Veterinary Village LLC &
International Canine Semen Bank - WI

BREEDING, WHELPING AND PUPPY CARE

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BREEDING:

Responsible breeding requires you to focus on your goals to improve your chosen dog breed in multiple areas including performance, health and longevity, temperament, and conformation.

SHOULD I BREED MY DOG?

Owners may consider breeding their pets for many reasons. You may want to have another dog just like the one you have. You may wish to make money or show your children the wonders of life. But think carefully – these may not be the right reasons. It is unlikely your dog will have puppies exactly like him or her – remember half the genetics come from another dog. Breeding, and doing it right, can be an expensive undertaking. There are other ways to teach your children about reproduction. And the shelters are often overflowing with dogs needing a good home. Remember, there are also risks to your bitch inherent with pregnancy.

PLANNING FOR THE BREEDING:

Careful management of the breeding, pregnant bitch (prenatal period), birth of the pups (parturition) and the postpartum (neonatal) period is critical to assure the best possible outcome. In other words, YOU are in control of your bitch's and puppies' destiny.

HEALTH EVALUATION PRIOR TO BREEDING:

BITCHES:

Several weeks to months prior to your bitch's heat cycle during which you intend to breed her, your dog should be examined by your veterinarian. She should be in good general health, current on core vaccines, have good parasite control, and be free from orthopedic problems.

All necessary upcoming (within the next 4 months) core vaccines should be given prior to the start of her estrous cycle. She should not be overweight and should be on a moderate exercise program She should also be on a high quality PUPPY diet prior to breeding. In addition, she should be Brucella negative and screened for genetic defects (see sections below). She should be examined to assure there have been no pelvic fractures or other structural abnormalities which could have narrowed the birth canal.

Pregnancy should be as drug-free as possible. Medications and supplements should not be given prior to or after breeding without first consulting with your veterinarian as certain drugs are known to cause birth defects. Even seemingly innocuous nutritional supplements can be dangerous at this time. Specifically avoid calcium supplementation and raspberry tea leaf preparations.

DOGS:

The male dog should also be in good general health, well fed, exercised, current on immunizations, free of parasites, screened for genetic defects and Brucella negative (see sections below).

BRUCELLA TESTING:

Brucellosis is a bacterial disease which is most frequently transmitted between dogs by sexual contact. It is easily screened for on a blood test. Both the male and female dog should be tested prior to breeding. Brucellosis not only can cause health problems for the adult dogs, but it can also cause sterility, abortion and early puppy death. Of highest concern is that this incurable disease is transmissible to humans.

DNA TESTING:

For most AKC registered dog breedings, this is not currently required but this may become mandatory in the future.

SCREENING FOR GENETIC DISORDERS:

Each breed and family of dogs within a breed has a different set of potential inherited disorders. Your veterinarian and breeder can help you identify which problems should be screened for in your dog. Proper genetic screening for selection of breeders minimizes inherited congenital defects. The CHIC website, http://www.caninehealthinfo.org/, lists specific tests recommended by many breed clubs.

DNA TESTING:
New DNA tests become available frequently. They range from tests to predict coat color and length to tests associated with life-threatening defects. It is recommended that each breeder research current tests and familiarize themselves with defects and tests specific to their breed. Even the best informed veterinarian is unlikely to know about every available DNA test for each breed as the research is changing frequently.

EYES:
The Canine Eye Registry Foundation (CERF) in the USA registers dogs that are found to be clear of eye problems by a board certified Veterinary Ophthalmologist (AVCO). There are many inherited ocular disorders such as cataracts, glaucoma, and retinal diseases. All breeds should have their eyes examined prior to breeding and on an annual basis thereafter, particularly if these dogs or their offspring are still in your breeding program.

HIPS AND JOINTS:
Regardless of size, there are a variety of joint problems found in most breeds. Hip dysplasia is probably the best known problem. This is a malformation of the ball and socket of the hip joint, found primarily in large breed dogs, which leads to premature development of arthritis in the hips. In many breeds, 30% and up of individuals may be affected.

The Orthopedic Foundation for Animals (OFA) is an organization which provides certification based on pelvic x-rays that the dog being evaluated does not show radiographic evidence of hip dysplasia. To have your dog certified by OFA, he or she must be at least two years of age. Carefully positioned x-rays are taken, at times with sedation, by your veterinarian and are submitted for rating by OFA.

OFA issues a rating (excellent, good or fair) and a certification number if the dog "passes". OFA will issue a preliminary rating for dogs less than 2 years of age to aid breeders in their decisions regarding their dog's future. The goal of OFA certification is to reduce the incidence of dysplasia in your breed. Selecting dogs that are free of dysplasia and whose parents and relatives were also OFA certified will help reduce the incidence of hip dysplasia in your lines over time. OFA will also certify elbows (for elbow dysplasia), shoulders (for OCD) and patellas (for patellar luxation) free for defects which can lead to debilitating orthopedic disease.

An additional method of evaluating hips is a procedure known as PennHip R. This requires general anesthesia and a series of 3 x-rays. The films are submitted to PennHip R in Pennsylvania to have measurements taken to compare distracted with compressed views. A number evaluating the amount of laxity or looseness in the hip is reported. This laxity is felt to have predictive value.

There are other breed specific orthopedic problems which can affect other joints or the spine.

MISCELLANEOUS:
Some breeds may be candidates for other health screens. These include testing for thyroid disease, von Willdebrand's disease (a bleeding disorder), heart disease, deafness, etc. In addition, dogs exhibiting or carrying genes for certain health problems felt to be inherited such as epilepsy, should not be bred.

TEMPERAMENT:
We feel it is important to breed dogs who are happy, confident and obedient as new research indicates temperament is a highly inherited trait.

PEDIGREE RESEARCH:
It is important to carefully consider each dog's pedigree for compatibility. This may require considerable research to find a suitable candidate. Often the breeder of your dog or someone with experience with your breed can assist you.

CONTRACTS:
It is recommended that the stud and bitch owners have a written agreement defining the details of the breeding. For example, fees, number of pups guaranteed, and health checks to be completed prior to the breeding are topics that need to defined prior to breeding to avoid any misunderstandings.

BREEDING:
ESTROUS CYCLES:
Bitches usually reach puberty at 6 to 9 months of age, but this may occur as early as 4 months in small breeds and as late as 14 months in giant breeds. It is usually recommended that a female not be bred until her second or third heat cycle, and older than 2 years if OFA certification is expected. This assures she has reached her full size and maturity prior to breeding. Most dogs have two heats or estrous cycles a year, approximately 6 months apart, usually in spring and fall.

The estrous cycle can be divided into 4 parts. The first, called proestrus, is the part where the vulva swells and a bloody vaginal discharge occurs. It lasts approximately 7 to 12 days and the bitch is neither fertile nor will she accept the male during this time. However, males, especially those without experience, are frequently attracted to the bitch at this time. The second part, called estrus, lasts 5 to 7 days. During this stage, there is usually a straw colored discharge (sometimes with blood). Ovulation occurs at this time, the bitch is fertile and will accept the male for breeding. The third and fourth parts are called metestrus and diestrus. During this time, the bitch again is not fertile and is not interested in the male.

The usual recommendation for breeding the female is to breed her on days 12 and 14 after the onset of vaginal bleeding. At this time, the vaginal discharge is straw colored and the vulva lips are softer. Two or possibly 3 breedings are Ideal and adequate for a good conception rate. It is not possible to follow these guidelines exactly as not every female is ready to breed on these days. In this case, the best guideline is to introduce the male to the female daily starting day 9 after the onset of bleeding, breed the female as soon as she will accept the male and repeat at 24 to 48 hour intervals until the female will no longer accept the male. When selecting a male for an inexperienced female, it is best that he be experienced but not overly aggressive, and vice versa. It is a good idea that the dogs be introduced to one another prior to breeding, but not allowed to become familiar as this may diminish the chance they will breed.

Observing a "tie" between the male and female is your best indication that a successful breeding occurred. A tie of up to 15 to 30 minutes is normal. It should not be misinterpreted that the dogs are stuck together. The tie occurs because the bulb of the male's penis engorges with blood once inside the female's vagina and remains enlarged for approximately 15 minutes. This is normal and necessary for breedings to be successful. No attempt should be made to separate them as this could harm both the male and female physically and psychologically for future breedings.

TIMING BREEDINGS:

Many times, it is important to evaluate the bitch to estimate the ideal time for breeding. This may be useful if the dog will be traveling a long distance for breeding, if fresh or frozen semen is to be used, or in dogs that have a history of being difficult to breed.

A vaginal cytology is commonly done. This involves a swab being placed up into the vagina, the cells smeared onto a microscope slide, stained, and examined for changes in the cell types in the vaginal fluid. The cells seen at the ideal time of breeding are cornified epithelial cells, with few red blood cells (RBC's), white blood cells (WBC's) or debris. This vaginal smear also may indicate the presence of other problems such as vaginitis. This test is simple, safe, inexpensive, well tolerated by the bitch approaching estrus, and is helpful in timing breedings.

A progesterone blood test is the most accurate method to time breedings. A semi-quantitative test, to estimate progesterone levels, can be done in the some veterinary clinics. A quantitative progesterone test can be sent to a reference lab or may be run in-house in the few clinics with this equipment if an exact progesterone level is needed. Quantitative progesterone tests are essential for fresh chilled and frozen inseminations, but are invaluable for all breedings and are strongly recommended. Precise timing is not only helpful for timing breedings using fresh chilled or frozen semen, but also for males and females with compromised fertility. Additionally, it allows precise prediction of the whelping date and for scheduled c-sections.

An LH peak test can also be run if it is necessary to specifically pinpoint the time of ovulation. Our recommendation is to breed 2 to 3 days after the progesterone level reached 5 ng/ml. at this time, we expect the progesterone level to have exceeded 10 ng/ml for fresh and 20 ng/ml for frozen semen breedings.

ARTIFICIAL INSEMINATION (AI)

Artificial insemination is the process by which semen is collected from a male dog, and is introduced into the vagina of the bitch in lieu of a natural breeding. This can be done to assist breeding if there is a male-female incompatibility, for safety, or if both the dog and bitch are not on the same premises.

FRESH CHILLED SEMEN:

Fresh chilled AI can be done to breed a bitch to a dog long-distance. This procedure is highly successful in producing a pregnancy and are recognized by the AKC with appropriate paperwork. Special transport medium and overnight shipment are required to ship semen to another site.

FROZEN SEMEN:

Semen can now also be collected and stored for use at a later date. This is also accepted by the AKC. Specialized techniques for handling, freezing and insemination are now well worked out. Prior arrangement must be made. (see Frozen Semen handout).

AFTER THE BREEDING:

ACCIDENTAL BREEDINGS:

At times, breedings may occur which are unplanned. Several options are available should this occur.

1. Allow the pregnancy to go to term, the bitch to whelp, and choose to raise or not raise the pups, as you see fit. This is by far the safest option as a normal pregnancy has few risks. For an inexperienced bitch, whelping and raising pups may reduce the loss of pups at the next intended breeding. This breeding will in no way compromise the quality of subsequent planned breedings.
2. Spay the bitch early in the course of her pregnancy. Spays close to term frequently result in large volumes of blood lost and can be risky, thus are not advised. Of course, this is not an option if future breedings are planned.

3. Mismate injections: this is a course of estrogen treatment to prevent pregnancy. Owners occasionally ask for this service, but in my opinion and that of many other veterinarians, it is DEFINITELY UNSAFE. Side effects include incomplete elimination of fertilized embryos resulting in the birth of an unexpected litter, pyometra, and bone marrow suppression. A pyometra is an infected uterus and the generally accepted therapy is an ovariohysterectomy or spay. This is a high-risk procedure and obviously precludes future litters. Bone marrow suppression is when the cells in the bone marrow, where new WBC's, RBC's and platelets are manufactured, quit functioning which frequently proves to be fatal. DON'T DO IT!
4. Prostaglandin & anti-prolactin therapy: This is a series of injections and oral medication given over several days to the bitch four weeks after breeding when a pregnancy has been confirmed. This will cause the expulsion of developing fetuses. Coupled with ultrasound and progesterone levels, termination of the pregnancy can be confirmed. It is often accompanied by vomiting, diarrhea, and abdominal cramps and usually done as an inpatient procedure. This is the preferred method .

If a breeding is suspected but was not witnessed, a vaginal smear can help determine if the bitch may have been fertile at that time. The presence of sperm confirms a breeding, but the absence does not rule this out. Studies show approximately 62% of bitches with one witnessed accidental breeding were shown NOT to become pregnant. (Of course, the 38% will ALWAYS be your bitch).

The bottom line is to be very protective of your bitch in estrus. Males will go to all extremes to accomplish their goal. Medications are available to prevent estrus and aid in planned breedings.

BREEDING FREQUENCY:
It is no longer recommended to limit breeding a bitch to once a year – back to back breedings are better for maximal fertility. Most bitches should not be bred after 6 years of age for a maiden bitch and after 8 years if previously bred. Reproductive performance generally declines and the incidence of pyometra rises after the age of 6. Every estrus cycle the non-pregnant uterus is bombarded by progesterone, irreversible aging changes occur.

In some cases, protecting the uterus by using the prescription drug Mibolerone, may be recommended by your veterinarian.

FAILURE TO CONCEIVE:
The most common cause of failure to conceive is not breeding at the correct time. The second most common cause of apparent infertility is poor semen quality. Diagnostic evaluations usually will begin evaluating timing history and semen quality.

Many diseases, conditions and hormonal disorders can interfere with normal estrous and breedings, Should difficulty in breeding arise, or illness is detected, a diagnostic work-up should be started to determine the cause. Some of these problems can be successfully treated, thus returning the bitch to fertility.

SEMEN ANALYSIS:

Semen analysis should be recommended for dogs prior to collecting semen for shipping or freezing, for cases when the bitch failed to conceive after a witnessed breeding, or for dogs who have not been bred for an extended period. A semen analysis is required by AKC to register litters of pups fathered by a stud over 12 years of age.

PREGNANCY & WHELPING:

PREGNANCY AND OBSTETRICS:

During the last 3 to 4 weeks of pregnancy, the bitch should be housed in familiar surroundings with minimal exposure to infectious diseases or dogs from other households of kennels.

Normal pregnancy in the bitch is considered to be 63 days from ovulation, but can range from 58 to 65 days depending on the timing of the breedings. It is often a good idea to confirm the pregnancy prior to delivery. Several methods are available. Pregnancy can be diagnosed by abdominal palpation (feeling the uterus through the abdominal wall) 28 to 35 days post-breeding.

Ultrasound can be used as early as day 28 and confirms both presence and viability of fetuses. The number of pups can only be estimated with ultrasound.
Puppy count x-rays can be taken from days 58 to 62 of pregnancy. These are strongly recommended. This aids in determining puppy size, position and number. Knowing the anticipated number of pups will assist in determining when it is safe to consider her delivery to be complete and when a scheduled c-section should be recommended. X-rays are not harmful to the fetuses after the first 3 weeks of pregnancy.

NUTRITION:

Throughout the pregnancy, the bitch should be fed a high quality puppy, pregnancy or performance diet (appropriate for pregnancy and lactation as assessed by feeding trials established by Association of American Feed Control Officials (AAFCO), containing a protein level of 27-34% from animal sources with at least 18% fat, balanced supply of both n-6 and n-3 fatty acids and 20-30% carbohydrates). This diet should be fed starting several weeks prior to breeding. Recent research suggests that it requires 8 months for a bitch to return her nutritional stores to the pre-breeding level. We recommend continuing her on this special diet if another breeding is planned within the year.

In many cases, the bitch's appetite will diminish about 4 weeks into her pregnancy (the range is 3 to 5 weeks) and is the most reliable symptom indicating pregnancy. After 5 weeks, the bitch will begin to gain weight, may show moderate discomfort, and her mammary glands begin to enlarge. At this point, she should consume 20% or more food to adequately nourish her pups.

WORMING:

To minimize the transmission of parasites through the placenta and mammary glands into the puppies, the pregnant bitch can be treated with Panacur^{R}. This should be used once daily from day 40 of pregnancy through day 14 of lactation to reduce the parasite load in the pups. Dose at the regular rate of 50 mg/kg once daily.

EXERCISE:
After breeding the bitch should have moderate exercise as determined by her breed, normal activity, time of year, and body condition. Care should be taken to avoid overheating during any part of her pregnancy. Swimming should NOT be allowed during the last 3 weeks of pregnancy.

LABOR AND DELIVERY:
PRIOR TO LABOR:
Several days before delivery, her vulva will enlarge, the tail head may become prominent, and watery milk may be present. Bitches with large amounts of hair on the abdomen should be shaved to assist the pups in nursing. Twenty-four hours prior to delivery, she may nest, stop eating and may vomit. Eight to 12 hours before delivery, the rectal temperature may drop by 2 to 3 degrees, to below 100 degrees, then rises back to 102 degrees as whelping approaches. At this time, she should be housed in a quiet warm room with suitable flooring or plastic sheeting and absorbent blankets. If not already done, her whelping box should be prepared. An inexpensive, easy to clean whelping box can be made from a child's round swimming pool lined with towels, blankets, or a fitted carpet to improve footing for the pups to aid in their development.

LABOR:
As with all mammals, there are 3 stages to delivery. The first consists of mild uterine contractions, and may last 6 to 12 hours, during which milk is present and the bitch is restless. At this point, you may notice that she passes a plug of mucus, called the cervical plug. The second stage is true labor (abdominal and uterine contractions) and delivery. In hard labor, the bitch will visibly strain and groan – she may lay down or stand.

DELIVERY:
In the uterus, each pup is surrounded by fetal membranes known as allantoic and amniotic membranes, their associated fluids, and a placenta. Delivery is preceded by passage of dark amber allantoic fluids. The amniotic sac passes into the cervix and anterior pelvis, resulting in abdominal straining and panting. Next, the perineum (skin around the vulva) distends as the amnion and pup is delivered. The first fetus should be delivered within 2 to 3 hours after the beginning of the start of hard labor. As long as the bitch's vaginal discharge is clear and she is not in hard labor, she should not be disturbed. Puppies can live in the uterus for up to 24 hours after labor starts. Dogs in labor for 3 hours without delivery of the first pup should be examined for evidence of complications.

If you are comfortable with this, you may don a glove and do a vaginal examination to assess position of the puppy. If there is a puppy in the pelvic canal, you can help her by massaging the roof of the vagina (called feathering).

You may be able to feel the pup's head or legs and assist the bitch by pulling the puppy out and down (toward the bitch's feet). Labor should be progressive and productive. If you are uninterested in intervening yourself, the bitch is weak and seems to you to be in danger, or you unable to assess the situation, this is the time to contact a veterinarian for assistance.

Subsequent pups should be delivered within 45 to 60 minutes of hard labor. Often the first 2 pups are born close together, and then a pause of up to several hours can occur. As long as the bitch is not in hard labor, or there is not excessive blood or **green color to the discharge**, there is no need to intervene. (Green color is normal after 1 or more pups have been delivered as this signifies placental separation). Frequently, the first and last pups are the largest, due to position in the uterus and optimum nutrition. It is not abnormal for pups to be born tail first (up to 40%). As long as the delivery is short, the pup should survive. Regardless of presentation, if the delivery is slow or difficult, the bitch can be assisted by gently grasping the pup with a towel or gauze and pulling downward between her rear legs.

The third and final stage of labor is the delivery of the placentae, which frequently occurs with each delivery. The amniotic sac is may be intact and the umbilical cord is unbroken. The bitch will normally remove the amnion and chew through the cord after each birth, then lick the pup to stimulate breathing. Do not interfere unless she is not interested, too aggressive or too weak. Try to account for one placenta per pup and allow her to eat only a few. Too many may cause stomach upset.

If the bitch fails to clean up the pup within 30 to 60 seconds of birth, you may need to intervene. This is best accomplished by tearing the sac off the face with a terry towel and rubbing the pup vigorously. A bulb syringe or DeeLee mucus trap can be used to suction excess fluids from the back of the pup's throat. (**Never swing the pups as this causes brain damage.)** The pup can be held at a 45 degree angle with the head down to allow drainage of fluids from the airways if necessary.
If the pup does not start to breathe promptly, an acupuncture point (25 gauge needle inserted in the center of the upper lip, below the nostrils, insert to bone and rotate) or a caffeine solution (1 caffeine tablet crushed in 1 cc of water) dropped on to the pups tongue can be used to stimulate the first breath. Mouth-to-mouth and chest compressions can be attempted if the pup fails to respond to the above measures.

If the umbilical cord tears too short and bleeds, immediately clamp the cord and tie dental floss or thread around it to control blood loss.

Whelping is best accomplished at home and without intervention if possible. Disrupting the bitch can stop or delay delivery of the pups. Occasional walking to allow the bitch to urinate may assist with delivery. Be sure to accompany her and take along a towel (and flashlight if in the dark), just in case she delivers a pup while outside. Allowing pups to nurse between deliveries will aid in uterine contractions. Ice cream (for calcium and energy) can be fed to her (and you) throughout labor to aid in keeping her contractions strong and effective. If indicated, oxytocin use MUST be done very conservatively to avoid endangering the health of the bitch and puppies. Only very small doses, if any, should be administered without veterinary or Whelpwise® oversight and should NEVER exceed 2 injections. The more oxytocin most experienced breeder-veterinarians use, the more respect they have for it's misuse.

UTERINE CONTRACTION MONITORING:
The Whelpwise™ uterine contraction monitor (tocodynomometer) can be used to monitor pre-labor and labor and allow for early intervention if premature delivery or dystocia is diagnosed. As in human obstetrics, insightful monitoring of labor can significantly improve neonatal survival. The equipment for this service needs to be ordered in advance. They may be reached at 1-888-281-4867.

The fetal Doppler included can be utilized to assess fetal heartbeats and detect fetal distress.

DYSTOCIA:
There are 2 basic causes for dystocia or difficulties with deliveries: those caused by the bitch and those caused by the pups. Maternal causes included obesity; voluntary inhibition if interrupted or overly sensitive; abnormally small litters (1-2 pups); exhaustion; or small pelvic or vaginal diameter. Fetal causes are large head, malposition or malpresentation, large size, other structural defects, and 2 pups being delivered simultaneously. To help alleviate exhaustion in the bitch you may wish to offer vanilla ice cream to provide energy, fluids and calcium without causing vomiting.

Under some circumstances, the bitch will need assistance and should be taken to the veterinarian. Corrections of dystocia (performed by your veterinarian) include manipulation and traction on the pup, episiotomy, drug therapy (oxytocin, calcium and glucose) and Caesarian section. Each case must be considered and treated individually.

CESARIAN SECTION (C-section):

At times, a c-section may be scheduled prior to the onset of labor. These reasons include small litters of 1-2 pups, larger litters of over 10 pups, or a breed at risk. On occasion, surgical intervention may be necessary to save the bitch and/or puppies. DO NOT DELAY HERE.

Any bitch that is too weak to stand, has an unexplained discharge from her eyes, unrelenting vomiting, has severe abdominal pain, is greater than 68 days post-ovulation, has a history of dystocia unrelated to fetal malposition, is having severe tremors, has green vaginal discharge without a pup delivered, has signs of fetal distress, has failed to respond to oxytocin, has weak contractions, has had her temp rise without labor starting, or is in hard labor 2 hours without presenting a pup needs immediate veterinary attention.

Done prior to the bitch and puppies developing extreme distress and done well by an experienced team of veterinarians and veterinary staff, C-sections can be highly successful, often producing 100% puppy survival rates. This is done with general anesthesia using Propofol^{R} for induction followed by isoflurane or sevoflurane. The bitch is monitored during anesthesia with a pulse oximeter and is given IV fluids. A spay should only be performed at the c-section under extraordinary circumstances due to the associated risks. The puppies are rapidly removed from the uterus and revived. As soon as the puppies and bitch are medically stable, they are sent home in your care.

PUPPY CARE:

POSTPARTUM AND PEDIATRIC CARE:

Careful management of the pregnant bitch (prenatal period), birth of the pups (parturition) and the postpartum (neonatal) period is critical to assure the best possible outcome. In other words, YOU are in control of your puppies' destiny. Carefully handled, you can set a goal of raising 100% of your puppies. Unfortunately, the veterinary literature often reports a "normal" death loss of up to 40% in the first 4 weeks of life. The goal of this information is to arm you with ammunition you need to maximize your success rate. We cannot expect our bitches and puppies to thrive unless we manage their health, nutrition and environment carefully.

It is critical to keep the pups warm with supplemental heat at this point – we use a towel and heating pad on low and wrap the pup like a taco while doing the initial handling and drying. The umbilical cord can be clamped and tied with thread or dental floss, cut 3/4" from the abdominal wall, and treated with iodine to prevent infection. The placenta/umbilical cord can be left attached if the pups are being delivered quickly. The pups should be left with the bitch if possible during subsequent deliveries to nurse, as this nursing will stimulate uterine contractions.

If the pups must be separated from the mother, they should be kept warm by placing them in the chest pocket of a shirt turned wrong side out. (You or an assistant wears the shirt, not the bitch!) This avoids burns associated with external heat source misuse and your movement will keep the pup stimulated. If the pups seem reluctant to nurse or are crying, a rectal temperature should be taken and if it is under 97 degrees, they should be warmed up to 97 degrees prior to feeding. If the rectal temperature exceeds 99 degrees, this indicates overheating or illness.

Environmental temperatures should be checked with a thermometer. Puppies do not have the mechanism to maintain their own body temperature. The area should be 80 to 90 degrees the first week and dropped 5 degrees a week until weaning. Specialized whelping nests are available commercially which provide a controlled and safe heat source. Light bulbs, heat lamps, hot water bottles, towel wrapped heating pads, or incubators can be used with caution to keep the pups warm. Only half of the box should be warmed so as to allow the pups and mother to move to warmer or cooler areas to best suit their needs.

Once (or more daily if the pups are not thriving), at the same time each day, the pups should be weighed and have a rectal temperature taken, recording it to monitor for adequate nursing and weight gain. At least once a day, you should really LOOK and LISTEN to your litter. Pick up the puppies, roll them over, feel how they hold their body, their body condition, their attitude and their general appearance. Don't worry – Mom should let you do this and she won't reject them. After all, you tend to her needs and she looks to you for this.

Stools should be formed, light brown with a yellow–seedy appearance. Urine color should be assessed on a cotton ball at least once daily to monitor for adequate

nursing and dehydration. The urine should be pale yellow in color. If the urine is darker yellow in color, this signifies dehydration. If the pups fail to gain weight, are fussy or weak, the urine is dark, the stools are abnormal, or the pups do not have good body tone, contact your veterinarian.

The first week of life is the time of greatest risk for the newborn. The pups should be kept warm, free from drafts, away from other dogs, and the neighbors and their children. Healthy well-nourished pups should be quiet, eat and sleep (with some jerking during REM) 90% of the time, gain weight daily after the first 2 days, and show increasing strength and body tone.

Each pup should gain 2 to 7 grams per day per kilogram of anticipated adult body weight. By day 10 to 12 of age, their birth weight should double. This is an average of 1 to 3 oz per day per puppy as neonates.

Daily, you should also examine your bitch. Assess her appetite, water consumption, urination, stools, temperature, and attitude. Look at the color, character and volume of her vaginal discharge. Take note of any unusual odor. Feel each mammary gland for texture and temperature (they should feel soft to firm, never hard) and look at a few drops of milk from each nipple. Colostrum, the first milk, will be yellow and thick. After the first 2 days, the color and consistency should very closely resemble cows milk. Thick milk of any color other than white should be noted. Report any abnormalities to your veterinarian. DO NOT START MEDICATIONS without consultation as some medications can harm the pups.

POST-PARTUM EXAMINATION:

Normal postpartum discharge is dark green for the first 1 to 2 days, then becomes bloody. There is usually a lot of discharge for the first 5 to 7 days. It should gradually decrease in volume and become thick and clear or gray by day 10. Abnormal, excessive or foul smelling vaginal discharge may indicate an infection, and you should consult your veterinarian. Postpartum complications include uterine infections, retained fetuses, retained placentas, poor return of the uterus to normal, mastitis, eclampsia (low blood calcium), and fetal death.

It is recommended to have the bitch and puppies examined within 24 hours of delivery to assure there are no retained pups, that the mammary glands are normal, and to have the puppies examined for defects or illness. The first day or two after whelping, the bitch may be reluctant to eat and have diarrhea. Drinking adequate fluids must be encouraged to assure adequate milk production. The mother's diet should be a high quality puppy or performance food to assure adequate consumption of calcium, protein, and calories. She will eat 2 to 3 times the amount she ate prior to breeding. Adding salt to her food and increasing the water availability will help assure adequate milk production. Do not administer any medications at this time without your veterinarians advice as many drugs can pass through the milk and affect the puppies.

TAILDOCKS AND DEWLAWS

Taildocks and/or dewclaw removal, if standard for your breed, are done between 3 and 5 days by your veterinarian.

From day 3 to day 16, we recommend the Early Neurologic Stimulation program by Carmen Battaglia be instituted to help the pups grow up as tolerant well-adjusted adults. (A handout covering this information is available.)

By days 10 to 14, the pups ears and eyes are usually opening. If bulging of the eyelids (Neonatal Ophthalmia) is noted prior to the eyes opening, you should seek veterinary care at once. At this time, the pups become more aware of their surroundings. By 3 weeks, the pups are becoming active.

Often, a runt pup is noted in the litter. It may help to direct the pup to nurse on one of the mammary glands between the back legs as these have the most milk. Nutritional supplementation may also be indicated. (see handout on tube feeding) Frequently, this pup will catch up by weaning time, and often this pup has the most spunk. This pup should not be destroyed.

LITTER REGISTRATION:
This is the time to remember to submit litter registration papers to the AKC or other registry organization in order to receive the individual puppy registration papers back in time for the puppy's adoption.

SICK NEWBORNS:
The most common concerns we see in the newborn are fading pups (failure to thrive), diarrhea and constipation. The first place to start is to assess the situation. Evaluate the puppy's environment: are they too warm, too cold, dry, clean? Do the pups have a normal temperature (96-99 degrees)? Are they gaining weight? How are their urine and stools? Do they feel dehydrated? How is their body tone? Is mom feeling her best? If she is sick, has infected mammary glands, a uterine infection, or is not eating well, she cannot adequately care for the pups.

Once you have done the assessment, it is now time to address the situation. Correct any environmental issues. Supplement feed with a bottle or tube if the pups are weak, thin, weka, dehydrated, or not nursing ONLY IF they have a rectal temperature over 96 degrees. If they have diarrhea, feed 1-2 cc of active culture yogurt and a couple of drops of KaoPectate. If they continue to have diarrhea, you may need to reduce their intake of milk for 1 to 2 feedings and/ or substitute an electrolyte solution. If they are constipated, stimulate stool passage by rubbing the rectal area with a warm wet cotton ball and give a few drops of Karo syrup orally. Pediatric simethicone drops can be used under veterinary direction if excess gas is noted.

Should this not resolve the problem within a few hours, or if the pups cry or mew excessively, fail to gain weight, fail to suck, have bloody urine, have labored breathing, have ongoing diarrhea, abdominal distension and pain, slough the toes or tail tip, or do not appear to be thriving, seek veterinary advice.

HAND-RAISING PUPPIES:
Unfortunately, not all puppies are lucky enough to be raised exclusively by their mothers. The first 24 to 48 hours are the most critical for the puppy to nurse. This is when the colostrum, the first milk, is produced. Colostrum contains high levels of antibodies critical to the pup's ability to resist infectious diseases (bacterial or viral). Without this, the pups will be more vulnerable to contagious diseases.

If the pup is unable to nurse from it's mother, the second best option is to find another lactating bitch that will accept the pups. This surrogate mother can usually increase her milk supply within a few days to respond to the increased demand.

Plasma, available commercially, may be given to sick pups. This is useful in providing antibodies and proteins to pups, and will support pups with a wide variety of illnesses. A total dose of 15 cc is required over a 24 hour period.

NO PUPPY SHOULD DIE OF STARVATION OR DEHYDRATION! If necessary, you may need to bottle or tube feed the pups. Pasteurized goat's milk or commercially available bitch milk substitutes make excellent supplements. In an emergency, a formula of 1 cup cow's milk, 1 egg yolk and 1 tablespoon Karo syrup can be used temporarily. Puppies can ingest 20 cc (4 teaspoons) of formula per 16 oz of body weight per feeding. Pups can be fed with an appropriate sized bottle if they will suck effectively. If not, they must be tube fed with a soft feeding catheter. With veterinary assistance, most owners can be taught how to place the tube. This should not be attempted without instruction as there are associated risks such as inhalation of the formula. The pups should not be fed or allowed to nurse if their rectal temperature is not between 96 and 99^{o} F.

Whether bottle or tube feeding, pups should be fed at least 4 times daily, preferably every 3 to 4 hours. Less frequent feedings or cow's milk formulas will guarantee diarrhea, weight loss and unthrifty pups.

For the first 2 weeks of life, after feeding, the pups should be stimulated to urinate and defecate by rubbing the area between the back legs with a warm wet cotton ball. This simulates the mother's clean-up efforts.

At three weeks, or if the pups are orphaned at this age, a gruel of Eukanuba Weaning Formula® or high quality softened small breed puppy food can be made and the pups handled as if they were being weaned. Orphaned pups should be immunized at a younger age than other pups. Hand-raising pups is time-consuming and an enormous amount of work but can be very rewarding when successful.

WEANING:

At 3 to 4 weeks of age, a dish of water and dish of gruel should be introduced to the pups. Feed a high quality dry puppy food, softened with warm goat milk or water to make a gruel. This can be fed in a low heavy dish 4 times daily. “Flying saucer” dishes, pie plates, ashtrays or rabbit dishes work well for this. Gradually decrease the amount of time the pups spend with their mother at this point. This will make the transition from nursing to weaning smoother and will also lessen the puppies' demands on their mother. Beginning at 2 weeks of age, they should be wormed with Nemex^{R} for the first time, then weekly until 2 negative fecal samples results are obtained, unless the bitch was on the Panacur^{R} protocol during pregnancy. By 5 to 6 weeks of age, they should be weaned and eating only puppy food. After weaning, temporarily decrease the bitch's food and water to aid in drying her up.

From this point on, the pups will become more fun and a lot more work. It can become difficult to keep the pups confined and they can be messy and destructive. An exercise pen or playpen can be helpful.

The first 3 weeks with the puppies are relatively neat and clean. Mom will lick them frequently and ingest all of their urine and feces. However, upon starting on solid food, the mom will give up this quest and you will now have to deal with excrement. There are many ways to keep the pups clean. My favorite is to place a 2’’ deep plastic tray in the enclosure filled with pine shavings or shredded or pelleted newspaper. This, with some practice, will give the pups a place to eliminate thereby keeping their bedding clean.

In addition to providing bedding to allow for good footing, the shavings tray, and food and water dishes, the pups should have a bed to sleep in and acceptable chew toys. Stuffed Kongs, soft toys, and rawhides should be changed regularly to provide environmental variety and developmental stimulation.

By this time, they should have increased human social contact. At 8 weeks, your pups should be examined, vaccinated, checked for worms, and wormed. Up to 95% of pups may have worms by this age, unless the bitch was on the prenatal Panacur^{R} protocol. Boosters should be administered every 3 to 4 weeks until 16 weeks of age.

By 6 weeks of age, they can go outdoors with supervision for brief periods, if the weather is acceptable.

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LEAVING THE NEST:

Eight to ten weeks is an ideal age socially to place pups in their new homes. The pups should have a great deal of human contact. A great challenge comes in selecting which, if any, pups are to be kept. It can be difficult to let them go out into the big world. Potential puppy buyers should be carefully screened to assure they are the right home for your pup. We recommend you sign a contract with puppy buyers.

Breeding your dog and raising pups can be hard work, time-consuming, expensive, messy, and at times heart-breaking. But the rewards of being a responsible breeder raising healthy, high quality puppies for your own stock or to sell are many.

ITEMS TO HAVE AVAILABLE PRIOR TO WHELPING:

1. Whelping box or Whelping Nest (TE Scott 800-966-3647 or www.scottsdog.com OR DuraWhelp^{R} 800-998-3331 or www.BreederBase.com)
2. Caffeine tablets
3. Towels and sheets
4. Newspapers
5. Bulb syringe / DeeLee Mucus Trap
6. Gloves
7. K-Y jelly
8. Hemostat to clamp off umbilical cords
9. Suture or dental floss
10. Scissors
11. Tincture of Iodine to treat the umbilicus
12. Heat source such as heating pads or hot water bottles
13. Ice chest or laundry basket to transport or separate puppies
14. Goat's milk, pasteurized or Puppy formula and bottle or feeding tube and syringe
15. Cotton balls
16. Thermometer, rectal
17. Thermometer, to check room temperature
18. Gauze
19. Scale in oz or grams
20. Plastic sheets or tarps to cover the floor
21. Ice cream, vanilla for her, your choice of other flavors for humans
22. 25 gauge needle for acupuncture
23. Chlorhexidine (Nolvasan^{R}) disinfectant (Farm and feed stores)
24. Spray bottle for cleaning
25. Paper toweling
26. Fingernail polish as identification marks on pups.

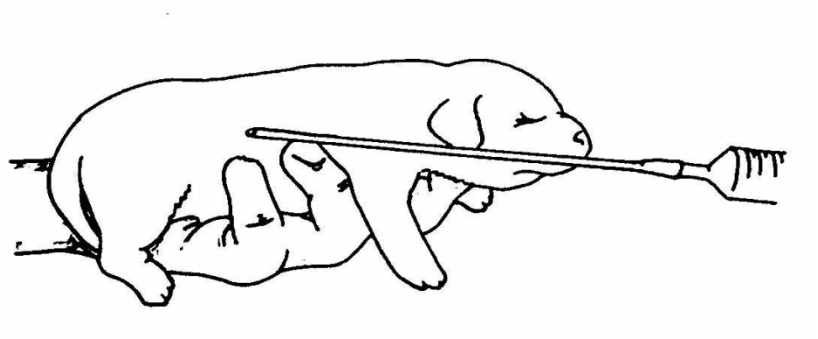
TUBE FEEDING DIRECTIONS:

MATERIALS:

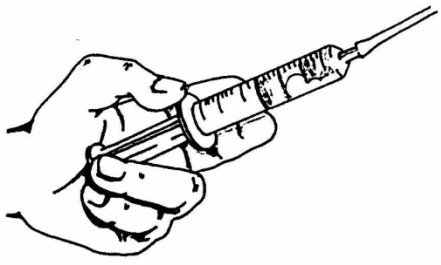
1. Goat's milk, pasteurized, or commercial milk replacer
2. Feeding tube, silicon or red rubber feeding tube 8 to 14 French
3. Permanent magic marker
4. Syringe of appropriate size with catheter tip (10 or 60 cc)
5. Puppy scale – feed at a rate of 20 cc per 16 oz of body weight. Repeat every 3 to 6 hours, based on pups condition.

STEPS:

1. Establish a well-lit warm location where you can hold the pup comfortably and all materials are within reach. Be attentive and do not rush.
2. Take the puppy's temperature rectally - do NOT feed unless the rectal temperature is between 96 degrees F and 99 degrees F. If the puppy's temperature is below 96 degrees F, warm the pup before feeding.
3. On a safe surface, hold the pup with the neck extended. Hold the tapered end of the feeding tube even with the last rib of the largest pup to be fed. Lay the tube along the side of the pup, mark the tube even with the tip of the pup's nose.



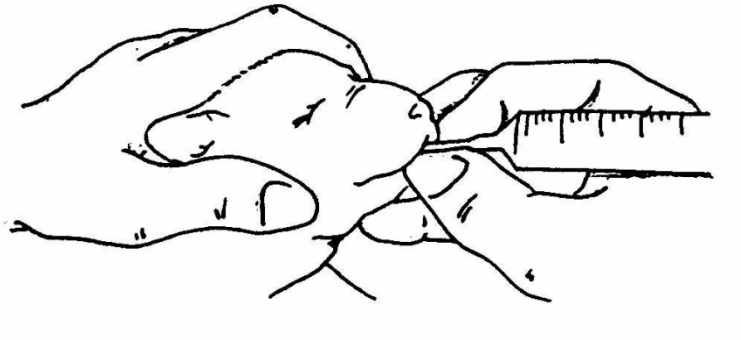
4. Fill the syringe with the calculated amount of formula or milk (20 cc/16 oz body weight or approximately 1 cc per ounce) plus 2 cc of air. Warm the formula to body temperature in a warm water bath – avoid microwaving.



5. Attach the syringe to the feeding tube.

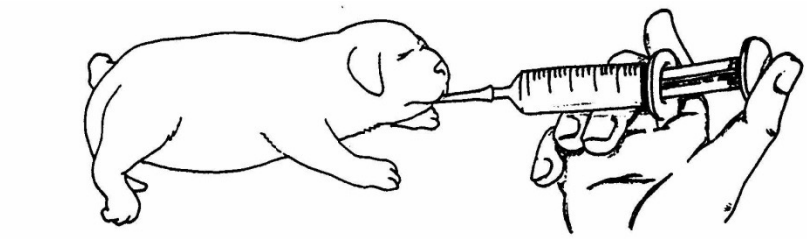
6. With the pup fully awake, warm (over 96 degrees F rectal temp) lying horizontally on the chest, gently pass the tube over the center of the pups tongue, applying gentle pressure to slide the tube up to the mark. If resistance is met, remove tube and start over.

7. With your left hand if you are right handed, cup your left hand around the back of the pups head and hold the tube between your index and middle finger to prevent it from moving out of the correct position while feeding.



8. BEFORE FEEDING, firmly pinch the pup on the foot or tail. If the pup vocalizes, the tube placement is correct and you can proceed with feeding. If the tube is mistakenly in the trachea, the pup will struggle but will not be able to make any sound – STOP IMMEDIATELY, REMOVE THE TUBE AND START THE PROCESS OVER.

9. With your right hand, depress the plunger on the syringe, NOT too quickly, delivering the calculated amount, stopping sooner should milk reflux out of the pup's mouth or nose.



10. Flex the tube on itself to prevent milk from being aspirated in to the pup's airway. Repeat for each pup.
11. Wash syringe and tube with hot soapy water and allow to air dry until next feeding.
12. Stimulate the external anal and urinary orifices to effect defecation and urination with a warm moistened cotton ball or washcloth.