Breeders and Fanciers Update

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CompanionAnimalClinicVa.com
WHY ARE WE HERE?
WHERE ARE WE?
NAME TWO THINGS THAT YOU WANT TO KNOW
DO I KNOW MY SUBJECT?

YES, I DO
CAN I TEACH YOU SOMETHING USEFUL?

YES, I CAN
IT’S WHAT YOU LEARN AFTER YOU KNOW IT ALL THAT COUNTS

John Wooden
NEONATE DIFFICULTIES
NEONATAL PUPPY LOSSES

- “Normal losses” 15 - 25 %
- With sound / simple management < 10%
  - 85 degrees - radiant heat
  - Supplemental feeding
  - 60% humidity
  - Pre breeding examination / consultation

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NEONATAL DEATH

- Infectious disease
  - Small portion of losses
  - Pathogens
    - Minute virus (cpv-1)
    - Canine Herpes Virus
    - Canine Adenovirus-1
    - Distemper
    - Coronavirus
    - Several bacterial infections
Neonatal Death

• Complete necropsy of puppy
• Common findings in my experience
  • Poor Husbandry
  • Congenital Defects
    – Mothering
      • Damage / Malnutrition
    – Infectious
      • Meningitis / Encephalitis / Septicemia
CANINE HERPES
CANINE HERPES

- Worldwide
- 100% in some kennels without losses
- Transmission by direct contact of body fluids
- Trans-placental transmission also occurs
- Latent after primary infection
- Sheds periodically - nasal, genital (rare)
RISK FACTORS

- LOW BODY TEMPERATURES
- IMMATURE IMMUNE SYSTEM FOR THE FIRST 10 DAYS OF LIFE
Canine Herpes Immunity

- Even sero-positive bitches do not produce significant amounts of neutralizing antibody.
- Previous exposure to CHV will not confer lasting immunity.
- Antibody levels can fall in as little as 3 months.
Canine Herpes Vaccine

Eurican Herpes 205, by Merial
Given during pregnancy
Improves weaning rates
Reduces early puppy death

Bitches that already have the virus can be successfully vaccinated
Licensed in Europe

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MATERNAL FACTORS
Aggression of the Dam

- Can occur, and most times unassociated with premonitory signs
- Behavior may reflect pain
- Can be associated with vocalization of pups
  - Mild sedation may be needed for safety of puppies and humans
Savaging offspring

- Also called kronism
- Usually associated with pain
  - Mastitis
  - Eclampsia
  - Surgery
Rejection of offspring

- Bitches will often push away a cold or inactive puppy
- If the entire litter is being rejected, look for signs of disease in the bitch
  › Mastitis
  › Metritis
  › Eclampsia
- Some bitches are poor mothers the first time around … subsequently, they are good mom’s
PREVENTIVE MEASURES

- Nutrition
- Parasite Control
- Vaccination protocols
- Regular Physical Exams
- Dental Care
- Physical Conditioning
- Housing and Environment
- Proper equipment at home
Nutrition
Optimal Nutrition

- The balance of nutrient supply and metabolic demand.
- Diet must provide
  - Body maintenance
  - Growth of her reproductive tissues
  - Growth and development of offspring
FEEDING THE BITCH

 Proestrus day 1 through breeding
  › Increase feed 15% by volume
 Last day of breeding through 6 weeks
  › Feed maintenance level
 Last 3 weeks of gestation
  › Increase gradually up to 150% by volume
 Lactation
  › May need to increase by 250%
Feeding the Bitch

- Protein 28%
- Lipids 18%
- Omega 6 : Omega 3
  - Ratio of 5 : 1
  - Decreases still born pups
  - Increases litter size
- Probiotics
DHA

- One of the omega – 3 fatty acids
- Bitches level influenced by
  - Stage of reproduction
    - Begin to decrease by day 21 of gestation
    - Greatest decline during peak lactation
  - Content of dietary lipids
  - Reproductive history
  - Litter size
DHA

- First litter pups have the highest levels
- Subsequent litters can have up to 50% less
- Unclear if due to parity or ageing of bitch
- Supplementation may not help
- Lower levels of DHA can adversely affect a puppies learning ability
Probiotics

- Improves bitches gastrointestinal health
- Improves bitches immune system
- Improves assimilation of nutrients
- Improves puppies health
Parasite Control

- **Heartworm**
  - 12 months a year
  - Blood test every 2 years most areas
  - Blood test yearly on coast, deep South
  - Ivermectin can cause deceased fertility – dog and bitch

- **Tick and Flea**
  - Stop 3 months before breeding a bitch

- **Hook and Whip**
  - Consider quarterly anthelmintics

- **Roundworm**
  - Dose Bitch during the last week of pregnancy
    - Strongid or Nemex
    - Panacur
  - De-worm bitch and pups at 2, 3, 4, and 6 weeks of age.
Parasite Control

- Giardia
  - Panacur
- Coccidiosis
  - Hygiene
  - Albon
  - Primor
  - Ponazuril (Marquis)
  - Toltrazuril
Albon

- Used to treat coccidiosis, although not approved for this use
- KCS reported with sulfonamides
- Dose during the infant period (2-6 wks)
  > 50 mg/kg PO first day
  > 25 mg/kg PO daily dose until symptoms regress
Ponazuril

- Also known as Marquis (Bayer)
- Neosporosis / Toxoplasmosis
  - 7.5-15 mg/kg PO once daily for 28 days
  - Dose extrapolated from dose for horses
- Coccidiosis
  - 15-30 mg/kg PO once or repeated in 7 days
  - Anecdotal dose
Parasite Control

- If there is an identified significant problem with parasites in a kennel, **fenbendazole** (Panacur) at 25mg/kg daily, from day 40 of gestation through 2 days post whelping may help

- An observation made during this study was that runting decreased in the litters of the bitches treated with fenbendazole
VACCINATION PROGRAMS

- There are as many protocols as there are users of vaccines
- Boost bitch 3 months before expected cycle, if needed
- No vaccinations for bitch within 1 month of cycle

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VACCINATION PROGRAMS

- Core Vaccines
  - Distemper >7yrs
  - Parvovirus >7 yrs
  - Adenovirus >7 yrs
  - Rabies >3 yrs

- Non core vaccines
  - Coronavirus - lifetime
  - Parainfluenza >3yrs
  - Bordetella <1yr
  - Lepto <1yr
  - Lyme <1yr
  - Giardia <1yr
  - Flu < 1 yr ?
  - Herpes – during pregnancy
VACCINE STRATEGY

• Minimal approach
  – Primary immunization 12 weeks or older
  – Use only DAP and Rabies
• Moderate approach
  – 6-9 weeks, then again 12-15 weeks
  – Revac in 1 year, then again in 3 years
• Maximal approach
  – 6-8, then 9-11, then 12-14, then 1 yr boost
  – After first year boost, vaccinate every 3 years
Most common reaction is a local swelling and / or mild pain
- Slight elevation in body temperature
- Mild anorexia
- Mild lethargy
- Rarely there may be swelling of the face
VACCINE REACTIONS

- Distemper vaccine most common cause
  - Usually occurs on a warm day
  - Commonly associated with exercise
  - Can cause hemolytic crisis up to 30 days later
Minimize Vaccine Reaction

- Cool day
- No exercise on day of vaccine
- Reduce stress
- Only vaccinate healthy animals
- Note vaccine site for future reference
PROPER TIMING OF BREEDING

AND THE RESULTING BENEFIT OF KNOWING THE WHelpING DATE
TIMING THE BITCH

• Advantages
  – Higher conception rates
  – Prediction of whelping date
  – Decreased travel time

• Techniques
  – Smears
  – LH
  – Progesterone
  – Ultrasound
TIMING THE BITCH

- Vaginoscopy
- Eosinophilic index (EI)
- Stud dog
  - 1 month prior to start of cycle, during Anestrus, LH pulses increase in frequency and amplitude.
  - This is detectable by the Stud
  - Use for early warning
- Tissue blot every other day

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VAGINAL SMEAR

- Cornification associated with high estrogen levels
- 2 periods of full cornification due to normal fluctuations in estrogen
- **IF USING THIS TECHNIQUE ALONE, THE BITCH WILL BE BRED TOO EARLY**
Most reliable method of Timing

- **Progesterone**
  - Reference lab
  - Chemilluminescence

- **Ovulation**
  - 4 – 10 ng / dl
  - 5 is accepted as a good average
Eggs released at ovulation

- Mature for 2 days in the oviduct
- Fertilized in the oviduct on day 2, 3, and 4 (maybe 5) post ovulation
- 60 - 72 hours post ovulation a common time picked for frozen semen use
- Fertilized eggs are released about day 14
- All eggs implant at the same time
Significant time difference by body weight in rise to 5ng / ml of progesterone from 2ng / ml.

Therefore, most accurate date to count from is 1.5ng - 2.5ng / ml.

This is DAY 1.

All body weights are in statistical agreement from this value.

Count forward 65 days.
HEALTHY WHELPING

THE PUPPY YOU SAVE MAY BE **THE ONE**
YOU ARE LOOKING FOR
INITIATION OF WHELPING

- FETUS PRODUCES CORTISOL
- ESTROGEN UP, P4 DOWN
- PROSTAGLANDIN RELEASED
- RELAXIN AND OXYTOCIN RELEASED
- WHELPING INITIATED
GUIDELINES DURING WHELPING

- **Stage 1 labor** - lasts about 6 - 12 hours
  - Anorexia, panting, restlessness
  - Nervous primiparous bitches may go 36 hours
- **Stage 2 labor**
  - Cervix completely dilated
  - Abdominal pushing
  - Cervix cannot be palpated vaginally
GENERAL GUIDELINES

- Strong, frequent stage 2 straining should produce a pup within 30 minutes.
- More than 1 hour between pups may be evidence of a problem.
- Weak, intermittent stage 2 straining should produce a pup within 4 hours (the first one) or within 2 hours (between pups).

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WhelpWise Service
Good Candidates for service:

- High Risk pregnancies; History of or current pregnancy resorbtions, infections, low progesterone levels. Prior premature delivery. Exceptionally large or singleton litters
- Novice breeder: Needs support above what you have time for in your office
- Client with zero tolerance for fetal loss.
- Client who needs to know which day(s) to schedule time off from work or activities.
- Ambiguous due dates, especially if small litter
- Planned C-sections
Normal uterine resting tone

Veterinary Perinatal Specialties

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Uterine contraction

Veterinary Perinatal Specialties

Patient Name: Ruthie Hertzog
Patient ID: Hertz210

File Name: A:\Hertz210.tg5
Record Date: 7/9/91 5:41:19 PM

mmHg

0 1 2 3 4 5 6 7 8 9 10

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Placentas and Placental profusion

- Provide the link for oxygen and nutrition throughout gestation
- During a contraction blood flow is decreased to the pup because of myometrial compression of microcirculation to the placenta
- Healthy placentas have a reserve blood volume to compensate for decreased blood flow during a contraction
- Prolonged labor will decrease placental function, decreasing placental profusion
- No placenta, no puppy
Temperature Change (or not) Related to Parturition

100 Clients using the WhelpWise™ Service evaluates the actual documentation of labor and its correlation with temperature change

35% did NOT have a temperature change of greater than 1 degree
32% had MULTIPLE temperature drops
More clients had an onset of labor 36-60 hours after the temperature change; only 23% had labor within 24 hours of the change
Most deliveries occurred 25-48 hours (highest incidence 37-48 hours) after the temperature drop
POSSIBLE ACTIONS WITH A SLOW WHelpING

- Pain management
  - Outside walk
  - Car ride
  - Light tranquilization
  - NSAID’s
- Feathering
- Reduce any environmental stresses
- Calcium injections – oral supplimentation
- Oxytocin
OTHER ACTIONS

- Massage therapy
- Glucose administration
- Ice Cream
One Last Idea

- Call your Veterinarian at 2 AM
- Discuss surgery in vivid detail
- Be certain your bitch hears this call
- Agree to meet at the office in 30 min
- 75% chance of puppy birth in the car
More Sophisticated Home Techniques

- Oxygen administration to bitch and puppies
- Nebulization of medication to failing pups
- Fluid administration to puppies
- Tube feeding
CESARIAN SECTION

EMERGENCY ELECTIVE
Cesarean Section Success Rates

- **Emergency Cesarean**
  - 25 of 40 pups survived to day 15
  - 62% success

- **Elective Cesarean**
  - 34 of 37 pups survived to day 15
  - 92% success
CESAREAN SECTION

- Planned or Emergency
- Drugs
  - Studies show propofol and then Iso or Sevo give the best chance of puppy survival
- Oxygen mask pre-op - 15-20 minutes
- Steroid administration
- IV support
- A lot of help! Ideally 1 person per puppy
On – Board Puppy Resuscitation

- Pre-oxygenation
- IV drugs given to Mother
  - Ultrasound can take the heart rate of pups
  - When puppy HR are dangerously low, medication given to mother can positively affect puppy HR
  - Easiest way to “IV” pups

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CESAREAN SECTION

- PLANNED - SCHEDULED
  - DOCUMENT P4 DROP
    - Not all bitches will drop below 2ng
    - Difficult to get timely and accurate results
  - USE SHORT ACTING CORTICOSTEROID
    - Soludelta cortef IV at typical shock doses
    - Give at least 1 hour prior to anesthesia
    - Hopefully helps with increased lung surfactant levels in the puppies
  - IV FLUID SUPPORT
Everyone scrubs their hands

1 person per puppy

Gentle suction

Keep them warm - not hot
  - Microwave IV bag for hot water bottle
  - Aqua K pad
  - Hugger
  - Hair dryer
  - Remove wet towels

Paint the umbilicus with tincture of iodine

STAT or equivalent supplement
C - section

- The “hand-off” from surgeon to assistant
  - Large stainless steel bowl, disinfected
  - Sterile towel lines the bowl
  - Surgeon gently drops puppy onto towel
  - No contamination
REALISTIC ACTIONS

- WARM AND DRY
  - DRY TOWELS ONLY
  - HAIR DRYER ON LOW SETTING
  - RADIENT HEAT SOURCE
- Autoclaved towels to dry puppies
- RUBBING AND SCRUFFING
- OXYGEN
- GENTLE SUCTION
- INTUBATION AND ASSISTED RESPIRATION
Neonate Normal

- Heart rate > 200 beats per minute
- Respirations: 15-35 breaths per minute
- Temperature: 96-97 F normal
  - < 94 F = gut stasis
  - > 100 F = hyperthermia

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Immediate post-op

- Check for irregular cardiac sounds in pups
- Check for cleft palate
- Check external genitalia and anus
- Check for open fontanel
- Palpate tail for deformities
- Count toes
- Weigh each puppy
Immediate post-op

- Prepare a padded wake up area for bitch
- Have owner present
- Wash nipples
- Allow puppies to nurse during wake up
Home care skills

- How to clean puppies
- How to bottle / tube / sponge feed
- How to administer SQ fluids
- Oxygen administration
- Nebulization
- Control of environmental factors
TAKE HOME MESSAGES

- IDENTIFY EMERGENCY MEDICAL HELP BEFORE YOU NEED IT
- O2 / STEROID PRE-OP
- PROPOFOL INDUCTION
- SEVO GAS IF POSSIBLE (ISO--OK)
- HUSBANDRY CRITICAL
- PUPPIES OVERDUE - BIG TIME RISK
- NUTRITION FUNDAMENTALS
- BREED YOUNG

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POTENTIAL USES OF LAMELLAR BODIES

Assessment of canine fetal lung development
A practitioners view

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MECONIUM ASPIRATION SYNDROME

RESULTING FROM ASPIRATION OF FETAL FECAL MATERIAL WHILE IN THE AMNIOTIC SAC - THE YELLOW / BROWN STAINED PUP
Meconium

- Meconium, an ether extract of meconium, and the major free fatty acids of meconium
- All found to increase the surface tension minimum of dog lung
- The free fatty acids of meconium are able to strip surfactant from the alveoli

Meconium

- Can induce chemical pneumonitis accompanied by alveolar collapse and edema
- Resulting atelectasis leads to pulmonary vascular constriction, hypoperfusion, and lung-tissue ischemia.
Therapeutic manipulation of lamellar body and surfactant levels
Infants born at term by caesarean delivery are more likely to develop respiratory morbidity than infants born vaginally (Starling’s equation).

Prophylactic corticosteroids accelerate lung maturation and reduce the incidence of respiratory complications.

Two IM doses of betamethasone given in the 48 hours prior to elective C-section.

Steroids - Pre-Natal Use

- Administration to women in preterm labor is standard of care
- Promote lung development
- Reduce neonatal intraventricular hemorrhage
- Reduce neonatal morbidity
Steroids - Pre-Natal Use

- No sepsis was associated with their use
- All steroids can stimulate synthesis of surfactant and the release into alveolar spaces
- Betamethasone and dexamethasone are used routinely in human medicine
Steroid - Post Partum Use

- Meconium aspiration syndrome
- Milk aspiration
- Pre-term neonate
- Lack of normal suckle and swallow reflex
Steroid - Post Partum Use in the newborn

- In line small-volume nebulizer probably best
- Dexamethasone plus
  - N-acetylcysteine (mucolytic)
  - Albuterol sulfate (bronchodilator)
  - Ceftiofur (antibiotic)
    • If conditions warrant

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P.R. Morresey. How to Deliver Respiratory Treatments to Neonates by Nebulization. 54th Annual Convention of the American Association of Equine Practitioners - AAEP, 2008 – San Diego, CA. USA.
Surfactant manipulation in the Veterinary literature

- 100% oxygen administration
  - Before and during c-section, first by mask then by intubation
  - Improves fetal surfactant
  - Decrease fetal anoxia

- Shock management doses of corticosteroid
  - Dexamethasone 8-24 hours prior to elective c-section
  - Immediate administration prior to emergency surgical intervention
    - Enhances or induces lung surfactant production
    - Enhances cardio-pulmonary and other maturational changes

Patrick W. Concannon. Understanding and monitoring canine pregnancy. Proceedings of the WSAVA congress, Mexico City, Mexico - 2005
Neonatal Apnea

- Sublingual Dopram
- Blow by oxygen
- Acupuncture
- Thermometer in the rectum
- Steroids

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Place the needle at the point indicated and pierce the lip.

Use a pecking action to stimulate the point.

**Resuscitation using Ting Points**

The Ting points of the hand (front leg) can be used to resuscitate over anesthetized patients.

They are found at the indicated points.
Neonate Dehydration

- “Tenting” not useful to diagnose dehydration
  - Pups lack dermal fat
  - Skin turgor test cannot be used
  - All pups “tent”
Neonate Dehydration

- Check gingival moisture with your finger
  - “Sticky” means dehydrated
- Check urine color
  - Dilute in appearance = normal
  - Lemon peel color = dehydrated
Thermoregulation

- Puppies cannot shiver
- Low reserve of SQ fat
- Large body surface area to weight ratio
- Hypothalamic inability to maintain temperature
Neonate Drug Therapy

- Metabolism is different from adult
- In general:
  - Give the same dose by weight as adult
  - **But**, give half as often
Antibiotic Therapy

- **Naxcel** (ceftiofur sodium)
  - Injectable
  - Late generation cephalosporin
  - Use no more than 3 days

- **Baytril** (enrofloxacin)
  - Ok to use in neonates
  - Injectable / oral

- **Clavamox**
  - Oral

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Agalactia (Lack of milk production)

- **Metoclopramide (Reglan)**
  - Enhances prolactin
  - Excreted into milk with no apparent ill effects to the pups

- **Domperidone (Motilium)**
  - Equine antiprototzoal
  - Increases serum prolactin levels
  - Small animal paste available
Assisted Feeding

- Body temp must be above 94 F
- Assume 1 pound puppy
  - 15 ml / feeding
  - 90-120 ml total daily intake
  - Start with smaller amounts
- Feed every 2-4 hours
Assisted Feeding

- Bottle feed using nipple designed for human premature infant
- Tube feed
  - Measure from nose to last rib – every feeding
  - Pre-load soft rubber catheter
  - Head up
  - Give slowly
- Sponge feed
NEW BORN NORMAL

- TEMPERATURE BY RECTAL THERMOMETER
  - NORMAL  96 – 97
  - < 94 = GUT STASIS
  - > 100 = HEAT STROKE

- HEART RATE
  - > 200 BEATS PER MINUTE

- RESPIRATION
  - 15 – 35 BREATHS PER MINUTE
Canine reproduction research has progressed light years since my graduation. However, as a practitioner, I still find myself using the “finger in the wind” method too often.

Practitioners generally must rely on limited data and their own experience.

More data and more experience means more consistently positive outcomes.

Need for more clinical trials and their combined analysis

- Therapeutic modalities
- Surgical procedures
- Diagnostic equipment and methodology

Breeders

- Accurate information
- Appropriate equipment
- Access to a mentor
Conclusion
Equipment For Whelping

- Oxygen
- Supplemental feeding supplies
- Thermometer – whelping box
- Rectal thermometer
- Nebulizer
- Medication on hand
  - Oxytocin
  - Dopram
  - Antibiotics for pups
  - Steroid
- SQ fluid supplies
THE SUCCESSFUL BREEDING PROGRAM

A FEW TRUTHS FROM THOSE THAT WENT BEFORE US
I would advise you, in breeding, to be as little prejudiced as possible in favor of your own sort; but send your best bitches to the best dogs, be they where they may. Those who breed only a few hounds, may by chance have a good pack; while those who breed a great many (if, at the same time, they understand the business) reduce it to a certainty.”
Advise from my Mentor

“Stick close to the root of the tree”
Advise from my Mentor

“Place in your mind’s eye the perfect dog. Keep this image with you always. Select mating’s that will bring this image to life”
BEST IN SHOW  2011
WESTMINSTER KENNEL CLUB
GCH. FOXCLIFFE HICKORY WIND
GCH Foxcliffe Hickory Wind
Westminster 2011