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EBOLA – NOT JUST ANOTHER EPIDEMIC

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INTRODUCTION:

The world has seen many epidemics before, but none quite compare to the current outbreak of Ebola Virus Disease (EVD) also known as Ebola Haemorrhagic Fever (EHF) that began in Guinea in West Africa in December 2013, was declared an epidemic by the World Health Organization (WHO) in March 2014 [1] and then spread first to the West African states of Liberia, Sierra Leone and Nigeria and later beyond to Europe and America. According to the WHO Situation Report of 14 January 2015, a total of 21,262 people have been affected and 8,414 of them have died [2]. WHO considers these figures an underestimate as cases and deaths continue to be under-reported.

This is not the first Ebola outbreak in history. There have been several outbreaks since the

one in 1976 near the Ebola River in the Democratic Republic of Congo (DRC) [3, 4, 5] that gave the disease its name, but the current one is by far the worst ever [6]. Already, it has caused more deaths than all the previous Ebola epidemics combined [6] and shows no sign of abating yet.

The horror of EVD that has also contributed to its spread is that the epidemic is not only a biological disease, but also a psycho-social, cultural, political and economic tragedy.

Biologically, Ebola virus (EBOV) is a single-stranded RNA virus of the Filoviridae family and genus Ebolavirus, which has five different species [7, 8]. The particular species responsible for the current outbreak is the Zaire strain [7, 8]. The EBOV replicates inside the human host and the greater the replication in the patient the more

lethal the infection. Left untreated, the mortality rate can be between 50-90% [7]. With treatment, which can only be supportive as there is no specific treatment for EVD, the mortality rate may be lowered to between 30-50%. That is still an extremely high death rate.

Transmission:

Transmission is generally human to human, via direct contact. EBOV is transmitted through the skin and body fluids such as urine, saliva, sweat, faeces, vomit, breast milk, tears, semen and vaginal fluid [7]. People with the virus can only infect others after they develop symptoms [7], that is, when the viral load is high. Asymptomatic patients, although they have the virus, do not transmit it. People can also contract EBOV via inanimate objects like needles, syringes, razor blades, bed linen and clothes that have been contaminated with the virus from an infected person [7].

According to the Centers for Disease Control and Prevention (CDC), not only can EBOV survive for several days at room temperature in body fluids such as blood, but it can also survive for several hours on dry surfaces such as door knobs and countertops [9]. People can therefore be unwittingly infected via touching these dry communal surfaces. EVD is an acute illness and there is no carrier state. Those at highest risk of infection include family members of patients and health workers. Women are twice as likely to

contract Ebola as men, and this is thought to be due to the fact that women are the usual caregivers and nurses of sick family members.

Signs and symptoms:

EBOV has an incubation period of 2-21 days. Fever is usually the first symptom and precedes the contagious stage. Other symptoms include severe headache, muscle pain, weakness, fatigue, diarrhoea, vomiting, abdominal pain, unexplained bleeding or bruising and in some cases delirium and seizures [9, 10]. People infected with EBOV are not infectious till they become symptomatic.

A Person Under- Investigation (PUI) is defined by CDC as one who has signs and symptoms of EVD as well as risk factors for EBOV infection within 21 days before the onset of symptoms [10]. Risk factors include history of travel to, or residence in, countries with high prevalence of EVD, contact with a person known to have or suspected of having EVD either by direct contact or indirectly via their body fluids or contaminated fomites, participation in funeral and burial rituals of a known or suspected Ebola victim or recent contact with non-human primates from the high risk countries [7]. A Confirmed Case is a person with laboratory confirmation of EVD [10].

Pathogenesis:

EBOV can enter the body via the mucous membrane, breaks in the skin or parenterally

[7,8,9]. The virus attacks multiple cell types including monocytes, macrophages, dendritic cells, endothelial cells, fibroblasts, hepatocytes and adrenal cortical cells. The virus then migrates to the regional lymph nodes and from there to the liver, spleen and adrenal gland. Lymphocytes, though not infected directly by the virus, undergo apoptosis, resulting in low lymphocyte counts. Necrosis of the liver cells results in coagulopathy due to dysregulation of clotting factors. Necrosis of adrenal cortical cells results in reduced steroid production. Release of cytokines leads to vascular leak and impaired clotting, which in turn leads to shock and multi-organ failure [11].

Laboratory findings may include proteinuria, leukopenia with lymphopenia, reduced platelet count, elevated hepatic transaminases (ALT and AST), prolonged prothrombin and partial thromboplastin times, and elevated fibrin degradation products [12].

Treatment / Management:

Management of EVD involves identification of cases, isolation and treatment of patients, informing the public health authorities and educating the public. Public health officials need to be notified about all EVD cases so that they can initiate contact tracing. A single patient can have between six and twenty-one contacts, some of whom will contract the disease and possibly spread it on before succumbing to it. There is no vaccine against the EBOV. There is no specific

anti-viral treatment for EVD. Treatment of patients with EVD is therefore only supportive and symptomatic, aimed at combating the electrolyte imbalance, the haemorrhage, the septic shock, the Disseminated Intravascular Coagulopathy, the hypoxia and the multi-organ failure. Treatment is also focused on pain control, nutritional support, fever control, rehydration and treatment of any secondary bacterial infection [7, 13]. Most patients may die and survivors are the exception, rather than the rule. This fact has grave practical, psychological/emotional and social implications for the public, with fear being a strong driving factor.

The WHO strongly recommends patients with EVD be taken to hospital, rather than having the family attempt to nurse them at home [14]. The WHO recommendations are sound, but may pose difficulties for some families. Not all health facilities have appropriate means of transportation such as dedicated ambulances or motorcycles to fetch the sick and due to the fear of Ebola in the community, public transportation may not be available, that is, the drivers may refuse to transport the sick and their relatives to hospital. When fear of contagion results in difficulty accessing hospital care, families are left in the distressing situation of having an infectious member whom no one wants to take to hospital and who will also put the other members at increasing risk, since his infectivity increases as his health status declines. Should the family opt to transport the patient informally by private car,

the inevitable close proximity and direct contact involved in handling and transporting the patient increases the helpers' risk of contracting the EBOV.

Preventive Measures:

Advice for self-protection given to people travelling to countries where there is an outbreak of EVD (but which is equally applicable to uninfected people resident in these countries) usually includes some or all of the following:

- Avoid contact with the blood and body fluids of any person, particularly someone who is sick,
- Do not handle items that may have come into contact with an infected person's blood or body fluids,
- Do not touch the body of someone who has died of EVD,
- Avoid funeral or burial rites that require handling the body of someone who has died from EVD,
- Avoid facilities where EVD patients are being treated,
- Seek medical care immediately if you develop signs and symptoms that could be indicative of EVD,
- Limit your contact with other people until and when you go to the doctor.

Should the patient remain at home, WHO recommends separating the sick person from the

rest of the family, obtaining and using protective clothing and limiting contact to prevent further infection [14].

On the one hand, the more sick the patient is, the higher the viral load and the more infectious the patient. On the other hand, the more sick the patient is, the greater his need for care and comfort from his family. Unfortunately, this is the very time the family would do well to avoid contact with him, due to his increased infectivity. The patient is therefore more likely to be abandoned during his greatest time of need. In other words, to keep yourself safe at home, what EVD demands is this: "If your family member becomes sick with Ebola, and you do not have hospital-type protective gear (which most people will not have at home) then avoid contact with the sick family member, that is, do not touch their skin or their bed linen; do not hug them (skin contact); do not wipe their sweat with your hands or touch towels they have wiped their skin with; do not wipe their tears. As your family member gets worse, they become more infectious, so you must avoid contact with them even more, despite this being the time they need their family most. Because most people with EVD are likely to die, your family member is likely to die – and so will you, unless you isolate and avoid them as demanded above."

Psychosocially, EVD goes against human nature in a manner other lethal epidemics do not. Cholera, for instance, is readily preventable by maintaining strict hygiene during outbreaks. It

does not go against human nature to wash hands regularly, boil drinking water, and avoid contamination. HIV (human immunodeficiency virus) is infectious but again, it does not go against human nature to be faithful to one sexual partner or use condoms to avoid infection. EVD on the other hand, demands what can be perceived as shunning and abandoning a loved one in his hour of greatest need. Although necessary for survival, such measures go against natural, instinctive, compassionate human behaviour.

Not only is EVD a risk during life, but sadly, the EBOV does not die immediately the patient does. The corpse is still highly infectious. The tragedy of EVD therefore reaches beyond the patient's death. EBOV endangers the family during the initial stage of illness, endangers the health workers during hospitalization and finally endangers mourners after death. Funerals are a significant factor in spreading Ebola infection, with at least 20% of new infections occurring during funerals of EVD victims [15]. Funerals occur in a socio-cultural context. People wash bodies before burial. People dress bodies before burial. People touch bodies before burial. All these pose risks. Those most at risk of contracting the EBOV during the funeral are the mourners who come in direct contact with the body, which remains very infectious, even after death. This contact may occur through washing and preparing the body for burial (which involves only a few mourners) or through touching the

dead body as a gesture of farewell or grief (which could involve hundreds of mourners, depending on the stature of the deceased and the esteem in which he was held). WHO recommends paying respect to the dead from at least one metre away, without touching, but that distance means the mourner may not be able to clearly see the body, especially the face; so many mourners may ignore the life-saving advice.

Mourners are also placed at risk when they touch, hug, kiss or embrace those family members who nursed the EVD patient and who may have contracted the EBOV prior to death. WHO recommends immediate burial, with the body being handled by people wearing personal protective clothing and gloves. However, many victims continue to be buried by family according to normal funeral rituals, which may last for days. The incubation period of 2-21 days, coupled with the frequent delay in burying the victims, especially among non-Muslim communities, means that the funeral is often held during the very period when the dead victim's contacts start showing the symptoms, thus putting the mourners at great risk of further infection, since it is the symptomatic contacts that are infectious.

Cremation, which has been suggested in some quarters as a safer form of disposal of infected bodies, is culturally abhorrent to many communities. Even where the family is willing to comply in order to protect themselves, they would still be psychologically distressed by the impact of having burnt their loved one's body to

ashes and the belief that by doing so and failing to bury the body they had interfered with the passage of the spirit to the next world. A funeral offers family members and other mourners a final chance to pay respects to, and send off, the dead person. Funeral customs also offer solace to the bereaved as others share their pain and mourning. With Ebola, the recommended way of interring a body would involve prompt burial (before all the relatives get a chance to come and say goodbye) by trained, professional handlers (denying the family the opportunity to perform what they consider their duty to the dead), during a funeral with a minimal number of mourners, no greetings or condolences that involve touch, and viewing the coffin from a distance of at least one metre (leaving mourners feeling they had neither attended a proper funeral nor consoled adequately with the bereaved). Any symptomatic family members would also be required to be kept at least one metre away from other people, a pariah situation that can only add to their grief. Other customs such as distributing the clothes the deceased wore, if carried out soon after death, could potentially spread the virus, albeit to a much lesser extent than direct contact with the body.

A few cases have been traced to a custom of rinsing children with water that had been used to wash the body of a traditional healer in the belief that the healer's wisdom and abilities would be passed on to these children. This custom, which would have been innocuous, had the healer died

say of malaria or a heart attack, proved deadly to the children because the healer had died of EVD contracted from the patients who had come to the healer for treatment.

In many communities, the place of death is not the preferred place of burial, even during an epidemic such as Ebola. Families prefer to have their loved ones buried at home, on their ancestral land, even if they died in a town a hundred kilometres away. During the sometimes complicated process of repatriating the body home, there is a risk of infection at the place of death, risk during transportation and risk at the destination. Healthy mourners travelling in for the funeral could also contract the virus from symptomatic family members. As such long-distance mourners tend to stay a few days and not just the day of burial, they could become infectious by the time they leave the funeral and carry the EBOV back to their usual place of residence. If this involves a lengthy journey, they could spread it along the way as well as at their final destination.

EVD control demands a change in normal social behaviour within the community, both in the home setting and in social settings including funerals, market places and church (and worshippers tend to shake hands and hug a lot). Shaking hands, which is the commonest form of greeting, is actively discouraged in areas affected by Ebola. Hugging and kissing are likewise discouraged. With HIV, one can safely shake hands with a friend. With cholera, as long as a

person washes his hands, he can continue shaking hands in greeting. With EVD, however, greeting someone by handshake or kiss could be a death sentence. People in the affected communities are therefore expected to follow a “hands-off” policy when socializing with one another. Not only is this difficult to maintain in a casual setting, but it becomes heartbreakingly hard in a family setting where there is a patient with EVD. Imagine a scenario where the patient is a feverish little child crying in pain for its mother. What parent would not instinctively reach out to wipe the sweat off the feverish face (often with their bare hand), wipe the tears and cuddle the child close? It goes against human nature to simply watch your sick child suffer from a “safe distance”, which with Ebola is the correct thing to do, unless the parent has on a protective gear. If that distressed child stretches up his arms to be picked up and comforted, the uninfected mother, not having protective gear, is expected to just look at the child from at least one metre away and not touch the child. If the child crawls to the mother and tries to touch her or climb onto her knee, she should back away and maintain a safe distance, unless she wants to join that child in death. How psychologically traumatizing would that be for a parent, to deliberately ignore or avoid their child in their hour of need?

Economic impact:

The majority of patients are in the 15-44 year age group, that is, the young, productive age group.

The fatal illness removes the contribution of the sick patients to the economy. Isolation of contacts means they have no access to their day to day income generating activities or food production. They cannot go to their farms or to market. Trade, including cross-border trade, may decline. Travel alerts against EVD affected countries and banning of flights to or from these countries have negative economic consequences that may exceed the direct economic consequence of the EBOV infection itself. These consequences include job losses as tourism declines and hotel occupancy rates plummet. Trade decreases, internally and across borders and prices rise. Schools and markets may close as people stay away, and even in the health facilities, some health workers may stay away due to their fear of contracting the virus from patients and then bringing it home to their families.

The World Bank reports that nearly half (46%) of the people working in Liberia at the start of the EVD crisis were no longer working by early November 2014 [16]. The self-employed have been affected the most. Half the salaried workers are also no longer working, mainly due to their workplaces being closed because of the crisis. The economic impact has been huge, with people having less money to spend, while prices of staple foods such as rice increased. Adults cut down on their food consumption in favour of feeding their children. The rise in food prices is attributed to reduced production and reduced

access caused by restricted human movement, but also to panic buying and hoarding.

The World Bank estimates that if the present rate of transmission of the EBOV continues, the gross domestic product (GDP) of the three countries most affected, Guinea, Liberia and Sierra Leone, could decline by between 3.7 and 7.3 percentage points [16]. As confidence falls, exchange rates also become volatile, due in part to capital flight.

Fear:

It is the main psychological complication of this epidemic and it includes fear of the illness itself, but also fear of isolation, fear of social rejection (stigma), fear of the hospital and fear of going about one's day to day public activities. Fear, and attempts to overcome it, can exacerbate an already serious epidemic.

Fear of the illness:

EVD is lethal, currently it has no cure. EVD is highly contagious, in life and also in death. As a result, it creates fear and despondency even among non-cases. Among health workers, who as a group are disproportionately victims of Ebola compared to the general public, the fear is that they may contract the illness and die a quick, painful death isolated from their loved ones, some of whom they might even had infected before being isolated. The public too is terrified of Ebola, the rationale being that if even doctors and nurses are dying, and in such disproportionately high numbers, what chance

would members of the public have? Within local communities, distant communities, neighbouring countries and even countries overseas, fear of EVD has gripped people and shaped their behaviour to an extent that far outweighs the actual threat of the disease.

Isolation and quarantine:

Isolation is a key component of the management of the EVD epidemic. However, isolation and fear of isolation come with psychological and political consequences. At times, involuntary isolation and quarantine has had to be enforced by armed government forces like the police or even the military. This has been viewed negatively by some communities in areas that were once battlefields, and where the sight of armed soldiers evoked unwelcome memories of past horrors, as in some parts of Liberia and Sierra Leone. Soldiers, unlike health personnel, are associated with violence and war, not with health care. Politics has not been spared either. Communities perceived as opposition strongholds are less likely to trust and comply with the ruling government's efforts to institute measures to control the spread of the EVD. Being quarantined and having their movements restricted could be seen as a political ploy, rather than the public health issue it is. Lack of trust in the government and suspicions about the government's true intentions in enforcing quarantine also contribute to people trying to avoid quarantine by not reporting cases of EVD.

The same suspicions also lead to those already quarantined trying to break out and flee to the perceived safety of their communities, and possibly carrying the virus with them as they flee. Fear of quarantine may also deter health seeking behaviour. Nobody would like to be “locked up” for the requisite 21 days away from their friends, family, community and workplace.

Fear of Stigmatization:

Panic, fear and paranoia are triggered among the healthy as well as the EVD patients. There is fear of being stigmatized and treated as outcasts, which could delay seeking health care. Even after recovery, survivors may be viewed with suspicion and kept at arm’s length by the community when they return home. Health workers are not spared the stigma, either, as demonstrated by the negative reaction shown towards some American volunteer health workers returning from Liberia and Sierra Leone to their homes in the US, with suggestions from some quarters that they should be kept in isolation for 21 days prior to entry into their country, due to their possible exposure to the EBOV.

Fear of the hospital:

WHO advises people not to care for patients at home but to seek treatment in hospitals where there are health staff and equipment necessary to manage EVD [14]. But people have developed a fear of the hospital. There may be reluctance on the part of patients with EVD to go to hospital

due to fear of never being discharged, since most of the patients may die. This is compounded by the fear of the patients never seeing the family again before they die, since visiting is discouraged. Because of the lethality of the disease the community may view admission to hospital as admission to death and avoid getting admitted. Families may conceal a member’s illness, keeping him at home and caring for him without protective wear, and thus risking the lives of the other family members, especially the main carer. People with EVD-like symptoms may not wish to go to hospital, since suspected EVD cases often share ward space with confirmed cases. There is therefore understandable fear of contracting the illness there, if one did not already have it. Fear of contracting EVD from the hospital may result in patients suffering from other illnesses refusing to seek help, be this for malaria, typhoid, meningitis or other serious but treatable illnesses. The use of dedicated staff in hospital, where available, is helpful in reducing the risk of staff transmitting the infection from the patients with EVD to other patients, but not all health facilities have sufficient numbers of such staff. Other patients and their families may therefore be afraid to be attended to by doctors and nurses who have treated EVD patients. When hospitals have admitted and confirmed EVD cases, other patients in the hospitals have been known to flee, as their fear of contracting EBOV overrides their concern about the illness they were seeking help for.

EVD may also result in increased morbidity or mortality from other illnesses. When significant bed space and health personnel are diverted to Ebola, what becomes of those suffering from other illnesses? EVD is a quick killer. Unlike with HIV infection, a patient with EVD develops symptoms within days, needs to be isolated promptly and for the majority the trip to hospital is the last time they will ever see their home or loved ones, due to the lethality of the infection and the necessary isolation policy. Death usually occurs within two weeks of the onset of symptoms. This means the patient only has time to infect his loved ones, but not enough time to get his affairs in order and make arrangements for the care of the family. An EVD death is a sad and lonely death. Nobody holds the hand of a dying EVD patient in comfort.

The way forward:

Concerted efforts are being made to contain this EVD epidemic and save lives in the affected countries in West Africa. Some experimental drugs are on trial. Isolation policies are being implemented. Supportive and symptomatic treatments are being given. Home kits for the care of EVD patients are being freely distributed by organizations such as Mediciens Sans Frontieres. However, the battle will not be won just in the health field. The epidemic has economic, social, cultural, psychological and political consequences, which must also be addressed. In addition, Fear, which strongly

influences the behaviour of victims, must be allayed. This would involve huge, multi-disciplinary effort, but without it the resolution of the current crisis may be prolonged.

CONCLUSION:

The current EVD epidemic in West Africa is likely to get a lot worse before it is brought under control. This will not be because of lack of knowledge about how to control its spread, but because the means of controlling it extend beyond health measures into the realms of people's natural instincts, longstanding social behaviour and what it means to be a compassionate, caring human being in the context of the community's accepted ways of living and dying. That is why Ebola Virus Disease is not "just another epidemic."

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