Objectives - introduce:

- The NAVLE
- Background information on the profession
- Information for your career planning
- Systematic approach to comparative biology

To avoid mistakes, gain a good understanding of your potential career pathway now

Student mistakes:
- Attempting to master everything – “jack of all trades, master of none”
- Thinking they understand a practice type because of much experience on the client side
- Focusing on a passion that is better an avocation, triaging the rest
- Focusing on a vocation because of the $$$$$ but without the passion to invest the time required to achieve excellence
- Underestimating how high the bar is for being of value to important client groups
- Navigating via the rear view mirror, missing impending change for a practice type

Given that learning it all is impossible, what should you learn now and how well?

What should you:
- Know really well?
- Know “so so”?
- Just get past the test? (“Binge and purge”)
- Triage ("Forgitaboutit!")

The biggest licensing hurdle is the National Board Exam (NAVLE)

- Computer-based test in December of 4th year
- Managed by the National Board of Veterinary Medical Examiners [http://www.nbvmme.org/](http://www.nbvmme.org/)
  - Much here – pass rates by interest, by class rank, . . .
  - Practice tests!
- Includes a discussion board for questions
- Exam is regularly updated based on private practice

  - 2010 entry-level job analysis survey of practitioners
  - On-line list of core Activities and Diagnoses

NAVLE has 300 multiple choice questions across three coverage areas

Data gathering and interpretation: 140 (47%)
- 56 (19%): Do history, physical exam, and evaluate environment
- 42 (14%): Develop problem and differential diagnosis lists
- 42 (14%): Establish a working or final diagnosis

Health maintenance and problem management: 140 (47%)
- 56 (19%): Evaluate prevention, treatment, & management options
- 42 (14%): Implement action plan
- 42 (14%): Assess outcome

Professional behavior, communication, and practice management: 20 (7%)

93% WSU 2012 first attempt pass rate
NAVLE questions are distributed across 9 species

- ~10% include graphic images
- No. questions (% of test) per species:
  - 70 (23%) Canine (176 activities & diagnoses)
  - 68 (23%) Feline (115 activities & diagnoses)
  - 47 (16%) Equine (133 activities & diagnoses)
  - 45 (15%) Bovine (115 activities & diagnoses)
  - 17 (6%) Porcine
  - 12 (4%) Ovine / Caprine / Cervidae
  - 12 (4%) Other Small Animals / Wildlife
  - 10 (3%) Pet Birds
  - 10 (3%) Public Health and Food Security
  - 6 (2%) Poultry
  - 3 (1%) Non-species specific

100% correct, pass!

Remember this distribution when triaging!

You are building a professional knowledge base

Different components for:
1. Those in mixed practice
2. Those focusing on a practice type
3. All veterinarians must:
   - Fulfill social expectations
   - Survive veterinary school!

You are building a professional knowledge base

Dairy Focus Cow-calf Focus

Bovine Core Mixed Practice

All Species Core Social expectations of veterinarians

"Temporary survival" knowledge

Society expects veterinarians to have broader knowledge than just their practice focus

“That’s an animal and you’re a vet”
“How could this happen?”

- Who else can your clients expect an informed answer from?
- Responding “I’m not that kind of veterinarian” doesn’t work at all well

Veterinary-related issues triggering questions appear constantly in the media

Issues of current wide concern:
- “Swine flu” spreading at livestock fairs
- Antibiotic usage in CAFO’s
- Bagged salad recall due to Listeria
- West Nile virus cases spreading
- Salmonella in cantaloupes

Two excellent information sources:
- ProMed Mail [http://www.promedmail.org/]
- CidRap - [http://www.cidrap.umn.edu/cidrap/index]

Conversations beginning “By the way, what do you think about . . . ?”

Realize that fear of the unknown drives these questions

Anything in food perceived to threaten children is ZAPPED!

Public risk perception is not straightforward!

Which are the jackhammers and which are the cigarettes?

Emotional perception trumps rational science every time

http://www.sheknows.com/channels/parenting

What do your clients fear that they see as falling into your professional domain?
Part of public trust is that veterinarians are expected to act on the animal’s behalf

Society expects veterinarians to act:
1. **First** as independent agents for the animals
2. **Second** in their clients’ interests

When expectations aren’t met, that trust is broken, and somebody else fills the gap!

Follow your dreams -- but know where your dreams will lead you!
(Jeff Haden 4/26/11)

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Follow your dreams -- but know where your dreams will lead you!

(Jeff Haden 4/26/11)

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What annual gross practice income generation is required for $85,000 annual compensation?

“Fee setting: A look at margins” (ML Heinke, DVM News magazine 2/1/10)

- 8 hrs/day x 5 days/wk x 50 wks/yr = **2,000 hrs/yr** + 2 wk vacation
- Small animal gross practice income needed per DVM:
  - 4x salary to cover salary plus clinic overhead (overhead = 75% of gross practice income)
  - Need $340,000 annual gross practice income per veterinarian
  - If ~50% of time is billable => $340 per hour professional fee (not including lab fees, pharmaceuticals, . . .)
- Food animal practice gross = 2x salary to cover salary plus overhead, no clinic (overhead = 50% of gross practice income)
  - 2 x salary = $170,000, 50% billable time => $170 per hour professional fee

---

AVMA defines 7 private practice types

<table>
<thead>
<tr>
<th>Practice Type</th>
<th>Species mix by time spent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Animal excl</td>
<td>95% dairy, 5% beef</td>
</tr>
<tr>
<td>Food Animal pred</td>
<td>62% dairy, 24% beef, 5% horses, 4% dogs, 2% cats</td>
</tr>
<tr>
<td>Mixed</td>
<td>29% dogs, 17% cats, 15% bovine, 12% horses</td>
</tr>
<tr>
<td>Companion pred</td>
<td>52% dogs, 35% cats, 5% horses</td>
</tr>
<tr>
<td>Companion excl</td>
<td>60% dogs, 37% cats, 2% other, 1% birds</td>
</tr>
<tr>
<td>Equine</td>
<td>100% equine</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>

AVMA Report on Veterinary Compensation, 2011

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Average 2011 grad starting salaries, highest to lowest by AVMA practice type

<table>
<thead>
<tr>
<th>Employment Type</th>
<th>% New Graduates</th>
<th>Ave Compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Animal excl</td>
<td>2% (29)</td>
<td>$71,000</td>
</tr>
<tr>
<td>Companion excl</td>
<td>24% (368)</td>
<td>$70,000</td>
</tr>
<tr>
<td>Companion pred</td>
<td>5% (79)</td>
<td>$67,000</td>
</tr>
<tr>
<td>Food Animal pred</td>
<td>2% (30)</td>
<td>$66,000</td>
</tr>
<tr>
<td>Uniformed Services</td>
<td>2% (31)</td>
<td>$64,000</td>
</tr>
<tr>
<td>Mixed</td>
<td>9% (144)</td>
<td>$63,000</td>
</tr>
<tr>
<td>Equine</td>
<td>3% (38)</td>
<td>$43,000</td>
</tr>
<tr>
<td>Advanced Study</td>
<td>52% (799)</td>
<td>$29,000</td>
</tr>
</tbody>
</table>

JAVMA 239(7):953-7, 2011
• Employees cost an employer ~25% more than their gross salary (benefit contributions, taxes)
  – $66,000 salary => $88,000 employer cost
• Employees net ~75% of their gross salary
  – $66,000 salary => $49,500 net take home
• If student debt = first year salary (1:1), at 6.8% interest, 10 year payback, loan payments are:
  – 14% of salary
  – 18% of net take home

Applying some financial thumb rules:

<table>
<thead>
<tr>
<th>Practice Type</th>
<th>Owner Net Income</th>
<th>Associate Net Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Animal excl</td>
<td>$133,000</td>
<td>$79,000</td>
</tr>
<tr>
<td>Food Animal pred</td>
<td>$103,000</td>
<td>$73,000</td>
</tr>
<tr>
<td>Mixed</td>
<td>$103,000</td>
<td>$73,000</td>
</tr>
<tr>
<td>Companion pred</td>
<td>$109,000</td>
<td>$73,000</td>
</tr>
<tr>
<td>Companion excl</td>
<td>$139,000</td>
<td>$85,000</td>
</tr>
<tr>
<td>Equine</td>
<td>$109,000</td>
<td>$73,000</td>
</tr>
<tr>
<td>50th percentile Overall</td>
<td>$121,000</td>
<td>$85,000</td>
</tr>
<tr>
<td>90th percentile Overall</td>
<td>$345,468</td>
<td>$139,000</td>
</tr>
</tbody>
</table>

2009 practice owner vs. associate median income

The veterans who do the best economically are the paradigm-changing entrepreneurs

- Recapture an old market:
  – Old services delivered innovative ways
- Create a new market:
  – New value-added service solving clients’ problem
- (Asides):
  – Profession doesn’t sell itself well
  – Working harder longer doesn’t add much
  – Change is constant!

2009 public and corporate income by median

<table>
<thead>
<tr>
<th>Employer Type</th>
<th>Mean Income</th>
<th>Median Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry</td>
<td>$167,000</td>
<td>$148,000</td>
</tr>
<tr>
<td>State Government</td>
<td>$109,000</td>
<td>$106,000</td>
</tr>
<tr>
<td>Other</td>
<td>$113,000</td>
<td>$103,000</td>
</tr>
<tr>
<td>Academic</td>
<td>$112,000</td>
<td>$103,000</td>
</tr>
<tr>
<td>Federal Government</td>
<td>$112,000</td>
<td>$103,000</td>
</tr>
<tr>
<td>Military</td>
<td>$92,000</td>
<td>$85,000</td>
</tr>
<tr>
<td>Overall</td>
<td>$124,000</td>
<td>$109,000</td>
</tr>
</tbody>
</table>

The veterinarians who do the best economically are the paradigm-changing entrepreneurs

- Recapture an old market:
  – Old services delivered innovative ways
- Create a new market:
  – New value-added service solving clients’ problem
- (Asides):
  – Profession doesn’t sell itself well
  – Working harder longer doesn’t add much
  – Change is constant!

Estimating new grad 90th percentiles – 1 in 10 newgrads make more than this amount

<table>
<thead>
<tr>
<th>Employment Type</th>
<th>90th percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Animal excl</td>
<td>$&gt;91,000</td>
</tr>
<tr>
<td>Companion excl</td>
<td>$88,000</td>
</tr>
<tr>
<td>Companion pred</td>
<td>$88,000</td>
</tr>
<tr>
<td>Food Animal pred</td>
<td>$85,000</td>
</tr>
<tr>
<td>Uniformed Services</td>
<td>$81,000</td>
</tr>
<tr>
<td>Mixed</td>
<td>$77,000</td>
</tr>
<tr>
<td>Equine</td>
<td>$65,000</td>
</tr>
<tr>
<td>Advanced Study</td>
<td>$37,000</td>
</tr>
</tbody>
</table>

A common employer complaint is that new graduates are not “practice ready”

Insufficient hours to achieve that in the curriculum alone!

Solution – Actively engage in your education

- Identify those skills that will make you “practice ready” and set about learning them now
  - Prioritized lists in papers under “Expected New Graduate Competencies” in VM 568 Notes & Resources
- Deliberately practice these skills sufficiently to achieve “practice ready” performance

Deliberate “time on task” with repeated self-testing is key!
"Getting there from here"

- Join relevant professional organizations as a student member
  - Read their proceedings, go to their national meetings, scan their list serves
- Pay attention to "Practitioners of the Year" or their equivalent selected annually by the practitioner organizations
  - Their peers have identified them as outstanding in that area
- Identify several progressive practitioners doing well what you want to do where you want to do it
  - Go see what they do for a week and "pick their brain" for advice
- Practice "environmental surveillance"
  - Identify and regularly scan the trade journals and websites relevant to the clients of your practice segment
- If you have problems identifying the above, ask faculty clinicians

The more advice from more sources, the better

Management and nutrition are the root of many herd disease problems

- To correct these, you **must** understand the management system that caused them
- Particularly true when dealing with livestock-inexperienced people "returning to the land"

Prevention beats a cure every time

- Horses, small ruminants, camelids, beef cattle, dairy cattle
- Each species has their problems associated with **critical periods** in gestation, parturition, neonates, weaning, breeding and growing
Learn the reproductive cycle details

Start with your favorites species, learn the “nuts and bolts” of their reproductive cycle, and extend that template to other species.

Basic beef cow biology example

<table>
<thead>
<tr>
<th>Birth weight from heifers</th>
<th>70 lbs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth weight from cows</td>
<td>85 lbs</td>
</tr>
<tr>
<td>Weaning weight, steer at 7 months</td>
<td>525 lbs</td>
</tr>
<tr>
<td>Age @ puberty</td>
<td>14 months</td>
</tr>
<tr>
<td>Weight @ puberty - heifers</td>
<td>700 lbs</td>
</tr>
<tr>
<td>Weight @ puberty - bulls</td>
<td>1,100 lbs</td>
</tr>
</tbody>
</table>

Forage growth patterns determine grazing animal production cycle timing

Beef cycle matches up:
- Cow gestation period
- Pasture growth cycle
- Cow milk yield curve

Northern Intermountain Forage-based Feed Cycle

Feed is > 50% of farm operating costs

Typical production cycle with feed

Critical Nutrition Period: Late Gestation, Early Lactation and Breeding
Each livestock species has their critical periods and common diseases

- Pregnancy Testing
- Critical Nutrition Period
- Weaning
- Bovine Respiratory Disease
- Dystocia
- Calving Period
- Calf Scours
- Bulls Out
- Bulls In
- Breeding Soundness Exams
- Pregnancy Testing
- Trichomoniasis (sexually transmitted)

Feed Cycle

Calving Period

Weaning

Bulls Out

Bulls In

Critical Nutrition Period

Dystocia

Weaning

Bulls Out

Bulls In

Breeding Soundness Exams

Begin learning the common diseases and problems of the major species

- Lectures present a synopsis of these for each species
- Write these down!
- Read about these in the Merck Veterinary Manual
- Watch for these on barn rounds and out in the field

Keep it with you on and off campus, reading up on the things you run across

Identify current clinical literature through Cornell Consultant

Enter a diagnosis key word

Search by Diagnosis

Species: All
Diagnosis Keyword: West Nile
Search

3 Possible Diagnoses
West Nile virus encephalomyelitis in horses and sheep, flavivirus: zoonosis
West Nile virus, flavivirus, in birds: zoonosis
West Nile virus, flavivirus, in dogs

Click on a link –

The four Veterinary Clinics of North America are an excellent review series

Each issue has ~10-15 review papers by invited authors focused on a theme

3 issues per year
$113 student rate

6 issues per year
$134 student rate

3 issues per year
$117 student rate

3 issues per year
$97 student rate

Google “Veterinary Clinics of North America”
Is landing back home feasible?

Maybe

Lined up for Landing

Where is sufficient veterinary work?

Depends on:
- Practice interest
- Geographic location of those animals

Use the USDA Census of Agriculture to find livestock densities in desired counties

'07 results released in '09

Is there enough cow-calf work?

Yes

1 dot = 2,500 head

~33 million head of calved beef cows

2007 USDA Ag Census Publications

Enough horse work in this cow country?

Sparse

1 dot = 500 head

~4 million head of horses


Enough feedlot work to specialize in it?

Nope

1 dot = 5,000 head

~15 million head of feedlot cattle

2007 Ag Census Publications

Enough dairy work to develop that expertise?

Nope

1 dot = 2,000 calved cows

~9 million head of dairy cows

2007 Ag Census Publications
Enough sheep work?

![Map showing the distribution of sheep in the United States](image)

~3.5 million head of ewes > 1 yr of age

1 dot = 500 ewes

2007 Ag Census Publications

How much veterinary work does the average herd have done?

USDA National Animal Health Monitoring System

- Regular national surveys on health and health management of:
  - Cow-calf
  - Feedlot
  - Dairy
  - Equine
  - Goat
  - Sheep
  - Swine
  - Poultry

NAHMS Equine 2005 on-line reports:
- Baseline health and management (128 pg pdf)
- Industry changes 1998 – 2004 (76 pg pdf)
- Health management at events (75 pg pdf)
- 14 Info Sheets (2 to 4 pg pdfs)

Google “USDA NAHMS reports”

USDA NAHMS reports livestock owner health practices and disease problems

<table>
<thead>
<tr>
<th>Source of Vaccines</th>
<th>Size of Operation (Number of Equids)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Small (5 or less)</td>
</tr>
<tr>
<td>Veterinarian</td>
<td>77.6</td>
</tr>
<tr>
<td>Feed store or veterinary supply store</td>
<td>15.2</td>
</tr>
<tr>
<td>Catalog/Internet</td>
<td>5.6</td>
</tr>
<tr>
<td>Other</td>
<td>1.3</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

You can determine what is being done, how much of it is being done, who is doing it and unrealized opportunities (what isn’t be done that would be “value added” to clientele).

"Prediction is very difficult, especially about the future"

Who said this?

Niels Bohr, Danish physicist

not

Lawrence Peter “Yogi” Berra

Always verify your sources!