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Access to medical supplies and devices — the lesser known story of COVID-19 and medical monopoly

By Salimah Valiani

Discussions around access to potential vaccines for COVID-19 are widespread, particularly in the global South. Much less discussed is the lack of access to already existing medical technology crucial to stemming the spread of the novel coronavirus and assisting its most severely affected victims. The latter is the outcome of the monopoly control of medical technology — a phenomenon stretching at least as long as the monopoly of Big PHARMA — though much less understood.

News of medical technology shortages have been reported around the world in the past months: from N95 respirators to protect healthcare workers from contracting and spreading the novel coronavirus, to COVID-19 testing materials, to ventilators for infected patients unable to breathe.

A well publicised example globally is the shortage of personal protective equipment (PPE). Since March, workers in rich as well as impoverished countries have demanded employers to provide protective gear including N95 respirators, gowns and gloves.

In the United Kingdom, when not on duty, public hospital workers demonstrated for PPE throughout March and April. By the end of April, the Guardian newspaper had recorded over 100 COVID-19 deaths of healthcare workers in the UK.

Also in April, as Canada's largest privatised elder care sector was becoming a hotbed of the first wave of the pandemic, The Ontario Nurses' Association, the country's largest nurses' union, had to file a court petition to push private long term care homes to provide protective gear to nurses and other healthcare workers.

In Northern Italy in mid-March, during the height of the first wave of the pandemic there, factory workers staged wildcat strikes demanding protective gear. While most shops and public places were under lockdown by March, factories remained open and without income supports, workers were forced to continue working. Even if not reported in the media, workers' battles for PPE will continue to intensify around the world as workplaces reopen and stay open despite resurgence of the virus.

In late April and May, in public as well as private hospitals in the Eastern Cape, South Africa, reproducing typical hospital hierarchies, management and doctors were hoarding PPE. Nurses and other healthcare workers contracted the virus in large numbers. Similarly in the Peruvian Amazon city of Iquitos, 80 per cent of hospital workers tested positive for COVID-19 by mid-May, largely due to a lack of PPE.

In Africa as whole, the World Health Organization (WHO) reported in late July that more than 10,000 health workers had contracted the corona virus, with lack of PPE being a major cause. In South Africa alone, by early August, 24,104 health workers had been infected, with 181 losing their lives. Elsewhere in the global South, health worker deaths related to inadequate PPE as of early September amounted to 1,320 in Mexico and 634 in Brazil.

Another example receiving some media coverage is that of COVID-19 testing materials. As early as March, the WHO was admitting the emergence of a global shortage of chemical reagents needed to process COVID-19 polymerase chain reaction (PCR) tests, the best WHO recommended test for clinical diagnosis.

In early June, toward the end of a crucial period for testing and contact tracing in South Africa, the Minister of Health finally acknowledged that both public and private South African labs were slow in processing tests due to a shortage of PCR test kits and the reagents required to read the tests in large number and quickly. By early July, the pharmacy group, DisChem, closed its testing facilities citing delays in receiving test results as the reason.

Speaking of the African continent, the Minister of Health of the Central African Republic, Pierre Somse, stated in mid-July "…we are in a scarcity, a misery of tests," attributing the Africa-wide lack of testing materials to hoarding in rich countries and a shortage of "global solidarity."

Explaining medical technology shortages

High demand and in turn, local and global shortages, is the most commonly provided explanation for the chronic lack of PPE, testing materials, and other COVID-19 related medical technology. At best, governments are blamed for epidemic unpreparedness and not stockpiling supplies despite long standing studies and recommendations from previous epidemics.

As I show in Rethinking Unequal Exchange, however, the problem runs much deeper. The medical device and diagnostics industry — like the better known story of pharmaceuticals — is a monopoly, with all the attendant features of for-profit production dominated by a small few.

Baran and Sweezy define monopoly capital as the central phenomenon of 20th century capitalism. They argue that in contrast to 19th century firms that produced small fractions of homogenous products for anonymous markets, the typical business unit of the 20th century was the large scale enterprise producing a substantial share of products of one or several industries. These enterprises were in turn able to control the production volumes of products, prices, and types and amounts of investment. In his 2013 book, The Implosion of Capitalism, Samir Amin updates and applies this analysis to the 21st century world capitalist economy, coining the notion of 'generalised monopolies' dominating globally in a range of industries including agriculture, communications and finance.

The makings of monopoly

In the instance of medical technology, the process unfolded from the late 19th century onward, largely in the USA. The process involved creating first local, then global markets for new medical commodities, patenting to maximise the price of these commodities by limiting production and supply, and controlling the direction and scale of technological innovation through the acquisition of firms with ideas that were investing in innovation.

Using such manoeuvres, US-based companies played a major role in establishing and leading the multinational medical device and diagnostics industry. Stretching into countries around the world, this history is part of what Giovanni Arrighi has termed US world hegemony. Where other major medical technology firms emerged, for instance in Western Europe, they necessarily had to use manoeuvres similar to those leading the industry.

Over time, some companies fared better than most. By 1999, 12 percent of firms came to dominate the US medical technology industry. More specifically, 733 of 5,998 companies accounted for 80 per cent of industry sales, with the top 2 per cent accounting for 48 per cent of these. Today, the total number of companies in the industry has gone down to 1,083, suggesting deepening monopoly control. Along the same lines, according to a 2017 estimate, the top 20 medical technology companies controlled just under 55 per cent of the global medical technology market, the majority of which were US firms (see table below).

Further suggesting deepening monopoly control are the numbers of US medical technology firms figuring in Fortune Magazine's listings of top performing companies in the USA (Fortune 500) and internationally (Global 500) between 2005 and 2019. In 2005, seven US medical technology companies (Baxter, Becton Dickinson, Boston Scientific, Medtronic, Guidant, Stryker and Danaher) figured in the Fortune 500, and one US medical technology company (Abbott) featured in the Global 500. By 2019, five of these companies (Baxter, Becton Dickinson, Boston Scientific, Stryker, Danaher) figured in the Fortune 500, and two (Medtronic, Abbott) featured in the Global 500. Meanwhile, the market size of the US medical technology industry increased from 67.9 billion USD in 1999, to 169.3 billion USD in 2018 and 425.5 billion USD globally. Two significant acquisitions occurred in this period. In 2006, Boston Scientific acquired Guidant, for 27 billion USD, or just under 40 per cent of the industry's total market value in 1999. In 2015, Zimmer acquired Biomet, thus gaining a place in the Fortune 500. By 2019, Zimmer ranked 387, climbing from 431 in 2016.

The story of US-based multinational, Becton Dickinson — which ranked 187 in the 2020 Fortune 500 — illustrates the rise and reach typical of firms in the top 2 per cent since the late 1990s. Beginning back in 1898, Becton Dickinson acquired half rights to the patent on the all-glass syringe developed in France. The company went on to produce a range of syringes and other medical devices, surgical instruments, and sterile disposable products. Along the way, Becton Dickinson absorbed various enterprises involved in producing and distributing medical technology. These include the Philadelphia Surgical Company in 1904, the Surgical Supply Import Company in 1913, the Toronto-based distributor, Norman S. Wright Company in 1951, Mexico-city based MAPAD S. A. CV in 1952, and AMI of France in 1955. Also in 1955, Becton Dickinson acquired the Baltimore Biological Laboratory, launching Becton Dickinson to become a leading force in two major changes in medical practice: conversion to sterile disposable products, and the emergence of diagnostic medicine.

Market Share of Top Global Medical Technology Companies, 2017

COMPANY	MARKET SHARE (%)
Medtronic*	7.4
Johnson and Johnson	6.6
Abbott	4.0
Siemens (Germany)	3.8
Becton Dickinson	2.7
Philips (Netherlands)	3.3
Stryker	3.1
Roche (Switzerland)	3.0
Boston Scientific	2.2
General Electric	2.5
Essilor International (France)	1.8
Danaher	2.1
B Braun Meisungen (Germany)	1.9
Baxter	1.8
Zimmer Biomet	1.9
Novartis (Switzerland)	1.5
Olympus (Japan)	1.4
3M	1.4
Terumo (Japan)	1.2
Edwards Lifesciences	0.8
TOTAL GLOBAL MARKET SHARE, TOP 20	54.4

Source: Statisca (based on company-reported sales data of the world's top 300 medical technology companies)

* All companies without countries indicated in brackets are USA-based.

Impact on hospitals

Through the 1980s, monopoly production of medical technology was the primary cause of cost escalation for US hospitals, the major consumers of medical devices and diagnostics. Along with reductions in public financing, medical technology induced cost escalation led to the failure of 550 community hospitals in the USA, and mergers of several hundreds. Around the same time, the

number of corporate-owned hospitals in the USA more than doubled, increasing from 445 in 1978 to 955 in 1984.

As hospital care became commodified in the USA, it quickly took on a monopoly structure like that of medical technology. Three companies — Hospital Corporation of America, Humana, and American Medical International — came to own just under three quarters of the 35.1 per cent of the country's hospital beds controlled by the private sector.

By the mid-1990s, two of these companies — after American Medical Holdings took over American Medical International — began ranking in the Fortune 500. This marked the beginning of multi-hospital systems becoming a high profit industry in the USA. Between 1996 and 2020, Humana rose steadily from 279th place in the Fortune 500 to 52nd.

Monopoly priced medical technology can be traced as a major cost pusher, over time, in public healthcare systems as well, for instance in Canada.

Impact on nurses

In order to maintain high profitability, particularly given the monopoly-driven high costs of medical technology, the hospital industry looked to reduce labour costs through the 1990s. Nursing work and compensation were restructured, undoing the gains made by nurses and their unions with regard to professional autonomy and compensation. Part of the cost saving shift was the increased use of internationally trained nurses entering the US on temporary work permits and employed at inferior levels of wages and working conditions to local nurses.

Reduced professional autonomy, worsening working conditions and the overall devaluing of nursing labour have been key causes of the dwindling supply of nurses in the USA and elsewhere in the world for the past several decades.

Full circle to COVID-19

The COVID-19 pandemic has amplified the gravity of the global nurse shortage. In the attempt to make up for the shortfall of nurses, Rwanda, for instance, turned to using robots for COVID-19 screening and care delivery. These robots, another form of medical technology, are not produced in Rwanda and come at a monopoly price that is unlikely to be sustainable, to say nothing of the human touch crucial to healing and impossible to emulate.

Testing materials, N95 respirators, and ventilators are technologies that are far more crucial than robots to manage COVID-19. All are produced by companies in the Fortune 500 and Global 500. Some have been in these lists since the 1990s, some since the early 2000s, and one since 2017.

Becton Dickinson and Danaher (the parent company of Cepheid) — ranking 187th and 161st respectively in the US top 500 — produce reagents that are necessary to process COVID-19 PCR tests. Danaher/Cepheid reagents are designed to function only with Danaher/Cepheid diagnostic machines. Mixing and matching is not part of the design. Nor are the machines compatible with reagents made using a method provided free of charge by the World Health Organization early on in the pandemic, before Cepheid created COVID-19 PCR tests. Becton Dickinson uses the same strategy of market control for its PCR tests.

Though South Africa was among the first to procure Danaher/Cepheid's GeneXpert Systems diagnostic machines, it has not been able to access adequate supplies of reagents. Many blame

state failure alone for delays in testing and contact tracing. Monopoly control of testing technology, however, is the more plausible, primary explanation for why South Africa — despite imposing one of the strictest, most extensive lockdowns globally — was not able to diagnose COVID-19 cases quickly enough to conduct contact tracing and stem the spread of the virus in the first wave. Peru, which was among the first in Latin America to impose a lockdown and conducted extensive testing from March, faced similar difficulty accessing reagents to process the tests. This was a major part of Peru surpassing the USA and Brazil from May in terms of infections per 1 million population. As of mid-October, as this article goes to press, this trend has continued, with infections of 25,900 per 1 million population in Peru, as compared to 24,057 per 1 million in Brazil, and 23,736 in the USA.

Thailand is another example. In Bangkok, three hospitals suspended testing as early as March because they had run out of reagents. Thailand then ramped up prevention through mass education and collective mobilisation as the major thrust of its COVID-19 strategy, an approach from which much can be learned. But that is another story for another time.

With ongoing innovation by non-profit bodies as well as smaller and larger companies, new testing technology is likely to emerge. Without decisive intervention, however — particularly as more waves of the virus unfold, underlining the importance of widespread testing and contact tracing — new tests are likely to fall into the same dynamics of monopoly control. An emerging example is Abbott's new rapid COVID-19 diagnostic test. Antigen-based and hence, less accurate than the PCR test, 120 million rapid tests will be distributed to 20 African countries through the WHO and players such as the Clinton Health Access Initiative and the Bill and Melinda Gates Foundation. These bodies have negotiated with the multinational to make available a portion of rapid tests at a lower price for a limited period while the company maintains its control of the market and continues earning monopoly profits.

The company 3M, producing medical as well as a range of other technology and ranking 103rd in the Fortune 500 in 2020 is the largest producer of N95 respirators in the USA. In early April, Kentucky state Governor Beshear called on 3M to release the patent on the N95 respirator so that other companies could produce them. Shortly after, President Trump invoked the Defense Production Act to among other things, stop 3M from exporting N95 respirators and other medical devices. Later on that month, next door in Canada, trade union and other activists called for a General Motors plant sitting idle for a year to be reopened to produce N95 respirators. Though the plant was reopened to produce masks, it was not the N95 respirators. This was undoubtedly related to the 3M patent.

Rather than releasing the patent, the CEO of 3M was quite public as early as March about the company's priority: working with large e-marketplace operators to identify and report counterfeiters and price gougers of N95 respirators and other 3M medical devices. By mid-July, 3M had filed 18 lawsuits after tracing 4,000 reports globally of fraud, counterfeiting and price gouging of its products.

Finally, Medtronic produces ventilators and technologies to treat some 40 medical conditions. It featured in the Fortune 500 from 2000 to 2006, and in the Global 500 since 2017. With the rise of COVID-19, along with the creation of virtual training in the use of its ventilators, the company has opened a 'COVID-19 path for idea submissions' online. Medtronic's focus is securing further monopoly profit and control through pandemic-related training and innovation.

One big solution

As I have discussed in an article on Interferon 2b and Cuba's other treatments for COVID-19, decommodified universal healthcare is the alternative to monopoly-driven healthcare ravaging countries around the globe. Not for profit production and delivery of all health related goods responding to general and specific human needs of the majority of any given country is the only means to assure quality health for all, in pandemic as well as non-pandemic times.

More concretely, decommodified universal healthcare is ecologically sound, public sector production of everything from food to psychological support, medicines to medical technology, as well as medical care. Rather than results based management and other corporate models adopted by most state owned enterprises globally in the past four decades, such public production should be designed and managed democratically by citizens, health professionals, scientists, and the range of other workers involved.

Taxation of corporations and rich individuals would be the primary means of financing decommodified universal healthcare. Due to the social importance of health related goods, and high employment potential given the extent of need in most countries, decommodified universal healthcare would constitute a significant segment of needs based, ecologically sound, nationally focused economies.

This contrasts with the narrow notion of 'universal health coverage' in the United Nations Sustainable Development Goals (SDGs). SDG-3 pertains to health and embodies results based management, favouring public procurement of healthcare commodities produced for profit. In order to do this, the UN and other intergovernmental bodies encourage impoverished countries to accumulate further debt through loans from the International Partnership for Health. Rather than this, these global bodies should be supporting healthcare financing through general taxation by devising strategies to retrieve the trillions of dollars of wealth lost to the global majority through tax avoidance by rich individuals and corporations like the medical technology multinationals discussed here.

Amid disintegrating human as well as ecological health and a collapsing world economy, decommodified universal healthcare within needs based, nationally focused, ecologically sound production is central to rebuilding world society.

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Fortune 500 and Global 500 Medical Technology Producer Rankings, 1996-2005
(compiled by Salimah Valiani, August 2020)

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Eastmen Kodak	67	72	91	-	-	-	-	-	-	Sold its Health Group to ONEX in 2007
Baxter	133	263	265	254	243	258	248	222	220	237
Becton Dick-inson	461	476	494	468	451	456	435	396	388	389
Boston Scienti-fic	856	-	762	603	523	561	547	503	478	352
Bausch& Lomb	587	625	641	-	-	-	-	-	-	-
Medtro-nic	-	573	538	533	381	349	318	276	263	246
Guidant	968	957	840	685	596	580	542	471	453	485
Stryker	-	-	-	-	-	-	559	493	465	450
Abbott (Global 500)	441	409	379	358	372	379	309	263	254	285
Danaher	-	-	-	498	478	441	432	357	338	306
3M	63	81	89	103	110	118	126	110	105	105

Notes

Initially counted in the Fortune 500 as part of the industry category, 'Scientific, Photographic, Control Equipment' (as per the North American Industry Classification System), in 1999, medical technology came into its own Fortune 500 category, 'Medical Products and Equipment.' Fortune 500 and Global 500 companies producing medical technology as well as other products are counted as part of other industry categories, most notably, 3M (Chemicals) and Fresenius (Health Care: Medical Facilities).

Fortune 500 and Global 500 Medical Technology Producer Rankings, 2006-2015
(compiled by Salimah Valiani, August 2020)

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Baxter	240	245	236	219	185	192	195	193	189	185
Becton Dickinson	397	392	380	347	312	316	333	332	336	338
Boston Scientific	346	308	310	320	279	305	335	357	367	378
Bausch& Lomb	-	-	-	-	-	-	-	Acquired by Bausch Health Companies in 2013		
Medtronic	235	-	-	-	-	-	-	-	-	-
Guidant	535	Acquired by Boston Scientific in 2006								
Stryker	439	422	401	375	333	323	308	305	306	300
Abbott Laboratories (Global 500)	283	312	312	294	250	255	268	261	377	396
Danaher	287	260	239	213	207	187	158	152	149	147
3M	101	97	100	95	106	97	102	102	101	98
Fresenius (Global 500)					439	462	479	470	444	387

Fortune 500 and Global 500 Medical Technology Producer Rankings, 2016-2020
(compiled by Salimah Valiani, August 2020)

	2016	2017	2018	2019	2020
Baxter	286	281	283	286	282
Becton Dickinson	278	225	251	195	187
Boston Scientific	359	327	328	319	296
Medtronic (Global 500)		377	396	419	not yet available
Stryker	287	252	240	233	214
Abbott Laboratories (Global 500)	-	-	433	438	not yet available
Zimmer Biomet	431	352	361	387	399
Danaher	133	144	162	160	161
3M	93	94	97	95	103
Fresenius (Global 500)	341	335	298	313	not yet available