

Neonatal Care Dr. Marty Greer, JD Winter 2021

Managing each pup will include measuring, recording, and addressing their oxygenation, weight and weight gain, hydration, temperature, and blood glucose, each of which will be explained in the following sections.



The above scoring should be done for each puppy at birth and 5 minutes after resuscitation efforts have begun.

To effectively track puppies, a system must be developed. We avoid using neck bands due to risk of strangulation. A colored towel system (sterile towels) can be used at c-section or vaginal birth. This can be followed by fingernail polish or fabric paint to allow you to follow puppy's APGAR score, weight, temperature, urine color, SPO2, and blood glucose levels.

Using a spreadsheet or notebook with lines drawn is very helpful in managing all the parameters you can measure.

APGAR Parameter	0	1	2
A = Mucus membrane color	Flaccid	Some tone in limbs	Active movements
P = Pulse, Heart rate	Absent to <110 BPM	110-220 BPM	>220 BPM
G = Grimace, Irritability reflex	Absent	Some movement	Crying
A = Activity, Mobility	Pale or cyanotic (Blue/gray)	Slightly cyanotic	Pink
R = Respirations	Absent	Weak, irregular	>15/min, rhythmic

1. Birth Weight – is not a parameter that you can control, other than by making certain their dam has appropriate quantities of appropriate nutrition. We encourage our breeders to feed quality puppy food manufactured by Purina, Eukanuba/Iams/Royal Canin and Hills. These diets should contain carbohydrates and meat sources. We strongly discourage the use of raw and grain-free diets. For more information, see notes on “Managing the Valuable Brood Bitch”.

2. **Litter size** – is the other parameter that you cannot control. The larger the litter, the smaller the pups and the smaller the litter, the larger the pups in general. Again, be certain the dam has adequate nutrition consisting of quality nutrients in appropriate quantities. For more information, see notes on “Managing the Valuable Brood Bitch”.

3. **4 H syndrome** – is a description of the 4 great causes of early neonatal illness and death. Once the pups are breathing well, managing these 4 parameters can make the difference between life and death for your pups. The 4 are all intertwined – without managing one well, you will struggle to manage the other 3. They will be discussed as the 4Hs for this reason.
 - a. **Hypothermia** – is low body temperature.
 - b. **Hypoglycemia** – is low blood glucose or sugar. Hypoglycemia is caused by lack of adequate nutrition and using too many calories for staying warm and moving around.
 - c. **Hydration** – is the fluid balance in the body. Dehydration is the lack of adequate fluids, usually taken in as milk during nursing.
 - d. **Hypoxia** – low blood oxygen



What can you measure?	What can you control?	Control → im
1. APGAR	1. Oxygen = SpO2	1. APGAR
2. Weight	2. Food intake	2. Weight gain
3. Urine color	3. Fluid intake	3. Hydration
4. Temperature	4. Environmental temperature	4. Gut motility, digestion, and activity
5. Blood Glucose	5. Food intake and glucose	5. Brain function and activity

4. What can you measure?
 - a. **APGAR** – reflects viability at birth. See the chart for definitions.
 - b. **SPO2** - % of oxygenation of circulating blood. Should be above 96%.
 - c. **Weight** – body weight, measured using a small kitchen scale. Grams (gm) and kilograms (Kg) are more accurate measurement than ounces and pounds.
 - d. **Urine color** – is the color of urine collected by stimulation on a dry white cotton ball or tissue.
 - e. **Body Temperature** – is measured rectally using a digital thermometer lubricated with Vaseline.
 - f. **Blood Glucose** – or blood sugar requires a blood sample and a glucometer. This is only indicated for failing puppies.

5. What can you manage?

- a. O₂ –can be assessed looking at the color of the pup’s tongue. With a pulse oximeter clipped on the foot of a pup, this monitor can measure oxygen in the blood. At this time, this is only available at your veterinary clinic.
- b. Feeding – for pups that are not nursing successfully, bottle or tube feeding is essential to support pups until they are stronger.
- c. Hydration – can be managed by increasing nursing, bottle feeding, tube feeding, or by injecting fluids Subcutaneously (SQ). Fluids are a prescription item.
- d. Environmental temperature – can be managed by heating from underneath the pups, increasing the room temperature, or with overhead heating.
- e. Blood Glucose – for pups to bring this level up to support the pup. This can be done at your veterinary clinic or at home if you have a human glucometer used to manage human or veterinary diabetic patients.



Managing your neonates:

1. **Breathing** – as in all resuscitation, the first steps are A B C = Airway, Breathing, Circulation.
 - a. Clearing the membranes off the pups face is job 1, whether you do it or the bitch beats you to it. This has to happen fast, so the pup’s first breath is not in the sac, inhaling placental fluids. The most effective way for you to help her is to use a gauze square or a terry cloth towel for a good grip. Avoid using scissors to cut the sac as this may cut the pup. There are 2 layers to the sac, so be sure to get through both layers. You will see the pup’s tongue clearly once you have gotten through both layers.
 - b. DeLee (DeeLee) mucus trap – is a suction device that allows you to use your suction to pull fluids from the back of the pups’ airways. It is soft and effective. With gentle use, you can’t really do it wrong. The act of sucking out the fluid will also stimulate the pup to breathe. Once the chamber on the DeLee is ½ full, stop and empty it (or you will have a straw and new-found appreciation for the flavor of placental fluids).
 - c. Bulb syringe – is the little blue “snot sucker” that most everyone with kids has used. It can be used alternately with the DeLee – as the bulb syringe does a better job with thicker mucus and the DeLee with watery fluids.
 - d. Oxygen – from an oxygen tank or preferably from an oxygen concentrator, will improve oxygenation of the pup’s blood. The PuppyWarmer oxygen concentrator is available through Revival Animal Health’s catalog or online.



Room air is 20% oxygen, oxygen concentrators provide 95% oxygen and oxygen tanks provide 100% oxygen. By increasing the oxygen in the pup's environment, with a face mask, blow-by, or in an oxygen chamber/incubator, you will improve the chances of the pups' survival until they are breathing strongly enough to survive on room air.



- e. Pulse oximeter – is a medical device that can measure the oxygen in the blood of a puppy or adult dog by use of a clip on the toes or lip. They are widely used in human and veterinary medicine during anesthesia or in the case of respiratory distress. This could also be purchased and used on newborn pups to assess their ability to move and use oxygen.

- f. 25 g needle – is a regular small gauge hypodermic needle. In the case of pups that are not breathing well or at all, it can be placed in the upper lip of the pup just below the nostrils in the crease. This is acupuncture site GV 26, known to stimulate respirations. It can be placed and used with either a pecking motion or a twist. The bleeding will be minimal. ❌

- g. Caffeine – can be used as another respiratory stimulant. Its use is documented in human babies and foals. Caffeine tablets for human use can be purchased at a pharmacy without a prescription. They are usually marketed to help keep people awake. The tablets can be easily dissolved in water, and a drop placed on the tongue of pups that are not breathing effectively. It can be repeated as needed.

- h. Dopram – is a prescription injectable drug used for respiratory stimulation with a controversial past. The controversy is that despite the drug's ability to stimulate the respiratory center in the brain, it also speeds up metabolism in the brain, meaning the brain needs more oxygen at the exact time that there is no oxygen being delivered to the brain. That being said, it is better to use as a last resort than not at all. If after 10 minutes of stimulation and suctioning, the pup is still not breathing, it is worth a try. The dose of 0.1 ml injected into the tongue muscle can be administered. Many but not all pups will start to gasp. At this time, the pup should have blow-by oxygen delivered while keeping the pup warm, safe, dry and suctioned.

- i. Head down – do NOT swing pups, but keep them tipped with their head down as much as possible. This will allow fluid to drain from their airway.

- j. Intubation – this is placing an endotracheal tube in the airway – the trachea, of the pup. This is something the veterinary technicians at your veterinary clinic may be able to learn to do with the help of an otoscope or laryngoscope, a tiny tube called a Cole tube, and a plate of chocolate cookies for motivation.

This takes practice and skill and is not likely something most breeders can do unless they have medical training. However, after the first puff of oxygen or air is given into the tube, the subsequent breaths are easier for the pup to take. Just like blowing up a balloon for the first time is hard, the second and third times are easier. In the lungs, the first breaths help spread the surfactant out in the alveoli, an essential step in breathing. In pups that are premature and underdeveloped, this is the first and most likely cause of puppy loss. (Second is failure to nurse strongly and take in colostrum at the right time for it to be produced by the bitch and absorbed in their gut). There is no surfactant substitute in the dog. The only other hope we have if we expect premature pups or even pups at full term to improve surfactant development in their lungs is administering Solu-Medrol to their mother 1 to 24 hours pre-birth.



If all else fails and you have cleared the airway, used the 25 gauge needle for respiratory stimulation, given drugs, and cannot intubate the pup, you can try using the little blue bulb syringe (snot sucker) as a miniature AMBU bag. By placing the bulb syringe at the back of the throat as near the tracheal opening as possible, you can try to gently inflate the pups lungs to help them take their first breaths.

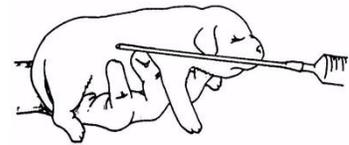
- k. Stethoscope – is an affordable and accurate way to assess newborns for heartbeats and lung sounds. Practice with it before you are in a crisis.
 - l. Warmth – during resuscitation, it is easy to get so wrapped up in resuscitation, breathing, and cord care that you can forget to keep your puppies warm. Your hands are not warm enough – you need an external heat source such as a heating pad, Snuggle Safe or hot water bottle. On the other hand, be cautious that you don't overheat the puppies – this can be dangerous too.
 - m. Don't swing – avoid swinging puppies to remove airway secretions. This is akin to "shaken baby syndrome" and causes brain damage. Suctioning and intubation are superior methods of resuscitation.
2. Heat source – puppies need to be kept warm –in an environment between 90°F and 95° F. Pups prefer to have a temperature gradient, meaning a variation of temperatures in their environment so they can move to an area with the temperature they prefer. Their rectal temperature needs to be between 94°F and 99°F. A heat source from underneath,

where the bitch is not subjected to a constant elevated temperature is preferred. Heat lamps and other sources can start a fire so try to avoid them.

3. Dip the cords – in tincture of iodine at birth, 2 and 8 hours, then 2 times a day till the cords fall off. This prevents an ascending infection up the cord that can lead to fatal peritonitis. Dip the cord really means dipping – be generous. Use a fresh small bottle with each litter.
4. Feeding – bottle and tube. Many puppies require supplemental feeding, either because they are ineffective nursers or because their dam does not lactate well. Neither should be a reason to lose pups. Either you can supplement the puppies with bottle or tube feeding or you can work to improve the bitch's lactation.

Low birth weight pups have an 81% chance of death in the 1st 48 hours. Pups in the lightest 25% of its breed has an increased risk of mortality during the 1st 2 days of life. Puppies that lose more than 4% of their birth weight have an 8 fold greater risk of death. Not surprisingly, **large litters** have a 4x increased risk of neonatal death associated with low birth weight and a slow prolonged delivery with oxygen deprivation.

For the bitch who is not lactating adequately, refer to the “Managing the Valuable Brood Bitch” handout.



Bottle feeding or feeding with the Miracle Nipple can be used for puppies with a strong suckle response. Feeding with an eyedropper, syringe, or sucking on a makeup sponge should be avoided.

For pups that won't take a bottle, who are too small and weak to bottle feed, or who have cleft palates, tube feeding is recommended.

By taking adequate precautions, tube feeding can be safe and effective.

There are 6 guidelines for safe tube feeding – the 6 P's.

1. **Premeasure** tube – nose to rib
 2. **Prewarm** – puppy and formula
 3. **Pass** with chin down
 4. **Pass** to the left
 5. **Pinch** → vocalize before feeding,
 6. **Place** tube end in bowl of water to check for bubbles
-
5. Puppy formula – use of a commercially manufactured milk replacer such as Breeders' Edge® Foster Care is recommended. Home made diets, cows milk and goats milk are not balanced, can cause diarrhea and may lead to nutritional cataracts.
 6. Passive immunity – colostrum /plasma – are required for adequate antibody transfer to the pups. Puppies need to absorb antibodies through their intestinal tract. Unlike

humans, little passive immunity comes thru the placenta. Puppies need to absorb colostrum in the first 6 to 12 hours after birth. After 24 hours, the gut changes and the large protein molecules that are antibodies are no longer absorbed; instead they are digested. Also, bitches only produce colostrum for a few hours – puppies born later will not receive the same amount of antibodies as puppies born earlier in the litter. This is of particular concern in large litters. Being late in birth order, having a prolonged delivery with associated hypoxia (oxygen deprivation) during birth, and being from a large enough litter to result in smaller sized puppies are 3 strikes against individual puppies.

With all 3, these small, chilled, late, colostrum and oxygen deprived puppies need a lot of extra help. They may need fluids, glucose, more warmth, oxygen, colostrum, tube feeding, electrolytes, and antibiotics.

For puppies who are colostrum deprived, whether because of late birth order, c-section bitches who don't lactate well, sick bitches or bitches who are programmed to lactate poorly, either colostrum or plasma administration may be advisable.

In the first 6 to 12 hours after birth, either colostrum or plasma may be administered. Colostrum can be collected from the mother of the pups if she is lactating well or from other bitches in the kennel. If you have a bitch with great volumes of colostrum and a small litter, you can hand-express colostrum and freeze it in 5 cc aliquots. Once needed, gently thaw and administer the colostrum with a feeding tube. Sharing colostrum between kennels could introduce diseases into a kennel and should be done only with careful consideration.

Fresh frozen plasma is available commercially. Hemopet in California does not require a prescription and will ship to breeders. The recommended dose is 16 cc per puppy, regardless of size. (Bouchard et al., 1992) The plasma or colostrum should be administered by feeding tube in several doses between birth and 12 hours of life. Plasma can be administered by SQ, IV or IO injection after 12 hours. Colostrum can only be given orally.

Plasma can also be used for any sick puppy at any age, by IV, IO, or SQ injection. IP injection is not recommended. For severe diarrhea, plasma has been suggested to be useful given orally to help create local immunity.

Sick puppies

Sick puppies have a limited number of symptoms they can exhibit. Many disorders look alike so it can be hard to determine the cause of illness. Fortunately, there are some diagnostic tests that can be done. Additionally, many of the disorders will respond to general supportive care.

Sick puppies exhibit the following symptoms:

1. Poor weight gain
2. Failure to nurse
3. Excessive crying
4. Excessively quiet
5. Rejection by dam
6. Diarrhea
7. Vomiting
8. Fever
9. Dark urine color
10. Abdominal distension
11. Cough/sneeze/ discharge
12. Littermate death

Diagnostics for sick puppies include

1. Blood tests – CBC, Chemistry screen, bile acids, blood culture
2. DNA test
3. Urine tests – dipstick, urinalysis
4. Urine organic acids
5. X-rays
6. Ultrasound

7. Treat for the Treatable

It can be difficult to confirm a diagnosis on puppies. The theory of “treating for the treatable” is a sound one – if good, smart, supportive care is provided, many puppies will recover. If you lose them, at least you tried.

- a. Fluids – are invaluable for puppies not thriving. Normal saline or 5% Dextrose is recommended for neonates but LRS is an acceptable substitute. Fluids can be given by IV, SQ, PO, IO routes. Avoid IP administration for all fluids and SQ administration for 5% dextrose (causes abscesses). Fluids can be administered using a needle and syringe, a syringe with a butterfly needle, or a bag of fluids with a venoset tube and needle attached. Fluids should be carefully warmed to body temperature before administration.

The dose is 1 ml/30 gm or 1 ml per 1 oz of body weight + what is needed to compensate for losses like diarrhea. This comes out to 16 ml or cc per pound of body weight. Fluids can be administered every 4-6 hours. Avoid over-administering fluids as puppies cannot eliminate excess fluids as an adult can.

Almost every sick puppy will benefit from fluid therapy as most illnesses lead to decreased nursing, eating, drinking, and subsequent dehydration.

- b. Glucose – can be given as 5 to 10 % dextrose orally or by IV or IO administration. The dose should be 1 ml (cc) per 4 oz of puppy weight/ 4 ml per pound of body weight. Doc Roy’s® Forti-Cal from Revival or Karo syrup can be given orally if injectable glucose or dextrose is not available. Karo syrup is also helpful to manage constipated puppies.

Toy breed puppies are most vulnerable to low blood sugar/glucose. These puppies should be watched carefully if they are not eating well – they have small glycogen reserves in their livers to support them in periods of not eating. Glucose should only be used for a short-term support as it is used and gone quickly. For longer periods of inappetence, complex carbohydrates and proteins are a better choice. Royal Canin Starter Mousse is an ideal formula to feed young pups.

- c. Electrolytes – are useful for puppies showing signs of dehydration, or for puppies who are vomiting and/or having diarrhea. These are to be given orally. Revival has a product – Breeders’ Edge® Puppy Lyte (and Kitten Lyte for kittens). These are palatable (tastes like chicken), easy to administer and useful in keeping ahead of illness that could otherwise end up at your veterinary clinic.
- d. Antibiotics – are life-saving when used correctly. Not every puppy and not every breeding dog and bitch should have antibiotics routinely administered. Overuse of antibiotics can

lead to bacterial resistance in your kennel and potentially your household, rendering even appropriate antibiotics to be ineffective. Only administer antibiotics on the recommendation of your veterinarians.

Puppies with a fever, puppies born exposed to meconium (the first stool in the placental fluids), or puppies suspected of being septic should have antibiotics administered immediately. Failure to gain weight, failure to nurse effectively, diarrhea, inconsolable crying, abdominal distension and pain (“the blue belly of death”), blood in the urine, respiratory distress, and/or sloughing of toes and tail tips are all suggestive of sepsis.

Plasma administration (See section on plasma) can also help manage bacterial infections.

Ceftiofur sodium (Naxcel) can be administered at a dose of 2.5 mg/kg SQ every 12 hours for no longer than 5 days. This will minimally alter intestinal bacteria. Clavamox is effective orally at 15 mg/kg every 12 hours for 5 days, longer if indicated. Probiotics should be administered along with antibiotics to help restore the correct bacteria in the gut of the puppy. Oral Clavamox or the injectable equivalent are options that may be more available.

- e. Probiotics – are useful in treating and preventing disease as well as to restore the correct bacteria in the gut after antibiotic administration. There is an indication that probiotics can help prevent diarrhea, mastitis, metritis, pyometra, and other bacterial diseases. Revival has a dog-specific probiotic, Doc Roy's GI Synbiotics that can be used to prevent and help treat many bacterial disorders.
- f. Vitamin K - puppies less than 48 hours old have reduced thrombin levels, so presumptive therapy with vitamin K1 may be used (0.01–1.0 mg SC per puppy) for any sick puppy, septic puppy or puppy with unexplained bleeding, internally or externally.
- g. Parasite control – is mandatory for all puppies and brood bitches. The CDC (Center for Disease Control – for humans) and CAPC (Companion Animal Parasite Council) have strict recommendations (NOT suggestions) that all puppies and their dams should be dewormed at 2, 4, 6 and 8 weeks of age, regardless of their fecal sample results. Parasites such as roundworms and hookworms can migrate through the bloodstream of the pregnant bitch into her puppies via the placenta and into her puppies guts via the milk. If at any point in her life, she had parasites, the stress of pregnancy and lactation can initiate the cysts to release parasite larva into her bloodstream.

A negative fecal sample is not evidence that she won't pass parasites to her puppies. That is a lot of negatives in the same sentence. In other words, the bitch can have a clear fecal sample and still share parasites with her puppies and your family. The concern about parasites extends beyond the health of the bitch and her puppies; it extends to the humans the bitch and puppies are around. These parasites are zoonotic, meaning they can spread to humans, especially the very young, very old, and immunocompromised. As a breeder, you may be liable for the passage of parasites to your puppy buyers and their friends and families.

An alternative to deworming the puppies and the bitch every 2 weeks and having to treat puppies that have parasites is to treat the bitch preventively with Fenbendazole. The protocol requires treatment of the pregnant bitch for the last 3 weeks of her pregnancy through to day 14 of lactation daily – that is 5 straight weeks. This is not how the label reads. However, the protocol is safe for pregnancy and has been proven in clinical practice to be highly effective in preventing, not waiting to treat, for roundworms and hookworms. (Kazacos, KR: "Treatment and Control of Gastrointestinal Helminths"). So rather than starting deworming when the puppies are being weaned, have parasites migrating in their guts, and are feeling



lousy, you can get ahead of this and have the healthiest puppies you have ever produced. The dose is 50 mg/kg once every 24 hours. Using the 10% Fenbendazole suspension, that is 1 cc per 4 pounds of bitch's body weight every 24 hours from day 42 of pregnancy to day 14 of lactation.



- h. Kao-Pectate – the real one. Kao-Pectate is Kaolin and Pectin – a clay-based product that is like a sponge to adsorb toxins and bacteria. The human over-the-counter product that is currently called Kao-Pectate is an aspirin-based product that may not be safe for pregnant and nursing bitches as well as their puppies. It is reported to be risky to use in women nursing their babies.

Kaolin-Pectin is safe to use in pregnant and nursing bitches as well as their puppies. Puppies should be dosed at 1 cc up to every 4 hours and adults can have 1 to 2 teaspoons 4 to 6 times a day.

This product does not have scientific evidence that it works but it has been used extensively and has strong clinical evidence that it helps reduce diarrhea.

- i. Inconsolable Crying – can be a very disheartening symptom to manage. It is upsetting the dam, all the dogs in the household, and you! First, check the puppy's temperature, hydration, feed it, administer plasma and antibiotics. If the crying persists, injectable butorphanol can be safely administered. This is a controlled prescription item you may be able to get from your veterinarian. If the puppy is colicky, or has another undiagnosed but reversible condition, allowing the puppy and mom to sleep may help the condition resolve.
8. Hygiene – is critical to keeping your kennel and dogs healthy. No antibiotics or vaccines can overcome good hygiene.

Only allow visitors that have healthy dogs at home. Require shoes and outer garments to be removed prior to entering your facility. Everyone who handles puppies need to wash their hands with soap and water, liberally and long.

Remove organic material – feces, hair, body fluids – by cleaning with soap. Then use an appropriate disinfectant, diluted according to label directions. The disinfectant needs to stay in contact with all surfaces to be disinfected according to label requirements to get a full effect. See:

<http://www.cfsph.iastate.edu/Disinfection/Assets/CharacteristicsSelectedDisinfectants.pdf> . Using bleach is one option but bleach needs to have a longer contact time with cooler temperatures. Using the bleach calculator at

<https://www.aspcapro.org/resource/bleach-dilution-calculator> will allow better outcomes.

9. Post mortems – are hard to manage but an important key to reducing loss of other puppies and adult dogs. You can learn to do your own. Or you and your veterinarian can decide if this test should be done at your vet’s clinic or if samples should be submitted to a diagnostic lab. For around \$200, a post mortem can help establish a cause of death in approximately 30% of puppies tested. There is great peace of mind knowing that a puppy lost is a single event or to predict what the cause of death was and how to prevent other fetal losses.

If a puppy is lost, chill but do not freeze the lost pup(s). Call your veterinary clinic asap for directions. If you need additional help with submissions, contact Revival Animal Health so they can reach me and help you determine your next step.

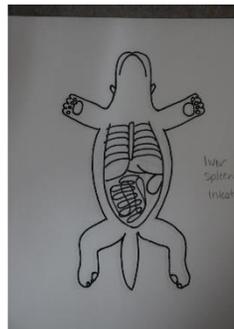
10. Vaccines – are an important but not solitary key to preventing infectious diseases. Use high quality vaccines, that have been shipped and stored at refrigerator temperatures, mixed immediately before use, and administered at recommended ages and frequencies. Practicing good hygiene, appropriate deworming protocols, and great nutrition all contribute to a healthy immune system with minimal viral, bacterial and parasitic challenges.

Unless otherwise instructed, use the first vaccine at 6 weeks of age – either Parvovirus alone or a Distemper/Parvo (DAPP) combination vaccine. Again, unless otherwise instructed, do not vaccinate more often than every 3 weeks.

Always administer vaccines over the right shoulder, not in the back of the neck and record the location – in this way if there is a vaccine reaction/lump, you can with confidence tell your puppy buyer that there is a vaccine reaction and that there is nothing serious causing a lump.

Only use good quality vaccines – Solvay, BI, Zoetis, and Neopar. If expired, made up too far in advance, or not shipped and refrigerated correctly, discard vaccines. Vaccines contain living virus and bacteria – they are fragile and ineffective if not handled with care.

Do not use Lepto vaccines under 12 weeks of age. Rabies vaccine must only be administered by a licensed veterinarian or in some states, a licensed or certified veterinary technician.



Bordetella, parainfluenza, and canine influenza (2 strains – H3N8 and H3N2) cause upper respiratory disease. Consider vaccinating annually for all listed organisms. The intranasal Bordetella/parainfluenza vaccine has created stronger immunity in our practice.

Lyme disease is recommended in parts of the country where Lyme disease, white-tailed deer, white-footed mice, and Ixodes ticks are prevalent. Lyme disease is thought to cause infertility in male and female dogs with active or chronic infections.

Discuss the frequency of infectious diseases and appropriate vaccination protocols with your veterinarian.

11. ENS – is Early Neurological Stimulation. Also called the “Super Dog Program”, it aids in puppy development.

The benefits noted:

- A . Improved cardio vascular performance (heart rate)
- B. Stronger heart beats
- C. Stronger adrenal glands
- D. More tolerance to stress
- E. Greater resistance to disease

There are 5 steps, performed from day 3 to day 16 after birth, once daily for 5 seconds each step.

The 5 steps are:

- 1. Head up
- 2. Head down, gently, no swinging
- 3. On the puppy’s back
- 4. Foot Tickle Tactile Stimulation
- 5. Cold Towel Thermal Stimulation





Supply and Equipment List:

- Scale
- Rectal thermometer
- Room thermometer
- Vaseline
- Notebook
- Cotton balls
- Method to identify puppies
- Heat source
- Graph paper

Drug and medical equipment list:

- Fenbendazole
- Plasma
- Caffeine tubes
- Dopram
- Vitamin K
- Oral Cal plus
- Forti-cal
- Deelee
- Bulb syringe

<ul style="list-style-type: none"> . Gloves . Starter mousse . Soap . Whelping pads . Towels . Ice cream . Brats . Oatmeal 	<ul style="list-style-type: none"> . Feeding tube syringe and formula . 25 g needles . Oxy momma . ThunderEase Pheromone . Glucometer and strips . Oxygen concentrator . Pulse oximeter
--	--

With all this information, you are now empowered to change your breeding program and improve the health and wellness of your puppies and their dams.

Puppy Environmental Enrichment:

In today's environment, socialization and environmental enrichment is more important than ever. Breeders have an obligation to puppy buyers to sell them the highest quality puppies they can. This means not only doing health screening on the parents, vaccinations, parasite control, and great nutrition, but it also means only using breeding dogs with reliable temperaments and great puppy raising skills.

Zoom may work for work meetings and family gatherings, but puppies cannot get social experiences virtually. Your puppy buyers might be able to sign up for a puppy class or a behavioral consult for themselves via telemedicine, but puppies still need first-hand experiences.

We have heard from experts who tell us that our puppies need 100 experiences in 100 days. What does 100 experiences mean? It means meeting people, going to new places, seeing new things. But what can we do during times when we cannot get out of the house or kennel? With some creativity, there are some easy solutions.

Meeting people is the hardest. You have to find a variety of people – different ages, sizes, shapes, styles of walking, clothing including hats, genders including facial hair, shoes, and voices. We also need to include canes, umbrellas, walkers, and wheels like wheelchairs, bikes, and skateboards.

What other options do you have? Some pet stores, home improvement stores, and other types of stores are dog friendly. Call first. Don't pretend you are training or traveling with a service dog. Be sure you only take one puppy at a time in. Have the puppy safely on a leash and collar or harness. And take along clean up supplies in case there is too much excitement and there is

an accident. Be sure your puppy has had adequate vaccinations and parasite control to prevent exposures to disease. Keep the visits short. Be extra nice to the store employees. And have fun.

You can also visit parks and schools that allow dogs but are not “dog parks”. Dog parks are NOT the safest place to take puppies, for several reasons including exposure to disease and exposure to dogs who are not puppy-friendly. While schools are out of session, there may be opportunities to visit parks where kids are playing. It is especially important to expose puppies to children when there are no little people in your life. Be careful – you don’t want to look like a stalker trying to pick up kids using a puppy as temptation. Take along snacks for the children to feed to the puppies. Using Ritz crackers with cheese (not peanut butter because of allergies) to hand to the children is a great tool to entice the puppies to like the children. Ritz have the advantage over dog treats of being safe for the kids to put in their mouths if they misinterpret the goal – for them to feed the Ritz crackers to the puppy. Parents are not found of their children eating dog treats.

We also have many creative ways to provide a variety of experiences for puppies at home or in the kennel. These include:

1. Bathmats – these come in at least a dozen textures, colors, and finishes. For under \$10 each, you can find bumpy, shiny, smooth, rough, round holes, square holes, slats, and bristly bathmats. Switch them out frequently. They wash beautifully in the washing machine for hygiene. Please hang to dry.
 2. Children’s toys – again there are unlimited numbers. Avoid any that puppies can chew pieces off of. They make great noises, can be moved around easily for variety, and can easily be disinfected between litters. If you don’t have any around you are willing to sacrifice, they can be found readily on the second-hand market in places such as Facebook Marketplace.
 3. Full-length mirror – can be laid on its side, just outside the puppy pen. The puppies can see themselves and others in the mirror. Putting peanut butter or squeeze cheese on the mirror can be used initially to attract them to their image. Watching them interact with themselves is very entertaining.
 4. Empty clean jugs and water bottles – remove the cap and discard it. Rinse out milk jugs and other bottles, avoiding any that contained bleach or other disinfectants. Puppies can have a lot of fun carrying them around and crunching them. Toss them if they are getting chewed, avoiding letting puppies ingest pieces of plastic.
 5. Wading pools – plan ahead, and purchase these before they are closed out for the winter. These can be used as whelping boxes when the pups are very young and to hold water for wading when the puppies are older. During hot weather, the pups will enjoy cooling off.
 6. Rocking boards – used as exercise equipment for adults. Letting the pups learn balance on low rocking boards it great for their self-confidence on uneven surfaces.
 7. Mini-agility equipment – you can build little teeters and dog walks, or you can purchase these on line. Be sure they are close enough to the ground to be safe for little puppies.
-

8. Muffin tins and cookie sheets – are a great way to feed puppies slowly. There are slow feeders and puzzles on the market. Sticking ginger snaps or dog treats to the inside bottom of a muffin tin wells with peanut butter, cream cheese, or squeeze cheese will keep a puppy occupied for extended periods of time. Freezing yogurt mixed with puppy kibble will make for a way to keep the puppies busy for extended periods of time while you are at work, doing school work, or making dinner.
9. Empty paper towel and toilet paper rolls – the cardboard rolls can be carried around or stuffed with fun toys.
10. A variety of fruits and vegetables – puppies can have many fun experiences with fresh fruits and veggies. Avoid potatoes, corn, raisins and grapes. For fruits like pineapple, cut off the rind and tops. For melons, you can cut them in half loosen the flesh, and let the puppies lick them out, discarding if they are about to eat the rind. You can cook down greens, carrots, and other firm fruits and vegetables, making them soft or mashed for young puppies. As long as you don't exceed 10% of the puppies diet with these treats, you will not cause a nutritional imbalance. This will keep the puppies busy for hours on end.
11. Durable dog toys – shop carefully and purchase dog toys that are safe and durable. Puppies will chew up and ingest pieces of the toy and stuffing if allowed access to toys that are not age appropriate.
12. Kong and other stuffable chew toys – you can stuff and freeze age and size appropriate Kong toys with peanut butter, yogurt, cream cheese, squeeze cheese, and liver sausage. Smear the interior with a thin layer, fill with puppy kibble, push a treat into the opening to make unstuffing harder, and freeze. Have these ready in the freezer in advance so they are ready to go when you need to keep the puppies busy.

What is normal?	Week 1	Week 2	Weeks 3-4	Weeks 5-6
Temperature, rectal	96 - 98° F >94°F to digest food	96-99 ° F	100 ° F	100 - 101 ° F
Whelping nest surface temperature	90°F	85°F °F	80°F	75°F
Ambient /Room Temperature	75 to 80 ° F	70 to 80 ° F	70 to 75 ° F	65 to 75 ° F
Heart rate & Blood Pressure	200 to 240 beats per min; systolic blood pressure 61 mm Hg	200 to 240 beats per min, sinus rhythm	160 to 200 beats per min, sinus rhythm; systolic blood pressure: 139 mm Hg	Varies with breed
Blood Volume	75 ml/kg			

Respiratory rate	15 to 35 per min	15 to 35 per min	15 to 25 per min	15 to 25 per min
Mucus Membranes Color/ CRT	Pink to hyperemic if recently nursed	Pink/1 second	Pink/1 second	Pink/1 second
Urine color	Very pale yellow, <1.020	Very pale yellow, <1.020	Pale yellow	Pale to moderate yellow
Weight	May lose up to 4% in the first 3 days. Birth weight: Toys 100-200 gms; Large 400-500 gms; Giant 700 gms	Gaining 5 to 10% daily, many double birth weight by day 10. Calculate weight gain of 2 -4 gm/day/kg anticipated adult weight.	Calculate weight gain of 2 -4 gm/day/kg anticipated adult weight.	Calculate weight gain of 1 -4 gm/day/kg anticipated adult weight. Giant and large breed at faster rate than small breeds.
Activity	Sleeps & eats 90% of time, twitch while sleeping. Movement is a crawl.	Sleeps & eats 90% of time, twitch while sleeping. Begin to support themselves on their forelegs.	Beginning to stand and walk by day 21. Start to play when eyes open. Can sit.	Walking, climbing, playing, may bark, begin to explore environment, mouthing. Normal postural reflexes.
Attitude	Quiet, cry infrequently.	Quiet	Quiet, more active	Start to develop "personalities",
Body Tone & Reflexes	Flexor dominance for 1 st 4 days, then extensor. Righting, rooting, weak withdrawal.	Extensor dominance, righting, rooting, crossed extensor. Withdrawal developing.	Approaching normal for adult. Suckling reflex & crossed extensor disappears.	Normal adult
Vision and hearing	No vision but blink with bright light. Limited hearing.	None to limited vision and hearing, menace present but slow initially. Limited hearing, waxy discharge.	Vision blurry, Pupillary light reflex present within 24 hours of eyelids opening, respond to sound. Startle reflex develops.	Approaching full vision and hearing

Teeth	None	None	Deciduous incisors & canine erupt	Deciduous premolars erupt
Breeder's interaction	Assure pups are nursing, supplement if necessary. Once to twice daily take and record temp, weight, urine & stool character. Start Early Neurologic Stimulation day 3 to 16	Assure pups are nursing, supplement if necessary. Daily temp take and record, weight, urine & stool character. Continue Early Neurologic Stimulation day 3 to 16	Continue to assure pups are thriving, begin to enrich environment by variation of toys, surfaces.	Continue to assure pups are thriving, continue to enrich environment. Lots of human interaction for socialization
Veterinary care	Assess & treat if not thriving, taildocks and dewclaws prior to 5 th day if appropriate for breed.	Assess & treat if not thriving. Dispense pyrantel pamoate to use on day 14 after birth.	Assess & treat if not thriving. Dispense pyrantel pamoate to use on day 28 after birth.	Veterinary wellness visit – assess pups for any abnormalities to allow breeder to sell pup with full disclosure. First vaccinations (DAPPv) end of 7 th week. Dispense pyrantel pamoate to use on day 42 after birth.
Food and water	Nursing only If supplementing, 60 ml/lb/24 hours divided by 12, fed every 2 hours.	Nursing only If supplementing, 70 ml/lb/24 hours divided by 8, fed every 3 hours.	Offer water, then gruel to start weaning. If supplementing, 90 ml/lb/24 hours divided by 6, fed every 4 hours.	Teething. Many pups weaned, on full food and water, some still nurse for social interaction.