PULSE EXPERIENTIAL TEAM ASSIGNMENT

1. Title of your PULSE experiential assignment. *Provide a creative and informative title.*
"B Aware": Pathogenesis of Hepatitis A, B, C, and D
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.]*
This project focuses on explaining how different types of hepatitis (A, B, C, and D) affect the liver and spread between individuals. Hepatitis refers to a group of viral infections that cause inflammation of the liver and can sometimes lead to serious complications such as long-term liver damage or cancer. This topic was selected due to its clinical importance and the difficulty many students face when learning the material. The project is presented as an interactive presentation-style resource that combines visuals, simplified explanations, and short learning activities. To enhance engagement, the resource includes case studies and a quiz-style activity. These features allow learners to apply knowledge to realistic situations, such as identifying likely sources of infection or interpreting basic test results. A global prevalence map is also included to highlight where different types of hepatitis are more common and to provide context for why these patterns exist. This format was chosen to address challenges associated with traditional learning methods, which can be dense and difficult to follow. A more visual and interactive approach supports understanding and retention of key concepts. Overall, this project aims to make complex medical information more accessible, engaging, and relevant for a broader audience, particularly students with limited prior knowledge of pathology.
3. Provide up to 6 keywords relevant to your PULSE experiential assignment. *3-6 keywords are ideal.*
Hepatitis, Serology, Transmission, Antibodies, Vaccine
4. Identify the course topic with which your PULSE assignment most aligns. *Refer to the various topics outlined under 'Course content and Schedule' in the syllabus (e.g. Inflammation).*
Hepatobiliary Pathology
5. What are the learning outcomes? *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*

Contrast the common types of viral hepatitis in terms of their transmission and likely clinical outcome
State the inheritance pattern and pathologic substrate for the 3 major hepatic metabolic and storage diseases discussed.

6. Why did the team select the chosen topic and the medium? How will the topic and medium of choice help learners?

A presentation was chosen as the medium for this project. This medium is ideal because it allows complex relationships to be visualized clearly using diagrams and visuals throughout. The topic of viral hepatitis was selected because it involves multiple types of viruses with overlapping but distinct features, making it challenging for learners to differentiate between them. Concepts such as transmission routes, serologic markers, and disease progression require clear organization and comparison to fully understand. A presentation format helps break down these complexities by structuring information into manageable sections and emphasizing key differences through visual aids, timelines, and case-based examples. This approach supports learner understanding by reinforcing pattern recognition and making abstract concepts, such as serologic timelines and co-infection mechanisms, easier to interpret and retain.

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)?

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?)

ChatGPT was used as an AI tool in this project. ChatGPT helped develop the Hepatitis B serology puzzle, the case studies, the global prevalence map content, and to summarize course and student notes. ChatGPT was chosen because it was useful for drafting interactive educational content, organizing complex pathology concepts clearly, and creating learner-friendly materials for a pre-medical undergraduate audience. It was especially helpful for generating quiz-style serology content and case-based learning scenarios. ChatGPT is not a novel technology, but the use of ChatGPT in this assignment was somewhat novel because it supported the design of interactive teaching elements rather than only summarizing information. Canva was used for slide design and formatting, but ChatGPT was the best fit for content generation and refinement. Alternative AI tools could have been used, but ChatGPT was selected because it allowed quick, structured drafting. All AI-generated content was reviewed, edited, and fact-checked against course material and credible references before being included in the final project.

8. How is your PULSE experiential assignment innovative and/or novel?

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?

This PULSE assignment is innovative because it moves beyond traditional study methods and focuses on making learning more interactive, visual, and applied. Instead of presenting information in a static format like textbooks or lecture slides, the project is designed to actively engage learners in understanding the pathogenesis of hepatitis A, B, C, and D. A key novel component is the use of case-based learning. Realistic scenarios encourage the application of knowledge to real-world situations. This approach helps develop early clinical reasoning rather than simple memorization.

The project also includes interactive elements, such as a Hepatitis B serology puzzle, which transforms a typically complex and abstract topic into an engaging self-assessment activity. This differs from many existing resources that rely heavily on dense tables without opportunities for active learning. Another innovative aspect is the emphasis on visual learning. Infographic-style slides are used to simplify concepts such as transmission pathways and serological timelines, making the material more accessible and easier to retain. In addition, a global health perspective is incorporated by linking diseases to specific geographic regions, helping learners understand the broader context and real-world impact of hepatitis infections.

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].

Please see the attached document "AI Prompts"

10. If you did not use an AI tool, please attach a copy of the team's notes to the assignment.

The response here is to allow others to observe the 'behind the scenes' team's work.

N/A

11. How did the team ensure the veracity of the information presented in the PULSE assignment?

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.

Information presented in the PULSE assignment was verified using course sources, PubMed, and WHO materials before inclusion in the final project. ChatGPT was used to help draft the Hepatitis B serology puzzle, case studies, and global prevalence map content, and all AI-generated information was fact-checked against legitimate scientific and course-based sources. PubMed was used to find reliable epidemiology, transmission, and global prevalence information. Any AI-generated content that was unclear was corrected using evidence-based sources before being included.

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?

Completing the PULSE assignment independently was both challenging and valuable. Because the entire project was completed by one person rather than a team, the process required a significant amount of planning, research, content development, slide design, fact-checking, and revision. In total, the assignment took approximately one month to complete. One challenge was managing the workload alone while also trying to create content that was accurate, engaging, and appropriate for future learners. Another challenge was avoiding personal bias in deciding what information to include, what level of detail was appropriate, and how to present global patterns of disease without oversimplifying them. To address this, content was reviewed carefully using course sources, PubMed, and WHO materials, with attention to clear, respectful, and inclusive wording.

This assignment helped deepen understanding of hepatitis pathology by requiring information to be reorganized into teaching tools. Creating the serology puzzle, case studies, and prevalence map strengthened understanding of transmission, diagnosis, and epidemiology in a more applied way. What worked well was the use of interactive elements to make the content more memorable and useful for other students. A major opportunity in this project was the ability to turn complex pathology concepts into learner-friendly material. A limitation was that working independently meant fewer opportunities for feedback during development.

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 components of this project were completed by TS, including topic selection, content development, use of AI tools, fact-checking with course materials and external sources, design of the presentation slides, and final formatting and submission.

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)]

1. Loh K, Kew S. Interpreting hepatitis B serology. Malays Fam Physician. 2007;2(1):31–2. PubMed PMID: 25606076.
2. Castaneda D, Gonzalez AJ, Alomari M, Tandon K, Zervos XB. From hepatitis A to E: A critical review of viral hepatitis. World J Gastroenterol. 2021 Apr 28;27(16):1691–715. doi:10.3748/wjg.v27.i16.1691
3. Tripathi N, Mousa OY. Hepatitis B. 2026. PubMed PMID: 32310405.
4. Girish V, Grant LM, John S. Hepatitis A. 2026. PubMed PMID: 29083664.
5. Basit H, Koirala J. Hepatitis C. 2026. PubMed PMID: 28613647.
6. Sachdeva K, Girish V, John S. Hepatitis D. 2026. PubMed PMID: 29261923.

16. Annotated Bibliography

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.*

Why do this?

- *Helps you keep track of your research.*
- *Shows your instructor you read and understood your sources.*
- *Develops critical thinking by requiring you to evaluate the quality and relevance of each source.*

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.*

1. Loh K, Kew S. Interpreting hepatitis B serology. Malays Fam Physician. 2007;2(1):31–2. PubMed PMID: 25606076.

This source was used in the project to support the section on hepatitis B serology, particularly the timeline and interpretation of laboratory markers. The article explains the significance of key serologic markers such as HBsAg, anti-HBs, HBeAg, and anti-HBc, and shows how these markers can be used to distinguish between acute infection, chronic infection, recovery, and immunity following vaccination. Its main strength is its clarity, as it presents complex diagnostic information in a concise and understandable format. This made it especially useful for explaining the serology quiz and the sequence of marker appearance in the presentation. A limitation of the source is that it is brief and does not discuss the broader pathophysiology of hepatitis B in detail. However, its focused discussion of serologic interpretation makes it highly relevant and credible for this project. Overall, this source was valuable because it directly supported the diagnostic portion of the hepatitis B section and helped ensure accuracy in explaining how hepatitis B infection is identified through blood testing.

2. Castaneda D, Gonzalez AJ, Alomari M, Tandon K, Zervos XB. From hepatitis A to E: A critical review of viral hepatitis. World J Gastroenterol. 2021 Apr 28;27(16):1691–715. doi:10.3748/wjg.v27.i16.1691

This source was used in the project as a broad background reference for the overall discussion of viral hepatitis. The article reviews hepatitis A through E, including their modes of transmission, pathogenesis, diagnosis, prevention, and clinical significance. Because the project focused on hepatitis A, B, C, and D, this source was particularly useful in providing comparative information across the major hepatitis viruses and

helping organize the presentation into clear sections. One of its major strengths is its breadth, as it combines a wide range of information in a single peer-reviewed medical review article. This made it helpful for establishing the general scientific framework of the project. Its main limitation is that, because it covers multiple viruses, it does not examine each type in great depth. It was an important source because it supported the project as a whole and helped connect the individual hepatitis sections into one coherent discussion. It also aligns closely with the overall structure and content of the presentation.

3. Tripathi N, Mousa OY. Hepatitis B. 2026. PubMed PMID: 32310405.

This source was used in the project to support the hepatitis B section, especially the material on transmission, chronic infection, and disease progression. It explains that hepatitis B is a DNA virus capable of causing both acute and chronic liver disease, and it outlines important complications such as cirrhosis and hepatocellular carcinoma. This information was directly relevant to the presentation slides describing the long-term consequences of chronic hepatitis B infection. The source was also useful in explaining the main mechanisms of transmission, including blood exposure, sexual contact, and vertical transmission from mother to child. One of its strengths is that it provides a clear and structured overview of the disease, making it a strong reference for foundational information. A limitation is that it functions more as a general clinical summary than as an in-depth research analysis. Even so, it was highly relevant to the project because it supported several key concepts presented in the hepatitis B slides and helped explain why hepatitis B remains a significant global health concern.

4. Girish V, Grant LM, John S. Hepatitis A. 2026. PubMed PMID: 29083664.

This source was used in the project to support the section on hepatitis A, especially the discussion of fecal-oral transmission, sanitation, and outbreak patterns. The source explains hepatitis A as an acute viral infection of the liver that is commonly spread through contaminated food and water. This information was directly applicable to the presentation slides describing transmission routes and the role of unsafe water and inadequate hygiene in spreading infection. It was also useful in supporting the case study involving a child in India exposed to untreated water. One of the main strengths of this source is that it presents the information in a straightforward and accessible way while still maintaining medical accuracy. This made it effective for translating scientific content into clear presentation material. Its limitation is that it is primarily a summary source and does not provide extensive detail on epidemiologic trends or regional prevalence data. It clearly explained the core features of hepatitis A and supported both the scientific and public health aspects of that section.

5. Basit H, Koirala J. Hepatitis C. 2026. PubMed PMID: 28613647.

This source was used in the project to support the section on hepatitis C, particularly the material on diagnosis, transmission, and chronic infection. It describes hepatitis C as a blood-borne RNA virus that is often asymptomatic in its early stages, which helped explain why infection may remain undetected for a long period. The source was especially useful for the diagnostic slide because it explains the role of anti-HCV antibody testing followed by confirmatory HCV RNA testing. This made it valuable for presenting the process used to identify chronic hepatitis C infection. One strength of the source is its clear explanation of diagnostic methods and disease progression, which made the information suitable for an educational project. It also helped connect laboratory testing to the long-term consequences of untreated infection, such as chronic liver damage. A limitation is that it does not explore regional historical factors in detail, such as the specific reasons for high hepatitis C prevalence in Egypt. Despite this, the source was important because it provided the essential medical information needed for the hepatitis C section of the project.

6. Sachdeva K, Girish V, John S. Hepatitis D. 2026. PubMed PMID: 29261923.

This source was used in the project to support the section on hepatitis D, particularly the explanation of its dependence on hepatitis B virus for replication. The source describes hepatitis D as a defective RNA virus that cannot replicate independently, making it distinct from the other hepatitis viruses discussed in the project. It was especially useful for explaining the difference between co-infection and superinfection, as well as why superinfection often leads to more severe liver disease. This information directly supported both the hepatitis D content slides and the case study involving a patient with chronic hepatitis B who later developed hepatitis D superinfection. One of the strengths of this source is that it clearly explains a concept that can otherwise be difficult to understand, namely the biologic relationship between HBV and HDV. Its limitation is that, because hepatitis D is a narrower topic, the discussion is less expansive than sources on hepatitis A, B, or C. However, it remained highly relevant to the project because it supported the key scientific concepts presented in the hepatitis D section and helped explain its geographic association with regions where hepatitis B is endemic.