### In this Issue

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letter from the President</td>
<td>2</td>
</tr>
<tr>
<td>Management Report and Minutes of Board Meetings</td>
<td>2</td>
</tr>
<tr>
<td>Call for Nominations Regions 2 and 4</td>
<td>4</td>
</tr>
<tr>
<td>Life Membership in AASRP</td>
<td>4</td>
</tr>
<tr>
<td>Announcements</td>
<td>4</td>
</tr>
<tr>
<td>Books, Bulletins, and Computer Websites</td>
<td>5</td>
</tr>
<tr>
<td>Student Externship Report – Oregon Camelid Rotation</td>
<td>5</td>
</tr>
<tr>
<td>AASRP-L Q&amp;A – Time to Caseous Lymphadenitis Seroconversion</td>
<td>6</td>
</tr>
<tr>
<td>AASRP-L Q&amp;A – Blood Transfusions in the Field</td>
<td>6</td>
</tr>
<tr>
<td>AASRP-L Q&amp;A – Route of Administration for Anthelmintics</td>
<td>7</td>
</tr>
<tr>
<td>AASRP-L Q&amp;A – Herd Health Programs for Range Flocks</td>
<td>8</td>
</tr>
<tr>
<td>Gestational Age and Immaturity Effects on Cria Survival</td>
<td>9</td>
</tr>
<tr>
<td>Sources of Joint Ill Outbreaks in Lambs</td>
<td>9</td>
</tr>
<tr>
<td>Management of a Vaginal Tear in an Alpaca</td>
<td>10</td>
</tr>
<tr>
<td>Summary of Dairy Sheep Production Research</td>
<td>11</td>
</tr>
<tr>
<td>D-Lactic Acidosis and Floppy Kid Disease</td>
<td>11</td>
</tr>
<tr>
<td>Kyphosis and Hyperreflexive Limbs in Hyperthermic Lambs</td>
<td>12</td>
</tr>
<tr>
<td>Caruncular Amyloid Deposits Cause Abortion in Goats</td>
<td>12</td>
</tr>
<tr>
<td>Choanal Atresia Not Proven to Be Linked to CHD7 Gene</td>
<td>13</td>
</tr>
<tr>
<td>Flock 5 Point Plan for Controlling Footrot</td>
<td>13</td>
</tr>
<tr>
<td>Epidemiology of Vaginal Prolapse</td>
<td>13</td>
</tr>
<tr>
<td>Topical Index 2014</td>
<td>14</td>
</tr>
<tr>
<td>AASRP Board of Directors</td>
<td>18</td>
</tr>
<tr>
<td>AASRP Veterinary College Liaisons</td>
<td>19</td>
</tr>
</tbody>
</table>

---

**Mission Statement of AASRP**

“To improve the health and welfare of sheep, goats, camelids and cervids, to further the professional development of the members, provide resources to elevate the standards of small ruminant practice and to be the voice for small ruminant issues.”
Letter from the President

Dear AASRP members,

By the time you receive this issue of Wool & Wattles, membership renewals will be due or overdue! Please renew now to avoid interruption of your access to member benefits such as the Wool & Wattles and the AASRP-L list serve. Special thanks to Dr. Mary Smith for her dedicated service in bringing us Wool & Wattles, with the abstracts of scientific literature across the many species and disciplines within AASRP as well as timely announcements and information. Visit www.AASRP.org to renew your membership online.

When you renew your membership, please consider a donation to the Samuel B. Guss Memorial Fund. Clinical practice externship experiences are vital in inspiring and educating the next generation of veterinarians. The Guss fund supports these opportunities and is a great opportunity to promote interest in small ruminant practice. Watch for the students’ reports from their externships in Wool & Wattles. Many thanks also to the veterinary practitioners who host these students in their practice.

I continue to be impressed with the quality of information that you, the members, provide for one another on the AASRP-L. Thanks to all of you for your participation. The AASRP website has been redesigned and is now available. Please visit our new web site and provide feedback on your favorite features and on areas where you would like to see enhancements or improved functionality. Also, if you experience difficulties in accessing your member benefits such as the list-serve, the new library access or with membership renewals, please contact us!

Dr. Patty Scharko is hard at work planning the AASRP small ruminant sessions at upcoming meetings - the North American Veterinary Conference in Orlando in January, the American Veterinary Medical Association meeting in Boston at the end of July and the American Association of Bovine Practitioners meeting in New Orleans in September all have strong AASRP-coordinated small ruminant continuing education offerings. The AASRP-L, AASRP’s Facebook page and the AASRP web site will have announcements on these events. AASRP is currently looking into interest and feasibility of conducting a "train-the-trainer” CE event to provide needed information/experience to veterinarians for best practices in velvet - this will help to advance best practices for cervid veterinarians and their clientele. This would take place in June. More communication on this will be coming soon.

As we move forward in this era of increased concern with antimicrobial resistance and antibiotic use in animal agriculture, the vital role of extra-label drug use in livestock practice, drug availability for minor species, livestock traceability and scrapie eradication, animal welfare issues and other issues of importance to small ruminant practitioners, AASRP represents your interests and provides input at many levels. Our representation at all levels of the AVMA through Committees, Councils, Task Forces and House of Delegates, and our experienced members involved in allied industry organizations continue their efforts to guide policy and relay information on these and other issues.

Please contact us for more information on issues of concern to you and your small ruminant area of interest or if there is any way that we can better serve you, the membership.

Best regards,
Joan Dean Rowe

Management Report

Seasons Greetings!

Thanks for another wonderful year serving as your executive director and member of your AASRP management team! I am constantly impressed with the level of service and unwavering dedication you provide to our industry, and the vast variety of services you deliver.

The new AASRP website is currently operational, and I encourage you to explore it! I hope that you can appreciate the new design, ease of use, and increased capabilities it should provide. Update your member profile while logged in to assure we have the best information available for you and your practice.

If you participate in social media, be sure to please LIKE us on Facebook and follow us on Twitter! Our postings are often and cover a broad range of interesting topics. If you would like to see different content, or suggest a topic, simply send your suggestion our way! We will begin to spotlight AASRP members and their practices in 2015, so if you would like to get in the queue for this opportunity, please send us an email at aasrp@aasrp.org and we’ll get you loaded.

From your Board of Directors & the management team in Montgomery, Alabama, we wish you a happy holiday season and a successful new year! We sincerely thank you for your continued support and membership in AASRP, and hope that we bring a solid value and benefit from your membership. If we can ever be of assistance, please let us know!

Dr. Brad Fields & the Franz Management Team

STUDENT EDUCATIONAL OPPORTUNITIES

We receive many requests from veterinary students for information about externship opportunities. We are asking AASRP Veterinary members if they are interested in hosting primarily 4th year students for 2-4 weeks. Information that the students desire includes: - Small ruminant species seen in your practice, - Busiest months of the year relevant to small ruminant work, - Practice location, - Availability of housing, and - Preferred contact information for externship requests. Based on student feedback, we see a need to update externship opportunity information from the membership. Thus we are asking for those of you who wish to host student externs to contact me directly via email using the following Subject line: AASRP Externships. Thanks and I look forward to hearing from you.

Cindy Wolf, DVM wolfso06@umn.edu
WELCOME NEW MEMBERS

4th Quarter

Active Members
John Andresen
Ryan Bevan
Lindsay Elaine Calhoun
Russ Daly
Kirt Hollister
Travis L. Kingsley
Katherine Mageean
Mari Maristany
Kathleen McCarthy
Rebecca McNear
Holly L. Miles-Moore
Tori Shay Moore

Benjamin Noland
Janet Nutting
Garry Lynn Reece
Reginald Thomas
Nicole Wannamaker
Andrew Weikert
Kelly Whitson
Christina Wilson
Ranatta Lynne Young

Students Members
Bridget Aznive
Chelsea Ballinger

Megan Bernard
Catherine Cote
Jill Ollivant DeSau
Leslie Dodd
Kristina Doyle
Cody Fielder
Kristen Fegel
Kendra Hayden
Carrie Marie Harkins
Amanda Igeta
Nicole Irizarry
Elena Kaplan
Ashley Elizabeth Kipka

Kristyn Kuppek
Andrew Daniel Ligon
Alicia Long
Kayleigh Marinac
Anne Odash
Michael Pawenski
Klaudia Polak
Rebecca Ellen Poulter
Elizabeth Racine
Jessica Ragauskas
Melissa Justine Rich
Julianne Richard
Rebecca Sue Remeika

Ashley Elizabeth Schiffmacher
Mallory Sczygelski
Desiree Shaha
Kevin Shrewsberry
Rebecca Smith
Samantha Leslie Thomas
Emily Thometz
Jennifer Ziemer

Samuel B. Guss Memorial Fund
Contributions as of December 10, 2014

In order to assist veterinary students interested in small ruminant medicine, AASRP provides grants each year to help student members of AASRP undertake extern opportunities. It is not required that the experience be with small ruminants exclusively, but it should provide at least some chance to observe a modern veterinary practice working with one or more of the small ruminant species.

Over one hundred AASRP-member practitioners throughout the United States – as well as Australia, Brazil, Canada, Germany, Israel and Puerto Rico – offer externships to students seeking experience in small ruminant medicine. To learn more about the AASRP Student Externship Program, call the AASRP Management Office at 334-517-1233, or log on at aasrp.org

*Donations for the Sam Guss fund can now be made on line without having to go thru the membership renewal. Here is the link: http://aasrp.org/donations/donate.asp?id=10954

2014 Student Grant Recipient

4th Quarter

Due to the continued contributions to the Samuel B. Guss Memorial Fund, the following veterinary students have been selected and are able to receive grants to help assist with the cost of the externships. Thank you to all of the donors. Your contributions truly make a difference.

Johana Cenera
Ohio State U
Mar 9-21, 2015
USSES

Kellie Haggett
Guelph
Mar 16-29, 2015
Windswept Farms

Cynthia Wise
UW Madison
April 5-18, 2015
USSES

Johan Deen Bowe
Bob Saunders
Patty Scharko
Leann M. Schuler-Tommas
David F. Seville
Grant C. Seaman
Patrick K. Skipper
Mary Smith
Heidi A. Schmitt-Weaver
Kraig Allen Steenme
Linda Joyce Taylor
Percy R. Turner
David VanMeter
Denise L. Warriner
Kathryn N. Wokin
Summary of AASRP Meetings: 
October 8, 29, and November 19, 2014

October 8  Special Executive Board Meeting Conference Call
The Board:
- Upon request from Dr. Cindy Wolf, who represents AASRP on the AVMA Animal Welfare Committee, a special meeting was held to discuss upcoming potential policy changes regarding removal of antlers (velveted).
- Approved a motion to plan a train the trainer session for proper cervid velveting procedures for veterinarians to be held in June 2015.
- Approved motion for AASRP to endorse the following statement concerning velveting policy changes: “Analgesia must address peri-operative pain and be administered in accordance with AMDUCA and FDA guidance”.

October 29, 2014 Executive Board Meeting Conference Call
The Board:
- Received reports from Regional Directors.
- Received & approved financial reports from Dr. Scharko
- Received Management Report from Dr. Fields.
- Approved externship funding requests for the following students:
  - Kellie Nicole Haggert 250.00
  - Cynthia Wise - Wisconsin - 350.00
  - Johana Cenera – Ohio State - 620.00
- Received report that the 2015 budget was being developed for BOD review
- Approved request to pay 2015 USAHA dues early to avoid price increase.

November 19, 2014 Executive Board Meeting Conference Call
The Board:
- Approved minutes from previous meeting
- Received reports from Regional Directors
- Received Management Report from Dr. Fields.
- Received & approved financial reports from Dr. Scharko
- Discussed a request from the Government Accountability Office about compounded drugs needed in small ruminant practice. Dr. Bowen will draft a memo to the GAO and forward to the board for review and comment.
- Approved motion to grant Drs. Fred Groverman and G.F. Kennedy Life Member Status.

CALL FOR NOMINATIONS

Directors Region 2 And Region 4

It is time to submit nominations for AASRP Board of Directors. Nominations for Directors in Regions 2 and 4 will be accepted through April 1, 2015 and voting ballots will go out shortly after that date. When nominating someone please make sure that he or she is aware and desires to serve a two-year term on the board. The board members are asked to participate in a monthly conference call and an annual face-to-face meeting.

The regions are broken down as follows:

Membership regions:
Region 1: Ohio, Pennsylvania, New York, Vermont, New Hampshire, Maine, Massachusetts, Delaware, Maryland, New Jersey, Rhode Island, Connecticut, Quebec, Newfoundland, Labrador, Nova Scotia, Prince Edward Island and New Brunswick
Region 2: Mississippi, Alabama, Georgia, Florida, South Carolina, North Carolina, Tennessee, Kentucky, West Virginia, Virginia, Indiana, Michigan and Ontario
Region 3: North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Texas, Minnesota, Iowa, Missouri, Arkansas, Louisiana, Illinois, Wisconsin, Saskatchewan, Manitoba and Nunavut Territory

Note: Please note map below with designated regions.

Your current regional directors are:
Region 1 - Dr. Dale L. Duerr - currently not up for re-election
Region 2 - Dr. Susan Myers – eligible for re-election (2 year term)
Region 3 - Dr. Ann Goplen - currently not up for re-election
Region 4 - Dr. Elizabeth Hardy – eligible for re-election (2 year term)

Please only nominate an AASRP member in your region. Submit your nominations to AASRP Management Office in a written nomination via website, mail, fax or email to aasrp@aasrp.org

LIFE MEMBERSHIP:

The AASRP Board of Directors designates honorary Life Members after having 40 years of continuous AASRP membership and being in good standing with the association. Dr. Rowe and her fellow board of directors are pleased to announce that three veterinarians have achieved life member status!

Congratulations are in order for Dr. David McCrystle, Dr. Fred Groverman, and Dr. G.F. Kennedy for 40 years of dedicated service to the American Association of Small Ruminant Practitioners and to our great profession!

They will be receiving a certificate of appreciation designating them as Life Members of AASRP, and are deserving of our thanks and appreciation!

On behalf of the AASRP Board of Directors, congratulations to each of these veterinarians for their outstanding accomplishments!

ANNOUNCEMENTS

Oregon State University will host the 2015 International Camelid Health Conference from March 5th through the 8th. It will again be held in conjunction with the Oregon Veterinary Conference, meaning there will be other concurrent sessions on other species for those looking to diversify their CE experience. The ICHC again will offer a combination of state-of-the-art research, comprehensive review, and networking opportunities with many of the world’s best and most active camelid veterinarians.

The North American Veterinary Conference (NAV) will be held in Orlando, Florida on January 17-21, 2015. The AASRP portion of the program begins on Monday January 19 with Drs. Sherrill Fleming and Patty Scharko speaking on Problems with Small Ruminant Parasite Control. Dr. Fleming continues with Parasite Control from SE Perspective; Scrotal
Ablation in Small Ruminants and Other Surgeries; Biosecurity Aspects Relating to CL, CAE, and Scrapie; Interesting Neuro Small Ruminant Case. Dr. Lucky Pittman finishes the day with Common Sheep and Goat Problems Seen at the Diagnostic Lab; What’s Your Diagnosis? Small Ruminant Case, and What to Send to the Diagnostic Lab. Dr. Pittman continues on Tuesday morning with How to Do a Great Field Necropy and What You Need to Do One; Abortion Problems Seen at the Diagnostic Lab. Dr. Clifford Shipley covers reproductive topics including Reproductive Physiology of the Sheep and Goat; Manipulation of the Reproductive Cycle of the Sheep and Goat; Breeding Soundness Exam of the Sheep and Goat. Dr. Pittman concludes the day with How to Pry More Information Out of Your Client to Make the Diagnosis. Dr. Shipley’s last talk on Wednesday the 21st is Tips for Resolving Small Ruminant Dystocias. Dr. Pam Walker provides camelid topics including Care of the Pregnant Dam and the Newborn Cria; Fluid Therapy and Blood Transfusion in Camelids; Gastrointestinal Parasites of Camelids; Herd Health and Common Medical Problems in Camelids. Dr. Scharko finishes the AASRP program on Wednesday with Alpaca Foreign Animal Disease Investigation; and Management Recommendations resulting from FAD Investigation. For more information or to register, go to <http://NAVc.com>.

The Western Veterinary Conference will be held at the Mandalay Bay Resort and Casino in Las Vegas on February 14-19, 2015. The small ruminant speakers include Dave Van Metre (Breeding Soundness Examination in the Ram; Tips and Tricks for Small Ruminant Practice), Patty Sharko (Effects of Trace Minerals on Goat Health; Poisonous Plants and Small Ruminants; Small Ruminant Health Basics; Small Ruminant Problems to Avoid), Sabrina Brounts (Field Anesthesia for Surgical Procedures in Small Ruminants; Fractures in Small Ruminants; Surgical Management of Dystocia in Small Ruminants; Urogenital Surgery in Small Ruminants: Has Anything Changed?), and Allen Roussel (Small Ruminant Medicine for the Mixed Practitioner). The veterinary technician program has two lectures by Michelle Rash on Caring for Goats as Pets. For more information see <http://wvc.org>.

The Midwest Veterinary Conference will be held February 19-22, 2015 at the Greater Columbus Convention Center in Columbus Ohio. The small ruminant program on Friday the 20th covers Gastrointestinal Parasites in Camelids - Management for the Herd (Pamela Walker); Fluid Therapy and Blood Transfusions in Camelids (Walker); Caseous Lymphadenitis - a Nemesis Revisited (Michael Rings); Neurologic Problems Seen by Small Ruminant Practitioners (Rings); Periparturient Disease of Sheep and Goats (Jeffrey Lakritz); Case Studies of Cache Valley Virus (Craig Sarver). The Saturday small ruminant program consists of 6 lectures by Mary Smith: Abortion Diseases of Small Ruminants; Periparturient Problems from Dystocia to Neonatal Care; Wasting Diseases of Sheep and Goats; Small Ruminant Field Necropsy; Skin Diseases of Small Ruminants; Disbudding, Dehorning, Docking and Castrating. For details about these lectures and the remainder of the conference program and to register, visit <www.mvcinfo.org>.

BOOKS, BULLETINS, AND COMPUTER WEBSITES

The Animal Contact Compendium is available online at <http://nasphv.org/documentsCompendiumAnimals.html>. Included here is the 2013 JAVMA article ‘Compendium of Measures to Prevent Disease Associated with Animals in Public Settings, 2013’ and a cover letter for it, a ‘Safety at Animal Exhibits’ poster and an ‘Animal Exhibits Handwashing’ poster in both English and Spanish. Please share this information with petting zoos, 4H clubs, and farms open to the public.

**STUDENT EXTERNSHIP REPORT: OREGON CAMELID MEDICINE AND SURGERY ROTATION**

Michelle Schack, U.C. Davis

The first day of my externship, I performed a necropsy on an alpaca, and I was shown exactly how close the carotid artery is to the jugular vein in a camelid. Scary! When I placed my first IV catheter 3 days later, I was prepared, and under the direct supervision and guidance from Dr. Chris Cebra, I was able to place it smoothly in the llama’s neck and become confident in my skills.

That is just one example of the many amazing skills I learned at the Oregon State University Camelid Medicine and Surgery Course. At UC Davis SVM, where I am currently a 4th year veterinary student, the camelid patients are seen in the equine hospital, and are infrequent. Being one of the 4 food animal track students in my class and planning to go into production medicine, I am not taking many equine clinics and was concerned about my knowledge of camelid diseases and technical skills, so I was thrilled with the opportunity to attend this course.

The course was combined classwork, labs, and field trips that gave us a great overview of the common diseases in camelids and taught us how to find information on our own. Some of the skills I learned include venipuncture, sedative and anesthetic protocols, standing and recumbent castration, transabdominal and transrectal ultrasound, CSF collection and epidural administration, fracture management, radiographic positioning and techniques, and vaccination strategies.

Not only did I learn skills and knowledge, but I gained a better appreciation for the industry. I have been to many places with 5-20 llamas or alpacas, but during my time in Oregon I visited several farms with over 100 camelids. I was able to speak to the owners and understand their business goals and
expectations of the animals, as well as what they are doing to further the industry in animal health, welfare, genetics, and outreach. My interest is in herd health, and therefore I didn’t want to be uncomfortable seeing camelid herds when I graduate. This externship provided me with anatomy, pathophysiology, practical skills, and technical skills so that I am prepared to successfully diagnose and treat camelid patients, as well as to react calmly and act quickly to problems when necessary. I am excited to graduate in May with the skills I need to see camelid patients and a greater understanding of both my patients and their owners.

Thank you to the AASRP, its members, and the Sam Guss Fund for helping make this out-of-state opportunity a reality. Thank you to Dr. Chris Cebra and all of the faculty and staff that planned and executed the Oregon State University’s Camelid Course; this experience was invaluable to me and I will highly recommend it to students in the future.

**AASRP-L QUESTION AND ANSWER - Time to Seroconvert for Caseous Lymphadenitis**

**Question:** Can anyone tell me if a known CL-negative goat got exposed to CL, how long would it take to see a titer form that the lab would pick up? My client is going to isolate this animal but I don’t know how long to wait till we draw blood.

**Answer:** Alas, there was a nice paper out in the April 2013 JAVMA [Washburn KE et al.: Serologic and bacteriologic culture prevalence of *Corynebacterium pseudotuberculosis* infection in goats and sheep and use of Bayesian analysis to determine value of assay results for prediction of future infection. JAVMA 242:997–1002, 2013; abstracted in W&W 41.2] that said the synergistic hemolysin inhibition test was not an accurate predictor of infection with *Corynebacterium pseudotuberculosis* and that culture of the organism remains the test of choice. When the SHI test was developed for horses at the University of California at Davis, several goat producers started using the test to see if they could determine which of their goats might be infected. Unfortunately, too many animals have low titers and one cannot tell the difference between recent exposure, vaccination, infection with other bacteria that produce phospholipase D or infection with *Corynebacterium pseudotuberculosis*.

I was really excited to try this test when it was first offered because I had a few clients at the time that were trying to clean up their flocks or herds. We tested several animals exposed to cases as well as animals that were from relatively clean herds. I used the test on the sheep and goats at a local demonstration farm that had purchased a buck at the local auction in order to breed the goats. It wasn’t until after the asymptomatic buck was returned to the auction that the first goat developed an abscess. This doe had a baseball-sized, culture-positive parotid lymph node approximately 90 days after she was pen-bred to the purchased buck. Just for curiosity’s sake, we submitted serum for the SHI test and her titer was 1:64. All of the exposed sheep and goats had low titers from 1:8 to 1:64. The instructions that came with the test results indicated that infected sheep and goats would have titers above 1:256. We checked the titers once more before the City made the decision to euthanize all of the sheep and goats, and none were over 1:64. Because this was a demonstration farm with children visiting every day, the City made the choice to euthanize all of the sheep and goats. With so many children going through The Farm, there would be no way of knowing which children might have compromised immune systems and there would be the possibility that they could become infected from one of the sheep or goats.

Since then, I have tried using the SHI test in other herds or flocks that had positive cultures from individuals with visible external abscesses. One 4H sheep flock had been asymptomatic until they went to the county fair one year, and unfortunately they were penned next to an animal with a visible abscess. About 8 weeks after they came home, their first clinical abscess developed and it was culture positive for *Corynebacterium pseudotuberculosis*. We tried for 2-2.5 years to clean up the herd based on the SHI results before finally giving up and vaccinating everyone. They culled animals who developed visible abscesses and vaccinated yearly with Case-Bac. It took a few years for visible symptoms to disappear through culling, but they kept up the annual vaccination and were symptom free before all of their children aged out of 4H. It was entirely possible that there were animals in the flock who had asymptomatic disease and were infected but did not develop visible abscesses.

I noticed that WADDL is recommending goat clients run the SHI whenever they send in serum samples for CAE, but I have a hard time recommending this test when even the lab that developed the test has said that it is not an accurate indicator of whether or not an animal is infected with caseous lymphadenitis. I think this is one of those times where a test is available, but due to the difficulty of accurately interpreting the results, it might make more sense just to vaccinate against the disease. The only herds in my practice that currently vaccinate are those that have had clinical cases.

Joan Bowen, Colorado

**AASRP-L QUESTION AND ANSWER - Blood Transfusions in the Field**

**Question:** Can anyone tell me a protocol for doing a blood transfusion in the field? I did some reading but nobody ever mentioned heparin as an adequate anti-clotting agent. I got called out to see a down goat who was ghostly pale. She did not last long but I was trying to find a protocol that does not involve hospitalization. Also, can some of you comment on case selection and outcomes? Do you try to calculate how much you are going to increase PCV? Or does giving them any amount of blood (appropriate for the size of the recipient) buy them enough time for their own bone marrow to catch up? (Assuming recipients are also dewormed with an effective drug or combination of drugs prior to or at the time of transfusion.) Owners always want to give iron supplements! I know that when anemia is caused by parasitism, iron is not the problem, but most owners (at least of pets) want to do “everything they can” to help these animals. Is there any harm in supplementing iron? What is the most appropriate product? Owners often ask me about Red Cell (an equine product...too high in copper!) and Geritol (a human iron supplement, I think). Thoughts? Does this fall under ELDU?]

**Answer:** I use the 450 ml, pre-made blood collection bags (from MWI or Jorgensen) that contain ACD as an anticoagulant. It has a 16 g. needle already attached. I work with a lot of dairy goats, so I usually put the donor doe on the milk stand. I also do standing sedation on the donor doe with 0.5 mg xylazine IV for 125 lb. doe. Clip and prep the jugular vein of your donor goat. Once you insert the needle into the jugular vein and the blood starts to flow, just hold the bag with the anticoagulant in a dependent position and keep letting me know how well the blood is flowing into the bag. The flow into the bag will slow then stop once it is full. Remove the needle from the jugular vein and turn the bag upside down to get the blood that is in line into the bag, then tie a tight knot in the tubing and cut the needle off. Keep pressure on the donor animal’s jugular vein for 5 minutes, then watch for hematoma formation.

You also need to buy the blood administration venoset that has a filter in the chamber. It will fit right into a separate port on the blood collection bag that is now full of blood. With very hypovolemic, anemic and shocky goats,
you can run it in pretty fast - over 30-40 minutes - with no adverse effects. I always try to get baseline vitals on both donor and recipient animal. I often give my donor animals - dog, cat, or goat - IV fluids afterwards (into the contralateral jugular vein in goats). Don’t give any drugs through the same line as the blood. Both saline and Normosol are compatible with blood, but lactated ringers is not, so you can piggy back with those crystalloids if need be.

Blood transfusions are not technically difficult, even in the field, and they can certainly be life-saving. There are simple ways to do cross matches, but I have never done it in the field, as it requires centrifuging and washing the red cells. Nor have I ever tried to store goat blood, so I would love to hear others’ advice about that.

Kellie Frame, western PA

Answer 2: Attach an IV Administration set to a liter bag of saline and drain out all but about 25-50 ml. Add 5000 units of Heparin or 100ml ACD per liter of blood collected. Clip and aseptically prepare the venipuncture site of the donor animal. You may consider placing a local block at the venipuncture site. Wrap a gauze pad at the base of the neck in the jugular furrow to occlude the jugular if you don’t want to keep holding it off. Perform a venipuncture with a 14 g or larger needle or catheter and attach to the IV Administration set attached to the fluid bag. Collect blood by gravity flow until the bag is full or the appropriate amount is collected. Gently agitate the bag as it fills to ensure mixing. Change the Fluid IV Administration set to a filtered Blood Administration set before IV administration to the patient. The blood collected using heparin should be used pretty quickly.

Stacey Byers, Fort Collins, CO

Answer 3: General rule: To increase PCV by 1 % infuse 2.2ml blood/kg of bw. I use 100 units of heparin to 100 ml of blood. I agree with you about the iron supplement but whenever there is an anemic goat in the clinic the students are always hunting me down for an appropriate supplement. Many of the iron supplements have copper in them so that could be a concern. I recommend a human 50mg iron tablet every other day. Pugh’s first text book says iron requirement is 30-40 ppm in the diet. If the animal eats a kg a day then with 50 mg every other day they are getting an extra 25ppm per day. No science there but it seems to make everyone feel better and I don’t think I am doing the animal any harm.

Kevin D Pelzer, Blacksburg, VA

Answer 4: We aim to increase their PCV to 25%, as long as we can use enough blood from a single donor in order to do this. We take up to 15% of blood volume (and blood volume is 8% of body weight) from our donor, and we also replace the volume with LRS. We have a 280 lb donor so we can take up to 1.2 liters at a time (then he gets a month rest). To calculate how much blood you need: ((desired PCV - actual PCV) / donor PCV ) x 0.08 x body weight in kgs. We transfuse animals when the PCV is less than or equal to 10%, sometimes in the 10-15% PCV range (depending on the animal’s overall condition). Animals that are down have a worse prognosis in my experience, as do animals with PCV <6, or another problem (pneumonia etc).

Pippa (Philippa) Gibbons, College Station, Texas, USA

**AASRP-L QUESTION AND ANSWER - Preferred Route of Administration for Anthelmintics**

Question: Could someone help me to understand why the sheep industry administers all dewormers orally? I’ve accepted it as conventional wisdom, but do not know the reasoning.

Answer 1: Several reasons, probably.
1. Sheep have been dewormed via drench forever, and producers are used to it. Furthermore, it’s not difficult to drench a sheep (vs an unhappy 1,200 pound bovine). Hence no label has been pursued for injectable use in small ruminants. Furthermore ivermectin injection is very painful (propylene glycol vehicle) and will cause goats to scream and do back flips, which does not please owners.
2. Mechanics of pour-on absorption are variable by species and hair follicle structure. Pour-ons have not been shown to be reliably absorbed in small ruminants via the pour-on route.
3. Injectable macrocyclic lactone anthelmintics (ivermectin, moxidectin, etc.) are given in a vehicle that is moderately slowly absorbed and then remains in the animal for some period of time. The pharmaceutical companies tout these periods as giving one longer duration of parasite control (e.g. 2-5 days in cattle), but the dark side is that there is a longer tail of subtherapeutic levels after the effective period and this greatly accelerates the development of resistance in the nematode population. This problem is many times worse with pour-on applications and is probably responsible for the rapid development of nematode resistance in cattle nematodes in Australia where pour-ons were adopted early and aggressively. Drenched products get in the animal, kill the worms, and are rapidly excreted, with a very short period of subtherapeutic dose on board. Any gain in a couple of days of extra therapeutic effect in small ruminants has been more than equally counteracted by the development of drug resistance.
4. Drenches are sometimes less expensive. Hope this helps. Others may have more information.

Joe Snyder, Portland, OR

Answer 2: I concur with everything Joe Snyder said, but can offer a few additional points:
1. Oral administration of anthelmintics to small ruminants is preferred for a number of reasons -- but it is not an absolute golden rule: For each drug class there is a specific good reason.
2. Benzimidazoles are insoluble and are only available in oral forms -- so no choice here.
3. Levamisole: Both subcutaneous and oral will yield similar good efficacy, since levamisole is rapidly absorbed by both routes. However, following SC administration, absorption is extremely rapid leading to higher peak plasma concentrations that are more likely to cause toxic reactions. Oral absorption is a bit slower, producing a lower peak and greater safety. Thus for GI nematodes oral is the preferred route. However, if treating non-GI worms the SC route might be preferred.

4. Macrocyclic lactones: It has been demonstrated that the oral route is the most effective since the worm has the greatest contact with drug. Even though PK studies show higher bioavailability after SC, that is based on measuring blood levels. However, there is more drug coming into contact with the GI worms (even *Haemonchus* as a blood sucker) after oral administration. Plus as Joe points out, the length of time where there are residual sub-therapeutic levels is reduced following oral administration so that there is less selection for resistance.

5. Monepantel (Zolvix): Not yet approved in the US, but it is sold only as an oral drench.

Ray M. Kaplan, University of Georgia

**AASRP-L QUESTION AND ANSWER - Herd Health Program for a Range Flock**

Question: I have a client with around 4000-5000 range ewes, primarily white face. He recently asked me to give him ideas for herd management and a vaccination program. I have worked with small family flocks, but nothing on this scale. It’s a little frustrating, as it is hard to get all the information from the owner. Initially he called in about April 2012 as he was losing a lot of lambs to “rattle belly” and had a lot of ketosis. I went out to visit the ranch and got to see the lambing barn at the end of yearling lambing. I also got to see his bumper lamb program. Did a fair bit of research, learned a lot myself and wrote up several suggestions for him which were mostly shot down as they didn’t fit his way of thinking. …My thoughts are Bo-Se at birth, *Campylobacter* to ewes pre breeding, and CD-Tetanus pre-lambing, and deworming at a minimum. Band resides in Central Oregon.

Answer 1: You will need to time vaccinations to when the ewes are already being worked. It takes a lot of man power and corral to work that many sheep. I also would be hard pressed to inject every lamb at birth, better to test mineral status of ewe flock and adjust trace minerals… I also recommend retesting the OPP positives, WADDL does a good job and can help you with disease questions.

Jill M. Swannack, Lamont, Washington

Answer 2: Just had a similar discussion with a colleague the other day, although it was about changing a cow herd. His advice to me was to find something within the herd you feel you could impact immediately and significantly enough that the owner could recognize it. Also, only one or two changes at a time. So, if analyzing the feed and adjusting the mineral is a simple enough change, and you can MEASURE the impact (especially financially), then the client wins, you look like a hero, and you get to stick around for another year, and he is more willing to accept other changes.

If he is agreeable to OPP testing, implementing a culling program may be the route to go. If given the opportunity to euthanize an OPP positive ewe, showing the post mortem OPP findings may give you some credibility in his eyes, and again, open the doorway. Also, Dr. Mike Heaton at the USMARC has done a huge amount of genetic research in OPP and would be a good resource for you. <mike.heaton@ars.usda.gov>. Flex your resource and networking muscles; that’s an advantage this list serve gives us that producers and lay folks don’t have access to.

Katherine Whitman, Clay Center, Nebraska

Answer 3: Working with large range flocks can be really interesting and fun because if you make a change that is needed, the benefits it reaps its owner can be huge. However, remember that he has been doing what he has been doing for a long time. You can make suggestions and they will throw up all sorts of reasons why they can’t do it, but they take it home with them and chew on it for a while and sometimes figure out how to get it done. However, throwing out suggestions without knowing more about his operation probably isn’t going to open any doors. He can tell you a lot of stuff, but you and he need to know some basics before you can really help him.

In my mind, there are a few areas that you and he can reap big rewards and shouldn’t be too difficult. One is to BSE his rams. If he hasn’t ever had his ram band checked and if he has *Brucella ovis*, you may get rid of 50% of the rams on palpation alone. Don’t bother to take blood or semen on them. Don’t let him talk you into letting one ram stay because he spent a lot of money on him or he’s a pet or what have you. Explain that ram will infect any new rams he buys. Then blood test the rest keeping in mind that you may have *Histophilus somni* and it won’t come up on a blood test. This should be done yearly but in the following years, it probably won’t be *B. ovis* and you will only cul led a handful of rams. If you haven’t done a lot of palpating you may also miss a few so the second year, you may have a few more than you might expect. If you get positives on the blood test; expect about ½ of them to be positive. Get rid of positives and all suspects. You may have to talk like a Dutch Uncle but emphasize that ½ of his rams were all that were fertile anyway and the others were infecting his ewes and causing open ewes, abortions and still births. He may tell you that he doesn’t have those problems. Then tell him he is feeding a lot of extra rams. I would explain all of this to him beforehand so it won’t be a huge shock and if he gets cold feet and won’t cull the rams after you do it, you have wasted your time and his money. If it turns out that he doesn’t have the disease in his rams, so much the better. He will be tremendously relieved. If he does have a large percentage of positive rams and he gets rid of them, you can tell him his next lamb crop will probably increase by at least 10% and he will whittle through lambing because a large percentage of his ewes will breed on the first heat. I would do this before the ram sales come up unless he buys his ram by private treaty. However, he can drop his ram to ewe ratio down to at least 1:75.

My next suggestion and you can do this when he lambs this next year, is to go out to his place about a week after lambing and once a week thereafter and necropsy all the dead lambs in the dead piles. You’ll have to ask him not to let the dogs drag them around or eat on the pile. Most of the dead babies are easy to diagnose. Lung not inflated, still birth, abortion; if a deep yellow color to its wool, dystocia. Lungs inflated, no milk in the belly; starvation. Broken ribs, ruptured liver, blood in body cavities; stepped on. Lung inflated, deep red color; pneumonia (*Pasteurella*). Lungs inflated, normal color, intestines filled with liquid and air, may or may not have a wet butt; usually has a wet mouth, *E. coli*. Keep track of what you find. You will find a lot of starvation and a lot of *E. coli* probably. After the second week, probably trauma, and starvation due to mastitis in the ewes or too little milk for twins. Three weeks old lambs: starvation and coccidia (mucky butts or sudden death, etc). If you are seeing sudden death and not much else on the necropsy, do a gram stain of the ilium and look for a lot of Gram positive rods or coccidia. The cold weather and the fact that these dead lambs cool out fast keeps the lambs looking pretty fresh so what you see in your gram stain is likely what was in it before it died. Lots of big gram positive rods and possibly sugar in its urine (although I don’t generally find anything infectious in the bladder (necrosis) and possibly fluid in the pericardial sac give you a diagnosis of *Cl. perfringens* D, a bloody gut (that’s red on the outside but also bloody contents on the inside) is *Cl. perfringens* C. If you don’t find many of those, don’t worry too much about vaccinating. If you do, suggest vaccinating when they dock and castrate.

It doesn’t take long to open the whole dead pile if you are just doing lambs; maybe an hour or even less. Sharpen your knife and charge him by the hour and give him the tally in writing and save a copy for your own records. That should help make him understands how much money you can make him by...
just knowing what his biggest losses at lambing are due to. Discuss what he can do to fix it but don’t get depressed by his throwing up barriers. I think that is normal, especially if it is going to cost him money. This is a good year, though, to get a foot in the door. Lamb prices have been high and he should have a little extra money in his pocket. Lamb prices are predicted to stay high which will make your job a lot easier. (Keep track of the price of lamb and the price of feed) Then you can talk and be more intelligent about changes he should make.

If he isn’t losing lambs from Cl. perfringens, don’t worry about vaccinating lambs. If he isn’t feeding enough, that should show up as starvation in lambs from day 1 until he turns them out. Vaccinating that many lambs is expensive and he may not need it. If he is already, just let him until you know more about what’s going on in his operation. If he had a number of abortions gather up at least three and send them and placentas into a diagnostic lab. Actually, you can just send placentas so that the shipping isn’t quite so expensive. If you just find a few, don’t bother.

If you can talk him into those two things, you’ll have done him a great service and probably know where to go next. Once he knows where his losses are coming from, no doubt he will make the management changes himself or talk them over with you. Both of you will know a lot more about his operation and where to go next. Good luck and come back to the list when you have more question.

Marie S. Bulgin, Caldwell, Idaho

Answer 4: I would like to reiterate the suggestion of others that identifying goals is very important. Often, it’s what the rancher is NOT telling you that is as important as all the words that he is telling you. Watch for the silences.

One thing that might be useful regarding selenium: If the rancher is offering free-choice minerals, regardless of the actual label composition, you would have to be comfortable with the assumption that all the animals are consuming this mineral on a regular basis. In general, especially for a large flock that is not intensively managed, this would be a questionable assumption. I could, however, also see why the rancher would balk at the prospect of injecting all the ewes with anything, including Bo-Se.

But since this operation is in Oregon, you may have an alternative option for selenium. Oregon permits the use of selenium (product = Selcote-Ultra) in dry fertilizer. If the rancher grows his own gestation forage and follows some form of fertilizer plan with those irrigated fields, then he could possibly add selenium to the fertilizer in the previous summer or fall. The fertilizer plant would have to do the mixing, but this is a routine procedure, costs around $7-8/ac (rate is 4.5 g Se/ac). The resulting forage generally contains selenium at 0.3-0.7 ppm for a year, maybe longer in his drier climate, which is a fine level and would be universally and steadily consumed.

Anyway, it’s just an idea. The issue is more than just selenium, of course, but that may be an opening that helps you work with a client.

Woody Lane, Ph.D., Roseburg, OR

**EFFECTS OF GESTATIONAL AGE ON PHYSICAL FINDINGS OF IMMATURITY, BODY WEIGHT, AND SURVIVAL IN NEONATAL ALPACAS (2002-2010)**

Crias born before 330 days or with signs of immaturity have a good prognosis for short term survival but will likely incur higher treatment costs at a referral hospital when compared with mature crias.

The records of neonatal crias (< 4 weeks of age) presented to the veterinary hospital at the University of Wisconsin between 2000 and 2010 were examined. Prematurity was defined as birth before 330 days of gestation, whereas immaturity was diagnosed if any of the following characteristics were present at presentation or birth in the hospital: tendon laxity, poor cartilage formation in the ear pinnae, failure of eruption of the incisors before birth or low birth weight. Short term survival was defined as discharge from the hospital. Of 130 neonatal alpacas presented, 86 (66%) had a gestational age recorded. The range was 312 to 393 days, with a mean of 340 days. The crias ranged from 0 to 21 days of age on presentation. Reasons for referral to the hospital included weakness, failure of passive transfer, failure to nurse, or prematurity. Sixteen crias had a known gestation age less than 330 days and 11 of these had physical signs of immaturity. There were 63 crias born within the normal gestation period of 330 to 360 days, and 15 of these had physical findings of immaturity. Of the 7 crias born after day 360, one had physical signs of immaturity. Crias with physical findings of immaturity were 3 times more likely to have been born prematurely than at term. Immature crias had lower birth weight (mean 6.5 kg) than physically mature crias (mean 8.8 kg). There was no statistical difference in survival between crias born prematurely (77%) and those born after a normal length gestation (88%) but numbers were too small to find such a difference if it existed. Cost of treatment was higher for immature crias that survived ($1750) than mature-appearing crias that survived ($1064). The treatment costs for surviving premature but physically mature crias ($950) was lower. Duration of hospitalization did not differ between any of the groups of surviving crias. Blood cultures were performed in 52% of the 27 immature crias and grew pathogens in 36%. Plasma transfusions were administered to 82% (22 of 27) of the crias with signs of immaturity. Survival was similar for premature and gestationally mature crias presented to the referral hospital, but healthy term crias did not figure into the referral population. None of the crias had physical examination findings or thoracic radiographs suggestive of surfactant deficiency, so it is unlikely that crias born after 312 days gestation will have a surfactant deficiency leading to respiratory failure. Radiographic examinations were not undertaken to investigate joint maturation, as is commonly done in immature foals. Immature crias often had laboratory evidence of septicemia, such as leukopenia or toxic changes in white cells, but this could be explained by musculoskeletal weakness affecting the cria’s ability to nurse.

Hardefeldt LY et al.  

**SOURCES OF STREPTOCOCCUS DYSGALACTIAE IN ENGLISH AND WELSH SHEEP FLOCKS AFFECTED BY INFECTIOUS ARTHRITIS (JOINT ILL)**

One or a few ewes may contaminate the pen; clean bedding is important for prevention of joint ill.

Streptococcus dysgalactiae is the most common cause of outbreaks of polyarthritis (joint ill) in lambs in England and Wales. Lambs usually begin to show signs at less than 4 weeks, and most typically at 10 to 14 days of age. Previous workers have isolated the organism from the mouth and vagina of a small number of ewes and the umbilicus is thought to be a portal of infection for the lamb shortly after birth. Because many lambs remain indoors on bedding for 24 hours or more after birth, the environment may be a source of infection, but survival of the organism in bedding has not been previously determined. The current study was designed to investigate the ewe as the source of contamination and the duration of survival on
CLINICAL MANAGEMENT OF POSTPARTUM HEMORRHAGE FOLLOWING FAILURE OF CERVICAL DILATION IN AN ALPACA

A vaginal tampon to compress the artery stopped the bleeding; aminocaproic acid was also given.

A 9 year old alpaca with a history of dystocia followed by failure to conceive despite multiple breedings was managed intensively and finally successfully bred using a minimum-contamination technique. The female received ceftriaxone (2.2 mg/kg Excenel\textsuperscript{®}) SQ one day prior to and 2 days after breeding. It was also give 50 mcg of a GnRH analogue (Cystorelin\textsuperscript{®}) IM to induce ovulation and a single dose of flunixin meglumine, 1.1 mg/kg SQ. The animal was then given 250 mg of exogenous progesterone (hydroxyprogesterone caproate) IM every 3 weeks from 7 to 300 days of gestation. The progesterone was given because of the animal’s previous history of infertility, but serum samples taken throughout pregnancy and analyzed retrospectively documented that the animal’s progesterone concentration dropped to 1.28 ng/mL at 95 days, 1.20 ng/mL at 116 days, and 0.60 ng/mL at 179 days. Progesterone concentrations less than 1.0 ng/mL are considered evidence of luteal insufficiency in alpacas. At 324 days of gestation the female was hospitalized to monitor parturition and given daily domperidone therapy (Equidone\textsuperscript{®}, 220 mg PO) on days 326 to 332 because of inadequate mammary development. The chorioallantois ruptured at 345 days gestation but the cervical dilation was judged to be only partial, at 6 to 8 cm. After 10 to 15 minutes of manual dilation of the cervix a live male cria weighing 7.73 kg was delivered. Profuse bleeding from the vulva then became evident. An intravenous catheter was placed and a loading dose of 5 g of aminocaproic acid was given in 500 ml of lactated Ringer’s solution (LRS), followed by 3 liters of LRS over 1 hour. This drug is thought to inhibit plasminogen activation, thereby stabilizing blood clots. The alpaca was given one quarter of a typical equine loading dose of 20 g. Subsequent doses of 2.5 g were given to the alpaca every 6 hours for a total of 3 doses. The female collapsed in the stocks and was given supplemental oxygen. A tampon was fashioned from brown gauze over roll cotton, covered with sterile lubricant, and inserted into the vagina to provide pressure at the site of hemorrhage from a several centimeters long tear involving and just cranial to the cervix. The tampon was removed after one hour, and oxytocin was given at 20 IU every 4 hours until the placenta passed at 34 hours and ceftriaxone was given at 2.2 mg/kg every 12 hours for 7 days. Ultrasound revealed no accumulation of fluid in the abdomen, suggesting that the tears had not been full thickness. Endoscopic exam at 21 days demonstrated that the vaginal tear was granulating normally, with no evidence of recent hemorrhage. The alpaca successfully raised its cria but rebreeding was not attempted. In the authors’ practice, all obstetrical manipulations are limited to 20 minutes, after which a Caesarian section is performed if the cria has not been delivered. Otherwise there is an increased risk of postpartum hemorrhage from damage to the vaginal artery. If this artery is torn, cardiovascular shock occurs, and if not recognized and treated promptly, the female is often found dead several hours after parturition. The exogenous progesterone might or might not have contributed to the failure of cervical dilation.

Pearson LK and Tibary A
DAIRY SHEEP PRODUCTION RESEARCH AT THE UNIVERSITY OF WISCONSIN-MADISON, USA - A REVIEW

Many ways to increase milk production and profit were investigated.

The Spooner Agricultural Research Station houses the only dairy sheep research flock in North America, and this paper summarizes much of the research that has been done there since 1993 when two ½ East Friesian (EF) rams were imported into the meat flock in 1993. The milking parlor is a double-12 high-line Casse system with in-place cleaning and the ewe flock is maintained at approximately 300 breeding ewes. When the original 1/2 EF rams or polled Dorset rams were mated with crossbred ewes (1/2 Dorset, 1/4 Romanov or Finn sheep, 1/4 Tarhgeb), the EF-cross lambs had greater birth, weaning, and postweaning weights that the Dorset-cross lambs, and when they lambed at 1 and 2 years of age gave birth to 0.27 more lambs per ewe lambing and produced 1.9 times more milk and more weight of milk fat and milk protein than the Dorset-cross ewes. This strongly supported the use of dairy sheep genetics over domestic meat/wool genetics for commercial sheep dairies. Later the EF and Lacaune (LA) breeds were compared. Ewes sired by EF rams gave 0.16 more lambs per ewe lambing than did those with LA sires. The EF derivation ewes also gave somewhat more milk, but very similar amounts of fat and protein over a lactation as the LA sired ewes. There have been no new importations of Lacaune genetics and only limited new importations of EF genetics into the USA since the late 1990s, so the breed differences found here probably reflect the situation in other US dairy sheep flocks. However, the LA breed in France has probably been making greater genetic improvement, as the French have many more milk recorded flocks and a sophisticated and effective program that has been improving the production of LA ewe by 6 liters per year. As the Spooner flock graded up to a higher percentage of EF breeding, the lamb mortality increased. For instance, in 1999, lambs with no EF genetics had a 96.4% survival from birth, whereas this was only 72.2% if the lambs were more than 50% EF. Later data analysis showed that the EF breeding of the ewe and not the EF breeding if the lamb is responsible for the increased lamb mortality. Numerous studies were done comparing three weaning systems: wean lambs at 24 to 36 hr postpartum and raise on milk replacer while machine milking the ewes (DY1), separate lambs from ewes overnight and machine milk once in the morning until weaning at 30 days (MIX), and leave lambs with ewes until weaning and machine milking begins at 30 days (DY30). Milk production was significantly different (DY1 = 260 kg, MIX = 236 kg, DY30 = 172 kg) but lamb weaning weights were not significantly different. The best income from milk and lamb over additional days of lambing and leave lambs with ewes until weaning and machine milk once in the morning until weaning at 30 days (MIX). The MIX system, which would be expected to vary with the prices of milk and lambs. The MIX ewes had a much lower milk fat percentage (2.8%) than the DY1 ewes (4.8%), presumably due to a failure of oxytocin release in the ewes holding up milk until returned to their lambs. When twice a day milking was compared with 3X milking, the 3X ewes produced 15% more milk during the first 30 days of lactation. After this time they were all milked 2X, and there were no carry-over effects on later lactation. In another study, some ewes were switched to a 16 hour milking interval at 90 days lactation, with no decrease in milk production noted. Machine stripping is frequently done with dairy sheep as they lack a vertical teat placement, but this lengthens the milking time and might result in over-milking of some ewes in the parlor. Ewes that were not stripped yielded 14% less commercial milk with no effect on milk composition or somatic cell count. Increased parlor throughput might partly or completely compensate for the decreased production. Photoperiod studies showed that short day length (8 hours) prepartum resulted in decreased circulating prolactin concentrations prelambing and increased milk production after lambing relative to ewes kept under long days (16 hr) prelambing when all the ewes at parturition were relocated to a room with 12 hours of light and 12 hours of dark and milked together twice a day. Ewes managed so as to be in late gestation in early winter under short day length might be expected to give more milk than those in late gestation in later winter or spring. Various nutrition studies showed that utilization of high pasture protein was improved by increasing dietary energy intake in the form of whole shelled corn. Adding more rumen undegraded protein to the diet also favored higher milk production for the ewes on lush pasture. Research related to processing aspects of sheep milk is not included in this summary but can be found by searching the Journal of Dairy Science for the authors W. Wendt and J. Jaeggi.


D-LACTIC ACIDOSIS IN NEONATAL RUMINANTS

Impairment of the palpebral reflex is a hallmark, at least in calves. Does this also occur in floppy kids?

D lactate in mammals is produced almost entirely by microbial flora within the gastrointestinal tract. Until the 1980s, D-lactic metabolic acidosis in veterinary medicine was only known to occur in adult ruminants suffering from acute ruminal acidosis from grain overload. Metabolic acidosis in calves was thought to be caused by loss of bicarbonate in the intestines or formation of L-lactate during anaerobic glycolysis under conditions of dehydration. Because D-lactate did not have medical significance, tests were not developed to detect D-lactate until later. Also, it was initially believed that mammals could not metabolize D-lactate but recent research has identified D-lactate dehydrogenases in mammalian tissues, including liver cells, though brain and heart have a much lower activity of these enzymes. In neonates, although D-lactate could theoretically be introduced by consumption of spoiled milk or yoghurt, essentially all of the D-lactate originates from bacterial fermentation in the reticulorumen or the intestinal tract. It has been shown in calves that force feeding milk, milk replacer, or various oral rehydration solutions results in abundant production of lactate in the rumen, and both stereo-isomers are equally represented. Ruminal drinking calves, with esophageal groove dysfunction, also incur lactic fermentation. In calves with diarrhea, younger calves with enterotoxigenic E. coli have lower D-lactate concentrations than older calves with viral or cryptosporidial infections that result in villous atrophy in the small intestine. Malabsorption and malabsorption then result in substrates being subjected to microbial digestion in the large intestine. It is likely that D-lactic metabolic acidosis without dehydration and with no or minimal diarrhea also results from overproduction of D-lactate in the intestines. Humans with D-lactic metabolic acidosis show altered mental status, slurred speech, ataxia, disorientation, and weakness. Affected calves are most commonly reported to show ataxia and depression. However, it has been shown that D-lactate rather than metabolic acidosis per se, is associated with impaired posture, behavior, and especially impairment of the palpebral reflex in calves. The sucking reflex on the other hand is impaired by metabolic acidosis. Impairment of the palpebral reflex is now considered to be highly specific for D-lactic metabolic acidosis. Floppy kid disease, first described in 1991, closely resembles an acidosis without dehydration syndrome that has been recognized in suckler calves since 1984. Affected kids have higher colony-forming unit counts of enterococci, streptococci, staphylococci, and lactobacilli in their feces than do healthy kids, though the cause of this dysbacteriosis remains unclear. The kids are depressed and weak with a high anion gap metabolic acidosis that can be treated with oral or IV sodium bicarbonate. A similar D-lactic metabolic acidosis in lambs was first described in 2009. Recently lambs affected with this syndrome have been shown to have varying degrees of nephrosis on histology, though this is not usually reported with affected calves or kids. Successful treatment of D-lactic metabolic acidosis can target a decrease in D-lactate production and absorption or an increase in metabolism and excretion. If correction of the acidosis is achieved, concentrations of D-lactate decrease regularly within 24-48 hours. Correction of the metabolic acidosis might result in decreased D-lactate production by interrupting a
NEUROLOGICAL DISEASE IN LAMBS ASSOCIATED WITH EXPOSURE TO HIGH ENVIRONMENTAL TEMPERATURE AND HUMIDITY

In high heat index conditions, rapidly growing sheep that display kyphosis and hyperreflexive limbs should be cooled.

During the summers of 2009 to 2012, a number of lambs presented to the Texas A&M Veterinary Medical Teaching Hospital with clinical signs of high rectal temperature and neurologic disease. Using a case definition of sheep under 12 months of age with neurologic signs coupled with a temperature greater than 104 °F (40 ºC), 18 affected animals were identified of which 15 had enough data recorded to include in the present report. A grading system was established, which described the clinical signs at time of presentation. Grade I animals had mild kyphosis, pelvic limb hyperextension, treading of feet, and hyper-reflexive spinal reflexes in all limbs. Grade II animals had kyphosis, muscle fasciculations, increased time of recumbency, and hyper-reflexive spinal reflexes in all limbs. Grade III animals were recumbent with hyperreflexive reflexes in all limbs. All cases occurred July to September and the median temperature for the three days prior to presentation was 86 °F (30 ºC) with a median humidity of 58% and a median heat index of 90.5, classified as emergency conditions for livestock. The lambs were 4 to 6 months old and of at least 3 breeds. All were bright and alert with good appetites and normal cranial nerve function. The median rectal temperature on presentation was 106.2 °F (range 104.2 to 107.6 °F). Seven animals presented as a group from a single owner and the other 8 presented individually. When tested, lambs showed elevations in GGT, AST, and creatinine kinase consistent with muscle fasciculations and recumbency. Cerebrospinal fluid was analyzed in 5 cases but results were not striking. Tests for bluetongue and epizootic hemorrhagic disease were negative. Magnetic resonance imaging was performed on two animals but no changes were identified in the brain or first segment of the spinal cord. The animals were admitted to the air conditioned hospital and treated by cooling alone or also given various antibiotics, fluids, anti-inflammatories or thiamine. Five were euthanized and submitted for necropsy along with one that died under general anesthesia for MRI. The 9 survivors improved at least one grade and were discharged after 2 to 7 days of hospitalization. Mild, generally subtle axonal degeneration was found at all levels of the spinal cord, especially in the ventral and ventrolateral funiculi. Minimal to mild skeletal muscle degeneration was found in 5 of 6 animals. Five of 6 animals had vacuolar changes in the liver (severe in 4). All of the lambs were receiving concentrates for rapid growth, and their high metabolic rate might have predisposed them to heat stress. A very similar syndrome of fever and axonal degeneration, called humpyback disease, has been reported in Australian sheep gathered for shearing in hot weather. The Australian condition has been associated with the consumption of a Solanum species, but the Texas cases lacked consistent exposure to such plants. An ergot alkaloid mycotoxin (associated with hyperthermia in ruminants) cannot be completely ruled out and needs further investigation. Recently eight lambs with similar signs of hyperthermia, arched back, and muscle fasciculations were reported from a farm in Oklahoma. Producers should be made aware of this syndrome in rapidly growing lambs in hot weather and of the value of cooling the affected animal.


PROTEIN PROFILING OF ISOLATED UTERINE AA AMYLOIDOSIS CAUSING FETAL DEATH IN GOATS

Amyloid deposits in the caruncles compromised gas and nutrient exchange and caused fetal ischemia and death.

Eight goats aged 3 to 7 years from two farms in California experienced abortion or prolonged gestation with mummified fetuses. The does were sacrificed for complete necropsy as previous diagnostic efforts on the farms had failed to yield an etiologic diagnosis. Six of these does were Toggenburgs and the other two were Saanens, but within the breeds the animals were closely related. Four of the goats had experienced at least one previous abortion. Extensive testing of 17 fetuses and one live neonate as well as placentas (serology, aerobic culture, histology, heavy metal testing) again failed to yield a diagnosis. Dead fetuses showed multifocal areas of white matter necrosis and mineralization in the cerebral cortex consistent with placental ischemia. All eight adult goats had chalky-appearing endometrial caruncles with occasional white streaks. Histology of the uterus revealed amorphous amyloid deposits in the interstitium of the caruncles but not in the endometrium between caruncles or in the myometrium or vessel walls or in other internal organs. The material was confirmed as amyloid by Congo red staining, birefringence under polarized light, and immunohistochemistry. In some of the caruncles 80 to 90% of the stroma consisted of amyloid. Ultrastructurally the endometrial amyloid consisted of loosely arranged bundles of unbranched fibrils. Various laboratory tests demonstrated that the amyloid was full length SAA3. The SAA3 was locally produced and deposited in the uterus, a highly unusual location. Tissues of four control goats euthanized for various inflammatory conditions were also examined but no amyloid was detected in these animals. Two other forms of amyloid protein, SAA1 and SAA2, are acute phase proteins produced by the liver and are associated with inflammatory conditions, as their production is upregulated by IL-1, IL-6, and TNF-alpha cytokine signaling during chronic inflammatory, neoplastic, or infectious diseases. These forms of amyloid commonly accumulate in the spleen, liver and kidney. The underlying mechanism for SAA3 amyloid production in the caruncle of these goats is unknown.

Gaffney PM et al. FASEB J Published online before print November 24, 2014
EVALUATION OF CHD7 AS A CANDIDATE GENE FOR CHOANAL ATRESIA IN ALPACAS (VICUGNA PACOS)

This gene, involved in multiple malformations including choanal atresia in human babies, does not appear to be the primary cause in alpacas.

Choanal atresia is a relatively common congenital defect in cameldids, occurring in 0.48% and 0.75% of live births in alpacas and llamas, respectively. In the US llama population, choanal atresia accounts for approximately 10% of congenital malformations. Affected crias have a unilateral or bilateral fibrous or bony septum occluding nasopharyngeal communication. They are dyspneic at birth and frequently develop a fatal aspiration pneumonia. Breeding studies have suggested that choanal atresia is inherited as a recessive trait that is not sex-linked. In human babies, choanal atresia is frequently associated with other anomalies in the CHARGE syndrome (Coloboma, Heart malformation, choanal Atresia, Retardation of growth, Genital anomalies and Ear anomalies). In most CHARGE patients causative loss of function mutations have been found in the CHD7 gene, and these mutations often arise de novo in the affected individual. The authors of the current paper sequenced the CHD7 coding region of a normal alpaca. They then selected 6 alpaca crias with choanal atresia and severe facial asymmetry from a cohort of 23 crias with choanal atresia presented to the University of Minnesota’s veterinary diagnostic laboratory. In all six individuals a soft tissue membrane caused an occlusion between the nasal septum and palatine bone. Various other malformations involved the skull, eye and optic nerve, brain, genital atresia or dysplasia and transposition of the great heart vessels. These 6 crias were thought to best represent a CHARGE syndrome and their CHD7 gene was sequenced. When compared with unaffected alpacas, 49 nucleotide variants were identified, but no common disease-associated mutations were detected. Although some of the mutations may be functional and a role of CHD7 in choanal atresia cannot be completely ruled out, these mutations do not appear to be the primary cause of choanal atresia in alpacas.

Reed KM et al.

THE ‘FIVE POINT PLAN’: A SUCCESSFUL TOOL FOR REDUCING LAMENESS IN SHEEP

The program seeks to build resilience, reduce disease challenge, and establish immunity.

Footrot and foot scald are the most prevalent causes of lameness in the UK, with an estimated 3 million sheep lame at any one time. The Farm Animal Welfare Council (FAWC) has set a target to reduce lameness to less than 5% by 2016 and less than 2% by 2021. The Five Point Plan was developed to achieve a farm-level solution to the lameness problem. The first point is to cull badly affected animals and those with misshapen hooves and any others treated more than once for footrot or scald, thereby increasing flock resilience. The next point is to quarantine any incoming animals until they are fully quarantined. The third point is to improve conditions underfoot in the field/barn and to restrict exposure that results from periods of close contact, as when the sheep are handled. The fourth point is to avoid propagation of infectious lameness on the farm by improving conditions underfoot in the field/barn and to restrict exposure that results from periods of close contact, as when the sheep are handled. The fifth point, not available to producers in the USA, is to vaccinate biannually, with boosters timed to provide peak protection during high risk times. A 6 point scoring system has been devised where score 0 animals have sound mobility, 1 indicates very mild lameness, 2 indicates obvious lameness in an animal that stands and walks on all four legs, 3 indicates an animal that walks on four legs but stands on three, 4 indicates an animal that walks on 3 legs only, and 5 indicates an animal reluctant to bear weight on more than 1 limb. Under this program sheep are considered lame with scores greater or equal to 1. The program was applied to a closed breeding flock of 1000 Coopworth ewes with outdoor lambing. The first year 4% of the ewes were culled for lameness and vaccination was begun. A single observer walked through the flock once a month and scored the sheep. Before the program was implemented the mean lameness prevalence was 7.4% with a seasonal peak of 19.1%. After the first year the flock achieved the FAWC target level, with a mean of 2.6% lame. Fewer than 1% were lame during every month of years 2 through 4. The antibiotic usage on the farm also decreased dramatically, from 3.8 treatments per 100 ewes per month before the program, to 0.3 treatments per 100 ewes per month during years 2 through 4. The program is likely to be relevant for lameness caused by ovine digital dermatitis also.

Clements RH and Stoye SC.
Vet Record 175(9):225, 2014

EPIDEMIOLOGY OF VAGINAL PROLAPSE IN MIXED-AGE EWES IN NEW ZEALAND

Prolapses increase with litter size and hilly terrain; ewes known to be carrying multiple lambs are best kept on flat pastures in late pregnancy.

In New Zealand, most vaginal prolapses occur 2 to 3 weeks before lambing and on most farm 0.5 to 1% of ewes are affected annually, though in some outbreaks as many as 10% of ewes are affected. Previous studies have shown that the disease is more common in ewes carrying multiple lambs rather than singles, the risk increases with parity (1st, 2nd, 3rd or more) and that affected ewes have a higher risk of recurrence in subsequent pregnancies. Conditions that increase the intraabdominal pressure would logically increase the risk of prolapse, but subclinical hypocalcemia, once considered a risk, is now believed to be a consequence of the prolapse rather than a cause. This report describes a longitudinal study of vaginal prolapse over two years in 113 farms in 2000 (61 in the Hawke’s Bay area and 52 in Southland and 88 farms continuing in 2001. Only 2-year-old and older ewes were included in the study. Flock sizes ranged from 345 to 6000 ewes 2 years or older. Two hundred cohort ewes on each farm were individually identified and followed, with collection of additional data such as body weights. Prolapse occurred in 34 of 6451 cohort ewes in the Hawkes Bay (0.05%) and 44 of 3843 ewes in Southland (1.1%). Annual farm incidence rates varied from zero to 5.9. There were 406 cases in a population of 36,695 animals for which scanning information was available. The odds of prolapse in ewes carrying multiple lambs were 3.43 times higher than those carrying singles. The risk also increased for ewes on steep pastures, those gaining weight between the start of mating and scanning time, and with the feeding of swedes or access to salt in late pregnancy. Increased abdominal pressure in the pelvic canal when sheep graze or lie down facing uphill could explain many of the factors affecting the risk of vaginal prolapse. Shearing during the second half of pregnancy was protective. No association was found with tail length, which varied from 1 to 5 cm. Most farmers culled affected ewes, but 17 tagged ewes were carried over to the next year and 6 of these prolapsed again (35%).

TOPICAL INDEX 2014

<table>
<thead>
<tr>
<th>Topic</th>
<th>Species</th>
<th>Ref #</th>
<th>Issue-Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abortion caused by amyloid deposits in caruncles</td>
<td>goat</td>
<td>17</td>
<td>42.4:12</td>
</tr>
<tr>
<td>Abortion diagnosis with Q fever serology</td>
<td>goat</td>
<td>14</td>
<td>42.2:15</td>
</tr>
<tr>
<td>Abortion due to <em>Campylobacter</em>, dealing with</td>
<td>sheep</td>
<td>2</td>
<td>42.1:10</td>
</tr>
<tr>
<td>Abortion due to <em>Verminia</em> infection</td>
<td>goat</td>
<td>18</td>
<td>42.3:13</td>
</tr>
<tr>
<td>Aggression decreased by gonadotropin releasing hormone vaccination</td>
<td>camelid</td>
<td>12</td>
<td>42.2:12</td>
</tr>
<tr>
<td>Aminocaproic acid used to stabilize blood clot</td>
<td>camelid</td>
<td>26</td>
<td>42.4:10</td>
</tr>
<tr>
<td>Ammonium chloride for prevention of urolithiasis</td>
<td>goat</td>
<td>37</td>
<td>42.3:12</td>
</tr>
<tr>
<td>Amyloid deposits in caruncles cause abortion, mumification</td>
<td>goat</td>
<td>17</td>
<td>42.4:12</td>
</tr>
<tr>
<td>Analgesia supplied by bupivacaine or lidocaine</td>
<td>sheep</td>
<td>23</td>
<td>42.2:14</td>
</tr>
<tr>
<td>Anemia, treatment with transfusion in the field (Q&amp;A)</td>
<td>all</td>
<td>4</td>
<td>42.4:6</td>
</tr>
<tr>
<td>Anthelmintics, reasons for preferring oral route (Q&amp;A)</td>
<td>all</td>
<td>4</td>
<td>42.4:7</td>
</tr>
<tr>
<td>Arthrogryposis caused by Cache Valley virus</td>
<td>sheep</td>
<td>4</td>
<td>42.1:11</td>
</tr>
<tr>
<td>Artificial rearing to avoid coccidiosis, editorial</td>
<td>goat</td>
<td>29</td>
<td>42.2:17</td>
</tr>
<tr>
<td>AVMA Animal Welfare Committee report 2014</td>
<td>all</td>
<td>4</td>
<td>42.1:16</td>
</tr>
<tr>
<td>Baking soda offered free choice (Q&amp;A)</td>
<td>goat</td>
<td>13</td>
<td>42.3:13</td>
</tr>
<tr>
<td>Bladder marsupialization a poor choice for urethral obstruction</td>
<td>camelid</td>
<td>32</td>
<td>42.2:11</td>
</tr>
<tr>
<td>Blister beetle toxicosis causes colic</td>
<td>all</td>
<td>4</td>
<td>42.4:6</td>
</tr>
<tr>
<td>Blood transfusion in the field (Q&amp;A)</td>
<td>deer</td>
<td>40</td>
<td>42.3:14</td>
</tr>
<tr>
<td>Bluetongue virus found in deer in New Jersey</td>
<td>sheep</td>
<td>23</td>
<td>42.2:14</td>
</tr>
<tr>
<td>Bluetongue virus serotype 4 outbreak in dairy sheep</td>
<td>goat</td>
<td>3</td>
<td>42.3:17</td>
</tr>
<tr>
<td>Bovine viral diarrhea virus transmitted from cattle to goats</td>
<td>sheep</td>
<td>2</td>
<td>42.2:10</td>
</tr>
<tr>
<td>Breeding soundness exam of ram after poor lambing (Q&amp;A)</td>
<td>sheep</td>
<td>29</td>
<td>42.2:17</td>
</tr>
<tr>
<td>Breeding soundness exams in range flocks (Q&amp;A)</td>
<td>sheep</td>
<td>2</td>
<td>42.4:8</td>
</tr>
<tr>
<td>Brucella ovis seroconversion and semen shedding</td>
<td>sheep</td>
<td>2</td>
<td>42.4:8</td>
</tr>
<tr>
<td>Brucella ovis control in range flocks (Q&amp;A)</td>
<td>sheep</td>
<td>2</td>
<td>42.1:12</td>
</tr>
<tr>
<td>Brucella ovis, laboratory detection of</td>
<td>sheep</td>
<td>2</td>
<td>42.1:11</td>
</tr>
<tr>
<td>Buhner needle, sheep size (practice tip)</td>
<td>sheep</td>
<td>23</td>
<td>42.2:14</td>
</tr>
<tr>
<td>Bunyaviruses, serological prevalence in US</td>
<td>goat</td>
<td>3</td>
<td>42.3:17</td>
</tr>
<tr>
<td>Bupivacaine compared with lidocaine for local analgesia</td>
<td>sheep</td>
<td>2</td>
<td>42.1:11</td>
</tr>
<tr>
<td>BVD transmitted from cattle to goats causing persistent infection</td>
<td>goat</td>
<td>10</td>
<td>42.3:15</td>
</tr>
<tr>
<td>Cache Valley virus update</td>
<td>camelid</td>
<td>44</td>
<td>42.1:13</td>
</tr>
<tr>
<td>CAE virus brain lesions detected by computed tomography</td>
<td>camelid</td>
<td>45</td>
<td>42.2:13</td>
</tr>
<tr>
<td>Camelid common disease presentations part 1</td>
<td>camelid</td>
<td>8</td>
<td>42.1:17</td>
</tr>
<tr>
<td>Camelid common disease presentations part 2</td>
<td>camelid</td>
<td>8</td>
<td>42.3:7</td>
</tr>
<tr>
<td>Camelid health care textbook</td>
<td>camelid</td>
<td>32</td>
<td>42.2:11</td>
</tr>
<tr>
<td>Camels as food animals (editorial)</td>
<td>camelid</td>
<td>32</td>
<td>42.2:10</td>
</tr>
<tr>
<td><em>Campylobacter</em> abortions, dealing with</td>
<td>goat</td>
<td>14</td>
<td>42.3:10</td>
</tr>
<tr>
<td>Cantharidin toxicosis causes colic</td>
<td>sheep, goat</td>
<td>33</td>
<td>42.3:14</td>
</tr>
<tr>
<td>Caseous lymphadenitis vaccine for goats, experience with (Q&amp;A)</td>
<td>sheep</td>
<td>30</td>
<td>42.1:12</td>
</tr>
<tr>
<td>Caseous lymphadenitis, time to seroconversion (Q&amp;A)</td>
<td>camelid</td>
<td>28</td>
<td>42.4:13</td>
</tr>
<tr>
<td>Castration analesia supplied by meloxicam</td>
<td>goat</td>
<td>28</td>
<td>42.3:9</td>
</tr>
<tr>
<td>Ceftriaxone crystalline-free acid, pharmacokinetics of</td>
<td>camelid</td>
<td>28</td>
<td>42.4:13</td>
</tr>
<tr>
<td>CHARGE syndrome in alpacas not caused by CHD7 gene</td>
<td>goat</td>
<td>9</td>
<td>42.4:13</td>
</tr>
<tr>
<td>Chlorine dioxide for teat dip (practice tip)</td>
<td>camelid</td>
<td>1</td>
<td>42.3:14</td>
</tr>
<tr>
<td>Choanal atresia, investigation of candidate gene unsuccessful</td>
<td>goat</td>
<td>1</td>
<td>42.3:14</td>
</tr>
<tr>
<td>CLA vaccine for goats from Texas Vet Lab, experience with (Q&amp;A)</td>
<td>goat</td>
<td>4</td>
<td>42.4:6</td>
</tr>
<tr>
<td>Coccidiosis control by hygiene, editorial</td>
<td>sheep</td>
<td>14</td>
<td>42.2:15</td>
</tr>
<tr>
<td>Coronavirus of Middle East Respiratory Syndrome shed by camels</td>
<td>goat</td>
<td>41</td>
<td>42.1:14</td>
</tr>
<tr>
<td>Corynebacterium pseudotuberculosis, serology for (Q&amp;A)</td>
<td>goat</td>
<td>27</td>
<td>42.3:17</td>
</tr>
<tr>
<td>Coxiella burnetii serology during abortion storm</td>
<td>goat</td>
<td>27</td>
<td>42.3:10</td>
</tr>
<tr>
<td>Coxiellois, factors that would cause an epidemic</td>
<td>sheep</td>
<td>9</td>
<td>42.4:13</td>
</tr>
<tr>
<td>Coxofemoral luxation repaired with toggle-pin</td>
<td>camelid</td>
<td>1</td>
<td>42.3:14</td>
</tr>
<tr>
<td>Cria care in zoo setting (Q&amp;A)</td>
<td>sheep</td>
<td>14</td>
<td>42.2:15</td>
</tr>
<tr>
<td>Calling as crucial part of footrot control</td>
<td>camelid</td>
<td>41</td>
<td>42.2:13</td>
</tr>
<tr>
<td>Cysts on back (Q&amp;A)</td>
<td>camelid</td>
<td>27</td>
<td>42.3:10</td>
</tr>
<tr>
<td>Dairy sheep production, research summaries</td>
<td>goat</td>
<td>28</td>
<td>42.3:10</td>
</tr>
<tr>
<td>Dentistry by laymen (Q&amp;A)</td>
<td>goat</td>
<td>25</td>
<td>42.2:10</td>
</tr>
<tr>
<td>Deworming chart</td>
<td>camel</td>
<td>45</td>
<td>42.2:13</td>
</tr>
<tr>
<td>Diarrhea, chronic, possible causes (Q&amp;A)</td>
<td>camelid</td>
<td>44</td>
<td>42.1:13</td>
</tr>
<tr>
<td>Diseases of camelids from birth to weaning</td>
<td>sheep</td>
<td>24</td>
<td>42.4:11</td>
</tr>
<tr>
<td>Diseases of camelids, common presentations part 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-lactic metabolic acidosis in neonates</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Wool&Wattles October-December 2014
<table>
<thead>
<tr>
<th>Topic</th>
<th>Species</th>
<th>Ref #</th>
<th>Issue-Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dried distillers grain with solubles may decrease fertility</td>
<td>sheep</td>
<td>42</td>
<td>42.2:12</td>
</tr>
<tr>
<td>Electroejaculation for semen collection, technique (Q&amp;A)</td>
<td>sheep</td>
<td>42</td>
<td>42.1:9</td>
</tr>
<tr>
<td>Endotracheal intubation techniques (Q&amp;A)</td>
<td>goat</td>
<td>42</td>
<td>42.2:7</td>
</tr>
<tr>
<td>Enteritis and typhlocolitis due to <em>Yersinia</em> infection</td>
<td>goat</td>
<td>18</td>
<td>42.3:13</td>
</tr>
<tr>
<td>Enzootic nasal adenocarcinoma transmitted experimentally</td>
<td>sheep</td>
<td>43</td>
<td>42.3:16</td>
</tr>
<tr>
<td>Epizootic hemorrhagic disease a differential for bluetongue</td>
<td>deer</td>
<td>40</td>
<td>42.3:14</td>
</tr>
<tr>
<td>Eprinomectin use, warnings about efficacy (Q&amp;A)</td>
<td>deer</td>
<td>42</td>
<td>42.2:10</td>
</tr>
<tr>
<td>Equipment for starting practice (practice tip)</td>
<td>all</td>
<td>42</td>
<td>42.3:9</td>
</tr>
<tr>
<td>Excede*, pharmacokinetics of</td>
<td>sheep</td>
<td>30</td>
<td>42.1:12</td>
</tr>
<tr>
<td>Fecal flora dysbiosis in floppy kid disease</td>
<td>goat</td>
<td>7</td>
<td>42.2:16</td>
</tr>
<tr>
<td>Fertility evaluation after poor lambing results (Q&amp;A)</td>
<td>sheep</td>
<td>7</td>
<td>42.2:10</td>
</tr>
<tr>
<td>Floppy kid syndrome, analysis of fecal flora</td>
<td>goat</td>
<td>24</td>
<td>42.4:11</td>
</tr>
<tr>
<td>Floppy kid syndrome, D-lactic metabolic acidosis in</td>
<td>camelids</td>
<td>9</td>
<td>42.3:7</td>
</tr>
<tr>
<td>Food animals may include camelids (editorial)</td>
<td>sheep</td>
<td>16</td>
<td>42.2:15</td>
</tr>
<tr>
<td>Footrot control program</td>
<td>camelid</td>
<td>38</td>
<td>42.2:14</td>
</tr>
<tr>
<td>Footrot elimination using whole flock gamithromycin</td>
<td>camelid</td>
<td>3</td>
<td>42.2:5</td>
</tr>
<tr>
<td>Footrot treatment with long-acting antibiotics</td>
<td>sheep</td>
<td>38</td>
<td>42.2:14</td>
</tr>
<tr>
<td>Fowler, Muray, obituary</td>
<td>camelid</td>
<td>26</td>
<td>42.4:10</td>
</tr>
<tr>
<td>Gamithromycin compared with oxytetracycline for treating footrot</td>
<td>goat</td>
<td>22</td>
<td>42.2:15</td>
</tr>
<tr>
<td>Gamithromycin whole flock treatment to eliminate footrot</td>
<td>sheep</td>
<td>16</td>
<td>42.4:8</td>
</tr>
<tr>
<td>Genes involved in choanal atresia still unknown</td>
<td>camels</td>
<td>28</td>
<td>42.4:13</td>
</tr>
<tr>
<td>Gestational age, influence on immaturity and survival</td>
<td>camels</td>
<td>19</td>
<td>42.4:9</td>
</tr>
<tr>
<td>Gonadotropin releasing hormone vaccination decreases aggression</td>
<td>camels</td>
<td>12</td>
<td>42.2:12</td>
</tr>
<tr>
<td>Handling crias to avoid problems (Q&amp;A)</td>
<td>all</td>
<td>42</td>
<td>42.3:10</td>
</tr>
<tr>
<td>Harp speculum, source of (Q&amp;A)</td>
<td>sheep, goat</td>
<td>26</td>
<td>42.4:10</td>
</tr>
<tr>
<td>Heating barrels (practice tip)</td>
<td>sheep</td>
<td>38</td>
<td>42.2:14</td>
</tr>
<tr>
<td>Hemorrhage postpartum, magement of</td>
<td>goat</td>
<td>22</td>
<td>42.2:15</td>
</tr>
<tr>
<td>Hemorrhage postpartum, magement of</td>
<td>sheep</td>
<td>16</td>
<td>42.4:8</td>
</tr>
<tr>
<td>Hepatic encephalopathy due to portosystemic shunt</td>
<td>deer</td>
<td>27</td>
<td>42.3:17</td>
</tr>
<tr>
<td>Herd health programs for range flocks (Q&amp;A)</td>
<td>deer</td>
<td>22</td>
<td>42.3:9</td>
</tr>
<tr>
<td>Hernia repair (Q&amp;A)</td>
<td>all</td>
<td>42</td>
<td>42.3:5</td>
</tr>
<tr>
<td>Hip luxation repaired with toggle-pin</td>
<td>camelid</td>
<td>19</td>
<td>42.4:9</td>
</tr>
<tr>
<td>Hoof disease associated with treponemes, elk</td>
<td>camelid</td>
<td>19</td>
<td>42.3:10</td>
</tr>
<tr>
<td>Hoof wall trauma and removal, treatment for (Q&amp;A)</td>
<td>camelid</td>
<td>19</td>
<td>42.3:10</td>
</tr>
<tr>
<td>Hyperthermia may cause spinal cord degeneration</td>
<td>goat</td>
<td>22</td>
<td>42.2:15</td>
</tr>
<tr>
<td>Immaturity, influence on survival</td>
<td>all</td>
<td>42</td>
<td>42.3:5</td>
</tr>
<tr>
<td>Incisor trimming by laymen (Q&amp;A)</td>
<td>camelid</td>
<td>26</td>
<td>42.4:10</td>
</tr>
<tr>
<td>Intubation techniques, stylets, preanesthetics (Q&amp;A)</td>
<td>sheep</td>
<td>38</td>
<td>42.2:14</td>
</tr>
<tr>
<td>Ivermectin, injectable product should not be given orally (Q&amp;A)</td>
<td>goat</td>
<td>22</td>
<td>42.2:15</td>
</tr>
<tr>
<td>John's disease fecal shedding in hospitalized alpacas</td>
<td>sheep</td>
<td>31</td>
<td>42.4:9</td>
</tr>
<tr>
<td>Joint ill due to <em>Streptococcus dysgalactiae</em>, sources of</td>
<td>all</td>
<td>42</td>
<td>42.3:5</td>
</tr>
<tr>
<td>Journal articles available free</td>
<td>camelid</td>
<td>26</td>
<td>42.4:10</td>
</tr>
<tr>
<td>Ketamine stun, drugs and dosages (Q&amp;A)</td>
<td>sheep</td>
<td>39</td>
<td>42.4:11</td>
</tr>
<tr>
<td>Kyphosis associated with hyperthermia</td>
<td>sheep</td>
<td>2</td>
<td>42.1:12</td>
</tr>
<tr>
<td>Lambs mortality increased by dairy sheep genetics</td>
<td>goat</td>
<td>10</td>
<td>42.3:15</td>
</tr>
<tr>
<td>Lepospiria, isolation from sheep genital tract</td>
<td>sheep</td>
<td>25</td>
<td>42.1:14</td>
</tr>
<tr>
<td>Leukoencephalomyelitis lesions of CAE detected by CT</td>
<td>sheep</td>
<td>23</td>
<td>42.2:14</td>
</tr>
<tr>
<td>Lice, guidelines for treating</td>
<td>sheep</td>
<td>21</td>
<td>42.4:13</td>
</tr>
<tr>
<td>Lidocaine compared with bupivicaine for local analgesia</td>
<td>deer</td>
<td>22</td>
<td>42.2:10</td>
</tr>
<tr>
<td>Litter size, effect on incidence of vaginal prolapse</td>
<td>camelid</td>
<td>27</td>
<td>42.3:17</td>
</tr>
<tr>
<td>Longrange* use, warnings about efficacy (Q&amp;A)</td>
<td>goat</td>
<td>2</td>
<td>42.3:15</td>
</tr>
<tr>
<td>Luxation of the hip repaired with toggle-pin</td>
<td>sheep</td>
<td>5</td>
<td>42.2:14</td>
</tr>
<tr>
<td>Machine milking, systems for (Q&amp;A)</td>
<td>sheep</td>
<td>20</td>
<td>42.3:15</td>
</tr>
<tr>
<td>Maedi Visna impact on dairy sheep</td>
<td>goat, sheep</td>
<td>35</td>
<td>42.2:11</td>
</tr>
<tr>
<td>Maedi Visna transmission and resistance</td>
<td>sheep</td>
<td>33</td>
<td>42.3:14</td>
</tr>
<tr>
<td>Markers for host resistance to parasites</td>
<td>camelid</td>
<td>1</td>
<td>42.3:14</td>
</tr>
<tr>
<td>Mastitis diagnosis from somatic cell count</td>
<td>sheep</td>
<td>39</td>
<td>42.4:11</td>
</tr>
<tr>
<td>Meloxicam oral formulation for castration and docking</td>
<td>goat</td>
<td>39</td>
<td>42.4:11</td>
</tr>
<tr>
<td>MERS-CoV shed by camels</td>
<td>goat</td>
<td>2</td>
<td>42.3:15</td>
</tr>
<tr>
<td>Milk production, factors affecting</td>
<td>goat</td>
<td>2</td>
<td>42.3:15</td>
</tr>
<tr>
<td>Milking machine systems (Q&amp;A)</td>
<td>goat</td>
<td>2</td>
<td>42.3:15</td>
</tr>
<tr>
<td>Minerals offered as smorgasbord (Q&amp;A)</td>
<td>all</td>
<td>42</td>
<td>42.3:5</td>
</tr>
<tr>
<td>Mouth speculum, source of (Q&amp;A)</td>
<td>goat</td>
<td>17</td>
<td>42.4:12</td>
</tr>
<tr>
<td>Mummification caused by amyloid deposits in caruncles</td>
<td>camelid</td>
<td>15</td>
<td>42.2:17</td>
</tr>
<tr>
<td>Topic</td>
<td>Species</td>
<td>Ref #</td>
<td>Issue-Page</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>---------</td>
<td>-------</td>
<td>------------</td>
</tr>
<tr>
<td>Nasal adenocarcinoma induced with beta-retrovirus</td>
<td>sheep</td>
<td>43</td>
<td>42.3:16</td>
</tr>
<tr>
<td>Necropsy of neonatal lambs in range flocks (Q&amp;A)</td>
<td>sheep</td>
<td>4</td>
<td>42.4:8</td>
</tr>
<tr>
<td>Neonatal diseases of crias</td>
<td>camelid</td>
<td>45</td>
<td>42.2:13</td>
</tr>
<tr>
<td>Neurologic disease associated with hyperthermia</td>
<td>all</td>
<td>36</td>
<td>42.4:12</td>
</tr>
<tr>
<td>Nipples swallowed if collapsible, case report</td>
<td>sheep</td>
<td>5</td>
<td>42.1:11</td>
</tr>
<tr>
<td>OPP control in range flocks (Q&amp;A)</td>
<td>sheep</td>
<td>24</td>
<td>42.4:11</td>
</tr>
<tr>
<td>OPP transmission and resistance</td>
<td>sheep</td>
<td>20</td>
<td>42.3:15</td>
</tr>
<tr>
<td>Ovine progressive pneumonia impact on dairy sheep</td>
<td>sheep</td>
<td>5</td>
<td>42.1:11</td>
</tr>
<tr>
<td>Palpebral reflex, absent in D-lactic metabolic acidosis</td>
<td>sheep</td>
<td>19</td>
<td>42.4:9</td>
</tr>
<tr>
<td>Prematurity, influence on survival</td>
<td>goat</td>
<td>21</td>
<td>42.3:12</td>
</tr>
<tr>
<td>Q fever serology during abortion storm</td>
<td>goat</td>
<td>37</td>
<td>42.3:12</td>
</tr>
<tr>
<td>Q fever, factors that would cause an epidemic</td>
<td>goat</td>
<td>14</td>
<td>42.2:15</td>
</tr>
<tr>
<td>Rattlesnake envenomation and its clinical effects</td>
<td>camelid</td>
<td>41</td>
<td>42.1:14</td>
</tr>
<tr>
<td>Resistance to anthelminitics delayed by oral route (Q&amp;A)</td>
<td>all</td>
<td>34</td>
<td>42.2:16</td>
</tr>
<tr>
<td>Rumen fluid acquisition, strainer for (practice tip)</td>
<td>goat</td>
<td>20</td>
<td>42.3:15</td>
</tr>
<tr>
<td>Sedation using ketamine stun (Q&amp;A)</td>
<td>sheep</td>
<td>6</td>
<td>42.3:13</td>
</tr>
<tr>
<td>Selection for host resistance to parasites</td>
<td>goat</td>
<td>14</td>
<td>42.2:15</td>
</tr>
<tr>
<td>Semen as possible source of <em>Toxoplasma</em></td>
<td>goat</td>
<td>42</td>
<td>42.2:12</td>
</tr>
<tr>
<td>Semen collection by electroejaculation, technique (Q&amp;A)</td>
<td>sheep</td>
<td>29</td>
<td>42.2:17</td>
</tr>
<tr>
<td>Semen production reduced by dried distiller grains</td>
<td>sheep</td>
<td>2</td>
<td>42.2:12</td>
</tr>
<tr>
<td>Semen shedding of <em>Brucella ovis</em></td>
<td>sheep</td>
<td>28</td>
<td>42.2:12</td>
</tr>
<tr>
<td>Serology for <em>Brucella ovis</em></td>
<td>sheep</td>
<td>28</td>
<td>42.2:12</td>
</tr>
<tr>
<td>Skin cysts (Q&amp;A)</td>
<td>sheep</td>
<td>21</td>
<td>42.3:12</td>
</tr>
<tr>
<td>Snakebite, clinical signs resulting from</td>
<td>camelid</td>
<td>26</td>
<td>42.2:16</td>
</tr>
<tr>
<td>Somatic cell count, relationship to mastitis</td>
<td>goat, sheep</td>
<td>35</td>
<td>42.2:11</td>
</tr>
<tr>
<td>Splayed toes, causes of (Q&amp;A)</td>
<td>goat</td>
<td>35</td>
<td>42.2:11</td>
</tr>
<tr>
<td>Start-up equipment</td>
<td>all</td>
<td>35</td>
<td>42.3:9</td>
</tr>
<tr>
<td>Streptococcus <em>dysgalactiae</em> in joint ill outbreaks</td>
<td>sheep</td>
<td>31</td>
<td>42.4:9</td>
</tr>
<tr>
<td><em>Taenia ovis</em> control measures in Canada</td>
<td>sheep</td>
<td>11</td>
<td>42.2:16</td>
</tr>
<tr>
<td>Tail docking analgesia supplied by meloxicam</td>
<td>sheep</td>
<td>33</td>
<td>42.3:14</td>
</tr>
<tr>
<td>Taenia <em>ovis</em> causes carcass condemnation</td>
<td>sheep</td>
<td>11</td>
<td>42.2:16</td>
</tr>
<tr>
<td>Testicular sperm count, relationship to mastitis</td>
<td>camelid</td>
<td>12</td>
<td>42.2:12</td>
</tr>
<tr>
<td>Tetracycline-resistant <em>Campylobacter</em></td>
<td>sheep</td>
<td>32</td>
<td>42.2:11</td>
</tr>
<tr>
<td>Toxicosis from blister beetles</td>
<td>camelid</td>
<td>32</td>
<td>42.2:11</td>
</tr>
<tr>
<td><em>Toxoplasma</em> found in semen of rams</td>
<td>sheep</td>
<td>6</td>
<td>42.3:13</td>
</tr>
<tr>
<td>Transfusions in the field (Q&amp;A)</td>
<td>all</td>
<td>6</td>
<td>42.3:13</td>
</tr>
<tr>
<td>Treponeme-associated hoof disease in elk</td>
<td>deer</td>
<td>19</td>
<td>42.2:6</td>
</tr>
<tr>
<td>Tube cystostomy and other surgeries for urethral obstruction</td>
<td>camelid</td>
<td>13</td>
<td>42.3:13</td>
</tr>
<tr>
<td>Umbilical hernia, repair of (Q&amp;A)</td>
<td>deer</td>
<td>13</td>
<td>42.3:13</td>
</tr>
<tr>
<td>Urethral obstruction in New World camelids</td>
<td>camelid</td>
<td>13</td>
<td>42.3:13</td>
</tr>
<tr>
<td>Uterine prolapse, preventing repeat occurrence (practice tip)</td>
<td>sheep</td>
<td>21</td>
<td>42.4:13</td>
</tr>
<tr>
<td>Vaginal prolapse, risk factors for</td>
<td>sheep</td>
<td>26</td>
<td>42.4:10</td>
</tr>
<tr>
<td>Vaginal tear postpartum, management of</td>
<td>camelid</td>
<td>21</td>
<td>42.4:13</td>
</tr>
<tr>
<td>Velvet removal from deer, AVMA policy on</td>
<td>deer</td>
<td>42</td>
<td>42.4:11</td>
</tr>
<tr>
<td>Weaning systems, effects on milk production</td>
<td>sheep</td>
<td>39</td>
<td>42.4:11</td>
</tr>
<tr>
<td>Welfare Committee report from AVMA 2014</td>
<td>all</td>
<td>25</td>
<td>42.1:14</td>
</tr>
<tr>
<td>Wool damage by lice, guidelines for treatment</td>
<td>goat</td>
<td>18</td>
<td>42.3:13</td>
</tr>
</tbody>
</table>

*Yersinia pseudotuberculosis* in goats in California
REFERENCE LIST

Ref #  Author, Title, Source of Reference - AASRP Newsletter - 2014
12 Donovan CE et al.: Effects of a commercial canine gonadotropin releasing hormone vaccination on intact male llamas and alpacas. J Vaccines 2013 Article ID181834 (open access).
17 Gaffney PM et al.: Protein profiling of isolated uterine AA amyloidosis causing fetal death in goats. FASEB J Published online before print November 24, 2014.
31 Rutherford SJ et al.: Sources of reference - AASRP Newsletter - 2014
41 USDA/APHIS/VS: Evaluation of factors that would initiate or propagate epidemic coxiellosis in the U.S. domesticated goat population. On line URL.
2015 AASRP Board of Directors

President
Dr. Joan Dean Rowe
24580 Cache Street
Capay, CA 95607
Phone: 530.752.0292
jdone@ucdavis.edu
Term: 7/13 – 7/15

President Elect
Dr. Patty B. Scharko
PO Box 102406
Columbia, SC 29224-2406
Office: 803-726-7803
Cell: 803-422-6998
pschark@clemson.edu
Term: 7/13 – 7/15

Immediate Past President
Dr. Joan Bowen
5036 E County Rd. 60
Wellington, CO 80549
Phone: 970.568.3613
joan.s.bowen@gmail.com
Term: 7/13 – 7/15

2015 AASRP Committees:

Nominations
Dr. Paul Jones
Woodburn Vet Clinic
225 South Pacific Highway
Woodburn, OR 80634
pljvet@gmail.com
Committee Members:
No Additional

Student Education
Dr. Cindy Wolf
University of Minnesota
wolfs006@umn.edu
Committee Members:
No Additional

College Liaison
VACANT CHAIR

Membership
VACANT CHAIR

AASRP Representation for AVMA Offices & Committees

Executive Board
Dr. Michael Whitehair
(2014-2015)

AVMA Delegate
Dr. Paul Jones
(2013-2017 renewable)
Alternate
Dr. Joan S. Bowen
(2013-2017 renewable)

Legislative Advisory Committee
Dr. Seyedmehdi Mobini
(2014 – 2017)

Alternate
Dr. Kelly Still Brooks
(2014 – 2017)

Committee on Environmental Issues
Dr. Grant Seaman
(2012 – 2015 renewable)

Clinical Practitioners Advisory Committee
Dr. Chris Duemler
(2013-2017 renewable)
Alternate
Dr. Sarah Lowry
(2014 – 2017 renewable)

Animal Agriculture Liaison Committee
Dr. Amy Robinson
(2014 – 2017)
Alternate
Vacant (2008-2014)

Animal Welfare Committee
Dr. Cindy Wolf
(2013-2019)
Alternate
Dr. Sarah Lowry
(2013-2019)

Food Safety Advisory Committee
Dr. Joan Bowen
(2012-2015 renewable)
Alternate
Dr. Jason Johnson
(2014-2017 renewable)

Committee on Disaster and Emergency Issues
Dr. Peregrine Wolff
(2011-2014)

Governance
Dr. Paul Jones
Woodburn Vet Clinic
225 South Pacific Highway
Woodburn, OR 80634
pljvet@gmail.com
Committee Members:
No Additional

Public Relations & Communication
Dr. Michelle Anne Kutzler
Associate Professor of Companion Animal Industries
Oregon State University
Michelle.Kutzler@oregonstate.edu

Term 2013-2017 (renewable)
Service began in 2009

AVMA Alternate Delegate
Dr. Joan Bowen
5036 E County Rd. 60
Wellington, CO 80549
Phone: 970.568.3613
Cell: 970.217.0447
joan.s.bowen@gmail.com
Term 2013-2017 (renewable)

Management Headquarters
Franz Management
P. O. Box 3614
Montgomery, AL 36109
Phone: 334/517-1233
Fax: 334/270-3399
Email: aasrp@aasrp.org
Service began in January 2010

Executive Director
Dr. Brad Fields
Cell: 334/521-2502
Email: bradfields@aasrp.org
Service began in September 2012

Term 2013-2017 (renewable)
Service began in 2009

AVMA Alternate Delegate
Dr. Joan Bowen
5036 E County Rd. 60
Wellington, CO 80549
Phone: 970.568.3613
Cell: 970.217.0447
joan.s.bowen@gmail.com
Term 2013-2017 (renewable)

Management Headquarters
Franz Management
P. O. Box 3614
Montgomery, AL 36109
Phone: 334/517-1233
Fax: 334/270-3399
Email: aasrp@aasrp.org
Service began in January 2010

Executive Director
Dr. Brad Fields
Cell: 334/521-2502
Email: bradfields@aasrp.org
Service began in September 2012
AASRP VETERINARY COLLEGE LIASONS

Auburn University
Misty Edmonson, DVM
1500 Wire Road
Auburn, AL 36849
Ph: 334-844-4490
Fax: 334-844-4368
abramms@auburn.edu

Ohio State University
Michael Rings, DVM
601 Vernon Tharp Drive
Columbus, OH 43210
Ph: 614-292-6661
Rings.31@osu.edu

Oklahoma State University
Lionel Dawson, DVM
Oklahoma State University
Boren Vet Med Teaching Hosp
Farm Road
Stillwater, OK 74078
Ph: 405-744-8584
Lionel.dawson@okstate.edu

Oregon State University
Michelle Kutzer, DVM, PhD, DACVIM
Dept. of Animal Sciences
312 Wittycombe Hall
Corvallis, OR 97331-6702
Ph: 541-737-1401
Fax: 541-737-4174
Michelle.kutzer@oregonstate.edu

Purdue University
A.N. (Nickie) Baird, DVM, MS
Diplomate ACVS
Associate Professor
Large Animal Surgery
Dept. of Vet. Clinical Science
625 Harrison St.
West Lafayette, IN 47907-2026
Ph: 765-496-8548
Fax: 765-496-2641
abaird@purdue.edu

Texas A & M University
Virginia Fajt, DVM, PhD, DACVCP
Clinical Assistant Professor
326-C VMA
Dept. of Vet. Physiology & Pharmacology
Hwy. 60, VMA Bldg., MS 4:468
College Station, TX 77843
Ph: 979-845-7299
Fax: 979-845-6544
vfajt@vam.tamu.edu

Tufts University
Sandra L. Ayres, DVM
200 West Borough Rd.
North Grafton, MA 01536
sandra.ayres@ltf.tufts.edu

Tuskegee University
VACANT

University of California
Joan Dean Rowe, DVM
Vet Medical Teaching Hospital
24580 Cache St.
Capay, CA 95607
Ph: 530-752-0292
jrowe@ucdavis.edu

University of Florida
Fiona Maunsell, PhD, MS, BVS, DACVIM
Large Animal Clinical Sciences-FARMS
University of Florida/CVM
2015 SW 16th Avenue
Gainesville, FL 32610
Ph: 352-294-4077
Fax: 352-392-7551
maunsell@ufl.edu

University of Georgia
Lisa Williamson, DVM
UGA College of Vet Medicine
Large Animal Department
Athens, GA 30622
Ph: 706-542-6932
lisa1@uga.edu

University of Illinois
Clifford F. Shipley, DVM, DACVIM
Assistant Director, AACUP
College of Veterinary Medicine
1008 W. Hazelwood Dr.
Urbana, IL 61802
Fax: 217-333-7126
chipley@illinois.edu

University of Minnesota
Cindy Wol, DVM
225 VMC, 1365 Gortner Avenue
St. Paul, MN 55108
Ph: 612-625-1780 - Cell: 507-450-5453
Fax: 612-625-6241
Wolbw06@umn.edu

University of Missouri
Dusty W. Nagy, DVM
Assistant Teaching Professor
Food Animal Medicine & Surgery
900 E. Campus Drive
Columbia, MO 65211
Ph: 573-882-6857
nagydw@missouri.edu

University of Pennsylvania
Marie-Eve Fecteau, DVM
Diplomate ACVIM-LA
Asst. Professor for Food Animal Medicine and Surgery
New Bolton Center
382 W. Street Rd.
Kennett Square, PA 19348
Ph: 610-925-6208
Fax: 610-925-8100
mfecteau@vet.upenn.edu

University of Tennessee

University of Wisconsin-Madison
Shelia McGuirk, DVM, PhD, MS, DACVIM
School of Veterinary Medicine
2015 Linden Drive West
Madison, WI 53706
Ph: 608-253-4437
mcguirk@svetmed.wisc.edu

Virginia/Maryland Regional CVM
D. Phillip Spoerenberg, DVM, PhD
Professor, Pathology & Genetics
Dept. of Biomedical Sciences
100 Duckpond Drive
Virginia Tech
Blacksburg, VA 24061
Ph: 540-231-4805
Fax: 540-231-6033
dpスポerenberg@vt.edu

Washington State University
Steven M. Parish, DVM
Professor, Large Animal Med/Surgery
Diplomate ACVIM
New Vet Teaching Hospital
College of Veterinary Medicine
Pullman, WA 99164
Ph: 509-353-0711
sm Parish@wsu.edu

Western University of Health Sciences
Spring K. Halland, DVM, CVA, DACVIM
Assistant Professor, Large Animal Internal Medicine
Western Univ of Health Sciences
College of Vet Medicine
309 E. 2nd Street
Rancho 248 BVCC
Pomona, CA 91766-1854
Ph: 909-469-6506
shalland@westernu.edu

FOREIGN COLLEGE LIASONS

Ross University
Jerry Roberson, DVM
Ross University School of Veterinary Medicine
P.O. Box 334
Basseterre, St. Kitts
Ph: 732-808-0065
Fax: 869-4645-4161 ext 1436
jroberson@rossvet.edu.kn

University of Guelph
Paula Menzies, MPVM
Associate Professor
Ruminant Health Management Group
Ontario Veterinary College
Guelph, Ontario CANADA
N1G 2W1
prenzies@yorku.ca

University of Montreal
Pascal Dubreuil
Faculté de médecine vétérinaire
3200 Sicotte St-Hyacinthe PQ
JP2 7C6
Ph: 450-773-8521 x8266
Fax: 450-778-8100
Email: pascal.dubreuil@umontreal.ca

University of Prince Edward Island
Jeffrey Wichtel, BVSc PhD DipACT
Associate Professor
Chairman, Dept of Health Mgt
Atlantic Veterinary College
550 University Avenue
Charlottetown, Prince Edward Island
CANADA
C1A 4P3
jwichtel@upei.ca

University of Saskatchewan
Lyla Patrici, BVMS, MRCVS
Dept of Lg Animal Clinical Sciences
University of Saskatchewan
8121 16 St. W
Saskatoon, SK, Canada
S7N 5B4
Fax: 306-966-7174
petrich@skyway.usask.ca

University of Prince Edward Island
Jon Petrie, BVSc PhD DipACT
Associate Professor
Chairman, Dept of Health Mgt
Atlantic Veterinary College
550 University Avenue
Charlottetown, Prince Edward Island
CANADA
C1A 4P3
jonpetrie@upei.ca

University of Saskatchewan
Pascal Dubreuil
Faculté de médecine vétérinaire
3200 Sicotte St-Hyacinthe PQ
JP2 7C6
Ph: 450-773-8521 x8266
Fax: 450-778-8100
Email: pascal.dubreuil@umontreal.ca

University of Prince Edward Island
Lyla Petrie, BVMS, MRCVS
Dept of Lg Animal Clinical Sciences
Western College of Vet Medicine
52 Campus Drive
Saskatoon, SK, Canada
S7N 5B4
Ph: 306-966-7087
Fax: 306-966-7174
petrich@skyway.usask.ca

NOTE TO STUDENT: If you cannot reach your liaison contact please contact aasrp@aasrp.org
American Association of Small Ruminant Practitioners
Membership Application

Name: ________________________________________________________________________________________________

Clinic/Business: _________________________________________________________________________________________

Address: _____________________________________________________________

City/State/Zip Code: _______________________________________________________

Country: ______________________________________________________________________________________________

Phone: _____________________________________________ Fax: _____________________________________________

Email: ________________________________________________________________________________________________

Veterinary College: ___________________________________________________________ Year Graduated: _____________

How would you like to receive your copy of the Membership Directory?

- Electronic
- Mailed

Would you accept externships? ___Yes   ____No

Please check the category that best describes you:
- Veterinarian: Owner/Partner  Associate  Academician/Researcher  Industry  Government
- Other

Non-Veterinarian:  Associate  Student  Would you accept externships? ___Yes   ____No

Do you provide reproductive services for sheep? ___Yes   ____No

If you marked yes, do you provide: (you may select as many as apply)
- Embryo transfer
- Semen collection & evaluation
- Laparoscopic AI
- Transcervical AI
- Ultrasonography for pregnancy diagnosis

Do you provide reproductive services for goats? ___Yes   ____No

If you marked yes, do you provide: (you may select as many as apply)
- Embryo transfer
- Semen collection & evaluation
- Laparoscopic AI
- Transcervical AI
- Ultrasonography for pregnancy diagnosis

**Contribution to Samuel B. Guss Memorial Fund $ __________

** A tax deductible contribution to the Samuel B. Guss Memorial Fund helps provide small grants to student members of AASRP to undertake extern opportunities in veterinary practice, working with one or more of the small ruminant species.

---

** AASRP Membership Dues Payment**

<table>
<thead>
<tr>
<th>DUES STRUCTURE:</th>
<th>U.S./Canada</th>
<th>Foreign</th>
<th>US Funds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veterinarian</td>
<td>$105</td>
<td>$130</td>
<td>$__________</td>
</tr>
<tr>
<td>Non-Veterinarian Associate</td>
<td>$105</td>
<td>$130</td>
<td>$__________</td>
</tr>
<tr>
<td>Veterinary Student</td>
<td>$15</td>
<td>$30</td>
<td>$__________</td>
</tr>
<tr>
<td>1st Year Graduates</td>
<td>$52.50</td>
<td>$65</td>
<td>$__________</td>
</tr>
<tr>
<td>Retired</td>
<td>$52.50</td>
<td>$65</td>
<td>$__________</td>
</tr>
<tr>
<td>Contribution to Samuel B. Guss Memorial Fund</td>
<td>$__________</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL ENCLOSED</td>
<td>$__________</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PAYMENT METHOD:
- Visa
- MasterCard
- Check

(Payable to AASRP and drawn on US bank in US funds)

Card #: _____________________  Exp Date: ___________  Security Code: ___________

Signature: ____________________

TOTAL ENCLOSED $ __________

---

*Please mail this form with payment to AASRP, P. O. Box 3614, Montgomery, AL 36109-0614 or fax (334) 270-3399. Please contact the AASRP office at 334-517-1233 with any questions.

**A tax deductible contribution to the Samuel B. Guss Memorial Fund helps provide small grants to student members of AASRP to undertake extern opportunities in veterinary practice, working with one or more of the small ruminant species.