

Fixing accountabilities and finding solutions to tackle acute (communicable) diseases viewed as collateral damage due to errors of omission and commission in primary care

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Since the Second World War, there has been an average increase in emergence or re-emergence of communicable diseases. South East Asia is identified as a major hotspot area for communicable diseases. This seriously compromises the related global preparedness.^[1]

In 2016, three communicable diseases were ranked in the top 10 causes of death worldwide, viz., lower respiratory infections (3.0 million deaths), diarrheal diseases (1.4 million deaths), and tuberculosis (1.3 million deaths).^[2]

Communicable disease incidence may be seen as “collateral damage” of our decisions or profile, e.g., our behaviour, religion, ethnicity, occupation, geographical location, or genes. These determinants affect disease extent and pattern. In fact, many communicable diseases are a result from domestication of animals or due to our infringements of the forests’ sanctity.^[3] For example, over the last 15 years, our planet has faced more than 15 deadly zoonotic or vector-borne global outbreaks, both viral (e.g., Hanta, Ebola) and bacterial (e.g., Escherichia coli O157:H7, Yersinia pestis, and Bacillus anthracis). Since 1980, more than 87 new zoonotic and/or vector-borne EIDs have been discovered.^[4]

Similarly, diarrhea and other gastrointestinal diseases emerged as collateral damage of affluence and development linked to

working couples’ culture when we for “eat out” and are exposed to unhygienic food handling. Food handlers with poor personal hygiene and lack of awareness of important issues in preventing food borne diseases, working in food establishments could be potential sources of infections of many intestinal helminths of protozoa and enterogenic pathogens. More than 250 food borne diseases are caused by either bacteria (Clostridium, Botulinum, E. Coli, Salmonella, Listeria, Vibrio Cholera); viruses (Enterovirus, Hepatitis A, Rotavirus, Norovirus); parasites (Entamoeba histolytica, Cryptosporidiosis, Giardia, Trichinosis).^[5] Various food borne diseases are botulism, campylobacteriosis, hepatitis A, norovirus infection, salmonellosis, shigellosis, diarrhea, typhoid, food poisoning, amoebiasis, ascariasis, hook worm infections etc.^[6]

WHO estimated that in developed countries up to 30% of the population suffer from food borne diseases each year, whereas in developing countries up to 2 million deaths are estimated per year. Moreover, in developing countries up to an estimated 70% of cases of diarrheal diseases are associated with the consumption of contaminated food. WHO estimated 16 million new cases and 600,000 deaths of typhoid fever each year.^[7]


These diseases can be easily managed if we adopt multi-sectorial setting-based health promotion approach involving departments of forest, health, food, veterinary, and civil engineering. The issue here is also of error of omission and commission, i.e., lack of enforcement of the food safety related laws when

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eating establishments are allowed to violate the food hygiene norms (substandard raw material, dirty premises, unhygienic food handlers, and poor food storage).^[8]

This is common in army also. Because of the nature of their field duties soldiers are exposed to diseases like malaria, scrub typhus, meningococcal infections, Ebola, Q fever, etc.^[8] Prior to World War I, the ratio of deaths due to disease versus battle injury was approximately 10:1, which decreased to 1:1 during World War I and 0.01:1 during the Gulf War. During the Vietnam War, there were 1,253 in-hospital deaths among a total of 132,996 military hospital admissions of which, 91 (7.3%) were nonsurgical and the result of common infectious disease causes, including malaria (12 deaths), hepatitis (4 deaths), and encephalitis (4 deaths). Somehow, maintaining good environment/hygiene is impossible in the battle field, as many of the factors are beyond the control of army personnel.^[9]

Such “collateral damage” due to error of omission also result in hospital acquired infections (HAI) which act as a double-edged sword. In 2011, WHO reported that on average at any given time 7% of patients in developed and 10% in developing countries will acquire at least one HAI; death from HAI occurs in about 10% of affected patients. Besides nosocomial infections in patients HAI also affect health personnel themselves as an occupational hazard.^[10]

These can be easily prevented if standard precautions are adopted through simple setting-based health promotion approach, e.g., washing of hands by health personnel before and after contact with patients or specimens, wearing gloves; safe disposal of used syringes, vaccination of health personnel and use of personal protective equipment by them. Here, all laboratory specimens, blood and body fluids need to be considered as potentially infectious. Infection control committee can play an important role here. In most hospitals, it is the most neglected part of their infection control practices.^[8]

Similarly, for poor sections of society, communicable diseases can be seen as a “collateral damage” of unhygienic environment linked with poverty leading to repeated outbreaks of diarrhea, typhoid, and jaundice.^[11]

Response of public health specialists to this scenario is usually confined to data and samples collection through useless “circular epidemiology” approach of doing such surveys repeatedly. Basic flaws in the system like poor civil engineering work, unsafe water supply, and bad sewerage system, however, persist unchanged and cause more outbreaks next year.^[12]

We have to understand that epidemiology is just a diagnostic tool to quantify and analyze the problem while health promotion focuses on action through lobbying advocacy, formulating laws, creating civic amenities and imparting health education).^[13] Very often, epidemiology is misused as a political tool, when outbreaks of communicable disease occur to suppress the data, e.g., “under-reporting” of malaria in India in 2010.^[14]

Epidemiological research should not be used to justify creation of good civic amenities like safe water supply by providing data on fecal contamination leading to diarrhea/jaundice outbreaks. Provision of Safe water supply and sanitary waste disposal are the basic rights of all citizens. These facilities are aesthetically and inherently desirable for ensuring good quality of life.

Public health should not be exploited to divert public attention from real issues. Data collection just give an impression of some action being taken. However, the much-needed correction of the deplorable condition of civic amenities is not done.^[15]

Even undue focus is there on “health education” of general public as the panacea to all public health related ills whenever we talk about “preventive medicine”. We tend to ignore role of civic authorities, town planners or the engineers.^[15]

As per health field theory, there are three major health promotional approaches to the control of communicable diseases, viz., improvement of host resistance by immunization and good nutrition, physical/mental fitness; environmental hygiene measures to control the disease agents by (food, air, housing, water, garbage wastewater, and disposal) through vector control and sanitary engineering. For control of communicable diseases primary prevention is the key, e.g., by vaccination (Tetanus/measles/polio), safe water supply and sanitation (infectious diseases), early diagnosis and treatment (TB/malaria).

Public health legislations also have a role here through improved access of people to vaccinations, screening, and treatment.

Historically also, communicable diseases were controlled in western countries as a consequence to improved standards of living and not through any disease control program. So, in developing countries like India, government has to provide basic civic amenities to ensure the minimum level of health for the masses to achieve similar success. All these are long term measures. These require heavy financial investment. Here, non-health sectors clearly have more role. Drieze and Sen had also opined that government has to focus on creating minimum standards of basic civic amenities like education, roads, electricity, and water supply. However, even in 2019, we have not been assured of this liberty.^[16]

However, despite all the theoretical knowledge, focus in communicable disease control is on quick technology heavy solutions like immunization (The Times of India. “100s of Madrassas reject MR vaccination”, 21st December 2018),^[17] novel diagnostic procedure (Genexpert test for detection for Tuberculosis) or a new drug regime (Bedaquiline – a new drug therapy for drug resistant tuberculosis) without mentioning underlying social pathology like poverty, poor civics or lack of inter-sectoral co-ordination.^[18] As this quick fix/knee jerk responses are responsible for huge amount of business, directly or indirectly. On the other hand, health promotion activity is not profitable business in monetary terms. It also requires behavior

change of people which itself is a slow process and bureaucratic system believes in quick, tangible results due to their uncertain tenure of power.^[18]

Control of infectious agents and their reservoirs also needs collaboration with entomologists, veterinarians, and toxicologists as this requires elimination of breeding grounds of vectors through sanitation. That is practically nonexistent in the ground level due to multiple reasons. Now a days, the term multisectoral collaboration is limited in the textbooks only.^[8]

Prevention of communicable diseases can be achieved by promoting healthy behavior and avoiding high risk behaviors like avoiding intravenous drugs for prevention of Hepatitis-B, avoiding multiple sex partners for prevention of sexually transmitted diseases (HIV), etc.

Basically, it is due to the imbalance between microbiome structures in our body, which determines the occurrences and spread of communicable diseases. Imbalance may occur in gut during the intake of unhealthy food, or it may occur in respiratory tract when we are exposed to toxic gases/infectious droplets (TB), or it may occur in our genital tract during unsafe sex. These are largely preventable. In short, whenever the peaceful coexistence of microbes is disturbed, harmful microbes multiplies in our body and communicable disease occurs.^[19]

In context of communicable disease control peaceful existence is also important. Any war-like situation anywhere damages all progress made in health sector. There is serious disruption of routine health activities like immunization, basic health care.^[19]

India's national health policy also prioritizes immunization coverage through Mission *Indradhanush*. It gives due emphasis to relationship between communicable disease control programs and public health system strengthening. It advocates the need for surveillance of the communicable diseases at district level through network of laboratories and respond to the disease outbreaks.^[19,20]

Still, we should not be satisfied with our "successes" like eradication of small pox/poliomyelitis (impending); elimination of dracunculiasis, neonatal tetanus, leprosy, yaws; reduction in incidence of AIDS, malaria, kala azar, etc. These just represent temporary victories. Microorganisms and vectors are much smarter than us! Even if we seem to have controlled these, their resurrection is the norm. After initial triumph over bacterial diseases which were the major health risks earlier, viral diseases like Monkey pox, Ebola, SARS, Zika, Nipah, etc. have reemerged. Even modern methods have not been able to completely eradicate communicable diseases. Instead of focusing on "survival of the fittest" philosophy we should understand that communicable diseases are the result of imbalance in the harmony between people and microbes in their environment.^[2]

Besides human beings Nature is also the ecological niche of microbes and vectors. These are more in tune with Nature which

may have the last laugh regarding the issue of communicable disease control. Hence, there is a need for peaceful co-existence between people and the microbes.

So, ad hoc solutions will not control communicable diseases. Long-term sustainable solutions are needed. Commitment by individuals, communities, and countries is also important. Public health specialists have to play a leadership role here academically as well as through action! Lastly, though we have won battles through science, but the war on communicable disease is still on!

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