

## MEDICINE AND SOCIETY

## The surgical mask is a bad fit for risk reduction

When I walk past my waiting room, I see people wearing surgical masks. This scene becomes surreal when my patients are watching pandemic disaster movies on the wall-mounted television screen, movies that feature frightened crowds who wear similar masks in the vain hope of protection. As my eyes move from mask-wearing patients to screaming on-screen characters and back, I wonder: What is happening here?

As represented by our cinema and other media, Western society expects too much of masks. In the public's mind, the still-legitimate use of masks for source control has gone off-label; masks are thought to prevent infection. From here, another problem arises: because surgical masks are thought to protect against infection in the community setting, people wearing masks for legitimate purposes (those who have a cough in a hospital, say) form part of the larger misperception and act to reinforce it. Even this proper use of surgical masks is incorporated into a larger improper use in the era of pandemic fear, especially in Asia, where such fear is high.<sup>1</sup> The widespread misconception about the use of surgical masks — that wearing a mask protects against the transmission of virus — is a problem of the kind theorized by German sociologist Ulrich Beck.

The surgical mask communicates *risk*. For most, risk is perceived as the potential loss of something of value, but there is another side to risk, memorably formulated by Beck in his *Risk Society*.<sup>2</sup> Beck states that risk society is “a systematic way of dealing with hazards and insecurities induced and introduced by modernisation itself.”<sup>2</sup> For Beck, risk occurs not only in the form of threat and possible loss, but also in society's organized management and response to these risks,



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which create a forwarding of present risk into the future. Furthermore, Beck writes of the “symptoms and symbols of risks” that combine in populations to create a “cosmetics of risk.” He suggests that people living in the present moment conceive of risk in terms of the physical tools used to mitigate risk while still “maintaining the source of the filth.” Beck critiques the cosmetics of risk as measures that are not preventive but rather act as a “symbolic industry and policy of eliminating the increase in risks.” I propose that the surgical mask is a symbol that protects from the perception of risk by offering nonprotection to the public while causing behaviours that project risk into the future.

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.<sup>3,4</sup> The tech-

nology 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.<sup>3</sup> 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.”<sup>5</sup> A number of studies have shown the inefficacy of the surgical mask in household settings to prevent transmission of the influenza virus,<sup>6,7</sup> but Smith and colleagues,<sup>8</sup> in a recently published meta-analysis, concluded that the surgical mask was noninferior to the N95 mask in terms of influenza transmission rates among health care workers. So ... health care workers *should* wear masks to prevent transmission for reasons other than

source control, but the public *shouldn't*? This conflict creates an optics problem. When risk is perceived, readiness and protection for all those at risk becomes a goal, which thereby creates a constant state of preparedness in the universally vulnerable. Remember the sinister-looking beaked plague mask from the Middle Ages that instilled fear in onlookers? Wearing a mask reinforces fear. The cosmesis provided by the mask creates more risk of an affective kind.

An affective problem occurs in the present through anticipation of an unknowable, but somehow threatening, future. Beck suggests that the cosmetic symbols are themselves manifestations of risk that bear their own risks. The same mask donned in the present for the common cold at a local clinic forms part of the cosmetic framework of future pandemic risk management. The future pandemic is perceived in the present, but its materiality is not just in our minds, it is literally substantiated by the mask. Thus we have the means for a self-perpetuating system: the mask symbolically protects against infection just as it represents fear of that infection.

This fear surfaces in public policy. In an annex to the Canadian pandemic influenza preparedness plan covering public health measures,<sup>9</sup> the Public Health Agency of Canada (PHAC) does not recommend the use of masks by well individuals in pandemic situations, acknowledging that the mask has not been shown to be effective in such circumstances. However, this stance is complicated by the PHAC's supporting reasons, which relate to problems of supply, cost, distribution and feasibility: panic might occur if the availability of masks were limited; public purchase of masks might limit the availability of masks in health care settings where

they are required; and not all members of the public can afford to purchase masks — if masks are recommended by public health authorities, there could be an expectation that they will be publicly funded and made available by public health programs.

The dimension of supply constitutes tacit acknowledgement that people expect masks to be available in pandemic situations. And they do, if the evidence of popular cinema can be believed. Western society has already emerged into a present reality in which citizens are conditioned to want masks on the basis of media representations of pandemics. The same annex on public health measures refers to the “false sense of security” that a mask can psychologically provide,<sup>9</sup> but the converse is the real risk posed to a government unable to mollify its population.

The PHAC has warned that “Just as we do not know when the next pandemic will strike, we cannot predict how severe it will be.”<sup>10</sup> The pandemic preparedness plan operates in the present, however, with much evidence of the Canadian government's ongoing preparation, including the release of an updated version of the pandemic influenza preparedness plan in December 2015. Such a future-oriented plan mines anxiety in the present.

We act out our collective anxiety about pandemics by wearing masks even when there isn't a pandemic,<sup>1</sup> but wearing masks reinforces the idea of a possible future of pandemic. The problem of affect in political terms is a contagious one: fear spreads among the public, leading to intensification of risk management — the classic example being 9/11 and the war on terrorism. Fear of infective risk spreading communicably becomes an ironic pun. Pandemics occurred in 1918, 1957,

1968, 2003 and 2009. Thus, the conversation changes from *if* the next pandemic will occur to *when* the next pandemic will occur. Because we are currently “between pandemics,” our existence is book-ended by the realized threats of the past and the reasonable threats of the future — to our detriment, with this detriment masked by the surgical mask itself.

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#### References

1. Burgess A, Horii M. Risk, ritual and health responsibility: Japan's 'safety blanket' of surgical face mask-wearing. *Sociol Health Illn* 2012;34:1184-98.
2. Beck U. *Risk society: towards a new modernity*. London: Sage Publications; 1992.
3. Belkin NL. The evolution of the surgical mask: filtering efficiency versus effectiveness. *Infect Control Hosp Epidemiol* 1997;18:49-57.
4. Spooner JL. History of surgical face masks: the myths, the masks, and the men and women behind them. *AORN J* 1967;5:76-80.
5. Larson EL, Liverman CT, editors. *Preventing transmission of pandemic influenza and other viral respiratory diseases: personal protective equipment for healthcare workers: update 2010*. Washington: The National Academies Press; 2010.
6. MacIntyre CR, Cauchemez S, Dwyer DE, et al. Face mask use and control of respiratory virus transmission in households. *Emerg Infect Dis* 2009;15:233-41.
7. Cowling BJ, Chan KH, Fang VJ, et al. Facemasks and hand hygiene to prevent influenza transmission in households: a cluster randomized trial. *Ann Intern Med* 2009;151:437-46.
8. Smith JD, MacDougall CC, Johnstone J, et al. Effectiveness of N95 respirators versus surgical masks in protecting health care workers from acute respiratory infection: a systematic review and meta-analysis. *CMAJ* 2016 Mar. 7 [Epub ahead of print].
9. Annex M: Public health measures. In: *Canadian pandemic influenza preparedness: planning guidance for the health sector*. Ottawa: Public Health Agency of Canada; 2006 [modified 2016 Feb. 12]. Available: [www.phac-aspc.gc.ca/cpip-pclcpi/annex-m-eng.php](http://www.phac-aspc.gc.ca/cpip-pclcpi/annex-m-eng.php) (accessed 2016 Feb. 22).
10. Frequently asked questions — pandemic influenza preparedness. Ottawa: Public Health Agency of Canada; 2012. Available: [www.phac-aspc.gc.ca/influenza/pp-faq-eng.php](http://www.phac-aspc.gc.ca/influenza/pp-faq-eng.php) (accessed 2016 Feb. 22).

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