



The Nuances of Neonatal Care

Optimizing dam and neonatal survivability

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Society for Theriogenology






www.therio.org



Optimizing dam and neonatal survivability








Be prepared for C-section if:



- 1) Breed predisposition
- 2) Small (1-2 puppy) litter
- 3) Large puppies/small dam
- 4) Large litters (>10)




Types of C-section




- 1) Emergency/dystocia
- 2) Elective C-section

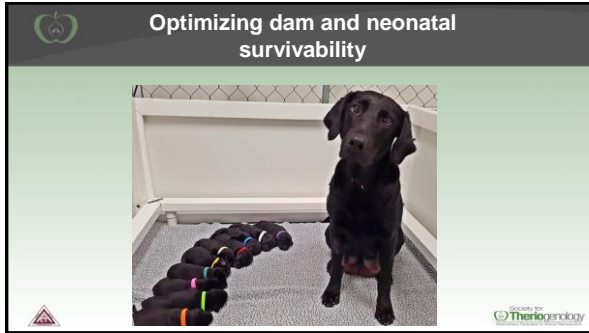





Emergency C-section

- Assess dam and stabilize ASAP
 - IV fluids
- Assess fetal distress
 - HR should be >200 beats per min
 - 170 bpm or lower = fetal distress



Elective C-section

- Timing is EVERYTHING: How can we know when the dam is in an acceptable window for neonatal survival?

- 1) Ovulation timing performed during estrus (63 days \pm 1 from ov)
- 2) Progesterone value of <2 ng/ml
- 3) Daily u/s exams when due date nears to assess fetal maturation

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Predicting Due Dates

- Gestation length
 - 63 days \pm 1 day from ovulation
 - 65 days \pm 1 day from LH surge
 - ****Gestation range from a single breeding: 57-72 days****

Timeline: LH (orange arrow) Ovulation (orange arrow) F S S M T W H F S S M T W


Calendar: January

1	2	3
4	5	6
7	8	9
10	11	12
13	14	15
16	17	18
19	20	21
22	23	24
25	26	27
28	29	30
31		

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Predicting Due Date

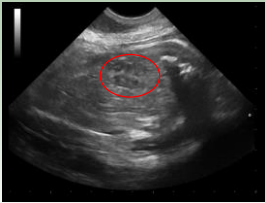
- Decline in body temperature of the dam?? (<99° F)
 - Not 100% reliable
 - Must take temp twice daily and record it
- Progesterone falls below 2 ng/ml → whelp within 24 hrs
- Progesterone declines → temperature declines → whelping
- **Progesterone often fails to decline in 1-2 puppy litters**



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Fetal maturation

- Recheck daily
- Fetal maturation
 - Kidneys: ~57 days gestation
 - Intestines: ~61-62 gestation

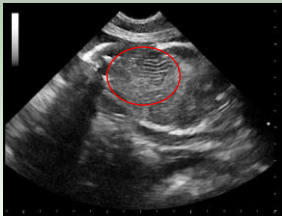


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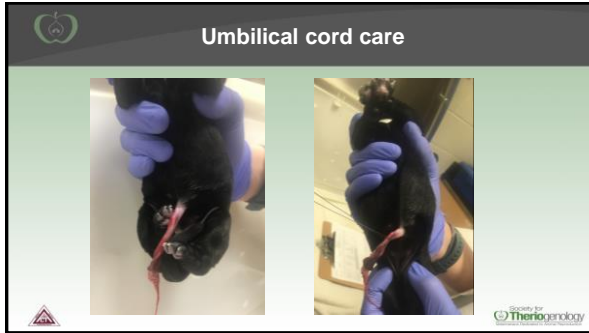
Fetal maturation

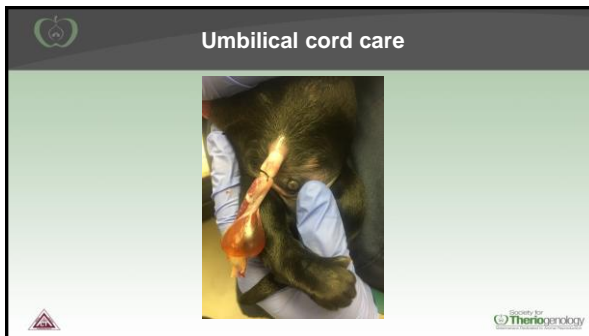
Fetal intestinal definition →

Good intestinal definition (+/- peristalsis)
+ ↓ progesterone
= safe for C-section



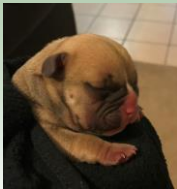
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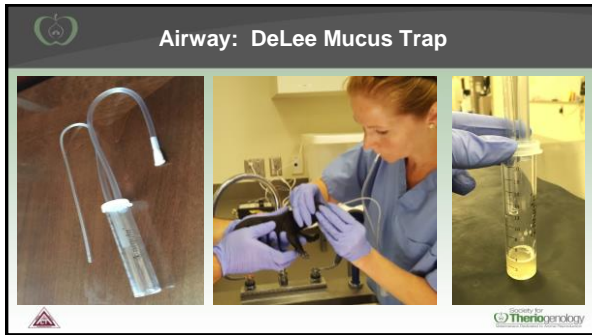


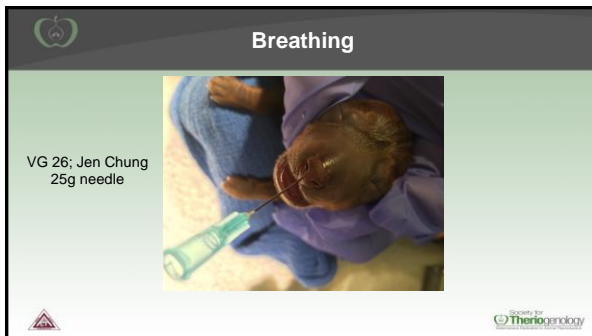
Neonatal Resuscitation

- Airway
 - Clear the mucus
 - Bulb syringe or DeLee mucus trap
- Breathing
 - Vigorous rubbing
 - Acupuncture point
 - Vocalization
- Circulation



Logos for the Society for Theriogenology and AAEP are visible at the bottom.

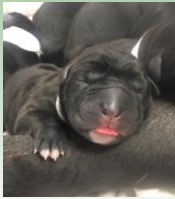







Neonatal Viability Scoring

- APGAR scores
 - Dr. Virginia Apgar, 1953
 - **A**ppearance, **P**ulse, **G**rimace, **A**ctivity and **R**espiration
- Higher scores: Neonates requiring less intervention
- Lower scores: Neonates with higher mortality rates

Neonatal Exam & Apgar Score Sheet

Litter DOB: _____


Color: _____ ID: _____

Sex: _____ Wt: _____

Bitch's Patient Sticker/info


PE: Hard and soft palate ☐ Anus ☐ Urogenital ☐ Umbilicus ☐ Auscultation ☐ Abnormalities: _____

	0	1	2	Score: 5 min	30 min	2 hrs
Mucous Membrane color	Cyanotic	pale	pink			
Heart Rate	<180 bpm	180-220 bpm	>220 bpm			
Respiratory effort/rate	No crying/ <15 bpm	Mild crying/ 16-30 bpm	Crying/ >31 bpm			
Reflex irritability	Absent	Feeble reaction (grimace)	Vigorous Reaction (grimace/vascularization)			
Mobility, muscle tone	Flaccid	Some tone in extremities	Active Movements			
Suckling (scored as -, +, ++)						
Rooting (scored as -, +, ++)						
Score: 7-10= No distress; 4-6=Moderate distress; 0-3= severe distress				Totals: _____		





Congenital defects

Normal Palate




Cleft Palate





[illegible][illegible]

Neonatal Weights



Two photographs showing a small brown puppy being weighed on a digital scale. The left photo shows the puppy on the scale with the display at 3.38. The right photo shows the puppy on the scale with the display at 3.40.

Supplemental feeding?

- How do you know what is needed?
 - Weigh 2x day
- A good rule of thumb is a weight gain of 10% per day as a minimum
- Neonates must be warmed to normal body temperature before feeding to avoid gastrointestinal ileus (95-99°F for neonates <1 week of age)**

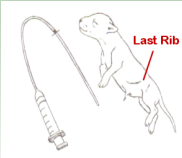



Diagram of a puppy's body with a red arrow pointing to the last rib, indicating the location for supplemental feeding.

Immunity: Colostrum vs. serum/plasma


****Colostrum is far superior****

Serum or plasma should be used in absence of colostrum


	Volume of serum or plasma to be given	Route of administration	Notes
Puppies	10 ml/lb	PO if <12 hrs SQ if >12 hrs	Can be given at once; no more than 5 ml/site if SQ
Kittens	15 ml total	PO if <12 hrs SQ if >12 hrs	Given in 5 ml boluses at birth, 12 hrs and 24 hrs






Photograph of a black puppy lying on a white surface, possibly receiving colostrum or serum.



Neonatal Safety











Pearls to Take Home



- The most common threats to newborns: hypothermia, hypoglycemia and dehydration.
- Key points for caregivers:
 - Warmth first
 - Nutrition second (body temp >95°F before feeding)
 - Stimulate urination/defecation if dam does not
 - Steady weight gain is single best indicator of neonatal wellbeing







Resources

- www.therio.org (Society for Theriogenology; "Find a Vet" feature)
- www.caninehealthinfo.org (Breed-specific screening tests)
- DeLee® mucus trap: several online sources; medical supply retailers, Amazon
- Whelping boxes:



Questions?

