



Cornell University

Cornell Center for Animal Resources and Education

CARE618.01 Perinatal Care of the Dog

The intent of this standard operating procedure (SOP) is to describe the minimum standards for perinatal dog care. This SOP is intended for use by all personnel involved in the perinatal care of dogs used for Cornell Research Protocols. This SOP is approved by the Institutional Animal Care and Use Committee (IACUC) and the Cornell Center for Animal Resources and Education (CARE). Any exemption must be approved by the IACUC prior to its application.

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1. Introduction

- a. The perinatal period refers to approximately the last two weeks of gestation up to weaning of the pups.
- b. A primiparous bitch is a bitch pregnant for the first time, or having given birth to only one litter.
- c. Gestation is 63 days on average (56-72 days) from the first mating.

2. Materials

- a. Feed (dry and canned)
- b. Vaccines
- c. Whelping box
- d. Drain cover
- e. Heating pad or lamp

3. Procedures

- a. Before gestation
 - i. Institute appropriate weight reduction of obese bitches prior to breeding. Do not pursue weight loss during pregnancy.
 - ii. Feed underweight bitches a growth or performance food to rapidly correct their weight condition.
 - iii. Ensure that vaccines for rabies, canine distemper, hepatitis, parvo virus and parainfluenza virus are current prior to breeding.

Important: Do not give modified live vaccinations during pregnancy.

Ensure that other components of the veterinary care (such as dental prophylaxis, deworming, etc.) are scheduled before gestation/lactation.

b. Gestation

- i. Feed a good-quality maintenance dog food up to day 50 of gestation.
- ii. Feed bitches *ad lib* unless justified for scientific reasons (and approved by the IACUC) or for medical considerations (and approved by the veterinarian).
- iii. Feed a diet with a high caloric content at day 50 of gestation and continue to do so until pups are weaned.
- iv. Place a whelping box in the pen one week prior to whelping.
- v. Place the drain cover over the gutter drain.
- vi. Place a heat lamp over the whelping box in the corner so that the bitch has a choice of being under it or not.

Note: Do not use a heating pad unless reviewed and approved by a CARE vet.

- vii. Make sure animals cannot reach the protected cord and place a safety screen over the bulb.
- viii. Unplug the heating device during cleaning with water. Make sure lights are turned back on after each cleaning.
- ix. Place whelping box paper in the box one week prior to whelping.
- x. During whelping, change the whelping box papers only if wet; otherwise, do not disturb.
- xi. Notify the PI that bitch is whelping and if any problems are seen or dead pups are found.

c. Parturition

- i. Observe for signs of parturition (see appendix).
- ii. During second stage parturition, the bitch must be examined if

1. She has greenish discharges but no pup is born within 2–4 hours.
2. Fetal fluid was passed more than 2–3 hours previously but nothing more happened.
3. The bitch has had weak, irregular straining for more than 2–4 hours.
4. The bitch has strong, regular straining for more than 20–30 minutes.
5. More than 2–4 hours have passed since the birth of the last puppy and more remain.
6. The bitch has been in second-stage labor for more than 12 hours.

- iii. During third stage parturition, the bitch must be examined if

1. All placentas have not been passed within 4–6 hours (although placenta numbers may be difficult to determine because of the bitch eating them).
2. The lochia are putrid and/or foul smelling.
3. There is continuing severe genital hemorrhage.
4. Rectal temperature is higher than 39.5 °C or

103° F.

5. The general condition of the bitch is affected.
6. The general condition of the puppies is affected.

- d. Early lactation through weaning
 - i. Ensure all pups are feeding and that the bitch has no signs of mastitis.
 - ii. Observe bitch for post-whelping complications (see appendix).
 - iii. Record the total number of pups (alive and dead), their sex and ID# in the bitch's health record.
 - iv. Notify the PI immediately.
 - v. Place dead pups in a plastic container, labeled with the bitch's number, in the designated refrigerator.
 - vi. Continue to feed diet of high caloric food through weaning.
 - vii. Provide a small amount of food such as growth formula (see appendix) mixed with warm water when the pups are 3-4 weeks of age.
 - viii. Continue to feed this to the pups until they are weaned off the bitch and on to dry food.
 - ix. Feed pups dry food (growth formula) *ad lib*, until 9 months of age or as prescribed by PI.
 - x. Remove the bitch and pups from the pen (leaving the pups in the whelping box for the first 2–3 days) and hose down the area as noted above for daily cleaning.
 - xi. Transfer pups to a clean box after 2-3 days.
 - xii. Change papers in the whelping box daily, including the day of whelping.
 - xiii. Clean and sanitize the whelping box on regular schedule as per facility SOP.

4. Safety

- a. Use hearing protection when working in dog kennels.
- b. Be aware of zoonosis risk, allergen prevention and refer to CARE SOP 707 for Animal Related Injury.

5. Contingencies

- a. In case of an emergency, contact the CARE group pager 1-800-349-2456.
- b. Examples of when the vet must be called are listed in the boxed sections under Parturition.

6. References

- a. Ettinger, S.J.; Feldman, E.C. *Textbook of Veterinary Internal Medicine*; W.B. Saunders Co: Philadelphia, PA. 2000.
- b. *Kirk's Current Veterinary Therapy XIII, Small Animal Practice*; Gentz, N., Ed.; W.B. Saunders Co: Philadelphia, PA. 2000.
- c. Clinical Theriogenology, *Vet. Clin. N. Am., Small Animal Practice*, Vol. 31. 2001.
- d. Birchard, S.J.; Sherding, R.G. *Saunders Manual of Small Animal Practice*; Elsevier Health: New York, 2000.
- e. CARE Zoonosis web page

- <http://www.research.cornell.edu/care/zoonoses.html>
- f. Allergens Prevention web page
<http://www.research.cornell.edu/Care/documents/OHS/AllergyPreventionFactSheet.pdf>
- g. CARE SOP 707 Animal Related Injury
<http://www.research.cornell.edu/care/documents/SOPs/CARE707.pdf>

7. Appendix

- a. Gestation notes
 - i. Note that at about three weeks of gestation, the bitch may suffer a loss of appetite, with occasional nausea and mild vomiting. Appetite typically will return at about week 4.
 - ii. Feeding vitamins and supplements is discouraged.
- b. Parturition notes
 - i. Several days before parturition, the bitch may become restless, seek seclusion or is excessively attentive and may refuse all food.
 - ii. In primiparous bitches, lactation may be established less than 24 hours before parturition, whereas after several pregnancies, colostrum can be detected as early as 1 week prepartum.
 - iii. The bitch may exhibit nesting behavior 12–24 hours before parturition concurrent with increasing frequency and force of uterine contractions.
 - iv. Drop in rectal temperature 8–24 hours before parturition.
 - v. First stage of parturition:
 - a. Duration: 6–12 hours. May last up to 36 hours in nervous primiparous.
 - b. Vaginal relaxation and dilation of the cervix occur during this stage.
 - c. Intermittent uterine contractions, with no signs of abdominal contractions or straining are present.
 - d. The bitch may appear uncomfortable, and the restless behavior may become more intense.
 - e. Panting, tearing up and reorganizing of the bedding, shivering, and occasional vomiting may be seen.
 - f. Some bitches show no behavioral evidence of first-stage labor.
 - vi. Second stage of parturition:
 - a. Duration is usually 3–12 hours.
 - b. If one or more of these signs have been observed the bitch is in second-stage labor:
 - 1. The passing of fetal fluids.
 - 2. Visible abdominal straining.
 - 3. Rectal temperature returning to normal level.
 - c. At onset of second-stage labor the rectal temperature rises to normal or slightly above normal.
 - d. Expulsive uterine contractions are accompanied by abdominal straining.
 - e. Allantochorionic membranes may rupture and a discharge of some clear fluids may be noted.

- f. The first fetus is usually delivered within 4 hours after onset of second-stage labor.
 - g. Normally the bitch will break or tear the fetal membrane, lick the neonate intensively and sever the umbilical cord. At times, the bitch will need assistance to open the fetal membrane. The umbilical cord can be clamped with hemostats and cut with blunt scissors, leaving about 1 cm of the cord.
 - h. In normal labor the bitch may show weak infrequent straining for up to 2 hours, and at the most 4 hours before giving birth to the first pup. If the bitch is showing strong, frequent straining without producing a pup this indicates the presence of some obstruction and veterinary advice must be sought.
- vii. Third stage:
- a. Expulsion of the placenta and shortening of the uterine horns follows within 15 minutes of the delivery of each fetus.
 - b. The bitch should be discouraged from eating more than one or two of the placentas because she may develop diarrhea and vomiting.
 - c. Lochia (greenish postpartum discharge of fetal fluids and placental remains) will be seen for up to 3 weeks or more.
- c. Early lactation through weaning notes
- i. Post-whelping complications include red or abnormally swollen mammary tissue and elevated temperature.
 - ii. Example of growth formula for puppies is Esbilac and baby cereal.

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