Peter Morresey, BVSc, MACVSc, Dipl. ACT, ACVIM, an internal medicine specialist at Rood & Riddle Equine Reproduction in Lexington, Kentucky, shared his thoughts on neonatal foal nutrition and the role of nutrition in the prevention of sepsis at the 2015 American Association of Equine Practitioners' convention, held Dec. 5-9 in Las Vegas.

When a foal is under the care of a veterinary practitioner, a number of factors can indicate that the foal is at risk for sepsis, including: 

- Prematurity
- Dysmaturity
- Perinatal asphyxia
- Intrauterine infection
- Birth trauma
- Hypothermia
- Hypoglycemia
- Neonatal shock
- Intraoperative infection

Dr. Morresey noted that the most common problem in both foals that survived and those that did not were sepsis. Researchers have suggested that a low segmented white blood cell count, a low red blood cell count, hyperbilirubinemia (high bilirubin), increased creatine phosphokinase (CPK) concentrations, and decreased blood glucose levels are associated with a poor prognosis. Nonsurviving foals were more likely to exhibit decreased immunoglobulin G (IgG, or antibody) concentrations; and a positive blood culture (which indicates bacteremia, or the presence of bacteria in the foal’s bloodstream) was more common in nonsurvivors than in survivors; and bacteremia was most commonly due to Escherichia coli.

While bloodwork results and clinical chemistry have been evaluated to predict foal survival, the overall body of research yielded no consistent factors, research site dependent implications, Morresey said. “A plethora of information is available; however, inconsistency between and within institutions (meaning the study results couldn’t always be repeated or confirmed).”

So What Do We Have?

The values that are difficult to measure in day to day clinical practice are metabolic and endocrine pathways, Morresey said. However, he noted these values are not available in field settings.

To help veterinarians predict foals’ survival, Morresey recommended that practitioners take a disciplined and practical approach to evaluating foals:

1. Evaluate him carefully at presentation. Take note of his clinical signs, his mucous membranes, and whether he is standing at admission. Is his mentation normal? (“There’s no good reason for a healthy foal to have injected [dark red or muddy] membranes,” Morresey said), and whether he is standing at admission.
2. With that in mind, he reviewed some study findings and options that are most useful for determining a practitioner’s initial evaluation can reveal substantial prognostic information, Morresey said: signs of sepsis, or does he have ruminal tympany? Does he have a fever or is he hypothermic? Is he nursing or attempting to nurse? This is key, he said. Does he have diarrhea or other gastrointestinal problems? Does he have a heart murmur? Is there anything in the mare’s history that could explain it? Is the mare pregnant? Is the mare lactating? Can the mare feed the foal? Does the mare have a full bag? Is she rejecting the foal? Does she have any other obstetric problems? Does the foal have a problem? Was the foal’s umbilical cord twisted? Was there any suggestion that his intrauterine environment was abnormal? Would indicate something could be amiss? Were there any events during birth that could suggest a problem? Was the foal’s umbilical cord twisted? Was there any suggestion that his intrauterine environment was abnormal?
3. Researchers have suggested that a low segmented white blood cell count, a low red blood cell count, hyperbilirubinemia (high bilirubin), increased creatine phosphokinase (CPK) concentrations, and decreased blood glucose levels are associated with a poor prognosis. In one study, sepsis was the most common problem in both foals that survived and those that did not. Researchers also found that bacteremia was most commonly due to Escherichia coli; and in another, a positive blood culture (which indicates bacteremia, or the presence of bacteria in the foal’s bloodstream) was more common in nonsurvivors than in survivors; and bacteremia was most commonly due to Escherichia coli; and in another, a positive blood culture (which indicates bacteremia, or the presence of bacteria in the foal’s bloodstream) was more common in nonsurvivors than in survivors; and bacteremia was most commonly due to Escherichia coli.

“Estimating the prognosis of the sick neonate has profound clinical, economic, and client relationship implications,” Morresey said. “A plethora of information is available; however, inconsistency between and within institutions (meaning the study results couldn’t always be repeated or confirmed).”

Further, Morresey said, there’s some good news for owners of sick foals, regardless of how the practitioner reaches his prognostic and diagnostic decisions: “It’s all worth it.” Research has shown that further evaluation can reveal substantial prognostic information.