

From PPE shortages to Covid-19 vaccine distribution, the supply chain has emerged as a determinant of health

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[Toilet paper](#). [Hand sanitiser](#). [Coffee](#). Over the past year, many people have probably spent more time thinking about their abilities to gather basic supplies than in other recent times.



Image source: [Gallo/Getty](#)

Supply chains are the networks involved in getting products to their final buyer or user, such as the toilet paper many of us were desperately tracking down in early 2020. As with most things, supply chains are actually quite complex. This is especially so in the context of a crisis, such as the Covid-19 pandemic, where there is a need to rapidly and equitably distribute supplies at a massive scale.

The Covid-19 pandemic has very clearly revealed the reliance that Canada's public health and healthcare systems have on global supply chains. When the healthcare system went into crisis mode, it caused simultaneous supply and demand disruptions in global supply chains.

The most immediate and early needs were for critical medical products, such as respirators and personal protective equipment. These products were in short supply globally, which left [health-care workers](#) and [patients vulnerable](#).

We're now at a different stage of the pandemic, and many demands on the global supply chain are focused on vaccination supply and distribution. We have heard about how rich countries have monopolized vaccine supply chains, causing disproportionately more deaths and economic turmoil in [lower-income countries](#).

Additionally, vaccine supply chains require a [“cold chain” infrastructure to deliver vaccines to the population](#). These have strained public health budgets and created [additional barriers in many countries and regions around the world](#).

Supply chains influence health

It is widely recognized that where we were born, how we live and where we work are among the most critical factors that shape our health. These factors are known as the [social determinants of health](#). Throughout the Covid-19 pandemic, the supply chain has emerged as a very important determinant of health.

We make this assertion as a team of health supply chain and health services researchers who have been deeply involved in studying several relevant aspects of the pandemic over the last year. Public health and the provision of health care depends on global health supply chains.

The Covid-19 global pandemic has exposed the interdependence of our socio-economic systems. Supply chains are often complex networks with many members using their know-how in production, processing, transportation, retailing and waste management through the product life cycle. There is no obvious centralized decision-maker or mastermind commanding and controlling the end-to-end supply chain. Rather, several distributed participants co-operate and compete to deliver value to end customers or patients.

China dominates the world's production of personal protective equipment (PPE). At the end of 2019, the epicentre of the Covid-19 pandemic happened to be located in the global PPE production centre. On Jan. 23, 2020, [the city of Wuhan was locked down by the Chinese authorities](#), shutting off all industrial activities and the outflow of PPEs.

Supply chains are not only a determinant of public health, but also affect all other factors responsible for the health of individuals and communities. Despite their critical importance, health supply chains still exist as an addendum in health public policies and investments. In many health care organizations, health supply chain is reduced to a purchasing or sourcing unit.

Resiliency of supply chains

Thereafter, the rest of the world realized the gravity of the situation and the extraordinary impacts of this pandemic on

health care systems around the world.

Many factors affected the health supply chain's ability to continually fulfil the range of changing and sometimes conflicting requirements for PPE, vaccines and other medical supplies. The increased global competition for the same supplies increased pressure on supply networks, especially in production capacity and global distribution.

Internally, health supply chains continue to be [fragmented and barely coordinated among different authorities and health care units](#). This is far from the ideal.

Health supply chain management includes managing operations and logistics for supply to meet effectively and efficiently the demand. It drives coordination and collaboration with partners, suppliers, third-party service providers, frontline workers and those who need to access health care. The fragmentation of health supply chain management is the reason that most health supply chains continue to struggle during the pandemic.

Public authorities and stakeholder groups should recognize the critical importance of building robust and resilient health supply chains that connect those involved in the delivery and management of health care globally, nationally and regionally.

Supply chains and health

The overarching goal of designing and operating a health supply chain is to contribute to public health and social well-being while reducing the impacts on the environment. Declaring the health supply chain as a major determinant of health calls for management strategy beyond the conventional race for efficiency at all cost.

Most importantly, it calls for the recognition that supply chains are an integral component of socio-economic resilience and, conversely, vulnerability. For decades, we have justified the under-investment in health care supply chains in the name of budget cuts and financial efficiency. However, while this may have provided short-term benefits, it is not sustainable for the long term.

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