

Summary Report

University of Illinois
Colloquium on One Medicine

Designing an intra-university public health program at the interface of human,
animal and ecosystem health

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Introduction

As international trade and travel have become the bases of world economies over the past few decades, many threats to human and animal health, once isolated by geography, have become easily and rapidly transmitted across the globe. No longer can societies depend on distance as an effective barrier from diseases reported half a world away.

With the consolidation and vertical integration of agricultural production systems, the potential for catastrophe due to agro-terrorism or natural disasters has been increased. As societies demand more protein in human diets, pressure has been placed on animal production systems to respond, often to the detriment of ecosystem health and frequently with little concern for bio-security.

Against this back drop, there has been increased concern over the role of animals in causing disease and antimicrobial resistance in humans, not only in the United States, but worldwide. These concerns have ranged from the role of cattle in the transmission of *E. coli* 0157:H7 to the significance of Bovine Spongiform Encephalopathy as a cause of severe dementia in humans; from using pets as sentinels for human disease to their role in the transmission of antimicrobial resistant bacteria; from the impact of poultry, swine and human population densities in the spread of highly pathogenic avian influenza (H5N1) to the potential adverse consequences of consuming products from cloned food animals.

As a nation, we are faced with new and re-emerging threats associated with changes in world economies and production systems, an exploding human population and encroachment on natural areas. It is necessary that public policy assesses potential exposures, develops policy to decrease or mitigate their effects and assures that health policy is effective and cost efficient.

In this context, faculty in the College of Veterinary Medicine at the University of Illinois, Urbana-Champaign and in the School of Public Health, University of Illinois, Chicago are exploring the development of a public health educational, research and community outreach program that emphasizes the relationship between people, animals, and environment, including food animal production systems.

Involved faculty designated this approach to public health pedagogy as "One Medicine", borrowing from the concept that was first developed by leaders in the history of medicine and public health such as Virchow and Chadwick.

With principal funding from the University of Illinois Vice President for Academic Affairs, organizers developed an intra-university colloquium designed to explore the "One Medicine" approach and the proposed organizational structure. The colloquium, which was held on January 9 and 10, 2007 on the

campus of the University of Illinois at Urbana-Champaign, involved invitees from the University of Illinois faculty and staff, state and federal governmental officials and other experts.

The colloquium was divided into three broad and overlapping areas: presentations by four key-note speakers, “breakout” brain storming sessions and interim reports from each session followed by question and answer periods.

Speakers were chosen to prepare attendees for the work sessions by sharing their expertise and experiences working in public health.

Speakers included:

- Dr Laura Kahn from the Woodrow Wilson School of International and Public Affairs, Princeton University, speaking on physicians and veterinarians working together to promote and ensure patient health
- Dr. Tracy McNamara from Bridge Pharmaceuticals, Frederick, MD, describing the importance of zoo animals and wildlife in surveillance for zoonotic diseases
- Dr. Paula Cray from USDA-ARS, Atlanta, GA, detailing food safety concerns and antibiotic resistance among food animals
- Dr. Bennie Osburn from the School of Veterinary Medicine, Davis, CA, recounting the need for a new model in the public health education of veterinarians and physicians

During the group sessions, attendees were asked to answer a series of questions centered on four basic considerations:

- 1) Is there a need for a public health program centered on the interface of human, animal, public and ecosystem health?
- 2) What would a program focused on the One Medicine concept accomplish?
- 3) How could such a program be structured to accomplish the current goals of public health?
- 4) Is a program in One Medicine financially sustainable?

Break out sessions were facilitated by organizers and staff and group deliberations were recorded by student and staff volunteers on both traditional flip charts as well as laptop computers.

Group responses to the four questions were then collated and organized into common themes that serve as the basis for this report.

Findings from the Break Out Sessions

Session One: Is there a need for a public health program centered on the interface of human, animal, public and ecosystem health?

Invitees to the One Medicine Colloquium, staged January 9th and 10th in Urbana, IL, were asked to consider whether there is a need for an integrated, intra-university Illinois Center for One Medicine. Their responses were consistent and encouraging:

- There was consensus that the health of animals, whether domestic or wildlife could be important sentinels for ecosystem and human health.
- Invitees recognized that problems that are common across species suggest the need for collaborative solutions. We need a new cadre of health professionals who are cross-trained not only in veterinary and human medicine but in ecology, sociology, public health, education, law, policy development, informatics and other disciplines
- Zoonotic and emerging diseases have become the most commonly cited reasons for collaboration between physicians and veterinarians. And with good reason; the majority of infectious diseases can be transmitted between people and animals.
- Due to increased global demands for animal protein in human diets and for grain based fuels for transportation, livestock and agricultural production systems are becoming more consolidated and vertically integrated. In developing countries especially, production systems can often encroach on natural areas, affecting wildlife, domestic animals and the people who are exposed to both. Health professionals must understand modern production systems and where exposures are likely to occur.
- As production systems become more complicated within a global economy, science policy must keep up. In order to develop science policy that is based on best evidence, health professionals must understand the health, environmental and social impacts of modern systems. Food safety and bio-security depend on it.
- A solid foundation in policy development is necessary to inform the policy making process. Health professionals must be educated broadly in public policy.
- An international economy means that we are all related by transportation of people, animals and consumer goods. Concerns for bio-security and

the quality and safety of imported food for people and for domestic animals suggest a need for individuals trained in international public health. The World Bank, the United Nations Food and Agricultural Organization, World Health Organization and Office of International Epizootics are just some of the international agencies that have expressed a need for veterinarians, physicians and other health professionals trained in international health.

- Emerging diseases are not limited to those caused by biological agents. As populations increase, potential exposures to chemical and physical agents in or on the products demanded by consumers may increase.
- There is a dramatic need for better communication and data sharing between researchers, federal, state and local agencies and private sector health care providers. The key to surveillance is case definition and data acquisition. The power of surveillance systems is sharing of accumulated data in a timely manner.
- Some members of the Colloquium were not comfortable with the “One Medicine” name. They preferred “One Health”, suggesting that “medicine” implies an intervention whereas “health” implies the desired outcome.
- Implicit in any discussion of One Medicine is animal welfare. Colloquium members suggested that if our animals are healthy, then our production systems and their process outcomes are probably healthy.

Overall, responses from participants on the need for an Illinois Center for One Medicine centered on the three traditional roles of the university: teaching, research and service. There was consensus that we need to cross-train health professionals so that, in the future, collaborations and communication between human, animal and ecosystem health experts are standard and effective. There was agreement that research needs to be less narrowly focused solely on humans or on animals but should be broadened to include the effects of human and animal activity on ecosystems and how those effects impact human and animal health. There was the sense that an intra-university group that focuses on the interrelatedness of health and environment would be a natural source for facilitated communication across disciplines and with policy makers and health delivery systems.

Session Two: What would a program focused on the One Medicine concept accomplish?

Attendees at the One Medicine colloquium offered creative visions for what such a program should be. Participants suggested that an Illinois Center for One Medicine (ICOM) should be a collaborative organization that would integrate the collective strengths of the University of Illinois system to accomplish the

teaching, research and public service functions that were in described in the deliberations on the need for such a Center.

Within the area of teaching, attendees suggested that the Center should offer a range of educational opportunities to students from undergraduates through practicing veterinarians and physicians, from employees at local, state and federal health departments to those employed within the military and federal agencies.

The formats for educational programs could vary from “executive” Master’s degrees, short courses, workshops and certificate programs, research based PhDs programs and continuing education for public health professionals and policy makers. Some educational formats might be financially self-sustaining through fees.

There were suggestions that the Center take a “liberal arts” approach to learning, building a broad base across all of the “-ologies” to produce a graduate well versed in science, policy, communication, engineering, ecosystems, economics, leadership, international trade, foreign languages and production systems. It was offered by one group that the Center should strive to produce medical “Renaissance” individuals.

Implicit within the educational vision of a Center for One Medicine is the need to produce a public health workforce cross trained in many related disciplines. Invitees recounted the critical workforce needs of public health, which are well known and have been described extensively. But the Center would have to effectively market the eclectic education that it proposes. There were suggestions that the Center would need to target its educational programs to all prospective students, even down to the secondary school level as well as educate the public about what the Center is trying to accomplish.

The second component of the vision for a Center for One Medicine focused on encouraging collaborative and innovative research on topics of community health. When considering public health issues, strength should come from incorporating expertise and perspectives from a number of experts from a number of disciplines. By joining intellectual forces from varied departments across campuses, research projects at a Center for One Medicine could be extremely competitive in receiving grants and contracts. Research could be either applied or theoretical but should always consider the many components that go into creating conditions in which all communities can be healthy.

The third component of the vision for a Center for One Medicine was a service or public outreach function. This function could be multi-faceted.

Potential service initiatives might be:

- To serve as a clearinghouse for media and the public on potential disease threats such as avian influenza and West Nile virus.
- To provide training for public health professionals within local, state and federal government agencies
- To provide evidence based background for policy development
- To provide expertise for agencies involved in community assessment, surveillance and programmatic development.

Session Three: How could such a program be structured to accomplish the current goals of public health?

The structure of an Illinois Center for One Medicine should be directed by a strong, independent Director, and supported by a full-time staff composed of individuals performing the secretarial, communication and marketing duties to support a matrix organization with participants throughout the university.

The Director should lead the daily activities of the Center and develop liaisons with the private and public sectors for future collaborations and programming regarding the teaching, research and community outreach functions of the Center. The administration of the Center would handle infrastructure - communications, outreach, central support (space for visitors), visiting scholars program, liaisons/relationships with state/federal agencies, IT, funding, development of grants (research, grad students).

The Director should coordinate funding and political outreach activities with the University of Illinois Government Relations group to develop relationships with legislators in Washington DC and Springfield to ensure the financial stability and recognition of this Center throughout the state, region and country.

The Director, along with staff, should develop relationships with industry, especially food producers, processors and distributors. Given the global nature of economies including international trade in food products, industry is a potential source of funding for the Center and employment for its graduates.

Similarly, the Center should capitalize on the needs of the international health community for physicians, veterinarians and other health professionals to work in areas of bio-security, sustainable systems development, international trade, health and economic development. A strong international component based on partnerships with international programs in both the public and private sectors as well as with existing university programs would be desirable for the Center.

The Center should be structured to respond to needs of U.S. policy makers and agencies at federal, state and local levels. Creating the Center as

the “go to” organization for employee training and policy backgrounding should be a priority for the Director and staff.

An internal advisory board, made up of a cross section of faculty from participating campuses and programs should provide oversight on initiatives developed by the Center. The advisory board would serve in the traditional role of promoting the vision and mission of the Center while the Director would lead its everyday activities. It is critical that the Center use all available information and communication technologies to keep the advisory board engaged in the direction of the Center.

An external advisory board might be desirable for even broader review of the Center functions, programs and outcomes

In establishing the Center, support must be developed at all levels within the university from the President down to specific programs, especially those that would play a significant role in the mission on the Center. The Center needs to not only have buy-in from University of Illinois administration but an administrative advocate for the Center at each of the campuses.

It seems that a broad based Center for One Medicine, focused on training public health professionals and public outreach would be a natural fit for the Global Campus Initiative proposed by President Joseph White. Distance learning could become a significant part of the Center’s academic programs, especially those aspects focusing on students who are already engaged in medical or public health practice.

Resources necessary to make a multi-campus initiative functional and effective are:

- 1.) Support of the President
- 2.) Money – Seed and sustained resources
- 3.) Distance communication – Telemed, Video conference, Distance Education
- 4.) Government Interest and Support
- 5.) Communication – Website, Periodic Press Release, Brochures, Sponsored workshops

In drawing together many programs and departments within the University, special attention must be focused on building and maintaining a positive, “win:win” attitude between the Center and its academic partners. It would fall on the Director to initiate, synthesize and sustain these relationships and avoid the natural tendency for programmatic entropy.

An additional danger of putting together cross campus programs is assuring that administrative policies are in place to allow for a seamless transition for students enrolled in a program at one University of Illinois campus

and taking classes at another. The DVM/MPH program could serve as a template for cross campus academic programs. Lessons learned from establishing that program point to the need for constant vigilance when dealing with registration procedures for dual degree students at individual campuses, their effect on student financial aid and designating an “academic home” for students for specific semesters.

The structure of the Center should provide the Director and the advisory board the flexibility to respond rapidly to changes in national and international needs.

Initially, faculty would retain their appointments in their home departments and participate in Center activities on an as needed basis. As the Center develops, faculty could have joint appointments. Undergraduate faculty should not only participate in the Center’s activities but be called on to help market the opportunities available for undergraduate students through the Center’s programs.

The Center would be composed of Veterinary Medicine (home college), Public Health, Medicine, ACES, Law, Engineering, public policy, National Center Supercomputing Applications, GIS technology, zoos and natural resources, diagnostic labs, Natural History Survey, economics, business, risk management, media and communication.

The strength of a program attempting to draw together disparate but related areas of interest lies in its broad view of issues of community health. The weakness is that, if not managed properly, the program will end up unfocused and weak. The Center should not create a new curriculum but synthesize, from individual programmatic expertise and perspectives, a new way of analysis and problem solving. A Center for One Medicine should not create “turf” issues with existing programs; its concept is unique. For example, the Center for Zoonotic Research continues to be an effective effort to develop expertise in zoonotic research and bring recognition to the University. However, even though zoonotic diseases are relatively high profile, they are only part of the puzzle that makes up community health. The Center for One Medicine would address population health topics much broader than zoonoses, from health care for underserved populations to antibiotic resistance, from sustainable systems of production to the epidemiology of chronic diseases.

Students gaining training from the Center should range from undergraduate through professional school students, from those already working full-time in the private sector to those committed to full-time research in an academic institution. Educational programs should accommodate the needs of students whether on-site at one of the University campuses or on-line throughout the world.

Session Four: Is a program in One Medicine financially sustainable?

Participants in the Colloquium on One Medicine offered a consistent message when considering funding for a proposed Center for One Medicine: organizers must consider many potential funding sources from both private and public sectors, develop creative solutions to fill the need for seed money and cultivate grants for long term sustainability.

That the Center concept received enthusiastic support during the Colloquium from University of Illinois President Joseph White, who spoke at the Colloquium dinner and from U.S. Senator Richard Durbin via videoconference at the close of the proceedings should provide impetus to attract external funding.

Given the current university budget, most attendees felt that organizers should not rely on the University for very much of any proposed Center budget.

Potential public sector sources

Possibilities for funding include but are not limited to the following:

National Institutes of Health, Health Resource Service Administration, US Agency for International Development, National Science Foundation and - Department of Defense training grants

Line item in federal USDA, HHS or DHS budgets; explore capitation system

Veterinary Workforce Expansion Act

University departments participating in ICOM (e.g. \$20K start-up funds from each department)

Research Grants

State legislative initiatives (i.e., IBHE)

Potential private sector sources

Tuition from graduate degrees, professional programs, undergraduate participants

Large Foundations (Howard Hughes Foundation, Gates Foundation, MacArthur Foundation, Joyce Foundation, Ford Foundation, Clinton Foundation, Google)

Insurance Companies

International Sources (World Bank, WHO, Wildlife Conservation Society, UN

Programs, UNIP, Nature Conservatory).

Private individuals

Industry (multinational food corporations have issues that are interdisciplinary in nature).

Agricultural industry groups (ICOM should be a presence at agricultural legislative roundtables)

Industry partnerships: Farm Bureau, livestock organizations, AVMA, AMA, Cargill, Tyson, ADM.

Green Companies. Most environmental dollars are spent in response to regulatory compliance issues. Green image companies are looking beyond that. They want plans to prevent "image tarnish" which mere regulatory compliance can not address. (Staples, BP, Caterpillar).

World Bank, Food and Agriculture Organization of the UN, WHO

Alumni and outside donors

Developing nations (possible incentive to other countries other than global health would be a new Visa, exchange-type category for international scientists.

Critical to any development effort must be University prioritization of ICOM as high in any legislative effort. An external advisory board should be chosen carefully so that members might help ICOM in development, marketing and funding efforts. Additionally, an effective advocate for ICOM would be desirable at both state and federal levels.

Summary

Participants endorsed the concept of a University of Illinois Center for One Medicine focused on the interface of human, animal and ecosystem health, including food animal production systems. The Center would focus on instruction; research and outreach efforts. Attendees cautioned that faculty associated with developing the Center should seek a broad variety of funding possibilities, that the Center should have both domestic and international programs and that the Center be led by a Director supported by both internal and external advisory boards.

The written outcome from the Colloquium have been collated and examined. Principal organizers have met and decided to develop a One Medicine Course to be offered university- wide in the Fall of 2007. At the same

time, a faculty advisory board will be appointed and a Center organizational structure developed.