Canine Reproduction

Can Veterinary Nurses Play a Role??

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Introduction
As discussed in the last article, veterinary nurses can play a huge role in canine reproduction. This article covers from when the bitch is confirmed pregnant, her care, whelping and post natal care. This part of the reproduction process is when the veterinary nurse can really build on relationships with clients and gain their trust and confidence as we are often the "person on the end of the phone".

Care of the pregnant bitch

Immunisation
It is preferable to have the bitch properly vaccinated prior to breeding. Vaccines (especially modified live vaccines) should be avoided during pregnancy and only be administered if there is substantial risk of an infectious disease. It is important during the last three to four weeks of gestation that the bitch is housed in a familiar surrounding and to minimise exposure to pathogens (viruses, bacteria, parasites) that can be introduced from other dogs or humans and can cause abortion, stillbirths and neonatal death.

Nutritional requirements
The most common error is to over feed the bitch during early pregnancy and underfeed during lactation. In the first month of gestation the bitch should be maintained on her normal diet and during the second month the food intake should increase by 30–40% (depending on foetal numbers) and if possible the diet should be slowly transitioned onto a commercial puppy food or a growth, pregnancy and lactation formula. Multiple small meals throughout the day will help the bitch achieve her nutritional requirements as her stomach capacity may reduce.

It is not recommended to supplement the bitch with any additional nutrients, vitamins or minerals during pregnancy as this unbalances the nutrition provided by the commercial diet and may adversely affect the bitch and the foetuses. It is particularly important NOT to supplement the bitch’s diet with calcium.

Exercise
Moderate exercise is to be encouraged throughout gestation in order to maintain the bitch’s body condition. It is important for a successful and complication free whelping that the bitch is fit and not fat.

Drug administration during gestation
The optimal situation is to avoid any drug administration during the bitch’s gestation period. If the bitch requires medication for a pre-existing condition or for an illness that arises during pregnancy then this should be discussed with the veterinarian.

Predicting the onset of labour
Being prepared and well organized prior to the bitch’s whelping will help predict, reduce and efficiently and successfully manage any complications that may arise. This is especially important if the bitch has a history of “dystocia” or problems at whelping. Prediction of the bitch’s whelping date plays an important role in this pre-whelping planning and organization.

Behaviour and lactation
Bitches can start ‘nesting’ five to seven days prior to giving birth. The onset of lactation can occur anytime from two weeks to just prior or after whelping.

Breeding dates
Labour may begin anywhere from 57 to 72 days from the first day of mating.

LH surge (LH 0)
Labour begins after 65 +/- one day from the LH 0 date in most breeds. (If accurate ovulation timing has been undertaken then the predicted whelping date can be determined using this information.)

Rectal temperature
Taking the rectal temperatures twice daily at the same time everyday for the week prior to the expected parturition date will allow detection of a significant and abrupt temperature drop of at least 0.5°C or below 37.5°C in 80% of pregnant bitches. This temperature drop is usually followed by the onset of labour 12–24 hours later.

Serum progesterone
Progesterone concentration acutely drops to <2ng/ml 24 hours prior to the onset of parturition. Performing a progesterone test can be extremely helpful if your client is unsure of the whelp date.

The whelping area
• A familiar environment
• Free from draft, moisture, excessive cold or heat
• Clean and disinfected
• Minimal traffic
• Minimize any contact with visitors or other dogs
• Introduce pregnant bitch to the whelping area seven to ten days prior to her predicted whelping due date.

Construction of a “pig rail” around the inside edge of the box prevents pups from getting crushed.

It is very important that the bitch has minimal disturbance prior to and during whelping as interference can delay the delivery of the pups.

Managing parturition and labour
Maintenance of pregnancy depends on the secretion of the hormone “progesterone” by the ovaries. The foetuses decide when they are due to be born and at this time initiate a cascade of hormonal and molecular changes which ultimately results in an acute drop in progesterone concentration (<2ng/ml) and triggers the onset of labour. It is important to be familiar with the normal events/stages of whelping so that you are then able to
recognize the early signs of “dystocia” and get your clients to seek immediate veterinary advice/assistance so as to prevent loss of neonates.

Clients should be encouraged to let their veterinary clinic know expected whelp dates so that the clinic is appropriately staffed for an emergency. If the bitch is only carrying one pup the client should be encouraged to schedule an elective caesarean section as unfortunately in most of these cases the bitch’s hormones are not sufficient to trigger labour.

**Stages of labour**

**Stage 1:** The cervix starts to dilate and synchronous uterine contractions move the pups into the birth canal. These uterine contractions are not visible externally but can be detected by Doppler ultrasound. This stage may be associated with restlessness, panting, shivering, apprehension (especially in a maiden bitch) not eating and nesting behaviour. The duration of this stage is approximately 12 hours.

**Stage 2:** The cervix is fully dilated and strong visible abdominal contractions/straining results in the passage of pups through the birth canal and rupture of the “allantoic sac” or foetal fluids, which are clear. The first pup is usually delivered within 15 minutes after the onset of strong abdominal contractions. On average one pup is delivered every 30 – 60 minutes but there is significant variation.

Above: ‘Pig rail’ inside the whelping box.

Below: Caesarean section.
between breeds and individual bitches. 40% of pups are born backwards which is normal.

**Stage 3:** The placenta is usually expelled five to fifteen minutes after the delivery of each pup. Sometimes two or three pups will be delivered before the placentas are passed. It is important to account for each placenta as a retained placenta can make the bitch very sick. However it should be noted that the bitch can eat these very quickly and it can be difficult to determine if they have been expelled or not.

**When to intervene**
1. The bitch has reached her due date for whelping without any signs of labour or temperature drop. This is particularly important if she is pregnant with only one to two pups (determined by x-ray or ultrasound).
2. The first pup should be born within 20-30 minutes after the onset of strong and forceful abdominal contractions (i.e the onset of Stage 2 of labour).
3. If strong and frequent abdominal contractions occur but fail to result in expulsion of a pup within 15-30 minutes.
4. Weak or intermittent abdominal straining that fails to result in the birth of the first puppy within two hours or when the interval between the delivery of two pups in greater than two hours.
5. A green-blood tinged vulval discharge without the birth of a pup or at any stage of pregnancy.
6. The client is in a state of panic and cannot be placated by phone.

**After care**

**Postnatal management – care of the bitch**

Normal suckling by the pups causes the bitch to produce the hormone “oxytocin” which stimulates uterine contractions and involution. In some cases exogenous oxytocin administration may be indicated. However, this should only be done under veterinary advice and supervision.

Take the bitch’s temperature daily for one to two weeks following birth. An increased temperature may indicate an inflammatory or infectious process occurring in the mammary glands, uterus or can also be associated with the condition, “eclampsia”.

It is important to check the bitch’s mammary glands daily for any heat, pain, skin discoloration or the production of brown-pus like material from a teat or teats. Also check daily for any purulent or pungent vulval discharge. The client should contact their veterinary clinic immediately if any of these clinical signs or if the bitch goes off her food or appears unwell.

It is normal for a bloody-brown, non-purulent discharge to be present from the vulva for three weeks post partum. However, in some cases this discharge can continue for longer (up to three months!). It is important for the client to contact their veterinary clinic if this occurs.

A lactating bitch may need to eat three times her normal food intake to provide enough energy for milk production. She should be fed a “Complete nutrition for growth, pregnancy and lactation” formulated commercial diet or puppy food ad lib or at least three to four times daily until the puppies are weaned.

The bitch should be observed closely for excessive weight loss.

**Postnatal management – care of the neonates**

A healthy neonate should be fat and sleek and sleep contentedly when not nursing. Puppies that are frequently crying and crawling around constantly indicates there may be a problem.

**Weight**

Body weights should be accurately measured and recorded at birth, daily for two weeks then every three days until one month of age. Puppies less than six weeks old are very prone to dehydration and one of the first indicators is weight loss. Puppies should increase their body weight by 5-10% per day and double their birth weight by ten to twelve days of age.

**Temperature**

Care must be used in the provision of a heat source. In the first three weeks of life pups cannot regulate their own body temperature so they rely on the bitch and the environment for sufficient warmth.

A good mother will provide most of the required heat by presenting the skin of the mammary area against which the pups huddle. If the bitch doesn’t leave the pups for long and they are strong and feeding well, the room temperature only needs to be about 22°C - 24°C.

An external heat source is needed in cooler weather especially if the mother does not stay with the pups enough or if the pups are orphaned. For orphan pups in the first week of life, the room temperature should be kept at 30°C-32°C. This can then be reduced to 22°C-24°C over the next couple of weeks. The best heat sources are a pet electric blanket or a heat lamp. Hot water bottles cool easily and need to be changed often. When they are hot they need to be heavily wrapped to prevent skin burns, and on cooling it can lower the pup’s body temperature further. “Snuggle Safes” are a much
better option if available as they retain their heat for longer and never cool the same as hot water bottles. Care must be taken when heating pups – always check the temperature with a thermometer placed at pup level in the box and allow the pups space to move away from the heat source.

Pups that get too cold will die, but pups that get overheated will not thrive either.

**Hypothermia and hypoglycaemia**

If puppies become depressed or comatose rapid intervention is essential. External warming must be provided. The best option is to provide a warmed atmosphere to 32°C and radiant heat from a heat lamp. It is obviously important to not overheat the neonate. Once the puppy is warmed and if still depressed give oral glucose (1 – 2ml of 10% solution) or supplementary feed.

Neonates have minimal fat reserves and limited metabolic capability to generate glucose and are therefore susceptible to developing hypoglycemia.

**Nutrition**

Of course in most instances, the bitch will take care of this. However some bitches or large litters may require supplementary feeding or in some situations if the bitch becomes unwell entire litters may need to be hand raised, which is very intensive and hard work especially in the first two weeks.

Underfed puppies:
- Cry and whimper a lot
- Are restless and not sleeping
- Lose weight
- Become hypothermic easily
- Can develop low blood glucose leading to depression and coma
- Become dehydrated.

When supplementary feeding, use a commercial puppy milk replacer or formula and strictly follow label instructions.

Newborn puppies should be fed about 10ml every four to six hours gradually increasing by about 1ml per feed. Most puppies will suckle from a bottle with a human neonatal teat. Great care must be taken when feeding a puppy by stomach tube as many complications can result from doing this and ultimately loss of pups can occur. We recommend this be done only under veterinary supervision.

**Summary**

Canine reproduction is wide and varied but the veterinary nurse can establish a rewarding and value added role and service both within the clinic and to their clients. It is advisable to keep current on nutrition and products that can and can't be used on breeding animals and neonates. Remember that no one person has all the answers so don't be scared or ashamed to ask for help or refer to a veterinarian.

The Glenbred team is always available to answer any queries you may have or if your clinic wish to refer clients. Please phone 07 888-8197 or email us glenbred@matavet.co.nz

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**New Zealand Veterinary Nursing Association Journal Rates for 2013**

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Journal printed in March, June September and December. The deadline for each journal is the 1st of the month prior, i.e February, May, August and November.

**Taken for 2013**

Flyer insert in journal (Copies supplied by advertiser – membership 750 copies as at December 12) ...........................................$350
NZVNA to print black on white or coloured paper, one side ...........................................................................................................$195
Direct mail-out, same flyer as above if provided with prepaid envelopes .........................................................................................$350

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