

Critical Care Nursing Following Kirby's Rule of 20

This lecture outlines the concept of Kirby's Rule of 20. It will review the established evidence-based information regarding the use of Kirby's Rule of 20 in veterinary emergency and critical care medicine. Each parameter (listed below) will be discussed in depth, focusing on the physiology, clinical application, and monitoring of.

1. Fluid balance
2. Oxygenation and ventilation
3. Blood pressure
4. Heart rate, contractility, rhythm
5. Glucose
6. Body temperature
7. Albumin
8. Electrolytes/acid-base
9. Mentation
10. RBCs/hemoglobin
11. GI motility and integrity
12. Nutrition
13. Renal function
14. Coagulation
15. Immune status
16. Drug dosage/metabolism
17. Wound care/bandages
18. Pain control
19. Nursing care
20. Tender Loving Care

Target Audience:

- Veterinary nurses, intermediate to advanced level

Learning Outcomes:

- Identify each of the 20 patient parameters that should be monitored in critical patients
- Recognize the importance of evaluating a patient as a whole (holistic approach)
- Describe above and beyond nursing care

Understand how to implement Kirby's Rule of 20 in practice

Peritoneal Dialysis 101

This lecture is intended to discuss the treatment modality of peritoneal dialysis for acute kidney injury (AKI) patients.

Briefly review renal anatomy and physiology.

Discuss the definition of AKI, including the 3 types of azotemia and common disease conditions that contribute to each.

Discuss what dialysis is, the pathophysiology, and types of dialysis options (hemodialysis, continuous renal replacement therapy, peritoneal dialysis).

Discuss in detail peritoneal dialysis, including what it is, pathophysiology, and indications. Review the peritoneal catheter options, dialysate options, the process of performing peritoneal dialysis treatments, and complications.

Discuss the detailed nursing care and patient considerations for a renal patient, specifically one receiving peritoneal dialysis.

Review a case study.

Target Audience:

- Veterinary nurses, intermediate to advanced level

Learning Outcomes:

- Identify what a nephron is and the 4 key functions of the kidneys
- Recognize the 3 types of azotemia and common disease conditions that cause each
- Define dialysis and peritoneal dialysis
- Explain the pathophysiology of dialysis and specify how peritoneal dialysis works
- Recognize indications for initiating peritoneal dialysis therapy
- Describe the process of performing peritoneal dialysis
- Recognize complications associated with peritoneal dialysis
- Understand the specific nursing care needed for renal patients

The IV League: Critical Care Fluid Resuscitation

This lecture will review the pathophysiology of body fluid composition and the fluid needs of critically ill patients. Review body fluid composition, including the intracellular fluid compartment, extracellular fluid compartment, and Starling's Forces. Discuss the four phases of fluid resuscitation (rescue, optimize, stabilize, de-escalation). Emphasis will be on the rescue phase as this is the phase most concerned with critical illness resuscitation. Review the role of the endothelial glycocalyx. Discuss the types of fluids used during the rescue phase (crystalloids, colloids, hypertonic saline) including the evidence-based literature surrounding pathophysiology and indications of each. Discuss early goal-directed therapy and tailoring fluid therapy resuscitation to the individual patient. Review the importance of monitoring of fluid therapy, including monitoring for signs of fluid overload.

Target Audience:

- Veterinary nurses, intermediate level

Learning Outcomes:

- Explain the pathophysiology of body fluid composition
- Identify the four phase of fluid resuscitation
- Recognize the indications for each fluid type based on evidence-based literature
- Describe monitoring of fluid therapy with an emphasis on fluid overload

Effects of Early Fluid Resuscitation (Corrin Boyd) - fluid phases = rescue, optimize, stabilize, de-escalate; critical illness is the result of surviving what would otherwise have been a non-survivable insult; key players in the rescue phase is the endothelial glycocalyx, acute inflammation in the immune system, renal dysfunction, coagulation; a Cochran Review of human studies show with 95% in favor that colloids when used for fluid resuscitation have worse renal outcomes than crytsalloids (especially HES) in the optimization phase; veterinary studies have mixed results about crystalloid vs. colloid; proposed mechanism of colloid-induced AKI is osmotic nephrosis (renal tubular vacuolization); a Cochran Review of human studies show patients receiving crystalloids receive less transfusions than patients receiving colloids (colloids contribute to hypocoagulability); colloids tend towards association with AKI, hypocoagulability, varying effects on inflammation; advantage to colloids is they can be given at lower volumes to achieve the same level of volume expansion of higher volumes of crystalloids (landmark study Assessing the Changes in Blood Volume over time after Administration of Fluid Resuscitation Products to Dogs; 0.9% NaCl is an unbalanced crystalloid; movement from EGDT to 4 phase model with key point of preventing over-resuscitation - don't need to get our patient to normal perfusion with rescue resuscaition phase, need to get them out of life-threatening shock to move into optimization and tailor the fluid therapy to individual therapy; aim for safety with the 4 key players during rescue fluid resuscitation (use balanced crystalloid solution)

Blood Gas Tic-Tac-Toe

This lecture will serve as an introduction to venous and arterial blood gas analysis and interpretation.

Discuss the basics of acid-base, including what information a blood gas gives you, the four most common acid-base derangements, how pH, bicarbonate (HCO_3) and carbon dioxide (TCO_2) affect the body, and the body's compensatory mechanisms.

Review how to interpret venous blood gas results and understand how the acid-base disturbances relate to disease processes.

Review the concepts of oxyhemoglobin dissociation curve, A-a gradient, and $\text{PaO}_2/\text{FiO}_2$ ratio and how they relate to arterial blood gas interpretation.

Target Audience:

- Veterinary nurses, intermediate to advanced level

Learning Outcomes:

- Explain normal acid-base physiology
- Identify the four common acid-base derangements
- Relate acid-base disturbances to disease processes
- Be able to interpret venous blood gases
- Be able to interpret arterial blood gases

Not so Cute: Acute Anaphylaxis

This lecture is intended to discuss the disease process of anaphylaxis. It will begin with defining anaphylaxis and allergic reaction and briefly explaining how they differ.

Brief review of the role/function of the immune system and pathophysiology of anaphylaxis.

Discuss the major body systems affected by anaphylaxis and their corresponding clinical signs.

Discuss how a diagnosis of anaphylaxis is made, with emphasis on patient history and thorough physical exam. Brief mention of biomarkers that have been associated with anaphylaxis diagnosis (elevated alanine transaminase and gallbladder changes).

Discuss what the treatment entails, including a brief review of the mixed shock states anaphylaxis presents as (distributive-hypovolemic), as well as IV access, fluid resuscitation guidelines, and a special focus on the use of epinephrine. Additional treatment options such as oxygen, antihistamines, bronchodilators, vasopressors and GI protectants will also be reviewed.

Discuss the veterinary nurse's vital role in nursing care of the anaphylaxis patient will include extensive/frequent physical assessments (HR, pulse rate, BP, mm color, CRT, mentation, ECG, Doppler BP, pulse oximeter), recumbent care (recording losses, PROM, hip rotation, maintaining clean bedding), and monitoring for a biphasic reactions.

Target Audience:

- Veterinary nurses, intermediate level

Learning Outcomes:

- Define anaphylaxis and explain how it differs from an allergic reaction
- Explain the pathophysiology of anaphylaxis
- Identify what body systems are affected by anaphylaxis
- Recognize the diagnostics and biomarkers for anaphylaxis
- Recognize the treatment and nursing care for anaphylaxis