

Customizable Patient Profiles with R Shiny

Huw Wilson, MSc



Introduction

Patient profiles are individual summaries of the efficacy and safety data collected for each patient. Within a study team, several different stakeholders have an interest in these profiles due to the value of having holistic patient-level information when making patient-level decisions. For example, they can be used by clinicians to assess patient welfare, and by statisticians to investigate possible outliers.

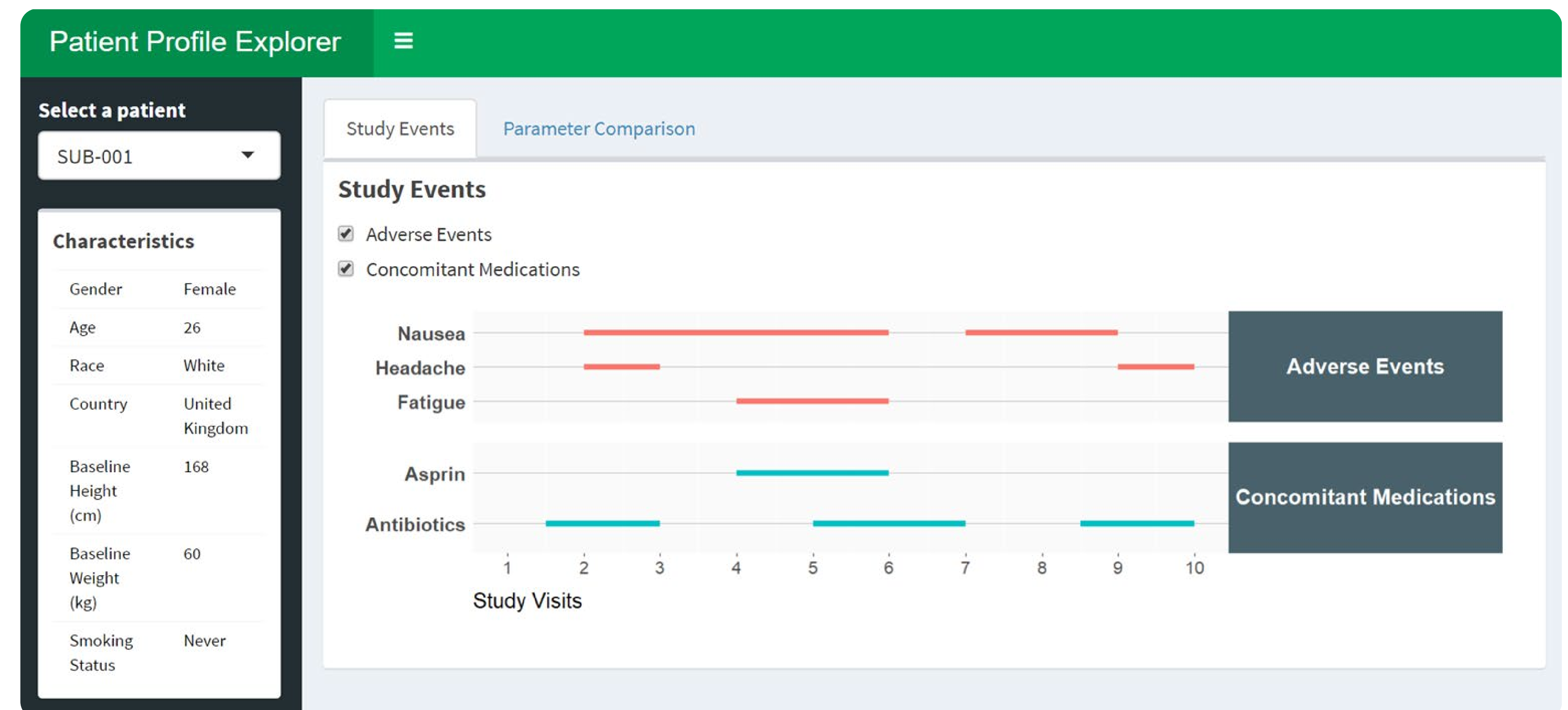
However, the creation of these profiles is resource-intensive, which means that only one profile is typically made for each patient. This means they can easily fall into the trap of being general enough to partially suit everyone, but not specific enough to satisfy anyone. Consequently, this can place further demands on the programming team as stakeholders seek the information that is absent.

Advantages of Using R Shiny

R Shiny is an open-source package in R that allows interactive dashboards to be created relatively easily, without requiring in-depth knowledge of web development languages.

Some of the advantages of using R Shiny for patient profiles are:

- **Increased Availability of Data** – The amount of information available in the profile can be significantly increased as it isn't limited to what can be fitted on a couple of pages.
- **Customization Ability** – Users can customize the app to suit their own interests and needs, and they also have the ability to 'drill-down' into the data and explore other aspects.
- **App Generalizability** – Once an app is developed, it can be adapted to different studies and settings, which avoids having to program the app from scratch each time.



Challenges

Sharing the App – Sharing R Shiny apps can pose a problem, but there are some possible solutions. One option could be to use a version control system like Git which allows stakeholders to run the app on their local computers. However, this does require some technical knowledge which is likely to be a barrier, and issues could arise from having different app versions. Alternatively, a centralized server to host the app could be set-up which avoids both of those problems, but this comes with the added complexity of creating a private, authenticated server to ensure data protection.

Validating the App – Since the data used by the app will presumably come from already validated datasets, the validation needs to ensure that the transfer and presentation of that data is correct. Validation strategies could include double programming and electronic comparison of the pre-processed input datasets as well as a visual review of a sample of the possible customizations.

Conclusion

R Shiny is an open-source alternative to the static patient profiles that are traditionally created. An interactive patient profile has several added benefits that can increase their value to stakeholders, but these benefits come with their own challenges.

Scan the QR Code with your phone to view the app

