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# Do Masks and Respirators Prevent Viral Respiratory Illnesses? An Interview with Professor Denis Rancourt

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A health professional told me back in March that face masks were ineffective but that respirators (the N95) were. Because of the source, I thought there must be validity to this. However, it seemed counterintuitive.

I reasoned that there would be differentials between using any type of mask versus no mask because no mask usage would allow aerosols to penetrate unabated, whereas a mask should capture much of the aerosol and reduce risk of spread to others and presumably should also function to mitigate breathing in viral-laden droplets. Because of the greater density of respirator material, the prophylactic would be reasoned to be greater.

However, what I had not considered was how extremely small the virion was in relation to the porosity of the material in the masks and respirators. I also had not looked at the scientific literature on the subject…until now.

Denis Rancourt, an **eminent physics professor**, former anarchist, and author, examined the scientific evidence for using face masks and respirators as preventative of contracting respiratory influenza-like disease, or respiratory illnesses believed to be transmitted by minuscule droplets.

What I have noticed is that Rancourt is wedded to the evidence, and he is unafraid to make known his conclusion even though it goes against the mainstream consensus. His article, **"Masks Don't Work: A review of science relevant to COVID-19 social policy,"** is Rancourt at his iconoclastic finest. He concludes,

*No RCT [randomized control trial] study with verified outcome shows a benefit for HCW [health care workers] or community members in households to wearing a mask or respirator. There is no such study. There are no exceptions.*

The virions are super tiny, tinier than the pores in the respirators. Rancourt writes,

*if anything gets through (and it always does, irrespective of the mask), then you are going to be infected. Masks cannot possibly work. It is not surprising, therefore, that no bias-free study has ever found a benefit from wearing a mask or respirator in this application.*

Rancourt's article is fascinating and anyone curious abut the efficacy of masks should read it.

**Denis Rancourt:** In my article **"Masks Don't Work: A review of science relevant to COVID-19 social policy"**, I show that there have been many randomized controlled trials (RCTs) and meta-analyses of RCTs, which were designed to detect any benefit from wearing a mask, in terms of reducing the risk of being infected by a viral respiratory disease.

In the many studies, in which the known bias of self-reporting is eliminated by using laboratory-confirmed infection detection, no statistically meaningful advantage is ever found, in either health-care or community settings, with either surgical masks or N95 respirators. No study, and there have been many, has been able to establish any advantage of wearing a mask or respirator, with viral respiratory diseases.

This means that, even in controlled professional health-care settings, any benefit is too small to be detected by science, and that other factors must be overwhelmingly more important.

Regarding all viral respiratory diseases — which are both known to be transmitted by small aerosol particles (i.e., "droplets" of less than a few microns in diameter) and known to be highly infectious in terms of the so-called minimum-infective-dose (i.e., the number of virions that will likely be sufficient to cause illness or detectable infection) — in plain language, this means "masks don't work". (A "virion" is a single virus unit, the RNA and its shell.)

Therefore, any societal debate about the virtue or responsibility of wearing a mask to reduce the risk of infection, whether it involves Pence or anyone else, is occurring in a science vacuum. It is a political and psychological debate, not one that is science-based.

Likewise, no unbiased RCT has ever shown any advantage for a confirmed-infected person to be less likely to transmit a viral-respiratory-disease infection to susceptible (i.e., not immune) persons if the infected person wears a mask.

Studies that show that cough and sneeze droplets are physically intercepted by masks are irrelevant in this regard, because they do not represent the reality of actual person to person transmission, nor do they measure actual transmission.

In my article, which has been read more than 70 K times on Research Gate, I also review what is known about the physics and biology of transmission of this class of diseases. I argue that, on this basis, one should not expect masks to work. Likewise, if masks cannot stop inward transmission (into the lung), then, by the same physics, they cannot stop outward transmission.

However, it is important to distinguish a RCT that evaluates risk of actual person-to-person transmission of confirmed infection, as one class of study, and the necessarily simplistic arguments based on hypothetical scenarios using physics and biology. And the "masks intercept droplets" studies are useless in the relevant context. Masks intended to stop a surgeon's spit from impacting an incision area are a completely different question.

Coming back to Pence, a face mask is a powerful psychological symbol of submission (to both the invisible disease and any State policy directives), such that it is understandable that many political leaders would not want to wear masks in front of media cameras.

**KP:** *You write that there has been no randomized controlled trial that shows a benefit for anyone (doctors, nurses, regular folks, et al.) wearing a mask or respirator. The reason proffered is because the mask/respirator material is too porous for virion particles.*

*The N95 respirator blocks at least 95 percent of very small (0.3 μm) test particles, but the virion particles (from 0.06 μm to 0.14 μm) (See Na Zhu et al.,* ***"A Novel Coronavirus from Patients with Pneumonia in China,"*** *20 February 2020, NEJM, 382:727-733.) can pass through.*

*I am trying to visualize this on a larger scale. If I kick a soccer ball at a chain-link fence, all soccer balls will be blocked. But if I throw a handful of sand at the chain-link fence, almost all grains of sand will pass through. Is this an apt analogy for the mask and the virion?*

**DR:** The many RCTs show no statistically valid benefit from wearing a mask or N95 respirator, and show no differences in RCT comparisons between surgical masks and N95 respirators, regarding risk of infection from this class of diseases. That is a separate question from any hypothetical mechanistic explanation as to why any benefit from wearing a mask would be so small as to be undetected.

In other words, that masks don't work must be discerned from the question of why masks don't work. The former is a scientific outcome of the studies, irrespective of what we believe or infer about the latter.

Nonetheless, regarding a discussion of the hypothetical mechanisms, one can say the following things:

- There can be little doubt that the overwhelmingly dominant path of infection is via small aerosol particles of less than approximately 2 microns in diameter.
- Such a particle can contain many and up to hundreds of virions.
- One virion is approximately 0.1 microns in size.
- Such small aerosol particles stay suspended in air in-effect indefinitely, as part of the fluid air; as would virions themselves, subject to chemical adsorption and aggregation.
- Regarding the masks and respirators, pore-size of the filtering material is not the relevant bottleneck in practice.
- The seal to the face is never perfect, and the mask is regularly moved by pressure differences, by the user for reasons of discomfort, and by normal facial and operational movements.
- Inhaled and exhaled air will flow mostly through the paths of least resistance (or fluid impedance): through the breaks in the seal, through the sides of a mask, and though the larger pores or stretches or micro-tears in the filtering material.
- The minimum-infective-dose is expected to be less than a single small aerosol particle, and can be as little as a single undamaged virion.

Thus, it is not difficult to conclude that mask and respirators should not work, even leaving out the complex particle-mask-material interactions that can occur, mask aging and wear considerations, and so on.

**KP:** *You cite possible harm from dictates requiring the wearing of masks. Could you elaborate?*

**DR:** My answer is in two parts. First, there is potential medical harm to the individual from the wearing of a mask. Second, there is societal and psychological harm from being forced to wear a mask in public.

In one large RCT in Japanese health centers, health-care workers who wore respirators suffered significantly more headaches than the cohort of workers who did not wear respirators. This was a statistically significant outcome. Furthermore, professional health-care workers self-report significant discomfort from wearing respirators, and therefore often adjust them or remove them, contrary to protocol. If healthcare workers, in circumstances in which there is no scientific basis for wearing respirators, suffer headaches and discomfort, then this can only negatively impact the intended health care.

More broadly, the potential health hazards of population-scale extended personal mask use have not been studied. Potential health hazards include such factors as:

- constriction of breathing itself, including both flow restriction, and recycling of $CO_2$ and vapour-laden breath
- breathing-in the particles, fibres and chemicals from the mask-material itself, both in a new mask and for aging, used, washed, and sun-bleached masks
- retention of particulates and adsorbed substances in proximity to the face, which would normally be expelled in the exhaled breath
- collection, concentration and retention of particulates and adsorbed substances from the environment onto the mask, in proximity to the face
- reactions of particulates and adsorbed substances on the mask, including shedding of virions or virion-carrying nano-particles from larger mask-captured droplets

Such factors have not been studied, yet population-scale policies of extended mask-wearing are being implemented.

From a societal perspective, what are the consequences of government coercion ("education" and enforcement) to wear masks in public, given that there is no scientific basis for any benefit from mask wearing, in terms of reducing the risk of being infected by a viral respiratory disease?

How is this not an arbitrary application of power, which directly infringes or denies personal freedom? What are the long-term consequences of habituation to arbitrarily applied violations of personal freedom?

The recent scientific study of Hickey and Davidsen (2019) (**"Self-organization and time-stability of social hierarchies"**) in my view provides a theoretical foundation that such habituation to arbitrarily applied power is part of a progressive degradation towards an extreme totalitarian state, depending on the degree of authoritarianism (whether contestation is effective) and the degree of violence (magnitude of the penalty for disobeying).

We should rollback arbitrary State powers. I would say: If an individual evaluates or believes that a mask constitutes health or privacy or religious protection in public, then the individual should be free to wear a mask, but how can forcing all individuals to wear masks be justified, beyond government

pronouncements? Security cannot be based on arbitrarily forced behaviour of everyone. This is the classic recipe for totalitarian rule.

In fact, the present case of pandemic mask laws or policies is a case where a health pretext and stoked fear are being exploited by governments, in a globalized corporate environment in which there are billions to be made from vaccines and other treatments, and where legal liabilities for the treatments have largely been socialized. Regular vaccination, for diseases that have always been kept in check by the human immune system, are a hard method of creating dependence on the State, involving seasonal violations of bodily integrity, which could become forced.

**KP:** *You point a finger at governments, monopoly media, and institutional propagandists for deciding "to operate in a science vacuum, or select only incomplete science that serves their interests." Which institutional propagandists do you refer to?*

**DR:** The main institutional propagandists here are the arms and legs of the pharma-medical complex, from the WHO and CDC, through the medical schools, to every hospital, research laboratory, clinic, community health center, and doctor's office. The medical establishment is a major network of the high-priests that structure and control modern society. In their book, "health" is a dependence on the health system, not healthy living conditions, contrary to all the science regarding the determinants of public health. I mean, Pharma and medical errors are the third leading cause of death in the Western world, after heart disease and cancer, and that is not a "pandemic"? It is not even on the radar, except in specialized conferences and journals.

As another example of institutional and professional alignment with top-down directives and recommendations, John Ioannidis showed in 2005 (**"Why Most Published Research Findings Are False"**) that most of the scientific research that finds marginal benefits for expensive and dangerous treatments is incorrect.

In the case of the on-going COVID-19 saga, several top researchers and experts have broken rank, and these professionals have been profiled in a series of three articles in Off-Guardian, for example. Generally,

these contrarians who insist on practicing science, have been avoided by the mainstream media, and have had to be featured in the alternative media, and on YouTube. John Ioannidis and Knut Wittkowski are just two of the names that stand out for me.

**KP:** *Given that the conclusion of your review of meta-analyses is accurate, why would so many health care professionals, who presumably have been trained in evidence-based practice, disregard the absence of evidence for the efficacy of masks and respirators?*

**DR:** It is a myth that medicine is an evidence-based practice. This myth is propagated by the medical establishment. It has never been the case in the history of medicine, and it is not the case today. In practice, medicine is whatever the profession can get away with and profit from.

From a political perspective, the public-relations statement about being "science-based" is a propagandist mantra applied in training those initiated into the profession. It is designed to deliver legitimacy in the public's mind and among other professions, and means that the profession will attack, destroy or capture competitors that are not in the profession, such as homeopaths, nutritionists, acupuncturists, chiropractors, psychologists, councillors, life coaches, etc.

There is a large litigation record of this reality. If you litigate against or attempt to discipline an MD or a medical specialist for a practice that is not science based, then you find that the in-court or administrative-tribunal argument will never be about the science itself or whether a scientific basis exists.

None of the actual medical researchers will be called as expert witnesses, and they would be seen as irrelevant and thus inadmissible. Instead, a complete defence will be based on whether or not the hired expert witnesses for the defendant will be of the opinion that the impugned practice is within the spectrum of actual practice in the field, irrespective of whether there is a scientific basis.

In order to win, you will need to prove that the impugned act or practice is egregiously contrary to what is generally done or officially recommended by a certifying body; again, irrespective of any scientific-basis consideration. "Scientific basis" is given lip service, nothing more.

For example, when a drug or procedure is convincingly and unavoidably proven to be unacceptably harmful after being put into practice, and this harm is reported in the mainstream media, and there is organized public outcry, then the practice is changed but no practitioners are ever found to have been at fault. This means that the practitioners are not responsible to evaluate and establish a scientific basis for their prescriptions and treatments. They are only bound to do what one does in the profession.

If mechanical ventilators are the treatment for critical COVID-19 patients, then we kill those patients with those mechanical ventilators until the proverbial shit hits the fan (**"New study finds nearly all coronavirus patients put on ventilators died,"** The Hill, 23 April 2020).

The history, to this day, of the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders is exhibit-one regarding the extent to which medical practice is distinct from any scientific basis. The said Manual is the pseudo-scientific organizational pretext for a large pharmaceutical project of managing the mind, which relies on heavy-handed "precautionary" prescriptions, made by any army of medical practitioners. For example, see Gary Greenberg (2013) (The Book of WOE: The DSM and the Unmaking of Psychiatry).

I could go on for days. Coming back to the masks, medical commentators, like politicians, will say whatever seems advantageous at the time, in terms of propping up their own legitimacy and popularity, and in terms of avoiding public-perception liability.

If it is politically risky to recommend masks, then masks are out, and there is no evidence that they work. If it becomes risky to go against masks, then masks are in, and we must all do our part to protect those who are most vulnerable, etc.

**KP:** *Since there is evidence that viruses flourish during dry periods, might the use of a humidifier be a recommended preventative measure during seasons when humidity is low?*

**DR:** There is conclusive evidence that viral respiratory diseases and flu-like diseases predominantly propagate via small aerosol particles, which are stabilized in dry air, and that this is why these diseases are seasonal in mid-latitude regions.

The reproduction number, R0, can vary four-fold during a season, in accordance with absolute humidity of the atmosphere. This oft-confirmed discovery was initiated with the **landmark work of Shaman et al. (2010)**.

Closed buildings such as hospitals, residences for the elderly, and day-care centers are proven to have large densities of virion-laden aerosol particles suspended in the air, in the dry season. In addition, air-flow has been shown to play a role regarding transmission, in restaurants and airplanes.

Therefore, it is not unreasonable to examine the use of controlled absolute humidity, and air-flow management in critical facilities housing many persons at risk of severe complications if infected. A high humidity would in-principle draw-out virtually all the aerosol particles, by condensation, particle growth, and gravitational removal.

In principle, what was an environment of high-density of aerosol particles, would become an environment of low-density of aerosol particles. Only a true RCT comparative study, with laboratory-confirmed infection determinations, could demonstrate whether such measures can be effective.

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