Building a Coalition for a One Health Approach to Preserving Antibiotic Effectiveness

Comments by

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Antibiotic Use – Working Together for Better Solutions for Animal Agriculture and Human Health

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The findings and conclusions in this presentation are those of the author and do not necessarily represent the views of the George Washington University or the U.S. Food and Drug Administration.
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one health

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Promoting efforts around the world to bring together all human, animal, and environmental health disciplines

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check www.onehealthday.org for more information
One Health Defined

“One Health is the collaborative effort of multiple disciplines - working locally, nationally, and globally - to attain optimal health for people, animals, and our environment.”

AVMA One Health Initiative Task Force 2008
Mission Statement:
Recognizing that human health (including mental health via the human-animal bond phenomenon), animal health, and ecosystem health are inextricably linked, One Health seeks to promote, improve, and defend the health and well-being of all species by enhancing cooperation and collaboration between physicians, veterinarians, other scientific health and environmental professionals and by promoting strengths in leadership and management to achieve these goals.

One Health Initiative Website: http://www.onehealthinitiative.com/mission.php
(The One Health Initiative Autonomous pro bono team (OHI) was co-founded in 2006.)
Scope of ‘One Health’ as per the One Health Initiative
One Health Commission Website: https://www.onehealthcommission.org/

(The One Health Commission is a globally focused organization dedicated to promoting improved health of people, domestic animals, wildlife, plants and the environment. It is a 501(c)(3) organization, chartered in Washington, D.C. on June 29, 2009.)
Mission: The One Health Platform is a strategic forum of stakeholders and a One Health reference network that aims to enhance understanding of and preparedness for the current and future outbreaks of zoonoses, emerging infectious diseases in humans and animals, and antimicrobial resistance, including the ecological and environmental factors which impact on these diseases.

The One Health Platform website: http://onehealthplatform.com/

(The One Health Global Network Webportal was established in 2011)

Lone Simonsen, Ph.D., from the Milken Institute SPH – Supervisory Board Member to the One Health Platform
Sir Alexander Fleming (1881 - 1955)
• 1928 discovered penicillin
• 1944 knighted
• 1945 awarded the Nobel Prize

Dr. Fleming cautioned that:
“Resistance is a natural counterpart to antibiotics.”

Louis Pasteur (1822 – 1985)
• Developed germ theory
• Created pasteurization
• Created vaccines for anthrax & rabies
• Developed fermentation

“Messieurs, c’est les microbes qui auront le dernier mot.” Louis Pasteur
“Gentlemen, it is the microbes who will have the last word.”
Antimicrobial Resistance (AMR) – Global concerns

• Dawn of antibiotic era was 7 decades ago – discovery of penicillin by Sir Alexander Fleming in 1928 – introduced as a therapeutic in 1943 but by 1947 there were penicillin resistant strains of bacteria.

• Today, AMR has become a major international concern... further emphasizing that we live in a global village!!

• International travel increases opportunities for microbes to share genetic material and to spread globally.

• AMR is outpacing the development of new countermeasures capable of thwarting infections.

• AMR threatens patient care (human and animal), economic growth, public health, agriculture, economic security, and national security.
September 2014 – Presidential Executive Order on Combating Antibiotic Resistant Bacteria

The National Strategy outlines 5 Goals and Objectives:

1. **Slow** the emergence of resistant bacteria and prevent the spread of resistant infections.
2. **Strengthen** National One-Health surveillance efforts to combat resistance.
3. **Advance** development and use of rapid diagnostic tests for identification and characterization of resistant bacteria.
4. **Accelerate** basic and applied research and development for new antibiotic, other therapeutics and vaccines.
5. **Improve** international collaboration and capacities for antibiotic resistance prevention, surveillance, control, and antibiotic research and development.
WHO-OIE-FAO 2015 Global Action Plan on AMR

- **Objective 1**: Improve awareness and understanding of antimicrobial resistance through effective communication, education and training.
- **Objective 2**: Strengthen the knowledge and evidence base through surveillance and research.
- **Objective 3**: Reduce the incidence of infection through effective sanitation, hygiene and infection prevention measures.
- **Objective 4**: Optimize the use of antimicrobial medicines in human and animal health.
- **Objective 5**: Develop the economic case for sustainable investment that takes account of the needs of all countries, and increase investment in new medicines, diagnostic tools, vaccines and other interventions.

[May 2015 - World Health Assembly adopted this Global Action Plan on AMR]
United Nations held a high-level meeting on antimicrobial resistance on 9-21-2016.


“Support a multi-sectoral, One Health approach to address antimicrobial resistance, including through public health-driven capacity-building activities and innovative public-private partnerships and incentives and funding initiatives, together with relevant stakeholders in civil society, industry, small- and medium sized enterprises, research institutes and academia, to promote access to quality, safe, efficacious and affordable new medicines and vaccines, especially antibiotics, as well as alternative therapies and medicines to treatment with antimicrobials, and other combined therapies, vaccines and diagnostic tests...”
One Health Act of 2016 …

An example of political action:

• A bill entitled the **One Health Act of 2016** (s.2634) was introduced in the 114th Congress this past March. If this legislation is passed by Congress…

• … it would require the Administration and Federal agencies to create a comprehensive strategy—the **National One Health Framework**—that will outline ways they can **work together** to address infectious diseases in animals and the environment, in order to **prevent** spread into human populations.

• … it would also create competitive grant programs to carry out the programs outlined in the framework and **spur collaboration** between health programs at the state and local level.

• … it would also urge international health organizations, like the World Bank and World Health Organization, to **increase investments** in One Health approaches to global health security.
Embracing a One Health Approach…

• The “One Health” approach, in which all sectors work together, leads to the strongest coalition we can make to address AMR and preserve antibiotic effectiveness … a true, whole-of-society engagement.

• Sectors including human and animal health, agriculture, food production, government, non-governmental organizations, patients, consumers, universities, pharmaceutical industries, environmental scientists, etc.

• Together we can help break interdisciplinary barriers, learn from one another, enhance communication, build long-lasting relationships and catalyze future transformative collaborations.

• Promote education and training on the responsible use of antibiotics; support research; develop rapid diagnostics; improve surveillance; develop novel therapeutics; strengthen national action plans and budgets for implementation of AMR activities, demonstrate stewardship, and international cooperation.

• We all need to be stewards of judicious use of our antibiotics!
Crossing Bureaucratic Boundaries...

• **You** can be the agent of change.... first, seek to understand, then reach out to other disciplines to “bring the needed expertise to the table” in a collaborative effort to address the needs more efficiently, and often with an innovative approach not previously considered.

• Engage policy/law makers from your local community, state, and federal levels to embrace a One Health collaborative, multidisciplinary approach to AMR.

• Work with granting agencies (and government) to develop cross disciplinary funding proposals that encourages collaboration and embraces innovative technologies.

• Encourage development of surveillance programs that can share data on global platforms.

• Help implement the AMR Action Plans!!!
Putting the AMR plans into ACTION...

My colleague, **Dr. Amanda Beaudoin**, Director, One Health Antibiotic Stewardship with the Minnesota Department of Health will provide an excellent overview of how they set up their “living” Five-Year Strategic Plan where progress is regularly reviewed and the plan is amended as needed to improve implementation.
• One Health Day is an international campaign co-coordinated by the One Health Commission, the One Health Initiative Autonomous pro bono Team and the One Health Platform Foundation.

• The goal of One Health Day is to bring attention around the world to the need for One Health interactions and for the world to ‘see them in action’. The One Health Day campaign is designed to engage as many individuals as possible from as many arenas as possible in One Health education and awareness events, and to generate an inspiring array of projects worldwide.

• For more information about One Health Day, please contact:

   E-mail: Info@onehealthday.org

   Internet: https://www.onehealthcommission.org/en/eventscalendar/one_health_day/contact_us/
“Science is far from a perfect instrument of knowledge. It’s just the best we have. In this respect it’s like democracy.”

Carl Sagan

Those are the profound words of Dr. Carl Sagan, a man who was a brilliant communicator of science. His words remind us that science – like democracy – will change, develop and transform, but the direction it takes will always rest in our hands: shaped by our desire to contribute to a better world through a One Health approach... seeking optimal health for people, animals and our environment.

Thank you!
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