

Balancing Puppy Socialization with Infectious Disease Prevention

Meghan E. Herron, DVM, DACVB

*Gigi's – Improving the Lives of Shelter Dogs
Columbus, OH 43110*

Jason Stull, VMD, MPVM, PhD, DACVPM Adjunct

*The Ohio State University, College of Veterinary Medicine
Columbus, OH 43210*

Introduction

The first 12 weeks of a puppy's life are prime time for socialization. Failure to adequately socialize puppies during this time is arguably the most common reason for the development of major, often life-threatening behavioral concerns in adult dogs. Many serious problems can be prevented if appropriate care is given during these early, sensitive weeks of a puppy's life. One major challenge to adequate socialization is a puppy's simultaneous vulnerability to infectious diseases. As maternal antibodies wane and immune systems lag in their full response to immunization, many in the veterinary community advise against early contact with dogs and environments outside the safety of home. This then means puppies do not gain essential social feedback until they are fully protected between 16-20 weeks of age – an age that is far past the window of time when socialization will have a positive impact. So how do we navigate these competing risks and promote overall behavioral and physical health? The key is finding a balance that takes BOTH risks into consideration, weighs them against the benefits, and provides an individualized plan for each puppy.

Key prevention strategies

Keeping puppies as protected as possible during an age when they are most vulnerable to infectious disease is essential prior to embarking on any socialization experience. A few key prevention strategies can help mitigate a puppy's risk of illness/infection. A discussion with the owner regarding potential pathogen exposure (risk assessment) will guide decisions regarding prevention strategies that extend beyond the current core recommendations. Critical to this conversation is that infectious disease prevention should target both the puppy (e.g., vaccination, deworming), as well as other non-puppy areas, such as the location/facility (e.g., cleaning and disinfection), and people involved (e.g., cleaning hands before/after puppy contact). A number of resources (e.g., infectious disease fact sheets, mitigation strategy recommendations) are available, both for clients and veterinary staff, at <http://go.osu.edu/IDK9risk>.

The puppy

Vaccination. Although a fairly limited number of puppy infectious diseases are preventable or reduced in severity through vaccination, several high-consequence pathogens are effectively controlled through this important prevention method. Established vaccination recommendations are available and should guide risk-based discussions with puppy owners.¹ As of November 2024, core canine vaccinations (e.g., vaccinations every puppy should receive) are DA₂PP (distemper virus, adenovirus, parvovirus, canine parainfluenza virus),

Leptospira, and rabies virus. Additionally, owner discussions will help determine the need for non-core 'lifestyle' vaccinations, including Lyme disease, *Bordetella*, and canine influenza virus.

Due to waning maternal antibodies, puppies should receive at least 3 doses of a combination DA₂PP vaccine between 6 and 16 weeks, 2-4 weeks apart. The remainder of the core and the lifestyle vaccines should be given as early as recommended by the manufacturer, with appropriately timed boosters.¹ Ensuring vaccination starts as early as possible will assist in ensuring puppies have some vaccine-inducible immunity prior to beginning socialization.

Endo/ecto parasite screening, treatment, control. Endoparasites, including tapeworms (e.g., *Dipylidium caninum*), roundworms (e.g., *Toxocara canis*), whipworms (e.g., *Trichuris vulpis*), hookworms (e.g., *Ancylostoma* spp), and *Giardia* as well as ectoparasites (ticks, fleas, mosquitoes and associated pathogens) are important contributors to infectious disease in puppies (and zoonotic transmission to people). Dogs that have direct or indirect contact with other dogs are at increased risk for many of these parasites, therefore effective screening, treatment and control of these parasites in puppies is important.² All puppies should be on an effective endoparasite and ectoparasite prevention program appropriate for their anticipated infectious disease risks prior to and while engaging in socialization activities. For young puppies, this will involve routine fecal examinations and deworming, transitioning to a long-acting product (e.g., monthly) based on manufacture recommendations for minimum age and weight.

Established deworming recommendations are available and should guide risk-based discussions with puppy owners.³ In puppies, fecal examination for GI parasites should occur at least 4 times in the first year (and 1-4 times/year depending on lifestyle in adult dogs). Puppies should be dewormed (with a broad-spectrum product) starting at 2 weeks of age, occurring every 2 weeks until monthly prevention is in place. Ectoparasite prevention is equally important. All puppies (based on location) should receive flea and heartworm prevention, while most puppies should receive tick prevention (based on a risk assessment). Selection of monthly control product (e.g., active ingredients) for endo and ectoparasites should be based on a risk assessment for the puppy (current and anticipated future risks).

Non puppy mitigation areas

Multiple infectious disease prevention strategies should be aimed at the puppy, as many diseases cannot be specifically targeted, and approaches that target a given pathogen are seldom 100% effective (e.g., vaccination with waning maternal antibodies). As such, it is important to ensure infection control efforts aimed at the location/facility are incorporated into the infectious disease prevention plan. Examples include (1) appropriate cleaning and disinfection before and after puppy presence, especially when high-risk dogs, such as puppies are present (e.g., puppy classes), (2) exclusion of pest and wildlife from the area (such as with fences), and (3) the careful use of formal inclusion/exclusion policies as applicable (e.g., no sick dogs or those with known recent infectious disease exposure, minimum preventive care requirements for group settings such as puppy classes). See **Location** below. In addition, efforts should include person-related mitigation factors. Personal hygiene, such as hand

hygiene (cleaning), should be emphasized. See **People** below. Further examples and evidence to support these mitigation steps are available.²

Socialization

Proper exposure and handling of puppies during their first months of life is essential to the prevention of behavior problems.⁴ The socialization period in puppies begins at age 3 weeks and continues to age 12, possibly 14, weeks of age.⁵ During this time, a puppy's brain is developing social capabilities and learning who and what can be trusted as safe. Dogs will show concern, fear, and potentially panic in response to stimuli they did not establish as trustworthy during this early, critical timeframe. Early socialization allows for healthy social development, preventing avoidance behaviors and acts of aggression based on fear of other dogs, people or new environments later in life.

Appropriate socialization involves exposing puppies to a variety of **people**, **locations**, **animals**, and **novelty**, without causing fear (P.L.A.N.). The anticipated lifestyle in each puppy's future - any people, animals, objects, and locations that a puppy may be exposed to later in life should be introduced prior to 12 weeks of age when and if possible. While neutral experiences are meaningful, those associated with positive emotions will establish an even more powerful connection of safety and trust.

People

Caregivers should devote extra effort to introducing their puppy in a positive way to children, elderly people, and people who have other physical differences from their own family. Examples include people of all ages, sizes, and colors, men with beards, people wearing uniforms, headgear or glasses, people in wheelchairs or walkers, and people riding bikes, skateboards, or rollerblades. Keeping small, palatable, cooked (if meat- or egg-based) treats at all times will be helpful so that the new people the puppy meets can provide a positive interaction. Teaching a puppy to sit for all interactions with new people will also encourage them to greet people in a polite manner. When meeting and interacting with new people, inquire about recent dog exposure and visits to areas where traffic may be high for dogs with unknown health status (i.e. dog shelters, dog parks). It may be best for them to change clothes/shoes before visiting with a new puppy. Also be sure that people practice proper hand hygiene by washing and/or disinfecting hands before and after interacting with a new puppy.

Visits to the veterinarian should be as positive as possible as most puppies are in their first fear period (8-10) weeks at the initial vaccine visit. This sets them up to have strong fear learning capabilities and one negative experience can be detrimental for life. The veterinarian and staff should approach puppies gradually and quietly, while speaking in a light-hearted tone of voice and offering palatable, cooked (if meat- or egg-based) food treats. Palatable treats should again be offered during physical exam and vaccinations to establish a positive emotion with such interactions/procedures.

Locations

At the initial puppy wellness visits, determine anticipated lifestyle plans so that caregivers can try to provide exposure to locations where the puppy will frequent later in life. Examples might include campgrounds, parks, outdoor sporting events, home improvement stores, and dog training/daycare centers. Locations where dog traffic is either high or unknown should be treated with caution, but not necessarily avoided. Puppies can attend a child's soccer game and be contained in an area where the ground is covered by a tarp or thick blanket to prevent contact with any potentially contaminated areas. They can be carried or strollered when getting from one place to the other if the available walking paths are frequently trafficked by other dogs. Consider taking the puppy for walks in neighborhoods that differ from the family's neighborhood (rural vs. urban vs. suburban). Sticking to the sidewalk and minimizing contact with grassy areas where dog traffic is unknown will reduce risk of infectious disease spread. Strollers or slings are also an option if contact with the ground is deemed too risky.

Group classes, such as puppy classes, should be researched ahead of time to ensure proper health screening of all dogs entering the facility, as well as proper disinfection practices. Visit: <http://go.osu.edu/IDK9risk> for a checklist of items to review prior to attending class, daycare, or boarding.

Animals

Friendly interactions with other animals are especially important for the puppy's social development. Arrange "play dates" with friends who have other dogs or puppies. Be sure to supervise all interactions and that the dogs with whom the puppy plays are socially appropriate. The best play pal for a new puppy is a mature adult who is known to be friendly and eager to play with other dogs, but also one that does not tolerate excessive mouthing or jumping. It is appropriate for the adult dog to give an occasional reprimand in the form of a bark or air snap when the puppy is biting or playing too roughly, any aggression beyond that, however, is not appropriate. Watch the body language of the adult dog – if you notice that they are avoiding the puppy, growling or playing too roughly, remove the puppy from the situation immediately. A bad experience at this sensitive age can have long lasting negative effects. Double check that any dog interacting with a new puppy is healthy and current on vaccines and ecto/endo parasite prevention to minimize risk for the puppy.

If the family does not have cats in the home, it may be beneficial to have them seek out friends or family with well-tempered cats to provide at minimum visual exposure to cats in a positive and safe manner. Avoid having the puppy interact with cats or other animals who are afraid of dogs as a negative interaction could be quite detrimental.

Novelty

Exposure to novel stimuli is important to prevent fear and phobias from developing later in life. Things that we might take for granted, such as a rake resting on a garage wall or the sound of a lawn mower, can be terrifying for a dog if they did not get adequate, positive exposure as a puppy. Caregivers should make an effort to consider off-season items, such as snow shovels, cold weather outerwear, holiday decorations, and running hoses so that they do not provoke

fear when that season comes around. When introducing novel items, start at a distance and allow the puppy to approach on their own, using palatable food treats to establish a positive emotional association. For items that make noise and move, introduce and wait for the puppy to acclimate to the sight of the item alone, before introducing noise and then movement. Vacuum cleaners are a great example of an item that looks, sounds and moves in a way that is frightening to most dogs. This fear can be avoided with a slow and careful introduction during the socialization window.

Adolescent Wellness Visits

With most booster inoculations occurring during early puppyhood and then not again for a full year, many adolescent dogs are going through one of the most challenging developmental phases without a veterinary wellness visit. The adolescent brain has not yet developed cortical connections to the limbic system that help control emotional outbursts, frustration, and impulsivity in the adult brain. This leads to dogs that are seemingly willful, defiant, and difficult to control in comparison to their softer, more compliant puppy personality. Scheduling this “teenage tune-up” visit between 8-10 months of age allows a veterinarian to assess both physical and behavioral development, as well as ensure that the initial inoculation series were adequately completed, update the dog’s risk assessment based on any changes to anticipated lifestyle/experiences, perform the initial heartworm test, do a follow up fecal screening, and provide important dog ownership information that may have been missed or forgotten during previous puppy visits.

Puppy classes

An appropriately run puppy class can provide ample, safe opportunities for puppies to gain exposure and make positive connections with other people, dogs, and various novel items. That said, not all puppy classes are created equal so careful research into policies and practices should be completed prior to selecting a class (see **Locations**). Classes should be reserved for puppies under 4 months of age, be focused on creating positive emotional connections, and have a solid supervision plan in place to address how attendees (and their children) interact with other puppies and to manage size differences between puppies in class which could lead to fear in smaller puppies. Puppies are eligible to start class at the minimum age of 7 weeks, be given a clean bill of health by a veterinarian, and should have at least one distemper, parvovirus, adenovirus, parainfluenza vaccine and one dose of ascarid dewormer given at least 7 days prior to the start of class.⁶

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