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Cholera Management in Iraq: Challenges, Strategies, and the Path Forward

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Abstract

The article discusses the ongoing challenges and management of cholera, particularly in Iraq, which is experiencing a resurgence of the disease. The bacteria Vibrio cholerae is the cause of cholera, which is mainly transmitted via tainted food and water. If left untreated, cholera can be fatal and cause severe dehydration. The article highlights the historical context of cholera outbreaks, the factors contributing to its prevalence in impoverished nations, and the specific situation in Iraq, where inadequate sanitation, malnutrition, and the aftermath of conflict exacerbate the problem.Efforts to manage cholera include rapid intervention, infection control, and public awareness campaigns. Organizations like WHO and UNICEF provide resources for cholera management, emphasizing the importance of early detection and treatment. The article also outlines the epidemiology of cholera, noting its endemic presence in various regions and the impact of climate change on outbreaks. Challenges to cholera prevention include poor healthcare infrastructure, political instability, and environmental factors. The article advocates for improved water and sanitation services (WASH), vaccination campaigns, and better healthcare facilities to reduce cholera incidence. It concludes that sustained efforts and funding are necessary to combat cholera effectively and improve health outcomes in affected regions.

Keywords: Cholera Management, Iraq, Challenges, Strategies Forward

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Introduction

Political and evidence-based communication are essential for raising public awareness of an illness, generating support, influencing policy, and securing funding. In every nation, advocacy and communication have been crucial to the management of illnesses like HIV/AIDS, pneumonia, TB, etc [1]. A diarrheal illness called cholera is spread via tainted food and drink. It can cause

serious dehydration and level death if left untreated. It may cause a health crisis, make it impossible for you to work, and cause your health to continue declining. Naturally, because it feeds the cycle of poverty, the effects on underprivileged areas are disastrous as well as responsibility [2]. With over seven pandemics and four million cases reported, cholera remains one of the most prevalent acute watery diarrheal disorders in the world today.
Iraq is fighting cholera once more, just like other developing nations are. The outbreak in 2015 was particularly deadly, with up to 1500 people losing their lives. This time, it is crucial to contain the disease as soon as possible. The high rate of cholera in Iraq is caused by the country's war-torn condition, malnourished populace, inadequate sanitation and hygiene, large-scale relocation, and global warming. It is advised to use extra tactics, such as information campaigns, food inspection, and water body safety monitoring, in addition to the current efforts to manage cholera cases [3].

Seven pandemics have resulted from the battle against cholera, which began in the 1800s in the Indian Ganges delta and has since spread to South Asia, Africa, and the Americas [4].
The disease-causing agent, Vibrio cholerae, is spread through the fecal-oral route and, to a reduced degree, by eating shellfish. The primary causes of cholera, which kills people of all ages, are serogroups O1 and O139, which have approximately 200 proteins linked to the virulence factor [5].Many impoverished nations have high rates of cholera because of inadequate sanitation and hygiene standards, postponed treatment, and inadequate infrastructure for healthcare [6]. On June 20, 2022, the Iraqi Ministry of Health is dealing with 13 cases of cholera, most of which are in the Sulaymaniyah province in the Kurdistan area. This indicates that Iraq is experiencing another outbreak of cholera. Iraq had already faced cholera in 2015, with the Islamic Relief Project reporting that 1500 people had died in 18 regions [7].Even though cholera is known to exist across Asia, the expense of treating the disease for hospitals, individual households, and missed wages as a result of being unable to work among .The cost of illness is the sum of the expenses incurred by patients and caretakers [8]. and decreased output), are little known. Just two earlier studies have calculated the cost of illness by accounting for both personal and family costs as well as those paid by the government [9].Researchers found that every year, between 1.3 and 4 million cases of cholera are reported, and between 21,000 and 143,000 people die from the illness worldwide. [10] The epidemiological surveillance system and those who are directly or indirectly affected by the outbreak notify others about it, which is how the public health department finds out about it. The epidemiological surveillance system's main objective is to collect, analyze, and review health-related data in order to organize and evaluate public health efforts. Sometimes the information obtained from the people is just as faulty as the information gathered by the monitoring system, making it impossible to plan any kind of intervention. [11].

Current understanding of human preparedness and reaction, epidemiological patterns across nations, and management of cholera transmission.

Controlling cholera
To effectively handle cholera cases, quick early intervention and meticulous attention to detail including infection control protocols are required. However, these don't have to be extremely expensive. Organizations with well-developed, highly protocolized methods that can be implemented effectively and at scale in places with limited resources include MSF, ICDDR,B

WHO, UNICEF and other organizations offer a plethora of information on the management of cholera. Incorporating training resources available online. References [12–16].

Epidemiology of Cholera Disease

Regional Dispersion and Cholera Burden Information from the past ten years indicate that the prevalence of cholera has increased and has grown to be a significant public health concern in lacking in resources endemic countries [17]. Figure 1 shows the regional spread of cholera worldwide from 2016 to 2019 [18–20]. In the past, the Asian subcontinent—which includes Indonesia, India, Bangladesh, Vietnam, Thailand, Pakistan, Nepal, and Iraq—was endemic for cholera. But at the moment, it is endemic in Africa, the Caribbean, South Africa, Mozambique, Zambia, Sierra Leone, Nigeria, Angola, the Democratic Republic of the Congo (DRC), Yemen, Zimbabwe, the United Republic of Tanzania, and Guinea, among other places in Latin America, the Caribbean, and Africa. [18-20]. Many nations fail to record cholera cases or deaths because of inadequate or nonexistent monitoring systems [21]. When declaring cholera epidemics, some nations exercise caution to avert social unrest and economic costs from decreased exports and tourists. However, shorter epidemic durations have been observed because of early reporting of cholera outbreaks [22]. 52 developing nations have reported an increase in cholera infections since 2006 [23]. Contributors to Hazards Cholera risk factors include contaminated drinking water, unhygienic living circumstances, and consuming food from the street is associated with poverty. There is a decreased risk before, after, and after defecation when hands are cleaned with soap [24]. Biological factors that have been identified as cholera risk factors include female gender, blood group O, retinol deficiency, and hypochlorhydria, which is a condition in which a person takes antacids, proton pump inhibitors, or histamine receptor blockers [25–30]. Moreover, two significant factors that contribute to severe disease are Helicobacter pylori infection and gastrectomy [31]. Malnutrition increases susceptibility, especially in young children [31]. In endemic nations, children under five have the highest prevalence of cholera due to lower levels of acquired immunity than adults [32].A household contact study of cholera patients in Bangladesh found that first-degree family members (parents, children, and siblings) have a higher chance of getting the disease than second-degree relatives (grandchildren, grandparents, uncles, and aunts) who live in the same home [33].Though cholera has long been prevalent in many parts of Asia, Haiti and Africa are only recently experiencing outbreaks of the disease. Cholera is currently considered endemic in various regions of Africa, notably the Central African Rift Valley region [34]. This is in accordance with the World Health Organization's criteria, which requires cases to be proven by culture for three of the previous five years. After making a comeback in 2010, cholera was deemed common in Haiti, where outbreaks had not occurred in more than a century [35].

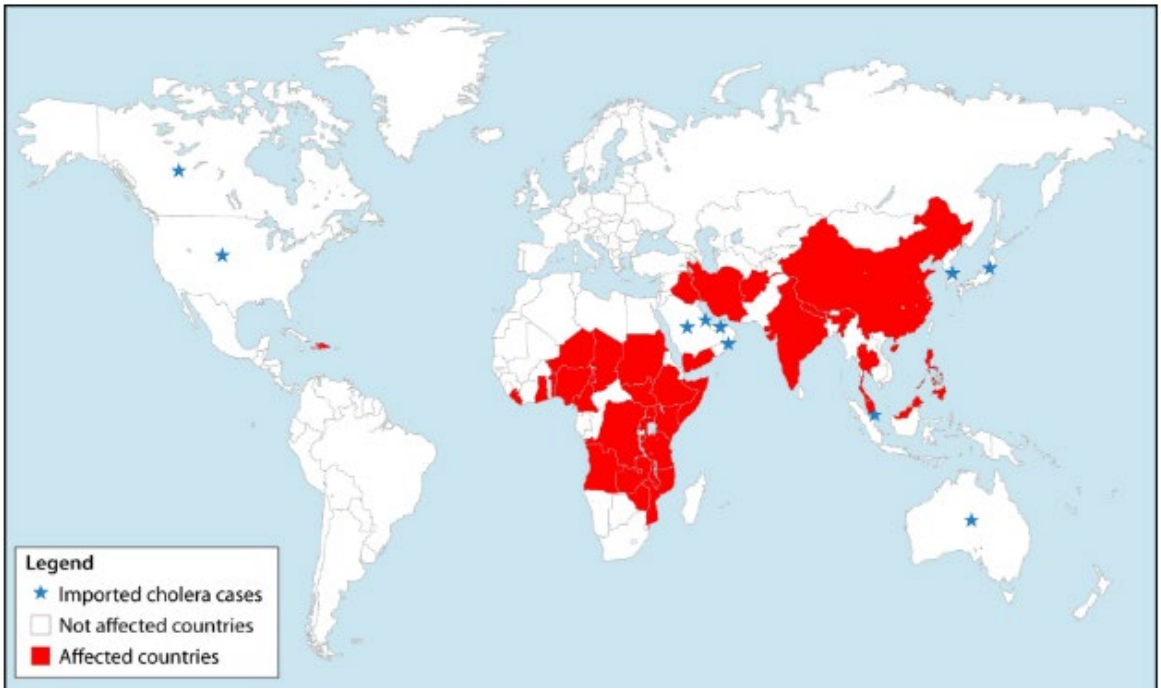

Figure 1 shows the cholera outbreak worldwide between 2016 and 2019. Moreover, the imported cases originated from regions of the nation where cholera is not frequently found. The afflicted nations where cholera is endemic during the three years are represented by the red zones.

Challenges in the way of cholera anticipation and controller

There have been reports of an increase in cholera outbreaks in certain countries during the dry season and others during the raining period [36]. Today, it is believed that climatic shifts and environmental deterioration play a major role in the higher risk of infectious illness outbreaks and recurrences, especially cholera [37]. Human displacement is impacted by climate change, including droughts and overflowing. Which, by limiting access to clean water, encourages cholera outbreaks [38,39]. Aside from restricted availability of potable water, a drought like that Development in Yemen encourages the growth of unofficial urban areas and the isolation of refugees and nomadic people settlements, all of which aid in the spread of cholera [40]. The impact of climate change on the frequency and occurrence of epidemics, including cholera, is a topic of growing recognition and discussion. The United Nations Climate Change Conference (COP27) preamble of 2022 noted that flooding and rising sea levels have damaged environmental hygiene, resulting in waterborne and diarrheal illnesses and that extreme weather has a detrimental effect on water supplies [45]. Thus, we anticipate further cholera outbreaks in the future unless corrective action is taken. Climate change is blamed for both locally and worldwide. Wash initiatives are recommended to eventually lessen the incidence of cholera in high-risk areas, even if the efficacy of various cholera interventions varies from nation to nation [42,43]. Cholera was successfully eradicated in industrialized and some emerging nations by funding suitable environmental health measures, such as appropriately treated water supplies. and distribution, proper human waste disposal, and infrastructure for sanitary facilities [44]. Consequently, enhancing environmental health the most important action to stop the spread of cholera or other waterborne diseases is to improve conditions, particularly with regard to water and sanitation [45, 46]. To develop the infrastructure and services, though, consistent dedication and funding are needed [47,48].

Long-standing political unrest, economic hardships, and religious conflicts in Iraq have led to a lack of qualified labor, inadequate resource availability, and serious healthcare issues. difficulties [49]. Targeted destruction of has long been a staple of war tactics. water delivery and infrastructure systems to flood communities, interfere with agriculture and deny residents access to water, sanitation, and resources for sanitation (WASH) [50]. Furthermore, due to frequent disease outbreaks and infectious illnesses, Iraq is particularly vulnerable to waterborne infections due to its location along the Tigris and Euphrates, whose contaminated waters provide the majority of its access to water, as well as its proximity to other countries [49].

Acute malnutrition affects Iraqis as well; food handouts barely provide for half of daily energy needs, and food shortages have been exacerbated by inflation. Moreover, there is a deficiency in medical supplies, tools, medications, and qualified staff. In the past, the government has demonstrated indifference and made less contributions than the necessary amount of its funds to healthcare. Hospitals are nevertheless congested, underfunded, and understaffed [51].

The government has taken steps to stop the cholera epidemic from spreading, but overall water quality and sanitation facilities are still subpar. Because of the potential for the development of antibiotic resistance, mass chemoprophylaxis is not recommended. Similarly, because of their two-dose schedule, lengthy duration to achieve protective efficacy, high cost, and intricate logistical needs, oral cholera vaccines are rarely recommended during active epidemics [52].

Furthermore, even though chlorine is very necessary for purifying water, its availability is frequently limited because of its usage in previous terrorist operations [53].

Efforts and suggestions

As cholera is a self-limiting illness, death can be lowered by almost 99% with prompt treatment [54]. Given the inherent obstacles of providing healthcare in a post-conflict Iraq, an effective treatment and prevention strategy would involve a multipronged approach involving early detection, management, and treatment of the condition. As of June 2022, the United Nations and the Iraqi Ministry of Health are still collaborating to enhance healthcare outcomes throughout the cholera outbreak, as seen by the most recent shipment of medical supplies to the Kurdistan region [55]. Local healthcare officials are committed to stopping the disease's spread and have demonstrated this by holding awareness campaigns [56], treating and monitoring water sources [57], and conducting routine food inspections [58]. The encouraging response from the regional health authorities is still consistent with the UN's objective of having the government is more proactive in supplying life-sustaining assistance to the maximum in need [59].

Humanitarian groups are still working to improve the health outcomes for Iraqi inhabitants. The Humanitarian Response Plan (HRP), for example, was released by the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) and outlined the organization's strategy to support 991,000 Iraqis in need, with a particular emphasis on internally displaced people (IDPs) and returnees (those who have subsequently returned to their place of origin) [60].

In addition, a primary healthcare facility was built in Kawergosk, an Erbil subdistrict, to serve the more than 20,000 refugees residing in the area [61]. Finally, continuing humanitarian assistance is made possible by funding from nations like Korea [62] and Norway [63], with support from the US Agency for International Development (USAID) being particularly notable [64].

It took persistent efforts to successfully contain the cholera outbreaks that were reported in 2012 [65] and 2015 [66, 67].A 2022 investigation description outlining the accomplishments made possible by the HRP plan by OCHA demonstrates that although notable advancements were made in the Just 22% of the targeted population has received WASH services in the context of healthcare,

with a lack of financing being the main obstacle [68]. The prevalence of cholera in Iraq is still higher than anticipated, despite some progress A person can contract cholera by consuming [69].

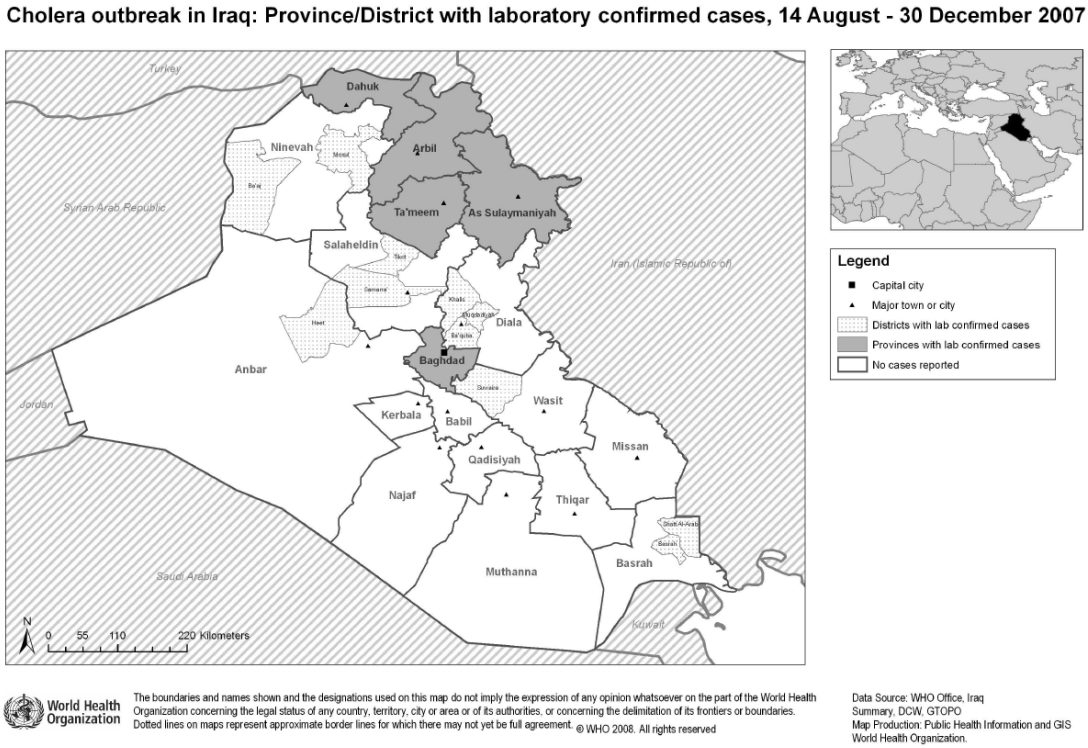

Figure 2: Iraq: Province/district with laboratory-confirmed cases of cholera, August 14, 2007–December 30, 2007[81].

Transmutation of Cholera

Since contaminated food and water can spread cholera, early efforts have concentrated on increasing public knowledge of the need to handle these consumables with care as well as proper hand washing [70,71]. As a result, in order to ensure that these programs continue to operate, emphasis must be focused on a global effort to give financial aid to Iraq. As part of WASH initiatives, we advise installing private restrooms with mirrors and liquid soap access because this could result in enhanced compliance with hand washing [72]. Furthermore, despite the widespread understanding of the benefits of hand hygiene in reducing the spread of disease, efforts to increase awareness of the topic have proven unsuccessful because they ignore the factors that influence handwashing behavior [71, 72]. As a result, when spreading awareness of the topic, an integrated approach that takes into account people's physical, psychological, and environmental needs must always be taken into consideration.

Treatment of Cholera

Early efforts have focused on raising public awareness of the need to handle consumables with care and practice adequate hand washing because contaminated food and water can spread cholera [70,71]. WHO-prequalified OCVs, such Euvichol-Plus® and ShancholTM, are vaccines that are easy to store and transport [73,74], as well as being cost-effective [73,75]. As a result, they offer a promising way to prevent cholera in nations where it is still endemic, like Iraq. The mainstay of care for severe cholera cases that have severe vomiting and diarrhea is still rehydration therapy.

Patients with substantial coinfections and comorbidities, pregnant women, and malnourished children are examples of high-risk populations that need to be managed quickly in clinical settings [76]. For individuals suffering from severe dehydration, an immediate intravenous (IV) injection of Ringer's Lactate solution (10% of body weight) is recommended; normal saline may be substituted if needed [77, 78].

Initial treatment for fluid loss due to persistent diarrhea should be modified to shorten the duration of dehydration. Cholera cots can be used to measure the volume of feces [76, 77]. Care must be taken in the early phases of therapy, especially with young patients, to avoid overhydration and the resulting pulmonary edema [76]. Stabilized patients should be urged to take oral rehydration therapy (ORT) as soon as they stop vomiting. While glucose-based ORT is still widely used, rice-based ORT is more successful in lowering stool volume [75] and is not associated with the generation of the virulence factor observed with the earlier formulation [79]. Based on local trends of antimicrobial resistance, antibiotics should be co-administered in critical settings as they reduce the intensity and duration of the illness. Even for pregnant women and children, doxycycline remains the medicine of choice due to its price, simplicity of administration, and single dosing [78, 80]. Maintaining uterine blood flow and ensuring proper rehydration are essential for ensuring embryonic viability in pregnant patients. Moreover, clinical settings need to be prepared for the possibility that the illness can cause preterm labor to begin [75]. Due to the correlation between malnutrition and higher mortality, it is imperative to promptly resume a regular diet and to continue breastfeeding infants throughout the initial course of treatment [77]. For children five years of age and under, zinc supplementation at a dose of 20 mg per day for ten days is advised. This has been demonstrated to lower mortality as well as the risk of future diarrheal diseases [78].

Conclusion

The causative agent of cholera, *Vibrio cholerae*, affects people of all ages and is still one of the most common diseases in many regions of the world. Following an outbreak in 2015, Iraq is still fighting cholera, despite incidents of the disease spreading over the globe. A number of factors contribute to the incidence of cholera, such as inadequate healthcare facilities, inadequate infrastructure, inadequate sanitation and hygiene, undernourishment, and the nation's post-conflict situation. Large-scale relief efforts are still carried out by giving out food, cash assistance, immunizations, rehydration treatments, and antidiarrheal. In order to achieve sustainable improvements in health outcomes, it is imperative to execute awareness campaigns and make upgrades to public healthcare facilities and infrastructure. To create methods to lower the incidence and global prevalence of cholera, more knowledge and investigation are needed.

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