

Dinbeat **UNO**

Preventive Medicine
Protocol

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Preventive Medicine Protocol

Increasing the well-being and quality of our patients is possible by establishing a protocol for visits and application of preventive medicine, as well as creating individualized protocols for the specific care of each patient based on the needs that are required at all times.

With Dinbeat UNO we can establish reference ranges of physiological and objective parameters for each patient, as well as the early detection of diseases and complications in predisposed animals.

We can divide our patients based on:

- 1. Age**
- 2. Breed**
- 3. Gender**
- 4. Body condition**
- 5. Diseases underlying**



When can we use Dinbeat UNO?

Age related

According to the 2019 AAHA Canine Guidelines Life stage Guidelines and the 2021 AAHA/AAFP Feline Life stage Guidelines we can classify our patients into different groups (Table 1; Table 2).

The care that we must grant to these groups must also be based on the species, size, lifestyle, health status and breed.

Proposal for age classification in dogs	
Stadium	Definición
Puppy	From birth to 6-9 months
Adult young man	Cession of rapid growth until complete physical and social maturation. From 6-9 months to 3-4 years.
Mature adult	Physical and social maturation completed. From 3-4 years to 25% of life expectancy (depending on breed and size).
Senior	The last 25% of the expected life expectancy until the end of life.
End of life	Terminal stage (depending on specific pathologies).

Table 1: proposed age classification according to 2019 AAHA Canine Life stage Guidelines.



When can we use Dinbeat UNO?

Age related

Proposal for age classification in cats	
Stadium	Definition
Puppy	From birth to 1 year.
Adult young man	Cession of rapid growth until complete physical and social maturation. From 1 year to 6 years.
Mature adult	Physical and social maturation completed. From 6 years to 7-10 years of life.
Senior	From the age of 10.
End of life	Terminal stage (depending on specific pathologies).

Table 2: Proposed 2021 AAHA/AAFP Feline Age Classification Life stage Guidelines.

Age related

Puppies

Frequency of visits:

Dogs and cats : First visit and every 3-4 weeks depending on the needs.

Consultation approach: vaccination, deworming, nutrition and behavior plan...

Search by age for specific disorders:

Dogs: Evaluate predisposed diseases according to breed / genetics, as well as possible allergies. Infectious diseases: parasites, parvovirus...

Cats: Evaluate predisposed diseases according to breed / genetics, as well as possible allergies. Infectious diseases: parasites, peritonitis, coronavirus, panleukopenia , IVF...

Young adult

Frequency of visits:

Dogs and cats: Every 6-12 months.

Search by age for specific disorders:

Dogs: Evaluation for possible orthopedic, ophthalmological, renal or hepatic and allergic disorders. Overweight/obesity review.

Cats: Evaluation in search of possible respiratory, ophthalmological disorders, cardiomyopathies, chronic enteropathies, urolithiasis, renal or hepatic and allergic. Overweight/obesity review.



Mature adult

Frequency of visits:

Dogs: Every 6-12 months.

Cats: Every 1-2 years

Search by age for specific disorders:

Dogs: Search for neoplasms, renal, hepatic, endocrine, cardiovascular, or respiratory disorders. Oral affections, especially in small and mini breeds. Overweight/obesity. Prostatic changes.

Cats: Search for neoplasms, hepatic, endocrine (hyperthyroidism), cardiovascular or respiratory disorders, chronic enteropathies (GI lymphoma, IBD), chronic renal failure (pathology with a high incidence), systemic hypertension, osteoarthritis and discospondylosis . Overweight/obesity review. (Table 5).

Late onset of disorders, ongoing management of breed predisposing diseases

Senior

Frequency of visits:

Dogs: At least every 6 months depending on the result of periodic controls.

Cats: At least every 6 months depending on the results of periodic controls (minimum annual visit).

Search by age for specific disorders: (Table 4).

Dogs: Screening for neoplasms, late-onset disorders, ongoing management of predisposing diseases by breed. Of special importance heart problems in small breeds, osteoarthritis and cognitive disorders. Visual degenerations. Overweight/obesity review. Prostatic changes.

Cats: Search for neoplasms, hepatic, endocrine, cardiovascular or respiratory disorders, chronic enteropathies (GI lymphoma, IBD), chronic renal failure, osteoarthritis and discospondylosis, weight control.

Late onset of disorders, ongoing management of breed predisposing diseases.



When can we use Dinbeat UNO?

Most common disorders in 2,986 dogs examined by veterinarians in a prevention campaign and their association with age and prevalence	
Disorder	Prevalence (%)
BCS >3/5	33.5
External otitis	14
Breast tumors	11
Waterfalls	9.5
Osteoarthritis	6.4
Limp	5.4
Gingivitis	5.4
Respiratory tract disease	3.4
Limp	3.2
Moist dermatitis	2.8
Atopic/allergic dermatitis	2.7
Conjunctivitis	2.6
Dermatitis	2.3

Table 3 : Most common disorders in dogs examined in private veterinary practices during prevention campaigns and their association between age class and prevalence of alterations according to a study by Diez, et al; 2015. (BCS: body condition score). .



Most common disorders in 2,986 dogs examined by veterinarians in a prevention campaign and their association with age and prevalence			
Disorder	Prevalence according age (%)		
	<24 months	2 to 6 years	>5 years
External otitis	9.8	38.5	51.7
Breast tumors	13.1	13.6	15
Waterfalls	2	5.8	26.6
Heart disease	0.4	1.2	24.4
Osteoarthritis	1.2	2.2	14.4
Limp	0.5	1.2	13.1
Gingivitis	3.9	5	6.9
Respiratory tract disease	0.3	2.3	6.8
Moist dermatitis	1.7	2.4	5.1
Dermatitis atópica / alérgica	0.5	3.1	3.1
Conjunctivitis	1.3	3.1	3.1
Dermatitis	2.9	1.5	3.7
Patellar dislocation	0.9	3.1	2.5

Table 4 : Most common disorders in dogs examined in private veterinary practices during prevention campaigns and their association between age class and prevalence of alterations according to a study by Diez, et al; 2015. (BCS: body condition score).

Most common disorders in 2319 cats examined by veterinarians in a prevention campaign and their association with age and prevalence

Disorder	Prevalence (%)
BCS >3/5	36.3
Gingivitis	11.3
External otitis	5.5
Respiratory tract disease	3.9
Conjunctivitis	3.84.5
Atopic/allergic dermatitis	2.3
Heart disease	2.3
Renal disease	2
Osteoarthritis	1.6
Dermatitis	1.5
Waterfalls	1.5
Stomatitis	1.2
Urinary system infections	1.2

Table 5: Most common disorders in cats examined in private veterinary practices during prevention campaigns and their association between age class and prevalence of alterations according to a study by Diez, et al; 2015. (BCS: body condition score).

Most common disorders in 2319 cats examined by veterinarians in a prevention campaign and their association with age and prevalence

Disorder	Prevalence according age (%)		
	<24 months	2 to 6 years	>5 years
BCS >3/5	15.2	42.8	41.9
Gingivitis	6.2	10	17.4
External otitis	4	6.1	6
Respiratory tract disease	3.9	4	3.7
Conjunctivitis	4.5	2.9	4.1
Atopic/allergic dermatitis	1.2	2.2	3.6
Heart disease	0.6	1.2	5.3
Renal disease	0.1	0.7	5.2
Osteoarthritis	0.1	0.5	4.4
Dermatitis	0	0.2	4.2
Waterfalls	0	0.2	4.2
Stomatitis	0.7	1	1.9
Urinary system infections	0.7	1	1.9

Table 6: Most common disorders in cats examined in private veterinary practices during prevention campaigns and their association between age class and prevalence of alterations according to a study by Diez, et al; 2015. (BCS: body condition score).

Conditions particularly important in senior patients		
Weight changes	Gain or obesity.	Loss (important in cats).
Orthopedic disorders	Osteoarthritis	Artrosis
GI disorders	IBD Constipation	Hepatobiliary Dental
Endocrine disorders	Hypothyroidism Hyperthyroidism Hypoadrenocorticism	Hyperadrenocorticism Mellitus diabetes
Neurological disorders	Incontinence Peripheral neuropathies Spinal cord diseases Vestibular syndrome (head tilt) Seizures	Behavior changes associated with degenerative neurological diseases (disorientation, anxiety, unusual night walks...)
Urogenital disorders	Renal insufficiency Urolithiasis	Uterine disorders (pyometra) Prostate disease
Cardiovascular disorders	Mitral valve degeneration (dogs) Heart disease	Pericardial disease Hypertension
Hematopoietic disorders	Anemias	Cytopenias
Respiratory disorders	Chronic rhinitis Chronic bronchitis	Laryngeal paralysis Tracheal collapse
Dermatological disorders	Cutaneous and subcutaneous masses or tumors	Chronic external otitis

Table 7: Summary of important conditions to assess in senior patients according to AHA Senior Care Guidelines for Dogs and Cats .

Depending on the breed

Diseases/disorders that frequently occur in certain breeds (neoplasms, osteoarthritis ...) must be evaluated and reported at all ages.

Therefore, we will assess each case particularly with:

- Tests according to race-predisposition.
- Examination with Dinbeat UNO (Holter mode).

For breeds with prevalence in:

- Congenital respiratory conditions.
- Congenital heart conditions.

(Table 8)

Heritability of disorders according to breed in dogs		
Respiratory disorders		
Brachycephalic syndrome	Boston terrier	Shar-pei (Chinese)
	English bulldog	Shih-tzu
	French bulldog	Cavalier King Charles
	Lhasa apso	Spaniel
	Bull terrier	Staffordshire
Tracheal hypoplasia	Boston terrier	Flanders bollero
	English bulldog	Siberian Husky
Laryngeal paralysis	Bull terrier	Dalmatian
Tracheal collapse	Yorkshire terrier	English bulldog
	Pomeranian	Poodle, toy
		Skye terrier
Cardiovascular disorders		
Arrhythmogenic cardiomyopathy of the right ventricle (ARVC)	Boxer	
Atrial septal defect (ASD)	Boxer	Bobtail
	Doberman pinscher	Samoyed
Dilated cardiomyopathy	Boxer	Scottish deerhound
	Doberman pinscher	Cocker spaniel
	Great dane	Newfoundland
	Irish wolfhound	American cocker spaniel
	Saint Bernard	Bobtail
Mitral / tricuspid regurgitation due to myxomatous degeneration	Portuguese Water Dog	Poodle
	Cocker spaniel	Teckel
	Poodles thumbnail	Schnauzer miniatura
	Yorkshire	Shihtzu
	Chihuahua	Lhasa Apso
	Cavalier King Charles	

Table 8: Summary of congenital disorders detectable by Dinbeat UNO according to breed predisposition.

Heritability of disorders according to breed in dogs

Cardiovascular disorders

Persistent Arterial Duct (CAP)	Poodles German Shepherd Collie Labrador Kerry blue terrier Maltese Bichón Pomeranian Shetland Sheepdog	Bichon frize Chihuahua Cocker spaniel, american English springer spaniel Irish setter Keeshond Poodle, miniature Poodle, toy Yorkshire terrier
Persistent right aortic arch	Great dane	German shepherd
Shunt portosystemic	Irish wolfhound Schnauzer , miniature Yorkshire terrier Australian dog Cairn terrier Golden retriever	labrador retriever Maltese bichon Cocker spaniel , american Dachshund Dandie dinmont terrier
Pulmonary stenosis	Beagle English bulldog Mastiff English Airedale terrier Chihuahua American Cocker Spaniel Scottish terrier	German shepherd Schnauzer Sussex-spaniel Fox terrier Samoyed West highland white terrier Miniature Schnauzer Dogs mixed
Sick sinus syndrome	Schnauzer, miniature Boxer American Cocker Spaniel	Dachshund Pomeranian Pug
Subaortic stenosis	Boxer Golden retriever Newfoundland Rottweiler English bulldog German shepherd	German shorthaired pointer Great dane Samoyed Bernese Mountain Dog Pointers Dogs mixed
Tetralogy of Fallot	English bulldog Keeshond Fox terrier	Poodle , toy Siberian husky
Tricuspid valve dysplasia	Borzoi German shepherd Great dane Pyrenean Mountain Dog Irish setter	labrador retriever Newfoundland Bobtail Weimaraner Shih Tzu
Ventricular septal defect (VSD)	English bulldog Keeshond Brittany Spaniel	English cocker spaniel Newfoundland Siberian husky

Table 8: Summary of congenital disorders detectable by Dinbeat UNO according to breed predisposition.



On gender role

Depending on gender, we can establish sterilization plans to prevent diseases and correct behavior (Table 10).

Individualized sterilization plans must be established related with the prevalence of diseases according to age, BREED, gender, body condition... adapted to each patient.

Benefits and risks of diseases linked to sterilization.		
Characteristics	Existing risk in sterilized animals	Existing risk in whole animals
Longevity	Males: 13.8% increase in life expectancy. Females: 26.3% increase in life expectancy.	- -
Pyometra	0	Dogs: 26-66% (in those older than 9 years). Cats: % unknown.
Breast tumors	Dogs: 0.5% (if the sterilization is before the first estrus). Cats: 85% reduced (if the sterilization is before one year of age).	Dogs: 23-63% (50% malignant). Cats: 11-33% (85-93% malignant).
Benign prostatic hyperplasia	0	Dogs: 75-80% risk (from 6 years old).
Testicular neoplasm	0	Dogs: 30% risk.

Table 10: Benefits and risks of diseases linked to sterilization.

When can we use Dinbeat UNO?

Depending on body condition

According to the patient's body score we can create a risk plan for the development of pathologies and their appearance in sudden changes in weight.

Overweight predisposes to several diseases, diabetes, hepatic lipidosis in cats... And in turn, sudden changes in weight can be a consequence of pathologies, an increase in weight can be due to hypothyroidism or hyperadrenocorticism; a sudden or chronic weight drop can be a consequence of hyperthyroidism or an indicator parasitosis.

The nutritional plan is very important for the prevention and treatment of pathologies (feed for kidney failure, prevention of crystals, for allergies...)

An incorrect diet can predispose to cardiomyopathies due to nutritional deficiencies or metabolic diseases.

Depending on the underlying diseases

With monitoring through Dinbeat UNO we can prevent the risk of pathologies and complications in existing diseases.

There are multiple pathologies that can directly or indirectly affect the cardiorespiratory system. Through the periodic use of controls with Dinbeat UNO we will be able to anticipate complications and future disorders.

For example, the appearance of arrhythmias as a result of pancreatitis, kidney failure, diabetes mellitus or due to electrolyte disturbances that are caused by diseases such as Addison's Syndrome.

Other alterations can cause heart rate and ECG changes, as in severe anemia, hyperthyroidism or hypothyroidism.



References

- Abbott, J. (2000). *Small animal cardiology secrets*. Hanley & Belfus.
- Anderson, M., & Sevelius, E. (1991). Animal Hospital of Helsingborg. In *Sweden Journal of Small Animal Practice* (Vol. 3).
- Bannasch, D., Famula, T., Donner, J., Anderson, H., Honkanen, L., Batchner, K., Safra, N., Thomasy, S., & Rebhun, R. (2021). The effect of inbreeding, body size and morphology on health in dog breeds. *Canine Medicine and Genetics*, 8(1). <https://doi.org/10.1186/s40575-021-00111-4>
- Belshaw, Z., Robinson, N. J., Brennan, M. L., & Dean, R. S. (2019). Developing practical recommendations for preventative healthcare consultations involving dogs and cats using a Delphi technique. *Veterinary Record*, 184(11), 348. <https://doi.org/10.1136/vr.104970>
- Boss, N., Holmstrom, S., Vogt, A. H., Jonas, L., Krauter, E., Moyer, M., Paul, M., Rodan, I., & Welborn, L. v. (2011). Development of new canine and feline preventive healthcare guidelines designed to improve pet health. *Journal of the American Animal Hospital Association*, 47(5), 306–311. <https://doi.org/10.5326/JAAHA-MS-4007>
- Creevy, K. E., Grady, J., Little, S. E., Moore, G. E., Strickler, B. G., Thompson, S., & Webb, J. A. (2019). 2019 AAHA Canine Life Stage Guidelines. *Journal of the American Animal Hospital Association*, 55(6), 267–290. <https://doi.org/10.5326/JAAHA-MS-6999>
- Diez, M., Picavet, P., Ricci, R., Dequenue, M., Renard, M., Bongartz, A., & Farnir, F. (2015). Health screening to identify opportunities to improve preventive medicine in cats and dogs. *Journal of Small Animal Practice*, 56(7), 463–469. <https://doi.org/10.1111/jsap.12365>
- Doit, H., Dean, R. S., Duz, M., Finch, N. C., & Brennan, M. L. (2021). What outcomes should be measured in feline chronic kidney disease treatment trials? Establishing a core outcome set for research. *Preventive Veterinary Medicine*, 192. <https://doi.org/10.1016/j.prevetmed.2021.105348>
- Egenvall, A., Bonnett, B. N., Häggström, J., Ström Holst, B., Möller, L., & Nødtvedt, A. (2010). Morbidity of insured Swedish cats during 1999–2006 by age, breed, sex, and diagnosis. *Journal of Feline Medicine and Surgery*, 12(12), 948–959. <https://doi.org/10.1016/j.jfms.2010.08.008>
- Epstein, M., Landsberg, G., Duncan, A. B., Lascelles, X., Marks, S. L., & Schaedler, J. M. (n.d.). *Senior Care Guidelines Task Force*.
- Fall, T., Hansson Hamlin, H., Hedhammar, ke, Kä mpe, O., & Egenvall, A. (2007). Diabetes Mellitus in a Population of 180,000 Insured Dogs: Incidence, Survival, and Breed Distribution.
- Gelatt, K. N., & Mackay, E. O. (2005). Prevalence of primary breed-related cataracts in the dog in North America. In *Veterinary Ophthalmology* (Vol. 8).
- Gunn-Moore, D., Bessant, C., & Malik, R. (2008). Breed-related disorders of cats. *Journal of Small Animal Practice*, 49(4), 167–168.
- Howe, L. (2015). Current perspectives on the optimal age to spay/castrate dogs and cats. *Veterinary Medicine: Research and Reports*, 171. <https://doi.org/10.2147/vmrr.s53264>
- Inoue, M., Hasegawa, A., & Sugiura, K. (2016). Morbidity pattern by age, sex and breed in insured cats in Japan (2008–2013). *Journal of Feline Medicine and Surgery*, 18(12), 1013–1022. <https://doi.org/10.1177/1098612X15616433>



References

- Kearsley-Fleet, L., O'Neill, D. G., Volk, H. A., Church, D. B., & Brodbelt, D. C. (2013). Prevalence and risk factors for canine epilepsy of unknown origin in the UK. *Veterinary Record*, 172(13), 338. <https://doi.org/10.1136/vr.101133>
- Kustritz, M. V. R. (2007). Determining the optimal age for gonadectomy of dogs and cats. *Journal of the American Veterinary Medical Association*, 231(11), 1665-1675.
- Martínez-López, B., Perez, A. M., & Sánchez-Vizcaíno, J. M. (2009). Social network analysis. Review of general concepts and use in preventive veterinary medicine. *Transboundary and Emerging Diseases*, 56(4), 109–120. <https://doi.org/10.1111/j.1865-1682.2009.01073.x>
- O'Neill, D. G., James, H., Brodbelt, D. C., Church, D. B., & Pegram, C. (2021). Prevalence of commonly diagnosed disorders in UK dogs under primary veterinary care: results and applications. *BMC Veterinary Research*, 17(1). <https://doi.org/10.1186/s12917-021-02775-3>
- Pearl, R. L., Wadden, T. A., Bach, C., Leonard, S. M., & Michel, K. E. (2020). Who's a good boy? Effects of dog and owner body weight on veterinarian perceptions and treatment recommendations. *International Journal of Obesity*, 44(12), 2455–2464. <https://doi.org/10.1038/s41366-020-0622-7>
- Quimby, J., Gowland, S., Carney, H. C., DePorter, T., Plummer, P., & Westropp, J. (2021). 2021 AAHA/AAFP Feline Life Stage Guidelines. *Journal of Feline Medicine and Surgery*, 23(3), 211–233. <https://doi.org/10.1177/1098612X21993657>
- Saunders, A. B. (2012). The Diagnosis and Management of Age-Related Veterinary Cardiovascular Disease. In *Veterinary Clinics of North America - Small Animal Practice* (Vol. 42, Issue 4, pp. 655–668). <https://doi.org/10.1016/j.cvsm.2012.04.005>
- Schrope DP, Prevalence of congenital heart disease in 76,301 mixed-breed dogs and 57,025 mixed-breed cats, *Journal of Veterinary Cardiology* (2015), <http://dx.doi.org/10.1016/j.jvc.2015.06.001> *Journal of Veterinary Cardiology* (2015)-, e-www.elsevier.com/locate/jvc
- Urfer, S. R., Wang, M., Yang, M., Lund, E. M., & Lefebvre, S. L. (2019). Risk Factors Associated with Lifespan in Pet Dogs Evaluated in Primary Care Veterinary Hospitals. *Journal of the American Animal Hospital Association*, 55(3), 130–137. <https://doi.org/10.5326/JAAHA-MS-6763>
- Van den Borne, B. H. P., Calvo-Artavia, F. F., Brodbelt, D., & McIntyre, K. M. (2017). SVEPM 2016 – Current multidisciplinary advances in veterinary epidemiology and economics, Society of Veterinary Epidemiology and Preventive Medicine conference Elsinore, Denmark 16–18 March 2016. *Preventive Veterinary Medicine*, 139, 91–92. <https://doi.org/10.1016/j.prevetmed.2017.03.004>
- Vogt, A. H. (2010). AAHA-AAFP Feline Life Stage Guidelines. www.aahanet.org
- Watson, P. J., Roulois, A. J. A., Scase, T., Johnston, P. E. J., Thompson, H., & Herrtage, M. E. (2007). Prevalence and breed distribution of chronic pancreatitis at post-mortem examination in first-opinion dogs. *Journal of Small Animal Practice*, 48(11), 609–618. <https://doi.org/10.1111/j.1748-5827.2007.00448.x>
- Yeates, J., & Main, D. (2009). Assessment of companion animal quality of life in veterinary practice and research. *Journal of Small Animal Practice*, 50(6), 274–281. <https://doi.org/10.1111/j.1748-5827.2009.00755.x>

