

Microchipping & Electronic Identification of Small Animals

Walt Ingwersen DVM, DVSc, Diplomate ACVIM



Companion Animals

Seminar Topics

- Animal identification in general
- Microchip identification
 - definitions
 - system components
 - how they work
- Compatibility and other technology issues
- Global status of microchip identification
- The future

Animal identification

- Historical
 - Description
 - Tags
 - Rabies/vaccinations
 - Municipal licensing
 - Personalized
 - Tattoos
- Current
 - Microchipping
- Future
 - DNA/other bio markers



Microchips

Keys points:

- Subjective (although still a component of equine ID) to objective methods
- Movement towards permanent/unalterable ID
- For true identification – permanent/unalterable/objective measures best
- Incorporated into municipal licensing and promoted via differential fees
- Overview some of the unique animal control programs such as TO “drive home”
- Use in dangerous dog legislation on both sides of the border
- For pet recovery – a combination of the above

Microchip/electronic identification

Definitions

- RFID
- FDX A; FDX B; HDX
- Transponders/transceivers
- ISO 11784/11785 and Annex A
- ICAR
- Forward/backward compatibility
- Universal scanner

Microchip/electronic identification

System components:

1. **Microchip = transponder**
2. **Reader = scanner or transceiver**
 - Points 1 + 2 = technical component and are specific to animal identification
3. **Database**
 - Point 3 + service component and specific to pet recovery

Functional pet recover system requires integration and individual function of all 3 components – a failure in one is a failure in the whole

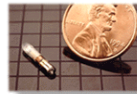
Closed colony management adequately addressed via 1+2 and allows for animal integration into data management systems such as laboratory environments and food-producing farms.

Also used for CITIES

Microchip/electronic identification

Microchip

- Purpose – to store and when prompted, transmit the unique animal ID number
- 4 essential components
 - Antenna, capacitor, silicon chip, connector wires
- Hermetically sealed into bio-inert glass or plastic capsule
- Implanted via specially designed syringe & needle
- Standardized implantation sites



Microchips



Microchip/electronic identification

Reader

- Purpose
 - Power microchip
 - Communicate & display unique ID number
- Additional features
 - Multi-read functionality
 - Memory capacity
 - Integration into data management systems



Microchip/electronic identification

Database

- Central data storage tying unique ID number with animal owner information
- Various provision models
 - Bundled vs. separate
 - One time fee versus recurring revenue
 - Various value-added features
- Issues to date
 - Access
 - Robustness

Compatibility and other technology issues

Compatibility

- Various methods of technology provision that are functionally and legally incompatible
 - Differing communication protocols
 - Patent protection
- Solution – standardization

Compatibility (continued)

ISO = International Standards Organization

- Global scope
- Function based on inclusion and consensus
- Mitigate patent issues through “new technology” and/or licensing agreements
- Not an enforcement/policing body
- Outcomes generally adopted by participating/member countries

Compatibility (continued)

ISO/TC23/SC19/WG3 and TWG

- ISO 11784 – microchip structure & content
 - 15 digit ID number
 - Initial 3 digits = manufacturer or country code
 - Subsequent 12 digits = animal ID
 - Allows for 275 billion different number combinations
 - Additional yet unused content to support advanced RFID devices

Compatibility (continued)

- ISO 11785 – communication protocol between microchip and reader
 - 134.2 kHz
- Annex A – backward compatibility
 - FECAVA/Destron = 125 kHz
 - Datamars = 125 kHz
 - Trovan = 128 kHz

Compatibility (continued)

ICAR

- Conformance testing and manufacturer code allocation
- Performance testing
- “Code of conduct”

Other RFID system-related issues

- Microchip migration
- Reader function
 - Orientation
 - Battery effect
 - “Hostile” environmental factors
- Database
 - Access
 - Robustness

WSAVA Microchip Survey - Goals

- Creation of awareness & collection of information
 - ISO standards
 - proper use of code structure
 - database registry infrastructure
 - national versus global trends

WSAVA Microchip Survey - Questions

- Microchip technology adoption
 - yes/no
 - ISO versus previous (FDX-A) technology
- Implementation of ISO technology
 - country versus manufacturer codes
- Market participants
- Database registry infrastructure

5/28/05

WSAVA Microchip Survey – 2002 Results

- 30/56 (54%) WSAVA member association response rate
- All continents represented

WSAVA Microchip Survey – 2002 Results

- Europe
 - Western Europe - 11 respondents
 - Eastern Europe - 5 respondents
- North America - 3 respondents
- South America - 4 respondents
- Australia - 2 respondents
- Asia & Middle East - 4 respondents
- Africa - 1 respondent

5/28/05

WSAVA Microchip Survey – 2002 Results

- Adoption & Implementation of ISO standards
 - well advanced to complete in Western Europe
 - achieving market dominance in Eastern Europe, Asia, and the Middle East
 - in it's infancy in North & South America
 - non-existent in Africa

5/28/05

WSAVA Microchip Survey – 2002 Results

- Database registries
 - no true national database exists in any of the responding countries
 - EuroPetNet has been effective at consolidating microchip registries in Eastern & Western Europe although a number of responding countries (4/11 and 3/4 in Western & Eastern Europe, respectively) were not participants

5/28/05

Microchipping: What's Changing? The North American Experience

- Canada
 - National Companion Animal Coalition
 - representing the interests of all user groups
 - Review process overseen by the Canadian VMA
 - ISO-only as of August 1, 2005
 - database access
 - Cross-border impact?

5/28/05

Microchipping: What's Changing? The North American Experience

- USA
 - Current market focus on FDX-A technology and driven by manufacturers/distributors
 - proprietary patents
 - encryption
 - microchip injection
 - patent enforcement through legal means
 - Entry of one manufacturer into the human market

Microchipping: What's Changing? The North American Experience

- USA (cont'd)
 - However, 2 providers of ISO standard technology have entered the USA market
 - Currently embroiled in legal challenges
 - Additional market forces preventing adoption of ISO standards
 - cost of infrastructure upgrade
 - user perceptions
 - lack of a consolidated user group effort

Microchipping: What's Changing? The North American Experience

- USA (cont'd)
 - Emerging user group efforts
 - AAHA
 - AVMA
 - SAWA
 - SPCA
 - Coalition for Reuniting Pets and Families
- 'the winds of change are blowing'

Microchipping: What's Changing? The EU Experience

- EU Pet Passport
 - Accepting microchip ID and tattoos until 2011
 - Microchip technology acceptable
 - ISO
 - Annex A
 - Own reader
 - Movement to amend to accept ISO-only technology
- DEFRA
 - Only accepts microchip identification (as above) and tied to applicable disease testing (principally for rabies 6 months prior to entry)

Electronic Identification – What Does the Future Hold?

- Advanced RFID technology
 - Read/write capability
 - Memory/storage component
 - Biological sensors
- True tracking capabilities

Additional resources

Websites/pages of interest

- www.wsava.org
- www.europetnet.com
- www.iso.com
- http://www.icar.org/sc_animal_identification.htm
- www.defra.gov.uk/animalh/quarantine/pets/procedures/Support-info/documents.htm
- http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/l_146/l_14620030613en00010009.pdf



Any questions?