

Ethical Considerations

Overview

Privacy and Security

Issue & impact

Actions & guidelines

Inclusivity and Ease of Use

Issue & impact

Actions & guidelines

Ensuring Patient Autonomy and Preventing Miscommunication

Issue & impact

Actions & guidelines

Transparency with Client

Issue & impact

Actions & guidelines

Accountability Within the Development Team

Issue & impact

Actions & guidelines

Overview

The development of the MMS system, encompassing the clinic web-app and patient mobile-app, aims to streamline appointment notifications and information sharing for patients, with the ultimate goal of improving their overall healthcare experience and reducing confusion. Given that the product operates in the sensitive medical space, where patients may be experiencing real distress from their situations and clinic resources and time are valuable, the stakes are particularly high. The need for trust between patients and their care providers is paramount, making ethical awareness and adherence to ethical principles crucial throughout this project.

Our team has been committed to upholding the highest standards of ethics, with a focus on protecting patient privacy and security, ensuring user accessibility and inclusivity, maintaining transparency with the client, and embedding ethical practices into our development process. This section outlines the key ethical considerations that have guided our design and implementation decisions, as well as the actions taken by the team and guidelines established to ensure the ethical integrity of the final product.

Privacy and Security

Issue & impact

This system will deal with real patient data uploaded from the clinic's existing practice management software, Genie. Handling sensitive medical information requires the utmost care and consideration for patient privacy. Improper handling or storage of this data could lead to significant breaches of trust, reputation damage, emotional distress for affected patients, and potential legal consequences for both the clinic and the development team. Patients may be hesitant to use the app if they do not feel their personal information is being protected adequately.

Actions & guidelines

A comprehensive and robust cyber security analysis has been performed - detailed comprehensively in the Cyber Security section. Potential threats have been identified and their impact considered, with an actionable risk strategy developed and employed in this project.

In addition to robust cyber security, patient privacy is ensured through minimal data collection. Only essential information necessary for app functionality, such as user name, email, and date of birth, is stored. No sensitive medical data, including test results or appointment outcomes, is collected or retained within the app's systems.

For development and testing purposes the client has provided sample patient and appointment html files which contain dummy data and no real, sensitive patient details. The team ensures that no sensitive data is used during the development process, particularly as the full cyber security measures are not in place yet.

Inclusivity and Ease of Use

Issue & impact

The MMS mobile app is expected to be used by a diverse patient demographic with varying ages, levels of technology literacy and accessibility needs. Furthermore, it has been flagged by the client that some patients may experience 'chemo brain', a cognitive impairment resulting from their treatment. It is therefore essential that the app is designed to be inclusive to a range of user demographics and has patient usability at the forefront. If patients have difficulty using the app this could lead to patient confusion, missed appointments or crucial medical information and decreased adoption of the app.

Actions & guidelines

The following design decisions have been made for the patient mobile app to address this ethical issue:

- **Simplistic, minimalistic design with a functional focus:** Clear, bold font is employed. We include images/icons to aid with the layout where applicable
- **Easy navigation:** A simplistic tab navigator is consistently accessible across all app pages, facilitating intuitive navigation for users
- **Persistent sign on:** When users login and are authenticated, a JWT as well as a refresh token are sent to the app. The refresh token allows for the retrieval of a fresh JWT on expiry without the need to login again
- **Integration with native features:** The use of react-native allows us to integrate with features on the users phone that they will be familiar with, e.g. linking to their native calendar, or utilising built-in share functionalities.

The app should be designed to ensure equitable access and treatment for all patients, regardless of their socioeconomic status, location, or other demographic factors. The app's features and functionality should be consistent across all user accounts, with the exception of personalised medical information. i.e. we do not filter by patient locations when displaying facilities.

Furthermore, in the development process, user stories were crafted with consideration for the persona of a carer. This approach ensures that the app's features remain accessible and usable even for patients who may require assistance or are unable to operate the app independently.

Ensuring Patient Autonomy and Preventing Miscommunication

Issue & impact

The core objective of the MMS system is to empower patients by providing them with access to healthcare information, thereby reducing confusion and enhancing their ability to manage their medical appointments effectively. While the app serves as a valuable tool to facilitate these objectives, it is crucial that its usage should remain entirely optional. The clinic's necessary functions and processes for managing appointments, such as cancellation or confirmation, should not be possible through the app.

Overriding the clinic's existing appointment management processes could have severe consequences. If the app were to include features that allow patients to directly cancel or reschedule appointments, it could lead to miscommunication between the clinic and the patients. Patients may inadvertently miss critical updates to their appointments, such as time changes or rescheduling, which could cause them to miss their appointments entirely.

This could have a significant impact on the patient's healthcare journey, potentially leading to delays in treatment, missed diagnoses, or other adverse outcomes. Additionally, it could create unnecessary confusion and frustration for both the patients and the clinic staff,

undermining the app's intended purpose of reducing patient confusion and consolidating their healthcare experience.

Moreover, the system should not overwhelm patients with unnecessary information or tasks, as this could undermine its effectiveness and potentially exacerbate patient confusion.

Actions & guidelines

- **Voluntary usage:** Patient usage of the app should be entirely opt-in and voluntary and should not be a mandatory requirement for patients to access the clinic's services. Patients should maintain full autonomy in their healthcare decisions and the ability to opt-out of using the app
- **Tailored information delivery:** Only doctor details relevant to upcoming and past appointments are displayed, preventing information overload and ensuring relevance to the patient's healthcare journey. Similarly, links to additional resources are provided selectively at the discretion of the clinic, minimising overwhelm and allowing patients to access resources relevant to their condition
- **Limited functionality:** While the app provides valuable information about upcoming appointments and links to additional resources, it does not include features that allow patients to cancel or confirm appointments. This limitation ensures that patients continue to interact directly with the clinic for appointment management, preserving their autonomy in scheduling decisions.

Transparency with Client

Issue & impact

Effective communication and transparency with the client are paramount for building trust and ensuring alignment throughout the project lifecycle. Failure to maintain transparency could lead to misunderstandings, misaligned expectations, and ultimately, dissatisfaction with the project outcomes. Moreover, lack of transparency may hinder the client's ability to provide timely feedback or make informed decisions, potentially impeding project progress and success.

Actions & guidelines

To uphold transparency with the client, several measures have been established:

- **Consistent Communication:** A designated product owner (Aadesh) has been appointed to spearhead all communication efforts, including scheduling meetings with Susan and disseminating questions and updates promptly.
- **Frequent progress reporting:** Regular updates on all development milestones and any encountered issues are ensured. Clear expectations of what is achievable in the project timeframe were established by thoroughly discussing the project scope with the client at the project's outset.
- **Invitation for Feedback:** Design and functional questions that the development team cannot answer are noted down and presented to the client in the next available meeting. The development team ensures to avoid making assumptions about the system and its users.

Accountability Within the Development Team

Issue & impact

Accountability within the development team is crucial for ensuring efficiency, quality, and successful project outcomes. When accountability is not upheld within the development team, several issues can arise. Deadlines may be missed or extended, leading to project delays and potential client dissatisfaction. Moreover, without clear accountability, team members may not take ownership of their tasks, resulting in incomplete or poorly executed work that is not in line with the scope and intentions of the project. This can ultimately impact the overall project quality and success.

Actions & guidelines

- **Consistent Stand-ups:** Regular stand-up meetings are conducted to keep team members accountable for their progress and tasks. During these meetings, team members provide updates on their work, identifying any obstacles or challenges they are facing, and can

collaborate with the other developers to find solutions

- **Individual Intra-team Meetings:** Individual frontend and backend team meetings are held as needed to discuss specific tasks, address concerns, provide feedback and ensure the team is up to date on each others progress
- **Jira Tickets Assignee and Reviewer:** Specific team members are assigned as both the assignee and reviewer for each Jira ticket. This promotes accountability by clearly defining who is responsible for completing the task and who is responsible for reviewing and validating the work before it is considered complete
- **Code Review Process:** Each GitHub branch is assigned a reviewer separate from the developer who reviews and approves pull requests before merging them into the main branch. This ensures that all code changes meet quality standards and align with project requirements