Population Mobility, Migration Infectious Disease Outcomes*

The concept of the global village has been appreciated since the classic reference in McLuhan's Understanding *Media: The Extensions of Man* in 1964. Writing of the evolution of communication technology he noted at that time "...since the inception of the telegraph and radio, the globe has contracted, spatially, into a single large village. "

Approximately a decade after McLuhan's book the impact of similar processes of global contraction began to significantly affect human migration and population mobility. Previously existing patterns of movement and immigration evolved in response to new and more complex social, political and economic stimuli. Traditional patterns of immigration which in the context of organized European migration to the Americas and Australia shifted dramatically following the de-colonialisation and again following the collapse of the former Soviet Union. Over the last three decades of the last century, immigration and the flow of other mobile populations have contributed to more and more ethnic and culturally diverse migrant communities. Many of these temporary and permanent migrants now arrived from developing and underdeveloped nations many of which were located in tropical, sub-tropical environments.

This evolving expansion and diversity of population flows has truly created a global village where individuals and groups easily travel between what were diverse and often isolated environments. The sharing of these diverse environments has implications and impacts that affect many aspects of society including health. As the world effectively shrinks in terms of physical distance and isolation, we continually move towards a globalized community where all health risks and benefits are to a certain degree shared.

This concept while simple, is important today and will be increasingly important over the foreseeable future. Its importance lies in the fact that in an integrated and globalized world, health risks present at one location are shared, through travel, with a distant location. This would be a self-evident and trivial observation if the world was a place of equality in health determinants and equity in health promotion and protection services. However that this not the case and disparities in health care and infectious disease epidemiology continue to exist and several important situations are actually increasing. We live on a planet marked by great disparities in health, well being and the distribution of health care services and the effect of globalization often brings those disparities into contact.

Ever increasing volumes of migration and rapidity of population mobility, that takes place against a background of sustained and in some cases growing disparity in prevalence and health outcomes, will increasingly challenge aspects of existing public health control systems. Differences in infectious disease risk affect, through population mobility the public health and infectious disease management systems of migrant receiving nations. Those resulting challenges have implications that are not simply limited to migration receiving nations. Integrated social, political , travel, commercial and labour systems reflect those challenges onto the regional and international levels where collaborative

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efforts are often required to deal with mobile infectious disease risks. As a consequence, through the process of population mobility and migration, the infectious disease threats of a single region can become international phenomena.

It can be suggested that several of these issues are common and solutions lend themselves to a similarity of basic approach. This is true, but global diversity extends beyond epidemiology and disease prevalence and extends into language, culture, religion, and other social constructs. This is another important factor in relation to population mobility because it is also well appreciated that medicine and health care is more than the simple delivery of therapeutic interventions, medications or procedures. The effective provision of health care is facilitated by the understanding and appreciation of all aspects of the patients' life. In a diverse world, those factors can vary dramatically creating additional challenges for the global control of disease and the effectiveness of medical and public health practice.

Mobility as bridge between Disease Diversity and Public Health Control Systems

What immigration and population mobility bring to the world of health are functional bridges between health environments. In the practice of quarantine and migration health it has been traditional to consider these bridges in terms of the differences in disease epidemiology between origin and destination. Migrants who come from areas where diseases are more or less common than they are at their new destination come to represent populations with higher or lower rates of these diseases when compared to the host population.

Several historic and existing disease control activities in this regard have been directed towards infectious, communicable diseases, most often at ports of entry or the frontier. As a consequence, public health control efforts are often focused on the arrival or border crossing segment of the migratory journey. However, the majority of the frontier-based public health control programs were developed to deal with diseases with acute presentations and immediate epidemic risk. While important for infections of limited duration, frontier-based controls are not particularly effective for infectious diseases with long periods of latency[1]. As a consequence global disparities in national capacity to manage some transmissible infectious diseases are significant and the prevalence of many serious infectious diseases in areas of the world where migrants originate can be hundreds of times greater than that observed in migrant receiving nations. It is for that reason that diseases such as tuberculosis[2], hepatitis, malaria and HIV are more common in migrant communities than host populations[3].

In spite of the fact that extensive studies have indicated that there is very little secondary transmission or spread of these diseases beyond migrant populations concern and interest are growing as the size of the infected cohorts expands in relation increasing numbers of arrivals. Additionally, these elevated rates of existing diseases that arrive with some migrants groups require attention for other more general international health reasons. Several illnesses and diseases that have been nearly eliminated or are only rarely encountered in the developed, immigration-receiving nations are routine health issues in many areas of the world[4]. Some of these infections can have significant implications for the health sector[5].

At the same time many health care providers who have been educated and who practice in immigration-receiving nations may be unfamiliar with common public health concerns prevalent in migrant origin nations. The combination of residual risk and limited surveillance and disease recognition capacity can influence global eradication and disease elimination programs[6].

However, independent of the cause of health disparities and unrelated to specific disease or illness, the trans-national bridging of these different health situations presents current and increasing

challenges for immigration receiving nations. As migrant communities increase in size, proportion and diversity, the health care sectors in the host countries will have to adapt to the sustained impact of globalization decreasing the physical and temporal distances between disparate health environments. That adaptation will be necessary to ensure that appropriate and effect services are available to serve diverse migrant communities.

Beside language, the cultural history and background of the migrant can influence both the use of and response to the health care sector. Several concepts related to health and disease have strong cultural overlays in some societies. Additionally, long standing cultural practices in the management and treatment of some conditions may differ from the norms and standards of the health care sector at the migrants' new destination. The recognition and appreciation of these cultural differences by health care providers is necessary to improve health intervention outcomes and compliance with health recommendations, to provide the opportunity for synergistic approaches as well as to reduce risks to patients.

Infectious Disease Consequence of Population Mobility

All of the examples and situations described in this short review are interacting to affect and influence the delivery of disease control and treatment programs in our globalized and ever more mobile world[7].

As the size of the migrant population of immigration receiving destinations increases the practice of medicine progressively will have to become more diverse. Previously rare or uncommon infections will become more commonly encountered requiring providers and diagnostic services to become more attuned to international disease epidemiology[8]. Patient populations will continue to become more diverse and many of their infectious disease concerns will be different than historical norms[9] creating a pressure to respond to diversity in the migrant population through education, training and the design, delivery and evaluation of control, prevention and intervention services.

Additionally, the ease of travel now available to many migrants provides them the opportunity to visit their place of origin more often than previous waves of immigrants were able to do so. This group of migrants who return home can, if they have been residing in highly developed location, be re-exposed to health risks. These groups who make visits to visit friends and relatives are known by travel medicine providers as VFR (Visiting Family and Relatives) travellers[10]. When accompanied by children who were born after the family immigrated, these return visits can expose the children to risks that their parents may not anticipate or appreciate. Increasing numbers of cases of malaria in returning travellers in Europe and North America are being reported in VFR travellers.

Differences will remain and the impact of social and economic disparity will continue to be more heavily apparent in the developing world. However, the increasing diversity in infectious disease epidemiology that is associated with population mobility and migration will increasingly affect the nature of communicable disease control activities for the foreseeable future.

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