

1.3 Three Definitions - Decompression sickness

Objectives:

1. Recognize the importance of the role of definitions in technical writing.
2. Understand the three types of definitions: parenthetical, sentence, and expanded definition.
3. Understand which type of definition is appropriate for which audience under the given circumstance.

Criteria:

The criteria for this assignment is to define a relatively complex term used in your discipline, and compose three types of definitions (which increases in depth of information) for a non-technical audience: a parenthetical definition, a sentence definition, and an expanded definition.

Technical Term:

Decompression Sickness

Situation and audience:

As a volunteer at a hospital, I had a visitor ask where their family member was with the description: “depressed because they drank too much bubbles”. I guided them to where they need to go, then explained to my partner that the visitors meant ‘decompression sickness’. It is important for volunteers to be able to figure out where patients and their family need to go, especially when they are frustrated and can only offer limited information as to where they need to go. In this case, it is my responsibility to help my volunteer partner understand for future reference that the inquirer is looking to go to the hyperbaric unit to treat ‘decompression sickness’.

Parenthetical Definition:

Decompression Sickness (formation of nitrogen bubbles in the body) is an acute condition that can occur when deep divers resurface too quickly.

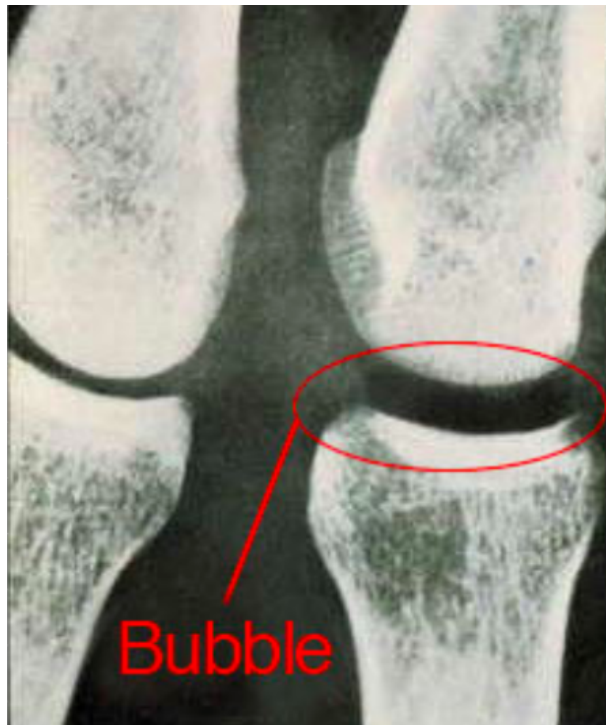
Sentence Definition:

Decompression sickness, also called the bends, refers to local damage caused by formation of nitrogen bubbles due to rapid decrease in surrounding pressure.

Expanded Definition:**What is Decompression Sickness?**

Decompression Sickness (DCS) is a condition that occurs when individuals suffer local damage from nitrogen bubbles in their ascent to sea level. When divers descend, they breathe compressed air (air normally breathed above water that is compressed 200 times into an air tank to go underwater). This compressed air, like atmospheric air, also contains compressed nitrogen gas. The deeper you descend below sea level, the higher your surrounding pressure from the water, allowing nitrogen to dissolve and accumulate in your blood and tissues. Upon

ascent, this nitrogen is breathed out; if the divers resurfaces too quickly, the nitrogen dissolved in the body can form small bubbles (due to decrease in pressure) in the tissue or their blood, causing anything from numbness or joint pain, to death. The reason it can cause death is because it can block blood supply, or cause blood vessels to burst. This can be alluded to opening a carbonated drink. The beverage will not form bubbles if it is slowly opened (depressurized), and will fizz if opened quickly. The goal in ascending from a dive is to avoid the “fizzing”.



<https://www.asc-csa.gc.ca/eng/sciences/osm/decomp.asp>

This is an x-ray that shows how decompression sickness affects the bones.
Bones on the left = normal. Bones on the right = bubble (between bones).

Origin of this term:

DCS was originally called caisson disease because it was first observed in the 19th century in compressed air (caisson) workers. It became “the Bend” because those who suffered from DCS walked or shuffled in a forward hunched position. Since the condition is related to bubble diseases where the bubble forms due to rapid decompression (lowering of pressure) when ascending, it became decompression sickness.

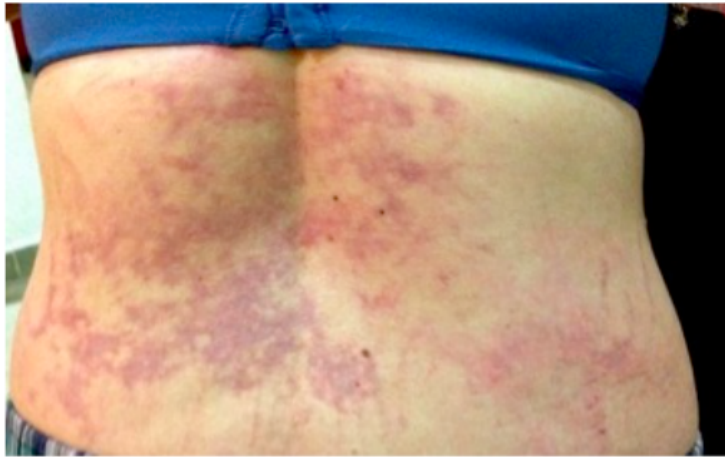
Who is susceptible?

Anyone who experiences a sudden, large enough pressure decrease, is susceptible to DCS. This includes divers, high-altitude pilots, and astronauts.

Symptoms of DCS (Divers Alert Network/ Harvard Health):

- Blurry vision

- Hearing problems
- Balance disturbance (“Staggers”)
- Breathing problems (“Chokes”)
- May also be immersion pulmonary edema (sudden accumulation of fluid which typically occurs early during a deep dive)
- Paralysis
- Coma
- Joint pain
- Dizziness
- Headache
- Difficulty thinking clearly
- Extreme fatigue
- Tingling or numbness
- Weakness in arms or legs
- A skin rash



<https://www.diversalertnetwork.org/diving-incidents/skin-bends-shower>

This is a case of cutaneous (skin) DCS, a painful skin reaction to DCS where Nitrogen is prone to fatty cells in the body. This often begins with itching which worsens, then progresses to pain occurring in the area not specific to only the skin. ~20% of cutaneous DCS is accompanied by dizziness, blurred vision, confusion, etc.

The best way to tell if a diver suffers DCS is if the diver goes down healthy, and comes up sick. Generally, the earlier the onset of symptoms, the more serious the case. Half of the listed symptoms can take place within the first hour, and may increase to 90% within 6 hours.

Treatment:

Individuals with DCS are treated by breathing pure oxygen in a pressurized environment between 1.5 and 3 times greater than normal air pressure (hyperbaric oxygen therapy). In doing so, it compresses the nitrogen bubbles, increases nitrogen removal from the body, reduces inflammation created by nitrogen bubbles, and improves oxygen supply to body tissue.



Photo taken from Vancouver Coastal Health: Hyperbaric Unit Patient Information
For more information on how the Hyperbaric Unit works, please visit:
<https://vch.eduhealth.ca/PDFs/JB/JB.300.H999.pdf>

How to minimize Decompression Sickness?

- When diving, do not stay below ~20 feet longer than the recommended duration that will be provided if diving with an instructor
- When ascending, ascend as slowly as possible
- Do not go to high elevations/ low pressure environments (i.e. mountain climbing, flying in a plane) after diving
- Reduce the number of deep dives in one session
- Stay well-hydrated before diving
- Foolproof method: Avoid diving altogether (especially if you have a history of lung-related illness)

How might “decompression sickness” be described by a visitor at the hospital?

Visitors who are not familiar with this term may confuse “decompression” with “depression” as it is more commonly known and associated with mental health; as such, pairing “depression” and “sickness” make sense.

Visitors may also provide a description involving at least 2 of the following keywords: “bubbles”, “oxygen”, “pressure”, “hyp unit”, “hyper”, “unit”, and “hyper unit”. This list is not conclusive as they have been gathered from personal experience with visitor interactions.

Vancouver General Hospital (VGH) is the only hospital in B.C. that has the Hyperbaric Oxygen Treatment. Therefore, specific to visitors at VGH, they may also provide additional information on the location of where they need to go, including: “Ground floor/ level”, “Ground floor/ level of Centennial Pavilion”, “Ground floor/ level of Leon Blackmore” or “near emergency”. This is also not comprehensive, and is only based on personal experience with visitor interactions.

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