



North American Veterinary Medical Education Consortium

National Meeting 1: Report

**Las Vegas, Nevada
Feb 11-13, 2010**

June 2, 2010

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Executive Summary

The North American Veterinary Medical Education Consortium (NAVMEC) was launched by the American Association of Veterinary Medical Colleges (AAVMC) in 2009 “to ensure that veterinary medical education meets the needs of our changing society.”

NAVMEC’s overall objective is to develop a “flexible road map for veterinary medical education, supported by accreditation and testing/licensure” so that the veterinary profession can meet changing societal needs.

The goal of this report is to provide a record of the broad discussions that occurred during the meeting.

Approximately 90 participants attended the first meeting, representing a spectrum of veterinary sectors (public and private), principally from the U.S. – a small number of attendees were from Canada, the Caribbean, and South America.

The objective of the meeting was to:

- Discuss global societal changes 2010-2030
- Explore what this society will need from the veterinary profession
- Define the veterinary skills/competencies needed to meet these societal needs

Further information on NAVMEC is available at www.navmec.org.

1.1 What Society Needs from the Veterinary Profession (2010 – 2020)

Using stimulus presentations, plenary discussion and focus breakout sessions, ‘societal needs’ fell into 2 distinct categories: external or internal to the profession.

1.1.1 External to the Veterinary Profession

- Medical & diagnostic technologies are evolving rapidly – will impact traditional veterinary skills, and potentially expand the spectrum of specialties (e.g. robotics, cloning, stem cells)
 - Veterinary clients will have even greater access to information on the Internet.
 - New agriculture technologies have the potential for dramatically changing farm animal production
 - In a borderless world, DVMs will be expected to be the ‘protectors of food safety’
 - Food shortages worldwide will create new roles and pressures for veterinarians
 - An increasing expectation for veterinarians to be ‘community leaders’, as food safety, human health and animal health issues merge in the public’s perception (e.g. One Health advocates)
 - The public will expect veterinarians to be excellent communicators, present information objectively and clearly, and to use current communications methods (including ‘virtual visits’)
 - The veterinary profession will be expected to reflect the diverse populations and culture(s) it serves, and veterinarians will need to understand, respect, and be sensitive
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to diversity and the cultural differences of their locations, including language skills and alternative medicine

- Veterinary profession will need to understand how diverse cultures may interpret animal welfare standards.
- The public will be increasingly aware of animal welfare and will expect veterinarians to be animal advocates and to address ethical topics

1.1.2 Internal to the Veterinary Profession

- Expectations of Future Employers of DVMs
 - DVMs are at the intersection of human, animal and environmental health
 - Food supply medicine will become an interdisciplinary effort
 - Veterinarians must provide more acute critical thinking/problem solving
 - Respected leadership in disaster management
 - DVMs involved in public office at all levels of government
 - More public communication and education
- Financial & Economic Issues
 - There is decreased state funding to veterinary schools – some schools are responding to the budget deficit by increasing class sizes, especially with additional out-of-state students.
 - Students are graduating from veterinary school with debt that is increasing disproportionate to entry-level salaries; current trends may not be sustainable over time.
 - While upwards of 40% of graduating DVMs are choosing to pursue more training, there is little agreement on either the need or reason for this trend.
 - Graduates need strong mentoring & coaching in their first jobs.

1.1.3 Commentary

How do we prepare new grads for a career in which the technologies and tools will be dramatically different in 5-10 years? The near-future prospect of rapid-access to validated knowledge and information will change the role of veterinarians (and other professionals) from their traditional role as the sole source of expertise. This spectrum of new technologies will certainly impact the role of veterinarians, and how they interface with the rest of society – potentially changing the nature of the profession. However, predicting these impacts with any specificity is almost impossible. Perhaps this implies training (and re-training) curricula, which are very flexible, and can be changed rapidly.

1.2 Future Skills & Competencies

Multiple breakout sessions and large group discussions explored veterinary competencies, along many different parameters:

- Technical and non-technical (i.e. communication or management)
 - Core or common to all veterinarians and discipline-specific competencies
 - Existing recognized competencies of respected veterinarians and anticipated competencies that may be needed in 15- 20+ years.
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Although breakout sessions used multiple, various lenses, the same foundational or core veterinary competencies were consistently described. With thanks for her insights to Dr. Kate Hogdson (representative from the College of Veterinarians of Ontario, the provincial regulatory agency), these competencies might be grouped as follows:

- **Multi-Species Clinical Expertise**
 - *Diagnosis and therapeutic skills; animal behavior, wellness, and welfare*
 - *Prevention and treatment of common health problems*
- **Interpersonal Communications & Education**
 - *Facilitate veterinary-client patient relationship*
 - *Effective interactions with team members, colleagues & community*
 - *Oral & written communications, and use of e-media (social networking)*
 - *Deliver compassionate health care*
- **Collaboration**
 - *Work within a healthcare team to achieve optimal patient care*
 - *Partner with interdisciplinary healthcare providers, policy makers, etc.*
- **Management (Self, Teams, Systems)**
 - *Efficient operation of business; financial literacy*
 - *Resource allocation, delegation, prioritization & investment decisions*
- **Public Health & One Health Promotion**
 - *Prevent, diagnose & control zoonotic diseases*
 - *Involved in the political process and advocacy*
 - *Knowledge of food safety and security*
- **Life-Long Learning**
 - *Critical thinking, problem solving & curiosity*
 - *Invest in self-directed learning to develop and expand competencies*
- **Ethical Professional Leadership**
 - *Committed to health & welfare of patients*
 - *Protection of human health through ethical practice*
 - *Considered to be leaders in the community; media-savvy*
 - *Volunteer to be spokesperson*
- **Adaptable to Changing Environments**
 - *Able to quickly acquire technology expertise*
 - *Cultural diversity awareness & skills*

Inevitably, discussions broached critical curriculum-related topics, such as:

- Once core competencies are defined for Veterinary Medicine, should these be implemented across the spectrum of education?
 - When should discipline-specific competencies be trained (tracking in the professional curriculum or post-graduate specialization)?
 - How practical are expectations for changes in accreditation and licensure?
 - How to implement new competency training formats (however defined), while taking account of the cost to the student, and the colleges?
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1.2.1 Commentary on Skills/Competencies

- Presenting current (or under-development) lists of skills/competencies, together with a consolidated set from Meeting #1, will enable the discussions on curriculum to proceed more productively.
- Innovative approaches to merging technical and non-technical skills training are likely being used in other venues, and should be researched, and presented at future meetings, including from other professions.
- Much of the discussions at Meeting #1 revolved around ‘future skills that will be required, however many of those skills are also needed in today’s world. Curricula will surely need to be changeable at rather short notice (annually?) to react to new scientific, technological, environmental and economic factors.

1.3 NAVMEC Success Factors

Participants provided NAVMEC with a set of success factors to ensure that NAVMEC’s recommendations are broadly implemented in an effective and timely manner.

- *Success Factors*
 - Create a top-10 list of actions that can be implemented (try to deliver one improvement in 2011)
 - Appreciate that navigating through different cultures at different colleges will be challenging
 - Realize that one veterinarian cannot be all things to all people
 - Develop clear, concise, defined goals for NAVMEC
 - *Change*
 - Create a sense of urgency – will a focus on student debt be the driver?
 - Changes must be either driven by Council on Education (COE) or otherwise mandated
 - Implement Kotter’s change process
 - *Competencies & Curriculum*
 - Create a model list of core competencies
 - Have flexibility in recommendations to be able to implement at different schools
 - Focus on entry-level skills rather than the tertiary-level skills that are modeled in many veterinary teaching hospitals.
 - *Funding/Licensing/Accreditation*
 - Identify and secure resources (dollars and people) to implement the report
 - Leverage accreditation and licensing processes to generate change
 - *Implementation & Buy In*
 - Must have an implementation team
 - Recommendations must be specific and achievable
 - Engage faculty – faculty buy-in is critical
 - Advocacy by meeting participants and supporting organizations
 - **“A miracle will really help!”**
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2.0 Introduction

"This is our opportunity to drive our own professional future." NAVMEC participant, Meeting#1, Las Vegas

In 2009, the American Association of Veterinary Medical Colleges (AAVMC) launched the North American Veterinary Medical Education Consortium (NAVMEC) "to ensure that veterinary medical education meets the needs of our changing society."

NAVMEC's overall objective is to develop a "road map for education, accreditation, and licensure" that is:

- Responsive to society
- Flexible
- Builds on the strengths of colleges
- Encourages partnering and collaboration among colleges

NAVMEC will hold three national meetings in 2010 to offer stakeholders and beneficiaries of veterinary medical education and other interested parties the opportunity to discuss the skills and competencies needed by tomorrow's veterinarians. Together, participants will explore new educational models to meet the educational goals identified, and the relationship between education, accreditation and licensure.

Further information on NAVMEC is available at www.navmec.org.

2.1 About this Report

This report summarizes key discussions from NAVMEC's first national meeting held in Las Vegas, February 11 to 13, 2010. These results will be used to inform and launch discussions at NAVMEC's second national meeting, to be held in Kansas City, April 29 to May 1, 2010.

3.0 Society's Future Needs (Day 1)

3.1 Stimulus Presentations and Discussions: Societal Changes 2010-2030

Day 1 kicked-off with a plenary session featuring three stimulus presentations designed to help participants to consider some of the societal challenges and professional challenges that veterinarians may face in 2020 and beyond. Each speaker's presentations will be available to attendees.

The following section highlights some of the key questions and discussion points raised by participants in response to each presentation.

Key Discussion Points

"Looking Beyond 2010"

Professor Jack Smith, National Research Council Canada and Telfer School of Management, University of Ottawa

Prof. Smith's presentation explored some of the disruptive socio-economic, technological, political and environmental changes that may shape our world between 2020 and 2050.

Q. Looking to the economy of the future, how will we pay for our needs, especially given rising economic competition from China, Russia, Japan etc.?

A. This is a key challenge for our leadership. I can see both opportunity and chaos ahead. This is difficult to predict: economies may leapfrog ahead at different times. Overall, China is emerging as a very strong science and technology culture – strong in bio-fuels and renewable energy. What are the implications for veterinarians? China may emerge with a stronger educational system and capabilities than western countries.

Q. What are the future trends you see in human and animal nutrition?

A. We may see a move towards scientifically-controlled nutrition or scientifically-manufactured food. In a crowded world with environmental contamination and multiple bio and terrorist threats, we may come to question what is harvested from the wild and what isn't, and come to equate wild with risky. Highly manufactured food may be seen as safer. Future generations may change how they value their protein sources. Will they want as much? Will they prefer it to be 'natural' or will they value 'manufactured' protein because of its potentially low impact on the environment?

Q. Do you see a paradigm shift from health care to health assurance (prevention)?

A. We are seeing mixed trends. On the one hand the digital generation is proactive in seeking out health information, yet there is mounting obesity. We could see the role of health professionals changing away from being the 'expert' to more of a counselor, analyst or coach.

“Veterinary Medicine – Global Health”

Dr. Alan Kelly, Center for Animal Health and Productivity, University of Pennsylvania, School of Veterinary Medicine

Dr. Kelly’s presentation focused on global hunger and the need for a Green Revolution in animal productivity.

Q. How many students are training in food production across the United States? How many production-side medical faculty do we have? Does our current curriculum meet this need? India and China are sending students to train here.

A. We are not currently training enough students in this area, although there are some students with a very strong interest in food productivity. Not sure that the current system is the right one. I like the Centers of Excellence model. Funds are no longer coming from the States for training in food animal productivity. This is a national issue that requires national funding. This has also been advocated before. The veterinary profession will be marginalized unless we take action.

Q. Can you see population dynamics (aging) working against addressing food productivity issues? The U.S. is becoming more urban, with more pets.

A. The veterinary profession needs to be more open to using paraprofessionals; to learn how to run a practice using smart phones etc. We may not need more veterinarians, but our infrastructure has to grow.

“Changing Societal Attitudes toward Animals and possibly Veterinarians”

Dr. Alan M. Beck, Center for the Human-Animal Bond, School of Veterinary Medicine, Purdue University

Dr. Beck’s presentation focused on changing societal attitudes toward animal welfare issues.

Q. Animal welfare has focused largely on companion animals. How do you see concern about large animal welfare impacting food production (reference UK report on Five Freedoms)?

A. The large animal branch of the profession has to get more involved. Veterinarians tend to do what they THINK the farmer want. In reality, farmers are more receptive to the veterinarian’s influence. We need to learn more from what’s been done to improve the welfare of the animals used in research.

Q. The spay/neuter construct is different in Europe. Please comment.

A. There is a different appreciation of the animal in Europe; in general people are more sensitive to animal welfare issues. For example, Sweden is working to get rid of all intensive farming. If everyone does it – it doesn’t impact competitiveness (cheap/dirty source of product vs. nicer/expensive source of product). We need to take account cross-cultural differences and the attitudes of the animal’s whole family.

“Competency Based Education”

Dr. Elizabeth Hardie, North Carolina State University, Veterinary Education College

Dr. Hardie's presentation focused on the shift within the veterinary education community to competency-based education (measuring outcomes) and recent research on the changing attitudes/values of the 'millennial' generation.

Q. We hear that the 'millennials' are preparing for multiple careers. What does this mean for the veterinary profession?

A. Today's students are thinking of the future in a very individualized way. They grab resources from wherever they can; they don't like locked-down systems. They love to design their own programs to build something concrete that meets their needs. They get bored easily and don't like repetitive tasks.

Q. Data shows the feminization of our profession. Are family concerns becoming more important?

A. Yes, women are looking for controllable lifestyles. But it's not just the women, because men are in the same situation. Equine data shows that women will opt out of the solo large animal practice. Yes, often when women have a family, they move out of the profession; but they often come back later. It's also a 'millennial' behavior. Many graduates are looking for internships because they don't feel practice-ready. They are looking for key skills that can make them more valuable as employees, especially in surgery.

Q. What is your opinion on rising debt loads for veterinary students? We keep hearing that graduates are feeling pushed towards internships. The trouble is this extends their low-income years; it's not regulated, it's very academic, and young vets feel they are a source of slave labor.

A: This generation of students wants to feel really competent before stepping out on their own. They have less tolerance for this feeling of uncertainty than previous generations. Their role models at schools also push them towards specialty. This may change with more emphasis on primary practice. We need to give careful thought to the debt-income ratio.

Audience Comment: Some students are fearful of going to the next level because of licensure issues/state complaint issues.

A. Just off-the-cuff, two points: there are very few new graduates starting their own practice and it's my impression that many graduates are going into relief work because of the low overhead.

Audience Comment: Maybe we need national data

3.2 Plenary Discussion: Impact of Societal Changes

Participants engaged in a plenary discussion on the potential impact of societal changes over the coming decades on the veterinary profession. Key statements were captured 'live' during the discussion and are presented below.

- The information from one CVM shows a shift in careers within five years of graduation. How to influence students to be more adaptable/flexible and self-confident? *A. Maybe look at the selection/admissions processes*
 - How to keep up with rapidly changing *student behavioral characteristics*
 - *How will veterinarians change society?*
 - Where have all the male veterinary students gone?
 - No jobs for "one medicine" graduates
 - Cost of veterinary care is increasing...negatively impacts public image of the profession
 - If 70% of increased demand for food comes from tech developments, how do we connect with our society's desire for more "natural" products and processes?
 - Diminishing middle class in U.S. – impacts?
 - Increased urbanization – impact on student perception and funding
 - How will new vets know about public service career opportunities?
 - How do we feed the world with animal protein... changing attitudes toward animal welfare?
 - Balance the need for veterinarians for a global world with current needs for producers...curriculums should be dichotomous between developed/developing worlds
 - How do we know what society wants vs. needs, and how to help veterinarians retool for the future?
 - How do we prepare new grads for a career when the tools will be different in 5-10 years? And lots of information for veterinarians to process... ever increasing
 - Based on societal needs are we heading for limited licensure or re-licensure?
 - How do we manage the contributions of the paraprofessionals?
 - How to get physician counterparts to embrace "One Health, One Medicine"?
 - Most societal changes identified were tech-driven: How to address the general lack of technology knowledge?
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3.3 Plenary Discussion: Changing Societal Needs Report Back on Breakout 1 Discussions

Breakout 1 asked groups to identify society's key needs from the veterinary profession in the future. Each group adopted the lens (perspective) of a specific stakeholder within society. All groups made an effort to consider both incremental, fairly immediate changes in societal needs and more major, 'new world' changes we can only just begin to imagine.

Each group reported back to the plenary on the top three 'changes' they felt were most significant for society or the profession. These results are captured in the table below. Further details on Breakout 1 discussions are available in Appendix A.

Changing Societal Needs: Top 3 to 5 Discoveries
Meeting attendees were divided into breakout groups that discussed "changing societal needs" as seen through these various lenses. The comments listed below were generated by each group.
<p>Food Industry</p> <ul style="list-style-type: none"> ▪ Increasing need for food supply veterinary medicine ▪ Technology will change the product (species) and the way we practice ▪ Need to play a larger role in leadership (e.g. public health and epidemiology), higher positions involved in government & decision-making ▪ Food supply veterinary medicine becomes a team or interdisciplinary effort
<p>Companion Animals</p> <ul style="list-style-type: none"> ▪ Traditional model for small animal practice is changing (computers, remote diagnostics, information access) ▪ Different cultural views of animals are not understood by traditional veterinarians and may clash with animal welfare standards ▪ Need to be proactive advocates for animals ▪ Student debt may result in a lack of change in the profession <ul style="list-style-type: none"> - Focused on generating income/debt repayment - Not receptive to new ideas/technologies - No time for leadership roles
<p>Research</p> <ul style="list-style-type: none"> ▪ Expectation that veterinarians engage in broad, critical thinking process ▪ AVMA will cease to exist without a paradigm shift <ul style="list-style-type: none"> - Perception of association represents only a slice of who we are ^ need to reflect more diversity & our research, public health and practice roles ▪ Greater expectation that veterinarians translate science and research to the larger community <ul style="list-style-type: none"> - Already doing this; other professions not

Changing Societal Needs: Top 3 to 5 Discoveries

Meeting attendees were divided into breakout groups that discussed “changing societal needs” as seen through these various lenses. The comments listed below were generated by each group.

Animal Welfare

- Be voice of authority on animal welfare issues
 - Proactive on wildlife and companion animal issues
- Sophisticated diagnostics to assess animal welfare, health and well-being
 - Thought & emotion-recognition
 - Personality matching with owners
- Respected central leadership and organized authority for interdisciplinary, federal/state disaster preparedness

Environment and Conservation

- Veterinarians on the ethical edge between human, animal and environmental health
- Veterinarians need to become more involved in political advocacy and PR issues on animal welfare & the vet's role
- Maintain U.S. leadership by helping with capacity building for animal protein production
- Majority of vets are in small animals, but need to prepare students for emerging conservation and environmental medicine

Private Practice

- Veterinarian is no longer doing it all – central resource of knowledge while delegating many services
- Must exploit advanced technology (health & IT)
- Need for broad multicultural understanding
- Practice 'One Health', integrated, collaborative health practice at all levels –haven't yet agreed on what 'One Health' means
- Effective interpersonal communications skills

Public Policy

- Dramatic changes in licensure and practice acts
 - Post-graduate apprenticeships
 - Certification of paraprofessionals
 - International reciprocity in licensure
 - Other professionals certified to deliver veterinary services
- Veterinarians licensed & required to certify & serve in food safety, public health issues, zoonotic disease outbreaks, terrorist attacks
- Involved in public office at higher levels (local, state, national)

Changing Societal Needs: Top 3 to 5 Discoveries

Meeting attendees were divided into breakout groups that discussed “changing societal needs” as seen through these various lenses. The comments listed below were generated by each group.

Veterinary Industry

- National tracking system and database for zoonotic diseases, evolutionary biology & changes in viruses
- Greater veterinary involvement in research, bio-farming, nanotechnology. etc.
- Utilization of prebiotics for human health (human digestive system)
- Enhanced role in communicating about zoonotic diseases. etc.

Additional

- Use of robots – wide range of impacts in private practice, food animals, wildlife etc.

4.0 Future Skills and Competencies (Day 2)

4.1 Stimulus Presentations and Discussions: *Veterinarians' Skills in 2030*

Day 2 began with four stimulus presentations outlining work being done on identifying core competencies for veterinarians. Each speaker's presentation will be available to attendees.

The following section highlights some of the key questions and discussion points raised by participants in plenary in response to each presentation.

"The Elephant in the Room"

Mr. Fritz Wood, Certified Public Accountant, Certified Financial Planner, Kansas

Mr. Wood's presentation focused on the increasing challenge of veterinary student debt.

- Q.* Fifty years ago, the main source of veterinary income was agriculture; now it's derived from discretionary income. Is this really a strong enough economic foundation for a profession?
- A.* People continue to spend money on pets. This recession is impacting small animal practices, but not that badly. The average growth rate for practices is down from 12% to 4%, but most practices are still growing in most parts of the country. All indications are that people will keep spending money on their pets. New York analysts William Blair.com research shows that small animal VM has not participated in a recession in the last 70 years.

- Q.* Of the students who have graduated in the last five years, do we know how many are exiting the profession because of debt load?
- A.* No, we don't have any research to answer that question. We do know that 40% more graduates than 20 years ago are going on to advanced residencies and internships. Only 10% of students are graduating debt-free.

- Q.* What capacity do most practices have to pay higher starting salaries?
- A.* A practice owner will be able to pay an associate 20% to 22% of the associate's personal production. A new graduate has to be able to jump into the practice and be productive.

- Q.* When looking at comparative debt load reports, is there a difference between males and females?
- A.* The AVMA keeps debt load information, but I don't think they divide by gender. (People in room said those data are available: \$10,000 difference.)

"Entry-level DVM Core Competencies"

Dr. Jan Ilkiw, University of California, Davis School of Veterinary Medicine

Dr. Ilkiw's presentation focused on the UC Davis experience in identifying core competencies.

- Q.* Are you incorporating any observation of actual duties occurring at a practice level?
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- A. We are doing this in species-specific competencies, where we have four years of data. However, there are gaps.
 - Q. Have you surveyed students and recent graduates?
 - A. We will be collecting that kind of data by conducting outcome assessments
 - Q. Does your study really look forward to the future or is it geared to the past? We need to understand what students and clinicians are moving forward to.
 - A. This is the value of outcome assessment; we should be realigning as we go along.

“Competencies Needed in Federal Veterinarians”

Dr. Todd Behre, Coordinator, National Veterinary Accreditation Program, Animal and Plant Health Inspection Service/USDA

Dr. Behre’s presentation focused on the role of veterinarians at the USDA and the competencies required for a career at USDA

- Q. You are facing the retirement of an aging workforce. Do you have an internship for students to help attract new employees?
- A. Veterinary Services Headquarters offers unpaid externships for veterinary students to work on special projects (two to three weeks duration) to learn about what we do and contribute to our mission at the same time. My team welcomes students to join us year-round.
- Q. Are starting salaries competitive in the federal services?
- A. Most new graduate veterinarians would start at the GS 11 pay grade and become GS 12s after one year. Depending on location, starting salaries would be 50-65K the first year, and climb to 60-77K the second year. Beyond those two years, salaries are competitive with the majority of careers in the private sector.
- Q. What percentage of USDA new hires are recent graduates?
- A. I don’t know. I will tell you we have a lot of highly qualified applicants for each job, and the applications grading system I described results in the applicants with the most experience rising to the top of the certification lists that determine who we can interview. That is why I talked so much about applicants needing to fully describe their experience in the on-line application process.

“Re-defining What We Want to Be”

Ms. Lisa Greenhill, American Association of Veterinary Medical Colleges, Associate Executive Director for International Research and Diversity

Ms. Greenhill’s presentation challenged the profession to consider how it can attract the very best and the brightest minds in a society that is increasingly diverse.

- Q. Is there any evidence that (diversity) affects outcomes in a learning environment?
 - A. Yes, the evidence shows that diversity is worth the effort. Yes, there are challenges in managing this environment, but the data shows that it produces better professionals and clinicians.
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- Q.* Where are the men? Why are they not enrolling? Have we studied this in veterinary medicine?
- A.* No, not yet. Most likely it's a combination of factors: lack of role models, diversity and no pets in the home, the economy, men feel they can't make enough money etc. There are probably rather specific and nuanced reasons for this happening in veterinary science. This is the fifth year female enrollment numbers have held steady.
- Q.* Why are we so far behind other professions on diversity?
- A.* We only started to pay attention to this in the last few decades. The process is evolutionary. We are only just getting to this ah-ha moment.
- Q.* Some social science studies suggest that increasing diversity may lead to less political activity/participation. What are your thoughts on this?
- A.* Although the relationship with marginalized groups has improved, it's still very paternalistic. We have to include each community in how it shapes the outcomes that it wants to see. We probably have similar health disparities in animals as we see in people. We have to partner with these groups if we want to treat their animals (invisible pets), and partnering takes negotiation skills. The more diversity we have in the profession, the better our negotiations skills will be. These groups have had **lots** of practice.
- Q.* What are the solutions? How are we going to attract minority students?
- A.* The profession isn't attractive to them. They may feel the calling, but additional influencers mute that call:
- a. Veterinarians don't speak highly of their profession
 - b. Neither do counselors
 - c. Parents of color have greater influence on their children's career choice than others – these parents don't know anything about your profession

You have to do a better job of promoting – you have to reach the whole family, the whole community (they are all riding that kid's coattails). You are looking at needing to educate from the ground up.

4.2 Plenary: Core Skills and Competencies Report Back – Breakout 2

Breakout 2 asked participants to use their understanding of society's future needs to identify the 'core' or 'generic' skills and competencies that ALL practicing veterinarians would need to have in the next 5, 10 or 20 years.

Following the breakout, each group presented their top three to five discoveries regarding generic skills. These are listed in the table below.

A plenary discussion resulted in the addition of a new category of core skills that would be required from an employer's perspective. These are also listed in the table below.

Further details of each group's observations are available in Appendix A.

Core Skills: Top 3-5 Discoveries

Meeting attendees were divided into breakout groups that discussed "core skills & competencies", especially new ones, as seen through these various lenses. The comments listed below were generated by each group.

Society's Perspective

- Basic epidemiology (understand and apply) and wellness
- Digital technology, including social networking skills
- Awareness of the political process, including 'One Health'
- Communication (written & oral), teamwork & interpersonal skills (faculty trained in same skills)
- Diversity skills (local and global)
- Business skills (responsive business models)
- Retrieve and critically evaluate data
- Analyze and debate
- Understand the value of community engagement
- Leadership development & advocacy training – and adaptable to changing environment
- Problem solving – financial literacy, critical analysis & quantitative skills
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- Preservation of the environment – ecosystems, interface between human and animal health team
- Focus on principles vs. techniques
- Knowledge of food safety, quality and security
- Comparative medicine professionals, clinical expert
- Recognized as the authority for animal welfare
- Collaboration skills

Core Skills: Top 3-5 Discoveries

Meeting attendees were divided into breakout groups that discussed “core skills & competencies”, especially new ones, as seen through these various lenses. The comments listed below were generated by each group.

- Management skills & ability to delegate
- Lifelong learner – creativity, curiosity and critical thinking and problem solving
- Ability to serve as well as lead
- Multicultural understanding of human and animal behavior
- Leadership in public and population health
- Veterinary ethics – remote communications, new technologies, genetic engineering, etc.
- Advocacy for the veterinary profession
- Ancient medicines – non-Western and integrated medicine

Employer’s Perspective

TECHNICAL

- Better surgery skills
- Better emergency medicine training
- Examination room skills
- More understanding of primary care conditions – as opposed to referral

NON-TECHNICAL

- Business ownership skills – succession planning
- Team skills – working with staff and paraprofessionals
- Interpersonal/communication skills – in the future we’ll be more interdependent
- Understanding productivity in a practice
- More confidence re: what they can do within a general practice
- Employers/practitioners need to be strong mentors to new hires
- Commitment to self-improvement – adding new skill sets
- Entrepreneurial skills
- Awareness of unique contributions/career paths outside of practice
- Being other-centered rather than self-centered

4.3 Plenary: Discipline-Specific Skills and Competencies

Report-back on Breakout 3

Breakout 3 asked participants to identify discipline-specific knowledge and skills that veterinarians would need to meet changing society’s expectations over the next 20 years. Each group presented their top three to five discoveries to a plenary session. These findings are listed in the table below. Further details of each group’s observations are available in Appendix A.

Discipline Specific Skills: Top 3-5 Discoveries

As before, meeting attendees were divided into breakout groups that discussed discipline-specific skills & competencies - especially new ones - as seen through the lenses of various careers. The comments listed below were generated by each group

Veterinarian Industry

- Business acumen
- Clear, concise written and presentation skills
- Better understanding of the corporate and regulatory world
- Desire for broader impact in the veterinary and 'real world' and broader personal vision
- Broader adaptability and problem solving

Public Health

- Enhanced communication skills – media training
- Understand the role of the veterinarian in community outreach
- Global awareness of the role of the DVM in Public Health and disease surveillance
- Ability to do health education and health promotion
- Food protection/food safety
- Animal welfare

Wildlife/Conservation

- Non-mammalian physiology and anatomy
- Biosphere management skills
- Ethics – human, environmental and animal – prioritizing
- Media and lay communication skills
- Math modeling, informatics and remote sampling skills
- 'Followership' skills – team playing in a multi-disciplinary arena

Companion Animals

- More advanced technology – diagnostic and communication, genomics, epigenetic, nano-technology, etc.
- Increased business skills
- Increased animal/human behavior management
- Increased multi-cultural and multi-lingual skills
- Increased political advocacy – particularly in area of animal welfare
- Increased community service and population management

Regulatory & Research

- Increased knowledge of veterinary political science
- Knowledge of the emergency command system
- Why and how to get involved
- Hypothesis-driven and evidence-based research

Food Animals

- Shift from technical to analytical skills
- Teach how to be a consultant to the production industry
- Increase in regulatory management
- Leadership in integration within the industry
- Genetic modification of animals
- Adaptability to emerging technologies

Discipline Specific Skills: Top 3-5 Discoveries

As before, meeting attendees were divided into breakout groups that discussed discipline-specific skills & competencies - especially new ones - as seen through the lenses of various careers. The comments listed below were generated by each group

Equine

- New business models – interdisciplinary teams
- Equine cultural intelligence
- Recognized voice of authority on equine welfare
- Advocacy, training and translation of equine bio-medical research
- Mentorship, leadership & public policy

5.0 Veterinarians' Skills (Day 3)

5.1 Plenary Discussion: Veterinarians Skills

Synthesis of Breakouts #2 and #3

On Day 3, participants engaged in a plenary discussion on the skills and competencies veterinarians will need going into the future. Some of the major points raised include:

- *Will We Have Veterinarians in 2030?*
 - Will we still have veterinarians in 2030 or 2050? Or will we be replaced?
- *Adaptability*
 - Teach skills that give our graduates adaptability.
 - Set short and long-term goals. Things are changing so quickly.
 - What does it take for a graduate to hit the ground running? We need to consult employers, consumers and students about what they need most. National Board of Veterinary Medical Examiners (NBVME) performs Job Analyses regularly.
- *Business and Communications Skills*
 - What's our focus? This discussion isn't really about medicine it's about teaching the skills from the outside world – business and communications.
 - Our universities are asking for broader business and social skills.
 - This discussion has been too focused on business skills. There is more to being a veterinarian than private practice.
 - No matter if you are in private practice or in regulatory policy or enforcement, you need good business and communications skills to succeed (business plans, proposal-writing, presentation skills, advocacy, interpersonal skills).
 - Students are asking for more business and communications skills.
- *Ethics*
 - Teach ethics (human-animal-environment interface; remote medicine; remote communications – less face-to-face).
- *A Broader Discussion*
 - Broaden the discussion to pre-vet, veterinary medicine and post-graduate.

- Create a more seamless flow of students through pre, vet and post.
 - *Public Health*
 - Need more emphasis on public health as a core competency. Future holds more opportunities for vets in public health (animal welfare, food safety, environment).
 - *Global Awareness*
 - There's a backdrop of global issues and economic issues we are not taking into account.
 - *Set Priorities*
 - "He who defends everything, wins nothing."
 - We need to focus on the big picture; not get bogged down in curricula minutiae.
 - Is it really possible to add all this to the curriculum? What if it isn't needed in 30 years?
 - *Try New Models*
 - It doesn't all have to be accomplished through the curriculum. Can be handled through the selection process, mentoring, new models of teaching that encourage teamwork and model 'soft skills' as you teach. Practitioners can be on faculty.
 - *Barriers*
 - Currently have a confusing morass of prerequisites that vary from state to state. We need to simplify and create more consistency.
 - *Culture Change – Be Positive as a Profession*
 - How do we recruit new generations if we continue to be negative? We must convince ourselves and others that this is a vibrant profession with lots of opportunities for dedicated, committed individuals.
 - *Recruitment*
 - Recruit the finest students with the aptitudes we want.
 - Looking for people who are other-centered rather than self-centered.
 - Ensure entry-level students are aware of the debt load they will carry when they graduate.
 - *Team-work/ Mutual Respect*
 - What can we do as a team? We need to lay to rest the academia vs. private practice dynamic (and others ways us vs. them impacts the profession).
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6.0 How to Maximize NAVMEC Success (Day 3)

6.1 Plenary Discussion: NAVMEC Success

As part of Breakout 3, participants brainstormed on how best to ensure NAVMEC's recommendations are broadly implemented. Their top recommendations are summarized in the table below.

NAVMEC – Driving Success
<p>Success Factors</p> <ul style="list-style-type: none"> ▪ Create a top-10 list of actions that can be implemented (one improvement in 2011) ▪ Appreciate that navigating through different cultures at different colleges will be challenging ▪ Realize that one veterinarian cannot be all things to all people ▪ Develop clear, concise, defined goals for NAVMEC
<p>Change</p> <ul style="list-style-type: none"> ▪ Create a sense of urgency – possibly focus on student debt ▪ Changes must be either driven by Council on Education (COE) or otherwise mandated ▪ Implement Kotter's change process
<p>Competencies & Curriculum</p> <ul style="list-style-type: none"> ▪ Create a model list of core competencies ▪ Have flexibility in recommendations to be able to implement within different schools ▪ Focus on entry-level skills rather than the tertiary-level skills mostly demonstrated in academic clinical practice

NAVMEC – Driving Success
<p>Funding/Licensing/Accreditation</p> <ul style="list-style-type: none"> ▪ Identify and secure resources (\$ and people) to implement the report ▪ Leverage accreditation and licensing processes to affect change
<p>Implementation & Buy In</p> <ul style="list-style-type: none"> ▪ Must have an implementation team ▪ Recommendations must be specific and achievable ▪ Engage faculty – faculty buy-in is critical ▪ Advocacy by meeting participants and supporting organizations ▪ “A miracle will really help!”

Participants engaged in a plenary discussion to collect additional thoughts on how to ensure the successful implementation of NAVMEC’s recommendations. Discussion points that were new or amplified earlier observations are summarized below:

- Identify champions/spokespeople. Use these ambassadors to visit all the universities, licensing boards etc. to persuade them to implement the NAVMEC recommendations.
- Students are in a unique position to drive this change. We need to let them know that they need to push for this. Also, we need to get more student input/feedback: where do they think the gaps are?
- Increase the linkages between academia and stakeholders.
- Develop a model list of competencies that will help the universities implement change.
- Ensure all NAVMEC communications and initiatives incorporate a positive spin on the profession.
- Be prepared for resistance and territorialism.
- Two competing views: competencies need to be prescriptive/this may be counterproductive – can’t micromanage the universities.
- Caution about flexibility: shouldn’t be a ‘wet noodle’.
- Find the common ground where there is a sense of urgency and move this forward.
- Don’t assume we understand all stakeholder needs. Validate.
- Need sustained funding that can cross state lines.
- Align recommendations with those of allied professions.
- Avoid scope creep.
- We are talking about national standards, but students/graduates don’t really have this kind of mobility. Is there a way we can have a national consensus?
- The recession is impacting schools, students, practices ... we are in a critical period ... we may need to really focus on the next five years.
- Need continued participation and deep engagement from people in this group and all others that can we reach.

- Challenge our assumptions, ideas, educational and funding models and the status quo. Keep our minds open (e.g. how many years should it take to become a veterinarian? Should we give Bachelors in Veterinary Medicine more value?)
- Don't be afraid to look at some of the harsher realities. What are the real factors that will affect supply and demand in the short and long term, e.g. the economy, new technologies, foreign veterinarians?)
- Recognize that academia trains residents, not students (most in the room disagreed with this statement, however the two students who were present agreed).
- Clearly communicate the student debt problem to faculty.
- Before we approach "One Health", we need "One Veterinary Medicine."

APPENDIX A: Breakout Sessions

This section provides more detailed information on the findings of each breakout session.

Breakout 1: What Will Society Need from the Veterinary Profession?

On Day 1, participants were divided into eight breakout groups representing different veterinary stakeholders. Participants were asked to consider what society would need from the veterinary profession in response to 'Incremental' social, technological and environmental changes and more major 'New World' changes. Each group was assigned a 'stakeholder' lens through which to consider the future.

Each group's observations are charted on the following tables.

What Will Society Need from the Veterinary Profession (TECHNICAL REQUIREMENTS)		
Stakeholder Lens	Incremental (Small changes/3-5 years)	New World (Major changes/10+ years)
Animal Welfare	<ul style="list-style-type: none"> ▪ Non-surgical sterilization ▪ Greater capabilities in human/animal psychology/behavior ▪ Growing animal population ^ more relinquished & feral animals ^ need for veterinary leadership ▪ Surveillance technology/animal IDs 	<ul style="list-style-type: none"> ▪ Sophisticated diagnostics for pet choice/genome analysis ▪ Sophisticated diagnostics & tracking processes for food animals ▪ Sensor diagnostics to ID disease and track animal health ▪ Genetic engineering to control life span ▪ Increasing use of surveillance

		technology/animal IDs
Environment and Conservation	<ul style="list-style-type: none"> ▪ Zoos – more theriogenology (reproduction) ▪ More zoonotic disease knowledge ▪ Invasive species ▪ Advanced diagnostics ▪ Fast-breaking diseases 	<ul style="list-style-type: none"> ▪ Obesity, nutrition issues in zoos ▪ Invasive species ▪ Rescue/disaster management ▪ More understanding of climate change ▪ Safe management of GMAs (Genetically Modified Animals)
Private Practice	<ul style="list-style-type: none"> ▪ Zoonotic/FAD understanding ▪ Universal medicine – population medicine and epidemiology ▪ Broad based knowledge – flexible ▪ Vet must interpret and reach a conclusion using genetic data ▪ Self management (time, decision-making, delegating) ▪ Use of technology to condense info and treat all species ▪ Know who to go to for specialized information ▪ Communication (one-on-one) 	<ul style="list-style-type: none"> ▪ Access to technology and genetic info to predict outcomes ▪ Analyzing data/rapid response ▪ Integral part of community health team (local, state, national, global) ▪ Collaborating to treat ALL species (preventive care) ▪ Be prepared to use new technology ▪ Be prepared to work at greater cognitive, judgment & behavior levels ▪ Psycho-social understanding at all levels (generational, cultural, local, globally)
Pet/Companion Animal Owners	<ul style="list-style-type: none"> ▪ Expectations vary (stratification based on economics) ▪ Clients want to share their findings (knowledge) and expect us to validate it ▪ Grief counseling ▪ Equivalent-to-human medicine & technology ▪ Cloning 	
Public Policy and Regulators	<ul style="list-style-type: none"> ▪ All DVMs better schooled in disaster medicine, bioterrorism, zoonotic diseases, pandemics, infectious disease – licensed & certified. ▪ How to manage & put together programs, disaster operations. Do not need to know individual animal medicine. Instead of as now by trial & error. ▪ Shelter medicine & its relationship to zoonotic diseases – will be regulated. Herd health medicine. ▪ Understanding of wildlife management within the environment. Interface with the 	<ul style="list-style-type: none"> ▪ Vet to understand engineering to know equipment and maintain it ▪ Protect all the food supply ▪ Ability to look at ways to keep food safe from international contamination & bioterrorism ▪ Key role in organ production (animal & people) ▪ Key role in developing medicine ▪ Limited licensing in public policy expertise – with recertification ▪ International licensing (e.g. NA, South America) ▪ Aquaculture knowledge for food, research (the next mouse)

	wildlife biologist –zoonotic diseases.	
Agriculture and Food Animals	<ul style="list-style-type: none"> ▪ Increased knowledge of animal welfare sold as good for business (science & base practices) ▪ Awareness of pre-harvest food safety (growing food NOT animals) ▪ Complete understanding of total food production system (genetics, nutrition, economics) ▪ Better understanding of legislative and political process ▪ Two types of practitioners (specialist, mixed) ▪ Entrepreneurship ▪ Ability to solve complex problems 	<ul style="list-style-type: none"> ▪ Green movement – move towards a “cleaner” and more environmentally-friendly agriculture ▪ Explosion in nutrient genomics. Better understanding of specific nutrition needs ▪ Holistic approach (health, environment & welfare) ▪ Waste management ▪ Disease containment in a borderless world ▪ Internships/residency opportunities
Research Community	<ul style="list-style-type: none"> ▪ Don't need a vet; need a 'person' ▪ Question what a 'vet' is (broad training) ▪ Disruptive ^ training/education ^ accreditation ▪ Be prideful re: expertise ▪ Know what vets are involved in 	<ul style="list-style-type: none"> ▪ Disruptive ^ training/education ^ accreditation ▪ To create a new/sub-discipline: 'comparative medical professional' ▪ Species extinction expertise ▪ Protect against bio/agri-terrorism ▪ Basic scientific training for all vets
Veterinary Industries	<ul style="list-style-type: none"> ▪ Research driven: <ul style="list-style-type: none"> ○ Individualized needs for nutrition, disease surveillance ○ Methods of disease prevention and control ○ Advanced therapies, stem cells ○ Advanced diagnostics ▪ Biostatistics ▪ Epidemiology ▪ Molecular biology/genomics ▪ Robotic surgery (starting) ▪ Virtual reality surgery (starting) 	<ul style="list-style-type: none"> ▪ Robotic surgery ▪ Virtual reality surgery ▪ Nanotechnology diagnostics/ treatments ▪ Genetically modified hosts ▪ Biopharma ▪ Organ synthesis

What Will Society Need from the Veterinary Profession (COMMUNITY REQUIREMENTS)		
Stakeholder Lens	Incremental (Small changes/3-5 years)	New World (Major changes/10+ years)
Animal Welfare	<ul style="list-style-type: none"> ▪ Community resource on human/animal bond – dealing with increased animal population and social issues ▪ Defining space (physical & community) for food animal 	<ul style="list-style-type: none"> ▪ Solve feral animal issue ▪ Be voice of animal welfare for wildlife (organized DVM response teams) ▪ Rapidly diagnose, control and treat infectious diseases and

What Will Society Need from the Veterinary Profession (COMMUNITY REQUIREMENTS)		
Stakeholder Lens	Incremental (Small changes/3-5 years)	New World (Major changes/10+ years)
	production	teach/educate public <ul style="list-style-type: none"> Pro-active public education re: zoonotic issues
Environment and Conservation	<ul style="list-style-type: none"> See animal/human big picture Ethics (people vs. animals) Public education (animal health links to public good; vet's roles) Interpret society's needs as positive to food producers (e.g. explain gov't/society expectations and help find solutions) 	<ul style="list-style-type: none"> Be politically savvy/know how to secure resources ETHICS (priority setting: people vs. animals vs. environment)
Private Practice	<ul style="list-style-type: none"> Connect with different communities globally 	<ul style="list-style-type: none"> Continually increasing global connection Clearly defined community involvement and leadership
Pet/Companion Animal Owners	<ul style="list-style-type: none"> Bio-security Public education THE animal advocate Unique value of veterinary education 	
Public Policy & Regulators	<ul style="list-style-type: none"> Advocate & inform policy making about public health issues Advocate veterinary medicine to the community and anyone who will listen Quality pet care to the community Spokesperson regarding zoonotic diseases Vets to report 'reportable' diseases – requires training and recertification 	<ul style="list-style-type: none"> Vets sitting on all public health (county) boards Vets sitting on all hospital boards Able to analyze & discuss what immediate test results mean. All disaster boards will have a DVM DVMs oversee & assess healthcare-at-home services, as many people will be treating their own animals Oversee what info on the Internet re: veterinary medicine (serve as overseer and regulator)
Agriculture and Food Animals	<ul style="list-style-type: none"> Local public health expert Communications – bilingual What is a food animal veterinarian? Better selling of ourselves Leadership (professionals that actually stay in rural community) Re-emphasis of epidemiology 	<ul style="list-style-type: none"> Veterinary schools training technicians for food animal work (paraprofessionals) Veterinarian will be the Public Health Doctor of the community Veterinarian adds economic value to the community
Research Community	<ul style="list-style-type: none"> Fundraising <ul style="list-style-type: none"> Research funding 	<ul style="list-style-type: none"> Communicating research needs & role in research

What Will Society Need from the Veterinary Profession (COMMUNITY REQUIREMENTS)		
Stakeholder Lens	Incremental (Small changes/3-5 years)	New World (Major changes/10+ years)
	<ul style="list-style-type: none"> ○ Communicating vet's role in research 	<ul style="list-style-type: none"> ▪ Be a role model ^ veterinary scientist
Veterinary Industries	<ul style="list-style-type: none"> ▪ Educate/communicate – community outreach ▪ Social responsibility ▪ Promote human-animal bond ▪ Media training ▪ Economic development role ▪ Civic engagement (city council, etc) ▪ Creativity training 	<ul style="list-style-type: none"> ▪ Fully integrated into public health

What Will Society Need from the Veterinary Profession (LEADERSHIP REQUIREMENTS)		
Stakeholder Lens	Incremental (Small changes/3-5 years)	New World (Major changes/10+ years)
Animal Welfare	<ul style="list-style-type: none"> ▪ Voice of authority on animal welfare ▪ Set global standards for DVM training to meet growing shortage of DVM skills ▪ Leadership on animal welfare in Animal Health Emergency Management system (AHM) (respected central authority coordinating fed/state/local) 	<ul style="list-style-type: none"> ▪ Voice of authority on animal welfare/continued leadership in AHM system ▪ Rapid & sustained responses through high-tech and some local components ▪ Local needs/access to global resources ▪ Leaders of large, specialized paraprofessional teams (domestic & global) to meet growing demand for DVM care due to growing animal population/huge paraprofessional & volunteer contingency
Environment and Conservation	<ul style="list-style-type: none"> ▪ Advocacy for environment and public good ▪ Work hard to maintain credibility & trust ▪ Act as bridge of understanding on animal/human/environment issues ▪ Understand corporate & regulatory affairs ▪ Be very proactive – will need to ACT 	<ul style="list-style-type: none"> ▪ Public education on animal/human/environment interface issues

What Will Society Need from the Veterinary Profession (LEADERSHIP REQUIREMENTS)		
Stakeholder Lens	Incremental (Small changes/3-5 years)	New World (Major changes/10+ years)
Private Practice	<ul style="list-style-type: none"> ▪ Provide LEADERSHIP on 'One Health'/be seen as a key player on these issues/collaborating ▪ Maintain high credibility within society ▪ Access outside sources for continuing education (e.g. cross-cultural skills) 	<ul style="list-style-type: none"> ▪ Veterinarians involved in the community
Pet/Companion Animal Owners	<ul style="list-style-type: none"> ▪ Leader in disaster preparedness & implementation ▪ Legal experts relative to animals ▪ Public health experts ▪ Animal advocates (all animal types) 	
Public Policy & Regulators	<ul style="list-style-type: none"> ▪ Critical thinking skills ▪ Advocate for veterinary medicine ▪ Leadership role in public health ▪ Veterinarians taking lead in wildlife issues & management ▪ Leaders on all animal welfare issues. Do not take back seat. Show that vets are qualified and essential ▪ Involved in every policy making decision that includes animals ▪ Sensitive to cultural differences ▪ Emotionally intelligent 	<ul style="list-style-type: none"> ▪ Providing vision & strategy for welfare of all animals ▪ Vets in public office (state & national) & high agency positions/recruit vets to pursue these positions ▪ Political skills, communication skills ▪ Multilingual/appreciation of other cultures & societies ▪ President of the U.S. – she is a vet ▪ Greater empathy towards other geopolitical entities
Agriculture and Food Animals	<ul style="list-style-type: none"> ▪ Active role in politics ▪ Public awareness of veterinary expertise (including media) ▪ Recognized animal welfare experts ▪ Leadership training included in veterinary curriculum ▪ Greater involvement in oceans and aquaculture 	<ul style="list-style-type: none"> ▪ Environment, welfare and health experts ▪ Gender equality & acceptance ▪ Define what is a food animal program ▪ Distance learning technology collaboration between schools (also a resource for practicing veterinarians) ▪ Presence in high governmental positions/decision making ^ 'One Health'
Research Community	<ul style="list-style-type: none"> ▪ Engaged in communication activities 	<ul style="list-style-type: none"> ▪ Global conservation expertise ▪ Serve as credible source of biological scientific information ▪ Protect and respect important life

What Will Society Need from the Veterinary Profession (LEADERSHIP REQUIREMENTS)		
Stakeholder Lens	Incremental (Small changes/3-5 years)	New World (Major changes/10+ years)
		moments (animals) <ul style="list-style-type: none"> ▪ Ecological approach to problem solving
Veterinary Industries	<ul style="list-style-type: none"> ▪ Community outreach ▪ Social responsibility ▪ Evidence-based policy development (H1N1, <i>E coli</i>) ▪ Management skills (planning, etc.) ▪ Creativity training ▪ Change management ▪ Political involvement 	<ul style="list-style-type: none"> ▪ Lead veterinary industries into integrated 'One Health' approach/eliminate stove pipes ▪ Veterinarian as US President/senators ▪ Leading interdisciplinary teams

What Will Society Need from the Veterinary Profession (OTHER REQUIREMENTS)		
Stakeholder Lens	Incremental (Small changes/3-5 years)	New World (Major changes/10+ years)
Animal Welfare	<ul style="list-style-type: none"> ▪ Standardized skills for veterinary medical communication (client, political, policy development) ▪ Multidisciplinary teams (approach to problems) 	<ul style="list-style-type: none"> ▪ Multidisciplinary teams (approach to problems) ▪ Use tech communications methods of 2030
Environment and Conservation	<ul style="list-style-type: none"> ▪ Communications ▪ Public relations abilities (broaden public understanding of vet's roles and value to society) ▪ Multilingual ▪ Listening skills ▪ Culturally aware ▪ Social marketing skills (animal/human/environmental issues) 	<ul style="list-style-type: none"> ▪ Social marketing skills (animal/human/env issues)
Private Practice	<ul style="list-style-type: none"> ▪ Spanish or other language ▪ Management – self and group practice (health systems) 	<ul style="list-style-type: none"> ▪ Even greater need for Spanish or other language ▪ CULTURAL UNDERSTANDING ▪ Strong communication skills ▪ Business managers – non DVMs?

What Will Society Need from the Veterinary Profession (OTHER REQUIREMENTS)		
Stakeholder Lens	Incremental (Small changes/3-5 years)	New World (Major changes/10+ years)
Pet/Companion Animal Owners	<ul style="list-style-type: none"> ▪ Information access point on vet medicine ▪ Interpersonal skills including English ▪ Scientific literature ▪ Spanish ▪ Animals' language (behavior) ▪ Expect to look like the community (reflect diversity) 	
Public Policy & Regulators	<ul style="list-style-type: none"> ▪ Negotiation skills ▪ Conflict avoidance ▪ Conflict resolution ▪ Vets have basic clinical skills to assess/treat any species ▪ Vets take more active role in regulating their own profession (impaired driving, suicide rates are high now). Be honest. ▪ Accountability & regulation of telemedicine 	<ul style="list-style-type: none"> ▪ Modify licensure including (but not limited to) limited licensure for defined scope of services, 'apprenticeships', post-grad pre-licensure, re-tooling, paraprofessional certifications for limited skill sets, other profession & limited vet skill sets, international licensing. ▪ New definition of client-patient-veterinarian relationship ▪ Much more vulnerable for liability because pet is more a family member ▪ Pet health insurance will increase demands for regulation
Agriculture and Food Animal	<ul style="list-style-type: none"> ▪ Multi-lingual (especially Spanish) ▪ Multi-cultural training (racial, ethics, religions) 	<ul style="list-style-type: none"> ▪ Change current 4-year pre-vet requirements to allow more specialization once entering veterinary school/allow 5-year vet program
Research Community	<ul style="list-style-type: none"> ▪ Create opportunities for students with aptitude 	<ul style="list-style-type: none"> ▪ Critical thinking and problem solving skills ▪ Communications skills
Veterinary Industries	<ul style="list-style-type: none"> ▪ Mirror society ▪ Cultural awareness <ul style="list-style-type: none"> ○ Globalization 	<ul style="list-style-type: none"> ▪ Global standards for VM education ▪ Virtual global VM education

Wild Card Event

Participants were asked to consider society's future needs from the profession if a wild card event occurred (e.g. a massive earthquake in California or a bioterrorist event in the New York subway system).

Each group presented their top three observations to the plenary. These are listed in the table below.

Societal Needs (responding to a Wild-Card Event)	
Scenario #1 (Earthquake)	Scenario #2 (Bio-terrorist attack)
<ul style="list-style-type: none"> ▪ Veterinary workforce must be trained in Emergency Response ▪ Veterinarians must be skilled in communication 	<ul style="list-style-type: none"> ▪ Discussion on veterinarians' role in emergency response/preparedness but no consensus ▪ Severe media attention – any statement goes public ▪ Vet hospitals used as human hospitals ▪ New surveillance technologies & animal ID ▪ Licensure issues – how to practice? Asked to treat humans and animals
<ul style="list-style-type: none"> ▪ Ability to deputize veterinarians; vets must be able comply & serve & carryout orders ▪ Be recognized as subject experts so we can play primary role at all times ▪ Must exploit advanced technologies (IT, molecular, health, communications) to provide the best services 	<ul style="list-style-type: none"> ▪ Poor funding/complacency reduce ability to respond ▪ Quick screening diagnostic tests for pets ▪ Create respected national authority working with all levels of government for animal health emergency management (AHEM) <ul style="list-style-type: none"> ○ Organized DVM response teams ○ Organized volunteer teams under AHE authority ○ Multi-disciplinary teams led by DVMs ▪ Get act together on jurisdictional/licensure/funding issues in advance ▪ Planning – have turf battles resolved/skills & resources lined up
<ul style="list-style-type: none"> ▪ Knowledge of, and implementation of, recovery programs ▪ Competence in proper training for early detection and diagnosis of FMD ▪ Must practice 'One Health' -- integrated collaborative practice at all levels (have not agreed on One Health definition) 	<ul style="list-style-type: none"> ▪ No education about large animal diseases or emerging disease could make veterinarians lose public respect ▪ Veterinarians expected to be leaders & organize the human & other resources available to manage disaster ▪ Dead animals – public health issues
<ul style="list-style-type: none"> ▪ Training in communications and conflict resolution 	<ul style="list-style-type: none"> ▪ Adaptability & flexibility are part of veterinarians ▪ First responder training – need grass roots capacity

<ul style="list-style-type: none"> ▪ Epidemiological training and skills to be able to direct policy on disaster containment ▪ Must have effective interpersonal skills 	<ul style="list-style-type: none"> ▪ Organize the euthanasia & disposal of cattle carcasses in efficient/safe/sound way ▪ Provide education entrepreneurial abilities (don draper)
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Breakout 2: Future Skills and Competencies – ‘Core’ or ‘Generic’

Breakout 2 asked participants to identify the ‘core’ or ‘generic’ skills and competencies that ALL practicing veterinarians would need to have in the next 5, 10 or 20 years. Groups were asked to consider the impact of ‘Incremental’ and ‘New World’ (more significant) changes on future skills and competency requirements.

Again, groups were assigned a ‘stakeholder’ lens through which to consider society’s and the veterinary profession’s future needs. Each group’s findings are summarized below.

Future Skills and Competencies – “Generic”		
	Incremental (Small changes)	New World (Major changes)
<p>Technical Lens</p> <p>Examples:</p> <p>Most important technical skills?</p> <p>Need to be technologically savvy??</p>	<ul style="list-style-type: none"> ▪ Need to know how to be an effective learner (this is a technical process) ▪ More teaching of principles, less teaching of techniques ▪ Difference between knowledge & skill (applied knowledge) ▪ Confidence & authority to deal with new situations ▪ Develop new business models to incorporate rapidly changing technology into practices ▪ How to use paraprofessionals ▪ Remote medicine ▪ Can’t teach it all/do it all – where is the cut-off? ▪ More breadth/less depth ▪ Core knowledge in <ul style="list-style-type: none"> ○ Animal welfare ○ Food production/safety/security ○ Emergency preparedness ▪ Comparative medicine ▪ Grounded in: <ul style="list-style-type: none"> ○ Literacy ○ Entrepreneurial skills 	<ul style="list-style-type: none"> ▪ Give vets 4 years of principles-based training then an internship with the technical training ▪ Use mentorship models ▪ Teach ‘systems’ thinking ▪ Ecology training ▪ Global awareness of animal health issues, politics and food systems ▪ Understand food chain/epidemiology ▪ Understand population health data ▪ Convergence with other medical training – ‘One Health’ ▪ Information technologies & informatics ▪ Database training ▪ Holistic medicine (integrative) ▪ Comparative medicine ▪ Management of information/technology ▪ Application/analysis (critical thinking)

Future Skills and Competencies – “Generic”		
	Incremental (Small changes)	New World (Major changes)
	<ul style="list-style-type: none"> ○ Data management ○ Statistics ○ Biostatistics ○ Physiology ○ Basic and applied epidemiology (clinical & population) ○ Skills to become a consultant ▪ Power of observation (e.g. recognition of normal animal/vs. abnormal) ▪ Thorough history/physical exam ▪ Analytical skills, evidence-based medicine, pulling data facts together & interpret results ▪ Math skills/literacy ▪ Basic financial literacy ▪ Problem solving (across the board: business, human resources, animal health) ▪ Organizational skills ▪ Accessing, evaluating & integrating information ▪ New technologies training ▪ How to use scientific search engines ▪ Understanding of basic research ▪ Short-term: how to bridge old vs. new technologies (e.g. paper vs. electronic systems) ▪ Technology skills & knowledge ▪ Alternative therapies ▪ Animal behavior/welfare ▪ Population-based medicine (shelters & feed lots) ▪ Working in interdisciplinary teams ▪ Cost of care ▪ Ability to develop and implement wellness programs (individual & herd) ▪ Understand economics of industry & communicate to stakeholders ▪ Individualized learning plans for students ▪ Superior curricular mapping 	<ul style="list-style-type: none"> ▪ Fluent in genomics ▪ Think broadly in ecosystems ▪ Understand medical interface of animal & human health issues (broad, not just a few entities) ▪ Problem solving/critical thinking (diagnostics etc) ▪ Computer generated diagnostics ▪ Global service delivery (patient & DVM in different countries) ▪ Knowledge of global health threats/medicine issues ▪ Animal behavior ▪ Better animal handling/examination ▪ Interactions with androids ▪ Stay informed on new technology (Lifelong Learning) ▪ Flexibility & vision ▪ Ability to ‘unlearn’ previous information/skills ▪ Understand biomedical technologies & nanotechnology ▪ Telemedicine ▪ Be at cutting edge of technology ▪ Basic understanding of food production & safety ▪ Increased problem-based learning ▪ Keyboarding/touch pads
<p>Communications Lens</p> <p>Examples:</p>	<ul style="list-style-type: none"> ▪ Speak larger language of health & wellness for humans and animals (e.g. alternative medicine) ▪ Ability to engender trust/inspire ▪ Be able to frame medical issues to 	<ul style="list-style-type: none"> ▪ Change in doctor/patient relationship – remote communication skills will be needed ▪ Cultural skills more important

Future Skills and Competencies – “Generic”		
	Incremental (Small changes)	New World (Major changes)
<p>Skills in what types of communications?</p> <p>Are team and client communication skills different?</p>	<p>clients</p> <ul style="list-style-type: none"> ▪ Technical communications skills (digital, virtual & traditional) ▪ Cultural skills ▪ Media relations/training at all levels ▪ Public speaking/presentation skills ▪ Interpersonal skills ▪ Mentoring skills ▪ Negotiating skills ▪ Multicultural & international communications skills ▪ Oral & written communications skills ▪ Emotional communications/empathy skills (e.g. sensitivity to handle euthanasia) ▪ Ability to address psycho-social needs of others ▪ Emergency communications skills ▪ Consultation skills ▪ Ability to communicate with phone order pharmacies ▪ Mandatory communications courses ▪ ‘Toastmasters’ for all ▪ Understand human psychology ▪ Pet loss/grief counseling ▪ Understand link between human abuse & pet abuse ▪ Client compliance skills ▪ Apply ethical reasoning ▪ Interface with allied professionals ▪ Listening skills ▪ Train students and faculty in: <ul style="list-style-type: none"> ○ Gender communication ○ Confidence ○ Body language ○ Reflective listening ○ Exam room skills ○ Teaching & learning ○ Behavior & personality profiles ○ Emotional Intelligence 	<p>than language skills</p> <ul style="list-style-type: none"> ▪ Communications with an ethical spin ▪ Conflict resolution with different philosophies ▪ Networking skills ▪ Team management/communication skills ▪ Diversity training ▪ Cross-cultural communications (domestic & global) ▪ Social media/technology skills (Face Bock 4.0) ▪ Able to evaluate pros and cons of new communications technologies
<p>Leadership Lens</p> <p>What leadership role in the future?</p> <p>What leadership skills will be needed?</p>	<ul style="list-style-type: none"> ▪ Professionalism, ethics ▪ Voice of animals (welfare & well-being/validated animal welfare assessments/ability to analyze & debate) ▪ All vets have MBA-like skills (management skills, small team 	<ul style="list-style-type: none"> ▪ Learn how to be leaders, not just technicians ▪ International fellowships & internships for students – role for AVMA to provide leadership/promotion/funding ▪ Vets are visible & vocal in public

Future Skills and Competencies – “Generic”		
	Incremental (Small changes)	New World (Major changes)
	leadership & utilization skills, multidisciplinary teams) <ul style="list-style-type: none"> ▪ Understand what motivates people ▪ Scholar/researcher/practitioner ▪ Jurisprudence training (know vets legal boundaries/where can act & not act) ^ greater confidence in leadership and public speaking situations ▪ Delegate to paraprofessionals some roles of DVM ▪ Crisis leadership skills ▪ Conflict resolution skills ▪ Conflict prevention skills ▪ Courage – decision making ▪ Incorporate EQ model into leadership training ▪ Mentorship ▪ Pride in the profession (respect their degree) ▪ Ready & able to be proactive leaders/advocates for the profession ▪ Understand & value community engagement ▪ Ability to build trust with others ▪ Civic knowledge/know how to influence political processes ▪ Self-knowledge skills (self-growth, self-aware, how to become confident) ▪ Team building skills (leadership & followership) ▪ Professionalism skills (morals, dress, speech, etc) ▪ Value professional involvement (organizational) ▪ Public service training ▪ Healthy coping behaviors ▪ Delegation skills ▪ Know when to refer ▪ Be pro-active sources of information ▪ Visionary ▪ Effectively and strategically network with allied industries 	eye/decision-making circles <ul style="list-style-type: none"> ▪ Vets in high leadership positions ▪ Vets on research boards (e.g. NIH) ▪ International trade/non-profit boards ▪ Know how to manage change ▪ Servant leader (leader at the service of public/others) ▪ Sensitive to culture/nationalities/diversity ▪ Visionary ▪ Better listening skills because we may meet electronically, not in person ▪ Embrace ‘One Health’ medicine (define & pursue)
Community Lens Examples:	<ul style="list-style-type: none"> ▪ Networking & collaboration skills (ability to build partnerships, community coalitions) 	<ul style="list-style-type: none"> ▪ Profitable business using sound business principles (e.g. working with paraprofessionals)

Future Skills and Competencies – “Generic”		
	Incremental (Small changes)	New World (Major changes)
What skills needed in a diverse community?	<ul style="list-style-type: none"> ▪ Profit isn't bad ▪ Pay paraprofessionals ▪ Leadership skills ▪ Civic and political involvement ▪ Instill a sense of service, but know this comes with a price (mayor, school board, joining boards). Debt loads may hinder. Teach self-confidence skills – know they can make a difference ▪ Credit at school for students to go into the community to give presentations ▪ Require/allow time/credit for students to engage in community service ▪ Crisis management skills – all veterinarians should be able to respond to a crisis ▪ Cultural competencies/awareness ▪ Understand how culture impacts business ▪ Skills to be leaders in all animal welfare issues – not to be the follower ▪ Broad teaching skills/abilities to teach others of varied backgrounds ▪ Shelter medicine/interact with welfare societies & organizations ▪ Understand knowledge & legal structure as applies to VM ▪ Cultural awareness regarding animals ▪ Appreciate multiple solutions to problems based on culture (national & international) 	<ul style="list-style-type: none"> ▪ Veterinary advocacy in the community ▪ Veterinary leaders at all levels of 'community' ▪ Skills to react to inevitable public health crisis (basic public health skills) <ul style="list-style-type: none"> ○ Environment ○ Toxicology ○ Zoonotic diseases ▪ Skills to train workforce on how to manage population medicine/herd health manage for all species ▪ Skills to teach others effectively (visually, auditory) ▪ Leaders in public health/'One Health' ▪ Vets are THE voice of animal welfare authority for emergency response/disaster ▪ Inter-community communications ▪ Managed care ? ▪ Apply unique technical knowledge for the advancement of human and environmental health ▪ Recognize that 'communities' are no longer limited by geography ▪ Maintain collegiality despite increased technology
Attitude Lens (Added by Breakout Group)	<ul style="list-style-type: none"> ▪ COMMITMENT to Lifelong Learning & developing new skill sets ▪ Vets as ambassadors/advocates for profession, animal welfare & animal-human-environmental health big picture (role for AVMA to promote) ▪ Teach to be less conservative ▪ Curiosity ▪ Asking questions ▪ Confidence to make own decisions ▪ MIND SHIFT: veterinarians don't 	<ul style="list-style-type: none"> ▪ Willingness to adapt to new technology ▪ Creativity, curiosity

Future Skills and Competencies – “Generic”		
	Incremental (Small changes)	New World (Major changes)
	have to do all the diagnosing/prescribing – transfer responsibilities to vet technicians <ul style="list-style-type: none"> ▪ Be EXTROVERTED ▪ Instill a sense of community responsibility 	

Breakout 3: Future Skills and Competencies – Discipline- specific

Breakout 3 asked participants to identify discipline-specific knowledge and skills that veterinarians would need to meet society’s changing needs and expectations over the next 20 years.

Each group’s main findings are presented in the table below.

Future Skills and Competencies – TECHNICAL REQUIREMENTS (Discipline-specific)			
Stakeholder Lens	New	More	Less
Equine	<ul style="list-style-type: none"> ▪ New business model – work/life balance ▪ Knowledge of global transportation ▪ Global diagnostic knowledge ▪ Diagnostic imagery ▪ New technical skills re: equine rehabilitation (all forms: post-op, neurological, muscular-skeletal, etc) ▪ Performance medicine ▪ More sophisticated lameness diagnostics ▪ Application of stem cell technology ▪ Genetic diagnostics & treatments ▪ Assisted reproductive 	<ul style="list-style-type: none"> ▪ Current diagnostic technology ▪ Equine behavior management (e.g. foal rejection)/diagnostics & treatments for specific behaviors ▪ Horse learning theory ▪ More advanced horse handling skills (chemical restraints, safety) ▪ More knowledge of toxicosis, horse environments ▪ More knowledge of horse nutrition ▪ More understanding of urban equine husbandry ▪ Less invasive services ▪ How to reduce 	<ul style="list-style-type: none"> ▪ Basic procedures ▪ Hands-on work ▪ Palpation techniques (replaced by ultrasound or other imaging technologies)

Future Skills and Competencies – TECHNICAL REQUIREMENTS (Discipline-specific)			
Stakeholder Lens	New	More	Less
	technologies <ul style="list-style-type: none"> ▪ New methods of assessing well-being (chips?) ▪ Remote services ▪ Skills for virus vaccination technologies ▪ Assessment of DNA for diagnostics 	confrontational management techniques	
Environment and Conservation * More veterinarians will need this knowledge & skills set	<ul style="list-style-type: none"> ▪ Need a different kind of person ▪ More flexibility in curriculum ▪ Legal & political awareness ▪ Legislation development (knowledge & skills) ▪ Disease transmission to humans (knowledge) ▪ Math/modeling skills ▪ Informatics ▪ Non-invasive data collection/sampling 	<ul style="list-style-type: none"> ▪ Disaster management training ▪ Non-mammalian physiology & anatomy ▪ Plant systems ▪ Specific eco-system management skills (landscape & biosphere conceptualization – this includes water) ▪ Population orientation ▪ Capture & restraint skills ▪ Anesthesia skills ▪ Pharmacology 	
Regulatory	<ul style="list-style-type: none"> ▪ Veterinary political science ▪ Distance learning skills ▪ Bioterrorism ▪ Surveillance/data analysis ▪ International laws/regulations/accreditation 	<ul style="list-style-type: none"> ▪ Zoonotic disease diagnostics ▪ State Practice Acts ▪ Business law ▪ Foreign animal disease diagnostics 	
Companion Animals	<ul style="list-style-type: none"> ▪ Veterinary forensics (animal CSI) ▪ Genetically engineered animals ▪ Genomics ▪ Robotic surgery ▪ Examine/treat remotely ▪ Ethics re: new technologies & emerging issues ▪ Remote diagnostics & treatment ▪ Non-surgical sterilization 	<ul style="list-style-type: none"> ▪ Behavior management for pets ▪ Foreign diseases & companion animal health ▪ Population management ▪ Physical exams ▪ Stem cell therapy ▪ Interventional radiology/minimally invasive surgery ▪ Business/entrepreneurial skills ▪ Advanced geriatrics ▪ End-of-life skills/hospice 	<ul style="list-style-type: none"> ▪ Basic technical skills

Future Skills and Competencies – TECHNICAL REQUIREMENTS (Discipline-specific)			
Stakeholder Lens	New	More	Less
Public Health	<ul style="list-style-type: none"> ▪ Global awareness training (e.g. water, food, human health) ▪ Animal assisted therapies (e.g. military, civilians) ▪ Food systems <ul style="list-style-type: none"> ○ Protection/defense ○ Sustainability/Eco development ▪ Disease – surveillance & control/action-based response ▪ Emergency preparedness & response ▪ Bioterrorism 	<ul style="list-style-type: none"> ▪ Study design skills ▪ Deeper analysis skills (paper, evaluation) ▪ Broad opportunities for public health careers ▪ Environmental health/conservation 	
Agriculture and Food Animal	<ul style="list-style-type: none"> ▪ New diagnostic & surveillance technologies ▪ Genetic engineering for whole animals ▪ Food safety monitoring ▪ Global inventory of animal IDs ▪ Novel vaccine technology & therapeutics 	<ul style="list-style-type: none"> ▪ Production techniques to increase animal efficiency ▪ Animal welfare ▪ Greater regulatory oversight ▪ Waste management ▪ Aquaculture ▪ Changes in feeding practices ▪ More intervention strategies for alternative production methods 	<ul style="list-style-type: none"> ▪ Emphasis on technical skills
Research/ Academia	<ul style="list-style-type: none"> ▪ Opportunity to get their feet wet in clinical research ▪ Learning styles & teaching methods ▪ Knowledge of academic culture ▪ Personal attributes: <ul style="list-style-type: none"> ○ Competitive skills ○ Patience skills ▪ Understanding what 'scholarship' means ▪ Students need basic understanding of all disciplines & areas ▪ Career awareness with exposure to academia & research ▪ Excellent general & 	<ul style="list-style-type: none"> ▪ Excellent ethics, high curiosity ▪ High integrity ▪ Highly creative ▪ High interdisciplinary team skills ▪ High capability to apply new technologies & discoveries ▪ Must be highly self-confident! 	

Future Skills and Competencies – TECHNICAL REQUIREMENTS (Discipline-specific)			
Stakeholder Lens	New	More	Less
	proposal writing skills		
Industry	<ul style="list-style-type: none"> ▪ Business acumen ▪ Continuous improvement process ▪ Understanding of regulatory agencies (EPA vs. USDA vs. FDA) 	<ul style="list-style-type: none"> ▪ Business acumen ▪ Problem solving (adaptability, transferability, applying experience to new problems) ▪ Seeking continuous improvement/lifelong learning ▪ Analytical thinking 	

Future Skills and Competencies – COMMUNICATIONS REQUIREMENTS (Discipline-specific)			
Stakeholder Lens	New	More	Less
Equine	<ul style="list-style-type: none"> ▪ More electronic communications ▪ New methods of communication as they become available 	<ul style="list-style-type: none"> ▪ Information/knowledge of ‘equine cultural intelligence’ (e.g. TB horse vs. Arab horse, overall equine-human bond) ▪ Consultation skills ▪ Wellness communication ▪ Team communications skills ▪ Communication networks skills ▪ Interdisciplinary equine health care teams (farmer, trainer, DVM, etc) 	
Environment and Conservation		<ul style="list-style-type: none"> ▪ Media skills ▪ Mediation skills ▪ Teaching skills 	
Regulatory		(No entries)	
Companion Animals	<ul style="list-style-type: none"> ▪ Client–driven communication models ▪ Media training 	<ul style="list-style-type: none"> ▪ Communications skills for faculty ▪ Training for communications practitioners/specialists ▪ How to be visible & vocal ▪ E-records ▪ Multicultural/multilingual competencies ▪ James Herriot model (common-sense, empathic doctor) 	

Future Skills and Competencies – COMMUNICATIONS REQUIREMENTS (Discipline-specific)			
		<ul style="list-style-type: none"> ▪ Breadth of knowledge re: controversial issues 	
Public Health	<ul style="list-style-type: none"> ▪ Single Overriding Communications Objective ▪ Competency in health education & promotion 	<ul style="list-style-type: none"> ▪ Ability to create a cogent presentation on a public health issue ▪ Media training 	
Agriculture and Food Animal	<ul style="list-style-type: none"> ▪ How to be a consultant ▪ Cultural understanding of production animals ▪ Discuss & debate animal welfare issues 	<ul style="list-style-type: none"> ▪ Quantification skills (math) & access to databases ▪ Reliance on paraprofessionals 	
Research/ Academia	<ul style="list-style-type: none"> ▪ Ability to communicate in scientific terms ▪ Communication skills (convey messages to the public) 	<ul style="list-style-type: none"> ▪ Interdisciplinary education ▪ Excellent oral communication skills ▪ Faculty are the mentors for students wanting to go into research/academia – faculty need the highest levels of leadership/communication/critical thinking skills and curiosity ▪ Expose students to role models 	
Industry	<ul style="list-style-type: none"> ▪ Public speaking skills 	<ul style="list-style-type: none"> ▪ Public speaking skills ▪ Acceptance of rejection ▪ Creating clear and concise written & verbal communications 	
Future Skills and Competencies – LEADERSHIP REQUIREMENTS (Discipline-specific)			
Stakeholder Lens	New	More	Less
Equine * Recruitment & retention		<ul style="list-style-type: none"> ▪ Mentorship/leadership for younger practitioners ▪ Mentorship skills for new grads to coach others ▪ Become recognized voice of authority on equine welfare ▪ Involvement in equine organized VM & industry 	

Future Skills and Competencies – COMMUNICATIONS REQUIREMENTS (Discipline-specific)			
		<ul style="list-style-type: none"> ▪ Leadership & public policy ▪ Equine research priorities 	
Environment and Conservation		<ul style="list-style-type: none"> ▪ Followership skills ▪ Ethical implications re: animal/environment/human prioritization & decision making ▪ Diplomacy, political activism/advocacy ▪ Conflict resolution skills 	
Regulatory	<ul style="list-style-type: none"> ▪ Systems thinking ▪ How to be a good citizen ▪ What's best for profession ▪ Proactive societal leaders ▪ Political skills ▪ Knowledge of the command system (HAZMAT – hazardous materials) ▪ Collaboration skills 	<ul style="list-style-type: none"> ▪ Professional & ethical behavior 	
Companion Animals	<ul style="list-style-type: none"> ▪ Pet trusts to cover care of animals/dead owners 	<ul style="list-style-type: none"> ▪ Animal law skills/knowledge ▪ Leadership of multidisciplinary teams (medical & non-medical) ▪ Political awareness & involvement at all levels, lobbying ▪ Business knowledge ▪ Knowledge re: pet health insurance ▪ Advocacy for geriatric owners 	
Public Health	<ul style="list-style-type: none"> ▪ Counseling opportunities ▪ Team participation & management ▪ Advocacy (multidisciplinary & broad) ▪ Mandatory externship 	<ul style="list-style-type: none"> ▪ Public policy 101-201 	

Future Skills and Competencies – COMMUNICATIONS REQUIREMENTS (Discipline-specific)			
	<ul style="list-style-type: none"> ▪ Public health professional coaching ▪ Transferability 		
Agriculture and Food Animal	<ul style="list-style-type: none"> ▪ Veterinary leadership in multinational food companies (tell why public is concerned) ▪ Veterinary leadership in industries served ▪ Leader for integrating science & production (e.g. water shortage) ▪ Broad certification by species (not subspecialty) 	<ul style="list-style-type: none"> ▪ Collaborative work – so small group gets bigger voice 	<ul style="list-style-type: none"> ▪ Use of medical & surgical specialties to organize food animal education
Research/Academia	<ul style="list-style-type: none"> ▪ Passion to be successful 	<ul style="list-style-type: none"> ▪ High team-building skills ▪ Team orientation ▪ Global economic & cultural exposure 	
Industry		<ul style="list-style-type: none"> ▪ Political savvy ▪ Personal accountability ▪ Collaborative team player ▪ Changeable entrepreneur ▪ Confidence 	

Future Skills and Competencies – COMMUNITY REQUIREMENTS (Discipline-specific)			
Stakeholder Lens	New	More	Less
Equine	<ul style="list-style-type: none"> ▪ Additional role in community engagement 	<ul style="list-style-type: none"> ▪ Advocacy on land-use & other public policy issues ▪ Authority on horses ▪ Outreach to youth ▪ Marketing of equine health issues ▪ Marketing of equine veterinary medicine 	

Future Skills and Competencies – COMMUNITY REQUIREMENTS (Discipline-specific)			
Stakeholder Lens	New	More	Less
Environment and Conservation		<ul style="list-style-type: none"> ▪ Ability to interact with many different communities (always an outsider in this field) ▪ Global cultural sensitivity & understanding 	
Regulatory	<ul style="list-style-type: none"> ▪ Why & how to get involved (e.g. horse slaughter issue) 		
Companion Animals		<ul style="list-style-type: none"> ▪ More education on pet population management & pet hoarding ▪ Involvement in public health ▪ Community service ▪ Raise awareness of companion animal/issues/welfare ▪ More pro bono work (e.g. for the homeless) ▪ Disaster response skills (leadership skills) 	<ul style="list-style-type: none"> ▪ Apathy
Public Health	<ul style="list-style-type: none"> ▪ Understanding communications outreach opportunities 		
Agriculture and Food Animal		<ul style="list-style-type: none"> ▪ Consumer influence on products ▪ Ag-rural interactions are changing ▪ Regulations/laws impact on production (land, water, waste management) ▪ Clinician with 	<ul style="list-style-type: none"> ▪ Become less reactive, more proactive

Future Skills and Competencies – COMMUNITY REQUIREMENTS (Discipline-specific)			
Stakeholder Lens	New	More	Less
		practice experience <ul style="list-style-type: none"> ▪ Faculty have 'real world' experiences periodically 	
Research/Academia		(No entries)	
Industry	<ul style="list-style-type: none"> ▪ Better understanding of corporate industry as a resource and/or career 	<ul style="list-style-type: none"> ▪ Involved in extracurricular activities ▪ Desire for broader input ▪ Awareness of cultural sensitivity ▪ Broad personal vision 	