

PULSE EXPERIENTIAL TEAM ASSIGNMENT

Team #: 21

1. Title of your PULSE experiential assignment.

Provide a creative and informative title.

A Heart's Journey: An interactive exploration of Myocardial Infarction

2. Please summarize your PULSE experiential assignment (max 300 words).

Provide a non-technical (lay) summary of your PULSE assignment. Prompts to think about: What is the topic? What is the format? Why did you choose this topic and format? The summary for lay audience is a brief and accessible summary of the assignment that is used to explain complex ideas, technical writing and scientific terms to people who do not have prior knowledge of the subject (e.g., high school science level). This summary should include the importance, impact, and content of your assignment to a broader audience.

[Team 23 is an example of an informative lay summary.]

Our project focuses on myocardial infarction (MI), commonly known as a heart attack. It explains the underlying processes that lead to it, along with modifiable factors and preventive tactics. We chose this topic because heart disease is one of the leading causes of death worldwide, making it important for people to understand how it develops and how it can be prevented.

We created an interactive website where users follow the life of a Matt, somebody who was recently diagnosed with MI, the way, users learn how genetic factors and lifestyle choices like diet, exercise, and smoking, affect the risk of developing cardiovascular disease. The website visually demonstrates how this risk factors contribute to plaque buildup in arteries, leading to blood clots, reduced blood flow, and eventually heart muscle damage.

Users can also explore different treatment and prevention strategies, including medications and lifestyle changes, and see how these decisions impact outcomes. Our goal of the interactive website is to help simplify complex medical concepts and makes learning engaging and accessible for individuals without a science background. Overall, this project highlights the importance of prevention, early intervention, and informed decision-making in reducing the risk of heart attacks.

3. Provide up to 6 keywords relevant to your PULSE experiential assignment.

3-6 keywords are ideal.

- Myocardial infarction (MI)
- Atherosclerosis
- Thrombosis
- Hypercholesterolemia
- Ischemia
- Prevention

4. Identify the course topic with which your PULSE assignment most aligns. <i>Refer to the various topics outlined under 'Course content and Schedule' in the syllabus (e.g. Inflammation).</i>
Hemodynamic Disorders, Thrombosis, and Embolism Atherosclerosis and Hypertension
5. What are the learning outcomes? <i>There should be a minimum of 2 learning outcomes for your assignments. For further information on learning outcomes, the Centre for Teaching and Learning offers information: https://teaching.uwo.ca/curriculum/coursedesign/learning-outcomes.html</i>
• Describe the pathophysiological progression from atherosclerosis to myocardial infarction • Analyze how genetic and lifestyle factors interact to influence cardiovascular disease risk and prognosis • Evaluate the effectiveness of prevention and treatment strategies in reducing myocardial infarction outcomes
6. Why did the team select the chosen topic and the medium? How will the topic and medium of choice help learners?
We selected MI because it integrates key course concepts such as thrombosis, embolism, and hemodynamic disorders in a way that is easy to follow. It allows us to connect molecular and cellular pathology to real-world disease outcomes. As the world continues to age, the prevalence of MI and other cardiovascular disease will continue to increase – making the education of the topic important in the long run. The interactive website format encourages learning by allowing users to actively engage with the material rather than just skimming text. By using the features on the website, the user will have their knowledge deepen, through fun fact and in-depth explanation on topics. Also, the narrative-based approach conveyed by the website (through the character of Matt) also improves retention and makes complex concepts more intuitive and accessible.
7. Did the team use an artificial intelligence (AI) technology tool? If so, which AI technology tool(s) did the team use? What other technology tools did the team use? Is the technology tool novel? Is the team using this technology tool in a novel fashion? If the team did not use technology tool, why did the team decide against using the technology tool(s)? <i>Please include details (e.g., for what purpose was the tool used for? Why was the tool the best tool to use for your assignment? Are there alternative tools that were considered?)</i>
We used artificial intelligence (AI) technology, specifically Chat GPT-5.3. It was primarily used to summarize content from articles and research papers, as well as to correct or structure paragraphs based on information found from various papers. We made sure to check any information that was presented on the website, to ensure the accuracy.

The website we used to create the interactive learn module, Genially, also has built in AI technology, used to format the content and add different images, such as the character used in our module. AI technology has been present for many years, but the rise in generative AI has made its use more common, often making it difficult to avoid. We believe AI can be a very valuable tool, and when used responsibly, it can increase efficiency and help support learning. We did not use AI in a novel way, but rather correct grammar, or condensing information to make it more engaging for our audience.
8. How is your PULSE experiential assignment innovative and/or novel? <i>Describe what about the PULSE assignment is innovative/novel. Is there a particular component or content that is innovative/novel? How is it different from other content that already exists?</i>
This project is innovative because it transforms traditional pathology learning into an interactive, decision-based experience. Instead of simply presenting information on a plain slideshow or infographic, users actively participate in the progression of disease through a patient's life. The interactive model allows learners to see how risk factors accumulate and how interventions can alter outcomes. This dynamic visualization of disease progression is more engaging and memorable compared to static diagrams or lectures, and confusing points on the website are accompanied by further explanation, either in the form of interesting facts or unique visuals.
9. If you used an AI tool, please copy and paste the prompt(s)/question(s) used along with the output(s)/answer(s) from the AI tool. <i>The response here is to allow others to replicate the team's work. If the prompts/outputs are lengthy (over 1 page), please attach it as a separate document and note below [Please see attached document].</i>
Please see attached document
10. If you did not use an AI tool, please attach a copy of the team's notes to the assignment. <i>The response here is to allow others to observe the 'behind the scenes' team's work.</i>
N/A
11. How did the team ensure the veracity of the information presented in the PULSE assignment? <i>The response should highlight how the team has ensured that the information presented in the assignment is evidence-based and not spreading misinformation. You should specifically mention which databases (if any) or textbook materials you used, and how you kept track of the sources/references for each claim. If AI provided you with false information, please describe how the team has fact-checked the AI response and the legitimate (scientific) sources you used. A reference document should be provided in the reference section (15. References) below. Please ensure to include in-text citations in your assignment where applicable.</i>

We ensured accuracy by cross-referencing all information with course lecture materials and reputable scientific sources, including textbooks and peer-reviewed articles. Concepts such as atherosclerosis, thrombosis, and MI were verified using established medical knowledge.

Our principle use for AI was as a springboard, to point us in the right direction for information on MIs and general cardiovascular diseases. When AI tools were used, all outputs were carefully reviewed and fact-checked against reliable sources cited in our bibliography to prevent misinformation. We also organized notes linking each concept to its original source.

12. Write a meaningful team reflection about the PULSE session (max 250 words).

Prompts to help your team write the reflection: Were there any team/individual biases that surfaced when creating content for the assignment? Did the team implement any practices to ensure the content was equitable, diverse, and/or inclusive? How has the PULSE assignment helped with the team's learning? If the team had to estimate, how long did the assignment take? What worked well for your team? What would the team do differently next time? What were the opportunities and challenges with creating the PULSE assignment to help others' learning? Were there any barriers or limitations?

Our group has worked collaboratively and effectively throughout the project. We divided the assignment into sections early on and ensured that each member took responsibility for specific content areas while still contributing to the overall concept. This helped maintain both accountability and cohesion.

One challenge we faced was narrowing the scope of the project. Initially, we wanted to include multiple hemodynamic disorders, which made the project feel overwhelming. We addressed this by focusing on a single, clear clinical pathway: atherosclerosis to MI. Time management was another challenge due to conflicting schedules.

To overcome this, we created a shared document and set internal deadlines to keep organized. We also plan to incorporate knowledge from upcoming lectures to strengthen our understanding.

This assignment has helped deepen our understanding of cardiovascular pathology by requiring us to apply concepts in a practical and engaging format. It also reinforced concepts not taught in class since the first section, so this project was beneficial in retaining old information. Moving forward, our priorities include finalizing content, refining the interactive design, and ensuring scientific accuracy. If we were to do this again, we would start narrowing our scope earlier to improve efficiency.

13. Write the contributions of individual team members using unique initials.

Example: All team members contributed to the design of the prompts used in the technology tool, ChatGPT (GPT-3.5). T.K and T.K2 fact checked the information presented by ChatGPT using published literature on PubMed (PMID 29211319, 32477271). Y.Z finalized and formatted the final infographic and compiled the prompts and outputs. P.E was involved in...

All team members contributed equally to the preparation of the initial outline for the PULSE assignment. The workload for the final submission was also evenly divided among the group.

H.R. and M.H. collaborated on developing the final learning module, focusing on formatting and integrating content from the initial outline. H.R. was responsible for the section covering the introduction through plaque rupture, while M.H. completed the sections from ischemia to the conclusion. Z.G. focused on the assignment template, including formatting, citations, and the annotated bibliography. Additionally, all team members reviewed the assignment template and contributed where appropriate, including the team reflection section.

14. Other comments (Optional)

Any comments the team would like to let the coordinator and/or TAs know.

We have attached the link to the learning module, if it expires, please let us know and we will email it to you. Also, all photos with no citation underneath are provided by Genially and each superscript next to information corresponds with the source number on the reference page.

15. References

1. Ojha N, Dhamoon AS. Myocardial infarction. In: *StatPearls*. StatPearls Publishing; 2026. Accessed April 9, 2026.
<http://www.ncbi.nlm.nih.gov/books/NBK537076/>
2. 10 facts you may not have known about heart attacks | columbia surgery. Accessed April 9, 2026. <https://columbiasurgery.org/news/2014/07/28/10-facts-you-may-not-have-known-about-heart-attacks>
3. Cardiovascular diseases (Cvds). Accessed April 9, 2026.
[https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-\(cvds\)](https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds))
4. CDC. Heart disease facts. Heart Disease. January 30, 2026. Accessed April 9, 2026. <https://www.cdc.gov/heart-disease/data-research/facts-stats/index.html>
5. Szczepańska E, Białek-Dratwa A, Filipów K, Kowalski O. Lifestyle and the risk of acute coronary event: a retrospective study of patients after myocardial infarction. *Front Nutr*. 2023;10:1203841. doi:10.3389/fnut.2023.1203841
6. Erdmann J, Linsel-Nitschke P, Schunkert H. Genetic causes of myocardial infarction. *Deutsches Ärzteblatt international*. Published online October 8, 2010. doi:10.3238/arztebl.2010.0694
7. Xu M, Zhao J, Zhang Y, et al. Apolipoprotein e gene variants and risk of coronary heart disease: a meta-analysis. *Biomed Res Int*. 2016;2016:3912175. doi:10.1155/2016/3912175
8. Kum J. Hemodynamic Disorders, Thromboembolisms & Shock [2]. October 6, 2025.
9. Tugaleva E. *Atherosclerosis and Its Sequelae*. 2026:1-4.
10. Buja LM. Pathobiology of myocardial ischemia and reperfusion injury. *Diagnostics (Basel)*. 2022;12(8):1850.
11. Thygesen K, Alpert JS, Jaffe AS, Chaitman BR, Bax JJ, Morrow DA, et al. Fourth universal definition of myocardial infarction (2018). *Eur Heart J*. 2019;40(3):237-

269. Accessed April 9, 2026.

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12. Ogobuiro I, Gonzales J, Tuma F. Anatomy, thorax, heart coronary arteries. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023. Available from: National Center for Biotechnology Information.
13. Public Health Agency of Canada. Heart disease in Canada [Internet]. Ottawa (ON): Government of Canada; 2022 Jul 28 [cited 2026 Apr 10]. Available from: <https://www.canada.ca/en/public-health/services/publications/diseases-conditions/heart-disease-canada.html>
14. Rao SV, O'Donoghue ML, Ruel M, et al. 2025 ACC/AHA/ACEP/NAEMSP/SCAI guideline for the management of patients with acute coronary syndromes: a report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. J Am Coll Cardiol. 2025;85(22):2135-2237. Accessed April 9, 2026.
<https://www.ahajournals.org/doi/10.1161/CIR.0000000000001309>

16. Annotated Bibliography

Ojha N, Dhamoon AS. Myocardial infarction. In: *StatPearls*. StatPearls Publishing; 2026. Accessed April 9, 2026. <http://www.ncbi.nlm.nih.gov/books/NBK537076/>

Summary:

This textbook source provides a comprehensive clinical overview of myocardial infarction (MI), including its definition, pathophysiology, risk factors, presentation, diagnosis, and management. It explains how coronary artery occlusion leads to ischemia and myocardial cell death and outlines diagnostic tools such as ECG changes and cardiac biomarkers. Treatment approaches, including pharmacologic therapies and reperfusion strategies, are also discussed.

Evaluation:

The publisher of the text, StatPearls, is a peer-reviewed, continuously updated medical resource written by healthcare professionals, which enhances its credibility. Its strength lies in its clear, structured format and clinical focus. However, it is more of a general reference text and may lack depth in critical analysis or emerging research debates.

Relevance:

In combination with lecture material taught in Pathology 3500, this source was used to provide foundational knowledge about MI, especially for defining key concepts and explaining mechanisms and clinical features in a clear and authoritative way.

10 facts you may not have known about heart attacks | columbia surgery.
Accessed April 9, 2026. <https://columbiasurgery.org/news/2014/07/28/10-facts-you-may-not-have-known-about-heart-attacks>

Summary:

This article presents ten key facts about heart attacks, including common misconceptions, risk factors, warning signs, and prevention strategies. It highlights that heart attacks can occur without typical symptoms and emphasizes the importance of early intervention and lifestyle factors in reducing risk.

Evaluation:

The source is published by an academic medical institution, which supports its credibility. It is written in an accessible, non-technical style, making it useful for general audiences. However, its simplicity is also a limitation, as it lacks detailed scientific explanation and citations. Its intention is just to enlighten readers on interesting facts about MIs.

Relevance:

This source was incorporated in a *did you know* themed interactive tab, with facts discussing onset on disease, medication and the impact of emotion on MIs.

Cardiovascular diseases (Cvds). Accessed April 9, 2026.

[https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-\(cvds\)](https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds))

Summary:

This fact sheet provides a global overview of cardiovascular diseases (CVDs), which MIs fall into. It includes prevalence, mortality rates, risk factors, and prevention strategies. It emphasizes that CVDs are the leading cause of death worldwide and highlights modifiable risks such as smoking, diet, and physical inactivity.

Evaluation:

As a publication from the World Health Organization, this source is highly credible and authoritative. Its strengths include up-to-date global statistics and a public health perspective. However, it provides broad information and lacks detailed clinical explanations.

Relevance:

This source was included in our epidemiology section, with the facts on our website using this website. It also helped support discussions on global burden and prevention strategies of cardiovascular diseases.

CDC. Heart disease facts. Heart Disease. January 30, 2026. Accessed April 9, 2026.

<https://www.cdc.gov/heart-disease/data-research/facts-stats/index.html>

Summary:

This source – the Center for Disease Control and Prevention - provides statistical data on heart disease, including prevalence, mortality, and risk factors in the United States. It highlights disparities across populations and identifies key contributors such as hypertension, high cholesterol, and lifestyle factors.

Evaluation:

The CDC is a highly reputable public health authority, making this source reliable and current. Its main strength is the presentation of clear, data-driven insights. However, it focuses primarily on the U.S., which may limit its global applicability.

Relevance:

This source was used to support statistical claims in the epidemiology section of the interactive website and ties in with knowledge provided by lecture content in Pathology 3500.

Szczepańska E, Białek-Dratwa A, Filipów K, Kowalski O. Lifestyle and the risk of acute coronary event: a retrospective study of patients after myocardial infarction. *Front Nutr.* 2023;10:1203841. doi:10.3389/fnut.2023.1203841

Summary:

This article investigates the relationship between lifestyle factors like diet, and the risk of acute coronary events by analyzing patients who have experienced an MI. Using a retrospective design, the study surveyed 116 Polish patients with a questionnaire to assess dietary habits and overall lifestyle in the year prior to their heart attack. Researchers found that most participants followed poor-quality diets characterized by high consumption of refined carbohydrates and low intake of fruits, vegetables, and legumes. While unhealthy eating patterns were common, the study found that not all patients with poor diets developed cardiovascular disease, suggesting that the relationship between diet and heart disease risk is complex and not fully captured by the tools used.

Evaluation:

This study has moderate credibility due to its publication in a peer-reviewed journal and use of a standardized dietary assessment tool (the KomPAN questionnaire). However, its retrospective design introduces recall bias, as participants relied on memory to report past behaviors. The relatively small sample size also limits generalizability, and the inconsistent results across dietary indices weaken the strength of its conclusions. Additionally, the study cannot establish causation, only associations, which is an important limitation when interpreting its findings.

Relevance:

This paper was used to support arguments about the role modifiable risk factors (in this case lifestyle and diet) in cardiovascular disease risk. It was used because it provides real-world evidence that unhealthy dietary habits are prevalent among heart attack patients and emphasized the importance of prevention strategies.

Erdmann J, Linsel-Nitschke P, Schunkert H. Genetic causes of myocardial infarction. *Deutsches Ärzteblatt international*. Published online October 8, 2010. doi:10.3238/arztebl.2010.0694

Summary:

This review article examines the genetic basis of myocardial infarction (MI), with a focus on findings from genome-wide association studies (GWAS). It highlights that a positive family history is a major risk factor for MI and reflects underlying genetic susceptibility for the disease. Recent GWAS have identified multiple chromosomal regions associated with increased MI risk, including a locus on chromosome 9p21.3. These genetic variants are common in the population and typically confer increases in individual risk for MI (approximately 10–30% per allele) and collectively contribute significantly to disease burden. Importantly, many of these variants act independently of modifiable risk factors such as cholesterol levels or hypertension, suggesting novel biological mechanisms in atherosclerosis and coronary artery disease. The article also discusses how genetic discoveries may improve future risk prediction and contribute to new therapeutic approaches.

Evaluation:

This source is highly credible as it is a peer-reviewed review article that synthesizes findings from large-scale GWAS. Its strengths include the integration of multiple studies and its focus on clinically relevant implications, such as risk prediction and prevention. However, because it is a review, it does not present original experimental data, and some conclusions are limited by the relatively early stage of genetic discovery at the time of publication. Additionally, the clinical application of these findings remains under development.

Relevance:

This source was used to support the section of the project addressing non-modifiable risk factors for myocardial infarction. It provides strong evidence that genetic predisposition could contribute to MI risk independently of lifestyle factors, which was incorporated into the interactive website to help users understand how inherited and modifiable risks interact in cardiovascular disease development.

Xu M, Zhao J, Zhang Y, et al. Apolipoprotein e gene variants and risk of coronary heart disease: a meta-analysis. *Biomed Res Int*. 2016;2016:3912175. doi:10.1155/2016/3912175

Summary:

This study is a meta-analysis examining the association between apolipoprotein E (ApoE) gene polymorphisms and the risk of developing coronary heart disease (CHD). The authors analyzed data from 30 studies including over 11,000 CHD cases and 17,000 controls to determine how different ApoE genotypes influence disease risk. The findings show that individuals carrying the $\epsilon 4$ allele have a significantly increased risk of CHD compared to the more common $\epsilon 3$ allele, while the $\epsilon 2$ allele may be associated with

a reduced or neutral risk depending on the population. The study also highlights variation in genetic risk across ethnic groups, suggesting that the impact of ApoE polymorphisms differs between sub-populations. Overall, the paper reinforces the role of genetic susceptibility in the development of coronary heart disease.

Evaluation:

This source is highly credible due to its meta-analytic design, which combines data from multiple studies to improve statistical power and reliability. It uses systematic search methods and includes a large sample size, strengthening the validity of its conclusions. The article was also published in a peer-reviewed journal, and it is supporting by previously done research. However, limitations include potential publication bias and heterogeneity between included studies, such as differences in population characteristics and study design. Additionally, while it identifies associations in the form of risk, it cannot establish causation.

Relevance:

This source was used to support the role of genetic factors in myocardial infarction risk within the project. It provided strong evidence that genetic variations, particularly ApoE alleles, contribute to coronary heart disease susceptibility. This information was incorporated into the interactive website to help users understand how non-modifiable genetic factors interact with lifestyle choices to influence overall cardiovascular risk.

Kum J. Hemodynamic Disorders, Thromboembolisms & Shock [2]. October 6, 2025.

Summary:

This lecture by Dr. Jina Kum provides an overview of hemodynamic disorders, including thrombosis, embolism, and infarction. It explains how normal hemostasis maintains blood flow after injury, while thrombosis represents a pathological clot formation within vessels. A key concept introduced is Virchow's triad—endothelial injury, abnormal blood flow, and hypercoagulability—which outlines the major causes of thrombus formation. The lecture also describes how thrombi can lead to embolism, where a clot travels and blocks distant vessels, and infarction, defined as tissue death due to ischemia. Factors influencing infarction, such as blood supply and tissue vulnerability to hypoxia, are also highlighted.

Evaluation:

This source is credible as it is based on established medical knowledge and aligns with standard pathology texts such as *Robbins Basic Pathology*. Its strengths include clear organization and explanation of foundational concepts like Virchow's triad and infarction, making it useful for understanding mechanisms behind cardiovascular events. However, as a lecture slide set, it lacks detailed data, references, and peer review, limiting its

depth and academic rigor. Additionally, the content is simplified for teaching purposes, which may omit nuances important for advanced analysis.

Relevance:

This source was used to support the educational content related to development of thrombosis and embolisms that could lead to MI. It provides clear, foundational explanations of how clots form and lead to blocked blood vessels, which can be translated into visuals or animations showing the progression from thrombosis to infarction. Concepts like Virchow's triad were adapted into interactive elements to help users understand how different risk factors contribute to heart attacks.

Tugaleva E. *Atherosclerosis and Its Sequelae*. 2026:1-4.

Summary:

This lecture by Dr. Elena Tugaleva explains the development and consequences of atherosclerosis, a major underlying cause of myocardial infarction (MI). Atherosclerosis is described as a chronic inflammatory disease of medium and large arteries, characterized by the buildup of fibrofatty plaques that narrow blood vessels and reduce blood flow. Detailed in the lecture was the "response to injury" hypothesis, which outlines how endothelial damage leads to plaque formation through inflammation, lipid accumulation, and smooth muscle proliferation. Key modifiable risk factors include smoking, hypertension, high cholesterol, and diabetes, while non-modifiable factors include age and genetics. The lecture further connects atherosclerosis to coronary artery disease, explaining how plaque rupture and subsequent thrombus formation can lead to complete vessel occlusion and MI. It also outlines MI diagnosis, treatment options such as thrombolytics and angioplasty, and potential complications like arrhythmias and heart failure.

Evaluation:

This information taken from the source is credible as it is based on established pathology principles and aligns with widely used pathology texts like *Robbins Basic Pathology*. It provides a clear and detailed explanation of disease mechanisms and risk factors, making it a strong educational resource. However, as a lecture document, it lacks peer review and primary research data (relying on textbook material) and simplifies complex processes for teaching purposes.

Relevance:

This source was used to link lifestyle risk factors to the biological development of heart attacks in the interactive website. The step-by-step explanation of plaque formation and vessel blockage can be adapted into animations or interactive diagrams to help users visualize how MIs occur. Additionally, the identification of major modifiable risk factors supports the creation of interactive tools that allow users to explore how behaviors like

smoking or high cholesterol increase their risk. This helps translate complex medical concepts into engaging, prevention-focused educational content.

Buja LM. Pathobiology of myocardial ischemia and reperfusion injury. Diagnostics (Basel). 2022;12(8):1850.

Summary:

This review examines the pathophysiology of myocardial ischemia and reperfusion injury, focusing on how reduced coronary blood flow leads to progressive cardiomyocyte dysfunction and death. It explains that ischemia first causes reversible injury characterized by ATP depletion, impaired contractility, and metabolic disturbance, but can progress to irreversible myocardial infarction if perfusion is not restored. The paper also outlines key mechanisms of irreversible injury, including loss of ion homeostasis, calcium overload, mitochondrial dysfunction, membrane damage, necrosis, inflammation, and subsequent scar formation. Overall, the article provides a detailed explanation of how myocardial ischemia develops, why it matters clinically, and how timing determines whether injury remains reversible or becomes permanent.

Evaluation:

This source has strong credibility because it is a peer-reviewed review article written by an established cardiovascular pathologist and published in a scientific journal. It is particularly valuable because it synthesizes experimental and clinical knowledge on myocardial ischemia into a clear pathophysiologic framework. However, as a review article, it does not present new primary patient data, and some of its conclusions rely on integration of prior studies rather than direct original experimentation. Even so, it is highly reliable for explaining the biologic sequence from ischemia to infarction.

Relevance:

This article was used to support the sections of the slide explaining what ischemia is, why it matters, the reversible phase of early ischemic injury, and how prolonged ischemia progresses to irreversible myocardial infarction. It was especially useful because it clearly supports the distinction between salvageable myocardium and permanent necrotic injury.

Ogobuiro I, Wehrle CJ, Tuma F. Anatomy, thorax, heart coronary arteries. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2026 Jan–.

Summary:

This source provides an overview of coronary artery anatomy and the myocardial territories supplied by the major coronary vessels. It explains that the left main coronary artery gives rise to the left anterior descending and left circumflex arteries, while the right

coronary artery arises separately from the aorta. The chapter describes the major perfusion territories of each vessel, including LAD supply to the anterior wall of the left ventricle and interventricular septum, LCx supply to the lateral wall of the left ventricle, and RCA supply to inferior or posterior regions depending on coronary dominance. It also discusses variation in posterior circulation, including left-dominant hearts in which the LCx contributes to posterior myocardial perfusion.

Evaluation:

This source has good educational credibility because it is hosted through the NCBI Bookshelf and written as a medical reference chapter. It is useful for anatomical clarification and provides concise, clinically relevant descriptions of coronary territories. However, it is not a primary research article, and because StatPearls is a continuously updated reference, it is more appropriate for general anatomy support than for nuanced or controversial claims. Still, it is reliable for a project section describing artery territories and ischemic location.

Relevance:

This source was used to support the section explaining which coronary arteries supply which regions of the myocardium and where ischemia will occur depending on the obstructed vessel. It was especially relevant for linking LAD occlusion with anterior ischemia, LCx occlusion with lateral ischemia, and RCA or dominant LCx involvement with inferior or posterior ischemia.

Thygesen K, Alpert JS, Jaffe AS, Chaitman BR, Bax JJ, Morrow DA, et al. Fourth universal definition of myocardial infarction (2018). Eur Heart J. 2019;40(3):237-269. Accessed April 9, 2026.

<https://www.ahajournals.org/doi/10.1161/CIR.0000000000000617>

Summary:

This article presents the Fourth Universal Definition of Myocardial Infarction and provides a standardized clinical and pathological framework for defining myocardial infarction. It explains that myocardial infarction occurs when acute myocardial injury is accompanied by evidence of ischemia and clarifies that, pathologically, MI is myocardial cell death caused by prolonged ischemia. The paper also distinguishes myocardial infarction from other forms of myocardial injury and outlines the diagnostic criteria used in clinical practice, including cardiac troponin changes, symptoms of ischemia, ECG findings, imaging evidence, and identification of coronary thrombus. Overall, it provides an authoritative definition of when ischemia progresses to irreversible cardiomyocyte necrosis.

Evaluation:

This source has very strong credibility because it is an international consensus document developed by major cardiovascular organizations and published in a high-impact peer-reviewed journal. Its main strength is that it establishes the accepted clinical

and pathological definition of myocardial infarction used in research and practice. However, because it is a consensus guideline rather than a primary experimental study, it focuses on definitions and diagnostic standards rather than mechanistic depth. Even so, it is one of the strongest possible sources for defining myocardial infarction accurately.

Relevance:

This source was used to support the section explaining that myocardial infarction occurs when ischemia becomes prolonged enough to cause irreversible cardiomyocyte death. It was especially relevant because it provided a precise, authoritative definition of MI and helped distinguish reversible ischemic injury from permanent myocardial necrosis.

Public Health Agency of Canada. Heart disease in Canada [Internet]. Ottawa (ON): Government of Canada; 2022 Jul 28 [cited 2026 Apr 10]. Available from: <https://www.canada.ca/en/public-health/services/publications/diseases-conditions/heart-disease-canada.html>

Summary:

This government publication presents national epidemiologic data on heart disease in Canada, including prevalence, mortality, sex differences, and major modifiable risk factors. It reports that heart disease is the second leading cause of death in Canada and that about 1 in 12 Canadian adults aged 20 years and older live with diagnosed heart disease. It also notes that men are twice as likely to suffer a heart attack as women and emphasizes prevention through smoking cessation, physical activity, healthy diet, weight management, and early detection of conditions such as hypertension, diabetes, and high cholesterol. The publication frames heart disease as a major public health issue while also highlighting preventable contributors to cardiovascular risk.

Evaluation:

This source has strong credibility because it is published by the Public Health Agency of Canada and based on national surveillance data. Its main strength is that it provides clear, accessible, population-level statistics directly relevant to Canadian public health. However, because it is a government infographic-style summary rather than a detailed research paper, it offers limited methodological depth and less pathophysiologic detail than a journal source. Despite this, it is highly reliable for broad epidemiologic context and national statistics.

Relevance:

This source was used to support the broader project context on the significance of heart disease and myocardial infarction in Canada, especially in the prevention and epidemiology sections. It was relevant because it provided Canadian statistics and reinforced the importance of modifiable risk-factor control in reducing cardiovascular disease burden.

Rao SV, O'Donoghue ML, Ruel M, et al. 2025 ACC/AHA/ACEP/NAEMSP/SCAI guideline for the management of patients with acute coronary syndromes: a report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines. J Am Coll Cardiol. 2025;85(22):2135-2237. Accessed April 9, 2026.
<https://www.ahajournals.org/doi/10.1161/CIR.0000000000001309>

Summary:

This clinical guideline outlines evidence-based recommendations for the diagnosis and management of acute coronary syndromes, including myocardial infarction. It discusses key aspects of acute treatment such as early recognition, reperfusion therapy, primary percutaneous coronary intervention, fibrinolysis when PCI is unavailable, antiplatelet therapy, anticoagulation, and additional early medical management. The guideline emphasizes the urgency of restoring coronary blood flow to salvage ischemic myocardium and reduce complications such as arrhythmias, heart failure, and death. It also addresses post-acute care and risk reduction following the acute event.

Evaluation:

This source has very strong credibility because it is a major clinical practice guideline developed by leading cardiovascular organizations and based on current evidence review. Its strengths include clinical authority, up-to-date recommendations, and direct relevance to myocardial infarction management. However, because it is a guideline rather than a primary experimental study, it synthesizes evidence rather than generating new data. Even so, it is one of the strongest possible sources for information on acute MI treatment and standard of care.

Relevance:

This source was used to support the acute treatment section of the project, including immediate reperfusion, antiplatelet therapy, anticoagulation, and early management of myocardial infarction. It was particularly useful because it clearly explained why rapid restoration of coronary blood flow is central to limiting myocardial damage and improving patient outcomes.