

Lesson 4: Osteosarcoma

Osteosarcoma is a form of cancer that affects the bones. It predominantly affects humans between the ages of 10 and 30 years. In dogs the long legged breeds are more often affected, such as greyhounds, boxers, irish setters and rottweilers. In this lesson we will look at osteosarcoma and treatment options. Cancers are one of the five medical diseases that Humanimal Trust have identified as a focus area.



Learning Objectives

Students will learn:

- What osteosarcoma is
- how it affects the body
- the similarities in treatment of humans and canines



Resources Required

Resource 1:

Powerpoint

Resource 2:

Teacher's notes

Resource 3:

Link to Humanimal Trust and Oncology film



Key Words

osteosarcoma, cells, genome, surgery, oncology,



Learning Outcomes

By the end of the lesson, students will be able to:

- Explain why One Medicine can help people and canines with osteosarcoma

NC Links

- Working scientifically - informing students of the role of science in understanding the causes of and solutions to some of the challenges facing society.

Development of scientific thinking:

- Appreciating the power and limitations of science and considering ethical issues which may arise
- Subject Content: 8 consider applications and implications of science and evaluate their associated benefits and risks
- Evaluate the ways in which society uses science to inform decision making.
- 15: Cells: the cell theory is a unifying concept in biology

Appendix 4: Psychology

- Methods and techniques for collection of quantitative and qualitative data including experimentation, observation, self-report and correlational analysis

Appendix 5a - Practical skills identified for indirect assessment and developed through teaching and learning

- Use and application of scientific methods and practices
- Comment on experimental design and evaluate scientific methods

Activity	Description	Timing
Introduction	<p>Be mindful how this may affect any of your students who may have a family member suffering with cancer.</p> <p>Introduce the word osteosarcoma. Ask the students if they know what it is, bone cancer.</p> <p>slide 2: discuss what cancer is and how it affects the body. The answer to the slide is the canine slide is on the left, human on the right.</p> <p>See teacher's notes for further information</p>	15 min
Watch the clip	<p>Watch Humanimal Trust and Oncology film</p> <p>The Humanimal trust shares the story of Kat, a junior doctor who was diagnosed with an Osteosarcoma at 12 years old and Max, a two-year-old Bullmastiff who received the same diagnosis.</p> <p>Both Kat and Max went on to receive similar treatments and solutions for their diseases and this film shares their remarkable and inspiring stories. The film illustrates the potential for One Medicine to improve and enhance the progression of human and animal medicine.</p>	15 min
Worksheet	<p>Complete the Treatment protocols worksheet.</p> <p>How many similarities do the students find?</p> <p>How could sharing information between vets and doctors help humans and canines?</p>	15 min
Plenary	<p>Discuss why humans and animals would benefit from One Medicine in the area of osteosarcoma.</p> <p>How has One Medicine helped Kat and Max in this film?</p> <p>Did you know that dogs can have the same kind of treatment as humans?</p> <p>What did you think about these two stories?</p> <p>What do you now know about One Medicine you didn't know before?</p> <p>Also, see Plenary/Assessment of Learning section for a further plenary activity</p>	10 min

Key questions:

What is osteosarcoma?

How could One Medicine benefit humans and animals in the treatment of cancers?

What aspect of the treatment of Kat and Max amazed you the most?

Plenary/ Assessment of Learning



Assessing Progress

The pwr of txt ;-)

Explain to students that they have got to write a text message on paper.

- The text message is to a friend explaining what they have found out in the lesson!
- The message has a maximum number of characters (including spaces)
- The text message can contain abbreviations and emoticons!

Extension activities



Research the statistics of how many humans get osteosarcoma and how many dogs do?
Write these down on your worksheet



Teacher's Notes / Observations

Teacher's Notes

Additional Information:

Slide 2: Owing to the genetic make up or genome of an osteosarcoma cell, they are so similar in humans and dogs that it would be very difficult to tell them apart.

Despite these genetic and physiological similarities, not just osteosarcoma but for many other diseases such as cancer, diabetes, arthritis etc, human and veterinary medicine do not routinely share their knowledge or work together.

Humanimal Trust is funding a research project at the University of Cambridge, where researchers are looking for markers that may be able to predict the risk of a patient's (human and animal) osteosarcoma spreading to other parts of the body as the main five cancer types typically are fatal due to their spread to other organs.

Answers to worksheet:

There are approximately 30 new cases of osteosarcoma in children each year in the UK.

<https://www.childrenwithcancer.org.uk/childhood-cancer-info/cancer-types/osteosarcoma/#:~:text=There%20are%20approximately%2030%20new,and%20in%20the%20upper%20arm.>

Breeds most likely to get osteosarcoma are long legged breeds. These include: Boxers, Rottweilers, St Bernard, Dobermann, Greyhound, Irish Setter, Irish Wolfhound

Osteosarcoma - a case for One Medicine

How many similarities did you spot between how human and dogs with osteosarcoma are treated?

Similarities

Extension activity:

Complete some research online into how many children suffer from osteosarcoma each year in the UK.....

Which breeds of dogs are most likely to get osteosarcoma?