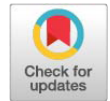


Review Article



Discussing One Health: Veterinary Public Health, Health Communication, and Collaborations and Partnerships

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Abstract | One Health, as an approach to achieving important global health outcomes, thrives at the intersectionality of human health, veterinary health and environmental health. The interdependence of these three pillars highlights its importance as a holistic tool for inclusive development. With a prevailing pandemic that is caused by a zoonotic viral agent, One Health truly is the keyword of the times. Similarly, the numerous Neglected Tropical Diseases prevalent throughout the world also calls upon a One Health approach for their control, elimination and prevention. Public health veterinarians seek to keep communities safe and healthy by promoting human and environmental health through preserving animal health. As a panopticon to view the achievement of vital global health outcomes, One Health is truly a collaborative affair. The paradigm, by definition, is multidisciplinary, multi-sectoral, and integrative in nature. Thus, effective collaborations and partnerships towards understanding are integral to successful programs. Moreover, how a One Health institution thrives is heavily reliant on how the separate, yet interconnected branches effectively communicate to each other. The aim of this paper is to consider some One Health points of discussion that are worthy of highlighting despite their preterm nature. Discussions on One Health as a lens in viewing NTDs in the Philippines, an appreciation of veterinary public health as veterinary medicine's entry point to One Health, the importance of effective communication, collaborations and partnerships within the paradigm are subsumed herein.

Keywords | Community Health, Environmental Health, Neglected Tropical Diseases, One Health, Veterinary Public Health

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INTRODUCTION

At the turn of the millennium, Taylor et al. (2001) reported that of the 868 known human pathogens at that time, 61% are zoonoses. Moreover, the authors pointed out that about 75% of the 132 known emerging infectious diseases were also found to be transmissible between humans and animals (Taylor et al., 2001). Thus, as early as 2001, the connections between animals, humans and the environment they share has been laid out. The

transdisciplinary, multi-sectoral and collaborative approach of looking at optimizing health outcomes through the recognition of the links between human, animal and environmental health-One Health-has come a long way since its first use in the early (Tenorio, 2022). Mackenzie and Jeggo (2019) noted that One Health was first associated with the severe acute respiratory syndrome (SARS) that swept across the globe in 2003. It would later be attached again to another zoonotic emerging infectious disease in 2005 the HPAI H5N1 outbreak. Considering that these

illnesses have originated from animals, particularly SARS which has roots from civet cats in China, the notion that life threatening human diseases could be derived from wildlife was the basis of the Manhattan Principles promulgated by the Wildlife and Conservation Society in 2004 (Zinsstag, 2012; Panda et al., 2021). One Health's origin in wildlife conservation and environmental studies signify the importance of the latter in maintaining global humanitarian health. Therefore, understanding the vital links between human, animal, and environmental health is important if the ultimate goals are to control, to do surveillance on, eradicate, and most importantly prevent global zoonotic emerging infectious diseases.

With a prevailing pandemic that is caused by a zoonotic viral agent, One Health truly is the key word of the times. Similarly, the numerous Neglected Tropical Diseases (NTDs) prevalent throughout the world also calls upon a One Health approach for their control, elimination, prevention. Thus, it is appropriate that we highlight this paradigm in the plethora of discourses in the current zeitgeist. Also, other less talked-about aspects of One Health, like Health Communication, Collaborations and Partnerships, and Veterinary Public Health need to be discussed amidst the health information shower that we experience during the current COVID-19 pandemic.

The aim of this paper is to consider some One Health points of discussions that are worthy of highlighting despite their preterm nature. Discussions on One Health as a lens in viewing NTDs in the Philippines, an appreciation of Veterinary Public Health as Veterinary Medicine's entry point to One Health, the importance of effective collaborations, partnerships and communication are succinctly subsumed herein.

ONE HEALTH AS A LENS: VIEWING NTDs IN THE PHILIPPINES

It is vital that we view global health issues through the lens of One Health. Thus, inspired by Cleaveland et al. (2017), this paper will use some of the NTDs that are prevalent in the Philippines as points of discussions to exemplify the aforementioned fact. Rabies, as also noted by Cleaveland et al. (2017), cannot be solely addressed by human pre- and post-exposure prophylaxis. This is particularly true in the Philippines where data shows that 99% of human cases are from dog bites, and canines also have the highest positivity rate, at 96%, among animal samples tested from 2017 to 2019 (Philippine Department of Health, 2019). Animal vaccinations have been the mainstay of rabies control programs, however in the country, very few regions meet the 70% vaccination target among canine populations. Thus, community education on the importance of canine rabies vaccinations needs to be strengthened not only for

the cause of human health but also for the health of the animals affected (Ubeyratne et al., 2021). Ensuring our dogs are free from rabies through vaccinations also ensures our community's health the-true core of One Health (Acharya et al., 2021). Another example is Soil-transmitted Helminthiasis (STH) which is prevalent in the entire country, and is a particular problem in rural, resource-lacking communities (Mationg et al., 2021). *Ascaris lumbricoides*, *Trichuris trichiura*, *Necator americanus*, and *Ancylostoma duodenale* are among the most important STH in the Philippines, and all of them have the potential to infect companion animals which may serve as reservoirs of human infection (Mationg et al., 2021; Labana et al., 2021). Mass drug administration of antihelminthics has been implemented to control STH. However, most of these programs do not include the potential animal reservoir hosts. Hence, it is not surprising that sometime after ridding the community folks of the helminths, they may become re-infected by helminths that developed from eggs released by un-dewormed companion animals. Also, the lack of intense community education in endemic foci aggravate this health problem (Ackley et al., 2021). The importance of animals in the control of zoonotic diseases must not be forgotten. Their health is integral to human health, the zoonotic diseases that they bring to our shared environment will inevitably find its way to humans again, the links that matter in understanding One Health.

The key point of viewing health within the One Health paradigm is to understand and take arms in the shared responsibility of mitigating animal and environmental health problems. To view that dire status of human global health is not only of our own human volition as a species, but rather the consequences of neglecting and abusing the environment and the other animal species cohabitating with us must be contextualized in the current zeitgeist. With the worsening COVID-19 nightmare worldwide, its high time that we reflect on One Health as a way of waking up and taking action.

VETERINARY PUBLIC HEALTH: AN APPRECIATION AND A PERSONAL TAKE

The benevolent role played by veterinarians in maintaining human health is what drew the author to Veterinary Public Health. Personally, the author believes that being a public health veterinarian is one of the most altruistic expressions of the veterinary profession. Public health veterinarians seek to keep our communities safe and healthy by doing what they can within the realms of Veterinary Medicine-promoting human health through preserving animal health (Ferri and Lloyd-Evans, 2021). As a profession, Veterinary Medicine is often attached with the notion that everyone within it is either a companion animal doctor or a livestock and poultry practitioner. To be fair, there is some truth in this notion. However, if the aforementioned

gross underappreciation of the public health importance of the veterinary profession continues, then veterinarians are bound to neglect their beneficial contributions in keeping communities healthy. As King (2006) noted, “veterinarians bridge agriculture and medicine”.

As a result of the judicious practice of Veterinary Medicine by livestock and poultry veterinary practitioner, the world is assured that every plate of *Khua klang* in Thailand and wrap of *shawarma* in Saudi Arabia is a safe and healthy meal to consume. The veterinary profession, much like other players in the agriculture sector, play a unique role in keeping food safe for human consumption from farm to fork (Tenorio and Flores, 2021). Also, they address zoonotic diseases and pathogens that affect production animals that may potentially cause illness to humans along the production lines (Ellwanger et al., 2021). Through vaccinations, prudent use of antimicrobials, proper animal health management practices, and meat and general veterinary inspection, veterinarians are able to abate serious public health eventualities (Rothe and Sandbulte, 2021). The absence of veterinarians in the food production chain may inevitably result to the proliferation of foodborne illness is derived from food animals a-serious public health implication. Another point of interest in this discussion is the roles played by companion animal practitioner colleagues. It must be acknowledged that they are often the first to diagnose, report and address zoonotic diseases in pets, both domestic and exotic ones (Ishola et al., 2021). This is exemplified by their ability to first detect rabid animals, diagnose zoonotic infectious agents through clinical assays and mitigate these in their clinical practice. The indispensable role of small animal practitioners in pet owner education regarding the harms zoonotic illnesses should also be highlighted (Park et al., 2021; Evason et al., 2021; do Vale et al., 2021). The daily routine of clinical veterinary practitioners can truly “contribute to the complete physical, mental and social well-being of humans” (Stewart et al., 2005).

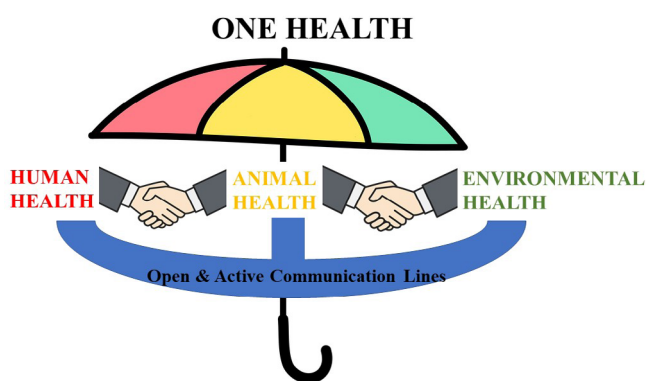


Figure 1: A schematic diagram of how the pillars of the One Health umbrella should be collaborative towards one another. Also, an active and open line of communication should be present at all times.

COLLABORATIONS AND PARTNERSHIPS IN ONE HEALTH One Health, as a panopticon to view the achievement of global health outcomes, is a collaborative affair (Figure 1). The paradigm, by definition, is multidisciplinary, multi-sectoral, and integrative in nature. Thus, it is not uncommon to see various instrumentalities of government, private institutions, academia, and community groups work hand in hand in programs that are grounded in the cadre of the said paradigm (Heukelback, 2021). How these bodies collaborate, and the successes of such collaborations are therefore important touchpoints to discuss.

Errecaborde et al. (2018) and Yashobant et al. (2019) both reviewed the literature to assess factors that contribute to successful One Health programs. In reading these papers, I saw similar patterns and results with regards to their reports and conclusions. The lack of an appropriate mechanism to assess the success of each program, the importance of willingness to collaborate between parties of interest, and the need for an efficient mechanism for which a program is to be rolled out, managed and continued are points that both papers highlighted. First, the willingness to cooperate between veterinary health and public health personnel often only arise when there is an explicit need to do so, or “*ad hoc*” as Errecaborde et al. (2018) would put it. Programs that start out as such and end when the problem supposedly abates sometime after are on the backfoot. This approach puts the program in a position where it is reactive rather proactive (Mills, 2020). Measures that supposedly continue monitoring, surveillance and prevention thrusts are abruptly halted as soon as the health crisis resolves. The willingness to collaborate between animal health, public health and environmental health personnel and organizations has always been there; however, the glue that will keep this willingness and subsequent One Health program execution together somehow dries up as time goes by. Echoing Yashobant et al. (2019), the “solution-based collaboration” during a health crisis should not end as soon as a malady is over, and then reappear when a similar but novel infectious disease arise. These must be strengthened by mutual understanding and transparency, and kept active to monitor and prepare for the next health crisis (Bloom et al., 2017; Baker et al., 2021). A proactive approach to emerging and endemic infectious diseases should be the norm and should be present at all times through appropriate communication mechanisms between involved bodies (Bloom et al., 2017). Things work better when everyone is on the same page in attaining a common goal. That being said, prioritization is also an important point of discussion that must be raised, as well as much governmental support.

In highlighting One Health as an approach to keeping everyone’s health safe, it is important to put an asterisk on the role of leadership and politics in bringing and sustaining

the needed collaborations. Groups with excellent leadership thrive and those who do not wilt as soon as adversity hits them. The same is true in One Health collaborations. Considering that collaborators are expectedly from different fields of expertise, a One Health leader must possess “horizontal leader” skills according to [Stephen and Stemshorn \(2016\)](#). One Health as a multidisciplinary and an integrative lens should not be dominated by a single body of knowledge. Human health, animal health and environmental health are on equal footing and thus are interconnected. Similarly, a One Health leader must have cross-cultural and cross-disciplinary communication skills, as previously mentioned, to keep everyone involved on the same page. They should have the ears to listen to everyone’s perspectives, have the eyes to see what is lacking and needs attention, and have the will to move a program forward. Such leaders should also be able to keep collaborators, especially the community beneficiaries and their political leaders, engaged in the benevolent goals of a program to ensure steadfast commitment from everyone. Political commitment and governmental support are integral in maintaining a One Health program ([Tenorio and Molina, 2021a](#)). Needless to say, the financial provision of governments is fundamental in all thrusts that forward public health. Thus, attention to infrastructure and institutions, both tangible and intangible, that prevent health crises is important. Financial support and attention through legislation and policy creation is a must if we are to aim for a successful One Health program ([Gruetzmacher et al., 2021](#); [Tenorio and Molina, 2021b](#)). Neglect should never be the prevailing theme among governments toward public health; the COVID-19 pandemic has highlighted this.

As [De Giusti et al. \(2019\)](#) has detailed, the principles of One Health had been sewn in the fabric of our shared medical and veterinary history. Collaboration, as history puts it, is the way to go if we are to safeguard everyone’s health. Veterinary Public Health practitioners are at the forefront of advocating for the One Health approach. We thrive at the interface of human, animal and environmental health. And by our engagement with the multiple sectors involved in this approach (i.e., multidisciplinary experts and bodies, private entities, social organizations, and community folks and their political leaders), we can hopefully initiate fruitful collaborations that prioritizes health in discussions and actions.

COMMUNICATING ONE HEALTH

Health communication, as [Cipolla et al. \(2015\)](#) noted, is the field that deals with how health information is generated, disseminated, and understood by the target receivers with the imperative of influencing human behaviors and attitudes so as to maximize health outcomes. The authors also added that health communication touches all aspects

of health (i.e., research, clinical practice, global public health, and policy decision making). The correct use of health information to improve lives is at the core of the field. As [Bernhardt \(2004\)](#) would put it, “public health communication programs have the capacity to elicit change among individuals and populations by raising awareness, increasing knowledge, shaping attitudes and changing behaviors”. Delivering important, timely and relevant information within the right context during a health crisis is also within the tenets of health communication. Moreover, interpersonal communication with other health offices within the same discipline, and multidisciplinary communication between the players within the scope of One Health is key for a successful program, as highlighted by [Bernhardt \(2004\)](#).

With the aforementioned definition and scope of health communication, it can be argued that it directly affects the outcomes of One Health policies. The way in which a One Health institution thrives is heavily reliant on how the separate, yet interconnected branches communicate to each other ([Filter et al., 2021](#)). As highlighted in the previous subsection, fruitful One Health collaborations and partnerships require that everyone involved must be on the same page. Therefore, the unification of ideas, interpretation, analysis and discussions are heavily reliant on how efficient the communication between human medicine, veterinary medicine and environmental health is ([Figure 1](#)). Also, health communication does not only affect One Health policies within institutions but is also integral in the implementation at the level of the populace. For instance, it would be easier to convince people to stay at home during the COVID-19 pandemic if they are aware of how the virus spreads ([Khamis and Geng, 2021](#)). Also, they would be more amenable to getting vaccinated against the disease if they know the efficacy and safety concerns of each available vaccine ([Motta et al., 2021](#)). On the animal side of things, owners will be more interested in getting their dogs and cats vaccinated against rabies if they know its veterinary and public benefits in preventing the dog-to-dog and dog-to-human spread, respectively ([Evason et al., 2021](#)). Thus, clear, effective, and relevant internal communication between concerned personalities and disciplines within the One Health institution and external communication between the health institutions and its public clientele are essential to the successful enactment of One Health policies.

CONCLUSIONS AND RECOMMENDATIONS

Indeed, the multi-disciplinary nature of One Health highlights some of its biggest advantages as a holistic approach in achieving global health outcomes. Operating successful One Health programs and activities require

strong and committed partnerships and collaborations between governmental agencies, experts, community folks and their leaders, and other key players within human health, animal health and environmental health. Moreover, this multidisciplinary approach relies on effective communication and understanding between collaborators, partners and the clientele they are serving. Veterinary public health needs much attention and appreciation as veterinary medicine's contribution to One Health. Public health veterinarians are one of the most important facets of the profession yet receive very minimal recognition for the vital and important work that they do. At the core of One Health is the consideration of all factors that contribute to the achievement of better health for humans, animals, and the environment. Therefore, it is an important tool in mitigating Neglected Tropical Disease that often affect people who are marginalized, financially challenged, and impoverished in rural communities. One Health may be an excellent framework for realizing inclusive community health growth and development. Everyone's health matter in One Health.

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NOVELTY STATEMENT

This is a novel paper that discusses the importance of One Health and its relationship with Veterinary Public Health, Health Communication, Colaborations, and Partnerships. The inclusion of all these components and their implications on One Health are briefly subsumed herein.

CONFLICT OF INTEREST

The author has declared no conflict of interest.

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