THE ECONOMIC IMPACTS OF EPIDEMICS-A CASE STUDY EBOLA EPIDEMIC IN WEST AFRICA

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Abstract:

Over times, the world is exposed to the spread of various epidemics which may inflict humans, animals or birds in different areas spreading fears and killing millions of people like Ebola .The strong impact of a particular epidemic depends on the extent of its spread in the infected area and the time it consumes. This study deals with epidemics and their relationship with the economic activities, the Gross Domestic Product (GDP), their various economic impacts in general while handling the case study of Ebola epidemic in West Africa in particular as it is considered as the most recent type of the epidemics. The paper assumes that epidemics have direct and indirect negative impacts on all economic and social aspects in the infected areas particularly the poor areas. The paper depends on the descriptive analytical approach and the case study approach .The total economic impacts of epidemics can be calculated in a particular area by calculating the differences the annual growth rates in the scenario case of the epidemic spread in a medium, small or large degree or in the case of the absence of an outbreak of an epidemic and the period length of the epidemic spread. In order to follow up the epidemics spread the study recommended that the international community must act very swiftly to avoid this crisis through the important improved of regional and international cooperation and it is essential to draw on lessons learned from other countries' experiences.

Keywords: Ebola epidemic in West Africa, Economic Impacts ,economic challenges, the necessary policies.

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Introduction:

There is a strong relationship between healthcare and the economic growth of a certain country. The healthcare is the main engine behind the economic growth of a state. The contagious diseases which have the ability to mutate into epidemics differ in terms of transfer, cure, treatment, healthcare their economic impacts and how they can be managed at the long and short terms, particularly in the poor areas. Over times, the world is exposed to the spread of various epidemics which may inflict humans, animals or birds in different areas spreading fears and killing millions of people like AIDS, black plague , swine flue, bird flue, mad cow, Spanish flue, SARS, CORONA, Ebola, diphtheria, malaria, tuberculosis, measles, and other epidemics (*Bell Clive and Hans Gersbach,2008*).

The strong impact of a particular epidemic depends on the extent of its spread in the infected area and the time it consumes. Notably, the impact of some epidemics largely exacerbates in the infected areas whenever the suitable medical facilities or highly and efficient qualified human cadres to deal with such epidemics are absent. This sustained by the spread of ignorance and literacy, the decreased cultural and health awareness among individual to avoid infection with epidemics(*Boucekkine, Raouf, and Jean-Pierre Laffargue,2008*).

In spite of the recent infection of some of the world states with the strongest types of epidemics, the resulted in human casualties are relatively limited (healthcare and spread of cultural and health awareness) compared to the prevailed situation in the past. Curing the spread of such epidemics infection and the fear of being spread to the neighboring countries and perhaps the rest of the world states, the developed, developing states and the international cooperate together to exert world, regional and domestic efforts in order to find rapid treatment before their direct and indirect economic and social impacts are festered (*Salaam-Blyther, Tiaji,2014*).

This study deals with epidemics and their relationship with the economic activities, the Gross Domestic Product (GDP), their various economic impacts in general while handling the case study of Ebola epidemic in West Africa in particular as it is considered as the most recent type of the epidemics. The question to be raised is that what are the direct and indirect economic and social impacts of the spread of such epidemics? What are the challenges that impede their spread control? What are the necessary policies to face and curb the spread of such epidemics in the future?

The paper assumes that epidemics have direct and indirect negative impacts on all economic and social aspects in the infected areas particularly the poor areas. It also assumes that the negative strong impact of a particular type of epidemics depends on the extent of its spread in the infected area and the time it consumes.

The paper depends on the descriptive analytical approach and the case study approach in order to define epidemics, their subsequent economic impacts in general and the case study of the Ebola epidemic in West Africa in particular based on the World Bank study in September 2015 regarding the long and medium term economic impacts of Ebola epidemic.

The paper is divided into four parts. The first part deals with the total economic impacts of epidemics in general whereas the second part handles the economic challenges related to epidemics spread. The third part deals with the case study of Ebola in West Africa. The fourth part handles the most important concluded results, necessary policies and procedures in facing the epidemics and curbing their spread in the future.

First: The total economic impacts of epidemics:

The degree of economic influence of epidemics differs from an area to another and from an economic sector to another according to the epidemic type and the staff in each sector of the productivity sectors. The total economic impacts of epidemics can be calculated in a particular area by calculating the differences the annual growth rates in the scenario case of the epidemic spread in a medium, small or large degree or in the case of the absence of an outbreak of an epidemic and the period length of the epidemic spread (*Deaton Angus,2003*).The epidemics costs are divided into direct and indirect costs. The direct costs include the health services costs provided by the public and private sectors to people infected with the epidemic. The indirect costs include the economic value resulted from the epidemic as a result of disability and the early death and it is supposed to be the current value of the lost future profits besides the cost of tests, research, protection and enlightenment (*Lorentzen Peter, John McMillan and Romain Wacziark,2006*). The full cost of the outbreak will depend on how long it lasts and how far it spreads. The economic effects of Epidemics are more likely to be short term, although they can also have long-term economic consequences. The are several economic impacts of the epidemics which negatively affect all the state's economic sectors and mostly important the impact on population, public budget of the infected state, tourism, transportation and trade, resources allocation, production and productivity,

income distribution, saving and investment, poverty, food security, economic growth, GDP, and the conduct of the pharmaceutical companies.

- Impact of losing the human capital:

In spite of about seven centuries passed over the spread of the black plague in Europe which led to the death of about 30-40% of Europe population, it impacts are still present in the memory nowadays. Similarly, the Spanish flue led to the death of about 40 million people in the last century. These are human losses which extremely exceed the casualties of the world wars. This reflects the strength of those epidemics in facing the population and the subsequent death of population (*McDonald Scott and Jennifer Roberts,2006*).

- Impact on the public budget of the state:

The spread of any type of epidemics in a particular area, the state focuses on providing health care to the infected people with the disease. This represents a great burden on the state budget as a result of increased public spending on health services during the pandemic spread (direct costs). Consequently, the epidemic spread creates uncertainty in the economy as a whole as a result of people being keen on staying at home in order to reduce the risk of the disease infection. this largely affects the decline in consumer's spending and confidence. This leads, in addition, to people's absence from their workplaces, closure of production, commercial and service activities, decrease of labor productivity and other means of production due to workers' illness, death or patient care. This leads to the collapse of the production system in the society. A state may resort to curfew, suspension of several activities such as schools and universities, the whole workplaces are suspended as a whole (indirect costs). Certainly, the infected state economic activity slump leads to the decline of its customs and taxes revenues and a large deficit occurs to the state public budget (*Boucekkine, Raouf, Bity Diene and Théophile Azomahou,2007*).

- Impact on tourism:

The infected state economic impact is largely and negatively maximized whenever the state depends on tourism and its economic activity depends on the tourism sector in which a large number of people work and the epidemic spread lead to the absolute suspension of the tourism movement. Some airlines may impose ban on tours to the infected areas. As such the profits of such airlines may remarkably decline. This leads to the state income decline from tourism revenues, unemployment increase, income decrease, deterioration of the standard of living and other negative

impacts on the gross domestic product and the economic growth (*Boucekkine, Raouf, Rodolphe Desbordes and Hélène Latzer,2008*).

- Impacts on transportation and trade movement:

The epidemic infected state imposes strict restrictions (quarantine) either over the movement of individuals or products to curb the epidemic spread. Subsequently, the trade and productive activity decreases in the state and the essentially negative impact of transportation and trade movement. The neighboring countries may ban moving into or the unofficial trade across borders with their neighboring epidemic infected states. This leads to the decline of growth rates of the GDP and the economic growth. The growth rates decline leads to economic losses in the infected West Africa valued about $ US 32.6 dollars in 2014 and 2015 besides large increase in the poverty levels (*Fisman D., E. Khoo and A. Tuite,2014*).

- Impacts on production and productivity:

Epidemics negatively affect the economy when spread among the classes of people able to work and do not spread among the young and the elderly through the decrease of the GDP and the exacerbation of the dependency rate. Epidemics also affect the changing of the labor force structure in terms of skills, education and experience. This eventually leads to decreasing the productivity and work quality. In addition, some of the infected people relatives would take work leave or withdraw from the educational institution to provide healthcare to the infected people. This leads to the long-term decreasing investment of the human capital and decline of the economic growth rates and economic development in general (*Clive Bell and Maureen Lewis,2004*).On the contrary, epidemics may have positive impacts on the economy whenever spread among the young and elderly people without infecting the class of people able to work as the number of beneficiaries of the fixed assets decreases such as land and the material capital (individual luxury). In this particular case, the positive impact of epidemics appears in curbing the dependency rate, employment increase and unemployment decrease, individual per capita in income increases and naturally reduction of the labor numbers and the youth generation enters the stage of labor power depletion which can constitute an economic problem in the future (*Brainerd Elizabeth and Mark V. Siegler,2003*).

- Impacts on resources allocation efficiency:

Ensuring the resources allocation efficiency is one of the most important functions of the economic system. The epidemics lead to transfer the path of resources allocation from public spending on the

investment in the material and human capital to spending on covering the health services away from other productivity uses. This leads over time to the slowdown of the GDP growth (*Trish Saywell, Geoffrey A Fowler, Shawn W Crispin,2003*).

- Impact on the economic growth, GDP and income distribution:

Epidemics negatively affect the economic growth as the economic growth tends to decline for a long term. In addition, the negative impact on the GDP for the individual and the growth of the GDP as a whole. Epidemics negatively affect as well income distribution and inequality among the rich and the poor. This leads abject poverty and the loss of comfort. Through the expanding protection program, spending increases on health and the minimum-income poor classes are damaged. Meanwhile, the rich classes possess most of the productivity assets like land capital in order to protect themselves from the epidemics risk through the ability bearing the treatment costs as compared to the poor. This expands the gap between different social classes (*Cogneau Denis and Michael Grimm,2005*).

Remarkably, the good economic circumstances such as income distribution at an exact level, spending distribution on healthcare, organizing the health system and the increase of income, lead to providing better healthcare. Developed countries, the richest people obtain all the main products and services necessary to better health life as compared to the poor in terms of food, suitable housing, clean water, quality healthcare and opportunities of having information about health protection. They also have the ability to influence the decision making in terms of meeting their demands to improve the health services and take necessary actions in this regard. The rich countries have a clear scientific progress and the ability to develop and buy medicines and other health technology, training and paying the costs of doctors, nurses, build main hospitals and health clinics, the public health campaigns, the ability to lessen infection of the epidemics spread as compared to the poor countries (*McDonald Scott and Jennifer Roberts,2006*).

- Impacts on saving and investment:

In the new classic growth model, epidemics directly affect the GDP through reducing the number and efficiency of workers. It also has an indirect affect through lessening the rates of saving and investment. The economic uncertainty case affects the decisions of investors and the investment atmosphere related to the development of current and future circumstances in the epidemic spread areas and its impacts on the expected return rates of investments. When the potential investors are

convinced that the epidemic has a dangerous effect on the reduction of the return rate of the invested capital, the foreign and private domestic investments decrease. In addition, the negative impacts resulting from the world stock markets as a whole and not on the infected state only due to fears and anxiety of wide scale epidemic spread. The healthcare related to education and knowledge reinforces work productivity and encourages saving and investment. The increase expected retirement age, the retirement savings in forms of funds available for investment and help attract direct foreign investments and increase the economic growth and the GDP on contrary to health fears of epidemic spread which largely and rapidly lead to the decline of direct foreign investment (*Bell Clive and Hans Gersbach,2008*).

- Impact on poverty and food security:

Epidemics have a negative impact on the increase and deepening of poverty in the infected countries through reduction of the individual per capita growth rate of the national income and the potential loss of income as a whole. The poor families suffering from a particular epidemic withdraw their savings and sell their possessed assets in order to pay for the treatment costs. In addition, the human capital, which constitutes long-term investment, is lost along with the social capital. This stops the farmers to practice their agricultural activity due to the epidemic spread in a certain area and create a crisis in the food supply, increase fears of food shortage and the subsequent remarkable increase of food particularly during the period of epidemic spread as occurred in West Africa where the sectors of agriculture and mining were ones of the most important sectors which were negatively affected by the Ebola epidemic due to individuals stop working in the two sectors and lost income (*UNDP Regional Bureau for Africa,2014b*).

- Impact of the pharmaceutical companies conduct:

The conduct of some pharmaceutical companies towards seizing and treatment of some epidemics may lead to a period of epidemic continuation and the double of their negative impacts in the infected areas (particularly the poor states) because the priorities of the pharmaceutical companies are embodied in the spending on research plans and development based on commercial bases in the light of the expected demand on medicine. In the case of the poor states, the expected demand on medicine is limited and poor due to low incomes and weak motives, encouraging financial incentives of paying attention in these states (*Warwick J. McKibbin and Alexandra A. Sidorenko,2006*).

As the pharmaceutical companies are concerned with medicine sustainability demand, they are not interested in producing emergent medicines or temporary-demanded vaccinations due to their low-expected returns. This explains the long period of some epidemics sustainability (Ebola epidemic) without treatment because of the weak purchasing power in areas where it spreads (West Africa Areas). With the increasing absolute danger of Ebola epidemic spread, threat to many countries, fears of its infection spread in the developed countries, the developed countries paid concern and intervened by seizing and treating the epidemic in order to avoid its negative impacts. The pharmaceutical companies conduct and their economic and perhaps also political trends are stressed through producing vaccinations and medicines related to serious diseases spreading in the poor countries such as malaria, tuberculosis. Such diseases led to the death of million people annually. Meanwhile such companies are constantly concerned with producing various and developed medicines for less serious diseases such as blood pressure or cloistral for particular economic and investment considerations(*Boucekkine, Raouf, and Jean-Pierre Laffargue,2008*). In sum, the analysis of overall economic impacts of epidemics tends to provide a more optimistic evaluation compared to their actual and real economic impact as they do not into considerations the lost value of investment in the human capital, social capital which is increasingly growing over time.

Second: The economic challenges related to epidemics spread:

The most important economic challenges imposed by epidemics include the inability to predict their occurrence in a particular area and a particular rime. This constitutes a considerable difficulty in planning and allocating the material and human resources required to the potential facing of epidemics in the future. The issue of globalization constitutes a serious challenge of spreading epidemics through movement, competitive pressures, liberalization and increase of the world trade movement, tourism, internal and external migration. The climate change and global warming are considered as clear serious factors for transferring infection from one place to another. The rich people are more often able to move from one country to another compared to the poor. This increases their exposure to get infected by diseases and transfer them to the poor (*UNDP Regional Bureau for Africa,2015a*). The poor may also move from one place to another due to wars, conflicts, environmental catastrophes or because of the circumstances of work and migration from the countryside to the urban life. They may then live in camps or crowded slum areas suffering from bad health conditions which could be an ideal environment for epidemics spread. Remarkably, some economic systems are flexible while others are dogmatic. Therefore, some people have the ability to adapt with the unexpected changes. Although these epidemics cause several deaths and

some appeared and disappeared quickly, the resulted in economic upheavals due to diseases inflection, treatment and transitional social arrangements do not remain for a long period in order to have a long-term impact (*World Bank,2015*).

Third: The case study of Ebola in West Africa

The 2014 Ebola virus disease (EVD) outbreak in West Africa (Guinea, Liberia and Sierra Leone) is the longest, largest, deadliest in history .This outbreak has lasted for more than a year and had fully abated. As of 11 February 2015, there were 22,859 EVD cases and a total of 9,162 deaths as a result. In less than six months, what started as a public health crisis in Guinea had degenerated into development crises (i.e. economic, social, humanitarian and security threats) in Guinea, Liberia and Sierra Leone (*UNOCHA,2015b*). The disease outbreak in West Africa case is complex and geographically widespread, and involves small rural and large urban centers. This pandemic is very difficult to contain. The infection of 830 health workers, of whom 488 died, further complicated its containment. This is the first time that the EVD has been transmitted to other countries through air travel (*UNECA,2014*). The health systems in Guinea, Liberia and Sierra Leone were unprepared for Ebola at the onset of the epidemic. Moreover, impoverished rural areas have more limited access to services than relatively well-off urban areas. The inequitable distribution of human and financial resources has hampered the response to the epidemic. The high mortality rate associated with Ebola threatens the performance of many interventions that could help contain the epidemic. The difficulty of coordinating Ebola-related aid and of treating infected patients using existing infrastructures is another impediment to stopping the epidemic. It also impacts on the human rights situation in the region, with significant negative effects on social, and economic fields of affected populations. All three countries have recently emerged from civil conflicts or political instability that resulted in countless deaths, economic crises, and deterioration in infrastructure and social conditions (*UNDP Regional Bureau for Africa,2015b*).

- The impact on the economy:

The impact of (EVD) on the Guinean economy and households' economic activities as negative. It had a strong negative impact on the labour market. Many workers reduced their weekly hours of work and some decided to temporarily stay at home to prevent themselves from Ebola contamination. Those seeking new jobs or lacking revenues had left contaminated localities and moved to less risky areas to find new jobs. A combination of several factors such as the closing of borders, private businesses and enterprises, awareness of the need to avoid contacts with others, and

fear of the disease and stigmatization have impeded households' economic activities. Few business holders that were able to open their businesses have taken advantage of the scarcity of goods by raising prices (*World Bank,2015*). The inability to carry out their normal businesses led to a decrease in household incomes. The feedback on the impact of the EVD on food security. It not only reduces access to food but has also negatively affected people's food consumption habits. Many people changed their consumption habits and had to eat less than before the EVD (*FAO and WFP,2014*) .The EVD has had a significant impact on the education sector. The impact consists in the loss of teachers and students, the closure of schools and a reduction in school attendance. The EVD has negatively affected on social life, including attending ceremonies and public events. The relationships between different communities were weakened by the EVD, people have started to avoid risky cultural behaviours. Awareness was raised on the risk of transmitting Ebola through direct, close contact, body liquids and infected objects, and risky ceremonies were reduced as much as possible (*UNECA,2014*).In addition, the patronage of health facilities is further complicated. As a result, access to some hospitals was denied to non-Ebola patients. In some cases, due to fear of the EVD and to high fatalities of health workers. Some medical clinics have closed down temporarily. Moreover, medical personnel, including nurses and doctors, stayed home because they felt unprotected against patients who may also have EVD. Overall, the health system was weakened. This will have a negative impact on the achievement of the Millennium Development Goal (MDGs) , especially child and maternal health, as well as the endemic diseases in the region, such as malaria and Lassa fever (*WHO,2015a*).Ebola had a negative impact on people's perception of the future. For the majority of people, Ebola diminished their hopes for the future. The social impact of the EVD is mostly reflected by a general fear among the population. People expressed fear for the future of their family, community and for the whole country.

Effective management will help build trust and confidence in the people and boost their expectations for the future. people's overall confidence in the government regarding its ability to successfully manage the EVD crisis is very poor. The government has an important role to play in building confidence (*UNDP Regional Bureau for Africa,2014c*).

- The impact on poverty.

Due to the political crisis and the disastrous economic policies over the years in Guinea, and the decade of civil war in Liberia and Sierra Leone, more than half of the population of these countries live below the national poverty line. The proportion of the poor in the population was 52.9 % in

Sierra Leone (2011), 55.2 % in Guinea (2012) and 83.8 % in Liberia (2011). However, with the previous economic outlook, a significant decrease in the poverty rate in the three countries was expected (*UNDP Regional Bureau for Africa,2015c*) .The impact of the EVD on poverty in Guinea is a very strong increase in poverty over the medium-term period in the region, which is much more pronounced in the epicenter countries. poverty is estimated to rise by between 2.3 and 2.6 % in 2014, and raised by 7.1 % in 2015. The situation is worse in Sierra Leone (13.7 % in 2014 to 21.8 % in 2016) and Liberia (17.5 % in 2015 to 19.2 % in 2016). Thus, with a growth elasticity of poverty estimated at -0.74, the incidence of poverty should be 49.78 % in Guinea, against 31.20 % in Sierra Leone and 63.47 % in Liberia in 2016. The poverty rate in Mali has also been estimated to increase by between 1.7 and 4.% during 2014 -2016. It also affects the poverty situation of the unaffected countries in the region by 0.5 % (Cote d'Ivoire) and 1.4 % (Senegal) in 2014 (*UNDP Regional Bureau for Africa,2015c*).However, the Ebola epidemic outbreak will significantly affect the capacity of the countries to achieve their poverty reduction objectives. The available evidence indicates that the epidemic will affect production in strategic sectors such as agriculture and transportation, as well as the informal sector where employees are poorest.

The impact of the Ebola epidemic on poverty is also notable in the neighboring countries of Guinea, Liberia and Sierra Leone. In contrast to Senegal, Cote d'Ivoire, Guinea Bissau and Mali have experienced serious crises, which negatively affected economic growth and exacerbated poverty between 2011 and 2013 (*UNOCHA,2014a*). Thus, given the economic growth of these countries, the incidence of poverty could be around 50 % in Cote d'Ivoire in 2011, and 68 % in Guinea Bissau and 45 % in Mali in 2013. In Côte d'Ivoire, the poverty rate has risen by between 0.5 and 0.58 % in 2014. These could reach 2.27 % in 2016.In Guinea Bissau, the poverty rate could rise by about 2.33 % In 2016. In Mali, the proportion of poor population could increase by 1.72 to 2.07 % in 2014, these will rise to 4.12 % in 2016.For Senegal, the proportion of people living below the national poverty line could increase by 1.4 to 1.8 % in 2014. In 2016, these could reach 3.59 % (*UNDP Regional Bureau for Africa,2015c*).

- The impact on Food security.

The restriction of movements of goods and services, the quarantine of communities that are food baskets of the affected countries, the fear of trading with affected areas, the closure of borders in West Africa have affected access to food. There is a strong correlation between EVD outbreaks and the prevalence of under nutrition. Among the epicenter countries, the impact on undernourishment

could be higher in Liberia than in Guinea and Sierra Leone (*GIEWS,2014*). The undernourishment rate will range between a 2.28 and 4.17 % increase between 2014 and 2016 compared to between 0.5 and 1.5 % in Guinea, and between 1.3 and 4.0 % in Sierra Leone. In Guinea, despite the limited impact on the food insecurity at the national level, the most affected regions may experience more difficulties in access to food products of sufficient quality and quantities. As a result, employment and income could be more greatly reduced. Much of the production of this part of the country is traditionally exported to Senegal; the border closure has reduced the export opportunities (*World Bank,2015*).In Sierra Leone the epidemic will result in increased food insecurity, with the prevalence of undernourishment rising with the prevalence of infection. In addition to the worsening of income poverty that reduces capacity to access food, the epidemic has left its mark on the country's agricultural production and marketing systems. The restrictions on the movement of people and the supply of labour, has led to serious concerns with respect to food production (*OHCHR,2015*).

The situation is similar in Guinea Bissau, Cote d'Ivoire and Mali. Guinea Bissau will be most affected by food insecurity. Indeed, the level of undernourishment have increased by 3.64 to 3.68 % in 2014,this increase could reach about 11 % in 2016.Côte d'Ivoire is the second country where the food security impact. The increase in food insecurity is 1.14-1.39 % in 2014. However, the situation could improve in 2016, with a lower increase in food insecurity of around 0.45 %. The negative impact on informal trade and production activities with Cote d'Ivoire could be large (*Meltzer, M., C.Y. Atkins,2015*). Due to the higher likelihood of contamination by disease, Cote d'Ivoire closed its borders with Liberia and Guinea on 22 August 2014. Senegal and Mali recorded a slight increase in the prevalence of undernourishment from 0.52 to 0.19 %(Senegal) and 0.37 to 0.55 % (Mali) in 2014. In 2016, these rise to 1.12 % (Senegal) and 1.13 % (Mali). However, the most severely affected by food insecurity could be the border areas of these countries, which depend more on cross-border trade. For the remaining countries, the impact is almost marginal. Only The Gambia recorded an increase in prevalence of undernourishment, which could reach 1 % in 2016. In Nigeria, Ghana and Togo, food insecurity increased by 0.20 %, 0.096 % and 0.36 % respectively in 2016 (*World Bank,2015*). This calls for a very strong social protection mechanisms for heavily affected people, especially pregnant women and children. The governments, UN agencies, donors, NGOs and other stakeholders should focus more attention on this issue. Given the impact of the EVD on sectoral output, especially agricultural outputs, and overall economic growth, food insecurity is expected to be deeply affected in a negative way, particularly in the three epicenter

countries. The results of the econometric estimation indicate that there is a negative relationship between the undernourishment prevalence rate and the rate of economic growth.

Fourth: Results, necessary policies and procedures in facing the epidemics and curbing their spread in the future.

Epidemics can be faced through protection or treatment (prevention is better than cure). Health is as important as the economy – without a healthy population, promoting a rapid and sustained economic growth is difficult. Although it is impossible to fully get ready for facing the underlying diseases which have not been discovered yet, it is possible to change the human behavior in order to curb their risks in the future. In addition, it is possible to pay attention to the reinforcement of health systems in particular countries and providing quality health services with reasonable prices and giving further attention to the drainage services. It is necessary as well to exert further efforts in the field of human resources development in order to curb poverty. The increase of human resources development indicators in most states particularly the developing ones, exposure to epidemics decreases at the long term. Addressing the important of trust between the people and their government, Fear and ignorance must be overcome through better communication (*World Bank,2015*).It also important to exert efforts for activating the intensive media campaigns, mobilization of volunteers from the domestic society for controlling the potential harm of epidemics occurrence in the future. It is necessary to improve the health systems readiness for facing the potential epidemics through documented epidemics control in order to determine the new health threats seriousness. It entails exerting further international cooperation and endeavors to improve the control with states which have effective systems and early warning equipments and helping the poor states in this regard. Whenever a new epidemic appears whose infection mechanism is not defined yet, it is necessary to immediately resort to isolation and quarantine of the infected individuals while taking into considerations that strict procedures may differ from one case to another. The epidemics management health systems should be financially ready through allocating adequate resources, programs of rapid immunization and vaccines particularly in the poor states which are more vulnerable to the danger of epidemics spread. The developed countries should provide technical and financial aids to those states through the training of staff working in the health field on how to respond and deal with epidemics.

The government concerned should play an effective role through improving nutrition, providing safe water supplies, improving the drainage system in order to curb the occurrence of epidemics in

the future. Epidemics control should have the priority in all developed and developing states through investment increase in the world and domestic health systems. This entails cooperation and collaboration among developed and developing states and the international organizations to prevent epidemic occurrence at the world level. The international community must act very swiftly to avoid this crisis through the important improved of regional and international cooperation and it is essential to draw on lessons learned from other countries' experiences.

Finally, it is necessary to activate the role of the world health organization and the UN agencies through issuing world travel warning from and to infected areas with a particular epidemic. It is necessary to exploit the world mass media, international information network, and modern communication technology to explain the protective measures and reinforce world controlling system through cooperation with migration bureaus, airlines, and airports to follow up the epidemics spread.

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