

COVID Response Is All Cost, No Benefit

Guest Editorial By Kristina Kristen

[https://childrenshealthdefense.org/...](https://childrenshealthdefense.org/) – August 20, 2020

Government officials' interventions for COVID-19 have been strategically one-sided and myopic. Many leaders, in response to the perceived virus threat, completely abandoned rational considerations to lower *overall* suffering and death. In a blind focus intended to "stop the virus," officials recklessly locked down billions of people globally with little to no debate, while ignoring the *cost* factor, an indispensable half of a "cost-benefit" analysis in calculating any solution.

The cost-benefit analysis, the most basic tenet of any decision making process, especially those having to do with life, death and health, must contain two critical data points: whether the intervention will work and whether the *cost of it working* will create *more harm*, in which case other alternatives must be considered, including: *doing nothing*. If a so-called solution "works" but in doing so creates massive, disproportionate collateral damage and increases overall harm, then clearly it cannot be called a solution, and certainly should never be mandated onto a population.

An Unprecedented, Unscientific Experiment

Draconian mandates of isolation, social distancing and masks imposed on healthy populations have never been done before. Why? The answer is simple—because an elementary calculation of potential lives saved versus the overall decimation of an entire society was a preposterous "solution" to any microbe. The "medicine" would be far deadlier and damaging than the "disease."

The layered downstream and long-term effects of lock downs, social distancing, and mandated masks have yet to be fully revealed, but what we do know is poverty and suicide rates have sky-rocketed as 50,000,000 people have been forced into poverty in the US, alone. [27,28] Deaths from poverty and despair, based on estimates of 37,000 deaths per 1% increase in unemployment in the US will be devastating, lasting after the virus is long gone.[39]

Globally, a UN report also finds the lock downs are reversing decades of progress on alleviating poverty and improving health and education [26]. Strangely, COVID-19 seems to be mostly a disease of the developed world, with 74 percent of the 4.4 million cases and 85 percent of worldwide deaths occurring in North America and Europe. [37]

On the other hand, lock downs kill people through deprivation of livelihoods and disturbance of health services. Some 1.6 billion of the world's 2 billion informal workers, or nearly half the global workforce, have already lost their jobs, according to the International Labor Organization. These include gig workers in Western economies. But the vast majority of job loss is in developing countries, where most employment is informal and families live hand-to-mouth, relying on a daily wage if they are to eat at the end of that day.[38]

Missing Concept: Economics Impact On Life, Health, and Mortality

There is an incessant false dichotomy implied in the flawed assertion that "health is more important than wealth." The economy, to many, is somehow disconnected from what it actually is, a life force. What seems to be lost on some is while the wealthy profit from this life force the majority live, suffer, and die by it. To make matters even worse with regard to supposed "benefit," global data now illustrate countries with full lock downs not only have massive economic collateral damage, but *deaths from COVID in many cases are higher* than countries with minimal to no lock downs, such as Sweden, South Korea, Japan, and Taiwan—the natural "control groups" in this massive, unprecedented global experiment [30]. This evidence takes any "benefit" of lock downs completely out of the equation, leaving all "costs"—real costs that officials have ignored.

Problematic "Virtues"

Mandating millions of healthy people, young and old, to wear cloth masks is perhaps the most troublesome "solution" that, as it turns out, also delivers little benefit with a suffocating cost. On a very basic level, we all understand the size of the particle compared to the size of the filter, matters...right? The image of throwing sand against a chain link should come to mind. What we know is masks can filter

some bacteria and contaminants, but given the size of viruses at 0.06-0.125 microns, cloth masks are virtually incapable of blocking their aerosolized transmission. Numerous randomized controlled studies not only demonstrate they are woefully ineffective at stopping transmission, but, some have even shown masks to INCREASE infection due to repeated touching and trapping of germs [1,2,3,4,5,8,13]. The overwhelming data simply does not support the assertion they will protect from a virus.

Masks have been branded now as virtuous despite the realities of compromised health. We are designed to breath in oxygen-rich (O₂) air and we exhale carbon dioxide (CO₂), a metabolic waste product. Meanwhile, our brain is dependent on an adequate and continuous supply of oxygen in order to optimally produce cellular energy to support life. The central nervous system is thereby extremely vulnerable to inadequate O₂ supply. [16,17,18,19,20,21,22,25]. Normal atmospheric oxygen level is 20.9%. But when wearing a mask, a portion of the carbon dioxide *waste* exhale displaces the O₂ inside the mask, and thereby we re-inhale our own CO₂ exhale. Clearly, when we re-inhale a portion of our exhale, we are obstructing optimal O₂/CO₂ gas exchanges, otherwise known as breathing, an activity that, up to recently, we all recognized as the most vital action we engage in to stay alive!

Known Standards

Occupational Safety and Health Administration (OSHA), has determined that the atmospheric oxygen level in work places must be above 19.5%, below which it warns of "immediate dangers to life and health" (IDLH). It turns out, in seconds, OSHA-approved monitors illustrate oxygen levels inside masks drop precipitously to well below 19.5%. Demonstrations performed with the mask show 17-18% oxygen levels, causing monitors to loudly alert the mask-wearer that they are breathing insufficient Oxygen. [31,32]

OSHA likewise regulates the amount of atmospheric CO₂ levels in working environments. Normal outdoors CO₂ levels range from 350-550 parts per million (ppm). Acceptable levels are less than 600ppm. OSHA-approved monitors, within seconds, show dangerous levels of CO₂ inside masks, with levels reaching above 10,000ppm. [33] Summarized effects of elevated CO₂ levels on people:

- complaints of stiffness and odors: 600 – 1000 ppm
- general drowsiness: 1000 – 2500 ppm
- adverse health effects may be expected: 2500 – 5000 ppm

Prolonged exposure limits:

- maximum allowed concentration within 8 hour working period: 5000 – 10000 ppm
- maximum allowed concentration within a 15 minute working period: 30000 ppm

The Air Hunger Games

The negative health effects caused by excess CO₂ are the result of its behavior as a simple asphyxiant. A simple asphyxiant is a gas which reduces or displaces the normal oxygen in breathing air. According to OSHA: "Symptoms of mild CO₂ exposure may include headache and drowsiness. At higher levels, rapid breathing, confusion, increased cardiac output, elevated blood pressure and increased arrhythmias may occur. Breathing oxygen depleted air caused by extreme CO₂ concentrations can lead to death by suffocation." [33]

In separate studies performed by Harvard and Yale, student volunteers engaged in game-like simulation over three short trials during which they breathed air containing 600,1,000, and 2,500 ppm of carbon dioxide. The results were astounding in that "there were moderate declines in decision making performance at 1,000 ppm compared to 600 ppm. At 2,500 ppm, the drop in mental capacity was astonishingly large." [35] Alarming, cloth masks raise CO₂ levels to over 5,000ppm, well-above the 2,500ppm level demonstrated to have "astonishingly" high cognitive impairment on students.

Another potentially serious side-effect of excess CO₂, well known by doctors and nurses, is respiratory acidosis, where a build-up of CO₂ causes the blood PH level to become overly acidic. Carbon dioxide in our blood or in solution becomes carbonic acid, and this mild acid plays a major role as a buffer along with bicarbonate (a mild base) in maintaining the very narrow range of 7.35-7.45 blood PH. Our life

literally depends on maintaining this specific blood PH level, and our bodies rely primarily on two organs, our lungs and our kidneys to keep this level stable. Inhaling our own exhaled CO₂, especially over time, can cause respiratory acidosis, which is a stressor to the kidneys and the circulatory system. [36] We are mandating children and workers to wear masks for hours every day, knowing they are breathing sub-optimal air and likely creating imbalances and stress in their bodies. Where are the safety studies performed to show wearing masks for extended periods does not stunt growth or create illnesses in children who have virtually zero risk from the virus itself?

Of course concerns about wearing masks extend well beyond physiological and health repercussions, into much broader and equally important domains of social, emotional, interactive and community effects, which lay outside the scope of this paper. Suffice it to say, short and long-term negative psychological impacts of wearing masks in potentially producing a disconnected, anti-social, fearful and germophobic society cannot be overly emphasized.

Even more disturbingly, as new data has become available showing the virus fatality rate of 0.1-0.26, corroborated globally, and as death rates approach zero, our leaders continue with these extreme measures. They persist as though the initial, wildly inaccurate, and long-debunked predictive models are still in play.

Shutting down the globe for a virus is unprecedented in and of itself, but continuing to do so when the serious ramifications of lock downs, social distancing and mask wearing become so disproportionate to the perceived threat of the virus, is shocking. This complete and wholesale dethroning of safety and health in policy-makers' analytics is arguably the biggest driver of suffering and lost lives. A deranged *Machiavellianesque* approach to solutions with a one-sided "success"-at-any-cost-mentality, has supplanted legitimate, broad, and holistic critical reasoning in finding viable solutions. The reasonable among us must ask for real and rational discourse along with comprehensive solutions from our leaders; the failure in their approach is no longer supportable. The hubris and intransigence of too many leaders in this crisis should be measured as crimes against humanity.

Citations/Resources

1. Do facemasks protect against COVID-19?

The public might wear masks to avoid infection or to protect others. During the 2009 pandemic of H1N1 influenza (swine flu), encouraging the public to wash their hands reduced the incidence of infection significantly whereas wearing face masks did not. ⁵ There exists no good evidence that face masks protect the public against infection with respiratory viruses, including COVID-19. ⁶

Surgical face masks are designed to be discarded after single use. As they become moist they become porous and no longer protect. Indeed, experiments have shown that surgical and cotton masks do not trap the SARS-CoV-2 (COVID-19) virus, which can be detected on the outer surface of the masks for up to 7 days. ^{7, 8} Thus, a pre-symptomatic or mildly infected person wearing a face mask for hours without changing it and without washing hands every time they touched the mask could paradoxically increase the risk of infecting others.

2. A cluster randomized trial of cloth masks compared with medical masks in healthcare workers

Results: The rates of all infection outcomes were highest in the cloth mask arm, with the rate of ILI statistically significantly higher in the cloth mask arm (relative risk (RR)=13.00, 95% CI 1.69 to 100.07) compared with the medical mask arm. Cloth masks also had significantly higher rates of ILI compared with the control arm. An analysis by mask use showed ILI (RR=6.64, 95% CI 1.45 to 28.65) and laboratory-confirmed virus (RR=1.72, 95% CI 1.01 to 2.94) were significantly higher in the cloth masks group compared with the medical masks group. Penetration of cloth masks by particles was almost 97% and medical masks 44%.

Conclusions: This study is the first RCT of cloth masks, and the results caution against the use of cloth masks. This is an important finding to inform occupational health and safety. Moisture retention, reuse of cloth masks and poor filtration may result in increased risk of infection. Further research is needed to inform the widespread use of cloth masks globally. However, as a precautionary measure, cloth masks should not be recommended for HCWs, particularly in high-risk situations, and guidelines need to be updated.

3. Universal Masking in Hospitals in the Covid-19 Era

We know that wearing a mask outside health care facilities offers little, if any, protection from infection. Public health authorities define a significant exposure to Covid-19 as face-to-face contact within 6 feet with a patient with symptomatic Covid-19 that is sustained for at least a few minutes (and some say more than 10 minutes or even 30 minutes). The chance of catching Covid-19 from a passing interaction in a public space is therefore minimal. In many cases, the desire for widespread masking is a reflexive reaction to anxiety over the pandemic.

4. The use of masks and respirators to prevent transmission of influenza: a systematic review of the scientific evidence

Findings, however, may not be applicable to influenza and many studies were suboptimal. None of the studies established a conclusive relationship between mask/respirator use and protection against influenza infection.

5. Mask Facts

Conclusion: Wearing masks will not reduce SARS-CoV-2.

- N95 masks protect health care workers, but are not recommended for source control transmission.
- Surgical masks are better than cloth but not very efficient at preventing emissions from infected patients.
- Cloth masks will be ineffective at preventing SARS-CoV-2 transmission, whether worn as source control or as personal protective equipment (PPE).

Penetration of cloth masks by particles was 97% and medical masks 44%, 3M Vflex 9105 N95 (0.1%), 3M 9320 N95 (<0.01%).

- Moisture retention, reuse of cloth masks and poor filtration may result in increased risk of infection.
- The virus may survive on the surface of the face- masks
- Self-contamination through repeated use and improper doffing is possible. A contaminated cloth mask may transfer pathogen from the mask to the bare hands of the wearer.
- Cloth masks should not be recommended for health care workers, particularly in high-risk situations, and guidelines need to be updated

6. Advice on the use of masks in the context of COVID-19

From the WHO: There is limited evidence that wearing a medical mask by healthy individuals in the households or among contacts of a sick patient, or among attendees of mass gatherings may be beneficial as a preventive measure.¹⁴⁻²³ However, there is currently no evidence that wearing a mask (whether medical or other types) by healthy persons in the wider community setting, including universal community masking, can prevent them from infection with respiratory viruses, including COVID-19.

7. The Surgical Mask Is a Bad Fit for Risk Reduction

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Histories of the surgical mask offer some clues about our contemporary risk profile, a profile that is, according to the nature of risk, future-oriented. The birth of the mask came from the realization that surgical wounds need protection from the droplets released in the breath of surgeons. The technology was applied outside the operating room in an effort to control the spread of infectious epidemics. In the 1919 influenza pandemic, masks were available and were dispensed to populations, but they had no impact on the epidemic curve. At the time, it was unknown that the influenza organism is nanoscopic and can theoretically penetrate the surgical mask barrier. As recently as 2010, the US National Academy of Sciences declared that, in the community setting, "face masks are not designed or certified to protect the wearer from exposure to

respiratory hazards.” A number of studies have shown the inefficacy of the surgical mask in household settings to prevent transmission of the influenza virus.

8. Face Masks to Prevent Transmission of Influenza Virus: A Systematic Review

There are fewer data to support the use of masks or respirators to prevent becoming infected. Further studies in controlled settings and studies of natural infections in healthcare and community settings are required to better define the effectiveness of face masks and respirators in preventing influenza virus transmission.

9. Evaluating the efficacy of cloth facemasks in reducing particulate matter exposure

Standard N95 mask performance was used as a control to compare the results with cloth masks, and our results suggest that cloth masks are only marginally beneficial in protecting individuals from particles <2.5 μm . Compared with cloth masks, disposable surgical masks are more effective in reducing particulate exposure.

10. Facemasks for the prevention of infection in healthcare and community settings

Further research should focus on examining the efficacy of facemasks against specific infectious threats such as influenza and tuberculosis, assessing the efficacy of cloth masks, investigating common practices such as reuse of masks, assessing compliance, filling in policy gaps, and obtaining cost effectiveness data using clinical efficacy estimates.

11. Effectiveness of N95 respirators versus surgical masks in protecting health care workers from acute respiratory infection: a systematic review and meta-analysis

Results: We identified 6 clinical studies (3 RCTs, 1 cohort study and 2 case-control studies) and 23 surrogate exposure studies. In the meta-analysis of the clinical studies, we found no significant difference between N95 respirators and surgical masks in associated risk of (a) laboratory-confirmed respiratory infection (RCTs: odds ratio [OR] 0.89, 95% confidence interval [CI] 0.64–1.24; cohort study: OR 0.43, 95% CI 0.03–6.41; case-control studies: OR 0.91, 95% CI 0.25–3.36); (b) influenza-like illness (RCTs: OR 0.51, 95% CI 0.19–1.41); or (c) reported workplace absenteeism (RCT: OR 0.92, 95% CI 0.57–1.50). In the surrogate exposure studies, N95 respirators were associated with less filter penetration, less face-seal leakage and less total inward leakage under laboratory experimental conditions, compared with surgical masks.

Interpretation: Although N95 respirators appeared to have a protective advantage over surgical masks in laboratory settings, our meta-analysis showed that there were insufficient data to determine definitively whether N95 respirators are superior to surgical masks in protecting health care workers against transmissible acute respiratory infections in clinical settings.

12. Unmasking the Surgeons: The Evidence Base Behind the Use of Facemasks in Surgery

Examination of the literature revealed much of the published work on the matter to be quite dated and often studies had poorly elucidated methodologies. As a result, we recommend caution in extrapolating their findings to contemporary surgical practice. However, overall there is a lack of substantial evidence to support claims that face masks protect either patient or surgeon from infectious contamination. More rigorous contemporary research is needed to make a definitive comment on the effectiveness of surgical facemasks.

13. Use of surgical face masks to reduce the incidence of the common cold among health care workers in Japan: a randomized controlled trial

Results: Thirty-two health care workers completed the study, resulting in 2464 subject days. There were 2 colds during this time period, 1 in each group. Of the 8 symptoms recorded daily, subjects in the mask group were significantly more likely to experience headache during the study period ($P < .05$). Subjects living with children were more likely to have high cold severity scores over the course of the study.

Conclusion: Face mask use in health care workers has not been demonstrated to provide benefit in terms of cold symptoms or getting colds. A larger study is needed to definitively establish

noninferiority of no mask use.

14. Simple Respiratory Protection—Evaluation of the Filtration Performance of Cloth Masks and Common Fabric Materials Against 20–1000 nm Size Particles

Common fabric materials and cloth masks showed a wide variation in penetration values for polydisperse (40–90%) as well as monodisperse aerosol particles in the 20–1000 nm range (40–97%) at 5.5 cm s⁻¹ face velocity. The penetration levels obtained for fabric materials against both polydisperse and monodisperse aerosols were much higher than the value for the control N95 respirator filter media but were in the range found for some surgical masks in previous studies. Penetrations of monodisperse aerosol particles slightly increased at 16.5 cm s⁻¹ face velocity, while polydisperse aerosols showed no significant effect except one fabric mask with an increase. The penetration values obtained for common fabric materials indicate that only marginal respiratory protection can be expected for submicron particles taking into consideration face seal leakage.

15. Influenza Virus in Human Exhaled Breath: An Observational Study

The data also suggest that influenza virus RNA is contained in fine particles because over 87% of the exhaled particles were under 1 μm and less than 0.1% were larger than 5 μm . This distribution of particle sizes is consistent with previous studies showing that 98% of particles produced during normal breathing are under 1 μm [6]–[8]. Thus, based on the particle size distribution, it is unlikely that the viral RNA detected was carried on large particles. We also note that the Exhalair sampler fitted with a face mask as the patient interface would likely impact most large particles (>20 μm) on the mask or in tubing connecting the mask to the particle counter and filter cassette. Therefore, it is likely that the influenza virus RNA we detected in exhaled breath was contained in exhaled breath particles <5.0 μm in diameter. If influenza virus is carried in the smaller particles and transmission occurs via the airborne route, the use of interventions such as surgical-type masks as personal protective equipment may not prevent transmission. However, larger studies should be conducted to provide baseline data on particle and infectious influenza virus generation, as well as potential changes in virus generation due to use of surgical masks by patients or healthcare professionals.

16. Optical microscopic study of surface morphology and filtering efficiency of face masks

We studied the effect of surface morphology of locally available face masks on their PM filtering efficiency. Filtering efficiency of CM for ambient PM₁₀ was poorer than in SM. The poor efficiency was due to the presence of larger sized pores. Our study also demonstrated that washing and drying cycle deteriorates the filtering efficiency due to change in pore shape and clearance. We also found that stretching of the CM surface alters the pore size and potentially decreases the filtering efficiency. The findings of this study suggest that CM are not effective, and that effectiveness deteriorates if used after washing and drying cycles and if used under stretched condition. (CM = cloth mask, PM = particulate matter, SM = surgical mask).

16. Headaches Associated With Personal Protective Equipment – A Cross-Sectional Study Among Frontline Healthcare Workers During COVID-19 (Journal Headache)

Conclusion: Most healthcare workers develop de novo PPE-associated headaches or exacerbation of their pre-existing headache disorders.

17. The Physiological Impact of Wearing Masks on Medical Staff

Wearing N95 masks results in hypooxygenemia and hypercapnia which reduce working efficiency and the ability to make correct decision. Medical staff are at increased risk of getting ‘Severe acute respiratory syndrome’(SARS), and wearing N95 masks is highly recommended by experts worldwide. However, dizziness, headache, and short of breath are commonly experienced by the medical staff wearing N95 masks. The ability to make correct decision may be hampered, too. The purpose of the study was therefore to evaluate the physiological impact of N95 mask on medical staff.

18. Preliminary Report on Surgical Mask Induced

Deoxygenation During Major Surgery

Results: Our study revealed a decrease in the oxygen saturation of arterial pulsations (SpO₂) and a slight increase in pulse rates compared to preoperative values in all surgeon groups. The decrease was more prominent in the surgeons aged over 35.

Conclusions: Considering our findings, pulse rates of the surgeon's increase and SpO₂ decrease after the first hour. This early change in SpO₂ may be either due to the facial mask or the operational stress. Since a very small decrease in saturation at this level, reflects a large decrease in PaO₂, our findings may have a clinical value for the health workers and the surgeons.

19. The physiological impact of wearing an N95 mask during hemodialysis as a precaution against SARS in patients with end-stage renal disease

Results: Thirty-nine patients (23 men; mean age, 57.2 years) were recruited for participation in the study. Seventy percent of the patients showed a reduction in partial pressure of oxygen (PaO₂), and 19% developed various degrees of hypoxemia. Wearing an N95 mask significantly reduced the PaO₂ level (101.7 +/- 12.6 to 92.7 +/- 15.8 mm Hg, p = 0.006), increased the respiratory rate (16.8 +/- 2.8 to 18.8 +/- 2.7/min, p < 0.001), and increased the occurrence of chest discomfort (3 to 11 patients, p = 0.014) and respiratory distress (1 to 17 patients, p < 0.001). Baseline PaO₂ level was the only significant predictor of the magnitude of PaO₂ reduction (p < 0.001).

Conclusion: Wearing an N95 mask for 4 hours during HD significantly reduced PaO₂ and increased respiratory adverse effects in ESRD patients.

20. Chronic hypoxia-hypercapnia influences cognitive function: a possible new model of cognitive dysfunction in chronic obstructive pulmonary disease

It has been confirmed that chronic hypoxia-hypercapnia contributes a lot to the development in pathophysiology of COPD. Data from some pilot studies indicated that chronic hypoxia-hypercapnia influences cognitive functions both in patients and in animals, which includes some distinctive pattern of cognitive dysfunction in human being or impairment of spatial learning-memory in rat. Therefore, we propose that cognitive impairment is strongly related to combination of chronic hypoxia and hypercapnia, and chronic hypoxia-hypercapnia-induced animal models may mimic the cognitive dysfunction of COPD. Attempts to confirm this hypothesis may lead to new model of cognitive dysfunction in COPD.

21. Effects of wearing N95 and surgical facemasks on heart rate, thermal stress and subjective sensations

Therefore, it can be concluded that N95 and surgical facemasks can induce significantly different temperatures and humidity in the microclimates of facemasks, which have profound influences on heart rate and thermal stress and subjective perception of discomfort

22. History and Value of Face Masks

Conclusion: During the COVID-19 pandemic, the use of face masks seems to be an accepted procedure worldwide although a scientific discussion is going on up to now, which has its roots in the history of medicine and science. Future research on efficiency and efficacy of long-term mask wearing outside of hospital settings is warranted and will allow for insights that are more detailed.

23. The US Surgeon General once warned against wearing face masks for the coronavirus but the CDC now recommends it

"You can increase your risk of getting it by wearing a mask if you are not a health care provider," Adams said. "Folks who don't know how to wear them properly tend to touch their faces a lot and actually can increase the spread of coronavirus," he added.

24. Science Says Healthy People Should Not Wear Masks

25. Oxygen and seizure dynamics: I. Experiments

The mammalian brain is dependent on an adequate and continuous supply of oxygen (*Hochachka and Guppy 1987*). Its necessity stems from a central role to produce adenosine triphosphate (ATP), the primary source of cellular energy required to maintain structural and functional integrity. With minimal O₂ storage ability, a tightly regulated balance between supply and demand is necessary to

maintain proper brain functioning, where too little or too much can cause serious consequences. This low tolerance to changes in oxygen concentration ([O₂]) renders the central nervous system exceedingly vulnerable to its O₂ supply, and when the balance between metabolism and delivery become compromised, so does physiological activity (*Schiff and Somjen 1987*).

26. Policy Brief: The Impact of COVID-19 on children 15 APRIL 2020

Economic hardship experienced by families as a result of the global economic downturn could result in hundreds of thousands of additional child deaths in 2020, reversing the last 2 to 3 years of progress in reducing infant mortality within a single year. And this alarming figure does not even take into account services disrupted due to the crisis – it only reflects the current relationship between economies and mortality, so is likely an under-estimate of the impact. Rising Executive Summary 2 POLICY BRIEF: THE IMPACT OF COVID-19 ON CHILDREN POLICY BRIEF: THE IMPACT OF COVID-19 ON CHILDREN 3 malnutrition is expected as 368.5 million children across 143 countries who normally rely on school meals for a reliable source of daily nutrition must now look to other sources. The risks to child mental health and well being are also considerable. Refugee and internally displaced children as well as those living in detention and situations of active conflict are especially vulnerable.

27. Unemployment Expected to Reach Highest Level Since Great Depression <https://www.wsj.com/articles/unemployment-expected-to-reach-highest-level-since-great-depression-11594112400>

Unemployment rates in the world's advanced economies will end the year higher than at any time since the Great Depression and not return to their pre-pandemic levels until 2022 at the earliest, the Organization for Economic and Cooperation and Development said Tuesday.

28. America's Stunning Unemployment Surge During Coronavirus, Visualized

The ranks of the unemployed are swelling in ways not seen before since the coronavirus crisis. Another 1.5 million Americans filed *jobless claims* last week, bringing the total to 45.4 million since the March 14. Numbers began surging as *state-ordered coronavirus lockdowns* brought huge swaths of the economy to a halt.

29. Lifting lockdowns: the when, why and how

They are blunt instruments that can cause immense harm. Time to be more discriminating

Since china locked down the city of Wuhan on January 23rd, over a third of the world's population has at one time or another been shut away at home. It is hard to think of any policy ever having been imposed so widely with such little preparation or debate. But then closing down society was not a thought-out response, so much as a desperate measure for a desperate time. It has slowed the pandemic, but at a terrible price. As they seek to put lockdowns behind them, governments are not thinking hard enough about the costs and benefits of what comes next.

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30. Why Sweden Succeeded in "Flattening the Curve" and New York Failed

While Sweden's death toll is indeed substantially higher than neighbors such as Finland, Norway, and Denmark, it's also much lower than several other European neighbors such as Belgium, the United Kingdom, Italy, and Spain. Indeed, a simple comparison between Belgium and Sweden—nations with rather similar populations—reveals that Belgium suffered far worse than Sweden from the coronavirus.

31. **Confined or Enclosed Spaces and Other Dangerous Atmospheres » Oxygen-Deficient or Oxygen-Enriched Atmospheres**

Oxygen-deficient atmospheres are the leading cause of confined space fatalities in the shipyard. While normal atmosphere contains between 20.8 and 21 percent oxygen, OSHA defines as oxygen deficient any atmosphere that contains less than 19.5 percent oxygen, and as oxygen enriched, any atmosphere that contains more than 22 percent.

Oxygen-deficient atmospheres may be created when oxygen is displaced by inerting gases, such as carbon dioxide, nitrogen, argon, or the ship's inert gas system or firefighting system. Oxygen can also be consumed by rusting metal, ripening fruits, drying paint, or coatings, combustion, or bacterial activities.

Oxygen-enriched atmospheres may be produced by certain chemical reactions, but in a shipyard they are typically caused by leaking oxygen hoses and torches. Oxygen enriched atmospheres present a significant fire and explosion risk.

32. **Confined Spaces: Is 19.5 Percent Oxygen Really Safe?**

OSHA's confined space regulation presumes that readers have substantial technical knowledge in areas such as, but not limited to, toxicology, fall protection, chemical protective clothing, machine guarding, fire protection, industrial hygiene instrumentation, electrical safety, lockout/tagout, respiratory protection, ventilation and adult learning methods.

In this light, there is a presumption that readers also understand the technical basis for many of the standard's requirements, including the 19.5 percent oxygen value. My experience, drawn from thousands of people who have attended dozens of my courses, suggests that most folks don't have a clue as to why 19.5 percent is significant. While this oxygen level may be acceptable in some situations, relying on it without understanding its basis can lead to fatal consequences.

33. **Carbon Dioxide Health Hazard Information Sheet**

Carbon dioxide (CO₂) is a colorless, odorless, non-flammable gas that naturally occurs in the atmosphere. CO₂ is produced by body metabolism and is a normal component of exhaled breath. It also results from the burning of fossil fuels and natural sources such as volcanic eruptions. CO₂ levels in outdoor air typically range from 300 to 400 ppm (0.03% to 0.04%) but can be as high as 600-900 ppm in metropolitan areas. Although it is most commonly present as a gas, CO₂ can also exist in a solid (dry ice) form.

34. **Exposure Limits for Carbon Dioxide Gas CO₂**

35. **High CO₂ Levels Inside & Out: Double Whammy?**

Student volunteers enlisted by the team engaged in the game-like simulation, working at desks in a chamber sealed tightly with a door like that on a refrigerator. Over three short trials, they breathed air containing 600, 1,000 and 2,500 ppm of carbon dioxide. The results astounded Mendell. Indoor air experts generally don't consider carbon dioxide to be a health problem unless breathed at levels far higher, at which point it causes respiration changes. "I didn't know what to think," he says. There were "moderate" declines in decision making performance at 1,000 ppm compared to 600 ppm. At 2,500 ppm, the drop in mental capacity was "astonishingly large."

36. **What to know about respiratory acidosis**

The symptoms of respiratory acidosis are generally the effects of raised CO₂. In chronic respiratory acidosis, these symptoms are less noticeable than in acute respiratory acidosis, because compensating responses in the body tend to keep blood pH near normal. The acidifying effect of raised CO₂ in chronic respiratory acidosis might reduce in the blood. However, the compensatory actions of the kidneys are not as effective for acid levels in the brain, leading to symptoms that affect thought, sleep, and memory. These symptoms can include:

- **headache** memory loss sleep disturbance **anxiety** and personality changes

In acute respiratory acidosis, or if chronic respiratory acidosis gets progressively worse over time, the effects of raised CO₂ in the brain become more severe. Symptoms can include:

- Confusion drowsiness stupor muscle jerking

In acute respiratory acidosis and deteriorating cases of chronic

respiratory acidosis, blood rapidly becomes more acidic and dangerous. Effects of a drastically lower pH in the blood include:

- - reduced heart muscle function disturbances in heart rhythm, producing **arrhythmias**
 - a drop in **blood pressure**

37. Hunger could be more deadly than coronavirus in poorer countries Some 1.6 billion of the world's 2 billion informal workers, or nearly half the global workforce, have already **lost their jobs**, according to the International Labor Organization. They include gig workers in Western economies, but the vast majority are in developing countries, where most employment is informal and families live hand-to-mouth, relying on a daily wage if they are to eat at the end of the day. The loss of income for people already living perilously close to the margins of survival will propel up to 50 million people into abject poverty this year, reversing three decades of gains in the war against deprivation, according to World Bank estimates. A **study by the United Nations** said 580 million could become impoverished, meaning they lack the basic means to survive. And as incomes are lost, a "**hunger pandemic**" could eclipse the **coronavirus**, the World Food Program has warned; 130 million people are expected to join the ranks of the 135 million who were expected to suffer from acute hunger this year, the agency says, bringing to 265 million the number of those at risk of starvation.

38. **COVID-19 and the world of work. Third edition Updated estimates and analysis**

Among the most vulnerable in the labor market, almost 1.6 billion informal economy workers are significantly impacted by lockdown measures and/or working in the hardest-hit sectors. X The first month of crisis is estimated to result in a decline in earnings of informal workers of 60 per cent globally. By region, the expected decline is largest in Africa and Latin America, ILO Monitor: COVID-19 and the world of work. Third edition 2 at 81 per cent. Regarding income groups, it is 82 per cent in lower-middle and low-income countries, 28 per cent in upper-middle-income countries, and 76 per cent in high-income countries

39. Bluestone, Barry. Bennett Harrison. Lawrence Baker. *Corporate Flight: The Causes and Consequences of Economic Dislocation*. Progressive Alliance, 1981. Print.