Results

Fourteen goats and 7 sheep that underwent nebulization were identified for this study. All were treated for some form of respiratory disease. Nebulized drugs included antimicrobials, mucolytics, and bronchodilators. In goats, the most commonly nebulized drug was ceftiofur (n=7). Dosages ranged from 0.45 to 6.6 mg/lb (1 to 14.5 mg/kg) (mean 3.1 mg/lb or 6.8 mg/kg). In sheep, the most commonly nebulized drug was ceftiofur (n=4). Dosages ranged from 3 to 4.5 mg/lb (10 mg/kg) (mean 2.6 mg/lb or 5.8 mg/kg) with 1 sheep identified only as "lamb" (no body weight listed) and administered a 25 mg total dose. Two goats exhibited respiratory distress during nebulization. Distress abated following adjustment of the aperture on the nebulizer. Nebulization therapy was discontinued for the second goat.

Among the patients undergoing nebulization, 6 were euthanized due to lack of improvement in their respiratory disease and an additional patient was euthanized due to musculoskeletal injury. Two patients died as a result of progressing respiratory disease. Twelve small ruminant patients that underwent nebulization survived to discharge from the VMTH. Preliminary regression analysis demonstrated a negative outcome for patients that did not undergo nebulization.

Significance

Nebulization therapy appears to be a minimally invasive adjunct for treatment of small ruminant respiratory disease. Practitioners should be aware of non-antimicrobial therapies for treating respiratory disease in small ruminants such as mucolytics and bronchodilators. Dosages higher than previously reported for calves (ceftiofur, 1 mg/kg) may be clinically useful for small ruminants with respiratory disease. Extralabel drug use should be considered when utilizing nebulization therapy. More research in a controlled setting is needed to further evaluate efficacy of nebulization therapies in the treatment of small ruminants with respiratory disease.

An assessment of the potential for transfer of *Staphylococcus aureus* between humans and dairy goats in NC

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Introduction

Staphylococcus aureus is a major pathogen frequently diagnosed in dairy goat intramammary infections (IMI). *S. aureus* also has human health significance as a zoonotic pathogen.[1,3] Control of *S. aureus* infections is difficult because infection is easily transmitted in a herd, and because there are multiple sources of infection.[1,3] In addition to the mammary gland, *S. aureus* has been isolated from other body sites and the environment. Mørk et al compared isolates from body sites using pulsed-field gel electrophoresis (PFGE) and found isolates in 6% of goat milk samples and approximately 70% of nasal swabs.[4] In this study, we identified *S. aureus* isolates from goat milk and nares and from the hands and noses of people milking the goats. Our purpose was to determine the prevalence of *S. aureus* from these sites, characterize antibiotic susceptibilities, and compare genotypes of isolates from the different sites. Producer surveys were used to characterize herd management practices.

Materials and Methods

A total of 519 milk samples, 502 goat swabs, and 97 human swabs were collected from 30 NC dairy goat farms from September 2014 to July 2015. The dairy goat farms ranged from small backyard to large commercial operations. Aseptic milk samples were collected from all milking does as well as nasal swabs. Both hand and nose swab samples were collected from individuals milking the goats. General demographic and herd survey data were also collected.

In the laboratory, milk samples (0.1 mL) were plated and bacteria present identified using procedures consistent with NMC recommendations. Swab samples were macerated in 0.85% sterile saline and 1 mL plated on 3M Staph Express Petrifilm plates according to manufacturer's instructions. Antibiotic susceptibilities for the S. aureus isolates were determined using the Kirby-Bauer method according to Clinical Laboratory Standards Institute (CLSI) protocol. Genotyping was accomplished by PFGE using US Centers for Disease Control (CDC) protocols with minor modifications, and PFGE gels were analyzed and dendrograms constructed using BioNumerics software.

Results

S. aureus was uncommon in NC goat milk samples (1.2%), but was found in almost half of goat nasal samples (46.2%). One quarter of human nasal and hand swabs were

positive for *S. aureus* (25.8%). Preliminary PFGE analysis reveals some sharing of *S. aureus* genotypes between goats and humans. Isolates of *S. aureus* from goats have displayed little evidence of antimicrobial resistance.

Surveys indicate that most goat owners consumed their own raw milk at home, and some process the milk for cheese making. Most farms milk their goats twice a day, either by machine, by hand, or both. Gloves are rarely worn during milking. A variety of procedures are used in pre-milking preparation, but all producers use post-milking germicidal teat dips/sprays.

Significance

S. aureus was uncommonly found (1.2%) in NC dairy goat milks. In contrast, 46.2% of goat nasal swabs were *S. aureus* positive. *S. aureus* from goats seldom exhibited antimicrobial resistance. The low prevalence of *S. aureus* in milk samples from NC dairy goats suggests current management practices may be effective at managing the risk of IMI.

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Effect of management factors on fecal egg counts of *Haemonchus contortus* in pastured sheep and goats in Northern New England

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Introduction

Haemonchus contortus (HC) is a subtropical parasite whose pasture-based larval stages are reduced significantly by severe Northern New England winters. Consequently, HC-contaminated northern pastures experience a winter die-off of infective larvae, with re-colonization of pastures occurring as temperatures moderate each spring. The cold winter environment of northern New England provides sheep and goat producers with an advantage over southern farmers because HC-infected fields may be managed each spring to minimize recontamination of pastures, and there is a short grazing season that limits the build-up of infective larvae on pastures. Management data were collected and HC concentrations in pooled feces were measured during the grazing season on 73 farms in Maine, New Hampshire and Vermont. Our objective was to determine the effect of farm type and management strategy on the abundance of *H. contortus* during the grazing season on northern New England farms.

Materials and Methods

Participants were recruited by invitation from Co-operative Extension and from sheep and goat association databases, and all that responded were included. The farms studied varied in animal number, species, and breed, and in management strategies employed for controlling HC. Prior to the 2014 grazing season, detailed data related to each farm's demographics and management strategy were collected. Producers then submitted pooled fecal samples at 2 pre-determined periods, 1 from late May through mid-June and a second during July and August. These sampling intervals were chosen to reflect HC fecal egg counts 1) prior to reinfection on pasture and 2) during significant reinfection with infective-stage HC larvae derived from spring reinfection of pasture. Each submission contained pooled feces from a group of breeding age adults and another from a group of yearlings, and in some cases, grazing juveniles. Internal parasites in these samples were quantitated and speciated through McMaster's fecal egg counts, microscopic evaluation of cultured third-stage larvae, and by the detection of fluorescently-labeled peanut agglutinin binding to Trichostrongylid ova. Relationships among survey and internal parasite data were statistically evaluated through analysis of variance and linear regression.

Results

Seventy-three farms participated in the study, with 64% raising sheep, 21% raising goats, and the remainder raising both. Numbers of breeding age livestock/farm averaged 26.9 +/- 3.9 S.E.M. Participating farms were evenly distributed