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Microchip scanners do good job, but proper technique essential

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Two recent studies found that universal scanners do a good job scanning all frequencies of microchips, but none was 100% effective. However, proper scanning technique, including frequent passes over the pet, improved each scanner's efficacy.

The study's researchers tested the chips both in vitro and in vivo. First, they used different scanners to read various chips that were not implanted in an animal to see how well each scanner performed in a controlled environment, according to lead author **Linda K. Lord**, DVM, PhD, from the department of veterinary preventive medicine at The Ohio State University College of Veterinary Medicine. Then chips were implanted in live animals, and shelter workers were asked to scan them. The results of both studies were fairly consistent, she said.

Six microchips were involved: two brands of 134.2-kHz chips; a 125-kHz encrypted chip; and two 125-kHz nonencrypted chips (with different communication protocols) and one 128-kHz nonencrypted chips. The researchers tested the HomeAgain universal WorldScan reader; Bayer iMAX Black Label scanner; AKC LID-560 scanner; and AVID Minitracker, which can read 125-kHz chips only. Both AKC and AVID have released new scanners since this study was conducted, Lord noted in an interview with VETERINARY FORUM.

In both studies, all the scanners performed best if the operator made more than one pass, she added, and if they were passed parallel and perpendicular to the animal's spine.

"The key findings were not particularly surprising to me: No scanner in either a [controlled] or real-world situation is 100% perfect," Lord said.

"A couple of the universal scanners worked pretty well," she added. "The best overall scanner in the study was the HomeAgain universal WorldScan reader, followed by the Bayer iMAX Black Label scanner; the AVID scanner did great on the 125s — it just was not designed to read the other chips. The AKC scanner did very well on the 128 and 134 but did not do well on the 125s. The HomeAgain and the Bayer universal scanners can detect and read the microchip number for all three frequencies, making them truly universal scanners," Lord said.

Regardless of which scanner was used, proper scanning technique was important. To capture the shelter environment, the shelter staff was blinded as to whether an animal had a chip, how many animals had chips and which person implanted the chips. "We also had a coordinator at each study site who trained staff on proper scanning technique, and I think that's a really important take-home point," Lord said.

"Scan slowly. People take a scanner and run it down the back once really quickly — that's not proper scanning technique. You want to go from — say the animal's head is north and its tail is south — you can go from east to west with the scanner first and you're concentrating between the shoulders but you definitely want to scan down the back. You want to scan on the sides, and you need to scan underneath the animal at least once because the chip can migrate. It's not common, but it can happen.

"Then you want to turn your arm 90° and scan in the other direction because the orientation of the microchip in the animal can affect scanner performance.

“The chip’s orientation in the animal can change a bit after implantation, so turning your arm and changing direction can help detect it. You also can rock your hand while moving the scanner head in place,” she said, adding that scanning is not a 1-second procedure. “Properly scanning an animal probably takes 10 to 20 seconds.”

Lord also recommended that a second person scan the animal if a chip is not found during the first scan. “In another study, we found that some chips get picked up on a second scan. So I think scanning more than once is really useful.”

Metal also can interfere with the signal and affect scanner performance, Lord noted, so staff members need to make sure that the animal doesn’t have a choke or chain collar on and isn’t sitting on a stainless-steel table. Computers and other CRT screens also can interfere with the chip’s radiofrequency.

Lord reiterated that microchips increase the chance of a pet being returned to its owner but should be part of an overall identification system. Owners need to put an identification tag on the pet and be reminded to register the chip with a database. “It’s important not to separate the microchip from the registration. That’s a separate issue from the studies, but I think it’s something that is really important to remember.”

Lord said she is seeing more acceptance of microchipping in the United States, but there are still barriers, such as whether universal scanners can read all chips and whether an indoor-only cat should be chipped. But she hopes studies such as hers will put some of the arguments to rest.

“If veterinarians have more confidence that the scanners can read all frequencies on the market, that’s really important as we learn to appreciate the importance of the registration and as the companies try to make that process seamless. It is important for veterinary clinics to upgrade their scanner to a universal scanner to make sure they can read all microchip frequencies in the marketplace.”

Lord recommended that clinics use high-quality, brand name batteries as well as change them regularly.

Lord said she thought that microchipping is a real relationship builder with the client. “If you think about the human–animal bond and you’re trying to provide clients with a way to keep the animal at home and safe, this is a practice builder for vets. A lot of [the promotion and education] can be done by the front office and techs — like so many things.”

Lord also noted the importance of promoting identification during a wellness exam. She developed a brochure called “Plan for a Happy Reunion” for distribution to pet owners with information on the importance of identification and what to do if a pet becomes lost. Brochures are available at vet.osu.edu/brochures.

The chip is only as good as the registration, she reminded, mentioning that another study concerning the registration process has been accepted for publication and should be out later this year.

For more information:

Lord LK, Pennell ML, Ingwersen W, Fisher RA. In vitro sensitivity of commercial scanners to microchips of various frequencies. *JAVMA* 2008;233(11):1723-1728.

Lord LK, Pennell ML, Ingwersen W, Fisher RA. Sensitivity of commercial scanners to microchips of various frequencies implanted in dogs and cats. *JAVMA* 2008;233(11):1729-1735.