

1 **Dairy Emphasis:** (17)

2 **Response to specific e-mailed questions:**

3 1) **“Economic competency” (doing the right thing well enough and fast enough) in what 5 to 10 key**
4 **individual and herd clinical procedures make a new graduate most “practice-ready” and “value-**
5 **added” to both their client and their employer?**

6 **D17:**

- 7 • perform rectal palpations
- 8 • perform lda,rda,c-section
- 9 • demonstrate competencies in OB procedures including fetomies
- 10 • balance rations for dry, lactating and calf pens
- 11 • be able to diagnose repro and milk quality problems from dairy comp305
- 12 • be able to necropsy a mature dairy cow unassisted
- 13 • write treatment protocols for 10 major dairy cow diseases (metabolic and non-metabolic)

14 **D16:**

- 15 • Physical examination
- 16 • Pregnancy Diagnosis / Rectal Palpation
- 17 • Surgery Experience
 - 18 ○ DA
 - 19 ○ C-section
 - 20 ○ Hernia
 - 21 ○ Cancer eyes
- 22 • IV injections and blood draws (including calves)
- 23 • Fetotomies / Obstetrical procedures
- 24 • Necropsies - including calves
- 25 • Perform Blood Agar and mycoplasma cultures, incl. interpretation

26 **D15: (#1 and #2 combined)**

- 27 • Three things - A student who can do the following 3 things will be profitable to the dairy vet, and will
28 give their employer a relief from long hours and emergency duty, something worth more than the
29 time they bill:
 - 30 ○ Bangs vaccination and TB testing: very simple, basic skills that are billable that get a new
31 grad some quality time with clients by themselves.
 - 32 ○ Sick cow work/DA's: to recognize disease and write out a treatment plan. To know when to
33 operate and when to beef. To be able to do a DA surgery by yourself in 45 minutes (prep to
34 close) would be a good goal.
 - 35 ○ Calvings/Fetotomies/C-sections: The bench mark is, whatever you decide to do, get it done
36 within 90 min. Make the correct decision in the first 5 minutes: avoid, "let's try to pull it for a
37 while...that didn't work....let's try a fetotomy....couldn't get all the pieces...let's try a c-section.
38 If you really know the procedures, then you should know immediately which will be the most
39 effective way to go for that particular animal. Unfortunately for new grads, experience is the
40 greatest teacher.
- 41 • Palpation skills: 90% accuracy on days preg. Being accurate on day 1 is most important. Speed
42 develops over time. I have lots of patience waiting for the right answer, very little for "making it up"
43 answers. Palpation is the source of a Dairy vet's credibility (right or wrong), until you can do this,
44 very few doors will open for you (unless your services are "free").
- 45 • Semen testing: with feed prices rising, the old "just put in more bulls than you need to cover the bad
46 ones" doesn't pencil anymore (if it ever did). It doesn't take a sub-fertile bull many days on feed to
47 cover the cost of semen testing. Should be able to do 5-10/hour.

- Motivation to improve your practice: all the other stuff falls into this category. Until you are proficient at the traditional skills, there will be limited opportunity for you in consulting. You will get some credibility from the company you keep, but this window will close quickly if you are incompetent in the traditional areas. If you can get through vet school, it means you have the ability to be taught. Once out of school, you will have to listen and communicate with clients, and begin to teach yourself. However, motivation to improve your practice is not an excuse to be consumed by it.

D14: (these first three questions are interrelated so I will answer as one)

- a rectal palpation at over 50 per hour on open cows with 100% positive preg diagnosis over 40 dslh
- ability to perform LDA/RDA surgery in under 1 hour with 90% success
- understanding reproductive programs enough to converse and adapt
- ability to discern calving problems and make correct judgments
- ability to perform c section or fetotomy under 2 hrs
- ability to exam individual cows or necropsy and put together or rule out possible herdwide issues and pass that onto management
- treat individual animals for problems in a manner that can be shown and explained to owners and herdsman
- Know industry standards for all areas of the business such as milk price, feed price, animal costs, herd statistics such as for DC305 culling death rates
- understanding the operation of management programs such as dc 305 or DHIA Plus
- be aware of industry issues such as animal welfare, BSE, Johnes, CWT program, marketing(BST vs Organic)

D13:

- Able to diagnose pregnancy at 35 post insemination with palpation and ultrasound, ability to palpate for 4-5 hours.
 - It may be impossible to get the endurance factor in school as it requires daily repro exams.
- Obstetrics.
 - We do a lot of fetotomies, due to the economics of a C-section and the historically poor post surgical results. Most large dairies would prefer fetotomies but we do some C-sections.
- Employee training.
 - Be competent in all areas of the dairy so you can help train employees, i.e., milker schools, hospital milk barn training, sick cow training, calving schools. etc. To train employees in these areas you need to have a good "practical understanding" of these positions.
- Vaccination protocols. A lot of different companies have similar products. What is needed is a good understanding of what products are available, their efficacy, their economic viability and when they are needed.
- Surgery. Be able to cut a DA, repair an umbilical hernia or cut a C-section in a reasonable amount of time.
- Records analysis. This should be higher up on the list.

D12: (extracted from text)

- Palpation/Pregnancy Detection - pregnancy status and fetal age down to 35 days
- Surgery with economic assessment:
 - DA – LDA multiple techniques, RDA/RTA
 - C-section
 - Umbilical hernia surgery, enucleation, teat surgery, and laceration repair are also common
- Obstetrics: (crews are very adept at fixing problems on their own and large herd veterinarians are usually only called for worst-case situations)
 - Identify presentation and determine the appropriate method of correction and extraction, while maintaining the integrity and viability of the dam and fetus if alive
 - Fetotomy

- 1 • Computer Records Programs
- 2 o Working knowledge of DC305, DHI Plus, Dairy Quest, and Westfalia Dairy Plan
- 3 • Cattle Handling and Restraint and cow psychology:
- 4 o Comfortable around cattle to effectively, calmly, and quietly work them (know techniques of
- 5 people such as Bud Williams and Temple Grandin)
- 6 o Effective restraint techniques using ropes and halters
- 7 o Basic chemical restraint protocols
- 8 • Spanish language skills – enough said

9 **D11:**

- 10 • Surgery-DA's and C-Sections—Able to understand the economic implications of the intervention—
- 11 organized, sanitary with moderate speed.
- 12 • Rectal palpation—99% accuracy at 35 DCC
- 13 • Quality Milk Program-basic understanding of milking procedures, treatment protocols and records
- 14 monitoring compliance—able to communicate and motivate.
- 15 • Reproduction management of synch programs and understanding of input costs and benefits. Able
- 16 to view records for results and compliance.
- 17 • Interpersonal skills for assuring application of the science and compliance. Able to facilitate group
- 18 action planning sessions.
- 19 • Records analysis for programs like DC305 & DHI-Plus. More important to know the right questions,
- 20 they can learn how to discover the answers later.
- 21 • Young stock Management-Nutrition, housing and vaccination protocols.
- 22 • Forage production and management—basics of harvesting, storage and feed out.

23 **D10:**

- 24 • Rectal palpation
- 25 • Pregnancy diagnosis via ultrasound
- 26 • DA surgery
- 27 • Neonatal disease workup
- 28 • Obstetrics, this would include c-sections
- 29 • Routine processing, (i.e., brucellosis vaccinating, dehorning, etc.)
- 30 • Herd problem workup (mastitis, respiratory, abortion, etc.)
- 31 • Necropsy

32 **D9:**

- 33 • Computer records – Dairy Comp 305
- 34 • Personal skills, including ability to speak Spanish
- 35 • Analysis of reproductive issues
- 36 • Ability to advise on general production issues: vaccines, milking procedures, milking equipment
- 37 evaluation, fresh cow problems, bulk tank analysis
- 38 • Feeds and feeding including ration formulation
- 39 • Individual animal medicine includes surgical skill and trans-rectal palpation

40 **D8:** (combined 1 & 2)

- 41 • Pregnancy detection via rectal palpation.
- 42 As a dairy practitioner, this is the most commonly performed task. Clients expect proficiency
- 43 (100% expected, 95% reality). Without ultrasound, detection should be at 35 days post-service
- 44 (minimum) and with ultrasound 28-30 days post-service. Speed is difficult to quantify because
- 45 there are so many factors that determine speed: coral conditions, body condition of cattle,
- 46 weather, stage of pregnancy, administering injections, tail marking, etc. Most dairymen are
- 47 pretty understanding of speed, especially if you are doing a good job. A 100 cow herd check (no

1 heats, early pregs, big calf confirmations, etc with the vet tail marking and giving injections)
2 should be completed in 2 to 2 ½ hours.

- 3 • Pregnancy detection with ultrasonography.

4 I believe it is important that dairy veterinarians be able to perform all palpation tasks
5 competently without an ultrasound. There will always be situations when the ultrasound will not
6 be available (malfunction, battery running out during herd check, etc). However, having the
7 ability to competently use ultrasound is important. For me, as a new veterinarian I palpated
8 everything, then on open cows double checked with the ultrasound. I did this for the first few
9 months to improve my accuracy. I still use the ultrasound to double-check pyos, dry cow
10 confirms that don't feel right and difficult/straining cows.

- 11 • Dystocias.

12 New graduates are expected to be able to deliver or "solve" any dystocia presented to them.
13 This includes being competent with manual manipulations, fetotomies, uterine torsions,
14 caesarean sections (and anything else I forgot). For benchmarks, I think the ability to remove
15 the calf without injuring the cow is the goal. Time is not that important at first as long as the
16 outcome is positive and the dairyman is charged by procedure and not hourly rate.

- 17 • Sick cow diagnosis and treatments.

18 Upon physical examination, graduates should be able to diagnosis and prescribe legal, practical
19 and successful treatments.

- 20 • DA diagnosis and treatment.

21 Accurately diagnosing and being able to correct DA's is important. Some dairymen prefer
22 surgery (vets choice to technique) and some like roll and toggles. I think it is important to be
23 able to do both and offer both techniques and be able to explain the pros and cons of each to
24 the dairymen. Surgery should be completed within an hour, roll and toggle 15-30 minutes.

- 25 • Brucella vaccinate, tag and tattoo

26 It is important to be able to administer brucella vaccine, apply a readable tattoo and a tag that
27 will stay in the ear (without any warts). A reasonable rate of 50-75 calves per hour when in lock-
28 ups.

- 29 • General: administer vaccinations, injections and treatments SQ, IM, IV and general cow handling
30 skills.

31 Benchmarks: know how to give all injections types without causing pain/ damage (abscesses,
32 etc) to animal. Be able to work cattle without upsetting them, or causing injury to animal or
33 human.

34 **D7:**

- 35 • Physical Exam - able to detect abnormal uterus, mammary gland, GI, Lungs ...
- 36 • Palpation – able to detect and age pregnancy
- 37 • Ultrasound – detection of pregnancy past 28 days, detection of abnormal uterus- metritis
- 38 • Communication – able to provide options and discuss solutions to issues without sounding arrogant
39 or undereducated –
- 40 • Pharmacy knowledge – understand the biology of pharmaceuticals and how they impact cow health,
41 the farm economics and the public health
- 42 • Basic nutrition – with an emphasis on how cows or other large animals are fed and what is normal
43 feeding practice – they don't need to know how to balance a ration
- 44 • Obstetrics – experience and thought as to how to provide a safe, healthy and economic outcome to
45 problem birth.
- 46 • Surgery – Experience with different LDA procedures, the process of a C section, Claw amputation,

47 **D6:**

- 48 • Palpation of pregnancy and ovarian structures
- 49 • Reproductive ultrasonography
- 50 • Thorough physical exam
- 51 • LDA surgery

- 1 • Management of dystocia
- 2 • fetotomy
- 3 • C-section
- 4 • Placement of IV catheter
- 5 **D2:** combined with previous (phone call)
- 6 Critical skills - Initially ability will be judged by producer and new employer by:
- 7 • Palpation skills – be able to accurately palpate a 42 day pregnancy accurately at a rate of at least
- 8 30 per hour.
- 9 • Ultrasound skills – I do not care for any ultrasound skills UNTIL new graduate is proficient in
- 10 palpation skills FIRST. Have seen new grad unable to palpate because they were only taught
- 11 ultrasound which is not economically and practical in commercial large scale dairy operations.
- 12 • Obstetric skills –
- 13 ○ Have been taught a systemic approach to dystocia and a complete knowledge of normal
- 14 parturition.
- 15 ○ Know how to properly administer an Epidural within 30 sec.
- 16 ○ Knowledge of all OB instruments with uses and limitations. (Many new grads don't know OB
- 17 equipment and how to use it).
- 18 ○ Knowledge of fetotomy procedures with indications, methods, and limitations.
- 19 ○ Knowledge of C-Sections with indications, methods, and limitations.
- 20 • Basic Surgical Skills
- 21 ○ Knowledge of all surgical instruments, names and indications for use. (Basic surgical
- 22 equipment handling)
- 23 ○ Ability to correctly attach suture needle to suture material
- 24 ○ Proficient in all surgical knots and suture size selection
- 25 ○ (Basic suture patterns and manipulation – sponge board practice)
- 26 ■ Everting, inverting, interlocking, Connel, Cushing, Utrecht
- 27 ○ Approaches and some experience in specific procedures: LDA & RDA; eye enucleation;
- 28 bleeder control; basic teat procedures; c-sections.
- 29 • Physical exam proficiency
- 30 • (Basic sick cow work)
- 31 ○ LDA, RDA diagnosis and treatment
- 32 ○ Hardware
- 33 ○ GI diagnoses and management

34 **D1:**

35 When I joined the mixed animal practice after my internship immediately I was expected to know and

36 perform well:

- 37 • Palpations (fresh cows, early preg (>40 days), and confirms(>150 days) as well as bull bred
- 38 (guessing the days))
- 39 • DA surgeries and toggles
- 40 • C-sections
- 41 • Uterine prolapses
- 42 • OB cases (including uterine torsions)
- 43 • Treating cows with diarrhea, pneumonia, mastitis, metritis, lameness, milk fever, ketosis, retained
- 44 placenta, etc.

45 **2) What are the minimum performance benchmarks for these?**

46 **D17:**

- rectal palpations: 40 hd/hr with 99% specificity on open cows and 96% accuracy on conception dates (i.e. the cow calves on the cycle or date given)
- Ida's, rda's, c-sections: 75% 12 month survival
- ob's: full fetotomy in less than 2.5 hrs
- Necropsies: <1 hr

D16

- Physical exams - Diagnose with reasonable accuracy which systems are experiencing problems (RUMMBA) in less than 15 minutes. Primarily without clin path support.
- Pregnancy Diagnosis - Greater than 90% accuracy at diagnosing greater than 40 day pregnancies at a rate of more than thirty cows per hour. (Speed not that critical)
- Surgery:
 - DA - Perform solo in less than 1.25 hours. Truck to truck
 - C- Section - Be comfortable performing, speed not initially critical.
 - Hernia - Be comfortable with procedure should be less than 1.25 hrs.
 - Cancer eye – enucleation - Experienced, less than 1 hour
- IV injections - Less than 5 minutes to hit jugular vein.
- Blood draws - 10 calves in less than 30 minutes.
- Fetotomy - Full 5 cuts in less than 2 hours, know the procedure well
- Necropsy:
 - Less than 45 minutes on cows.
 - Less than 30 minutes on calves.
- Read Blood Agar and Mycoplasma cultures
 - Greater than 80% accuracy at Genus diagnosis from colony morphology.
 - Greater than 60 BA cultures per hour.
 - Greater than 150 myco cultures per hour

D15: (see above)

D14: (these first three questions are interrelated so I will answer as one – see above)

D13:

To be honest most of these benchmarks would be hard to reach in school. We have been trying for two years to hire someone as are all the practices within 200 miles. I think the new grads need as much experience and exposure as possible. But when it comes right down to it the clients we deal with are very large (2,500-10,000 milking cow dairies) and are multi million dollar operations. What we need is someone who has a good knowledge, is a very hard worker, is capable of working around the cows safely and is able to communicate with the client. We had a 4th year student riding with us that had all experience in the world and yet still put himself in very life threatening situations behind the cows, was not very warm with the clients and his communication skills were minimal. None of our clients are going to trust a new grad right out of school regardless of experience so they need time to get the training wheels on. Our clients trust us to find and train them. What we need is individuals that have the book knowledge, are hard working, have a strong desire and interest and we will get them the rest of the way. Any extra experience is a plus. I don't think you need to kill yourself getting better ag grads. What is needed is getting more ag animal vets to enroll in vet school. But we can't even find individuals with the minimal qualifications right now. I think there are 15 jobs for every new grad out there.

D12: (extracted from text)

- Palpation/Pregnancy Detection - arrive at a diagnosis within one minute
- Surgery - uncomplicated LDA surgery from “truck to truck” within one hour

D11: (see response above)

D10:

- Palpate competently 50 cows/hr in lockups and 30/hr in barn

- 1 • Know the procedure for ultrasound and be comfortable with the view of structures on the screen.
2 Developing the ability to sex embryos would come with practice experience.
- 3 • DA surgery skin to skin in about 45 minutes with min 90% success rate
- 4 • Know the common neonatal diseases and be able to do necessary testing that would provide the
5 most value to the client.
- 6 • Be able to diagnose fetal malpresentations quickly and make the decision for c-section earlier rather
7 than later as this greatly influences surgery success. C- section in 60-90 minutes. Breed back in
8 Holsteins post c-section I've decided is a crap shoot, so I wouldn't put any benchmark percentages
9 there.
- 10 • Routine processing vaccinating alone--20-40 calves/hr (highly dependent on facilities)
- 11 • Vaccinating in combo w/ dehorning-- 10-15 calves/hr (includes pulling arteries, but may not include
12 blocking)
- 13 • Able to initiate a herd workup plan and implement in an economic manner
- 14 • Perform necropsy on animal, collecting required samples in under an hour

15 **D9:**

- 16 • Computer records:
17 Be able to effectively navigate the “bredsum” and “econ” commands. Other programs aren’t
18 even worth mentioning, a monkey can figure them out in minutes. Analysis of the dairy’s
19 situation by the others including DHI are inadequate. Every student should participate in
20 Minnesota’s DC-305 course
- 21 • Personal skills:
22 Clients don’t care what you know until they know you care. Levels one and two of Rosetta
23 Stone CD-ROM
- 24 • Reproductive issue analysis:
25 Until the practitioner has looked at the Dairy Comp, and asked all of the farm’s workers, he
26 probably won’t be able to figure what is causing the problems with infertility. This area has been
27 controlled by the veterinarian for a long time, this is expected to be our specialty, lets keep it
28 that way.
- 29 • Advice on general procedures:
30 Students need to spend at least a month, as an employee on a progressive dairy, in order to
31 start to be able to form opinions that will matter to a client. Dr. Wayne Ayers has started an
32 IBVEP that is just the type of thing that these students need. Milking procedures, obstetrical
33 procedures, feeding procedures are taught very well by Wisconsin and Minnesota CVM on
34 clinical rotations, WSU needs to imitate or send the students.
- 35 • Feeds and feeding:
36 Once practitioners graduate it is very difficult to gain sufficient knowledge in this area. Students
37 should be able to create a ration that is found on a dairy, and not in a lab. I’m not sure what is
38 needed to accomplish this, I’m still trying to gain this knowledge.
- 39 • Individual animal skills:
40 Least important of all of them, I’m not sure that this knowledge will be necessary five years from
41 now. Surgical skills are addressed in small animal and they do a really good job of teaching
42 them. Key to trans-rectal palpation is stamina, students cannot develop this in school. This skill
43 should be de-emphasized and students should be discouraged from wasting time trying to
44 accomplish this in school. We can give them all they need to know in the first 14 days of
45 practice. This is the biggest problem that I see as a practitioner, students are so focused on this
46 skill that they are handicapping themselves and cannot see it. Lets spend time on the other
47 skills, these are all taught in a small amount of time once employment begins.

48 **D8:** (see response above)

49 **D7:**

50 My thoughts on minimums:

- 51 • Physical exam – 6 cows per hour

- 1 • Palpation – 40 cows per hour >95% accuracy
- 2 • Ultrasound – 30 cows per hour > 95% accuracy
- 3 • Communication - ?
- 4 • Pharmacy knowledge – dosage and withdrawal on penicillin, ceftiofur, flunixin, aspirin,
- 5 hyperonic saline, Ca P IV preparations, dextrose, tetracycline, sulfa dexamethasone
- 6 • Nutrition – can perform a Penn State Shaker Box test in 15 minutes, Can identify common
- 7 feedstuffs
- 8 • Obstetrics – person knows the normal process of parturition and when to intervene, knowledge of
- 9 fetal positions,
- 10 • Surgery – can perform a LDA with one procedure in 90 minutes, can perform a C section in 120
- 11 minutes

12 **D6:**

- 13 • 95% accuracy on pregnancy diagnosis by palpation at 35 days, aging of fetus to within 5 days
- 14 between 35 and 90 days and to within 1 month between 3-9 months while palpating at least 50
- 15 cows per hour. Identification of follicular cysts, follicles and CL's.
- 16 • 95% accuracy on pregnancy diagnosis by ultrasound at 28 days and able to confirm presence of
- 17 fetal heartbeat on fetus between 30 and 75 days while scanning at least 50 cows per hour. Accurate
- 18 identification of ovarian structures.
- 19 • Able to perform a thorough physical exam and explain disease process and rational treatment plan
- 20 to owner/herdsman. Must be able to identify LDA, RDA, hypocalcemia, dehydration, metritis,
- 21 pneumonia, ketosis, traumatic reticulo-peritonitis, Johnes disease
- 22 • Able to perform LDA surgery with proper sterile technique with 1.5 hrs by at least 1 approach.
- 23 Knowledge of all surgical approaches to LDA correction.
- 24 • Able to identify and correct abnormal presentations, identify when fetal extraction will injury dam and
- 25 C-section or fetotomy is indicated
- 26 • Knowledge of cuts needed and able to perform fetotomy
- 27 • Able to perform uncomplicated C-section within 2 hours with survival of dam
- 28 • Able to prep and place IV catheter on dehydrated neonatal calf and begin fluid administration within
- 29 1 hour

30 **D2:**

31 Be able to perform with Accuracy and reasonable speed.

- 32 • Palpation 30 per hour minimum with sizing of pregnancy to at least 42 days
- 33 • Dystocia – 2 hours max
- 34 • C-section – 2.5 hours max with utilization of a peritoneal lavage. SUCCESS DETERMINED BY
- 35 ABILITY OF COW TO ENTER HERD AND MILK NOT BREED (WILL BREED IF WILL MILK 1ST)
- 36 • Eye enucleation – 1 hour max

37 **3) “Economic competency” (rapid, efficient, minimum cost approach yielding practical results) in**
 38 **working up and making herd-specific recommendations for what 5 to 10 herd problems make the**
 39 **new graduate most “value-added”?**

40 **D17:**

- 41 • low production (i.e. low peak milk or poor persistency)
- 42 • poor reproductive performance
- 43 • acidosis and/or high incidence of lda's
- 44 • lameness
- 45 • mastitis
- 46 • high calfhood mortality <14 days, 14-60, or >60 days

47 **D16:**

- 48 • Mastitis rate / high Somatic Cell Count

- 1 • Calf Scours - Including colostrum management
- 2 • Bovine Respiratory Disease - Including immunology and vaccinology
- 3 • Low Pregnancy Rate - Heat detection rate and/or conception rate
- 4 • Low Milk Production
- 5 • Fresh cow disorders/removal
 - 6 ○ DAs
 - 7 ○ Milk Fever
 - 8 ○ Retained placenta / metritis
- 9 • Rumen Acidosis
- 10 • High Dead On Arrival (DOA) rate

11 **D15:**

- 12 • Calf barn mortality/morbidity
- 13 • Transition cow problems
- 14 • Ration troubleshooting
- 15 • Lameness
- 16 • Mastitis
- 17 • Dairy Employee Training
- 18 • Poor Reproduction
- 19 • Poor Production
- 20 • Posilac Rehab Therapist

21 **D14:** (these first three questions are interrelated so I will answer as one – see above)

22 In dairy practice reproductive issues are the backbone and groundbreaking issues. They allow a newbie
 23 to interact and gain the trust to be asked the other questions that lead to consulting roles. Even if they
 24 are more versed in knowledge that us seasoned practitioners have, they have not built up the bond of
 25 trust yet to have herd issues placed in their hands. Having the knowledge when that window of
 26 opportunity arises is important as is the ability to understand how the industry works. Training herdsman
 27 with every call (and learning from their experience) will lead them to trust you, which will translate to
 28 them providing that feedback to the owners/managers.

29 **D13:**

- 30 • Reproduction programs and Records analysis
 - 31 ○ This is a constant changing thing with timed AI programs constantly being tweaked and
 - 32 every herd's management being different.
- 33 • Evaluating cull rates and finding ways to keep more cows longer
- 34 • Vaccination programs, how to manage and to prevent disease and save the client money
- 35 • Calf ranch management (see all three above)
- 36 • Fresh cow programs because this is where cull rates are the highest, probably more appropriately
 37 called Transition cow programs.

38 **D12:** (extracted from text)

- 39 • Whole herd problem diagnosis of:
 - 40 ○ DA incidence
 - 41 ○ increased milk fever incidence
 - 42 ○ increased retained placenta/metritis incidence
 - 43 ○ milk fat depression
 - 44 ○ milk yield drops
 - 45 ○ clinical/subclinical acidosis or ketosis
 - 46 ○ abortion storms
 - 47 ○ pneumonia outbreaks

- 1 ○ lameness problems
- 2 ○ dry matter intake depression
- 3 ○ decreased fertility/pregnancy rates
- 4 ○ mastitis problems (environmental and contagious)
- 5 • Common areas needing improvement on farms (or opportunities to make a living without palpating
- 6 all day)
- 7 ○ Reproduction: students should have impeccable knowledge of:
 - 8 ▪ the reproductive cycle
 - 9 ▪ common programs (e.g. OvSynch) used to manipulate it and problems not limited to
 - 10 the cow's physiology that can affect reproduction.
- 11 ○ Cow Comfort - knowledge of facilities design and upkeep and cow psychology to improve
- 12 cow comfort.
- 13 ○ Heat abatement strategies.
- 14 ○ Employee training and monitoring of protocols - Spanish language skills are invaluable for
- 15 teaching and gaining rapport with the employees.
- 16 ○ Milk Quality – can include everything from microbiology labs to milker training to protocol
- 17 development to facilities evaluation—endless opportunities
- 18 • Vaccination Protocols:
 - 19 ○ Dr. Evermann has a good philosophy that will serve new grads well in getting started.
 - 20 ○ Know what we want to vaccinate for (what are the typical problems we want to avoid and/or
 - 21 what are the problems specific to the farm?) and what type of immunity is required for the
 - 22 problem/bug in question

23 **D11:**

- 24 • DA Surgery
- 25 • Adding cows
- 26 • Improving conception rate and pregnancy rate
- 27 • Cost of high SCC
- 28 • Heifer rearing costs and age at first calving
- 29 • Dr. Dave Galligan and Dr. John Fetrow have been developing partial budgets for years. Students
- 30 need to be exposed to the best, learn from this core information and begin to develop their own
- 31 partial budgets to answer specific questions. Dr. Galligan is using a program called Dashboard to
- 32 communicate the results of some very sophisticated spreadsheets.

33 **D10:**

- 34 • High DA rate
- 35 • High bulk tank somatic cell count
- 36 • High neonatal morbidity/mortality
- 37 • Low conception rate
- 38 • High lameness rate

39 **D9:**

- 40 • Reproductive Issues, “why can’t we get these cows pregnant”
- 41 • Transition Cow Disease Prevention, this includes cow comfort
- 42 • Mastitis Problem Investigation, this includes milk machine maintenance
- 43 • Ration formulation and feeds acquisition
- 44 • Lameness scoring and evaluation

45 **D8:**

- 46 • Vaccine protocols for the entire herd: newborns, calves, heifers and adult cattle for reproductive
- 47 disease, respiratory, mastitis and possibly salmonella and newborn diarrhea.
- 48 • Reproduction protocols:

1 pre-synch, DIM for 1st service, ovsynch, cidrsynch, etc.

- 2 • Records analyses:
 - 3 ○ Reproductive parameters: PR, CR, etc
 - 4 ○ Milk production: by string, by lactation, etc
 - 5 ○ Sick cow rates, culling rates, abortion rate, etc
- 6 • Mastitis management and treatment protocols

7 **D7:**

- 8 • Reproduction – monitoring and instruction on the management of the following
 - 9 ○ Palpation and U/S skills to a level which enable further recommendations to be made –
 - 10 beyond pregnant or open
 - 11 ○ Bull Breeding -
 - 12 ○ Heat Sync. Programs
 - 13 ○ AI timing and Heat detection
- 14 • Mastitis
 - 15 ○ Fresh cow culture evaluation and treatment/prevention program
 - 16 ○ Bulk Tank culture evaluation
 - 17 ○ Instruction and evaluation on milking time procedures
- 18 • Fresh cow treatment and Evaluation
 - 19 ○ Examination and implementation of programs to keep fresh cows healthy
- 20 • Nutrition
 - 21 ○ Feed bunk evaluation – to be able to detect the difference between good feed provision and
 - 22 poor feed provision to animals
 - 23 ○ Urine pH knowledge – to be able to make diet recommendation based on urine pH of close
 - 24 up cows
 - 25 ○ Rumen pH – to be able to decide if SARA or clinical acidosis is and issue

26 **D6:**

- 27 • Calf scours outbreak or chronically high calf scours incidence
- 28 • High herd LDA incidence
- 29 • High incidence of metritis in fresh cows
- 30 • Chronically high calf pneumonia incidence or calf pneumonia outbreak
- 31 • Variable manure consistency and poor performance in milk cows

32 **D2:**

33 Overtaught in schools. New Grad MUST be able to perform routine procedures confidently and with
34 competency in a reasonable timeframe or will NEVER be allowed to progress to the next level by
35 producer.

36 **D1:**

- 37 • Because of my training [MS in ruminant nutrition – JMG] I helped a little with nutrition as well, but I
38 don't think that would make my top ten list of skills to be good at. A little understanding I feel is
39 sufficient for a new grad.
- 40 • An area that I needed to be good at and it was something that I felt very inadequate about was
41 calves
- 42 • I put prevention at the top of the list. That includes vaccination programs (type of vaccine and
43 timing) for cows, calves and feedlot heifers, colostrum management, transition cow management,
44 cow comfort and movement.

45 **4) What specific experiences outside the traditional on-campus curriculum and for how long would**
46 **maximize the “practice readiness” of new graduates? Where and how can students best obtain**
47 **these?**

48 **D17:**

1 Ride with a dairy vet and:

- 2 • palpate 200-400 cows per day for 20 days (4,000 to 8,000 cows)
- 3 • do 5 supervised (and hopefully un-assisted) Ida's and 2 c-sections

4 **D16:**

- 5 • Milk Quality Workshop - 2 weeks min., 4 weeks better with private practices specializing or
- 6 university such as Cornell's Summer Dairy Institute.
- 7 • Nutrition workshops
 - 8 ○ 2 weeks min, either with private practices or university
 - 9 ○ Examples; Van Saun – Penn State, Grummer- U Wisc.
- 10 • Calving Block - 2 weeks, U Minnesota Transition Management Facility or large dairy
- 11 • Fresh cow treatment crew on large 3000 + cow dairy - 2 weeks
- 12 • Palpation "time" - With private practices 6-8 weeks (including preceptor)

13 **D15**

14 Working on large (5000+ cows) farms, WITH the hired labor would be the best. Spend two weeks in the
15 maternity pen, the milk barn, the calf barn, with the breeders, with the hospital crew, etc. Do the same
16 rotation on a couple of different operations and see how one size does not fit all. Vet school does a
17 good job of demonstrating disease, but a poor job of "normal" repetition. I have heard good things about
18 the Cornell summer Dairy Institute (would recommend going into Junior year) and we sent one
19 employee to Dr. Shearer's course for a month. Lastly, preg check every chance you get, and appreciate
20 each different vet's communication style.

21 **D14:**

- 22 • Farm experience is essential - learning how to operate around cows and employees. I would
23 recommend for all non-farm raised vets.
- 24 • Attending AABP, the workshops more so than the general meeting - much more intense and
25 meaningful

26 **D13:**

27 Students entering dairy practice need to spend at least 2 months on a private dairy working for two
28 weeks in each area - Calving, Calf ranch, Milker, Hospital barn, Hospital worker, Breeder, etc. As
29 palpation goes away from the Dairy vet because we can not supply the vets, a consultant role will
30 replace it and then it will be essential to have an excellent understanding of the inner workings of a
31 dairy.

32 Talk to XX, 3rd year at WSU, on what she has done from the summer before vet school as this is what
33 all future dairy vets should do. We would hire her in a minute because she has been on multiple dairies
34 and rode with >10 different vets in multiple states.

35 **D12:** (extracted from text)

36 For the student to gain exposure/experience/competency in these skills, spend time away from the
37 hallowed halls:

- 38 ○ Spend at least one month with a large herd practice engaging in palpation every day and
39 learn to palpate with both arms at an early stage to prolong their careers
- 40 ○ Spend a few weeks with the calving crew of a large herd
- 41 ○ Think about spending time with a beef practice as they typically see more C-sections than
42 we do

43 **D11:**

- 44 • Spend two weeks on large dairy emerged with the herdsman and hospital crew.
- 45 • Spend two weeks with a consulting nutritionist and herd's nutrition foreman.
- 46 • Spend two weeks on a well managed calf ranch
- 47 • AABP Pre-Convention Seminars, i.e., Heifer rearing, Record Monitoring, Dry Cow Nutrition

48 **D10:**

1 For me, my preceptorship in Sunnyside w/ Dr. Wedam gave me the most benefit. This was 4 weeks
2 long, but would have been even better twice that long. Four weeks on a large dairy would be very
3 valuable for any student interested in dairy practice.

4 **D9:**

- 5 • Mastitis Problem Investigation, Transition Cow, and General Dairy Production Blocks at U-W
- 6 Madison
- 7 • Spending a month in Mexico to learn the language that is so vital to dairies
- 8 • Dr. Ayres' IBVEP these guys are on the right track

9 **D8:**

10 I think this will vary for each student depending on their skill levels and goals for practice. In general, the
11 first few skills listed above should be addressed. The current month long preceptorship in 4th year
12 address some of this skills, however, if they could be addressed earlier in school, the preceptorship
13 could be used to 'fine-tune' the skills for practice.

14 Palpation- I believe it just takes time to become competent. Any time students can get practice, they
15 should.

16 Dystocias- I believe training was lacking here for me. I knew the basics, but hadn't had the opportunity
17 to practice them much. If students could even spend 1-2 weeks with the calving crew at a 3000 cow or
18 greater dairy it would help.

19 Records Analysis- Spending a week or two with consultants, industry veterinarians or vets that do a lot
20 of computer analysis would give students the training they need.

21 **D7:**

22 Work on at least one if not multiple Farms- 2 weeks – to understand the day to day normal operation

23 **D6:**

24 For students interested in dairy practice, spending 2 weeks working on the calving crew of a 10,000
25 head dairy, attending Dr. Jan Shearer's lameness workshop and the Cornell Summer Dairy Institute, [to
26 this the practitioner added – JMG] spending at least 2 weeks per summer in externship with busy dairy
27 practices (several different ones) during first through 3rd year summers and another 2-4 weeks during
28 senior year.

29 **D2:**

30 It would be great to have lots of palpation and dystocia experience BUT I feel someone should teach
31 them the correct procedures before dumping them in a calving barn with lay dairy employees.

32 **5) What emerging technologies or opportunities should new graduates prepare for while in school?**

33 **D17:**

- 34 • emerging technologies: amino acid balancing in lactating dairy ration.
- 35 • Complete a **MS IN DAIRY NUTRITION** at WSU Animal Science even if it requires an extra year (or
- 36 two) at WSU

37 **D16:**

- 38 • Dairy records
 - 39 ○ RFID
 - 40 ○ Dairy comp/DHI Plus
 - 41 ○ EZ Feed/Feed Watch
- 42 • Non-Traditional (Non-Palpation) pregnancy diagnosis methods
 - 43 ○ BioPRYN
- 44 • Feeds Costs; Analysis and management
- 45 • Parlor Technology
 - 46 ○ Robotic Milkers
- 47 • Employee Training
 - 48 ○ How to teach others diagnosis and treatment skills
 - 49 ○ Basic Spanish

- 1 • Financial understanding of dairy management
- 2 • Estrus synchronization programs
- 3 • New vaccine technology; needless, intradermal, intranasal

4 **D15:**

- 5 • Technologies:
 - 6 ○ Computers: spreadsheets (Excel inside and out), DairyComp, DHI-Plus, finding resources
 - 7 ○ on the internet.
 - 8 ○ Sexed semen conception keeps improving.
 - 9 ○ To make ultrasound “work” on big dairies (>4000 cows), it will have to be run by the
 - 10 employees, so understanding this technology is important, but I can’t see myself using one
 - 11 on a routine basis. I have one client whose employees run the ultrasound, it hasn’t
 - 12 improved reproduction (not a timed-AI herd), but I do check fewer cows, which is always a
 - 13 good thing.
- 14 • Opportunities: Efficiency of production (with base/quota programs being instituted in many co-ops,
- 15 the old “just add more cows” solution is no longer viable). Also, rising feed costs demand more
- 16 efficient animals and labor. bST-free milk marketing also fits into this opportunity. Our practice has
- 17 grown the most when milk prices are the lowest.
- 18 • Another opportunity is the “extra-label” ban on ceftiofur, any chance to revisit old hospital paradigms
- 19 is an opportunity to improve.
- 20 • Another opportunity is the rising public interest in animal welfare.

21 **D14:**

22 Good question but hard to answer as they are emerging means they may not turn out to be relevant

23 **D11:**

24 Focus more on nutrition, reproduction and heifer raising. These are the opportunity areas that have the

25 largest potential returns on most dairy operations. The science and technology are important but

26 secondary to communication and leadership. Nutrient management and environment compliance will

27 also be opportunity areas.

28 **D10:**

29 I see ultrasound as the wave of the future for preg testing cows. Also, some dairies are using the

30 available blood testing for preg diagnosis. Veterinarians are going to have to prove their value as more

31 than a palpator or they may be phased out by the economic crunch.

32 **D9:**

33 Be able to interpret ultrasonographic images including fetal sexing. Brad Stroud has a video on fetal

34 sexing that helps with this situation

35 **D7:**

36 Ultrasound – cost effective use

37 Vaccine technology –

38 “Green” Technology

39 **D2:**

40 I think it would be interesting to have a class in “Current Affairs of Industry of Interest”. The world

41 changes constantly. I had a class in high school on Current Affairs which consisted of reading

42 newspapers and magazines and then discussed the future problems, implications, and possible broad

43 solutions. This type of course for a specific industry would be the best approach to something like this

44 since these problems and technologies are in constant change.

45 **6) What particular weaknesses do new WSU graduates have relative to those of other schools?**

46 **D16:**

47 Interesting that these mirror many of the important areas listed in #2, 3, and 4.

- 48 • Ruminant Nutrition
- 49 • Mastitis/Milk Quality

- 1 • Lameness training
- 2 • Records analysis (May have improved with Wenz)
- 3 • Facility Design
- 4 • Calving experience
- 5 • Sick cow diagnosis and treatment (is probably similar to other schools)
- 6 **D15:**
- 7 I haven't seen enough WSU students to comment on this question. However, I am rapidly developing a
- 8 "west of the Rockies, or south of the Mason-Dixon" bias, which is less a reflection of new grad skill and
- 9 more of a personality preference. I still think you hire people you enjoy working with who are, above all,
- 10 motivated to learn; the rest can be taught (I can't teach personality and I am not a motivational speaker).
- 11 **D14:**
- 12 General cow experience
- 13 **D13:**
- 14 Minimal records analysis, OB work, time on private dairies. I don't think WSU graduates have many
- 15 weaknesses and from what I have heard Dr. Chris Schneider has really tried to change the ones they
- 16 have had in the past.
- 17 **D12:** (extracted from text)
- 18 • WSU students are severely lacking in training in Palpation/Pregnancy Detection
- 19 • WSU students surgical skills/tissue handling skills are generally poor to fair
- 20 **D10:**
- 21 I can only compare myself as a WSU graduate to two associates I have had that were hired as new
- 22 grads. One graduated from Colorado State and the other from Wisconsin. Overall, I feel I was trained
- 23 every bit as well as the CSU grad and feel like I was better prepared for practice than the Wisconsin
- 24 grad. The place where I feel WSU could improve is to somehow get the ag animal students more hands
- 25 on experience, either through increased preceptorships or externships, since the ag animal clinic
- 26 caseload is relatively small.
- 27 **D9:**
- 28 Our practice has the opportunity to spend time with at least ten students a year that come through the
- 29 Caine Veterinary Teaching Center. WSU students are lacking skills in computer records, personal skills,
- 30 analysis of reproductive issues, ability to advise on general production issues and in feeds and feeding.
- 31 They are fairly competent with most of the skills in individual animal medicine and surgery except
- 32 palpation, which they are very focused at mastering
- 33 **D8:**
- 34 While practicing in California, I've heard nothing but compliments about students that had graduated
- 35 from WSU.
- 36 Cow sense and cattle handling skills are one area where I believe all veterinary schools are lacking,
- 37 especially because many food animal veterinarians were not raised on farms. I know this skill is difficult
- 38 to teach, but I believe we need to continue to work on this area.
- 39 The one area I have always felt was lacking was records analysis. I worked with vets that graduated
- 40 from UC Davis and U Penn. Both were more knowledgeable with records analysis. The one from U
- 41 Penn was extremely knowledgeable.
- 42 **D7:**
- 43 Lack of a herd production medicine experience – not instruction – experience
- 44 **D6:**
- 45 Palpation experience/ accuracy and exposure to adequate caseload to be able to become competent at
- 46 surgeries and calvings have been the weak area of WSU students' training.
- 47 **D3:**
- 48 A school's greatest asset for information of this sort is its recent graduates - have them report back at 6
- 49 months / 1 year / 2 years / 5 years on WSU training and practice readiness.
- 50 **D2:**

1 My experience that WSU students has been better to some degree with the experience problem BUT all
2 new grads from all schools that I have been exposed to have not been taught the BASICS of practice
3 and the consultant mentality has been overtaught.

4 **General Responses:**

5 **D16:** (extracted from accompanying note)

6 There are some intellectual areas I think are more important than "skills" that are not really covered here
7 such as immunology, nutrition, epidemiology, etc, though some are. I tried to tie these into your points as
8 well, but I think some of these are more important to me than how many cows can you palpate per hour.
9 Speed on many of these skills is not nearly as important as having done them (C-section, DA) or being
10 accurate (preg diagnosis).

11 Also, every time I read these skill lists I struggle with the idea that we should have a list for cow/calf and
12 feedlot as separate areas. These are very intertwined and WSU students have a long way to go in quality of
13 cattle education before we need to separate these two areas. That is; I'd be happy to see Beef medicine
14 and skills taught of any sort vs. small animal and anesthesiology. WSU really has the cart before the horse if
15 you're going to separate feedlot out. Those students would be lucky to see a calving block even if they are
16 into feedlot and it doesn't really apply. Maybe I'm off base here, and Texas A&M or some plains school may
17 be able to specialize students by industry, but I think WSU would be good to have a list of 'beef skills' to set
18 as a goal right now. My 2 cents.

19 **D12:** (extracted from text)

20 Advice to students not necessarily related to specific skills

- 21 • Have a good general knowledge and interest of the industry and operation so you can understand and
22 address your clients' needs and concerns. Read trade magazines.
- 23 • Check your ego at the door. This can be a humbling profession at times. Don't think you know
24 everything or can accomplish everything in one day. Often times the dairyman knows a heck of a lot
25 more than you about his cows and operation. Listen and ask questions. If you don't know something,
26 admit it up front, and try to find the answer (i.e. Don't B.S.). Many times there is not a quick solution to a
27 problem and progress can take time and be limited by money, facilities, personnel, etc., or all the above.
28 Depending on the client, it can take two or more years before enough confidence is gained by the
29 dairyman in you to listen to your recommendations.
- 30 • Remember that the dairy community is very small, and your actions/words are often relayed to other
31 dairymen. These guys do talk to each other. If you want to have a long career in this business, don't
32 gossip about other dairymen, keep your mouth shut, and don't burn bridges with clients, nutritionists,
33 dairy employees, equipment dealers, salesmen, etc. You are one part of a large team, with the goal of
34 improving your clients' operations.
- 35 • Show up for work and be on time. Work hard when you are on the farm. Most times you are charging by
36 the hour, so don't waste your client's money when you are there. This is also important to your
37 veterinary employers.
- 38 • Try to maintain a clean and neat appearance. Don't show up with dirty coveralls and boots. Try to wash
39 your truck once in a while.
- 40 • Maintain a good relationship with the state/federal entities. Complete your regulatory paperwork fully
41 and in a timely fashion. You never know when you may need a favor from these people and they will
42 tend to help you out if you keep your ducks in a row.

43 **D5: practitioner & dairyman:**

44 I'll take a stab at this but as you probably well know I am not in the mainstream on this issue. I think it is
45 unlikely that many new grads will be "value added" herd problem solvers until after a period of total
46 immersion in their chosen industry as traditional "bugs and drugs" veterinarians. I think exposure in the
47 curriculum to population medicine, epidemiology, farm economics, etc is good, but given the limited time
48 available I still believe that a primarily medical education with comparative aspects (large and small animals,
49 ruminant and monogastric, etc) is still the most valuable part of the degree. Here students must learn to
50 collect and analyze information, formulate a treatment plan, and monitor progress or outcomes. When they
51 get good at this they use this same system on herd and business problem solving. Thus the most important
52 things as I see it are to select energetic individuals who have intellectual vigor, who are emotionally

1 engaged, committed, and who have learned how to learn. We can take it from there in the field. Of course
2 selecting these individuals is easier said than done.

3 That being the case, I expect a new DVM or intern to have enough basic science and medical education
4 to diagnose and treat most common diseases (infectious and metabolic) of cattle. It would be nice if they
5 had command of some of the techniques that would include some palpation, surgery, sample collection. It
6 would be real nice if they had spent enough time close to the industry they hope to serve to understand
7 what the basic premise is and what is likely to lead to or preclude profit in that industry. Some schools have
8 enabled this better than others. The Davis program early in the curriculum supplements students who work
9 in or observe the dairy industry. SDI at Cornell is another great program. Good mentors at their first practice
10 is probably most practical.

11 As far as emerging issues, I think nutrition and business skills will determine who holds dairy assets so
12 maybe after the DVM they should get an MBA and PhD in nutrition or prepare to learn in the school of hard
13 knocks.

14 The shortcomings I have seen in WSU interns or grads are mostly related to attitude and appetite for
15 what we do. Perhaps this is a generation thing but I think that if you pick the right applicants, you will get the
16 right end product.

17 **D4: Mixed practitioner, dairy emphasis**

18 This is kind of a tough survey to fill out because I have a mixed large animal practice....in addition, the
19 food animal industry has become so specialized, yet highly variable in the skills that they want depending on
20 practice area. For instance, the skills needed in Wisconsin where I practiced are very different than out here
21 in the West, even though they are both dairy practices. I believe the more important pre requisite for
22 students is to have industry knowledge, practical animal farming knowledge, and knowledge of the "local"
23 animal ag culture where they will practice. This will vary depending on the practice area. For instance, if you
24 are in California, you might not need to know how to trim a hoof or treat mastitis. But you better know the
25 concept behind it. I used to think that doing a DA surgery was an important skill....but I only do one a week
26 now.

27 After reviewing your previous surveys [the Illinois and Missouri surveys – JMG]...I find no major
28 differences in my rankings....so I am going to cop out a bit on this survey....other than to say this:

29 A graduate food animal veterinarian needs to be able to DO everything that a good herdsman can do
30 (IV, pump cows, trim feet, give injections, etc.). The only way this can happen is for them to spend time at
31 farms working. If a client realizes that they know more than the vet, then they will not use him or her. Basic
32 animal HUSBANDRY is what is needed for mixed practices or food animal practices that service small to
33 medium farms. If you are working for [a 10k+ dairy herd – JMG], palpating three hundred cows in a day is
34 important.

35 Things to think about in the future? Not sure about this one, other than it is always changing. If a food
36 animal grad can think logically through problems then they can work with small low input farms, centralized
37 industrial farms, pasture based farms, CAFOs etc. I am not sure which type of animal agriculture will
38 emerge from the changing economy, but I know that I can adapt. If you have industry knowledge, general
39 knowledge of agronomy/economics/social/environmental issues etc. you can better anticipate changes and
40 stay ahead of the curve.

41 The only thing that WSU is handicapped by is that it is in the middle of wheat fields. The individual
42 clinical cases for students are not available...unless you consider alpacas a food animal (which I don't...and
43 I do a lot of camelid work as well) like they would be at other vet schools closer to farms. In the end, it
44 doesn't matter if students have good opportunities outside of the college, working with food animal
45 veterinarians who are forward thinking and have good critical thinking skills.

46 Sorry about the rambling. I think your idea about gaining early competence in specific skills is
47 excellent....in fact that is what I am trying to do with some prevet students before they get to you....but
48 again, the best way is repetition, and the best repetition can occur on some of the large operations....then
49 when they feel they can pull a calf, hit an IV, diagnose a pregnancy they will feel more confident. Then they
50 can apply this knowledge to smaller farms and different situations after you teach them the REALLY
51 important stuff like epidemiology, statistics, nutrition, disease investigation, etc...

52 Also one more note: I have my food animal prevet students read the trade journals religiously (Dairy
53 Herd, Progressive Dairyman, Beef, etc.....). If I had a group of food animal students at WSU, I would sit with
54 them once a week over coffee and discuss what we have read. Even the advertisements are helpful in
55 preparing students. Just a thought

1 **D3:** (summary of a phone conversation on the questions)

2 For large herd dairy practice, new graduates can cash flow by doing lab work, calfhood vaccinations,
3 filling out health papers and assisting with herd checks while getting on-the-job training with experience
4 vets. The income from large herd clients is so important to the practice that they don't send new graduates
5 on calls to such herds by themselves for the first 6 months so initially new graduates do not have a lot of
6 independence.

7 An area that students could easily develop an expertise in early in school that would help them go a
8 long way toward paying for themselves is milk microbiology. Being less than 1% of veterinary microbiology,
9 milk microbiology as a result is generally not taught well enough by veterinary schools. Different areas of the
10 country, such as Minnesota, Wisconsin and Cornell, have developed procedures appropriate for the herds in
11 their region. A good resource for students that covers the basics is the paper on on-farm milk microbiology
12 in the Proceedings of the NMC Visalia Summer Meeting (2007).

13 Students would benefit from spending 2-4 weeks on large dairy farms (those calving 30-50 cows per
14 day) working with the calving crew. They need some instruction to orient them first but they would get
15 valuable hands-on calving experience and very valuable experience working with farm labor, most of whom
16 are not fluent in English. In his experience, dairy cow calving is different and more difficult than beef cows
17 and dairy cows need close supervision even when well managed.

18 Large dairies are rapidly adopting Electronic ID and protocol-based timed AI programs with sexed
19 semen because these are the most efficient breeding programs. To gain skills students should spend 1
20 month working with the breeding crew on a large dairy using such a protocol-driven program. Because dairy
21 help is under the gun to get a lot of work done, they don't have time to analyze the data they generate so
22 students would have the opportunity to gain a lot of valuable skills working with the data and the employees.
23 Training and working with specialized labor takes experience, particularly those not fluent in English.
24 Ultrasound will be involved much more in these programs. Students don't graduate with sufficient ultrasound
25 skills but they can become proficient much faster than they can with traditional rectal palpation. Students
26 need arm stamina and experience scanning pregnancies

27 The endgame isn't just becoming an experienced palpator. The large herd side of the dairy industry just
28 keeps innovating, presenting new opportunities for veterinarians. Large dairies need veterinarians who can
29 oversee and train specialized dairy employees. The end result is a veterinarian who knows how to develop
30 protocols and understands teaching techniques and procedures for employee monitoring and reporting to
31 management. Veterinarians are a resource to management to help manage segments of the dairy. These
32 segments are:

- 33 • Milking management
- 34 • Breeding management
- 35 • Maternity management
- 36 • Calf management
- 37 • Colostrum management

38 Excellent computer and software skills are valuable assets for new graduates involved in this. Lots of
39 technology could be implemented by computer literate new graduates who know how to do data entry and
40 analysis. One way to gain these skills might be to do an internship with Valley Ag Software (DC305).

41 An emerging opportunity is aggressive lameness control programs because large dairies can generate
42 high returns from these. Jan Shearer's lameness program is excellent; others promote unfounded
43 techniques. Their practice encourages each large herd to buy an Appleton Steel Hoof Trimming Chute.
44 These chutes are ergonomically good for both the operator and the cow and enables hoof trimming in a fail-
45 safe, accident-free manner. Trimmers using traditional chutes end up with back problems.

46 The Cornell Summer Institute is excellent but attendees suggest to obtain maximum benefit new
47 graduates should spend a year in practice first and then go.

48 The dollars on large dairies are so big that management relies on specialized informed people for many
49 things, such as accounting and commodity buying. To gain a sense of this business, students might attend a
50 seminar by one of the specialized accounting firms [e.g, Genske, Mulder & Co. - JMG]. In these large herds,
51 this is beyond the veterinarian's role but they may be involved in smaller herds.

52 **D2:** Thoughts on Veterinary Education:

- 1) Most schools do not understand the requirements of a good practitioner because they themselves are not ones. This is no fault of theirs. The system selects researchers driven to publish even at their clinical levels. Most have never had to feed themselves in the real world nor satisfy the public.
- 2) I do not agree with the approach of intense species tracking &/or limited licensure for the following reasons:
- Most graduates will end up doing something in their careers that they do not expect to do while receiving their education.
 - Awarding the DVM degree to individuals that do not have exposure to all facets of Veterinary Medicine is a disservice to the public and the industries that we are to serve.
- 3) We have selected students based on their didactic skills – memorization and regurgitation of facts (the ability to learn and repeat). This concept is further continued in Professional education.
- The next level that I believe VM education misses on is teaching the students how to think and approach problems like a veterinarian. If you ever watched the movie “The Paper Chase” with John Houseman, he states the entire goal of legal education is to mold the student’s mind to think like an attorney not to learn everything there is know.
- There is not time in 4 years nor all the information available to teach students everything, but if the didactic material is mastered and the basic clinical skills presented with the ability to think and apply that education, the graduate should be successful.
- 4) The biggest shock to me after being exposed to students and new grads from several institutions is the complete lack of basic clinical instruction. For example, all have not recognized, nor know how to use the common OB instruments used in a dystocia. Know how to properly attach a suture needle to suture; how to administer a successful epidural injection within 30 sec; know how to tie the required suture knots. With this thought in mind, how will you turn them loose in a maternity barn or expect them to be able to perform a C-section.
- 5) This idea to teach consultants is fine only after the new grad can function with basic skills like palpation, obstetrics, and minor surgery.

D1:

I've been thinking about our conversation about what skills graduating veterinarians should possess when they leave WSU. Coming up with that list is the easy part. The more difficult task is to make it happen, both by providing the opportunity for the students to learn and assessing their skills.

Just a couple of thoughts. I don't think it is realistic to be able to teach all of these things at WSU. If I were you I would spend as little time in the classroom and spend most of my energy and resources lining up one on one experiences for the students. For example, I remember a test question on the national board exam about how much tuberculin you inject into the caudal tail fold of a cow when you TB test her. I remembered Dr. Stone saying something about it, but I wasn't sure of the answer at the time. I don't know if I even got it right. When I went to Michigan and after TB testing thousands (yes thousands) of cattle, you better believe I knew how much tuberculin to use. It was by doing that is the real teacher, not in the classroom. I understand your hands are tied a little (or maybe a lot) at WSU to have much hands on experience. That's OK. There are plenty of cattle and veterinarians within a days drive. I loved your idea of starting the hands on process sooner in the curriculum. I know that very few students in every class are interested in Ag animal, but for those that are, why not use the WSU facilities (LA clinics, dairy, etc) for the 1st and 2nd year students and send the 3rd and especially 4th year students away as much as possible. I think their are veterinarians, myself included, that WSU could identify as sort of adjunct clinical instructors, or whatever that would provide the experiences the CVM identifies as important, and just as interns and residents have a log of so many Sx's or cases they have to work up in order to qualify to take the exam, put similar requirements on the students and have the mentoring veterinarian sign them off. Whether those experiences happen at WSU, the Caine Center, or off site at an approved location. You are probably reading this thinking that I don't have a clue how the system works, and you are right, but I have never been one to let the system dictate the outcome of what I was trying to accomplish.

Small Ruminant Emphasis:

Mixed Emphasis: (no large animal species is > 40% or a majority of practice income)

1

2 **Document History:**

3 1) 7/25/08 - Document initiated 7/25/08

4 2) 7/28/08 - First draft provided to AAVET-WSU and AAVET-off campus and PDF placed on website for
5 continual updating