

PULSE EXPERIENTIAL TEAM ASSIGNMENT

Team #: 32
1. Title of your PULSE experiential assignment. <i>Provide a creative and informative title.</i>
Thrombosis (Blood Clots: When Protection Becomes a Problem)
2. Please summarize your PULSE experiential assignment (max 300 words). <i>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.</i> <i>[Team 23 is an example of an informative lay summary.]</i>
Mahnoor: We chose the topic thrombosis. Thrombosis is the formation of blood clot inside a blood vessel when it is not needed. Normal blood clotting is usually to help stop bleeding after an injury but thrombosis occurs when this process is unregulated. Thrombosis can block blood flow causing serious problems such as strokes, heart attack, etc. For this assignment, our group created a presentation and an animation at the end of it to explain thrombosis in a clear and structured way. We explored the roles of blood flow, vessel damage, and changes in blood that can increase risk of clotting. We chose this topic because thrombosis is a common and important medical condition that many people are affected by. We broke down some different concepts of thrombosis using different visuals, animation and also presentation itself. Our goal for this assignment was that those who have no to little background in biology or science will be able to understand this topic.
3. Provide up to 6 keywords relevant to your PULSE experiential assignment.
- Blood - clot - embolism - thrombosis - stroke - aneurysm
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>
The course topic that most aligns with our assignment is the topic on Hemodynamic Disorders, Thromboembolism & Shock.
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>
Define and identify the different types of thrombosis, as well as explain its underlying mechanism. Understand how clots are formed and can cause issues (thrombus), and understand the implication and importance of Virchow's Triad. Understand how thrombosis is caused, diagnosed, and ways to treat/prevent it.
6. Why did the team select the chosen topic and the medium? How will the topic and medium of choice help learners?
The team selected thrombosis as the topic due to its broad clinical importance and its relevance across multiple areas of health and disease. It provides a strong foundation for understanding how disruptions in normal blood flow can lead to serious outcomes, making it a valuable concept for learners to grasp. A visual, comprehensive slide deck was chosen as the medium to present the information in a clear and organized manner. This format helps simplify complex ideas and allows key points to be communicated efficiently. By presenting the material visually, the medium supports better retention, helps learners quickly identify important concepts, and provides an accessible way to review the topic.
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>
AI was used in a limited capacity. The AI was not used to generate the main content of the assignment or to replace the research process. Instead, it was used occasionally to clarify conceptual questions that arose while reading primary research papers. For example, the tool helped explain certain mechanisms related to thrombosis and clinical manifestations in simpler terms, which made it easier for the team to understand scientific literature before summarizing it in our own words. We used AI In the beginning when searching for Ideas on what topics to choose or what can we expect, we used it to help us summarize some papers just to give us an idea of what we can expect from them before committing to reading them. We also experimented with ideas of video scripts to give us any ideas about our project.
8. How is your PULSE experiential assignment innovative and/or novel? Erin
<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>
Interactive elements? Use case based studies/scenarios to explain how thrombosis progress/manifest?

- Drawn up pictures + personal story telling
- Simplify complex components (ex virchow's triad) creatively^
- Is not just knowledge based, but can be applied to life in a way that will help students be more wary of thrombosis in their day to day life

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.

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].

- Parmida:
 Prompt:
 "What is the relationship between deep vein thrombosis and pulmonary embolism, and how does a thrombus travel from the legs to the lungs?"
 Output:
 "Deep vein thrombosis (DVT) occurs when a blood clot forms in the deep veins, most commonly in the legs. In some cases, part of the clot can detach and travel through the bloodstream. The detached clot, called an embolus, moves through the venous circulation to the heart and then into the pulmonary arteries in the lungs. When it becomes lodged in these arteries, it causes a pulmonary embolism (PE), which can block blood flow in the lungs and impair oxygen exchange."
- Mahnoor:
 - o Prompt:
 - "What's the difference between arterial thrombi vs venous thrombi?"
 - o Output:
 - "Arterial Thrombi ("white clots")
 - **Where they form:** In **arteries** (high-pressure, fast-flow system), Usually due to **endothelial injury** (e.g., atherosclerosis), they are made of **Platelet-rich**, Less fibrin and fewer red blood cells
 - **Common triggers:** Ruptured atherosclerotic plaque, Turbulent blood flow
 - **Clinical consequences:**
 - Block blood *going to tissues* → causes **ischemia/infarction**
 - Examples: Heart → myocardial infarction, Brain → ischemic stroke
 - Venous Thrombi ("red clots")
 - **Where they form:** In **veins** (low-pressure, slow-flow system)
 - **Main cause: Stasis of blood flow** (think immobility), made of **Fibrin + lots of red blood cells**
 - Fewer platelets → Hence *red thrombi*
 - **Common triggers (Virchow's triad):** Stasis (bed rest, long flights), Hypercoagulability (e.g., cancer, pregnancy), Endothelial injury (less dominant than in arteries), **Clinical consequences:** Can break off → **embolize to lungs**

▪ Example: Deep vein thrombosis (DVT) → pulmonary embolism” - Erin: ○ Prompt: how do compression socks help with blood flow? ○ Output: Compression socks improve blood flow by applying graduated pressure to the legs—strongest at the ankle and gradually decreasing upward. Here’s how that helps circulation: - Pushes blood back to the heart: The pressure helps move blood upward against gravity, especially from the lower legs where pooling is more likely. - Prevents blood pooling: By reducing venous stasis (slow or stagnant blood flow), they lower the chance of clot formation. - Supports vein valves: Veins have one-way valves that can weaken or become less efficient; compression helps them close properly and maintain forward flow. - Reduces swelling: Less fluid buildup in the tissues makes it easier for blood to circulate efficiently. ○ Overall, compression socks improve venous return, meaning blood flows more effectively from the legs back to the heart, which reduces the risk of conditions like deep vein thrombosis (DVT).
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> - Copy of notes will be provided at the end. - https://docs.google.com/document/d/1c2X18Xts6_f8BYXK55peTEc1d340lqW0CxUwqs5tK5A/edit?tab=t.g2lzoqmh5jhp
11. How did the team ensure the veracity of the information presented in the PULSE assignment? (add any other sources that u guys used if u did) <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> Our team ensured the accuracy and reliability of the information presented in this assignment by using credible, evidence based sources. We primary used google scholar to find peer-reviewed papers related to thrombosis and its mechanisms. In addition, we accessed course materials and academic resources available through our university library to support and verify

our content. To further support our understanding, we also used educational videos from YouTube that explained concepts in a simpler manner, but we did not rely on these videos as our main source instead we just used them for clarification. We also used bio render to help us find clear images of concepts that we could use in our project.

When using AI - generated information, we carefully reviewed and cross checked all content with trusted academic sources. Throughout the project we kept track of our sources and the information we used in our presentation. We will provide a list of references at the end of this paper.

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?

Reflection:

- Our team found the PULSE assignment to be a valuable opportunity to reflect on both the scientific content and how we communicated it to others. When creating the slides, we tried to be mindful of avoiding overly technical language so the material would be understandable to a broad audience. Some biases we noticed early on was the tendency to assume that everyone already had background knowledge in cardiovascular physiology or already had background knowledge about thrombosis or even just science. To address this, we focused on explaining concepts more clearly and structuring the content so that each condition built logically from the core concept of thrombosis. We made sure to check on each other if any of us needed help. Additionally, we made sure to ask each of our teammates for feedback on our parts of the assignments, so we were all aligned. This helped make the material more accessible and inclusive for learners with different levels of familiarity with the topic. This assignment helped us improve our teamwork, how to teach these concepts to others. One thing that we will do differently next time is that it would be best that we start our project earlier and spend more time planning. Additionally, a challenge we faced during this project was making sure the content was both accurate and easy to understand, and we also had some time management issues due to our overlapping schedules. Overall, this was a helpful learning experience, working with teammates and getting to know them while also getting more experience in research.

S13. 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...

P.M.: Conducted background research to support the scientific content of the presentation slides worked on synthesizing key concepts into clear, concise points appropriate for an educational slide format. Contributed to identifying the major clinical manifestations of thrombosis to include and helped ensure the information was organized in a logical sequence from the core concept to specific conditions. Designed high-yield scientific visuals using BioRender and sourced relevant images from scientific literature to effectively illustrate the mechanisms and clinical outcomes discussed in the slides. Also contributed to the visual organization and formatting of the presentation using Canva to improve visual consistency and overall slide readability. Additionally focused on refining slide content and layout so that the information was communicated clearly and was suitable for peer learning.

O.E.: Conducted research to develop the introduction and the core content related to thrombosis, including causes, formation, and symptoms. I also worked on making the concepts into clear and concise explanations. I contributed to organizing the content in a logical sequence, covering types of thrombosis and risk factors to support a structured learning flow. Also I focused on refining the clarity and detail of explanations to improve overall comprehension.

M.O: Conducted research on the pathophysiology of thrombosis using academic sources such as google scholar, contributed to content development for the pathophysiology section, coordinated team meetings, and booked rooms for group work sessions. Also assisted in editing and organizing the assignment template. Used biorender to find appropriate images for our presentation. Made sure that throughout our presentation everything matches and its aligned. Made a video presentation just going over everything.

E.Z: Contributed research on the diagnosis methods, treatments, and prevention aspect, as well as completed the slides for those aspects. Led weekly meetings. Contributed to questions on the template.

14. Other comments (Optional)

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

Thanks to the Professors, course coordinators, and TA's who helped us learn many new things.

15. References

Please provide a numbered reference list with Nature citation style. [Please feel free to use citation management software (i.e., free citation manager, e.g., Zotero and Mendeley)]

Section 1:

1. CDC. About Venous Thromboembolism (Blood Clots) [Internet]. Venous Thromboembolism (Blood Clots). 2024. Available from: <https://www.cdc.gov/blood-clots/about/index.html>
2. Mackman N. Triggers, Targets and Treatments for Thrombosis. *Nature*. 2008 Feb;451(7181):914–8.
3. National Heart, Lung and Blood Institute. Venous Thromboembolism - What Is Venous Thromboembolism? | NHLBI, NIH [Internet]. www.nhlbi.nih.gov. 2022. Available from: <https://www.nhlbi.nih.gov/health/venous-thromboembolism>
4. World Health Organization. Cardiovascular diseases (CVDs) [Internet]. World Health Organization . 2025. Available from: [https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-\(cvds\)](https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds))

Section 2:

1. Lijfering, W. *et al.* (2011) 'Relationship between venous and arterial thrombosis: A review of the literature from a causal perspective', *Seminars in Thrombosis and Hemostasis*, 37(08), pp. 885–896. doi:10.1055/s-0031-1297367.
2. Metropolis Healthcare Limited (2023). *Thrombus and thrombosis - types, symptoms, and treatment insights*, *Metropolis India Lab*. Available at: <https://www.metropolisindia.com/blog/preventive-healthcare/exploring-thrombus-and-thrombosis-types-symptoms-and-treatment> .
3. Navarrete, S. *et al.* (2022). *Pathophysiology of deep vein thrombosis - clinical and experimental medicine*, *SpringerLink*. Available at: <https://link.springer.com/article/10.1007/s10238-022-00829-w>
4. Poredos, P. and Jezovnik, M.K. (2017) 'Endothelial dysfunction and venous thrombosis', *Angiology*, 69(7), pp. 564–567. doi:10.1177/0003319717732238.
5. Strukova, S. (2006). *Blood coagulation-dependent inflammation. coagulation-dependent inflammation and inflammation-dependent thrombosis*, *IMR Press*. Available at: <https://www.imrpress.com/journal/FBL/11/1/10.2741/1780>

Section 3:

1. Baig, M. U., et al. (2023). Thrombolytic therapy. In *StatPearls*. StatPearls Publishing.
2. Bagot, C. N., & Arya, R. (2008). Virchow's triad: A question of attribution. *British Journal of Haematology*, 143(2), 180–190.
<https://pubmed.ncbi.nlm.nih.gov/18783400/>
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4. Keller, K., et al. (2024). Outcome of pulmonary embolism with and without ischemic stroke. *Journal of Clinical Medicine*.
5. Lui, F., et al. (2025). Ischemic stroke. In *StatPearls*. StatPearls Publishing.
<https://www.ncbi.nlm.nih.gov/books/NBK499997/>
6. McLendon, K., et al. (2023). Deep venous thrombosis risk factors. In *StatPearls*. StatPearls Publishing. <https://www.ncbi.nlm.nih.gov/books/NBK470215/>
7. Schulman, S. (2024). The basic principles of pathophysiology of venous thrombosis. *International Journal of Molecular Sciences*, 25(21), 11447.
8. Stone, J., et al. (2017). Deep vein thrombosis: Pathogenesis, diagnosis, and medical management. *Cardiovascular Diagnosis and Therapy*, 7(S3), S276–S284.
9. Thygesen, K., et al. (2018). Fourth universal definition of myocardial infarction. *Circulation*, 138(20), e618–e651. <https://pubmed.ncbi.nlm.nih.gov/30571511/>
10. Vyas, V., et al. (2024). Acute pulmonary embolism. In *StatPearls*. StatPearls Publishing. <https://www.ncbi.nlm.nih.gov/books/NBK560551/>
11. Vyas, V., et al. (2024). Acute pulmonary embolism. In *StatPearls*. StatPearls Publishing. <https://www.ncbi.nlm.nih.gov/books/NBK560551/>
12. Wolberg, A. S. (2012). Procoagulant activity in hemostasis and thrombosis. *Arteriosclerosis, Thrombosis, and Vascular Biology*, 32(12), 2879–2884.
<https://pubmed.ncbi.nlm.nih.gov/22104070/>

Section 4:

Slide 26

1. Thrombosis Canada. Deep vein thrombosis (DVT): diagnosis. Thrombosis Canada; (n.d).
https://thrombosiscanada.ca/clinical_guides/pdfs/DEEPVEINTHROMBOSISDIAGNOSIS_54.pdf
2. Paeng D, Lee CA, Imtiaz C. Principles of Doppler ultrasound and emerging blood flow imaging. Radiol Journal; 2025. <https://pmc.ncbi.nlm.nih.gov/articles/PMC12645071/>

Slide 27

3. Daoud RM, et al. Is CT pulmonary angiography overutilized in the evaluation of patients with suspected pulmonary embolism: A retrospective study. *NIH*; 2025. <https://cjrt.ca/article/127660-is-ct-pulmonary-angiography-overutilized-in-the-evaluation-of-patients-with-suspected-pulmonary-embolism-a-retrospective-study>
4. Triggiani S, et al. Comprehensive review of pulmonary embolism imaging: past, present and future innovations in computed tomography (CT) and other diagnostic techniques. *NIH*; 2025. <https://pmc.ncbi.nlm.nih.gov/articles/PMC12479586/>

Slide 28

5. Wells PS, Anderson DR, Rodger M, Forgie M, Kearon C, Dreyer J, et al. Evaluation of D-dimer in the diagnosis of suspected deep-vein thrombosis. *N Engl J Med*; 2023. <https://pmc.ncbi.nlm.nih.gov/articles/PMC1126050/>
6. Selby R, Meijer P, Favaloro EJ. D-dimer diagnostics: can I use any D-dimer assay? Bridging the knowledge-to-action gap. *NIH*; 2024. <https://pmc.ncbi.nlm.nih.gov/articles/PMC12479586/>

Slide 30

- 7.
8. Righini M, Perrier A, De Moerloose P, Bounameaux H. Anticoagulants: A Review of the Pharmacology, Dosing, and Complications. *NIH*; 2008. <https://pmc.ncbi.nlm.nih.gov/articles/PMC3654192/>

Slide 31

9. Munoz A, et al. A review of mechanical thrombectomy techniques for acute ischemic stroke. *NIH*; 2023. <https://pmc.ncbi.nlm.nih.gov/articles/PMC10399505/>

10. Clarke MJ, et al. Compression stockings for preventing deep vein thrombosis in airline passengers. *NIH* ; 2019. <https://pmc.ncbi.nlm.nih.gov/articles/PMC6457834/>
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12. Shatzel JJ, et al. Thrombectomy. StatPearls Publishing; 2023. <https://www.ncbi.nlm.nih.gov/books/NBK562154/>

Slide 33

13. National Blood Clot Alliance. In-flight fitness. Stop the clot; 2026. <https://www.stopthecлот.org/in-flight-fitness/>
14. Watso JC, Farquhar WB. Hydration Status and Cardiovascular Function. *Lancet*; 2016. <https://pmc.ncbi.nlm.nih.gov/articles/PMC6723555/>
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16. Barua RS, Ambrose JA. Mechanisms of Coronary Thrombosis in Cigarette Smoke Exposure. *Ahajournals*; 2013. <https://www.ahajournals.org/doi/full/10.1161/ATVBAHA.112.300154>
17. Mclendon K, et al. Deep Venous Thrombosis Risk Factors. StatPearls; 2023. <https://www.ncbi.nlm.nih.gov/books/NBK470215/>
18. Bonnar J. Coagulation effects of oral contraception. *Br Med J (Clin Res Ed)*; 1986. <https://pubmed.ncbi.nlm.nih.gov/2960241/>
19. OrthoInfo. Preventing Blood Clots After Orthopaedic Surgery. OrthoInfo; n.d. <https://orthoinfo.aaos.org/en/recovery/preventing-blood-clots-after-orthopaedic-surgery-video/>

Images:

(a) Medex. Arterial Doppler Testing | Best Cardiologists in Forest Hills, Queens, NY. Medex Diagnostic and Treatment Center - Queens Medical Center - Medical Clinic in Forest Hills, NY. 2025. <https://www.medexdtc.com/arterial-doppler/>

(b) Bogot NR, Fingerle A, Shaham D, Nissenbaum I, Sosna J. Image Quality of Low-Energy Pulmonary CT Angiography: Comparison With Standard CT. American Journal of Roentgenology. 2011 Aug;197(2):W273–8.

<https://ajronline.org/doi/10.2214/AJR.10.5318>

(c) Lucid Medical. CT Pulmonary Angio Scan in Hyderabad. Lucid Medical Diagnostics.

2024 <https://luciddiagnostics.com/book/scans/ct-pulmonary-angio-scan-in-hyderabad/>

(d) Bogot NR, Fingerle A, Shaham D, Nissenbaum I, Sosna J. Image Quality of Low-Energy Pulmonary CT Angiography: Comparison With Standard CT. American Journal of Roentgenology. 2011 Aug;197(2):W273–8.

<https://ajronline.org/doi/10.2214/AJR.10.5318>

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<https://www.mindray.com/na/news-and-events/blog/doppler-ultrasound-many-shades-of-color/>

<https://oncquestlabs.com/blog/what-is-a-d-dimer-test/>

(f) Amin M. Taking Warfarin? Here's What You Need to Know
Marley Drug. 2025.

https://www.marleydrug.com/blog/warfarin?srsId=AfmBOooZuDfxaSYITawdtsAGNGu_MyiDCXxxNPvFyHuu8UQ9Xmjsgs18

(g) CIRSE. Thrombectomy. CIRSE; n.d. <https://www.cirse.org/patients/general-information/ir-procedures/thrombectomy/>

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16. Annotated Bibliography - all of us will complete it

An annotated bibliography is a list of sources (books, articles, websites, etc.) that you used for your project. Each entry has two parts:

1. *Citation* – written in the required citation style (same formatting and order as the Nature citation style in your list of references).
2. *Annotation* – a short paragraph that summarizes, evaluates, and explains how the source is useful for your assignment.

Write the annotation (about 150–200 words each)

- *Summary:* Briefly describe the main argument or purpose of the source.
- *Evaluation:* Comment on the credibility, strengths, or weaknesses of the source.
- *Relevance:* Explain how you will use this source in your assignment.

Section 1:

1.Citation:

(CDC) Centers for Disease Control and Prevention. (n.d.). *About venous thromboembolism (blood clots)*. Centers for Disease Control and Prevention. <https://www.cdc.gov/blood-clots/about/index.html>

Annotation:

This source explains what venous thromboembolism is and breaks it down. It talks about the main causes, symptoms, and risk factors, like sitting for long periods, surgery, or certain health conditions. The goal of the site is to help people understand how serious blood clots can be and how to recognize them early. I think this source is very reliable because it comes from the CDC, which is a trusted health organization. One of its strengths is that it explains things in a simple way that's easy to understand. However, it doesn't go into a lot of scientific detail. I will use this source to explain the basics of VTE, including what it is, its symptoms, and risk factors.

2.Citation:

Mackman, N. (2008, February 20). *Triggers, targets and treatments for thrombosis*. Nature News. <https://www.nature.com/articles/nature06797>

Annotation:

This article explains how blood clots form in the body and what triggers them. It goes into the science behind thrombosis and also talks about possible treatments and ways to prevent clots. This source is reliable because it comes from *Nature*, which is a well known science journal. It's strong because it explains everything in detail, but it can be difficult to read if you don't have a strong science background. I will use this source to explain the scientific side of VTE in my introduction.

3.Citation:

(NHLBI, n.d.) U.S. Department of Health and Human Services. (n.d.). *What is venous thromboembolism?*. National Heart Lung and Blood Institute. <https://www.nhlbi.nih.gov/health/venous-thromboembolism>

Annotation:

This source explains VTE in detail, including what causes it, how it is diagnosed, and how it is treated. It also talks about prevention and why it's important to get medical help quickly. The information is meant to help people understand the condition clearly. This is a trustworthy source

because it comes from a government health organization. It's easy to follow and still includes useful medical information. One strength is that it covers many aspects of VTE in one place. It will help me talk about prevention and management in the introduction.

4.Citation:

(WHO, 2023) World Health Organization. (n.d.). *Cardiovascular diseases (cvds)*. World Health Organization. [https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-\(cvds\)](https://www.who.int/news-room/fact-sheets/detail/cardiovascular-diseases-(cvds))

Annotation:

This source talks about cardiovascular diseases in general and how they affect people around the world. It explains the main causes, risk factors, and ways to prevent these diseases. Even though it doesn't focus only on VTE, it helps show how blood clots are part of a bigger health issue. The *WHO* is a very reliable source because it is a global health organization. It provides strong statistics and a worldwide perspective. However, it doesn't go into detail about VTE specifically. I will use it to give general information to support my introduction overall.

Section 2:

1. Lijfering, W. *et al.* (2011) 'Relationship between venous and arterial thrombosis: A review of the literature from a causal perspective', *Seminars in Thrombosis and Hemostasis*, 37(08), pp. 885–896. doi:10.1055/s-0031-1297367.
 2. This review by Lijfering et al. talks about the medical view that venous and arterial thrombosis are entirely separate conditions. While they are usually treated as different diseases, the authors analyze recent research suggesting a shared link between them. By using diagrams, they explore how factors like atherosclerosis, and cardiovascular risk factors (such as obesity and hypertension) might trigger both types of blood clots, suggesting that the line between these two conditions is blurrier than previously thought. This is credible peer-reviewed. Its main strength is its cautious approach; rather than jumping to conclusions, the authors carefully evaluate whether these links are truly causal or just the result of "bias and chance." I use this source in my assignment to discuss the connection between venous vs arterial thrombosis.
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1. Metropolis Healthcare Limited (2023) *Thrombus and thrombosis - types, symptoms, and treatment insights*, *Metropolis India Lab*. Available at: <https://www.metropolisindia.com/blog/preventive-healthcare/exploring-thrombus-and-thrombosis-types-symptoms-and-treatment> .
 2. This source gives a basic overview of thrombosis, including what it is, different types, symptoms, and treatment options. It explains the topic in a simple way that is easy to understand. The source is from a healthcare organization, so it is somewhat reliable for general information, but it is not a peer-reviewed academic article. This means it is useful for basic understanding but not for detailed

scientific explanations. This source was helpful for getting a clear introduction to thrombosis and understanding key terms. It supported general knowledge, which we then built on using more credible academic sources. I used the info from this to build myself some extra foundation.

1. Navarrete, S. et al. (2022) *Pathophysiology of deep vein thrombosis - clinical and experimental medicine*, SpringerLink. Available at: <https://link.springer.com/article/10.1007/s10238-022-00829-w>
 2. This article explains the pathophysiology of deep vein thrombosis, like how factors like blood flow, the endothelium, platelets, and inflammation interact to form a clot. It shows how changes in blood flow can activate the endothelium and promote platelet and white blood cell adhesion, leading to clot formation. This source is very useful for our assignment because it supports the physiological mechanisms of thrombosis, especially the role of inflammation, endothelial activation, and clot formation. It helped strengthen the scientific accuracy of our pathophysiology section.
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1. Poredos, P. and Jezovnik, M.K. (2017) 'Endothelial dysfunction and venous thrombosis', *Angiology*, 69(7), pp. 564–567. doi:10.1177/0003319717732238.
 2. This paper focuses on how endothelial dysfunction contributes to venous thrombosis. It explains that when the endothelium loses its normal protective functions, it becomes more pro-coagulant, promoting platelet activation and clot formation. This is a peer-reviewed journal article, making it a reliable and credible source. This source is useful for our assignment because it supports the role of endothelial injury in Virchow's triad. It helped explain how damage to the vessel lining leads to thrombosis at a physiological level. I used ideas and information from this paper in the pathophysiology section.
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1. Strukova, S. (2006) *Blood coagulation-dependent inflammation. coagulation-dependent inflammation and inflammation-dependent thrombosis*, IMR Press. Available at: <https://www.imrpress.com/journal/FBL/11/1/10.2741/1780>
 2. This paper explains the connection between inflammation and coagulation, showing how each process can activate the other. It describes how clotting factors like thrombin can promote inflammation, and how inflammation can increase the risk of thrombosis. This is a peer-reviewed scientific article, making it a credible source. It provides detailed explanations of the mechanisms involved. This source is useful for our assignment because it supports the

inflammation-coagulation link. It helped explain how thrombosis is not only a clotting issue but also involves inflammatory processes. I used information learned from this paper in my pathophysiology section of this assignment.

Section 3:

1. Citation: Wolberg AS. Procoagulant activity in hemostasis and thrombosis. *Arterioscler Thromb Vasc Biol.* 2012;32(12):2879–2884.

Annotation: Wolberg (2012) explains the role of procoagulant activity in both normal hemostasis and pathological thrombosis, emphasizing how imbalances in clotting mechanisms lead to disease. The article provides a strong biological foundation for understanding clot formation at the molecular level. This source is useful for explaining how normal coagulation processes can become dysregulated and contribute to thrombosis in the assignment.

2. Citation: Schulman S. The basic principles of pathophysiology of venous thrombosis. *Int J Mol Sci.* 2024;25(21):11447.

Annotation: Schulman (2024) outlines the key mechanisms of venous thrombosis, including clot formation, propagation, and resolution. It offers a current and comprehensive overview that links biological processes to clinical outcomes. This source is useful for strengthening explanations of disease progression and underlying mechanisms.

3. Citation: Bagot CN, Arya R. Virchow's triad: A question of attribution. *Br J Haematol.* 2008;143(2):180–190.

Annotation: Bagot and Arya (2008) examine the historical basis and interpretation of Virchow's triad, clarifying the roles of stasis, endothelial injury, and hypercoagulability. The paper evaluates how these factors contribute to thrombosis. This source is useful as a conceptual framework for organizing and explaining risk factors.

4. Citation: Balch MH, et al. The systemic pathophysiological response to acute ischemic stroke. *J Neuroinflammation.* 2020;17:1–16.

Annotation: Balch et al. (2020) explore the systemic inflammatory and physiological responses that occur following an acute ischemic stroke. The study highlights how stroke affects multiple organ systems beyond the brain. This source is useful for demonstrating the broader consequences of thrombotic events.

5. Citation: Lui F, et al. Ischemic stroke. *StatPearls.* 2025.

Annotation: Lui et al. (2025) provide a comprehensive overview of ischemic stroke, including its causes, mechanisms, and clinical presentation. The article synthesizes current medical knowledge in a clear and accessible way. This source is useful for explaining how thrombosis leads to stroke and supporting clinical context.

6. Citation: Vyas V, et al. Acute pulmonary embolism. *StatPearls.* 2024.

Annotation: Vyas et al. (2024) describe the pathophysiology, diagnosis, and management of acute pulmonary embolism. The article explains how thrombi formed in deep veins can travel and

obstruct pulmonary arteries. This source is useful for linking venous thrombosis to serious complications.

7. Citation: Keller K, et al. Outcome of pulmonary embolism with and without ischemic stroke. *J Clin Med*. 2024.

Annotation: Keller et al. (2024) evaluate outcomes in patients with pulmonary embolism with and without ischemic stroke. The study highlights how coexisting thrombotic conditions affect prognosis. This source is useful for providing clinical evidence to support discussions of complications and outcomes.

8. Citation: Thygesen K, et al. Fourth universal definition of myocardial infarction. *Circulation*. 2018;138(20):e618–e651.

Annotation: Thygesen et al. (2018) define myocardial infarction and establish standardized diagnostic criteria based on pathophysiology and biomarkers. The paper explains how arterial thrombosis leads to cardiac injury. This source is useful for ensuring accurate terminology and explaining heart attack mechanisms.

9. Citation: Baig MU, et al. Thrombolytic therapy. *StatPearls*. 2023.

Annotation: Baig et al. (2023) review thrombolytic therapy, including its mechanisms, indications, and risks. The article explains how clots can be pharmacologically dissolved in acute settings. This source is useful for linking pathophysiology to treatment strategies.

10. Citation: Stone J, et al. Deep vein thrombosis: Pathogenesis, diagnosis, and medical management. *Cardiovasc Diagn Ther*. 2017;7(S3):S276–S284.

Annotation: Stone et al. (2017) discuss the pathogenesis, diagnosis, and management of deep vein thrombosis. The article provides a detailed explanation of how clots form in deep veins and their clinical implications. This source is useful for establishing DVT as a key example of venous thrombosis.

11. Citation: McLendon K, et al. Deep venous thrombosis risk factors. *StatPearls*. 2023.

Annotation: McLendon et al. (2023) outline the major risk factors associated with deep venous thrombosis, including genetic and environmental contributors. The article emphasizes prevention and risk identification. This source is useful for supporting discussions of risk assessment and prevention.

12. Citation: Vyas V, et al. Acute pulmonary embolism. *StatPearls*. 2024.

Annotation: Vyas et al. (2024) is repeated in the source list and provides the same overview of pulmonary embolism. It reinforces the connection between DVT and pulmonary embolism. This source remains useful for emphasizing disease progression and complications.

Image sources:

1. gesLiu C et al., 2026
<https://pmc.ncbi.nlm.nih.gov/articles/PMC12827130/>

2. pulmonary embolism:

Chen D et al., 2025

<https://pmc.ncbi.nlm.nih.gov/articles/PMC12295995/>

3. Arterial thrombosis:

van Lent A et al., 2025

<https://pmc.ncbi.nlm.nih.gov/articles/PMC11960909/>