



## Food Borne Illness and One Medicine Approach

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Food borne illness is a serious public health threat problem. Centers for Disease Control and Prevention (CDC) estimates that 76 million foodborne illnesses occur in the United States each year, including 325,000 hospitalizations and 5,000 deaths. Two recently published Foodborne Diseases Active Surveillance Network (FoodNet) reports showed that *Salmonella* spp., *Campylobacter* spp., *Shigella* spp., *Cryptosporidium* spp., and Shiga toxin *Escherichia coli* (STEC) O157 continue to be leading causes of both the number and incidence of laboratory-confirmed foodborne infections in the United States [1]. Food-borne illness has a societal cost of \$357 billion annually [2]. Today the food processing environment is quite different from that of earlier times. It is common to have food prepared from a mixture of ingredients originated in several countries and to distribute the finished product across the continent. Food is also prepared in much larger batches than before. One of the outcomes of the move to large scale production and distribution of foods is that a problem in one batch in one location can affect people in many provinces and/or states [3]. While intensive farming practices have been linked with the rise of foodborne illnesses in humans, it is interesting to note that the rise has continued even when there has been a shift to less intensive farm production systems [4]. In the recent years consumption of ready-to-eat (RTE) salads also has increased worldwide. Consequently, the number of outbreaks caused by food-borne pathogens, including diarrheagenic *E. coli* pathotypes (DEPs), associated with the consumption of RTE-salads has increased. DEPs include enterotoxigenic (ETEC), typical and atypical enteropathogenic (tEPEC, aEPEC), enteroinvasive (EIEC), enteroaggregative (EAEC), diffuse adherent (DAEC) and Shiga toxin-producing (STEC) *E. coli* [5]. Today, approximately 60% of all human pathogens and 75% of newly emerging pathogens are zoonotic diseases of animal origin [6]. The interrelationship between human and veterinary medicine was recognised in the 19<sup>th</sup> century by Rudolf Virchow (1821-1902), a German physician and pathologist. He is considered the founder of comparative medicine, cellular biology and veterinary pathology and he first coined the term “zoonosis”. He said: “between animal and human medicine there are no dividing lines—nor should there be. The object is different but the experience obtained constitutes the basis of all medicine” [7]. Veterinarians have a major role to play in safety of foods of animal origin. In collaboration with other professional figures in food science, they are involved in projects to develop more rapid tests for detection of pathogenic bacteria and implement on-farm practices to minimize carriage of zoonotic pathogens by farm animals. They also actively involved on epidemiology of foodborne pathogens undertaking surveillance [3]. It is important to stress that the most food-borne illnesses are preventable. A key component of prevention will be the ability to use data to anticipate where outbreaks are likely to occur. Shifting to a proactive food safety approach needs governments to implement research-based interventions through regulation and education that will produce a greatest reduction in disease burden at the lowest cost. Such transformations will require a substantial “sea change” in philosophy—moving away from a top-down approach to public health and toward cooperative, interdisciplinary strategies for disease prevention [8]. In the last years mass-media gradually pay more concern with health-related food safety issues. Within the wide concept “risk society”, the advanced complex of food science and technology exposes human to the risk of food safety, such as mad

cow disease, avian flu, dioxin in eggs, pesticide in fruits, trans fatty acids, undeclared species in food, etc. The economic damage caused by recent “food scares” is very important. For example, an emblematic food scare is the 2006 spinach *E. coli* outbreak. The outbreak resulted in 204 illnesses, 104 hospitalizations, and 3 deaths. In September 2006 the FDA advised consumers not to eat bagged spinach and the following day expanded the warning to fresh spinach. This resulted in a five day period where no fresh spinach was sold in the US, while Californian spinach remained off the market for 10 days. The long term effects of the food scare continued to affect the bagged spinach industry for months afterwards. During the period January 24-February 24, 2007, 5 months after the outbreak, the value of retail sales of bagged spinach was still down 27 percent from the same period a year ago [9]. These “food scare events” have been affected not only food industry but cause alarmism that in turn makes difficult for government starting up risk communication and risk management measures. Moreover research suggests that journalists are often unprepared to cover health-related topics, mainly due to a lack of adequate expertise in medicine and to a not proper training in science reporting [10]. Some guidelines have been discussed in international meetings and draft by several medical journalists’ associations. However, “Good Medical Writing Practices” are still far to be applied. An ideal check-list should include the basic principles of medical science reporting and the journalist’s code of ethics. Health communication should adhere to the principle of beneficence, non-male efficiency, respect for personal autonomy and justice; sources should be checked for reputation of the individual and reliability; reports should be accurate, clear, accountable, but not necessary exhaustive; presentation of new research should include the sample size and highlight if the sample is large enough to draw general conclusions [11]. Some researchers have also proposed practical solutions to improve communication between scientists and journalists, such as sharing of informational resources, scenario exercises, and raising awareness at professional trade meetings [10]. Another attempt to improve health-news reporting comes from the concept of “One medicine approach”. This concept is defined as the collaborative efforts of multiple disciplines, working locally, nationally and globally, to reach optimal health for people, animal and the environment [12]. This means that a focused collaboration between medical experts and mass-media should be strongly recommended when health-related issues are divulged [11].

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