1. Which value is found to be higher in convalescent blood samples from cold stunned loggerhead sea turtles (*Caretta caretta*)?
   1. Creatinine Kinase
   2. Glucose
   3. Uric Acid
   4. Hematocrit
   5. Eosinophil counts

Answer: E. Values found to be lower in convalescent samples include: WBC, heterophils, eosinophils, CK, LDH, glucose, and uric acid

1. As part of a complete physical examination in cold stunned turtles, a complete ophthalmic examination is recommended. Which ophthalmic test is most important?
   1. Slit Lamp biomicroscopy
   2. Rebound tonometry
   3. Fluorescein Stain
   4. Schirmer’s Tear
   5. Cytology

Answer: C. Fluorescein stain as superficial corneal ulcers were the most common ocular finding

**Practice Question:** Which of the following factors may mitigate acute cold stress in fish?

1. Salinity
2. Weight
3. pH
4. Turbidity
5. Ammonia

Answer: A (and thermal refugia)

**Practice Question:** The survival of fish under cold stress are dependent on which two abiotic factors?

Answer: severity and duration

**Esophageal measurement of core body temperature in the Florida manatee (*Trichechus manatus latirostris*).**

Martony, M.E., Isaza, R., Erlacher-Reid, C.D., Peterson, J. and Stacy, N.I.

Journal of Wildlife Diseases, 2020;56(1):27-33.

Describe the preferred method for assessment of body temperature in a wild Florida manatee (*Trechechus manatus latirostris*) presenting for examination and rehabilitation.

Answer: Esophageal probe inserted through an orogastric tube into the caudal esophagus.

**Clinicopathological prognostic indicators of survival and pathological findings in cold-stressed Florida manatees (*Trichechus manatus latirostris*).**

Martony M, Hernandez JA, de Wit M, Leger JS, Erlacher-Reid C, Vandenberg J, Stacy NI.

Diseases of Aquatic Organisms. 2019;132(2):85-97.

Which of the following could be used as a prognostic indicator at intake, suggesting a reduced chance of survival in manatees presenting with Cold Stress Syndrome?

1. Low hematocrit
2. Low albumin
3. High BUN
4. High creatinine
5. Low triglycerides

Answer: High BUN

CSS often presents with hemoconcentration, low creatinine, high triglycerides. Albumin was significantly lower at admission with CSS compared to pre-release but was not found to be significantly different between survivors and non-survivors. Other predictors of survival were platelets (low in non-survivors), AST (high in non-survivors), and calcium (low in non-survivors).

A retrospective evaluating cold-stunned loggerhead sea turtles (Caretta caretta) found which of the following physiologic parameters to be associated with mortality?

1. Low glucose
2. Low potassium
3. High pH
4. High Lactate
5. Low heartrate

Answer: D

Which change in thromboelastrography (TEG) might you expect to see in a cold stunned sea turtle compared to a healthy individual?

1. A higher clot strength (maximum amplitude/MA)
2. A reduced clot formation rate (alpha angle)
3. An increased clot formation time (K) in acute cold stuns compared to chronic cold stuns
4. A decreased reaction time (R) in chronic cold stuns compared to acute cold stuns
5. No differences were seen between cold stuns and control turtles

Answer: B

**COLD STUNNING - SEA TURTLES**

*- Sea Turtle Health and Rehabilitation. Chapter 26: Cold Stunning. Pp 675-687.*

*- Mader’s Reptile and Amphibian Medicine and Surgery, 3rd edition: Medical management of sea turtles, Management of hypothermic (cold-stunned) turtles. Pp 1387-1388.*

Describe the differences in geography, duration of exposure, common species affected, and release rate of acute and chronic cold-stunned sea turtles.

* Acute: southern US/lower latitudes during abnormally cold weather, exposure <2 weeks duration, primarily green sea turtles, release rate high (70-90%)
* Chronic: high latitude temperature zones in late autumn/early winter, >2 weeks duration, primarily juvenile Kemps/greens and subadult Loggerheads, release rate 50-70%

**COLD STRESS SYNDROME - MANATEES**

*- CRC Handbook of Marine Mammal Medicine, 3rd ed: Sirenian Medicine - Cold Stress Syndrome. Pp 959-960*

*- Pathology of Wildlife and Zoo Animals. Chapter 24: Sirenia (cold stress syndrome). Pp 597-598.*

You get a call about a stranded subadult Florida manatee that is emaciated, has multifocal cutaneous pustules and ulcerations, and inappetence. What is your most likely diagnosis?

1. Brevetoxicosis
2. Boat strike
3. Exertional myopathy
4. Papillomatosis
5. Cold stress syndrome

Answer: E - cold stress syndrome