Streps . . . what we know and don’t know

by Hal F. Schulte III and Ruth N. Zadoks

We HEAR about “Streps” all of the time on the dairy, both in relation to the cows and to the tank. What are these “Streps,” and what do they come from, what do they do, and what can we do about them? The term Streptococci is used to describe a large group of bacteria with some similar features and characteristics. These bacteria further are divided into species classifications such as Streptococcus agalactiae, Strep uberis, Strep dysgalactiae, and so on. Many of us in veterinary medicine and other professionals dealing with medical issues and mastitis control throw these terms around easily as if they describe simple diseases that are well understood and controlled.

Recent research that looks at the genetic makeup of bacteria shows that bacteria in general are far more complex than we thought. In fact, looking at bacteria like Strep uberis, for instance, is more like looking at the Class of 2005 from a large university rather than a single identical entity. Just as the Class of 2005 is made up of men and women as one differentiating feature, it also is made up of thousands of individuals who share something in common.

The same is true for the bacteria. Each species of bacteria in our world is made of individuals that share some common features. Each species is subdivided into “strains.” DNA fingerprinting is a combination of techniques that can specifically identify individual bacteria by their DNA sequences. The same techniques that have recently become known in some criminal trials as tools for identifying individuals now are being used in our industry to identify bacteria and to trace those bacteria to their source.

The group that we call environmental Streps is made up of many different bacterial species. The major species involved in mastitis are Streptococcus uberis and Streptococcus dysgalactiae. We have learned a lot about these pathogens over the past few years. For example, Strep. dysgalactiae really is more like Strep. ag. in that it is transmitted quite easily from cow to cow. In that respect, it is a contagious bug. Just to make things complicated, it also is identified as Strep. ag. on the plates, and when the bacteria are called by the same name, they are different individuals.

Don’t think that we’ve found a way that has been able to demonstrate that, while human strains of Strep. ag. cause mastitis in dairy cows on rare occasions, the common cow strains of Strep. ag. do not cause disease in humans. So, even though these bacteria are called by the same name, they are different individuals.

The Streps truly are worthy foes in our battle for milk quality and the health of our cows. We have learned a lot about them over the past few years, but this is another case of the more we seem to know, the more we need to learn. For milk quality and the health of our cows, we have learned a lot about them over the past few years, but this is another case of the more we seem to know, the more we need to learn. For milk quality and the health of our cows, we have learned a lot about them over the past few years, but this is another case of the more we seem to know, the more we need to learn.

CONTACTING STREPS involves very careful milking as is the case with other types of mastitis. Actually, Streps can fit into both the categories of contagious (easily spread during milking) and environmental, being found in cows’ surroundings, such as in stalls and alleys.

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The Streps are found everywhere in the environment: in soil, bedding, manure, on the skin, in the respiratory tract, and the urogenital tract. They are considered to be major pathogens in mastitis. Streptococcus agalactiae (Strep. ag.) causes mastitis in cows and is one of the “contagious” mastitis bugs. It was thought only to live in cows’ udders, and it responds very well to antibiotic therapy. It can be eliminated from the herd and is controlled relatively easily.

We recently have found, however, that a bacteria from human medicine which also is identified as Strep. ag. can cause mastitis on dairies. In humans, this pathogen is better known as “group B streptococcus” (GBS), and it has become very widespread. Healthy men and women can carry the bugs with them, but these pathogens can cause fatal disease when they infect newborn infants. To our relief, we have been able to demonstrate that, while human strains of Strep. ag. cause mastitis in dairy cows on rare occasions, the common cow strains of Strep. ag. do not cause disease in humans. So, even though these bacteria are identified as Streptococcus agalactiae, Strep uberis, Strep dysgalactiae, and so on. Many of us in veterinary medicine and other professionals dealing with medical issues and mastitis control throw these terms around easily as if they describe simple diseases that are well understood and controlled.

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Of course, we also have been fooled. We have found a few cases where a “point source” (udder) is the suspect only to find later, after a lot of sampling and work, that a dirty valve was the point source. In one case, that dirty valve had a nearly pure culture of Strep growing, just like an infected quarter would. The “DNA fingerprinting” techniques mentioned above can prove absolutely that the infected cow is the cause of the high count in the tank. Currently, though, the time that these procedures require is too great to allow doing this on a routine basis. But the cost of such testing is low, and technical improvements may make it feasible to use it as a diagnostic test in the near future.

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