



**ONE HEALTH
CHALLENGE 4**
VECTOR-BORNE DISEASE CONTROL

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One Health Challenge: history

- Based on One Health Concept
 - Large health challenges must be addressed in an interdisciplinary manner
 - Veterinary medicine + human medicine + public health environmental health + nursing +++
 - SAVMA One Health Challenge since 2007
 - Generous sponsorship by AVMA GHLIT
 - SCAVMA chapters held events to increase awareness
 - Rabies 2007 - 2009
 - Obesity Awareness 2009 – 2011
 - Vector-borne disease 2011 – 2013

Obesity Awareness 2009 - 2011

- ▣ Increase awareness of obesity epidemic among human and companion animals
- ▣ SAVMA One Health Challenge provided
 - ▣ \$400 start-up grants
 - ▣ Up to \$1000 in possible additional funding



EVENT SUMMARY



- Over 4200 humans impacted by these events
 - Large impact on companion animals and companion animal health
 - Opportunity for veterinary students to become involved in community
 - Educate themselves
 - The public
 - Begin to participate as active members of profession
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Creative events



- Soccer tournament, Western University
 - 5k run/walk, numerous
 - Obesity Awareness March, WSU
 - Extended pedometer event, numerous
 - SCAVMA Ride the Heart of the Valley, Oregon State
 - Health Fairs, numerous
 - Cowboys Stepping Out Obesity, OK State
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Highlights



- “The community turnout was pretty tremendous. Many people brought multiple dogs, and we didn’t have any dog fights! Definitely recommend holding a similar activity at every school!”

 - Iowa State University SCAVMA Scamper
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Highlights



- “Students said that they placed a very high value on the content of the [One Health] conference. We have a large segment of students that believe the One Health Initiative is something that will greatly benefit the public health, once the human medical community is fully on board with it, and they are very excited to be a part of shaping our profession’s future to that end.”
 - Mississippi State University, Mississippi One Health Symposium
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Highlights



- This event was a great way to bring the CVM and the community together in a manner that encourages fitness for pet and human alike.”
 - University of Missouri, 17th Annual DOG JOG 5K Run / 2.5K Walk
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Highlights



- “This event was the first of its kind done in the CVM, as well as in Pullman. We made posters, designed cheers, and marched through campus and downtown Pullman...The interest we raised on campus was impressive. The best part of the march was marching through campus and getting to talk with students.”
 - Washington State University, Obesity Awareness March
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Highlights

One Health Challenge III



Dog Jog, September 19, 2010, University of Wisconsin

Paws on the Pavement 5k, October 2, 2010, Colorado State University



Vector-borne disease: a primer

- VBD: VIRAL, BACTERIAL, or PARASITIC diseases transmitted from one individual to another through a vector
 - Typically arthropod
 - Mosquitoes
 - Ticks
 - Flies
 - Fleas, etc

- One Health approach is ideal
 - Environment plays a key role
 - Many VBD are zoonotic



Vector-borne disease: challenges

- Climate change
 - Rising prevalence of VBD
- Increasing resistance to insecticides, therapeutic drugs by vectors/pathogens
- Decreased resources for surveillance/prevention/control
- Poorly prepared health care infrastructure
- Interdisciplinary collaboration essential!



Vector-borne diseases: by vector

□ TICKS

- Lyme Disease
- RMSF
- Ehrlichia
- Bartonellosis
- Babesiosis
- Anaplasmosis
- Cytauxzoonosis

□ FLIES

- Leishmaniasis
- Trypanosomiasis

□ MOSQUITOES

- EEE, WEE, VEE
- WNV
- Yellow Fever

□ FLEAS

- *Yersinia pestis*
- *Diplydium canis*

□ MULTI-VECTOR

- Tularemia
- Equine Infectious Anemia



Mosquito Vectors

□ EEE, WEE, VEE Mortality Rates □ 2010 West Nile Outbreak

□ Horses

- EEE: 75 – 95%
- WEE: 20-40%
- VEE: 40 – 90%

□ Humans

- EEE: 33%
- WEE 3-4%
- VEE: 4 -14%

□ 1021 Human cases

- 57 deaths
- 5.6% mortality





Rickettsial Diseases

- ▣ **Rocky Mountain Spotted Fever**
- ▣ 2,563 human cases in 2008
- ▣ Drastic increase from previous 1000 case/year average
- ▣ Transmitted by *Dermacentor spp.*
- ▣ < 2% of cases seen in Rocky Mountains
- ▣ Highest Incidence in southeast US:
NC, OK, TN, GA
- ▣ **Anaplasmosis**
- ▣ 2,563 human cases in 2008
- ▣ Widespread prevalence in cattle, dogs & cats
- ▣ Transmitted by *Ixodes spp.* Ticks
- ▣ 6 states account for 88% of human cases: NY, CT, MA, RI, MN, WI





Lyme Disease

- Most common vector-borne disease in the US for both humans and animals
- Transmitted by *Ixodes scapularis*
- 95% of human and animal cases seen in Northeastern US: PA, NJ, NY, CT, MA, MD, NH, DE, ME, VA
 - Also MN, WI
- 6th most common nationally notifiable disease in the US
- >30,000 human cases/year (US)
- Many endemic areas have canine seroprevalence of 70-90%





Malaria

- 3.3 billion people live in at-risk areas
- 190-311 million clinical episodes in 2008
 - 863,000 deaths (2008)
- 5th leading cause of disease worldwide (2nd in Africa)
- 1500 cases diagnosed in the US each year





WHAT CAN YOU DO?

- 2011-2012 One Health Challenge:
Vector-borne disease
 - Host an **interscholastic symposium**
 - Host an **expert panel** for Q & A
 - Organize **youth educational events**
 - Contact **local newspaper/television media** to increase visibility
 - Create and distribute **informational pamphlets**
- BE CREATIVE, THE POSSIBILITIES ARE **ENDLESS!!**



Interscholastic Symposium

- WHAT IS IT?
 - VBD focused conference/series of lectures
- Select organizational committee
- Determine topic
- Coordinate Venue
- Invite speakers
- Advertise the event to appropriate groups
 - Veterinary students, local veterinarians, students in other health professions, faculty, staff



"It's not that kind of symposium."



Expert Panel

- WHAT IS IT?
 - Question & Answer panel with experts aimed at audience of your choice
- Similar to Symposium – brainstorm speakers
- Develop questions to plant if necessary
- Advertise broadly
- Consider preparing pamphlets for distribution
- Educate, inform!





Media Talking Points

- Contact local television, radio
- Explain SAVMA and One Health Concept
- Take advantage of college/university public relations staff/resources
- Prepare press releases for event
- Useful for informational materials
- Specific talking points available on website





Youth Educational Resources

- WHAT IS IT?
 - Activities/events/educational materials for a youth audience
- Classroom activities
 - Show & tell – parasites, plastinated heart with *Dirofilaria*
 - Drawing – vectors and animals
- Presentations (videos, slideshows)
 - See resources on SAVMA website
 - Parasite information
 - Basics about ticks, mosquitoes, disease transmission





Informational pamphlets

- Pick a topic
- Find basic information
- Present the information in a logical, organized fashion
- Write at an 8th grade reading level
- Include useful and eye catching graphics
- Provide resources for more information
- Distribute widely!





Resources available

- <http://www.avma.org/savma/onehealth/>
- \$400 in start-up funding from SAVMA OHC (sponsored by AVMA-GHLIT)
 - Requires event report – due by 2012 AVMA Convention
- Grants available for up to \$1000 in further funding if necessary
- CDC Division of Vector-borne infectious diseases
 - <http://www.cdc.gov/ncidod/dvbid/>
- Global & Public Health Officer & GPHO-elect here to help
 - savma.gpho@gmail.com

Thank you

- AVMA-GHLIT Board of Trustees, Jana Davidson, Libby Wallace
 - Andy Stas, Global & Public Health Officer-elect
 - SAVMA One Health Working Group
 - Justin Fyfe, Monika Burns, Megan McClosky, Chase Crawford, Jenn Linton
 - Chris Koivisto, immediate-past GPHO
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