Let’s Start at the Beginning
How Can Breed Clubs Help Protect Health of their Breeds?

- Bank DNA from ALL dogs; perhaps as puppies, best is EDTA blood sample
- Keep good computerized health records on ALL dogs
- Keep current with all illnesses as the dogs age
- Record cause and age of death for ALL dogs, to study their stored DNA
- Keep historic records as well as those of current dogs for both diseased and their healthy controls
Thyroid Disorders

❖ Can affect any dog breed, hybrid and cross-breeds
❖ Small white-coated dogs are commonly affected
❖ Heritable and familial trait
❖ Accurate diagnosis can be difficult because •••
All animals are not the same

- Puppies have higher basal thyroid levels than adults
- Geriatrics have lower basal thyroid levels than adults
- Large/giant breeds have lower basal thyroid levels
- Sighthounds have much lower basal thyroid levels
Top 10 Clarifications

- Classical clinical hypothyroidism & low thyroid values occur after $\geq 70\%$ thyroid tissue destroyed.
- Other clinical / behavioral changes (especially aggression) seen during early phase.
- T4 alone gives misleading results; over-diagnose hypothyroidism with non-thyroidal illness or certain drugs; under-diagnose hyperthyroidism in cats or from thyroxine overdosage; inaccurately assesses thyroxine therapy; and fails to detect autoimmune thyroiditis.
Top 10 Clarifications (cont’d)

• Even T4 plus freeT4 and TSH = inadequate, for thyroiditis.

• **Age-and breed-specific norms essential for accurate diagnosis;** reference lab ranges not based on age and breed type.

• Sighthounds all have lower basal thyroid activity than other breed types. Treating them with thyroid hormone is wrong, unless truly low.

• Thyroxine binds to calcium & soy; **must** be given apart from meals; BID therapy always preferred.
Top 10 Clarifications (cont’d)

• Dispensing thyroxine by human pharmacist often under-dosed [animal doses 10 x higher]

• Stopping thyroxine to retest basal capacity needs 6 weeks or more

• Thyroid Support or Thytrophin inadequate alone to correct true hypothyroidism or thyroiditis
Dosing Thyroid Medication

- Always give twice daily, as half-life is 12-16 hrs in dogs
- Apart from meals – one hour before or three after eating
- Give without foods containing calcium or soy, as these foods bind thyroxine and impair its absorption
SUMMARY of Screening for Canine Thyroid Dysfunction

• Complete thyroid antibody profile preferred
• cTSH poorly predictive (~ 70%) compared to humans; dogs have another pathway (via GH)
• Basal levels affected (up to 25%) by certain drugs (steroids, Pb, sulfonamides, excess iodine)
• Basal levels lowered by estrogen; raised by progesterone [sex hormonal cycle effects]
• Rabies vaccine in prior 45 days can raise TgAA by ~ 25%
Clinical Signs of Canine Hypothyroidism

Alterations in Cellular Metabolism

- lethargy
- mental dullness
- exercise intolerance
- neurologic signs
- polyneuropathy
- seizures
- weight gain
- cold intolerance
- mood swings
- hyperexcitability
- stunted growth
- chronic infections
Overweight  Lethargic  Cold Intolerance  Anxiety/Aggression
Hypothyroid Akita -- severe obesity
Same Agility Akita after Thyroid Rx
Still Healthy at age 14 – on Thyroid Rx
Obese Hypothyroid pet with hair loss
Same pet after Thyroid Rx
Clinical Signs of Canine Hypothyroidism (cont’d)

Dermatologic Diseases

- dry, scaly skin and dandruff
- coarse, dull coat
- bilateral hair loss; "rat tail"; "puppy coat"
- hyperpigmentation
- seborrhea oleosa (oily); seborrhea sicca (dry)
- pyoderma or skin infections
- myxedema
- chronic offensive skin odor
Hypothyroid Akita – neglect case
Same Akita – skin infection & scratching
Same Akita-Hyperpigmented belly
Hypothyroid Scottie - naked body & tail
Same Scottie on Thyroid Rx
Hypothyroid Pointer – bald and sad eyes
Same Pointer – bilateral hair loss
Hypothyroid – progressive face changes
Hypothyroid IWS – post-partum hair loss & faded coat
Same IWS after Thyroid Rx
Hypothyroid Spaniel with skin crusts
Clinical Signs of Canine Hypothyroidism (cont’d)

Neuromuscular Problems

- weakness
- stiffness
- laryngeal paralysis
- facial paralysis
- “tragic” expression
- knuckling or dragging feet
- muscle wasting
- megaesophagus
- head tilt
- drooping eyelids
Autoimmune Thyroiditis Dog with severe temporal muscle wasting
Clinical Signs of Canine Hypothyroidism (cont’d)

Reproductive Disorders

- infertility of either sex
- lack of libido
- testicular atrophy
- hypospermia
- aspermia
- prolonged interestrus interval
- absence of heat cycles
- silent heats
- pseudopregnancy
- weak, dying or stillborn pups
Clinical Signs of Canine Hypothyroidism (cont’d)

Cardiac Abnormalities
- slow heart rate (bradycardia)
- cardiac arrhythmias
- cardiomyopathy

Gastrointestinal Disorders
- constipation
- diarrhea
- vomiting
Clinical Signs of Canine Hypothyroidism (cont’d)

**Hematologic Disorders**
- bleeding
- bone marrow failure causing low -- red blood cells (anemia), white blood cells & platelets

**Ocular Diseases**
- corneal lipid deposits & ulceration
- uveitis
- Keratoconjunctivitis sicca or "dry eye"
- infections of eyelid glands (Meibomian gland)
Clinical Signs of Canine Hypothyroidism (cont’d)

Other Associated Disorders

- IgA deficiency
- loss of smell (dysosmia)
- loss of taste
- glycosuria
- chronic active hepatitis
- other endocrinopathies
  - adrenal, pancreatic, parathyroid
Thyroid Function & Foods

Gluten-Thyroid Connection
Gluten-Thyroid Connection

• Autoimmune thyroid disease (Hashimoto & Graves) = gluten intolerance

• **Gliadin** from gluten (wheat, barley, rye, oats, kamut, spelt, farro, couscous) resembles thyroid gland protein

• **Eliminate gluten totally from diet**
Aberrant Behavior and Thyroid Dysfunction

• Principal reason for pet euthanasia is undesirable behavior

• Association between behavioral / psychological changes and thyroid dysfunction has been long recognized in humans

• 66% of human youngsters with ADHD found to be hypothyroid; thyroxine largely curative
Aberrant Behavior and Thyroid Dysfunction (cont’d)

- Parallel findings in dogs with thyroiditis/hypothyroidism; & cats with hyperthyroidism

- **Typical clinical signs:** unprovoked aggression, sudden onset seizure disorder, disorientation, moodiness, erratic temperament, hyperactivity, hypoattentiveness, depression, fearfulness, phobias, anxiety, passivity, submissiveness, compulsiveness, and irritability
BEHAVIORAL CHANGES

Subtle Personality & Behavioral Changes May Indicate Thyroid Deterioration

- Withdrawn
- Submissive
- Aggressive
- Anxiety
- Depression
- Sensitivity to noises or objects
Bloodhound Family loses Scenting Ability
UK Bearded Collie - Thyroid Cognitive Loss
Agility Shiba Inu with Thyroid Dementia
Agility Function Restored with Thyroid Rx
German Drathaar – Unprovoked Aggression
Autoimmune Thyroiditis and the Thyroid Gland

- Progressive destruction of thyroid acinar cells
Normal Canine Thyroid Gland
Lymphocytes invade and destroy thyroid cells
Many lymphocytes, swollen cells and ghost cells
Total destruction of thyroid gland
Do NOT Breed Dogs with Autoimmune Thyroiditis

- Screen relatives annually from puberty
- Consider for breeding, if negative, after age three
- Heritable trait, regardless of clinical status
Problems with your dog? It may be his thyroid!

If your dog is lethargic, losing his hair, gaining weight or suddenly becomes aggressive, perhaps the last thing you (or your vet) would think about is his thyroid. Unfortunately, however, thyroid disorders can cause literally dozens of health and behavioral problems in dogs and frequently go undiagnosed or are misdiagnosed. And the real tragedy is that most thyroid problems are treatable with the right medical care and a well-informed owner can often minimize the chance of a thyroid disorder occurring in the first place.

Noted veterinarian Jean Dodds and co-author Diana Laverdure have done the dog owning public and their vets a great service by writing The Canine Thyroid Epidemic. The book is written in such a way to inform both the average dog owner and animal health care professionals about the ways in which thyroid disorders occur, can be prevented and treated.

You will learn about:

- The role of the thyroid and why it is essential to a dog's health.
- How to identify the clinical signs and symptoms of thyroid disorders.
- The types of lab tests needed to identify thyroid problems and how to administer the proper medications.
- How an increasingly toxic environment can impact your dog's health.

What experts are saying about The Canine Thyroid Epidemic

There's probably no one in the dog world who cares as much respect for all quarters as Dr. Jean Dodds. Her latest work armors and sheds light on an epidemic of thyroid disease of staggering proportions. It alarms us as we witness the early age at which the disorder now commonly appears, and alerts us to how commonly we aggravate the problem through breeding, vaccination and feeding practices. Steve Mundus, DVM

The Canine Thyroid Epidemic is an amazing, life-saving gift to countless dogs and the people who love them. This expertly crafted guide provides the tools, advice and information needed to help dog owners navigate this complex, often misdiagnosed and misinterpreted disease. From recognizing the signs to finding the right veterinarian to long-term management, I can't imagine a better resource. Thanks to Dr. Dodds and Ms. Laverdure for shedding light on this epidemic in a way we can all understand. Melanie Mowbray, author of The Safe Cat Handbook

Dr. W. Jean Dodds has raised the awareness that canine hyperthyroidism is not only about low thyroid hormone levels, but in fact, it's a continuum of disease that often begins with the immune destruction of the thyroid gland (autoimmune thyroiditis) and progresses over time to end-stage disease (hyperthyroidism). Not only is this book a game "eye opener" for pet owners but also should serve as a reference for veterinarians whether they are in veterinary school or have many years experience in private or university practice. Rhett Nickols, DVM, ACVIM (Internal Medicine)