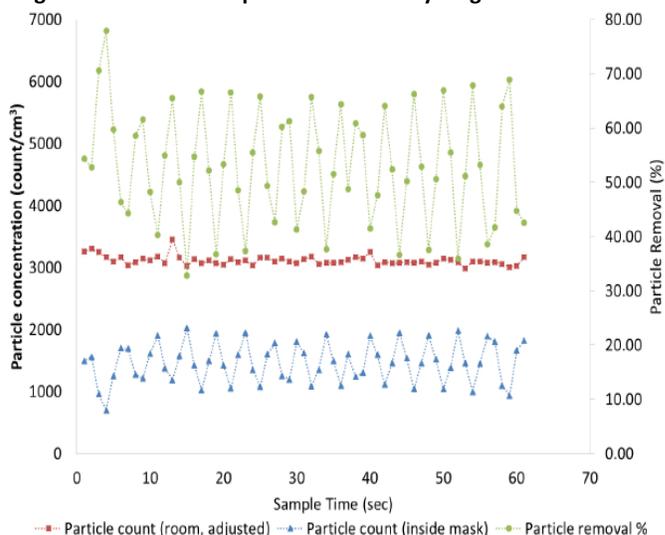
Figure 3. Custom nylon filter covering a sewn mask that has the filtration efficiency as an N-95 mask.

It appears that a sewn mask with a nylon filter could be custom made when PPEs are in short supply. There are likely issues of breathing comfort and skin irritation which are issues for all mask. The durability, cleaning, and re-use properties of the nylon filter were not addressed in the study.

SEE THE ARTICLE CABINET ON THE S: DRIVE, "COVID-19 ARTICLE RESOURCE CABINET" FOR CHILDREN'S FULL COLLECTION

Other References:

- Klompas M. Airborne Transmission of SARS-CoV-2: Theoretical Considerations and Available Evidence. JAMA. 07.13.2020 (Viewpoint). https://jamanetwork.com/journals/jama/fullarticle/2768396 pdf
  Findings: 1. Respiratory secretions are small (< 5um, aerosols) or large (> 5um, droplets) with the former "floating" in the air for hours requiring an N-95 mask for prevention and the latter falling by gravity within 3-6 feet of production and a cloth or surgical mask providing adequate protection. **2.** SARS-CoV-2 droplets and aerosols are generated by speech and viral RNA can be extracted from hospital air but its presence does not equate to infectivity. **3.** Infection rates from an index patient: time limited passing encounter, 1%; social contact, 5%; household contact, 10-40%. **4.** The balance of evidence implicates droplet spread of SARS-CoV-2 with aerosol spread problematic in closed poorly ventilated environs and with aerosol generating procedures. **5.** The review did not address transmission from surfaces.

- Morrison AR. Clinical characteristics and predictors of survival in adults with coronavirus disease 2019 receiving tocilizumab. Journal of Autoimmunity. 07.03.2020 (pre-print). www.sciencedirect.com/science/article/pii/S0896841120301347 pdf
  Methods: 1. Retrospective cohort adult study in 5 Michigan hospitals who received tocilizumab (IL-6 blocker) at the discretion of providers in patients with lab indicators of "cytokine storm". **2.** Patient stratified as mild, moderate, and severe COVID-19 disease and a 6 category clinical scale. **3.** Data collected for 28 days after the first dose of tocilizumab. **4.** Primary outcome was a comparison of survivors to non-survivors.
  Findings: 1. 81 adult patients- median age 64 (58-71); 69% male; 70% with severe disease; mortality 43.2% (46 survivors, 35 non-survivors). **2.** Survivors had a lower CRP (p=0.01) and other inflammatory markers; *earlier tocilizumab treatment (p=0.38) resulted in less mortality.* **3.** No differences were noted in the occurrence of adverse effects between survivors and non-survivors. **4.** Nosocomial co-infection occurred in 22.2% of patients. **5.** This preliminary study has many limitations including the concomitant variable use of many therapies including chloroquine, steroids, remdesivir, liponavir-ritonavir, and ribavirin.

- Carfi A. Persistent symptoms in patients after acute COVID-19. JAMA. 07.09.2020 (Research letter). https://jamanetwork.com/journals/jama/fullarticle/2768351 pdf
  Methods: 1. Establishment of a COVID-19 F/U clinic in Italy and patients seen when PCR was negative and quarantine requirements complete. **2.** Structured electronic data form built to capture a broad array of clinical characteristics. **3.** A quality of life (QOL) questionnaire was performed comparing QOL pre-COVID disease and QOL on the day of F/U. **4.** Primary outcome was to characterize residual symptoms if present following COVID-19.
  Findings: 1. 143 adult patients- mean age 56.5; assessments performed a mean of 60.3 (SD, 13.6) days after the onset of symptoms; and no patients had signs of acute illness. **2.** Only 12.6% (18 patients) were symptom free at the time of clinic. **3.** The most common residual symptoms: fatigue (53.1%), dyspnea (43.4%), joint pain (27.3%), and chest pain (21.7%). **4.** Worsened QOL was reported in 44.1% of patients.

- Saloner B. COVID-19 Cases and Deaths in Federal and State Prisons. JAMA (Research letter) 07.08.2020. https://jamanetwork.com/journals/jama/fullarticle/2768249 pdf
  Methods: 1. Cases of COVID-19 and presumed or confirmed deaths from COVID-19 taking place 03/21 – 06/06/2020 from all states and the District of Columbia was extracted from public web sites and supplemented from other sources including the Federal Bureau of Prisons. **2.** Deaths attributed to COVID-19 was determined locally by the department of corrections or external medical examiners. **3.** Crude COVID-19 cases and death rates from prisons and the overall population were calculated. **4.** Primary outcome was to describe and compare the COVID-19 case and death rate in prisons and the country.
  Findings: 1. 1,295,285 prisoners had 42,107 cases of COVID-19 and 510 deaths. **2.** The COVID-19 case rate of 3,251 per 100,000 prisoners was 5.5 times higher than the US population case rate. **3.** The COVID-19 death rate among prisoners was 39 deaths per 100,000 compared to 29 deaths per 100,000 in the general US population. **4.** The adjusted death rate in the prison population was 3.0 times higher than would be expected if the age and sex distributions of the US and prison populations were equal. **5.** Accuracy of case numbers and death attribution can be contested but the message of major disease outbreaks in prisons is likely true and requires specific public health measures to subdue.

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