Use of Microchips for Monitoring Health on a Thoroughbred Breeding Farm

By Dr. Alan Dorton

I started using the microchips mainly for identification purposes. We hade multiple births on the same day, usually at night. Four or five foals a night were not uncommon. There was one instance where two mares that had their foals a couple hours apart, and the guys cleaning the stalls the next day turned out the mares and foals into the same paddock. These mares then switched foals without anyone noticing, and the switch was not discovered until one foal was rejected for registration based on DNA. When the farm manager contacted me, I immediately suspected that a switch had occurred, so foals from mares that foaled around that time were all submitted for DNA typing, and the other mismatched foal was identified. Subsequent testing of those foals matched the original dams and the registration was OK'd.

After this episode, there was another mismatched set that were discovered at the racetrack, where the markings and sex didn't match. This was traced to the wrong halters being placed on the 2year o-lds at the training facility when they were leaving for the racetrack.

These two incidents happened very close together, and the farm manager asked me what we could do to prevent mix-ups like this from happening in the future. I had been doing some work with the University of Kentucky research folks, and they were using microchips for identification in their herd, and they were using the Thermochip for temperature monitoring in that herd. We were dealing with 200+ foals per year at that time, and using the Thermochips was an easy decision when I found that the price difference was only a few dollars per chip.

Foals, weanlings and yearlings are scanned at least once a day, and the temps are recorded. This was an easy way to monitor the temps on an individual basis, but it was still data that was recorded manually by the person scanning the horses. They would make note of those with elevated temperatures, then notify their foreperson, who would then notify the farm manager, who would then notify the veterinarian (me), and I would add them to the list of horses to be checked that day.

This was a cumbersome, but workable way to monitor the horses, but it proved to be a very difficult method to monitor histories of the horses, as there were some days where 500 different scans would take place. I kept after the sales rep for the microchips and scanner for several years about a way to link an iPad or smartphone to the scanner that would be able to at least tell me the name of the horse being scanned. She finally met a gentleman in Ireland, Dr. Kevin Corland, who had been working with an application for identifying animals with microchips, and I have been working with him the last year on doing beta-testing incorporating the Thermochip with his Equitrace App.

This App records the temperature of the horse by scanning the microchip, it identifies the horse by name, breeding, birthdate, sex, color, and even location using the smartphone's GPS setting.

I use the app daily. It allows anyone to access the horse's history, if they have loaded the app and been granted permission by the app owner (the farm) to access the data. All of the horses that are in the target range (foals, mares recently foaled, weanlings, yearlings) are scanned at least once daily, usually as they are being turned out (one person at the gate scans as the horses are brought out), or in the stalls after they have been brought in for feeding. I usually have my tech looking at the app data as we are driving to the farm—the app is set up where I can view all scans or notes made during a date range (I am looking at one morning at a time). It is presented on the app in the form of a spreadsheet, and it can be downloaded and emailed as an Excel sheet to anyone with an email address.

If we spot an elevated temp, the app links each horse to that horse's individual temperature and medical history (entered in the form of daily notes), where I can check the temperature history of the horse in a linear graph form, or a list form, to look for trends. This has proven to be invaluable in spotting early manifestations of disease, especially the development of early colitis/diarrhea problems before the diarrhea is evident externally. I commonly see an elevated temp, examine the foal/horse to look for problems, run blood tests if I feel they are warranted, ultrasound the animal, and treat accordingly.

I've been asked several times about the accuracy of the temps given by the microchip compared to the temp from rectal thermometers, and I have found the microchip temp to be within 1 degree of the rectal temp routinely, and usually closer than that, within ½ degree. I have put in over 2,000 chips, and have found only one chip that routinely reads about 2½ degrees lower than the rectal temp. The big benefit to the app and the microchip temp is that you can easily track changes in the temps that can signal a potential problem.

Problems I've found with microchip and app are really few. I have found that it is difficult to get an accurate reading if it is a cold, windy day on a horse that is wet—they read low. If you bring the horses inside to scan the temp, it will read accurately in about 10-15 minutes. If you read the chip outside in the sun … I've not seen elevated temps from that. That is really the only problem I've found.

I've encountered very little migration if the chip is placed properly, unlike the chips issued by The Jockey Club. The latter chips migrate a lot. For example, a couple of years ago I was doing a Coggins and EVA on a yearling that I had placed a chip in as a baby, and I could not find the chip from The Jockey Club. She was a quiet filly, so I started scanning up and down the neck, then the chest, then the left front leg, and I did locate the chip on the inside aspect of the pastern!

The Thermochip has something on it that makes it stay pretty much in place, but there can be a small amount of migration, usually six inches or less.

I place most of the chips the day of foaling. I like to place them from the right side, so that I can hold the nuchal ligament in these little guys in my left hand and pinch the ligament as I insert the needle containing the chip at about a 45 degree angle directly into the ligament. I've found that inserting like this allows for the largest cross-section for the reader, and having it as close to the center of the crest allows the most accurate reading of temperature. Most foals do not react to the insertion of the chip, unlike chipping weanlings and yearlings. Inserting the microchip at the time of the initial examination of the newborn foal pretty much ensures that the foal is properly identified as quickly as possible after foaling. As an aside, I always confirm the color and sex of the foal at that time, so that if there is a discrepancy in either of these later with the report filled out by the foaling person—usually in the middle of the night where mistakes can happen—they are caught early. There have been a few of those caught at either sale time or by the identifier at the track.

Other things I like and use about the microchip and Equitrace App are:

- Pedigree of the horse can be entered for each horse
- Birth date can be exact
- Location of the horse. This has been more valuable that I thought it would be- When you are dealing with 225 foals that become weanlings that become yearlings, and you have a farm with 48 barns, in the past major searches would be made to locate a certain horse. Every time I saw a horse, I would always note which barn I was in on my field ticket. Now the farm manager just has to access the app on his phone or iPad, search the horse he's looking for, and click a couple buttons and get a Google map of the last place the horse was scanned. This feature works anywhere Google maps is, which is pretty much world-wide.
- Foaling date, weight at birth, and IgG levels are recorded for each foal in the Notes section of the application.
- General health information: plasma, any orthopedic problems that need attention such as lax or contracted tendons that need special shoeing or bracing, Tetracycline, entropion, fractured ribs, etc. are all recorded as they are encountered and addressed.
- Illnesses, medications, etc.; anything of significance that needs recording.
- Vaccine and deworming history is easily recorded at time of administration
- Billing—I use the app Notes to record vaccines administered and deworming history. There is a feature with the app where notes can be emailed for a day or a range of dates. I use this to send to my bookkeeper for billing purposes. I have grouped foals by birth month, and I administer vaccines starting at three months of age. I do vaccines on the Wednesday or Thursday closest to the 15th of each month. This is most convenient for me to keep up with the timing. It's too difficult to do it individually, and this method has worked out well for me in the past.

Things I do use the app for in broodmares:

- I don’t record palpation results with the app, although I would like to do so. It would be too time-consuming for me to do it at this time I would have to have a well -trained assistant that I would trust to do this because data could be mis-filed and not be able to be found easily if it was not done properly. The creators of the app are working on a reproduction module that would probably fill this role.

- Cysts—This has been huge for me this year, recording cyst size and location in the uterus so that it is quickly found when I’m ultrasounding for pregnancy. For instance, I was checking a mare for 14-day pregnancy check and found two vesicles that were that size. Checking the app, I had made a note earlier around breeding that there was a 14-day sized cyst in the mid-right horn. This prevented me from going through pages of palpation records from 14 to 20 days prior looking for notes I had made as to the presence of a cyst. I only worry about the ones that look like pregnancies.
- Culture dates and results are noted for sending clean culture certs to breeding farms.
- Uterine treatments and duration of the treatments if metritis is present.
- Behaviour issues—There are a few broodmares out there that absolutely hate teasers and will never show to one. I’ve had mares refused at sheds for not showing to the teaser. I check them the next day and find an ovulation. This tells us to let the sheds know to tranquilize the mare and to jump the mare if she refuses to show to the teaser. Many of these problem girls will show and break down in the shed. The app gives us a quick reminder of these “problem children.”
- I don’t record breeding dates; I’m too superstitious for that. But I do record pregnancy exams. We routinely check mares at 14, 18, 28, 42, and 60 days, then confirm pregnancy status late November or early December.
- Progesterone supplements—We record which mares are given Regumate and/or Progesterone injections, and for the recommended time interval. Some get 45 days, some 150, some 300 days, and the app helps keep this straight.
- Vaccines during pregnancy—We vaccinate a 5, 7, 8, 9, and 10 months of gestation for various diseases, and this allows us to keep track easily. These are also used for sending to the bookkeeper for billing purposes.
- NI tests/history/results are recorded.