Editorial

Putting the puzzle pieces together: the dynamic landscape of influenza vaccine and policy

In this supplement, interested readers will benefit from expert reviews on topics such as new influenza vaccine development, new methods of vaccine delivery and administration, US and European influenza vaccine coverage rates, and lessons learned from the 2009–2010 influenza pandemic and the utilization of pandemic and seasonal vaccines. Each of these articles has been written by experts in the field and collectively provide an up-to-date, albeit brief, review of the major areas of concern in the field of influenza vaccines.

A consistent message in these reviews is that influenza infection remains underappreciated as a pathogen, and therefore influenza vaccine is vastly underutilized. This is true across all nations and cultures, without exception. It remains remarkable that despite the incredible yearly toll that influenza takes in terms of worldwide morbidity and mortality, the world still treats it as a benign illness. Were I to report a new infectious agent, call it “virus X”, that took 500,000 lives annually, and cost billions in direct and indirect dollars, and resulted in untold human misery, I believe the race would be on to quickly find a vaccine. Governments would devote hundreds of millions of dollars in research funding, public health authorities would be clamouring for preventive measures, and a panicked public would readily utilize whatever tools and vaccines were available. Despite this, across all cultures I am aware of, influenza is treated more with indifference than with importance. Even the modern-day diversity of influenza vaccine choices, and increasing worldwide availability of such vaccines, has not appeared to substantially improve immunization coverage rates. This may not be surprising in less developed economies, but it is an imponderable truth in economically prosperous nations. Even the 2009–2010 influenza pandemic was characterized more often by prodding governments and public health authorities to act and develop preparedness plans (still many nations failed to do so), than by well-orchestrated and orderly unfolding of explicit and well-designed evidence-based plans. A critical question for both current and future generations is, why? Will it take another 1918 to shock us out of our global generalized complacency?

I have previously touched on the answer to this question by invoking two mechanisms that I believe greatly impact thinking individually and collectively about influenza – denialism and innumeracy. Two recent books have been devoted to these respective topics, and are worthy of reading and considering in relation to influenza vaccine use and policies [1,2]. Denialism is characterized by conscious disbelief of facts. A turning away from unpleasant, but persistent, facts. By contrast, innumeracy has more of an unconscious bias to it. It is defined as the “mathematical equivalent of illiteracy”. Innumerates are simply unable to grasp or manipulate numbers, probabilities, and risks; and hence fail to act on them. Numerical concepts literally mean nothing conceptually or in reality to individuals wired in this manner. Regardless of educational level, denialism and innumeracy are characteristic, I believe, of the majority, rather than minority of individuals – including healthcare workers and scientists. That, at least, is my working hypothesis, and I believe that the facts to date support such a theory. How else can the worldwide abysmally low influenza vaccine coverage rates in the face of the yearly morbidity,

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mortality, and economic costs attendant to this disease be explained? The discrepancy between disease outcomes, on the one hand, and the ability to prevent disease, on the other, simply are irreconcilable.

It is hoped that this supplement will provide important information that collectively overcomes both denialism and innumeracy, and allows progress in the form of improved vaccine coverage rates to be made. A big step in this direction occurred in the USA in February 2010. The Advisory Committee on Immunization Practices, unanimously passed a recommendation I first introduced years earlier, stating that influenza immunization is recommended for everyone aged 6 months and older [3].

After the 1918 pandemic, H.L. Menken wrote this in 1956: “The epidemic is seldom mentioned, and most Americans have apparently forgotten it. This is not surprising. The human mind always tries to expunge the intolerable from memory, just as it tries to conceal it while current.” Whether Menken was commenting on denialism or another psychological defence mechanism is unclear, but what is clear, is that new technology alone will not overcome the problem of low vaccine coverage rates. Other pieces of the puzzle remain to be solved. One such piece is the need for increased collaborative research interactions between vaccinologists and social scientists (sociologists, psychologists, and cultural anthropologists) in order to better understand human behaviour in regard to influenza vaccine decision-making at the individual and societal levels, and to use this information to design programs and policies that increase coverage rates at the population level across nations and cultures.

This supplement provides the first piece of the puzzle – information about where we are currently in regard to vaccine use, and where the technology is heading. The second piece remains to be done. The facts are simple – influenza vaccines are safe and effective – though grossly underutilized, as well documented in Dr. Monto’s review. Another review in this supplement discusses the effect of the recent pandemic on utilization of both pandemic and seasonal influenza vaccines across cultures. Importantly, there is a significant connection between the likelihood of receiving pandemic vaccine and prior years’ receipt of seasonal vaccine. Drs. Falsey and Monto provide reviews of new influenza vaccine technology and methods of administration that might allow new vaccines to be developed and new methods of vaccine delivery that could be quick, easy, inexpensive, and painless. Such technology and the use of newer adjuvants could also provide protection in currently hard-to-protect persons, such as infants, immunosuppressed persons, and the rapidly expanding bubble of immunosenescent persons.

We have much to look forward to in the coming years – new vaccines, new adjuvants, new methods of vaccine delivery – but little of this will substantially reduce the yearly death and disease toll from influenza until methods to increase vaccine coverage are improved. For this, we need research focused on acquiring answers to questions about individual and collective decision-making in regard to vaccine uptake. Wisdom resides in that nexus – advanced vaccine technology and advanced paradigms of decision-making and influence – before we can solve the dilemma of influenza.

References