

## CASE REPORT

# A veterinary and nursing collaboration to increase access to healthcare

Shuzhen Chee<sup>1</sup>, Sarah Rivera<sup>2</sup>, Aaron Algren Huntley<sup>1</sup>, Lauren Lundahl<sup>2</sup>, Claire Bocage\*<sup>1</sup>, David E. Holt<sup>2</sup>, Brittany Watson<sup>2</sup>, Terri H. Lipman<sup>1</sup>

<sup>1</sup>School of Nursing, University of Pennsylvania, USA

<sup>2</sup>School of Veterinary Medicine, University of Pennsylvania, USA

**Received:** September 7, 2021

**Accepted:** October 25, 2021

**Online Published:** November 17, 2021

**DOI:** 10.5430/jnep.v12n3p84

**URL:** <https://doi.org/10.5430/jnep.v12n3p84>

## ABSTRACT

Hypertension is associated with almost 25% of US deaths. Philadelphia has the highest prevalence of hypertension of the 6 largest cities in the US, predominantly in non-Hispanic Black communities. Social determinants of health (SDOH) contribute to the development of hypertension and limit access to preventative resources and treatment. This case study describes an interprofessional collaboration between the University of Pennsylvania Schools of Nursing and Veterinary Medicine to offer blood pressure screenings at the annual MLK Day of Service Wellness and Vaccination Clinic. Clients were approached for blood pressure screenings and health education. Sixty-seven clients (48.2%), largely from zip codes with high levels of hypertension, agreed to blood pressure screening; 45 (67.2%) clients were hypertensive. Our One Health clinic could be a model to reach residents in marginalized communities.

**Key Words:** One health, Community outreach, Interprofessional care, Marginalized community, Hypertension

## 1. INTRODUCTION

### 1.1 Hypertension in Philadelphia

Philadelphia has the highest prevalence of hypertension of the 6 largest cities in the US, predominantly in non-Hispanic African American communities in West Philadelphia.<sup>[1,2]</sup> Hypertension predisposes affected individuals to multiple complications, including kidney failure, stroke, and heart disease, the leading causes of death in the US.<sup>[1,3]</sup> Raising hypertension awareness in the city is a major goal for Philadelphia and innovative programs are needed to reach marginalized populations.

### 1.2 One Health literature review

Although the interplay between human and animal health has been recognized since the 19th century, the 2006 One

Health (OH) Task Force advocated for the application of a multidisciplinary approach to alleviate current or potential risks to community health that may result from the interaction of humans, animals, and the environment.<sup>[4,5]</sup> Since inception, the OH approach has improved public health and advanced comparative medical/surgical endeavors with a rapidly growing number of publications.<sup>[6,7]</sup> The definition and boundaries of OH are elastic and broad; any initiative that expands interdisciplinary collaboration and communication in all aspects of health care for people, animals, and the environment is considered OH.<sup>[8]</sup> How OH is enacted tends to reflect the mission of the respective organizations; prior enactments of OH have ranged from a multinational collaborative research on zoonoses to food safety in agriculture.<sup>[6-9]</sup> The disciplines of veterinary and nursing practice

\*Correspondence: Claire Bocage; Email: [clairebo@nursing.upenn.edu](mailto:clairebo@nursing.upenn.edu); Address: School of Nursing, University of Pennsylvania, USA.

aim to foster physical, psychological, and social wellness. The human-companion animal bond, one characterization of the OH concept, has been utilized as a novel method to tackle public health issues such as obesity.<sup>[10–12]</sup>

### 1.3 How One Health can address Hypertension in Philadelphia

Social determinants of health (SDOH) such as lower income level<sup>[13]</sup> or inaccessibility to healthy food options<sup>[14]</sup> contribute to the development of hypertension and limit access to preventative resources and treatment.<sup>[15]</sup> Hypertension rates are extremely high in West Philadelphia near the University of Pennsylvania, where many members of the community are uninsured, unemployed, live in low income households, and have some of the poorest health outcomes in the city.<sup>[2]</sup>

Improving health access among marginalized communities has long been a mission of nurses,<sup>[15]</sup> primary care clinicians,<sup>[16–18]</sup> and veterinarians.<sup>[19,20]</sup> The University of Pennsylvania School of Veterinary Medicine (SVM) has provided free wellness exams, microchips, vaccination, and preventative services to pets of residents in West Philadelphia for the past 11 years at the annual Martin Luther King Jr. Day of Service Wellness and Vaccination Clinic (WVC). Similarly, the University of Pennsylvania School of Nursing (SON) engages in multiple research, practice, education, and service initiatives focused on the health of marginalized communities.<sup>[21,22]</sup> To combine the success of community outreach programs with OH concepts to improve access of care for marginalized populations,<sup>[23,24]</sup> blood pressure screening for pet owners was offered for the first time at an animal health screening event. The purpose of this article is to share the initial collaboration between the SON and SVM, the outcomes of the hypertension screening, and discuss future goals.

## 2. METHODS

### 2.1 About the Martin Luther King Jr. Day of Service Wellness and Vaccination Clinic

On January 20th, 2020, the Ryan Veterinary Hospital, in partnership with the SVM's student Shelter Medicine Club, hosted the annual WVC. Licensed veterinarians, veterinary students, and additional support staff performed free wellness examinations, administered vaccines, microchipped selected animals, and dispensed flea and tick preventative to pets from communities with limited access to veterinary services. All supplies, products, and funding were donated by sponsor companies. Outreach to the community was conducted through letters to local churches and announcements on social media. Client demographics, including animal type, vaccinations administered, and zip code, were collected on intake.

### 2.2 Blood pressure screenings

Following the pet appointment, clients were directed to a separate area that included a rabies and microchip registration table, checkout, and OH examination rooms and resource table. Clients were approached for their verbal assent to participate in blood pressure screening, health education, or both. Advanced notice of blood pressure screening and health promotion was not provided to pet owners who signed up for the event as final permission for the human program was not obtained prior to advertising the MLK clinic. Clients who agreed to blood pressure screening were brought into a private room typically used for pet physical examinations. Blood pressures were taken by two registered nurses who were nurse practitioner students in the SON. The readings were taken in either arm or, if requested, both arms. Blood pressure was obtained from the upper arm manually with a small or medium-sized cuff, or automatically with a medium-sized cuff, according to appropriate fit and supply availability. No large or extra-large cuffs were available for use. In cases of large upper arm diameter, blood pressure readings were obtained from the forearm. Heart rate was also obtained. Clients were educated on the national blood pressure goal of <130 mmHg/ <80 mmHg and were notified of their systolic and diastolic blood pressures and heart rate. Clients were also asked for verbal assent to record their blood pressure in a simplified binary format, where "0" indicated normotension and "1" indicated a hypertensive individual, with no differentiation between systolic and diastolic hypertension.

All clients who met the definition of hypertension, systolic and/or diastolic, were instructed to follow-up with a primary care provider. Those with extreme elevations of blood pressure (systolic pressure above 180 mmHg and/or diastolic pressure above 110 mmHg), were instructed to immediately report to urgent care or the local emergency department. Clients received verbal health promotion information according to their interest and health literacy level. Education included information regarding healthy diet, exercise, medication adherence, and modifiable risk factors, such as smoking cessation. Clients were also offered written health promotion brochures in English, Spanish, and simplified Chinese.

### 2.3 Post-event analysis

A follow-up satisfaction survey was sent on February 14, 2020 to all clients who provided a valid email address. Survey questions included three open-ended responses regarding client satisfaction with the event including, "What did you like about the clinic?", "What did you dislike about the clinic? Do you have any suggestions to improve those things you didn't like?" and "Any other thoughts, comments, or suggestions?"

### 2.4 Ethical considerations

This project was reviewed and determined to qualify as Quality Improvement by the University of Pennsylvania’s Institutional Review Board.

## 3. RESULTS

### 3.1 Participant demographics

A total of 147 rabies vaccines (IMRAB-3 for dogs, Merial; PUREVAX Feline Rabies 1-year for cats, Merial), 69 combination canine distemper virus/adenovirus type-2/parainfluenza/parvovirus vaccines (Recombitek C4, Merial Inc), and 77 feline viral rhinotracheitis/calicivirus/panleukopenia vaccines (Purevax Feline 3 (RCP), Merial) were administered. Forty six animals had microchips inserted, and 435 doses of flea and tick prevention were dispensed.

### 3.2 Blood pressure screenings results

A total of 67 clients (48.2%) agreed to blood pressure screening; 45 (67.2%) were hypertensive. Five clients (7.5%) had very elevated blood pressure levels but were asymptomatic. These clients were instructed to seek care as soon as possible, as described above.

#### 3.2.1 Blood pressure health education

All clients who agreed to a blood pressure screening received verbal health promotion education. Some of the modifications that clients wanted to make in their lives after being informed of blood pressure elevation included starting an exercise regime, seeking a primary healthcare provider, and changing diet. Clients with normal blood pressures were motivated to continue to be adherent to their medication and maintain an active lifestyle. Some clients noted their elevated blood pressure readings and verbalized that they would share it with their primary care provider.

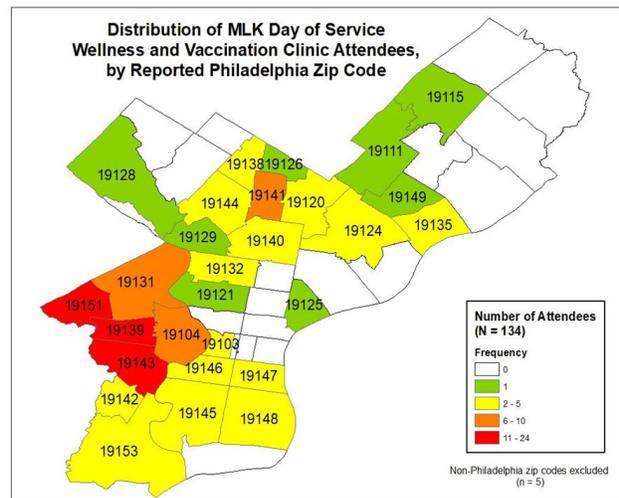
#### 3.2.2 Blood pressure screenings discussed in the follow-up survey

The health education was actionable in one case, as a participant reported in a follow-up survey, that the blood pressure screenings “saved” another client that was previously unaware of his high-blood pressure and saw a doctor about his high blood pressure after attending the clinic. The respondent reflected on the experience in the follow-up survey:

*“I also enjoyed the health clinic [it was] very helpful and saved my friend! His BP was very high which he was unaware! He saw the doctor right away! Thank you very much!”*

## 4. DISCUSSION

Despite a decade of effort in promoting healthy behaviors and increasing access to quality healthcare, the prevalence of hypertension in Philadelphia indicates the need for novel outreach and screening methods. The incorporation of OH into the WVC could be a promising method to reach marginalized populations to promote community health. Figure 1 demonstrates that most of the Philadelphia clients lived zip codes with the highest rates of poverty and hypertension in Philadelphia.<sup>[2]</sup> This finding concurs with previous literature that OH initiatives were instrumental in reaching high-needs populations such as undocumented immigrants and homeless individuals.<sup>[23,24]</sup> The WVC attracted at-risk individuals who may not have attended a stand-alone human health outreach event; several clients were provided with first time knowledge of their elevated high-blood pressures and were directed to seek follow up.



**Figure 1.** Geographic Distribution of MLK Day of Service Wellness and Vaccination Clinic Attendees

Description: Frequency of self-reported zip-codes of all 191 Philadelphia attendees

There are limitations to our findings. There was no plan for collection of human data prior to the event and the anonymous data prohibited the team from following-up with the hypertensive clients. The impact described is limited and not currently indicative of long-term change in blood pressure levels in clients. Robust follow-up of clients was never an intention for the WVC, but planning for more detailed client data collection will improve future evaluation efforts.

Despite the limitations, the first integration of OH concepts in the annual WVC provided clients care for their pets, as well as blood pressure screening that otherwise might not have been available. Although WVC was a singular event,

the high prevalence of hypertension and positive feedback from the clients were encouraging. Utilizing veterinary clinics as a bridge to human health is an excellent opportunity to increase healthcare access and efforts should be made to document impact of these clinical interventions.

## 5. CONCLUSION

This was the inaugural collaboration between the University of Pennsylvania School of Nursing and School of Veterinary Medicine at the annual MLK Day of Service Wellness and Vaccination Clinic for companion animals. With a growing interest in OH clinics and a common end goal to improve the care for animal and human health, it is essential that nursing and veterinary professionals collaborate.<sup>[25]</sup> Veterinarians and nurses have an undeniable link through promoting and maintaining wellness. Nightingale recognized a link between animals and human wellness by her observation that “a small

pet animal is often an excellent companion for the sick.”<sup>[26]</sup> The encouraging outcomes suggest the clinic can act as an impetus to further explore the impact of OH clinics on animal and human health for the residents in marginalized, high risk communities.

## ACKNOWLEDGEMENTS

We would like to thank Antoine Dodson for his support formatting the article and creating the relevant citations. This clinic was supported by a student grant from the Association of Shelter Veterinarians. The authors would like to acknowledge generous donations from Boehringer Ingelheim, Elanco, Zoetis, Merck, Purina, Banfield, Petsmart Charities, Pet King Brands, and Ceva Animal Health.

## CONFLICTS OF INTEREST DISCLOSURE

The authors declare that there are no conflicts of interest.

## REFERENCES

- [1] Farley T. Hypertension Among Adults in Philadelphia, 2011-2017. Philadelphia Department of Public Health. Available from: <https://www.phila.gov/media/20190516102711/chart-v4e4.pdf>
- [2] Hirsch JA, Melly S, Moore K, et al. Close to home: The health of Philadelphia's neighborhoods. Available from: [https://www.phila.gov/media/20190801133844/Neighborhood-Rankings\\_7\\_31\\_19.pdf](https://www.phila.gov/media/20190801133844/Neighborhood-Rankings_7_31_19.pdf) Published August 1, 2019. Accessed June 29, 2021.
- [3] Underlying Cause of Death, 1999-2019 Request. Centers for Disease Control and Prevention. Available from: <http://wonder.cdc.gov/ucd-icd10.html>
- [4] Gyles C. One Medicine, One Health, One World. The Canadian veterinary journal = La revue veterinaire canadienne. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4790223/> Published April 2016. Accessed June 29, 2021.
- [5] Centers for Disease Control and Prevention. Available from: <https://www.cdc.gov/onehealth/basics/history/index.html> Published October 25, 2016. Accessed June 29, 2021.
- [6] Zinsstag J, Schelling E, Waltner-Toews D, et al. From “one medicine” to “one health” and systemic approaches to health and well-being. *Prev Vet Med.* 2011; 101(3-4): 148-156. PMID:20832879 <https://doi.org/10.1016/j.prevetmed.2010.07.003>
- [7] Kerlin K. UC Davis awarded \$100 million to lead program to predict and prevent pandemic threats. UC Davis. Available from: <https://www.ucdavis.edu/news/uc-davis-awarded-100-million-lead-program-predict-and-prevent-pandemic-threats> Published January 24, 2016. Accessed June 29, 2021.
- [8] Gibbs EPV. The evolution of One Health: a decade of progress and challenges for the future. *Vet. Rec.* 2014; 174(4): 85-91. PMID:24464377 <https://doi.org/10.1136/vr.g143>
- [9] Andersen I. Preventing the next pandemic: Zoonotic diseases and how to break the chain of transmission. Available from: <https://www.unep.org/resources/report/preventing-future-zoonotic-disease-outbreaks-protecting-environment-animals-and> Published July 6, 2020. Accessed June 29, 2021.
- [10] Kushner RF, Blatner DJ, Jewell DE, et al. The PPET study: People and pets exercising together. *Obesity.* 2016; 14(10): 1762-1770. PMID:17062806 <https://doi.org/10.1038/oby.2006.203>
- [11] Bartges J, Kushner RF, Michel KE, et al. One health solutions to obesity in people and their pets. *J of Comp Path.* 2017; 156(4): 326-333. PMID:28460797 <https://doi.org/10.1016/j.jcpa.2017.03.008>
- [12] Chandler M, Cunningham S, Lund EM, et al. Obesity and associated comorbidities in people and companion animals: A one health perspective. *J of Comp Path.* 2017; 156(4): 296-309. PMID:28460795 <https://doi.org/10.1016/j.jcpa.2017.03.006>
- [13] Gerber Y, Weston SA, Killian JM, et al. Neighborhood income and individual education: Effect on survival after myocardial infarction. *Mayo Clin Proc.* 2008; 83(6): 663-669. PMID:18533083 <https://doi.org/10.4065/83.6.663>
- [14] Kaiser P, Diez Roux AV, Mujahid M, et al. Neighborhood environments and incident hypertension in the multi-ethnic study of atherosclerosis. *Am J Epidemiol.* 2016; 183(11): 988-997. PMID:27188946 <https://doi.org/10.1093/aje/kwv296>
- [15] Doyle SK, Chang AM, Levy P, et al. Achieving health equity in hypertension management through addressing the social determinants of health. *Curr Hyperten Rep.* 2019; 21(8): 58. PMID:31190099 <https://doi.org/10.1007/s11906-019-0962-7>
- [16] Rydholm L, Kirkhorn SR. A study of the impact and efficacy of health fairs for farmers. *J of Agricul Safety and Health.* 2005; 11(4): 441-8. PMID:16381165 <https://doi.org/10.13031/2013.19723>
- [17] Murray K, Liang A, Barnack-Tavlaris J, Navarro, A. M. The reach and rationale for community health fairs. *J of Canc Edu.* 2014; 29(1): 19-24. PMID:23907787 <https://doi.org/10.1007/s13187-013-0528-3>
- [18] Briant KJ, Wang L, Holte S, et al. Understanding the impact of colorectal cancer education: a randomized trial of health fairs. *BMC Pub Health.* 2015; 15: 1196. PMID:26621127 <https://doi.org/10.1186/s12889-015-2499-2>

- [19] Jordan T, Lem M. One Health, One Welfare: Education in practice veterinary students' experiences with Community Veterinary Outreach. *J of the CD Vet.* 2014; 55(12): 1203-1206.
- [20] Courtenay M, Sweeney J, Zielinska P, et al. One Health: An opportunity for an interprofessional approach to healthcare. *J of Interprof. Care.* 2015; 29(6): 641-642. PMID:26652637 <https://doi.org/10.3109/13561820.2015.1041584>
- [21] Schroeder K, Ratcliffe SJ, Perez A, et al. Dance for Health: An intergenerational program to increase access to physical activity. *J of Ped Nurs.* 2017; (37): 29-34. PMID:28733128 <https://doi.org/10.1016/j.pedn.2017.07.004>
- [22] Schroeder K, Deatrck JA, Klusaritz H, et al. Using a community workgroup approach to increase access to physical activity in an under-resourced urban community. *Health Promo Prac.* 2020; 21(1): 5-11. PMID:31423845 <https://doi.org/10.1177/1524839919867649>
- [23] Taylor H, Williams P, Gray D. Homelessness and dog ownership: An investigation into animal empathy, attachment, crime, drug use, health and public opinion. *Anthrozoos A Multidisc J of The Interac of People & Animals.* 2004; 17(4): 353-368. <https://doi.org/10.2752/089279304785643230>
- [24] Sweeney JM, Zielinska Crook P, Deeb-Sossa N, et al. Clinical one health: A novel healthcare solution for underserved communities. *One Health.* 2018; 6: 34-36. PMID:30386814 <https://doi.org/10.1016/j.onehlt.2018.10.003>
- [25] Errecaborde KM, Macy KW, Pekol A, et al. Factors that enable effective One Health collaborations: A scoping review of the literature. *PloS One.* 2018; 14(12): e0224660. PMID:31800579 <https://doi.org/10.1371/journal.pone.0224660>
- [26] Johnson RA, Meadows RL. Promoting wellness through nurse-veterinary collaboration [editorial]. *West J Nurs Res.* 2000; 22(7): 773-775. PMID:11077546 <https://doi.org/10.1177/01939450022044746>