



SPENCER BENEDICT STABLES

NI FOALS: ARE WE IGNORING A PREVENTABLE PROBLEM?

In today's horse world, especially in breeds where blood typing has largely been replaced by DNA parentage testing, Neonatal Isoerythrolysis (NI) has quietly faded from everyday breeding conversations. Unfortunately, the risk itself did not disappear just because testing became less common.

Is playing the odds good enough? For many breeders, the answer is no.



WHAT IS NEONATAL ISOERYTHROLYSIS (NI)?

NI is a condition where a mare's antibodies attack her newborn foal's red blood cells after the foal nurses colostrum.

These antibodies can cause severe anemia, weakness, jaundice, rapid decline, and even death.

The most common blood factors associated with NI are Aa and Qa.

UNDERSTANDING HORSE BLOOD TYPING

Horses have multiple blood group systems with many individual factors that can be present (+) or absent (-).

When breeders discuss "double negative" horses, they are usually referring to horses that are Aa negative AND Qa negative (Aa-/Qa-).

A mare that is double negative can develop antibodies if exposed to a foal carrying Aa or Qa positive blood factors.

HOW DO YOU GET AN NI FOAL?

An NI foal occurs when:

- 1 The mare lacks a blood factor (often Aa or Qa)
- 2 The stallion carries that factor
- 3 The foal inherits the positive factor from the stallion
- 4 The mare has developed antibodies against it
- 5 The foal nurses colostrum containing those antibodies

Not every incompatible breeding creates an NI foal. Not every double negative mare will become sensitized. And a mare can have several healthy foals before suddenly producing an NI foal.

WHY BLOOD TYPING STILL MATTERS

DNA testing does not replace blood typing for NI risk assessment. Without blood typing, crosses are made blindly and NI risk becomes guesswork. Knowing your mare's and stallion's blood types helps you make informed decisions, plan ahead, and protect your foals.

WHAT YOU NEED TO WORRY ABOUT – AND WHAT YOU DON'T

HIGHER CONCERN SITUATIONS

- Double negative mares (Aa-/Qa-)
- Mares with a prior NI foal
- Mares with unknown blood type bred to unknown stallions
- Valuable foals where risk reduction matters
- Mares that received blood transfusions
- Mares with multiple pregnancies and unknown sensitization history

LOWER CONCERN SITUATIONS

- Crosses where incompatibility is ruled out
- Mares that are not sensitized
- Breedings where blood typing confirms compatibility
- Foals monitored appropriately after birth

A prior healthy foal does not guarantee future safety. And a mare with a previous NI foal should always be considered high risk in future pregnancies.

DO OTHER BLOOD FACTORS MATTER?

While Aa and Qa are the blood factors most commonly associated with severe NI foals, they are not the only blood group antigens horses possess. Other antigens (such as Qb, Ac, Pa, and others) can occasionally be involved in NI reactions, but Aa and Qa remain the primary concern because they are the factors most likely to produce severe, life-threatening disease. For most breeders, understanding Aa and Qa status provides the most practical and useful information when evaluating NI risk.

WHAT ABOUT ET AND ICSI?

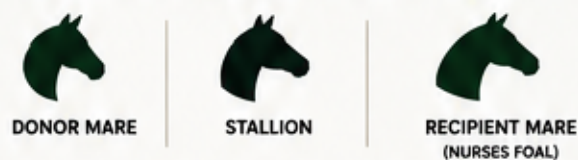
Embryo Transfer (ET) and Intracytoplasmic Sperm Injection (ICSI) do not eliminate the risk of an NI foal.

- The foal's blood type genetics come from the donor mare and the stallion.
- The foal will nurse the recipient mare's colostrum.
- The recipient mare's antibodies are what matter at foaling.

For ET and ICSI pregnancies, it is ideal to know the blood type of the donor mare, the stallion, and the recipient mare—especially if recipient mares have unknown histories.

SO WHO NEEDS TESTING FOR ET AND ICSI?

For higher-value ET and ICSI pregnancies, testing is ideal for:



The recipient mare is the horse providing colostrum and antibodies to the foal—making her an important part of NI risk evaluation.

WHERE CAN YOU GET BLOOD TYPING DONE?

One of the primary laboratories still performing equine blood typing in the United States is:

UC DAVIS

VETERINARY GENETICS LABORATORY

- Blood typing
- NI risk evaluation
- Parentage testing
- Additional genetic testing

Visit: vgl.ucdavis.edu

Some specialty equine reproductive veterinarians may also coordinate testing through reference laboratories.

PRE-FOALING NI TESTING

For mares considered at risk, additional testing can be done late in pregnancy.

MARE ANTIBODY SCREENING

A veterinarian can submit blood samples from the mare in the last 2-4 weeks of gestation to determine whether harmful antibodies are present.

COLOSTRUM TESTING

After foaling, the mare's colostrum can be tested against the foal's red blood cells to determine if the foal can safely nurse.

IF THE COLOSTRUM IS UNSAFE



Foal may be muzzled temporarily



Alternative colostrum provided



Plasma supplementation given



Nursing delayed until antibodies are no longer absorbed

Timing matters! Foals absorb antibodies most efficiently during the first several hours after birth.

QUESTIONS EVERY MARE OWNER SHOULD ASK

- ✓ Has this stallion been blood typed?
- ✓ Is he Aa or Qa positive?
- ✓ Has this mare been blood typed?
- ✓ Has she ever had an NI foal?
- ✓ Should this pregnancy be monitored differently?

Many stallion stations may already have blood typing on file—breeders simply are not asking for it.



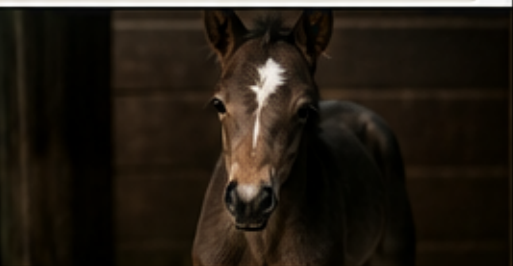
AS A BREED, ARE WE PAYING ATTENTION?

Modern breeding technology has advanced rapidly. We can freeze semen, perform ICSI, transfer embryos, and genetically test for countless traits with incredible precision. Yet in many ways, basic blood typing knowledge has quietly faded into the background.

NI is not necessarily common—but when it happens, the consequences can be devastating. And unlike many breeding risks, this is one where education and preparation can genuinely prevent loss.

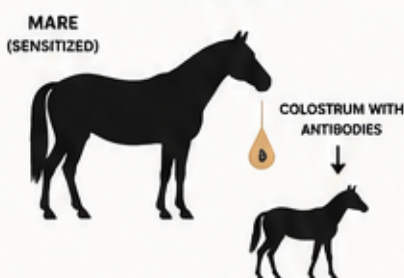
The goal is not fear or overreaction. The goal is awareness.

Knowing the blood type of breeding horses, understanding where risk exists, and having a plan before foaling can make all the difference. Sometimes the most important breeding decisions happen long before a foal ever stands to nurse.



1 NI RISK EXPLAINED

How antibodies attack a foal after nursing colostrum.



FOAL (INHERITS Aa OR Qa POSITIVE)

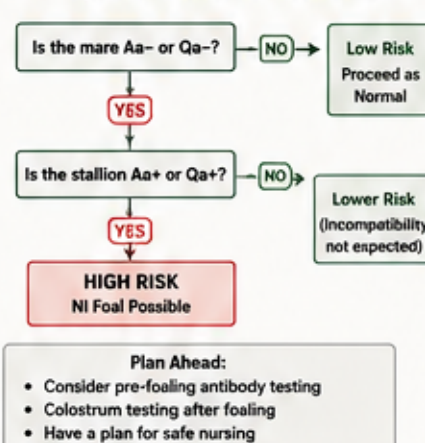
Antibodies destroy the foal's red blood cells causing anemia, weakness, jaundice, and in severe cases, death.

2 AA AND QA COMPATIBILITY CHART

| | | STALLION | |
|----------------------|-----|-------------------------------|-----------------------|
| | | Aa+ | Aa- |
| MARE (to be bred to) | Aa+ | COMPATIBLE (Low Risk) | COMPATIBLE (Low Risk) |
| | Aa- | HIGH RISK (Potential NI Foal) | COMPATIBLE (No Risk) |
| | | STALLION | |
| | | Qa+ | Qa- |
| MARE (to be bred to) | Qa+ | COMPATIBLE (Low Risk) | COMPATIBLE (Low Risk) |
| | Qa- | HIGH RISK (Potential NI Foal) | COMPATIBLE (No Risk) |

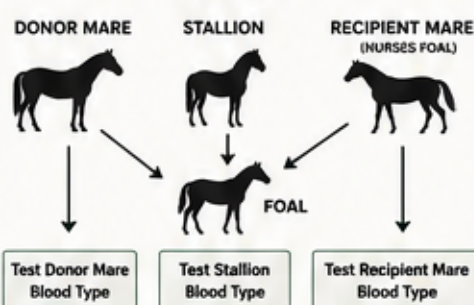
A mare that is Aa- or Qa- bred to a stallion that is positive (+) for that factor = HIGH RISK.

3 DO I NEED TO WORRY? QUICK DECISION FLOWCHART



4 ET & ICSI: WHO NEEDS TESTING?

The foal's genetics come from the donor mare and stallion, but the recipient mare's colostrum is what matters.



RECIPIENT MARE = SOURCE OF ANTIBODIES