July 22, 2020

To: Distribution

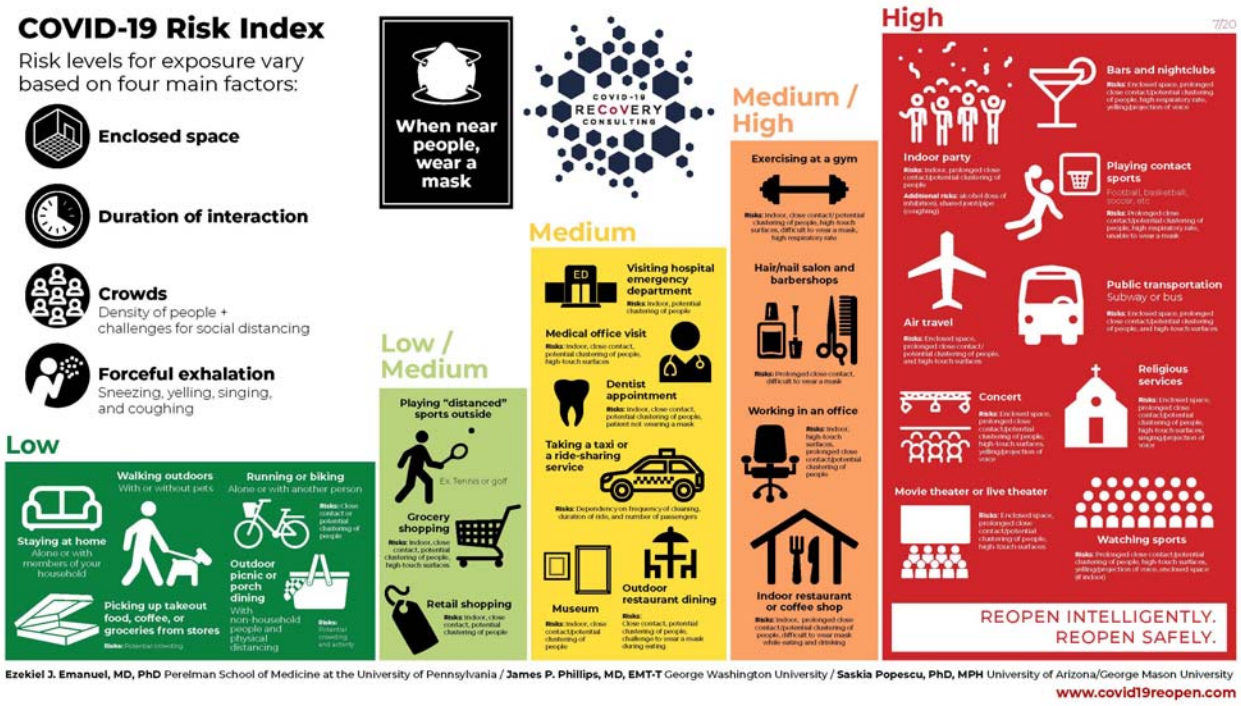
From: Pandemic Working Group

Re: **COVID-19: Bait & Switch ~ Risk Pictograph ~ Lethality**

Bait & Switch. As reported by the New York Times last week, Johnson & Johnson has been working since January to develop a coronavirus vaccine using an adenovirus known as Ad26, a relatively rare virus that causes mild colds but is very effective at invading human cells. In the world of vaccines, an adenovirus is used as sort of chassis that researchers modify to mimic a virus for which they are trying to develop a vaccine. In a sense, we are trying to fool the immune system by sending in a relatively harmless thing that looks or acts something like a real virus. The immune system, in turn, develops antibodies and possibly T-cells and, if the real thing comes along, the patient has a ready-made defense mechanism.

In 2011, led by Dr. Dan Barouch of the Center for Virology and Vaccine Research at Beth Israel Deaconess Medical Center in Boston, researchers used Ad26 to develop an HIV vaccine. First, they disabled it so that it could only invade cells and not multiply. Second, they added HIV proteins so that, once introduced into the patient, it would elicit an immune response. Trials for this HIV vaccine are still underway. In 2016, researchers used Ad26 to fashion a Zika vaccine, which was demonstrated to be safe and effective in early trials but was shelved when Zika retreated. Now, these researchers have fashioned copies of the coronavirus gene that directs production of its distinctive spike protein, affixed it to the Ad26 adenovirus and injected it into mice with success and more recently into monkeys. Results of these studies are expected within a few weeks, and, if found to be sufficiently effective, the Ad26 vaccine will be placed into human trials.

Infographic on Risk. From John Killmer, this infographic, which was generated by data from infectious disease experts at universities in Pennsylvania, Washington and Arizona, shows, in a single view, the relative risk of coronavirus infection in different venues starting in the lowest risk category (e.g., walking outdoors) and ascending to the highest risk (e.g., indoor parties and concerts). Of particular interest are the four factors for consideration in assessing the risk – which are consistent with Dr. Erin Bromage's "Dose X Time of Exposure = Infection" – those are: enclosed space, duration of interaction, density of people and forceful exhalations. With those factors in mind, looking at offices (med/high), we note high touch surfaces and potential clustering of people as negative factors. This is why, in our COVID protocols, we stress the importance of maintaining proper sanitization and social distancing – i.e., physical space, face coverings and capacity limitations in common rooms. With these controls in place, the risk drops to "low" according to the CDC. And, in an essential business such as ours, it is essential that we keep the workplace safe.



Is COVID More Lethal? Many persons in the public forum ask why COVID-19 is getting so much attention as compared to other potentially lethal viruses. As reported in the Wal Street Journal today, after conducting dozens of studies to calculate the infection fatality rate of the coronavirus (deaths compared to total infections including unreported), researchers are finding that most studies show COVID-19 killing between 0.5% and 1.0% of people infected (or from five to 10 per 1,000). This would make COVID-19 more deadly than the seasonal flu, but less so than Ebola. However, as John Hopkins' Dr. Eric Toner stated, "It's not just what the infection-fatality rate is. It's also how contagious the disease is, and Covid is very contagious." This is not a perfect data set, as measuring unreported cases (and, for that matter, unreported or overreported deaths) tends to sow a margin of error into the equation. However, as Timothy Russell of the London School of Hygiene and Tropical Medicine explained, "[R]obust studies are finding a clear signal in the noise." On a related subject, Dr. Toner added that fatality is not the sole consideration for patients, as "There's a large range of health-care consequences for people who get seriously ill." However, we will cover that tomorrow.

If you have any questions or comments on this advisory, please contact either kellyw@amvac.com or timd@amvac.com.