Florida High Schools Model United Nations

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WORLD HEALTH ORGANIZATION

GLOBAL ALERT AND RESPONSE FOR PANDEMICS AND EMERGING DISEASES

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Introduction

Threats to global public health present grave political problems, disrupt economies, and threaten the stability of entire societies. For nearly 40 years, the international community has confronted the HIV/AIDS pandemic, while simultaneously confronting rapid outbreaks of H1N1, or "swine flu" in 2009, H1N5, or "bird flu" in 2007, and Ebola in 2014 and 2018. New and emerging threats to global public health frequently present the World Health Organization (WHO), national, local, and regional governments, public health agencies and health providers, and communities around the world with formidable challenges. To ensure inclusive and sustainable human and economic development, it is vital that delegates to the WHO develop and support effective global alert and response systems for pandemics and emerging diseases.

The World Health Organization (WHO) defines a pandemic as "a worldwide epidemic of a disease. It does not necessarily mean mass fatalities. A pandemic refers to how far across the globe the disease has spread…."[1] Pandemics are then classified as to how widely they spread, and they may reach varying levels of severity in different countries. Countries with more developed and well-financed public health systems are generally more likely to respond quickly and effectively to emerging pandemics. Developing effective pandemic response mechanisms that are cost-effective and widely and readily available will comprise vital elements of the work undertaken by WHO delegates. Several current pandemics, including tuberculosis (TB), HIV/AIDS, and malaria, as well as previous instances, such as H1N1, commonly known as "swine flu", will be analyzed. WHO delegates may also wish to incorporate current as well as new and emerging diseases not discussed in this background guide, including, but not limited to: Ebola; and various strains of influenza, including H1N5, more commonly referred to as "avian flu" or "bird flu".

Combating Tuberculosis (TB) and Multidrug-resistant Tuberculosis (MDRTB)

Tuberculosis (TB) is a highly infectious bacterial disease that has plagued humanity for over 4,000 years; ending tuberculosis in the next 10-15 years, as world leaders have pledged, including at the recent, and first ever, UN General Assembly High-Level Meeting on the fight

[1] Regional Office for Western Pacific-World Health Organization, "Pandemic H1N1 2009", 2009. Found at: http://wpro.who.int/health_topics/h1n1/info/info_pandemic.htm

against tuberculosis[2], is an ambitious and necessary goal. According to the World Health Organization (WHO), TB accounted for 1.7 million deaths worldwide in 2016.[3] Tuberculosis (TB) is particularly pernicious in its devastating impact on economic and human development activities in the developing world. "In these regions, death and disease from TB occurs most often in the most economically active segment of the population; among the 1.5-2 million people dying annually from TB every year, 75 percent are between the ages of 15 and 24, with TB accounting for almost one-fifth of all deaths in this age group."[4] Tragically, too, tuberculosis (TB) is likely to be transmitted in familial settings; "it is estimated that each infectious patient infects 25-50 percent of his household contacts."[5] The probabilities of transmitting TB are compounded by the ever-present harbingers of poor health outcomes: poverty; malnutrition; overcrowding; lack of proper air circulation and ventilation; unsanitary living conditions; and insufficient access to proper medical care and medication.

Tuberculosis (TB) has been a leading cause of death worldwide for over four millennia but multidrug-resistant tuberculosis (MDRTB) only emerged as a serious threat to global health in the past 35 years. When patients begin but not do not complete the appropriate course of drugs, they become highly susceptible to multidrug-resistant tuberculosis (MDRTB), particularly because "MDRTB is a specific form of drug-resistant TB due to a bacillus resistant to at least isoniazid and rifampicin, the two most powerful anti-TB drugs."[6] While tuberculosis (TB) is found more frequently in poorer communities, its highly contagious nature makes it a serious danger to all. WHO has asserted that "given the increasing trend toward globalization, trans-national migration, and tourism, all countries are potential targets for outbreaks of MDRTB."[7]

Countries in Eastern Europe, the former Soviet Union, and Central and South Asia continue to be amongst the global hotspots for MDRTB, with China, India and Russia accounting for 47% of the newly identified 490,000 cases of MDRTB in 2016.[8] Sub-Saharan African countries and Afghanistan are also areas of grave concern for the spread of MDRTB. Multidrug-resistant tuberculosis (MDRTB) is especially insidious because it increases the complexity and difficulty of treating those who are infected as well as the resistance and resignation, respectively, of many politicians, pharmaceutical companies, and public health professionals to introducing second-line drugs and to higher mortality rates. Physician Paul Farmer notes that "when patients have MDRTB, they require longer periods of treatment – about two years of a multidrug regimen. This compares with the six to nine months of treatment

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[2] United Nations General Assembly (UNGA), "High-Level Meeting on the fight against tuberculosis", New York, September 26, 2018. Found at: http://www.who.int/news-room/events/un-general-assembly-high-level-meeting-on-ending-tb

[3] World Health Organization (WHO), "Factsheet: Global Tuberculosis Report 2017", 2017.

[4] Jim Yong Kim, Aaron Shakow, Arachu Castro, Chris Vanderwarker and Paul Farmer, "Tuberculosis Control", from Richard Smith, Robert Beaglehold, David Woodward and Nick Drager, eds., *Global Public Goods for Health: Health Economic and Public Health Perspectives*, Oxford University Press, Oxford, United Kingdom, 2003, p. 57.

[5] Kim, Shakow, Castro, Vanderwarker and Farmer, 2003, p. 62.

[6] World Health Organization (WHO), "Drug- and multidrug-resistant tuberculosis (MDRTB) – Frequently asked questions", http://www.who.int/tb/dotplus/faq/en.

[7] WHO, "Drug- and multidrug-resistant tuberculosis (MDRTB) – Frequently asked questions".

[8] WHO, "What is multidrug-resistant tuberculosis (MDR-TB) and how do we control it? Online Q&A", January 2018.

needed for a disease caused by drug-susceptible strains. Several of the less powerful second-line drugs, which are required to treat MDRTB, are also more toxic, with side effects such as nausea, abdominal pain, and even psychosis; as a result, it's harder to manage patients who are receiving them."[9] The treatment regimen also requires more prolonged exposure to chemotherapy and is not widely available in many parts of the developing world.

The costs of treating tuberculosis (TB) are significant, although costs vary tremendously amongst countries depending upon their respective drug pricing regimes. In the United States, the direct costs of treating people with drug-susceptible TB average $17,000 USD, while those infected with MDRTB and the strongest form, extensively drug-resistant tuberculosis (XDRTB), experience average direct costs of $150,000 USD and $482,000 USD, respectively.[10] Paul Farmer also highlights "the strikingly nonrandom occurrence of MDRTB" when pointing out that the vast majority of cases have been "registered among the inner-city poor, with significant outbreaks confined to prisons, homeless shelters, and public hospitals."[11] These groups or sub-populations are also amongst the least likely to be able to resist the ravages of the disease(s), are more likely to be HIV+, and have the least access to the high-quality, affordable health care needed to combat TB, MDRTB, and even XDRTB.

Recent Outbreaks, including Extensively Drug-resistant Tuberculosis (XDRTB)

As strains of tuberculosis (TB) mutate further, health professionals more frequently encounter patients who are resistant to almost all first and second-line drugs. In early 2006, WHO named the most virulent TB mutation identified thus far: extensively drug-resistant tuberculosis (XDRTB). This newest strain, XDRTB, is not only resistant to the two primary front-line drugs, isoniazid and rifampicin, it is also resistant to 3 or more of the six second-line drugs. In October 2006, the WHO Global Task Force on XDRTB met in Geneva, Switzerland to develop and articulate guidelines for countries facing XDRTB outbreaks. As of December 31, 2016, over 8,000 cases of extensively drug-resistant tuberculosis (XDRTB) had been reported in 121 different countries.[12] Health experts originally warned that up to 20% of all MDRTB patients could develop XDRTB; current rates average approximately 6%[13], but health providers and government officials must remain vigilant, particularly as some health professionals have called for a new designation of totally drug-resistant tuberculosis (TDRTB). WHO does not officially recognize any strain of tuberculosis as being totally drug-resistant[14] because of the

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[9] Paul Farmer, *Pathologies of Power: Health, Human Rights, and the New War on the Poor*, University of California Press, Berkeley, California, 2005, p. 118.
[10] TBFacts.org, "TB in the United States – Elimination, drug resistance, stories", 2018. Found at: https://www.tbfacts.org/tb-united-states/
[11] Paul Farmer, *Infections and Inequalities: The Modern Plagues*, University of California Press, Berkeley, California, 2001, p. 232.
[12] TBFacts.org, "XDR – XDR TB, XDR-TB, extensive, treatment, South Africa", 2018. Found at: https://www.tbfacts.org/xdr/
[13] Ibid.
[14] WHO, "'Totally Drug-Resistant TB': a WHO consultation on the diagnostic definition and treatment options", March 21-22, 2012. Found at: http://www.who.int/tb/challenges/xdr/Report_Meeting_totallydrugresistantTB_032012.pdf

difficulty of confirming total resistance in a laboratory setting but some clinical practitioners argue that this definition is relevant and needed.

The Global Fund and the Global Stop TB Plan

One key avenue for both preventing the spread of TB, MDRTB and XDRTB and treating extant cases is the Global Fund to Fight AIDS, Tuberculosis, and Malaria (GFATM). The Global Fund was established in 2002, resulting from recommendations made by WHO's Commission on Macroeconomics and Health (CMH); the Global Fund is a cornerstone program within the UN System to combat the spread of TB, MDRTB and XDRTB, along with WHO's directly observed therapy, short-course (DOTS) and the expanded DOTS-plus initiative. At the time, the Commission on Macroeconomics and Health (CMH) estimated that a minimum of $400 million USD annually for at least a decade would be required to effectively combat TB, MDRTB and XDRTB; current estimates indicate that funding requirements may be closer to $5 billion USD annually, with yearly financing gaps approaching $1.6 billion USD - $3.5 billion USD.[15][16] Private foundations, including the Bill and Melinda Gates Foundation, have donated hundreds of millions of dollars to the Global Fund as well as the Global Stop TB Plan over the past decade but increasing national and local government contributions to these mechanisms is still essential to treating extant cases of TB, MDRTB, and XDRTB, and preventing their spread. The Global Fund to Fight AIDS, Tuberculosis and Malaria remains a critical source of financing for pandemic control. Since its inception, the Global Fund has disbursed nearly $38 billion USD, with current annual totals approaching $4 billion USD.[17]

HIV/AIDS

HIV/AIDS was first officially classified in the early 1980s. By the end of 2017, WHO estimated an approximate global population of 36.9 million people living with HIV/AIDS[18], with 59% of those people, some 21.7 million, receiving antiretroviral treatment (ART).[19] Achieving 100% antiretroviral treatment (ART) remains a crucial but seemingly elusive goal for WHO and the global community.

HIV/AIDS overwhelmingly affects the global 15-49 age group, which constitutes the vast majority of parents and workers worldwide; the millions of AIDS orphans worldwide are the children of many of these parents. Preventing mother-to-child transmission (MTCT) through the effective administration of antiretroviral treatment (ARV) is a vital element in preventing further transmission and spread of HIV/AIDS.

Countries that have most effectively combated the effects and spread of HIV/AIDS have combined emphases on abstinence, increased use of contraceptives, educational programs aimed

[15] WHO, "Tuberculosis Financing and Funding Gaps", 2013. Found at: http://www.who.int/tb/WHO_GF_TB_financing_factsheet.pdf
[16] WHO, "Tuberculosis (TB)", 2018. Found at: http://www.who.int/tb/en/
[17] The Global Fund to Fight AIDS, Tuberculosis and Malaria, "Financials", 2018. Found at: https://www.theglobalfund.org/en/financials/
[18] WHO, "HIV/AIDS: Data and Statistics", 2018. Found at: http://www.who.int/hiv/data/en/
[19] WHO, "Global Health Observatory data repository: Antiretroviral therapy coverage: Data and estimates by WHO region", July 19, 2018. Found at: http://apps.who.int/gho/data/view.main.23300REGION?lang=en

at educating men, women, and children about transmission methods and prevention, and expanding access to antiretroviral (ART) treatment regimens, including at low or no direct cost to the patients and their families. Paul Farmer notes that for poor women around the world, and particularly in developing and the least developed countries (LDCs), "women are at risk [for HIV/AIDS] because poverty is the primary and determining condition of their lives"[20], meaning that low to no cost ARV treatment will improve the lives of millions of women and children around the world.

Malaria

Malaria is a frequently fatal disease spread by mosquitoes. After malaria enters the bloodstream, it infects the liver and red blood cells throughout the body. Once symptoms appear, malaria must be treated quickly, or it may threaten vital organs and/or kill the infected person. In 2016, WHO estimated a total of 216 million people infected with malaria with 445,000 people dying that year from malaria[21]; these totals represent a 12.5% decrease in total infections and a 55.5% decrease in mortality, respectively, between 2006-2016. These improvements in health outcomes are significant but may offer cold comfort to those currently infected and/or who have recently lost family members and friends to malaria.

Vector Control

A key method for preventing malaria infections is vector control. If the vectors, malaria-infected mosquitoes, can be prevented from coming into contact with humans, malaria transmission rates may be greatly reduced. The prevailing methods recommended by WHO, the United Nation's Children's Fund (UNICEF), Roll Back Malaria (RBM), and the Global Fund are: insecticide treated nets (ITNs); and indoor residential spraying (IRS).

Insecticide treated nets (ITNs) are chemically treated bed nets; they have proven to be highly effective at preventing malaria transmission when widely distributed.[22] Distribution of insecticide treated nets (ITNs) has increased significantly in the past decade, with at least 50% of all households in sub-Saharan Africa, the region with the greatest infection and transmission rates for malaria, owning at least one insecticide treated net (ITN); the percentage of households owning at least 1 insecticide treated net (ITN) for every 2 people in the home, the level needed for sufficient protection from malaria, unfortunately "remains inadequate at 43%."[23] Achieving timely and universal distribution of insecticide treated nets (ITNs) remains a critical goal for WHO and the international community.

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[20] Paul Farmer, *Pathologies of Power: Health, Human Rights, and the New War on the Poor*, University of California Press, Los Angeles, 2005, p. 44.
[21] WHO, "Malaria", 2018. Found at: http://www.who.int/malaria/en/
[22] Dr. Jan Kolaczinski, Coordinator of the Global Malaria Programme's Entomology and Vector Control Unit, estimates that 69% of the cases of malaria averted since 2001 were due to the use of insecticide treated nets (ITNs). From: WHO, "The critical role of vector control in the fight against malaria: Interview with dr. Jan Kolaczinski, Coordinator of the Global Malaria Programme's Entomology and Vector Control Unit", April 7, 2017. Found at: http://www.who.int/malaria/media/vector-control/en/
[23] WHO, "World Malaria Report 2017", 2017, p. xiv.

Indoor residual spraying (IRS) is the second form of vector control; in recent years, indoor residual spraying (IRS) has halved from a peak 5.8% in 2010 to 2.9% in 2016, with decreases across all WHO regions.[24] Concerns about the costs as well as the health and environmental impacts of pesticides such as dichlorodiphenyltrichloroethane, commonly known as DDT, factor into the lower incidence of indoor residual spraying (IRS) to prevent malaria.

Access to Medicines

The second phase of eliminating malaria is the treatment of infected persons and the prevention of infection through artemisinin-based combination therapy (ACT) and intermittent preventive therapy during pregnancy (IPT). Ensuring timely and affordable distribution of appropriate malaria drugs to the affected communities is essential to providing appropriate treatment as well as preventing the transmission to vulnerable members of the surrounding communities. As new strains of drug-resistant malaria emerge in different countries, researchers, pharmaceutical companies, and health care providers must adapt and develop effective and affordable treatment regimens.[25]

H1N1

The rapid spread of the H1N1, or "swine flu", pandemic throughout 2009 initially overwhelmed policy-makers and public health systems in many countries. By the end of 2009, WHO stated that over 200 countries and overseas territories had reported outbreaks of H1N1, with over 12,000 deaths globally.[26] More than half of the reported deaths occurred in the Americas, with Europe reporting the second highest number of fatalities, and Africa reporting the fewest H1N1 deaths of any WHO region. While WHO urged aggressive and rapid treatment of H1N1 throughout 2009, some health professionals and community advocates questioned the role of pharmaceutical manufacturers in pushing for such an aggressive and rapid treatment regimen[27]; WHO conducted a review of its own response to H1N1 to determine its adequacy and appropriateness.[28]

In the wake of the hysteria over the H1N1 pandemic, WHO, national governments, health providers, and pharmaceutical companies all faced questions about their roles and responses. At the beginning of the H1N1 pandemic, very few doses of the effective vaccine were available; after the pharmaceutical companies ramped up production, hundreds of millions of unused doses of vaccines were accumulating in countries such as the United States[29] at the same time that neighboring countries like Mexico[30] were struggling to procure enough vaccines to respond to the pandemic.

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[24] WHO, "World Malaria Report 2017", 2017, p. xiv.
[25] Mike Ives & Donald G. McNeil Jr., "As Malaria Resists Treatment, Global Experts Warn of a Crisis", *New York Times*, November 21, 2017.
[26] WHO, "Pandemic (H1N1) 2009 – Update 81", December 30, 2009. Found at: http://www.who.int/csr/don/2009_12_30/en/index.html
[27] Andrew Pollack, "New Drug for H1N1 Flu Offers Hope", *New York Times*, November 5, 2009.
[28] Imogen Foulkes, "World Health Organization to review swine flu response", *BBC News*, January 12, 2010.
[29] Lauren Neergaard, "Too much flu vaccine? Shot push this week to tell", *Washington Post*, January 12, 2010.
[30] Catherine E. Shoichet, "Mexico still waiting for most swine flu vaccines", *Washington Post*, January 13, 2010.

Global Outlook Alert and Response Network

The Global Outlook Alert and Response (GOARN)[31] system that WHO established nearly a decade ago is designed to "support national and international training programmes for epidemic preparedness and response; coordinate and support Member States for pandemic and seasonal influenza preparedness and response; and develop standardized approaches for readiness and response to major epidemic-prone diseases."[32] Much of the impact of the Global Outlook Alert and Response Network (GOARN) system will be determined by how quickly and effectively countries integrate their information and communications technologies (ICTs), particularly technologies designed for public health management.[33]

Patients' Rights?

National and local governments, public health officials, health providers, and ordinary citizens may be rationally concerned, at times even alarmed, by the emergence and/or outbreak of a new pandemic but that does not mean that anyone diagnosed with, or sometimes even suspected of being infected by, an epidemic or pandemic disease forfeits his/her rights. Many countries quarantine people with confirmed cases of pandemic diseases, even when quarantining the patients may not address the health issues experienced by the wider community.[34] Quarantining people may also violate their legal rights, particularly in cases where the person tests negative for the suspected disease, as in the case of Kaci Hickox, a nurse in the state of New Jersey. After treating patients with Ebola in West Africa in 2014, Hickox was quarantined upon her return to New Jersey under orders from then Governor Chris Christie. Hickox sued the state of New Jersey as well as then Governor Christie and then State Health Commissioner Mary E. O'Dowd; in July 2017, New Jersey reached an agreement with Hickox and agreed to update and revise its quarantine guidelines to protect both patient privacy and the treatment of people suspected of being infected, and/or diagnosed, with pandemic and/or highly communicable diseases.[35]

Conclusion

Pandemics can overwhelm not only public health systems but also public confidence in national and local governments, international organizations like the World Health Organization (WHO), health care providers, and the pharmaceutical industry. During the height of the 2009 H1N1 pandemic fears, governments enacted travel restrictions and closed down schools. Businesses suffered significant economic losses as potential customers avoided public spaces.[36] With increases in drug-resistant strains of a variety of diseases, including tuberculosis (TB) and

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[31] WHO, "Strengthening health security by implementing the International Health resolutions (2005): Global Outbreak Alert and Response Network (GOARN)", 2018. Found at: http://www.who.int/ihr/alert_and_response/outbreak-network/en/

[32] WHO, "Global Alert and Response (GAR)", 2012. Found at: http://www.who.int/csr/en/

[33] Delegates are encouraged to visit: http://www.who.int/csr/ict4phem/en/index.html

[34] Cecilia W. Dugger, "TB Patients Chafe Under Lockdown in South Africa", *New York Times*, March 25, 2008.

[35] Marc Santora, "New Jersey Accepts Rights for People in Quarantine to End Ebola Suit", *New York Times*, July 27, 2017.

[36] Veronica Smirk, "Swine flu infects Argentine economy", *BBC News*, July 10, 2009.

potentially malaria, governments and their citizens may well fear that existing alert and response mechanisms are insufficient to counter the rise of new pandemics. By improving and expanding the operational and institutional capacities of the Global Outbreak and Alert Response Network (GOARN) and related health machinery, WHO and the international community may ultimately prevent another plague on all our houses.

Guiding Questions:

What diseases are most prevalent in your country? Are any of them now, or were they previously, considered pandemics diseases? How have your governmental and public health officials and health care providers responded to these [pandemic] diseases?

How effectively has the World Health Organization (WHO) responded to pandemic outbreaks around the world? What steps can WHO take to improve its effectiveness at preventing and combating pandemics?

How can governments, public health agencies, regional offices of WHO, and health providers work together most effectively to prevent and combat pandemics that spread when people travel between countries? How might governments, philanthropic organizations, and corporations increase their contributions to voluntary funds, including the Global Fund to Combat HIV/AIDS, Tuberculosis, and Malaria?

How does your government balance public health concerns with the rights of patients? Has your government modified these policies in recent years? If so, how and why?

How can WHO and the international community most effectively and expeditiously ensure that people infected with diseases such as TB, MDRTB, XDRTB, HIV/AIDS, malaria, and Ebola receive the medicine that they need at prices they can afford? How might the WHO, national and local governments, public health officials, pharmaceutical companies, and other relevant stakeholders ensure sufficient and timely production and distribution of vaccines to prevent further transmission of these diseases?

Resolutions:

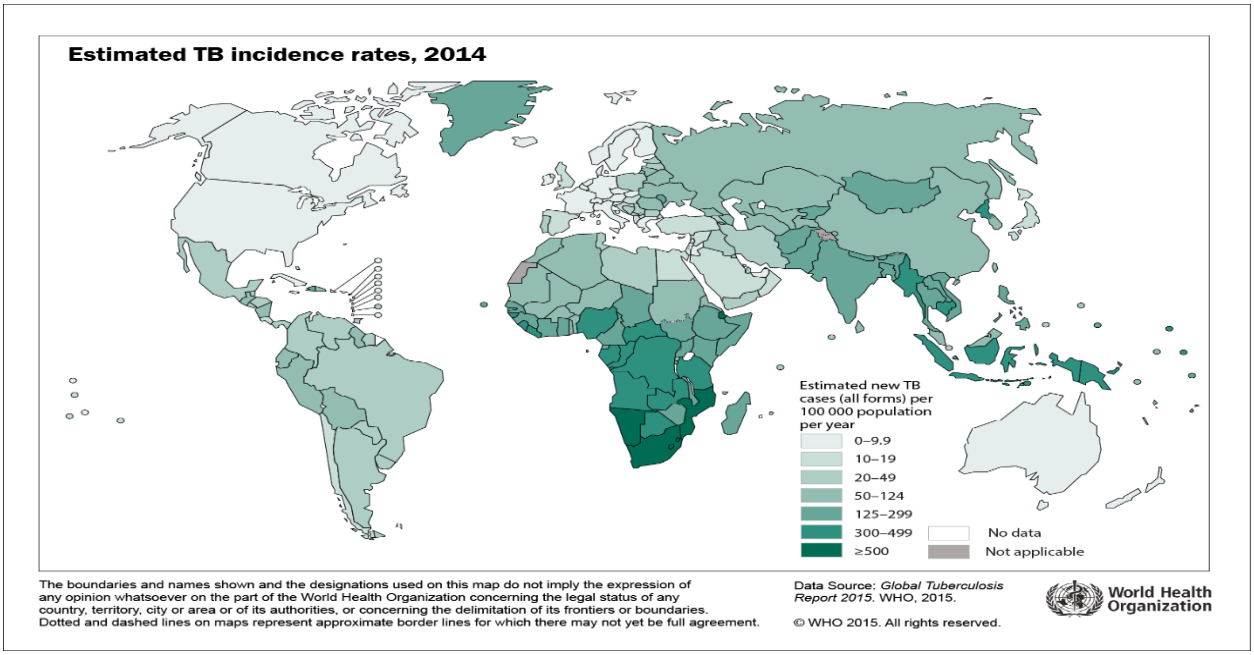
United Nations General Assembly resolution 72/309 (A/RES/72/309), “Consolidating gains and accelerating efforts to control and eliminate malaria in developing countries, particularly in Africa, by 2030”, September 10, 2018.

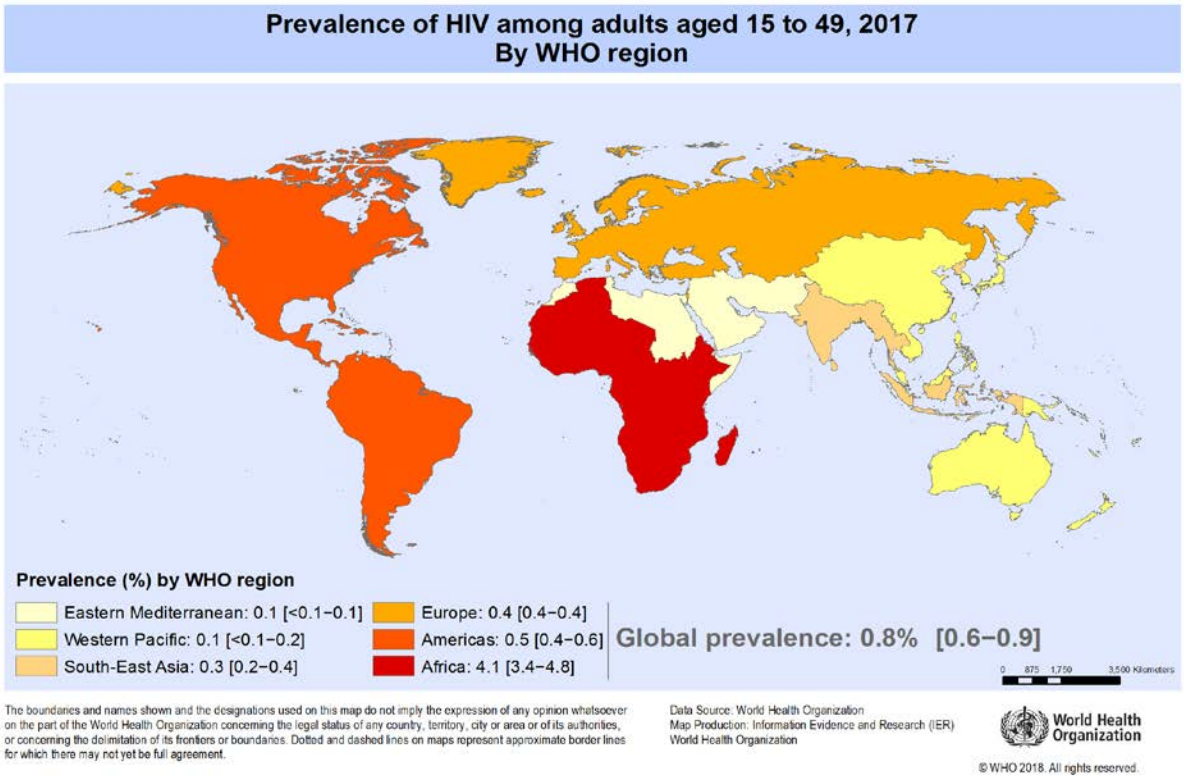
United Nations General Assembly resolution 72/268 (A/RES/72/268), “Scope, modalities, format and organization of the high-level meeting on the fight against tuberculosis Statement of financial implications (A/72/811)”, April 4, 2018.

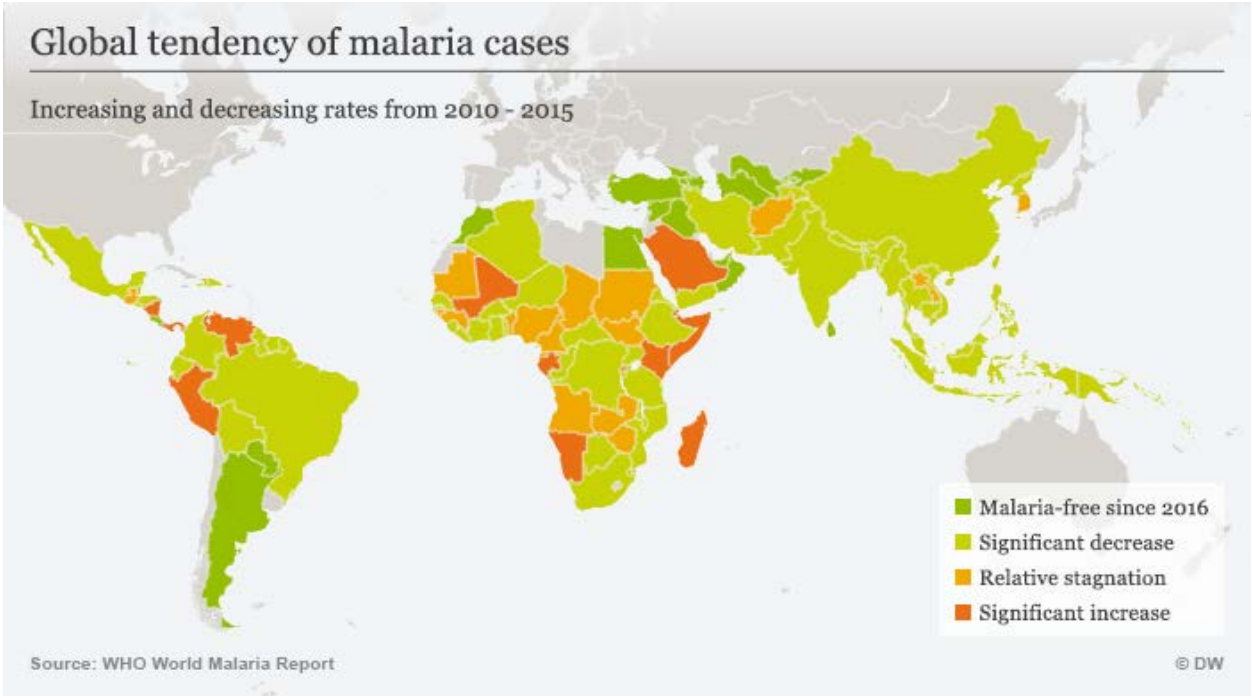
United Nations General Assembly resolution 70/266 (A/RES/70/266), “Political Declaration on HIV and AIDS: On the Fast-Track to Accelerate the Fight against HIV and to End the AIDS Epidemic by 2030”, June 8, 2016.

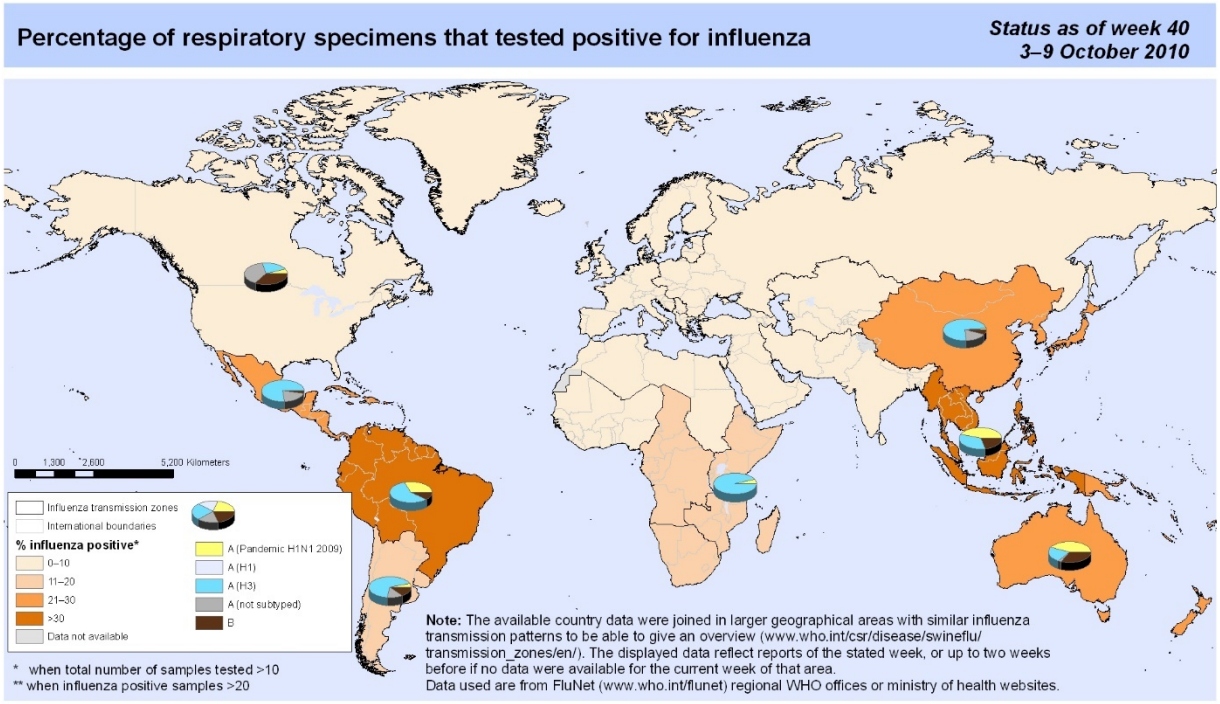
World Health Assembly (WHA) resolution 63.1 (WHA63.1), “Pandemic influenza preparedness: sharing of influenza viruses and access to vaccines and other benefits”, May 19, 2010.

World Health Assembly resolution 56.19 (WHA56.19), “Prevention and control of influenza pandemics and annual epidemics”, May 28, 2003.






Global tendency of malaria cases
Increasing and decreasing rates from 2010 - 2015
Malaria-free since 2016
Significant decrease
Relative stagnation
Significant increase
Source: WHO World Malaria Report
© DW


Percentage of respiratory specimens that tested positive for influenza
Status as of week 40
3–9 October 2010
0 1,300 2,600 5,200 Kilometers
Influenza transmission zones
International boundaries
% influenza positive*
0–10
11–20
21–30
>30
Data not available
A (Pandemic H1N1 2009)
A (H1)
A (H3)
A (not subtyped)
B
* when total number of samples tested >10
** when influenza positive samples >20
Note: The available country data were joined in larger geographical areas with similar influenza transmission patterns to be able to give an overview (www.who.int/csr/disease/swineflu/transmission_zones/en/). The displayed data reflect reports of the stated week, or up to two weeks before if no data were available for the current week of that area.
Data used are from FluNet (www.who.int/flunet) regional WHO offices or ministry of health websites.
The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.
Data Source: World Health Organization
Map Production: Public Health Information and Geographic Information Systems (GIS)
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