Disease 'X' - The Next Pandemic?

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When the WHO created the term Disease X in early 2018, Covid was not yet on the horizon. However, Disease X was mentioned together with a list of “blueprint priority diseases” that were well known for their morbidity and mortality, including SARS, Zika, Ebola and others. WHO recognized that a new disease, not yet known, with some key characteristics was possible and probable. The complete list, including Disease X, was a call to focus research and development to help mitigate and prevent serious outbreaks and consequences (WHO, 2018). Now, WHO is updating that research and development blueprint sometime in 2023/24, and Disease X will again be included.

Disease X Is An Unknown Disease With A Set Of Characteristics That Are Important For Its Potential To Cause Serious Infections, Outbreaks, And Possible Pandemics

Disease X is an unknown disease with a set of characteristics that are important for its potential to cause serious infections, outbreaks, and possible pandemics. Here are some of its characteristics, which are based on current knowledge of disease transmission, virulence, outbreak potential and treatment/prevention options:

1. Disease X is most likely a viral disease. It is important to notice that all the infectious agents in the blueprint, with one exception, are viruses. They are known to be the most dangerous pathogens. The new blueprint will also include some bacterial agents. However, while the only one currently recognized is the Plague (*Yersinia pestis*), the focus is on viruses. One of the reasons that bacteria are less of a concern is the ability to treat bacterial diseases with antibiotics and effective outbreak control.
2. Disease X will be transmitted through the air. As we have seen with COVID-19, airborne transmission was a key factor in the spread worldwide.
3. Disease X is a zoonotic disease that will spread from animals to humans.
4. Those without apparent symptoms will spread it, and therefore it will present significant challenges in tracking and outbreak control.
5. Disease X is a non-enveloped RNA virus with environmental hardiness and resistance and high mutation rate.
6. Within the affected population, immunity is not present, and until a suitable vaccine is developed, it will only be established in those that survive Disease X
7. Current treatment options are limited to symptomatic support.
8. Disease X has the potential for large-scale and rapid spread.

9. Disease X has the potential for laboratory release.
10. Disease X has the potential for significant morbidity and mortality.

There are other factors that could be included, but the list already contains enough scary properties to understand that the only way we can hope to manage such a disease successfully is by preparing now. Each of the listed properties above will require specific actions and preparedness. For example:

1. To manage airborne diseases, we need to focus on air quality and start now to improve/clean the air that we breathe in schools, work environments, shopping, large gathering indoor areas, etc. Viruses are particles, so improving air by filtering it will go along with trusted and reliable technology that is also affordable (e.g., HEPA filters). In addition, all of us can prepare by having suitable masks available any time there is a need. If we stock toilet paper, also stock some quality masks (e.g., N95, FFP3) unless you want to look at empty shelves when you need them.
2. Prepare your business with a reviewed and updated business continuity plan (BCP) that includes actions on supply chain shortage, unavailability of employees and other scenarios already experienced with COVID.
3. There needs to be a focus on a health care sector that can quickly ramp up staff up and supplies for outbreak and peak demand situations.
4. A trusted and proven path to vaccine development based on new and rapid technology platforms (e.g., mRNA vaccines), including investing in vaccine manufacturing abilities on a local level, must be established.
5. International agreements need to be developed and signed off on now for rapid deployment and sharing of resources (e.g., vaccines). Developed countries failed developing countries during COVID-19 by limiting the sharing of vaccines.
6. One of the new threats to public health worldwide and the possible creation of Disease X is the Gain of Function (GOF) work in laboratories where existing pathogens are intentionally made even more infectious. We need an international moratorium on all GOF work until the international community has decided on how to review the safety, security, and ethical concerns of this practice. Laboratories are essential for our work on infectious diseases and should never be the cause of an outbreak.
7. Focus on the “One Health” approach, where we realize that our health is directly connected to animals and the environment (CDC, 2023).
8. International cooperation in genetic sequencing of new and emerging diseases and having sequencing capacity worldwide for rapid investigation are vital.
9. Strengthening and supporting outbreak investigations and reporting on a national and international level needs to be recognized as a fundamental responsibility of every government.
10. Using science and not politics to make the necessary public health decisions must become the norm.
11. Continue to practice good hygiene and washing your hands.

This list is certainly not complete, and more needs to happen. The time to move forward is now and we all should play an active role in ensuring we are both preventing and being prepared for Disease X. As you can see above, responsibilities for it are multilayered. While governments, public institutions, organizations, and others have their share, we as individuals need to be equally involved and prepared. Within your workplace and at home with family and friends, have a conversation about getting prepared. Ask the following example questions and develop the answers and steps that will work for you. Keep in mind they can be used not only for a disease outbreak but also other emergencies:

1. Do we have a plan for the next emergency (written with all essential information), and have we tried the plan?
2. Who do we need to contact, and do we have all the information to do that?
3. What resources do we need (e.g., supplies, medication, protective equipment), and where do we get them?
4. What resources can we get now to store for the future?
5. Is our home safe, secure, and accessible?
6. Do we have access to a reliable emergency communication system, and what will we do if, for example, phones are down?

Just talking through these questions will help you to get a sense of what you can do, need and how to prepare. Let's prepare now because the question is not if Disease X will happen, but when.

References

CDC Centers for Disease Control and Prevention. (2023), One Health. https://www.cdc.gov/onehealth/index.html

WHO World Health Organisation. (2018, February 6-7)). 2018 Annual review of diseases prioritized under the Research and Development Blueprint. https://cdn.who.int/media/docs/default-source/blue-print/2018-annual-review-of-diseases-prioritized-under-the-research-and-development-blueprint.pdf