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# HAI AP News

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HAI AP Est. 1981

Health Action International (HAI) was formally founded in Geneva in 1981 and coordinated from Penang by Action for Rational Use of Drugs in Asia (ARDA). In 1995 Health Action International Asia Pacific (HAI AP) was formed as a collaborative network in the Asia Pacific Region to increase access to essential medicines and improve their rational use through research excellence and evidence-based advocacy. HAI AP is committed to strive for health for all now. *HAI AP News* is the organ of Health Action International – Asia Pacific and presents happenings in the region..

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**In this issue:** The struggle to combat COVID-19 continues. HAIAP colleagues have provided information about responses in Vietnam, Iran, Malaysia and Thailand. Access to affordable effective vaccines will be a priority. In this issue (published December 19, 2020) we look at the result of WTO deliberations concerning the proposed IP waiver for COVID-19 related technologies. We pay tribute to Dr Mongkol Na Songkhla (who passed away December 11) Minister of the Ministry of Public Health, Thailand (2006 – 2008). He made the unprecedented decision to invoke a public health safeguard, compulsory license (CL), to address the lack of lifesaving medicines at affordable prices.

We also look at the outcome of the RCEP trade deal.

We will remember 2020 for the tragic loss and disruption the pandemic has caused for families and communities around the world.

We acknowledge our dedicated HAIAP colleagues, who through immense and unforeseen challenges continue to show extraordinary resilience and ingenuity to continue to give committed service selflessly to their people.

Reports covering the COVID-19 response in Vietnam, Iran, Malaysia and Thailand highlight the continuing challenges presented by the pandemic. Importantly, Fran Baum from PHM's global Steering Council also highlights the enormous widening inequities that accompany the pandemic.

Despite the overwhelming challenges of COVID-19, activities associated with the annual World Antibiotic Awareness Week November 24-30 were not forgotten. We include reports from Thailand, Sri Lanka, and India. The instigators of WAAW efforts deserve mighty congratulations. It is well worth downloading the AMR book prepared by the Sri Lanka students association.

Many HAIAP colleagues have contributed to this December 2020 News. Thankyou!

Although we cannot be together we can stay in touch and still value each others' company and support.

Stay well, safe and strong in 2021.

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## Proposed waiver of Intellectual Property Rights for COVID-19 related products

### South Africa and India propose a waiver of IP rights for Covid related products

It is worth reading the detailed account prepared by D Ravi Kanth for TWN:

[https://www.twn.my/title2/intellectual\\_property/info.service/2020/ip201108.htm](https://www.twn.my/title2/intellectual_property/info.service/2020/ip201108.htm)

Under the World Trade Organisation (WTO) TRIPS (Trade and Intellectual Property Rights) Agreement there is a 20 year patent among other conditions for all new drugs, devices and medical entities such as vaccines. The patent monopolies lead to enormously high prices - particularly affecting access to new products by low and middle income countries (LMICs).

The *Doha Declaration* on the TRIPS Agreement and Public Health, adopted by the WTO Ministerial Conference in Doha in November 2001, affirmed that the TRIPS Agreement should be interpreted and implemented so as to protect public health and promote access to medicines for all. The Declaration enshrines the principle WHO had publicly advocated and advanced over the previous four years: the reaffirmation of the right of WTO Members to make full use of the safeguard provisions of the TRIPS Agreement to protect public health and enhance access to medicines. In Article 31 of the Agreement there are provisions that allow LMICs to over-ride patent provisions and use other flexibilities to access affordable essential medicines.

Flexibilities are spelt out that allow - for example - 'government use' and compulsory licensing to manufacture without permission of 'rightful owner' where price is a barrier to access to needed essential medicines.<sup>1</sup>

The hurdles to be jumped to make use of the flexibilities can make their use very difficult so India and South Africa have proposed a waiver of the TRIPS provision to facilitate access to COVID-19 vaccines as they become available.

On October 2, 2020, India and South Africa asked the World Trade Organisation to waive some provisions in the TRIPS Agreement to make vaccines and treatment more accessible to low-income countries.

The two countries argued that unless a waiver is issued there are 'significant concerns' that diagnostics, medicines and vaccines will not be 'available promptly in sufficient quantities and at affordable prices to meet

global demand,' according to their submission to the WTO's TRIPS Council.

Wealthy nations such as the USA, the UK, Germany, France and Australia have signed deals with various drug makers for hundreds of millions of doses of vaccines that are still being tested. Poorer countries lack the means to place such orders and global health officials fear that unequal access will cause further immeasurable suffering and the coronavirus will not be contained. It is estimated that nations representing 13 per cent of the world's population have reserved 51 per cent of vaccine production to date.

Specifically, India and South Africa have proposed waiving some rules that govern patents, industrial designs, copyrights, and protection of undisclosed information, a reference to trade secrets.

### 408 civil society organisations from around the world support the waiver

On October 15, 408 Civil Society Organisations (CSOs) from around the world called on the World Trade Organisation's TRIPS Council to support the South African and Indian proposal to waive the rules on patents, trade secrets, industrial designs and copyright for COVID-19 technology, such as PPE, test kits, medicines, vaccines, masks, and ventilators.

The 164-member TRIPS Council considered the Waiver Proposal on 15-16 October. According to Politico<sup>2</sup>, 16 members, including Egypt, Indonesia and Argentina, argued that current flexibilities in the agreement won't guarantee timely access to vital supplies during the pandemic. However the TRIPS Council delayed a decision until its next meeting in early 2021.

### What happens if the waiver is granted?

PHM has responded<sup>3</sup>

It will remove many of the barriers that exist today for better access to essential COVID-19 related medical products. This would lead to:

- Rapid scaling up of manufacture worldwide: The waiver enables technology transfer by enabling suspension of the grant or enforcement of copyright, industrial design, patents and protection of undisclosed information across the value-chain.
- Stimulation of Innovation: Greater sharing of information and removing monopoly would enable to develop more affordable products as well as newer,

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<sup>1</sup> <http://www.haiasiapacific.org/wp-content/uploads/2020/12/DOHATRIPS.pdf>

<sup>2</sup> <https://www.politico.com/newsletters/global-pulse/2020/12/10/patent-fight-pits-rich-against-poor-in-vaccine-race-491105>

<sup>3</sup> <http://www.haiasiapacific.org/wp-content/uploads/2020/12/PHM-Policy-Brief-on-Waiver.pdf>

improved COVID-19 medicines, vaccines and essential equipment.

- Enabling Imports of the most affordable product options from the global market, without fear of sanctions under the international trade regime.
- Lowering costs of the products and removal of regulatory barriers.

The letter from the CSOs went on to urge the WTO to support 'an expedited, open and automatic global solution to allow uninterrupted collaboration in development, production and supply, and to collectively address the global challenge facing all countries.'<sup>4</sup> It's time for governments to take collective responsibility and put people's lives before corporate monopolies.'

Prominent global health experts also supported the South African and Indian proposals. These experts include Marisol Touraine, Chair of the Unitaids Executive Board and former French Minister of Health, Leena Menghaney, South Asia Head of Médecins Sans Frontières' Access Campaign, and Dr Bernard Pécoul, Executive Director of the Drugs for Neglected Diseases Initiative.

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## TRIPS waiver gains more support despite efforts to stall its passage

Geneva, 11 December - D. Ravi Kanth TWN<sup>5</sup>

Attempts to avert an emerging 'vaccine apartheid' through a TRIPS waiver for combating the COVID-19 pandemic has gained support from more countries at the WTO as well as international civil society groups, exposing what appears to be the alleged repeated false claims advanced by the United States and a handful of its allies in protecting the monopoly profits of the leading Western pharmaceutical companies over the lives of people, trade negotiators told the SUNS.

At a formal TRIPS Council meeting held virtually on 10 December, the proponents of the TRIPS waiver proposal – South Africa, India, Kenya, Eswatini (formerly Swaziland), Mozambique, Pakistan, and now Bolivia as the latest co-sponsor – answered a maze of questions raised by the countries where Big Pharma is located such as the United States, the European Union, Japan, Canada, Switzerland, among others. There was a robust response to the seemingly extraneous questions and allegedly false claims,

Several developing countries from the more than 30 countries that spoke, including Indonesia and Egypt, drew attention to the intellectual property (IP) barriers for availing of COVID-19 related vaccines, therapeutics, and other medical equipment.

Meanwhile, international civil society groups have mounted increasing pressure on the governments in the countries opposing the TRIPS waiver to swiftly approve the waiver to combat the extraordinary health crisis that has claimed more than 1.5 million lives. In a signature campaign launched by civil society groups, more than 900,000 people from around the world called for the passage of the waiver and for putting lives before the rapacious profits and patents of Big Pharma.

**South Africa** conveyed to the opponents of the TRIPS waiver that 'ad hoc, non-transparent, and unaccountable bilateral deals that artificially limit supply and competition, cannot reliably deliver access during a global pandemic.'

'Disparity in access is certain to continue unless concrete steps are taken to address intellectual property barriers,' the South African delegate Mustaqeem Da Gama warned, according to several negotiators, who were present at the meeting. 'If what the EU, the US and Japan [are] suggesting, namely that the IP system is responsible for delivery of vaccines in record time, it would fly in the face of the heroic efforts of ordinary people, researchers, scientists and government support and funding to enable this monumental feat,' the South African delegate argued.

Further, 'not companies, but ordinary people have generously donated their skills and efforts to enable global collaboration by participating in vaccine trials, many in developing countries, putting their lives at risk for the greater good of mankind,' Da Gama said, pointing out that 'yet, the irony does not escape us, these very people are denied priority access despite the enormous sacrifices they made.'

### *Is the waiver necessary?*

Jayashree Watal, who served 18 years as a counselor in the WTO's intellectual property division, said there are merits to the queries around whether the proposal is necessary. Speaking in her personal capacity, Watal said there are exemptions within the TRIPS Agreement that could possibly be leveraged to gain legal access to the patents, copyrights, or industrial designs that lower-income countries say they need to begin production, see page 2.

But access-to-medicine activists highlighted the hurdles to actually taking advantage of these exemptions, including the time required to issue individual compulsory licenses, which might then be contested by the technology owner, and a history of higher-income countries threatening lower-income countries with WTO disputes when they attempt to claim an exception.

The 'waiver [that] has been proposed will address all these problems altogether,' said Carlos Correa, executive director at the South Centre, during an online

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<sup>4</sup> <http://aftinet.org.au/cms/node/1937>

<sup>5</sup> <https://twn.my/title2/wto.info/2020/ti201213.htm>

presentation earlier this month'. .. '[It] will address the limitations and pressures that may be exerted in cases that compulsory license system or government use is one of the options.'

See also

Intellectual Property and public interest in the context of COVID-19 – HAIAP News August 2020 *Ellen 't Hoen examines issues that can have an impact on affordability and access to technologies relevant to the management of COVID-19.*<sup>6</sup>

and

<https://www.hrw.org/report/2020/10/29/whoever-finds-vaccine-must-share-it/strengthening-human-rights-and-transparency>

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## Why COVAX is not good enough?<sup>7</sup>

COVAX is a facility created by a number of global health institutions to facilitate access to vaccine for developing countries. COVAX finances big pharma in return for supply of only limited doses for identified developing countries. It has been projected as the main answer for redressing inequity in access to vaccines. However this approach has severe limitations:

- Limited supply: COVAX guarantees vaccines to only priority population around 20% of the population Rest will be at market rates.
- It will not enable transfer of technology for rapid scale up of manufacture.
- It strengthens the existing intellectual property regime, undermines efforts alternatives/ improvements.
- It increases inefficiencies and is costlier as COVAX is paying more because of IPR costs when most of the funding is already from public money.
- There is no transparency in agreements with other countries: prices, delivery schedules, quantities unknown.
- Conflict of interests in governance structure: Role of WHO marginalized.

*One contention of rich countries is that IP is essential for innovation of new drugs and vaccines. Without IP protection pharmaceutical companies cannot recover what they spend on innovation.*

*Response:* Most of the innovation is developed with assistance of public financing, and therefore there is a public right to the scientific advancement so achieved.

Further, there is no evidence indicating that IP is helpful for innovation where public health needs are concerned, rather the evidence suggests to the contrary of blocking

innovation. A better approach would be for pharmaceutical companies to be transparent about costs of innovation and production.

*Is the waiver adequate to solve the problem of access to COVID-19 medical products?*

The waiver is essential, but not sufficient. A waiver will give countries the confidence to mutually co-operate and encourage local producers to contribute to development of COVID-19 related tools without fear of infringement proceedings.

Acceptance of the Proposal for waiver will allow developing countries to bring in emergency policies to respond to many challenges that their country is facing without fear of trade sanctions or tedious paper work.

Questions over equitable distribution of COVID-19 tools continue to loom. Countries with the financial resources are entering into advance purchase agreements to secure doses of (future) COVID-19 vaccines for their populations. The LMICs and LDCs lacking such financial resources may not be able to afford so many vaccine doses. Such countries may have to wait for over a year to procure these drugs albeit only to the extent the country's financial ability permits.

*Which countries and institutions are supporting the Proposal?*

The Proposal has been submitted by India and South Africa and is co-sponsored by Kenya and Eswatini. It is being supported by the group of LDCs, African, Caribbean and Pacific Group of States and Africa group of countries, and Nicaragua, Pakistan, Sri Lanka, Tunisia, Venezuela, Holy See, Nigeria and Senegal. WHO and UNAIDS have also extended their support to the Proposal.

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## Big Pharma opposes COVAX

The International Federation of Pharmaceutical Manufacturers and Associations opposes the WHO COVAX Facility and compulsory licensing and prefers to retain monopoly patents and negotiate prices with governments, a process which is not affordable for many low income countries.

A report written in October 2020 by Human Rights Watch (HRW) *Whoever Finds the Vaccine Must Share It*<sup>8</sup> shows the grave danger of failure to provide COVID-19 vaccines universally and fairly, as the global community witnesses a third wave of the pandemic in the northern winter.

The HRW report recommends that governments ensure transparent and affordable access to vaccines for all by:

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<sup>6</sup> <http://www.haiasiapacific.org/wp-content/uploads/2020/08/HAIAPNewsAugust2020.pdf>

<sup>7</sup> <https://phmovement.org/wp-content/uploads/2020/12/phm-policy-brief-with-logo-for-website.pdf>

<sup>8</sup> [https://www.hrw.org/sites/default/files/media\\_2020/11/globalvaccine1020\\_insert\\_LOWRES\\_WITH\\_COVER.pdf](https://www.hrw.org/sites/default/files/media_2020/11/globalvaccine1020_insert_LOWRES_WITH_COVER.pdf)



- Supporting the Indian and South African proposals to waive some WTO rules to remove restrictions to access for low income countries;
- supporting and implementing the WHO Technology Access Pool to share knowledge about vaccines and cooperating to expand manufacturing capacity and distribution to low income countries;
- not supporting deals with pharmaceutical companies that undermine equitable access to vaccines based on public health need.

[At the same time Moderna says they will not enforce the IP rights. In the current situation where resources should be used to bring the pandemic to an end as soon as possible, Moderna has said 'to eliminate any perceived IP barriers to vaccine development during the pandemic period, upon request we are also willing to license our intellectual property for COVID-19 vaccines to others for the post pandemic period.' Ed. <sup>9]</sup>

## A statistician explains: What does '90% efficacy' for a COVID-19 vaccine mean?

Atanu Biswas, Professor of statistics at the Indian Statistical Institute, Kolkata, November 28, 2020 <sup>10</sup>

Different pharmaceutical companies are now coming out with the success stories of their potential vaccines, and the efficacy rates of these vaccines are reported to be high – 70%, 90%, 95%, and so on.

Here is how we can understand vaccine efficacy.

### Vaccine trials

**Phase III trial:** Vaccines are usually approved on the basis of results from three stages of clinical trials. The trials aim to assess short-term safety, ability to generate an immune response, and efficacy. Short-term safety is usually judged in early phases.

Phase III trial, which is often the most elaborate one, investigates the efficacy of the vaccine under trial – usually in comparison to a placebo, which maybe a similar-looking injection having no medical effect. In a phase III trial, often thousands of people are given the vaccine or a placebo, and then these people are monitored over several months to see whether those receiving the vaccine get infected at a lower rate than people who get the placebo, on average. Thus, the performance of the vaccinated group is compared to that of the unvaccinated group. Phase III is a full-scale evaluation of efficacy, and it provides an opportunity to monitor for some safety issues that cannot be done in earlier phases.

<sup>9</sup> <https://investors.modernatx.com/news-releases/news-release-details/statement-moderna-intellectual-property-matters-during-COVID-19>

<sup>10</sup> <https://scroll.in/article/979627/a-statistician-explains-what-does-90-efficacy-for-a-COVID-19-vaccine-mean>

'**Vaccine efficacy**' is defined to measure whether the vaccine is able to prevent the disease significantly or not, and if so, to what extent.

Vaccine efficacy is expressed as a proportionate reduction in disease attack rate, AR, between the unvaccinated, ARU, and vaccinated, ARV, groups under the phase III trial.

ARV is just the proportion of individuals within the vaccinated group who got infected within the study period. Similarly, ARU is the proportion of infected within the unvaccinated group.

The ratio of ARV to ARU is called the **risk ratio, (RR)**. A lower value of RR clearly indicates better performance of the potential vaccine. When both the vaccinated and unvaccinated groups have, more or less, equal number of individuals, RR is the simple ratio of the number of infected in the vaccine group to that in the placebo group.

Clearly, higher the value of vaccine efficacy, the better the performance of the potential vaccine. Thus, a 90% efficacy (ie 10% RR) means that the proportion of infection in the vaccinated group is about one-tenth of the proportion of infection in the placebo group.

### Vaccine efficacy

The Moderna trial involved 30,000 people, and more than 43,538 people have been enrolled in the Pfizer/BioNTech vaccine trial – approximately half receiving the vaccine, and the remaining a 'placebo', in each trial. Of the first 95 to develop COVID-19 symptoms in the Moderna trial, only five were in the vaccine group, and the remaining 90 were in the placebo group.

Thus, the RR for Moderna vaccine up to this point of time is 5/90, and vaccine efficacy is  $(1 - 5/90)$ , which is 94.44%. Similarly, of the 170 cases of the Pfizer trial, 162 were in the placebo group, while 8 were in the vaccine group. The vaccine efficacy of the Pfizer vaccine is  $(1 - 8/162)$ , which is 95.06%.

The Oxford-AstraZeneca vaccine candidate appeared to be 90% and 62% effective for the two dose regimens having 2,741 and 8,895 individuals in the two groups, respectively. The average efficacy was announced to be 70%, the early analysis being based on 131 symptomatic COVID-19 cases that had turned up in study participants. But we still do not know how many cases were found in each group of participants across the vaccinated and placebo groups, and also the division among the two dose regimes.

### Short-term data

We should keep in mind that the vaccine efficacies are based on short-term data only although both trials are still taking place and the final numbers could change.

We should keep in mind that vaccine efficacy is just a statistical measurement of short-term performance of the vaccine. It cannot guarantee the durability of the vaccine beyond the time frame of experimentation, which is only a few months in these cases.

As per the 2020 'Guidance for Industry' of the US Food and Drug Administration for 'Development and Licensure of Vaccines to Prevent COVID-19', all phase III trial participants are expected to be monitored for at least one year. The recruitment of phase III for the Moderna vaccine was done in April and May, and that for Pfizer vaccine began in end-July. Thus, these all are short-term efficacy.

### How long will immunity last?

There is a widespread speculation that the SARS-CoV-2 antibodies, which would make one immune to COVID-19, may not last beyond a few months. This speculation is supported by different peer-reviewed articles in various journals as well. **It is still not very clear how long a vaccine would provide protection against the disease. Whatever be the case, vaccine efficacy might drastically change if the study individuals are monitored for another few months, at least. Let's just hope for the best.**

[It is also unclear whether a given vaccine works equally well in young and old people, or in people with co-morbidities; and how the top candidates compare to one another (critical for designing effective vaccination strategies) Ed.].

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## Equitable access to COVID-19 vaccines:

### **Cooperation around research and production capacity is critical \***

David G Legge and Sun Kim<sup>11 12</sup>

**Abstract**<sup>13</sup> The COVID-19 pandemic has devastated families and communities and disrupted society and the economy; it has caused over 1 million deaths globally and left a disturbing burden of chronic morbidity. The prompt availability of effective and affordable vaccines against the SARS-2- coronavirus offers the most promising path out of the disease and disruption that the pandemic has wrought.

From the beginning the WHO Director General was emphasising 'solidarity' as the key to the global response. However, the proposal that vaccine

technologies be pooled to accelerate vaccine development and production was a step too far for pharma and its nation state sponsors. WHO's proposed 'solidarity vaccine trial' which would yield comparative data about efficacy, safety and cost was likewise boycotted by pharma.

From late March negotiations toward global cooperation for diagnostics, medicines and vaccines moved from WHO to the G20 sponsored 'Access to COVID-19 Tools Accelerator', a new 'multi-stakeholder public private partnership'. The 'vaccine arm' of the Accelerator was the COVAX Facility which would enter into advanced purchase commitments for selected candidate vaccines for participating countries. COVAX also provided for the mobilising of donor funds to pay for vaccine supplies for low and lower middle income countries. COVAX was designed to deliver vaccines for the priority fraction of countries' populations (up to 20%). After this, countries would return to bilateral purchasing in the open market.

By July however, it was becoming clear that massive bilateral advanced purchase agreements, in particular, by the US, UK and EU, would reserve most of the early supply of effective vaccines and jeopardise the fund-raising for COVAX.

The rejection of technology pooling, the rise of 'vaccine nationalism', and the underfunding (and under-supply) of COVAX all look set to produce highly inequitable outcomes in terms of access to vaccination, particularly during the first year or so after the first vaccine is approved.

Drawing on a review and analysis of access-to-medicines debates over the last two decades, we propose a policy platform to promote a more equitable roll out of vaccines in the context of the COVID-19 pandemic. Core elements of such a platform include:

- full funding of the concessional component of COVAX;
- a rapid expansion of local production of vaccines in LMICs supported by an organised program of technology transfer as appropriate;
- an immediate waiver of key provisions of the TRIPS Agreement to facilitate access to intellectual property and technical knowhow necessary for vaccine development and production;
- full transparency regarding key aspects of vaccine development and production, including clinical trial data, production costs, and patent and market approval status; and
- a moratorium on national debt servicing and repayment for highly indebted LMICs.

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<sup>11</sup> Regional Coordinator PHM

<sup>12</sup> \*Presented to The 75th Anniversary Nagasaki Nuclear-Pandemic Nexus Scenario Project Oct--Nov 1 2020. Co-sponsored by Research Centre for Nuclear Weapons Abolition, Nagasaki University (RECNA), the Nautilus Institute, Asia Pacific Leadership Network for Nuclear Nonproliferation and Disarmament.

<sup>13</sup> [http://www.haiasiapacific.org/wp-content/uploads/2020/12/Legge\\_Kim\\_Covid\\_Nagasaki\\_WP\\_2020-1030-final-revised.pdf](http://www.haiasiapacific.org/wp-content/uploads/2020/12/Legge_Kim_Covid_Nagasaki_WP_2020-1030-final-revised.pdf)

Policy initiatives directed at a more equitable and efficient response to the next pandemic need to be put in place now:

- scaling up public sector innovation and manufacturing capacity in LMICs;
- regional and plurilateral agreements on biopharmaceutical technology transfer and capacity building;
- reforming the TRIPS Agreement to facilitate technology pooling in future pandemic emergencies;
- reforming the International Health Regulations to give WHO the power to trigger mandatory technology pooling and mandatory participation in comparative clinical trials ('Solidarity trials') in pandemic emergencies; and
- continued mobilisation around delinking and the creation of a global research and development treaty.

Critical to achieving progress in the implementation of this platform will be:

- institutional reform at the national level including legislation for the full deployment of TRIPS flexibilities and for the imposition of conditionalities on public funding of research (open licensing) and the funding of private pharma (transparency);
- protection of the multilateral member-state fora such as the UN and the WHO where LMIC voices can be heard and which can provide leadership in institutional reform; and
- community mobilization around single payer UHC and equitable access to affordable, effective medicines and vaccines.

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### Vale Dr. Mongkol Na Songkhla

16 January 1941 – 11 December 2020



Dr. Mongkol Na Songkhla was the Public Health Minister who made the unprecedented decision to invoke a public health safeguard, compulsory license (CL), to address the lack of lifesaving medicines at affordable prices.

The decision to grant compulsory licenses by Dr. Mongkol Na Songkhla also acted as a good example for other developing countries that the TRIPS public health safeguard is not limited to addressing HIV challenges only. In 2006 – 2008, Dr. Mongkol Na Songkhla, was the Minister when the unprecedented decision was made to invoke

a public health safeguards, known as 'government use' license or compulsory license (CL), to address the lack of lifesaving medicines at affordable prices that could save million lives of people living with HIV and patients suffering from cardiovascular diseases and cancers. The Thai Government Pharmaceutical Organization (GPO) was able to produce a triple cocktail of ARVs at low cost from the off-patent medicines; and the government announced the extension of the health benefit package of the national health insurance system to cover ARV treatment.

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### PHM<sup>14</sup> Statement on the 19<sup>th</sup> anniversary of the Doha Declaration on TRIPS and Public Health

WTO Member States adopted the historical Doha Declaration on the TRIPS Agreement and Public Health (Doha Declaration) on 14<sup>th</sup> November 2001. The Doha Declaration recognized the gravity of public health issues in developing and least-developed countries and reiterated the rights of WTO Member States to make use of the flexibilities in the TRIPS Agreement to promote access to medicines for all. The adoption of the Doha Declaration paved the way for the issuance of compulsory licenses in many developing countries to ensure access to medicines such as HIV and AIDS medications.

There is now an urgent need to address the availability and accessibility of medical products (including personal protective equipment, vaccines, medicines and diagnostics) for an effective response to COVID-19 pandemic. Many countries are financing big pharma companies for the innovation of medical products for COVID 19 responses. Medical products developed through public funding should be treated as global public goods and the companies undertaking research using public money should transfer the technology in a transparent manner to scale up production to ensure availability and accessibility across the globe. Multiple forms of IP protection especially copyrights, trade secrets, industrial design, and patents can legally prevent the dissemination of technology and scaling-up of local production.

PHM welcomes the joint proposal of India, Kenya, South Africa and Eswatini seeking a waiver from the TRIPS obligations concerning the protection and enforcement of copyright, trade secret, industrial design, and patent on COVID-19 medical products (Waiver Proposal) which is perfectly in line with the spirit and intent of the Doha declaration. Such a waiver will not only facilitate the availability and affordability of these medical products through local production but will

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<sup>14</sup> Peoples' Health Movement

facilitate speedy innovation of COVID-19 medical products by enabling transfer of know-how.

Further, such a waiver will bring legal clarity concerning the policy space available to WTO Member States and encourage them to remove the IP barriers preventing the local production of COVID-19 medical products. In this context we recall that the Doha Declaration recognized that, *'TRIPS Agreement does not and should not prevent Members from taking measures to protect public health.'*

We call upon all the WTO Member States to uphold the spirit of the Doha Declaration and support the adoption of the Waiver Proposal. We strongly urge those WTO Member States, who are opposing the adoption of the Waiver Proposal, not to hold peoples' lives at ransom for the protection of corporate profit.

The PHM called upon individuals, social movements and civil society organisations to endorse and support the statement and actively advocate with their governments for the adoption of the TRIPS Waiver proposal.

[Endorsements were requested by 18 November]

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## **RCEP trade deal could impede post-Covid local industry recovery and ignores labour rights and environmental standards**

AFTINET<sup>15</sup> 25 November 2020

The RCEP text and associated documents can be found here:

<https://www.dfat.gov.au/trade/agreements/not-yet-in-force/rcep/rcep-text-and-associated-documents>

The giant Regional Comprehensive Economic Partnership trade deal (RCEP) was signed on November 15, 2020, by Australia, New Zealand, China, Japan, South Korea and the 10 ASEAN countries (but without India). India left the negotiations in November 2019.

The deal was completed before the COVID-19 pandemic, and has not been revised in the light of lessons from the pandemic.

The pandemic has taught us that we need to depend less on imports and increase our local capacity to produce medical equipment, vaccines and other essential products. Instead the RCEP rules encourage all countries to specialise in a narrow range of products and services and import everything else.

AFTINET Convener Dr Patricia Ranald said in a media release. 'India left the deal because of concerns about

the RCEP's potentially negative impact on local industry development, which should sound warning bells'. 'The RCEP also has no commitments to any labour rights or environmental standards, increasing the danger of a race to the bottom on those standards,' she said. 'The deal includes countries like China and Myanmar where there is mounting evidence of labour rights and human rights abuses. But there are no provisions to deal with issues like forced labour or child labour, and no mention of climate change.'

But there are some welcome omissions.

### **No further ISDS rights for foreign investors**

The final text confers no special rights on foreign corporations to sue governments through what are known as Investor-State Dispute Settlement<sup>16</sup> clauses common in other agreements, although there is an opportunity for the members to revisit the idea two years after ratification.

Nor are there increases in patent monopolies for medicines of the kind included in the original Trans-Pacific Partnership. These were suspended in the revised Comprehensive and Progressive Agreement for Trans-Pacific Partnership. The RCEP will be reviewed by participating countries' parliamentary committees which, as is usual in these agreements, will be unable to change the text.

'The Australian government is claiming that the main benefit of the agreement is that it writes a common set of legally binding trade rules for the region. But many of these rules go far beyond traditional trade issues. They open up essential services like health, education, water, energy, telecommunications, digital and financial services to private foreign investors and restrict the ability of future governments to regulate them in the public interest,' said Dr Ranald. 'Governments need to have the flexibility to deal with crises like pandemics and climate change.'

As usual, the text was only released after signing, when it cannot be amended, and there has been no independent economic, social or environmental assessment of its likely impacts.



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<sup>15</sup> AFTINET is an Australian national network of community organisations and many individuals concerned about trade and investment policy. We support fair trade based on human rights, labour rights and environmental sustainability.

<sup>16</sup> <https://theconversation.com/suddenly-the-worlds-biggest-trade-agreement-wont-allow-corporations-to-sue-governments-123582>



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## Feature: The struggle to combat COVID-19 in Vietnam, Iran, Malaysia, Thailand

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### Fighting against COVID-19 in Vietnam

Dr Thu-Anh Nguyen - Country Director - Woolcock Institute of Medical Research Vietnam<sup>17</sup>

#### Basic information about Vietnam

- Population of 96 million
- Long land border and coastline
- GDP per capita ~ 2,700 USD
- Health insurance coverage ~ 90%
- 0.8 doctors and 1.4 nurses per 1,000 population

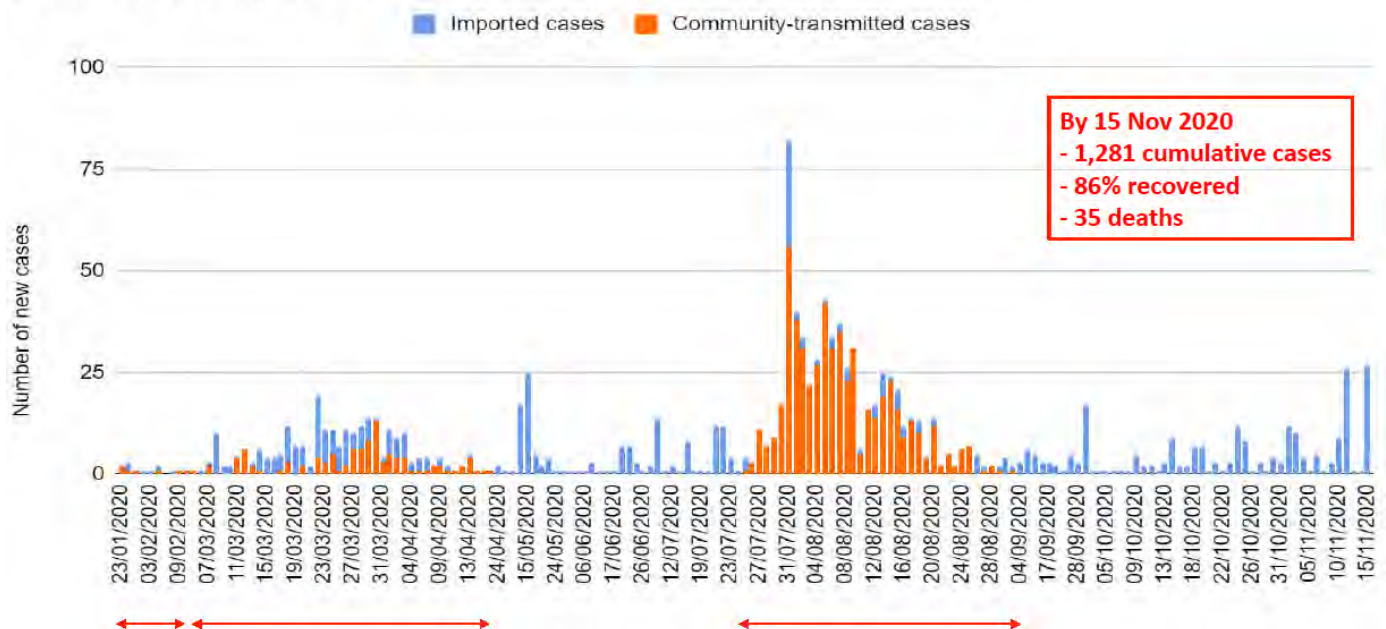
See also<sup>18</sup>

Although Vietnam reported its first case of COVID-19 on January 23, 2020, it reported only a few more than 300 cases; and zero deaths over the following four months. This early success has been attributed to several key factors, including a well-developed public health system, a strong central government, and a proactive containment strategy based on comprehensive testing, tracing, and quarantining.

[Then in Da Nang on July 25 a man tested positive without any travel history, and it's still unclear how he contracted the virus and by September 4, 632 new cases were confirmed and 35 deaths.

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### Number of daily COVID-19 new cases in Vietnam



So what went wrong?

'I'm not sure anything went wrong,' says Prof Michael Toole, an epidemiologist and principal research fellow at the Burnet Institute in Melbourne. Most countries that thought they had the pandemic under control have seen resurgences, he says, pointing to a long list including Spain, Australia and Hong Kong. Like in the first wave, Vietnam has responded quickly and forcefully.<sup>19</sup> Ed.]

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<sup>17</sup> Dr Thu-Anh Nguyen presented this information at the PHM Zoom Webinar *What the Philippines can learn from other countries on COVID-19 and beyond*. November 17, 2020

<sup>18</sup> <https://ourworldindata.org/covid-exemplar-vietnam>

<sup>19</sup> <https://www.bbc.com/news/world-asia-53690711>

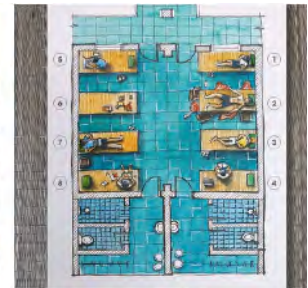
Lessons from Vietnam's successful early detection and containment strategy are worth examining in detail so other countries may apply them to their own responses.

#### Responses (1)

- Rapid, strong and multisectoral response as learnt from the experience in controlling SARS in 2003 and H1N1 in 2009.

As a result of the detection process, hundreds of thousands of people, including international travellers and those who had close contact with people who tested positive, were placed in quarantine centres run by the government, which greatly reduced transmission at both the household and community levels. Hot spots

with demonstrated community transmission were locked down immediately, and the government communicated frequently with citizens to keep them informed and involved in the public health response.



### Responses (3)

- Targeted lockdown was applied in communities with a size of about 10,000 residents for at least 21 days when a secondary transmitted case was found in the area, together with:
- Daily checks on symptoms
- Test for SARS-CoV-2 by RT-PCR test
- Mass serology testing
- Provision of basic food, health care and necessary goods
- Mass communication for transparency and gaining trust
- Social distancing, travel restriction and border closure in stages.

Although most COVID-19 patients in Vietnam were hospitalized (when needed) at specialty hospitals in Hanoi and Ho Chi Minh City, health care facilities at all levels were prepared to receive them, to avoid overwhelming the acute care system in the event of a larger outbreak. Although Vietnam has not had enough cases to overload hospitals, it is worth noting that only four health care workers have been infected to date.

### Responses (2)

- TTQ<sup>20</sup> rapidly based on epidemiological risk of infection

**Tests** targeted high-risk groups, including people travelling from other countries, close contacts and people with suspected disease, people living in communities with an outbreak, regardless of their symptoms. Testing capacity increased quickly.

**Tracing:** first-hand and second-hand contacts of confirmed cases were traced rigorously and rapidly, using technology, police officers with registered citizens, social media, social networks and neighbours.

**14-day quarantine** was mandated for people with history of exposure to confirmed or suspect cases, regardless of test results, plus regular symptom screening and temperature checks.

### Summary features of Vietnam's response

Leadership and investment

Rapid response

Detection, isolation and support

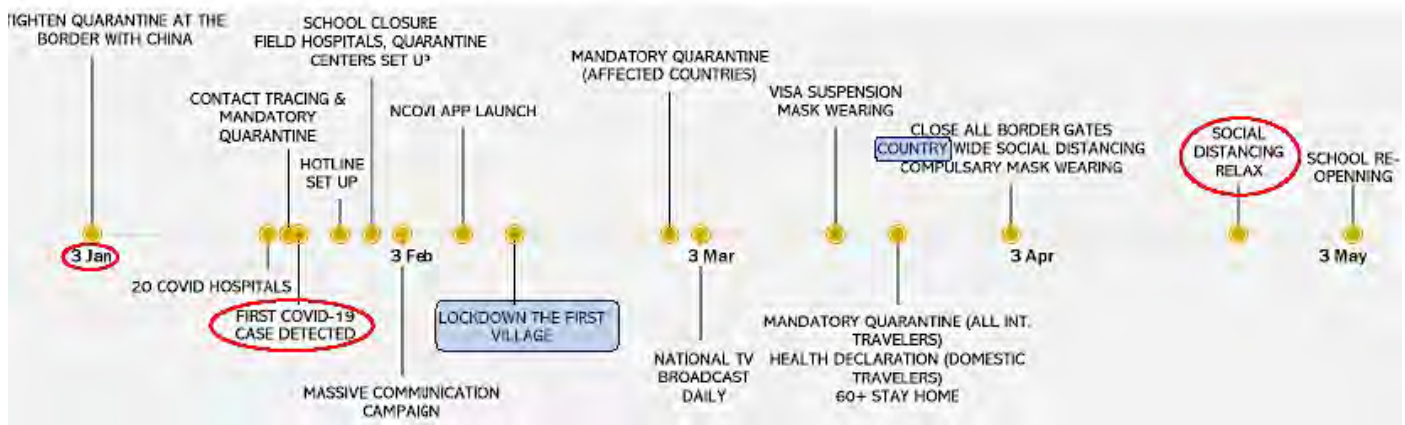
Community support

Communication, trust and compliance

Border restriction

<sup>20</sup> Test Trace Quarantine





## Vietnam's Vaccine plans

Vietnam opts for containment over a 'high risk' rush for costly COVID-19 vaccine. Vietnam has spent nearly \$US 776.7 million on containing the virus and its impacts.

On November 6, Vietnam made the decision to stick to its strategy of containing COVID-19 rather than rush to secure a supply of a vaccine that could be expensive and potentially risky, according to the Head of the country's coronavirus task force, Vu Duc Dam.

Vietnam will also buy from Britain, where it has a partnership to develop a home-grown vaccine with the University of Bristol. 'We have to be prepared for the fact that the pandemic will not end until 2021.'

Read more at:

<https://www.youngwitness.com.au/story/7002338/vietnam-opts-for-containment-over-vaccine/?cs=11835>



## Golestan in Iran – a Primary Health Care response to COVID-19

By Dr Mohammad Ali Barzgar<sup>21</sup>

Golestan Province of Iran, is located at North East of Iran in the Caspian Sea area with a population of 1,200,000.



The country of Iran with a population of 84,400,161, until 18 November 2020, had 806,894 cases of Corona-COVID-19, with 42,941 deaths, ie about 5.3% death rate which is one of the highest levels of fatality.

The number of cases and deaths happened in three waves, with the third wave continuing currently at country level.

During the first wave the prevalence of the cases in the rural areas with Health Houses and served by *Behvarz*<sup>22</sup> was around 20% of the cases.

<sup>21</sup> Dr Barzgar would like to thank Dr. Mohammad Javad Kabeer, the Deputy Chansellor of the Golestan Medical Sciences University, who kindly provided the information regarding the Golestan initiatives in controlling the Covid- 19

(In Urban areas without Health Houses and *Behvarz*, health centres are served by a physician).

In the second wave the number of cases was higher, about 40% of the number of cases in urban areas occurred in the rural areas.

In Iran, where Primary Health Care (PHC) has been implemented since five years before the Alma-Ata Declaration (1978) the use of the network system is considered as one of the main mechanisms for coping with COVID-19 in a ratified the health system. Therefore, at the end of the second wave, with the Initiative of *Behvarz*, an inter-sectorial Village Health Council was developed In rural areas, comprising *Behvarz*, Teacher, Agriculture Agent, Water Agent, Village Headman, Women's Representative, who through the school students, their parents and women's committee tried to locate and report the sick cases in the village as well as those who had been hospitalised in the town or city. Council members also tried to trace their contacts, and isolate the contact cases. They began to educate the public about wearing masks, washing hands, and social distancing. Fortunately because of these interventions, the number of cases in the third wave was much lower in the rural areas, less than 15% of the number of cases in urban areas. This powerful PHC infrastructure and therapeutic care, and specialized workforce appropriately distributed, played an important role in the disease management.

Therefore the authorities of the province have tried to replicate the initiative in urban areas as well, through Municipalities and City Councils. They have divided the City Blocs into smaller localities of 25-30 houses. They have tried to use representatives of different development sectors and community leaders (formal and informal leaders) to spread appropriate information in communities and to try to locate sick cases and trace their contacts for testing and isolation if positive.

From 21st November 2020 The Government of Iran had ordered two weeks lock down over the whole country for testing, tracing, Isolation and treatment using a whole of government approach.

See also

<https://www.frontiersin.org/articles/10.3389/fpubh.2020.00510/full>

For a description of the Iran PHC Health Houses program see

<http://www.haiasiapacific.org/wp-content/uploads/2019/12/HAIAPNewsDecember2019.pdf>

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<sup>22</sup> Specially trained male and female village health workers who focus on the health needs of the rural population according to a comprehensive PHC approach and with a major focus on MCH.

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## Malaysian response

Chee Yoke Ling 23 Nov 2020

The Malaysian Government's response to COVID-19 is very much led by the health ministry's medical civil servants. Targeted testing, tracing, isolation and treatment together with different degrees of movement restrictions and economic/social shutdown are functioning.

Anyone tested positive (including non-citizens and undocumented migrant workers) are admitted to government hospitals (several designated for COVID-19). Asymptomatic persons are also admitted for surveillance and subsequent tests.

### Vaccine plans

**Vaccine procurement / negotiations** with COVAX and individual pharma companies are led by the Ministry of Science, Technology and Innovation. There is a national vaccine roadmap being developed, triggered by COVID-19. The longer term aim is to develop local R&D and manufacturing capacity.

There is a separate COVID-19 Fund for all activities including vaccines - the vaccine budget is in the 2021 budget currently being debated in Parliament. Malaysia joined the COVAX Facility led by Gavi (there have been discussions on whether that is a good option because Malaysia is a self financing middle income country in that scheme). At the same time the government is negotiating with China concerning accessing the vaccines developed by Sinopharm and Sinovac.

There is commitment to source and to diversify the suppliers. Of course this is subject to global supply availability with COVAX supply to cover 10 per cent of the population, with more doses for another 60 per cent. The target: 70 per cent of the Malaysian population will be vaccinated. The Minister said the Malaysian government has directly contacted eight of 11 manufacturers of COVID-19 vaccine candidates currently in Phase 3 clinical trials, while another two were contacted through the COVAX Facility.

**On distribution and access:** The Malaysian government will only place orders for a vaccine after local health regulators have verified its safety and effectiveness. The aim is for access to a vaccine by the first or second quarter of 2021, depending on approval from the National Pharmaceutical Regulatory Agency.

**Three phases of priority:** MOH staff and staff from non-MOH agencies like the police, army, Immigration Department, Prisons Department then other high-risk groups like individuals with comorbidities and the elderly. Then other adult populations: Details are being drafted and will be publicised by the first quarter of 2021.



## Thailand

Source: Hannah Beech, New York Times

Photographs by Adam Dean

First Published July 16, updated August 20, and December 8, 2020<sup>23</sup>

In January 2020, Thailand confirmed the world's first case of the coronavirus outside of China — in a tourist from Wuhan, the central Chinese city where the outbreak is believed to have begun.

Another wave of infections was set off by people arriving from Japan, Europe and the United States. A Thai boxing event turned into a super-spreader event. But after a lockdown was enforced in March, shutting businesses and schools, domestic transmissions subsided.

In August, all of Thailand's recent cases had been among people who arrived from outside Thailand.

Dr. Wiput Phoolcharoen, a public health expert at Chulalongkorn University in Bangkok, noted that more than 90 percent of those who tested positive there were asymptomatic, much higher than normal.

So although Thailand's hospitals were not overwhelmed by coronavirus patients, the country's tourism-dependent economy was battered. In April, together with tightening lockdown Thailand banned almost all incoming flights. The Thai tourism and sports ministry estimates that 60 per cent of hospitality businesses could close by the end of the year.

Despite the influx of foreign visitors early in the year from countries badly hit by the coronavirus, Thailand had recorded fewer than 3,240 cases and 58 deaths by August. As of August 20, there had been no cases of local transmission for about seven weeks. Thais had been quick to adopt wearing face masks early in the pandemic and maintain social distancing when using public transport. Thailand's low rate of infection appears to be shared by other countries in the Mekong River basin. See *HAIAP News August 2020*.<sup>24</sup>

It has been suggested that the common *wai* greeting in Thailand and other Mekong countries, rather than shaking hands or making other physical contact, has contributed to the lower rate of infection.

### Community support

The promised disbursement of emergency government funds was initially bogged down in bureaucracy. However, *Covid Thailand Aid*<sup>25</sup>, a charity set up in the

wake of the pandemic, has been able to provide a enormous amount of community support. The organisation has been inundated by pleas from Thais with only a dollar or two left in their bank accounts, said Natalie Narkprasert, one of the group's founders. Natalie comes from the hospitality industry and knew there was a big surplus in resources,



Once the government stepped in to help with masks, the initiative diverted into catering towards the needs of the elderly and people who were in need, for example people who had disabilities and/or were completely dependent on other people.

‘A major challenge was that, because of COVID-19, we had to be really aware of safety precautions, and keep ourselves updated with the rules that were changing all the time’ said Natalie Narkprasert. ‘I just wanted to connect the excess resources to those who needed it. In the beginning, people would come to us offering extra goods they had, and I would welcome everyone who reached out.’

What started off as a small volunteer group in March blossomed into *Covid-Thailand Aid*, the volunteer-based NGO that has helped over 86,000 people in Bangkok, with many thousands of hot meals also packaged and delivered to the homeless.

### Migrant workers

The country's large population of migrant workers, many from neighbouring Myanmar and Cambodia, was also hurting. While some people managed to make it home before the borders closed, others were stuck in Thailand with no wages from their jobs as hotel cleaners, kitchen hands and food stall operators.

Within the vast network of around 500 volunteers there are chefs from renowned Michelin star restaurants who choose to collaborate with the organisation by offering up their kitchens and contributing to food donation drives.

<sup>23</sup> <https://www.nytimes.com/2020/07/16/world/asia/coronavirus-thailand-photos.html>

<sup>24</sup> <http://www.haiasiapacific.org/wp-content/uploads/2020/08/HAIAPNewsAugust2020.pdf>

<sup>25</sup> <https://hivelife.com/covid-thailand-aid/>

## The situation in August

In August a sense of normal routine returned to Thailand. Schools reopened with children wearing face masks and studying at spaced-out desks.



Thailand had also allowed a trickle of foreigners back into the country. But with the new arrivals comes the risk of contagion.

‘With the disease still looming,’ said Dr. Taweessin, the health ministry spokesman, ‘we have to keep our guard up.’

The region depends on its porous crossings for economic activity and COVID-19 Infections began to rise along Southeast Asian Borders.

By November, vigilance against the coronavirus was heightened in the Thai border town of Mae Sot, which sits directly across the Moei River from Myawaddy, Myanmar.

On December 8 Hannah Beech reported again in the New York Times.<sup>26</sup>

The border between Thailand and Myanmar is more than 1,500 miles long, much of it thickly forested and although Myanmar has suffered runaway transmission of the coronavirus, Thailand, so far, had not.



<sup>26</sup> <https://www.nytimes.com/2020/12/08/world/asia/covid-thailand-myanmar-migrants-border.html>

During the last weeks of November, at least 19 COVID-19 cases in Thailand were linked to migrant workers who slipped between the two countries undetected.

The health authorities in Thailand began racing to trace the contacts of hundreds of people who may have been exposed to the virus. These events have cast a spotlight on how regions like Southeast Asia that depend on porous borders are fighting to keep the virus out while allowing economic activity to continue.

The winding frontier between Myanmar and Thailand — separating one country that has managed the virus from one that has not — is putting the crisis in stark relief.

Compared with other countries, the total caseload in Thailand — a shade over 4,000 infections — seems absurdly low. At the beginning of December, Thailand fortified parts of its border, to try to stop the spread of infections. The police have arrested those suspected of being people-smugglers, who are paid as little as \$US15 to help migrants cross the border illegally.

Undocumented workers, who often labour in crowded conditions, are of particular concern to the authorities because their uncertain legal status also makes them less likely to admit when they are sick, increasing the odds that the virus could spread undetected.

Thailand had begun tightening the Mae Sot border in April, suspending traffic over the Friendship Bridge to Myawaddy. Restrictions eased a bit during June and July, then tightened again in August when the number of cases in Myanmar grew quickly. But undetected cross-border movement continues, including people who want to avoid Thailand’s mandatory two-week quarantine.

Despite this movement, Thailand had not reported sustained local transmission since May. Hospitals were treating about 180 COVID-19 cases, according to health officials, and almost all of them were among people who returned from abroad and tested positive in state-mandated quarantine.

A number of people — mostly women — slipped across the border on multiple days in late November and dispersed to at least five locations across Thailand. The health authorities closed schools, used contact tracing and disinfected airports.

As Thais, the women would have had little fear going to hospitals where health care for citizens is subsidized and high quality. But for the many undocumented migrants in the country, medical clinics can be unaffordable and risky. Labour groups say that they know of multiple cases of workers returning to Myanmar from Thailand with the virus, leading to fears that it may be quietly circulating in Thai factories and construction sites, despite the low national numbers.

In Mae Sot, Thais have started to organize neighbourhood watches and set up night-time road

blocks to prevent outsiders from coming in. But in a border town situated directly across the river from a place in Myanmar where at least 1,200 people have had COVID-19, keeping out disease is all but impossible.

'This area depends on trade, and on migrants,' said Col. Krit Kityathiwat, deputy commander of the 4th Infantry Regiment that patrols Mae Sot area border. 'We don't want to be known as the place where COVID-19 is'.

### Testing

Thailand has developed its first rapid test for COVID-19 that provides results within a day, boosting the country's fight against the disease.<sup>27</sup>

On September 6, Biosafety mobile units travelled to Khaosan Road, offering free COVID-19 tests to people who could be at risk after a COVID-19 positive patient reportedly visited entertainment venues near Bangkok's famous neighbourhood during the previous 14 days.<sup>28</sup>

The mobile units aimed to expand the screening to cover all risk groups.

Developed by the Medical Sciences Department, the new tests could cost as little as Bt100 (\$US 3.3) each once commercially produced<sup>29</sup>, compared to Bt300-Bt500 (about USD!0 -15) for imported versions.

The Thai-made rapid test kits use the immune-affinity method to read serum samples from plasma and blood from the fingertips, explained Supakit Sirilak, department acting director-general.



Once approved by the Food and Drug Administration (FDA), the test kits will be used by clinicians to screen people who have had symptoms for more than 15 days. Produced in conjunction with Siam BioScience, they use the real-time RT PCR technique, recognised by the World Health Organisation. Currently, 236 COVID-19 laboratories nationwide are checking more than 20,000 samples per day – 10,000 daily in Bangkok alone.

The new test kit is more than 90 per cent accurate, with FDA approval expected to take about one month. The department has a production capacity of 3,000 tests per week but is ready to transfer the technology to commercial producers.

### Thai Vaccine Plans<sup>30</sup>

Thailand's Ministry of Public Health has signed an agreement with Oxford/AstraZeneca to purchase 26 million at a cost of around 6 billion Thai baht (apprx \$US193.3 million). This is not going to take care of most of the people who need it as it will cover only 13 million people - roughly 20% of the population, and other vaccines are also being considered for the future. There has been an agreement for manufacturing this vaccine with Siam Bioscience which will supply not only Thailand in the future, but also other neighboring South-east Asian countries.

In-country there are seven vaccine candidates but all are in pre-clinical stage so their timely availability cannot be relied on, given the fast availability of other vaccines. These vaccine candidates are all being prepared by Thai institutions or companies in collaboration with such bodies as Chulalongkorn University, the Government Pharmaceutical Organization (GPO), Chula vaccine research centre with the University of Pennsylvania; and Baiya Pharma with Chula vaccine research centre.

### The current situation (December)

From Giten Khwairakpam<sup>31</sup>

During December there have been several cases (which are considered local transmissions) in the Northern part of the country. In addition, as people come in from other places - mostly Thais on repatriation flights - there have been a few cases (considered as imported cases).

Local cases are occurring in the Northern part of the country (mostly Chiangrai province) among people who worked across the border in Myanmar and came back to Thailand through natural tracks in the hills - not through immigration points where people are checked for symptoms. Vigilance in these areas ensures that people are intercepted and tested. At the moment the infection seems to be contained and only in those parts of the country.

**Bangkok:** More concerning are cases among nurses (four) in Bangkok in one of the most expensive and well-known private hospitals in the last few days. The hospital says that they were working across several quarantine centres (which are mostly hotels where people from outside stay 14 days) and they were infected while providing temperature checks and care.

<sup>27</sup> <https://www.nationthailand.com/news/30397474>

<sup>28</sup> <https://www.nationthailand.com/news/30394101>

<sup>29</sup> Free for Thai citizens

<sup>31</sup> Currently, Giten works with amfAR's TREAT Asia program in Bangkok, Thailand as the Community and Policy Project Manager



Those nurses and their close contacts have been isolated and quarantined. No more cases have been reported since those cases were identified; and initiatives were put in place to try to limit the practice of working across different sites. But questions are raised concerning the protection of staff providing care.

[December 19: <https://tinyurl.com/y8rtojfu> In Samut Sakhon province, more than 500 Shrimp factory workers from Myanmar, mostly asymptomatic, were found infected. The factory and the whole province were closed and curfew instated. Ed.]

## COVID-19: Widening inequities from a pandemic

Prepared from a presentation by Fran Baum to a PHM/SHAPE UP Philippines Webinar *What the Philippines Can Learn From Other Countries - On COVID-19 and Beyond*

(with acknowledgement to PHM colleagues, Lauren Paremoer, Sulakshana Nandi & Hani Serag, People's Health Movement & Southgate Institute for Health, Society and Equity)

### COVID-19 has highlighted:

- Discrimination and historical injustices
- Exploitative working conditions and lack of social security
- Weakness of privatised and commercialised health and care systems
- Authoritarian responses undermining human and ecological rights
- Overlapping crises

### Social Determination of Health

#### Specific immediate barriers and larger scale structural barriers

The COVID-19 pandemic has brought into focus the barriers to ensuring equitable access to essential health technologies – PPE, ICU capacity, diagnostics, medicines and vaccines. Thousands of people have been infected due to lack of PPE. Thousands have died because they did not have access to properly equipped ICUs and the epidemic has surged where public health officials did not have access to fast, cheap, reliable diagnostics.

#### Exploitative working and living conditions

Overall, COVID-19 has been devastating to precarious workers who fall into social categories (migrants, racial and ethnic minorities, lower castes, women) that are focal points for multiple intersecting dimensions of domination and discrimination. Refugees often fall within these groups. In Australia refugees applying for residence status are not eligible for social security payments or public health service.

The pandemic has underscored that precarious work, and exploitative and adverse working conditions act as drivers of infection. Precarious workers have limited access to healthcare information and healthcare

services. They receive wages that limit access to sufficient and good quality food, water and sanitation, and healthy housing. Fear of loss of income discourages precarious workers from self-isolating when exposed, or quarantining when COVID-19 positive.

### Meat processing industry



From the United States to Brazil, Britain, Germany and Australia, meat-processing plants have played a significant role in spreading COVID-19.<sup>32</sup>

In Brazil, union officials allege one-fifth of the industry's employees – about 100,000 meat plant workers – have been infected. In the US, meat-processing facilities have been linked to more than 38,500 cases and at least 180 deaths. Meat works made up almost half of US COVID-19 hotspots in May. They were also the major initial source of infections in Australia's June 'second wave' outbreak in the state of Victoria.

There are many clusters of meatworkers globally. They are often migrants working as casual workers with low wages and no sick leave - working in conditions of poor air quality. They live in common housing and are required to use communal transport.

[December 19: 500 Shrimp factory workers in Thailand affected - <https://tinyurl.com/y8rtojfu> Ed.]

### Migrant workers in India

Indian lockdown measures led to one of the largest people movements in the country's history. Labourers and informal workers, mainly from lower caste and tribal communities, walked with their families and often faced starvation, police brutality, illness and even death. The reverse migration caused an estimated 971 deaths. Causes of death include starvation and financial distress, accidents, suicides, police brutality, and lack of medical care.

The ILO estimates, that as of 4 June, 55 million or 72.3% of domestic workers were at risk of losing their

<sup>32</sup> <https://theconversation.com/treating-workers-like-meat-what-weve-learned-from-COVID-19-outbreaks-in-abattoirs-145444#:~:text=In%20the%20US%2C%20meat%2Dprocessing,in%20the%20state%20of%20Victoria>



jobs, of whom 67.3% are migrant workers and therefore at higher risk.

COVID-19 is proof of just how socially determined health is. A virus does not care how much money you have or how you live. Yet the pandemic has shown in the starkest terms that inequality kills.

‘....the pandemic is increasing poverty and inequality between richer countries that can afford to bail out their firms and provide social safety nets, and poorer countries that do not have the capacity to do so’.

*Goldin and Muggah (2020)  
World Economic Forum Covid Action Forum<sup>33</sup>*

### **Privatised and commercialised health and care systems**

Aged care homes in Australia are mostly run by private, for profit organisations. As well as their vulnerable residents, their staff share many important similarities with other precarious workforces: insecure casual employment, low casual salary, communal living arrangements and high mobility. In addition, staff in aged-care facilities in Australia often work at multiple facilities. In aged care we’ve seen a lack of appropriate workers during the pandemic leading to neglect of residents. This situation is a significant risk factor because casual, low-paid workers have greater incentive to come to work when they’re sick. Recent Australian government moves to provide financial compensation or paid pandemic leave when workers need to take time off to get tested and/or self-isolate are welcome, but came too late. The disability sector also lacks a ‘surge workforce’ — people skilled in disability support who are able to step in and provide care in the event usual workers become sick. Not all workers had accessed even basic infection control training, and of those who had, half wanted more training. Even those properly trained to use PPE can’t necessarily access it. Distribution of PPE has been beset with difficulties and the disability workforce hasn’t been a priority.

### **US Privatised health system**

The US privatized health system means that millions of people have minimal access to health systems because of the very high costs.

### **Global Governance (undemocratic dominance by private philanthropy, for-profit consulting firms and Big Pharma)**

It is possible for a tiny group to exercise increasing influence over the non-profit sector, and to provide funds worth hundreds of millions or even billions of dollars to the causes that matter most to them. Big Pharma has influenced governments to decline the use

the TRIPS flexibilities that can allow government to access affordable medicines, for example through the government use clause or compulsory licensing.

### **Erosion of rule of law and militarisation of responses**

- Militarisation of pandemic responses – undermining human rights
- Restriction of free flow of information: The UN Special Rapporteur on Freedom of Expression has expressed concern about the introduction of measures in Belarus, Cambodia, China, Iran, Egypt, India, Myanmar, and Turkey that restrict the free flow of information and punish those distributing it
- Threats to Security: Pandemic potentially increases existing threats to national security such as transnational crime, cybercrime, terrorism, weapons proliferation, people smuggling and human trafficking.

### **Climate Crisis, human behaviour and COVID-19**

‘COVID-19 is the latest dangerous infectious disease facilitated by human behavior that provides transmission opportunities from animals into humans. Other examples include Zika, Hendra, Ebola virus. Middle East Respiratory Syndrome and Avian Influenza.’

Jenkins et al The Lancet, August 2020.

[https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196\(20\)30165-0/fulltext](https://www.thelancet.com/journals/lanplh/article/PIIS2542-5196(20)30165-0/fulltext)

The Peoples’ Health Movement asks

### **Is a better world possible?**

What is needed:

- Global governance for health, eg appropriate trade agreements
- Binding treaties on business (TNCs) and human rights
- Social security for all
- Universal publicly funded free-at-point-of-use health care for all
- Democratisation of health service governance
- Worker empowerment – trade unions, co-operatives, labour protection laws
- Reduce wealth inequities (eg taxation, death taxes, regulate illicit financial flows ).

[Reviewer’s comment - yes they are the bedrock for a better world. Some of them have been achieved in some societies (Social Security for all). Why have they been not achieved in other countries? Questions for us to ponder ..... ]

<sup>33</sup> <https://www.weforum.org/agenda/2020/10/COVID-19-is-increasing-multiple-kinds-of-inequality-here-s-what-we-can-do-about-it/>

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## World Antibiotic Awareness Week

In spite of the overwhelming COVID-19 pandemic, activities associated with the annual World Antibiotic Awareness week – November 24 – 30 – were not forgotten.

### History of the WAAW – from European Antibiotic Awareness Day (EAAD) to WAAW

November 18, 2008 was the first European Antibiotic Awareness Day. Objectives were to raise awareness about the threat to public health of antibiotic resistance and the importance of prudent antibiotic use.

1. European Antibiotic Awareness Day occurred from 2008 - present
2. World Antibiotic Awareness Week 2015-2019 (WHO)
3. World Antimicrobial Awareness Week 2020 (WHO) 18-24 November

In 2020, the word *antimicrobial* replaced *antibiotic* to cover the use of all antimicrobial agents. WAAW 2020 expands the scope of the campaign to all antimicrobials and will facilitate a more inclusive global response to antimicrobial resistance and support a multisectoral **One Health** Approach with increased stakeholder engagement.

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## WAAW Thailand 16-24 November



From Dr Niyada Kiatying-Angsulee, Manager, Drug System Monitoring and Development Center (DMDC) and Chair of the HAIAP Governing Council.

The Ministry of Public Health, Thailand, worked with 22 agencies to raise awareness of drug-resistant infections, to mark World Antimicrobial Awareness Week (WAAW).

A series of presentations were programmed to cover a variety of questions about drug-resistant infection that raised doubts for many people, including – ‘What is drug-resistant infection?’ – ‘How does it happen?’ – ‘Is it dangerous or not?’ – ‘Can it come back again?’

Dr Niyada Kiatying-Angsulee led the week covering the rationale behind the week and the necessary elements of the campaign against antimicrobial resistance.<sup>34</sup>

She asked her audience: ‘Before coming tonight,

1. Have you ever heard anything about antimicrobial resistance?
2. Have you heard anything about Thailand Antibiotic Awareness Week before?’

### Dr Niyada explained **One Health**:

**One Health** is a collaborative, multi-sectoral, and trans-disciplinary approach — working at the local, regional, national, and global levels — to achieve optimal health outcomes by recognizing the interconnection between people, animals, plants, and their shared environment.

People manipulate antimicrobials in different sub-ecosystems (human, animal, plant, environment) that have an impact on the health situation of human, animal, plant, and microbes in various environments. Therefore it is important to target all the involved stake-holders for knowledge, attitude/awareness, practice, management, monitoring and evaluation, information and education campaigns and Regulation.

Findings of a WHO global survey on **behavioural changes** raised key questions:

*What is already known?* Public knowledge on appropriate use of antibiotics tends to be low and antimicrobial awareness campaigns (AACs) have been suggested as an intervention to improve outpatient antibiotic use.

*What are the new findings?* Numerous countries have conducted AACs but public communication and key messages are not always supported by evidence, nor targeted to conditions for which inappropriate use is highly prevalent in that setting (eg urinary tract infections).

A study reported in the British Medical Journal<sup>35</sup> Indicated that the evaluation of Antimicrobial Awareness Campaigns (AACs) remains suboptimal and it was suggested that:

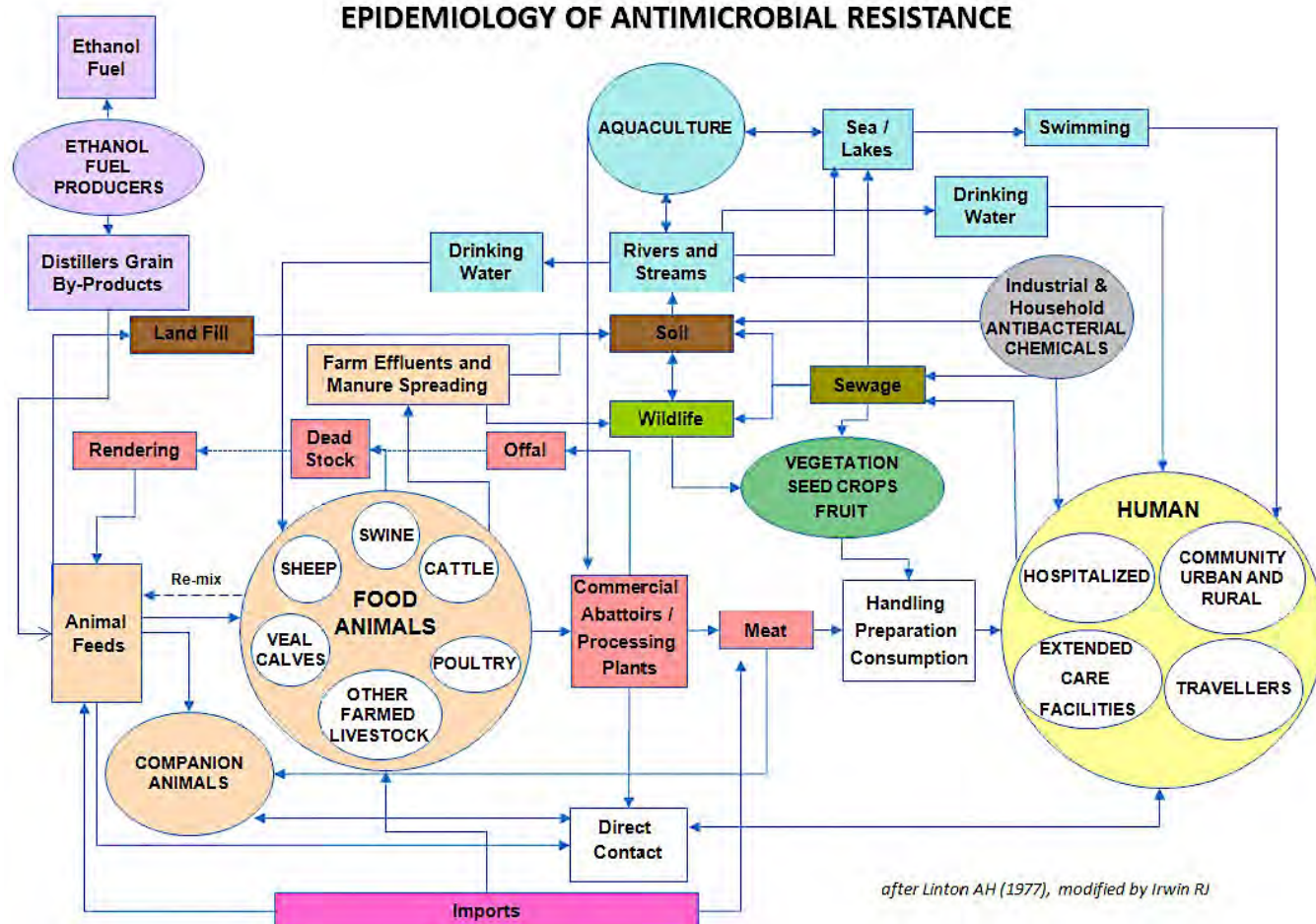
- Funding agencies should dedicate sufficient resources for the development and implementation and for the evaluation of AACs.
- Experts in health communication, social marketing and infectious diseases should be involved in the planning and conduct of AACs.
- AAC messages should be updated regularly reflecting local misconceptions and context.

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<sup>34</sup> <http://www.haiasiapacific.org/wp-content/uploads/2020/12/WAAWThai-17Nov20-newRed.pdf>

<sup>35</sup> <https://gh.bmj.com/content/4/3/e001239>

## EPIDEMIOLOGY OF ANTIMICROBIAL RESISTANCE



Those recommendations have been followed in Thailand.

### World Antimicrobial Awareness Week 2020 in Thailand

WAAW 2020 aimed to increase awareness of global antimicrobial resistance (AMR) and to encourage best practices among the general public, health workers and policy makers to avoid the further emergence and spread of drug-resistant infections in Thailand.

The slogan used in previous years - 'Antimicrobials: handle with care' - remains appropriate and applies to all sectors. The theme for the human health sector for WAAW 2020 was 'United to preserve antimicrobials'.<sup>36</sup>

Thailand's World Antimicrobial Awareness Week 2020 (16-24 November 2020) program included

1. Opening Session (16 Nov by MoPH and allies)
2. Platform 1: Toward a new normal for appropriate regulation of antimicrobial distribution (16 Nov by MoPH, MoAC)

3. Platform 2: Raising awareness of AMR and understanding AMU in animals (Veterinary sector)
4. Platform 3: Promoting AMR awareness in the general public and health professionals.

In Thailand there has been more than 10 Years of integrated work on AMR (2010-2020) from the bottom up. There has been a 'Campaign / Ground War / Air War' to cover Antimicrobial Resistance (AMR) occurring when bacteria, viruses, fungi and other organisms are found in people, animals, food, plants and the environment (in water, soil and air). To support the work there are:

1. Technical Support
2. Monitoring and evaluation
3. Continuous collaboration and implementation of activities in all disciplines
4. Multi faceted and Interdisciplinary interventions
5. Networking and collaboration

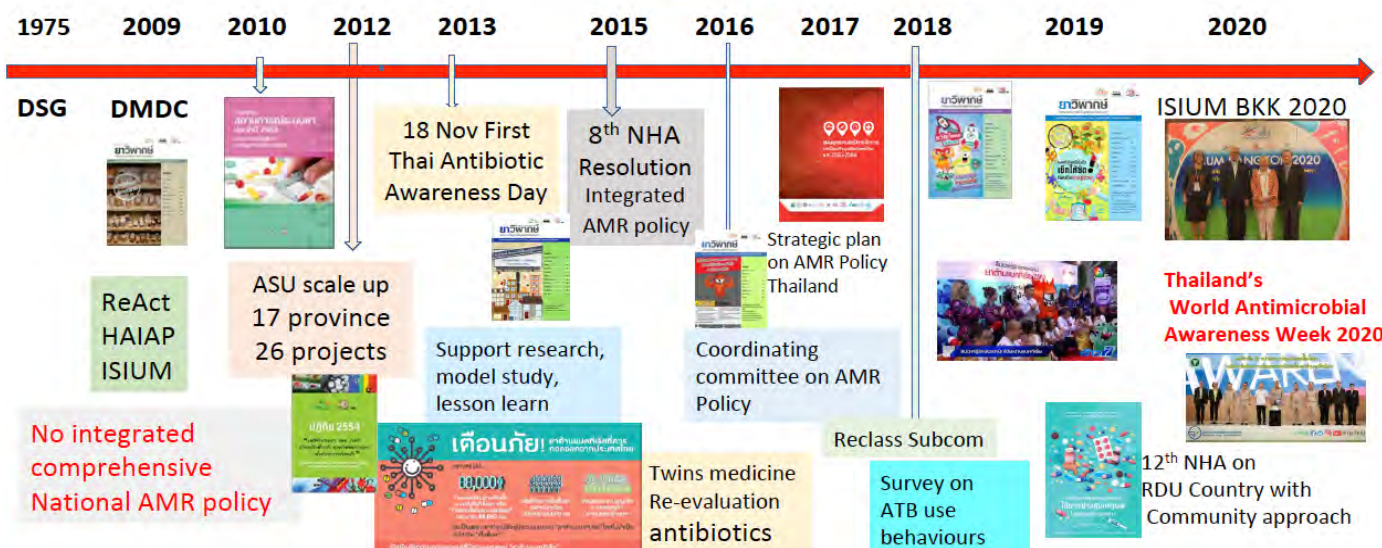
<sup>36</sup> <https://www.who.int/news-room/events/detail/2020/11/18/default-calendar/world-antimicrobial-awareness-week-2020>



## DMDC and AMR Policy movement



### AMR = Risk factor to health



### Annual activities since 2013 have included

- Thai Traditional Drama (Li-kae) with the Faculty of Fine and Applied Arts, CU
- Thai Puppets Group (Chiang Mai)
- Community Drama (Gap Fai - Chiang Mai)
- Booklets for children
- Flash Dance
- Fashion week
- Online clips
- Cm Café idol
- Arts camp

The campaign is ongoing. It is more than just the 'week', and in 2020/21 includes the following activities:

3 November: Lost in the family from AMR

10 November: What is AMR/ABR?

17 November: Common cold 'No need for an antibiotic'

24 November: How to self diagnose: to differentiate sore throat/common cold from a bacterial infection

1 December: Behaviours that cause AMR (central dialect)

8 December: Cough and cold in children – What are concerns? How to manage them?

15 December: No need for antibiotics in diarrhoea

22 December: Which wounds do not need antibiotics?

29 December: Behaviours that cause AMR (northern dialect)

5 January: Thai herbs as alternatives to antibiotics

12 January: AMR in the era of COVID-19

19 January: Behaviours that cause AMR (NE dialect)

26 January: Food and AMR

2 February: Behaviours that cause AMR (Southern dialect)

Links leading to records of the Thai activities: (many can be google-translated to English)

[www.thaidrugwatch.org](http://www.thaidrugwatch.org)

<http://atb-aware.thaidrugwatch.org/>

<https://www.facebook.com/watch/?v=389477888671823>

<https://www.youtube.com/watch?v=-Y6ieVtl5hY>

<https://www.who.int/campaigns/world-antimicrobial-awareness-week>

[https://www.youtube.com/watch?v=A-H\\_YJK3ZBk](https://www.youtube.com/watch?v=A-H_YJK3ZBk)

<https://www.amrdictionary.net/infobox.aspx?pageID=110&lang=en-GB>

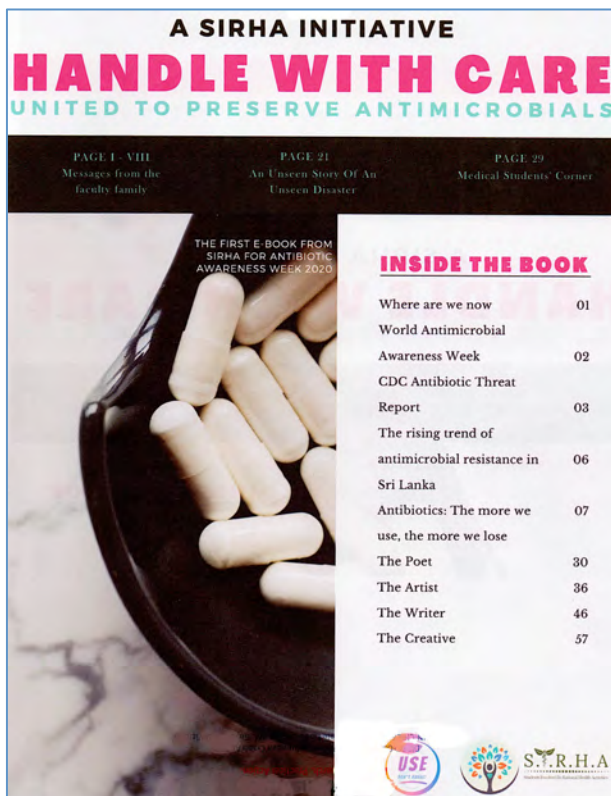
The 2020 Campaign organisers forwarded the messages and materials to stop AMR online to health facilities and hospitals. Thirty eight hospitals held exhibitions.



## Sri Lanka Student initiative

From Chamath Lavinda – President of Sri Lanka Students Involved in Rational Health Activities (SIRHA).

The students came up with the initiative of preparing an e-book called 'Handle with Care' targeting antimicrobial resistance that would be launched during World Antimicrobial Awareness Week which took place from 18th -24th November 2020.



As explained by Chamath Lavinda, the President of the students - 'this is not entirely a scientific article-type book'. The book does include scientific material but also includes creative illustrated and engaging stories and poetry to cover all the different settings affected by antimicrobial use and misuse - to convey the messages to medical students, university students and most importantly, the general public.<sup>37</sup>

<sup>37</sup> [https://drive.google.com/file/d/1iQa4\\_6YgFnQ\\_W2cOQNMIxBQg-tUiUYuc/view?usp=sharing](https://drive.google.com/file/d/1iQa4_6YgFnQ_W2cOQNMIxBQg-tUiUYuc/view?usp=sharing)

*'Everything in this book is made by our own medical students of Colombo Medical Faculty, Sri Lanka. (even the final design)'. Chamath Lavinda.*

The editors of the book, Afrah Niyas and Fayaz Ahamed, said: 'The themes and effort we invested in crafting this book have been a point of pride for us. The words of the writers, the details of the art, the fluency of the poets and the creativity displayed in the book by our medical students stand out as testimony to the multifaceted talents of our student body. Looking beyond the words and the art, what really fills the pages of this book is one resounding thought - it is the thought to preserve antimicrobials. We as medical students will one day inherit the future of medicines and our future is shaped by the present.'

**This book is a pledge to preserve**

**This book is a promise to prevent**

**This book is a reminder to Handle with Care.**

In a foreword to the book, the Dean of the Faculty of Medicine, Vidya Jyothi Professor Vajira H W Dissanayake congratulated the students involved in the production of the book. He said 'It highlights the creative talents of the students and their ability to communicate health messages to the wider community. I believe it is the first of its kind produced by a medical student groups anywhere in the world' 'I wish that all those reading this e-book will benefit immensely from its scientific articles as well as the other contents like the short stories. I hope that readers will become ambassadors who spread the message of the need to promote rational use of antimicrobials and contribute to prevention of antimicrobial resistance'



Sadeepa Thilakarathna

## Antimicrobial resistance: The need to tackle the access-excess problem

Nafis Faizi writing in *Down to Earth* on the access-excess problem for WAAW 2020.<sup>38</sup>

Published: Tuesday 17 November 2020 by CSE (Centre for Science and Environment New Delhi)<sup>39 40</sup>



Antimicrobial resistance (AMR) is perhaps the greatest health threat to human beings, partly because of its direct and indirect impact on most diseases affecting human health. This threat, however, exists because the warning was not heeded.

Alexander Fleming spoke in depth about negligent use and resistance in his Nobel Prize acceptance speech in 1945. Not only was resistance to sulphonamides known before the discovery of penicillin, 38 per cent of *Staphylococcus aureus* strains were reported to be penicillin-resistant in a London hospital three years after Fleming's warning in 1948.

We are currently staring at a world where several antimicrobials have stopped working or will stop working if we do not mend our ways. One must, however, resist the temptation to consider AMR an **event**, as war-like metaphors about it often suggests.

AMR is a **process**, and like every process<sup>41</sup>, it has its own drivers and determinants. The threat has evolved over time due to our acts of *omission* (not paying enough attention to health systems, infection prevention and other determinants) and *commission* (overuse / misuse of antibiotics and jeopardising access through intellectual property rights).

Here, I focus on one fundamental cause of antimicrobial resistance in the human health sector: The access-excess problem. Lack of access, and excess (overuse / misuse) of antimicrobials are both irrational and contribute to AMR.

<sup>38</sup> [https://www.downtoearth.org.in/blog/health/amp/antimicrobial-resistance-the-need-to-tackle-access-excess-problem-74271?\\_twitter\\_impression=true&s=03](https://www.downtoearth.org.in/blog/health/amp/antimicrobial-resistance-the-need-to-tackle-access-excess-problem-74271?_twitter_impression=true&s=03)

<sup>39</sup> <https://www.cseindia.org/page/aboutus>

<sup>40</sup> The author is Assistant Professor, Department of Community Medicine, JN Medical College, AMU, Aligarh. Views expressed are the author's own and don't necessarily reflect those of Down To Earth

<sup>41</sup> <https://www.downtoearth.org.in/blog/health/one-health-action-is-a-must-to-slow-down-amr-chronic-pandemic-74270>

The World Health Organization (WHO) defines access as 'having medicines continuously available and affordable at public or private health facilities or medicine outlets that are an hour's walking distance from the home.'

Poor access, including no access and delayed access to antibiotics, causes millions of deaths annually. The majority of the world's annual 5.7 million antibiotic-treatable deaths occur in LMICs where the mortality burden from treatable bacterial infections far exceeds the estimated annual 700,000 deaths from antibiotic-resistant infections.<sup>42</sup> This figure is far more than for AMR itself, which causes about 0.7 million deaths. It means that lack of, or delayed access to antibiotics kills more people than antibiotic resistance.

Poor access of antimicrobials leads to increase in resistance due to three main factors:

*First*, it leads to ineffective treatment and death. More than one million children die every year due to untreated pneumonia and sepsis. Only 12.5 per cent of children with suspected pneumonia in India receive antibiotic treatment. Both ineffective treatment and death leads to continuance of the infection transmission cycle as others are infected.

*Second*, when patients do not complete the full course of antibiotics<sup>43</sup>, often after symptomatic relief, it gives the surviving micro-organisms a golden opportunity to develop resistance against the antimicrobial used.

That is what Fleming warned about in his speech: '*If you use penicillin, use enough.*'

*Third*, poor access to first-line antibiotics, leads to increased and unnecessary use of newer broader spectrum group of antimicrobials. Unnecessary use of newer broader spectrum antibiotics further lead to development of resistance in second line and at times, last resort antibiotics.<sup>44</sup> An important example that might turn Fleming in his grave is penicillin itself. Benzathine Penicillin stockouts are a key example of poor access to first line antibiotic.

Despite its vital role in treating gonorrhoea, acute rheumatic fever and for prevention of mother to child transmission of syphilis, Benzathine Penicillin stockouts have been reported in as many as 39 countries in the last few years.

<sup>42</sup> <https://www.sciencedaily.com/releases/2019/04/190409135849.htm#:~:text=The%20majority%20of%20the%20world's,deaths%20from%20antibiotic%2Dresistant%20infections>

<sup>43</sup> <https://www.downtoearth.org.in/news/food/our-daily-dose-of-antibiotics-71804>

<sup>44</sup> <https://www.downtoearth.org.in/blog/health/drug-resistant-infections-the-silent-pandemic-that-we-must-tackle-now-74255>

Ironically, this situation increases the resistance potential of *Neisseria gonorrhoea*, which is already a high-priority pathogen for research and development of new antibiotics.

### **The mechanism of increasing resistance is further explained**

Access barriers could be due to therapeutic bottlenecks and delays in bringing new antibiotics to market, financial issues (unaffordability of a rational course) or structural issues (obstacles in delivery at the system/clinic level).

However, most antimicrobials should be affordable. More than 95 per cent on the WHO Essential Medicines List (EML) are off patent and the bulk of the remainder on the List are second-line antiretroviral drugs for HIV and AIDS.

Despite this fact, shortages, stock outs and unavailability remain common.<sup>45</sup> Access is dependent on four factors: Reliable health-care and supply systems, sustainable financing, affordable pricing and rational selection and use (WHO, 2004).

As part of the 2017 Essential Medicines List, WHO carried out a comprehensive review of antibiotics and introduced a new categorisation to guide prescriptions and treatment while monitoring consumption. By the end of 2023, WHO aims that 60 per cent of all antibiotics will be from the 'access' category, the narrow spectrum antimicrobials with lower resistance potential.<sup>46</sup>

Penicillin belongs in the reliable 'access' category. While the WHO effort is laudable, in most countries in the south including India, the data for estimating total access antibiotic consumption are not available so far.

At the other extreme lies the overuse and misuse of antimicrobials or the 'excess' problem. Way back in 1943, Rene Dubos, widely hailed for discovering the most powerful antibiotic of his time, gramicidin (which was later eclipsed by streptomycin) prophetically warned students against 'the wasteful and inconsiderate use of antibiotics'.

Despite the warnings, antibiotic use has increased by 36 per cent between 2000 and 2010 (Laxminarayan et al, 2016<sup>47</sup>). Though the increase in consumption is worldwide, it is not uniform across the world.

About 75 per cent of this increase is reported from BRICS countries (Brazil, Russia, India, China, South

Africa), with 23 per cent increase in retail sales volume in India alone, which has poor control against over the counter (OTC) sales (Laxminarayan et al, 2016).

As the per capita consumption of antimicrobials in India remains low, the bigger problem is misuse of newer broad spectrum antimicrobials. Such misuse is due to provider, regulation or user-related factors. The provider related factors include prescribing antibiotics when not required and using broader spectrum antimicrobials or multiple antimicrobials as shotgun therapy. Such factors are prevalent due to poor antimicrobial stewardship knowledge among doctors, as the Chennai declaration noted.<sup>48</sup>

Diagnostic uncertainty, lack of quality and timely diagnostics as well as unavailability of locally relevant and regularly updated Standard Treatment Guidelines are other factors that contribute to provider and regulation problems.

Sadly, the general public has little knowledge about antimicrobial resistance. This lack of information leads to pressure from the patients / end users themselves to prescribe (providers) or sell (pharmacists) antibiotics whether they are needed or not.

The access-excess problems are directly related to AMR and need to be addressed if we want to avert this global catastrophe. However, the problem cannot be solved with quick-fix solutions, but only with a whole health system-centric response.

The fight against AMR needs a strong inclusive health system with a well-funded and publicly provisioned primary healthcare and a regulated private health system together with a model of continuum of care that is systematic and organised.

More from Down to Earth

Antibiotics: even low use in children can have a negative impact on health – new research

<https://www.downtoearth.org.in/news/health/antibiotics-even-low-use-in-children-can-have-a-negative-impact-on-health-new-research-67543>

How drug resistance spreads in urban environment

<https://www.downtoearth.org.in/news/water/how-drug-resistance-spreads-in-urban-environment-67474>

India joins global research hub on antimicrobial resistance

<https://www.downtoearth.org.in/news/health/india-joins-global-research-hub-on-antimicrobial-resistance-66713>

<sup>45</sup> <https://www.downtoearth.org.in/blog/health/world-antibiotic-awareness-week-lack-of-access-67796>

<sup>46</sup> See WHO's AWaRe classification and access watch: [https://www.who.int/medicines/news/2019/WHO\\_releases2019AWaRe\\_classification\\_antibiotics/en/](https://www.who.int/medicines/news/2019/WHO_releases2019AWaRe_classification_antibiotics/en/)

<sup>47</sup> <https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1001974>

<sup>48</sup> <https://www.sciencedirect.com/science/article/abs/pii/S2213716513000040>

