

Research Assessment #11

Date: January 20, 2021

Subject: How Anesthetics Work

MLA:

Borel, Brooke. "How Does Anesthesia Work?" *Livescience.com*, Live Science, 23 Feb.

2012, www.livescience.com/33731-anesthesia-work.html#:~:text=Today%2C%20the%20most%20common%20modern,Isoflurane%2C%20Sevoflurane%2C%20and%20desflurane. Accessed 22 Jan. 2021.

Assessment:

While conducting individual research during my first semester in the ISM program, I came across multiple articles that discussed how doctors still do not completely understand how anesthetics work. That being known, I was curious as to how doctors discovered and tested anesthetics. Moreover, I want to know the specific qualities doctors look for when testing new possible anesthetics. The article I read was relatively short, but I gained a good foundation for the start of my research in and understanding of this topic.

The first and foremost essential aspect doctors look for in anesthetics is the specific function of the drug. Anesthetics are "drug combinations" meant to "ease pain, relax muscles, and, in some cases, put us in a deep state of hypnosis that gives us temporary amnesia"(Borel 1). First off, the fact that anesthetics are combinations of different drugs brings a new possible issue to light. Although not mentioned in the article, I wonder if one possibility doctors and researchers need to check and make sure of is that all of the different drugs work well together. It could be possible that some

different individually optimal drugs may not be compatible together and may lead to severe risks and consequences. The second thing that caught my attention was the specific functions mentioned which are to ease pain, relax muscles and possibly even cause a deep state of sleep if needed. So that tells me what exactly doctors tests these drugs for when experimenting with new possible anesthetics. These guidelines can also be used to compare current existing combinations, which is an avenue of research I am particularly interested in for my final project. The last piece of important information I gathered from this first half of the article is that there are “two primary types of anesthesia” in which general anesthesia has to “knock out the whole body” and cause the patient to be “completely unaware” during the operation(Borel 1). I have read about the differences between general anesthesia and local and regional anesthesia in multiple different articles and studies. So it makes sense that this article is also expressing the differences between the two by separating them. This leads me to believe that what doctors look for in the two types are also different. The most significant difference probably being that general anesthetics have to be stronger since they require the patient to be completely knocked out rather than just numb or loopy.

Another important feature in what anesthetics need to be able to do is muting bodily reactions during operations. It is stated that anesthetics need to “limits the physiological responses to surgical cuts” such as by “keeping blood pressure, stress hormone release, and heart rate constant during the procedure”(Borel 1). This is another aspect that I have read about when annotating and analyzing various other documents about anesthesia. I believe that this function is definitely essential because the patient having an involuntary response during surgery, blood pressure dropping too

low or a sudden drop or increase in the patient's heart rate could have fatal repercussions.

Finally, this article specifically mentioned a few anesthetics that would be interesting and helpful to compare. To begin, back in the days before anesthesia was around, the article said "opium or booze" was used instead(Borel 1). Although it may seem silly now to think back to that early since there are more modern forms of anesthesia that could be used for comparison, but I believe going all the way back is crucial to my overall understanding of the history and process of anesthesia.

Understanding the properties of alcohol and opium that made them temporarily ideal solutions for numbing pain and knocking patients out, is important to discover what modern anesthetics could be used as a better and more improved replacement. That being said, some examples of modern anesthetics are "novocaine shots"(Borel 1), "epidurals"(Borel 1), and "mixtures of inhalable gases, which include nitrous oxide (laughing gas) and various derivatives of ether, such as Isoflurane, Sevoflurane, and desflurane"(Borel 2). It is interesting to learn about how widespread and common different forms of anesthetics are used. Comparing these common modern anesthetics with each other as well as with other older and new possible anesthetics would be a really interesting project. I think this avenue of study would greatly benefit my overall understanding of anesthesia as well as help me learn more about possible drugs I could one day be working with.

This article acted as a good base for a future avenue of study I am interested in. It also provided me with a direction to go next, which I am very excited to explore. Anesthesia comes in different forms and combinations. I believe understanding how

these drugs are tested and chosen is fundamental to my overall knowledge of anesthesiology as a whole.