

Interactive Patient Profiles in R Shiny: Enhancing Narrative Review in Clinical Studies

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Abstract

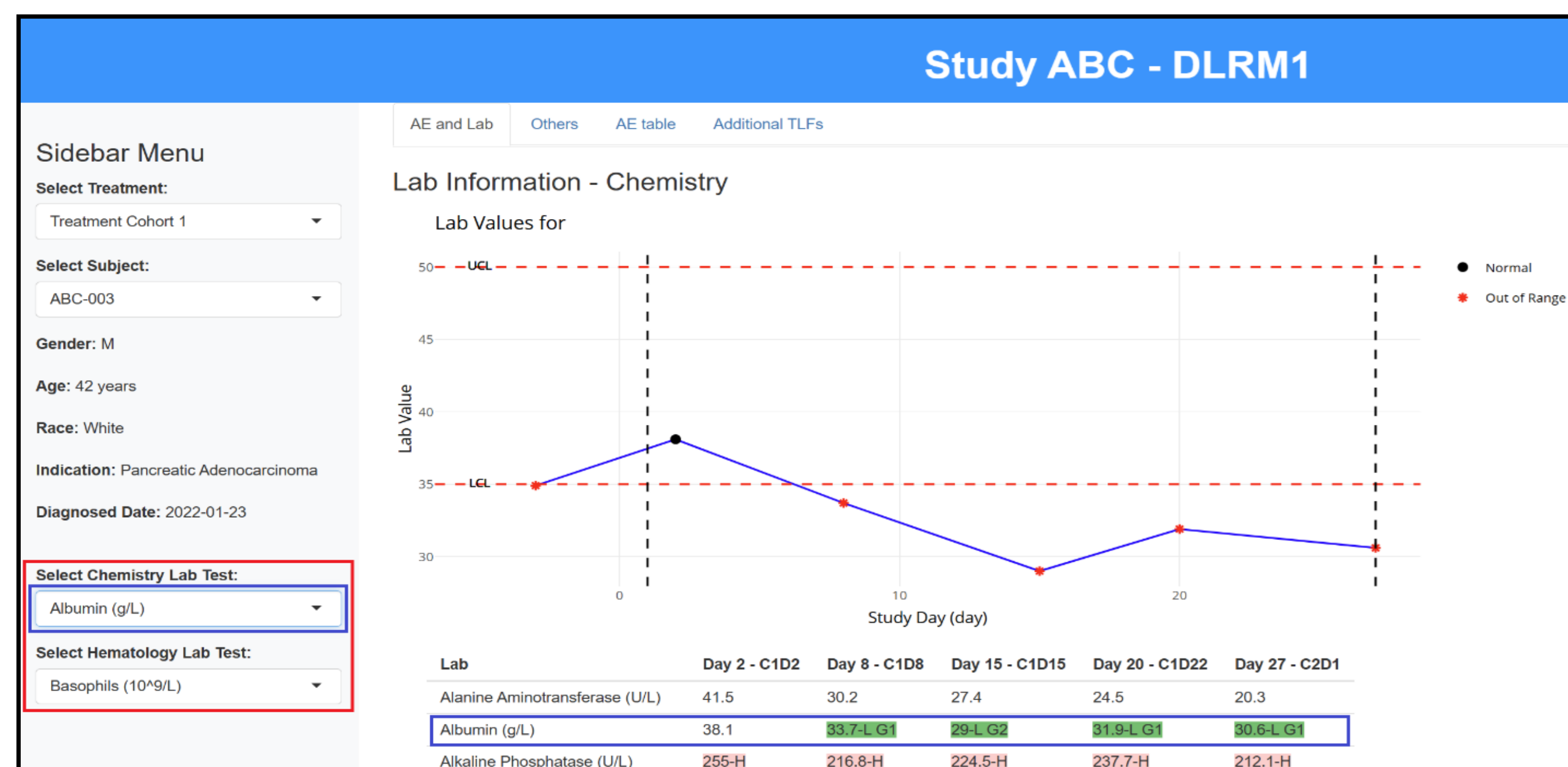
Traditional patient profile reports often use static tables with limited interactivity, making it difficult for medical writers and clinical reviewers to explore subject-level data efficiently. To address this, we developed an R Shiny application that enables dynamic, code-free exploration of clinical data from oncology and vaccine studies. The tool integrates CDISC-compliant datasets (DM, AE, CM, MH, FA, EX, LB) and provides interactive visualizations of adverse events, lab data, concomitant medications, medical history, and reactogenicity. Built with R packages-plotly, ggplot2, and DT, it allows filtering by treatment arm and subject ID, with hover-enabled pop-ups for added context. Sidebar panels summarize demographics and diagnosis, while tabbed views organize key safety data. This modular, user-friendly interface improves data clarity, reduces manual effort, and supports consistent, high-quality patient profile generation. The application showcases how R Shiny can bridge clinical data and medical writing, aligning with PHUSE's mission to advance analytics and automation in clinical research.

Introduction

Patient profiles are vital for summarizing clinical experiences in regulatory and internal reviews. Static formats are slow and hard to navigate, especially with large datasets. While commercial tools exist, they often lack customization and integration. Using R Shiny, we built a flexible, cost-effective platform tailored to our needs—especially for SDTM data. It allows custom visualizations, logic, and filters, deployable on-premises or in the cloud.

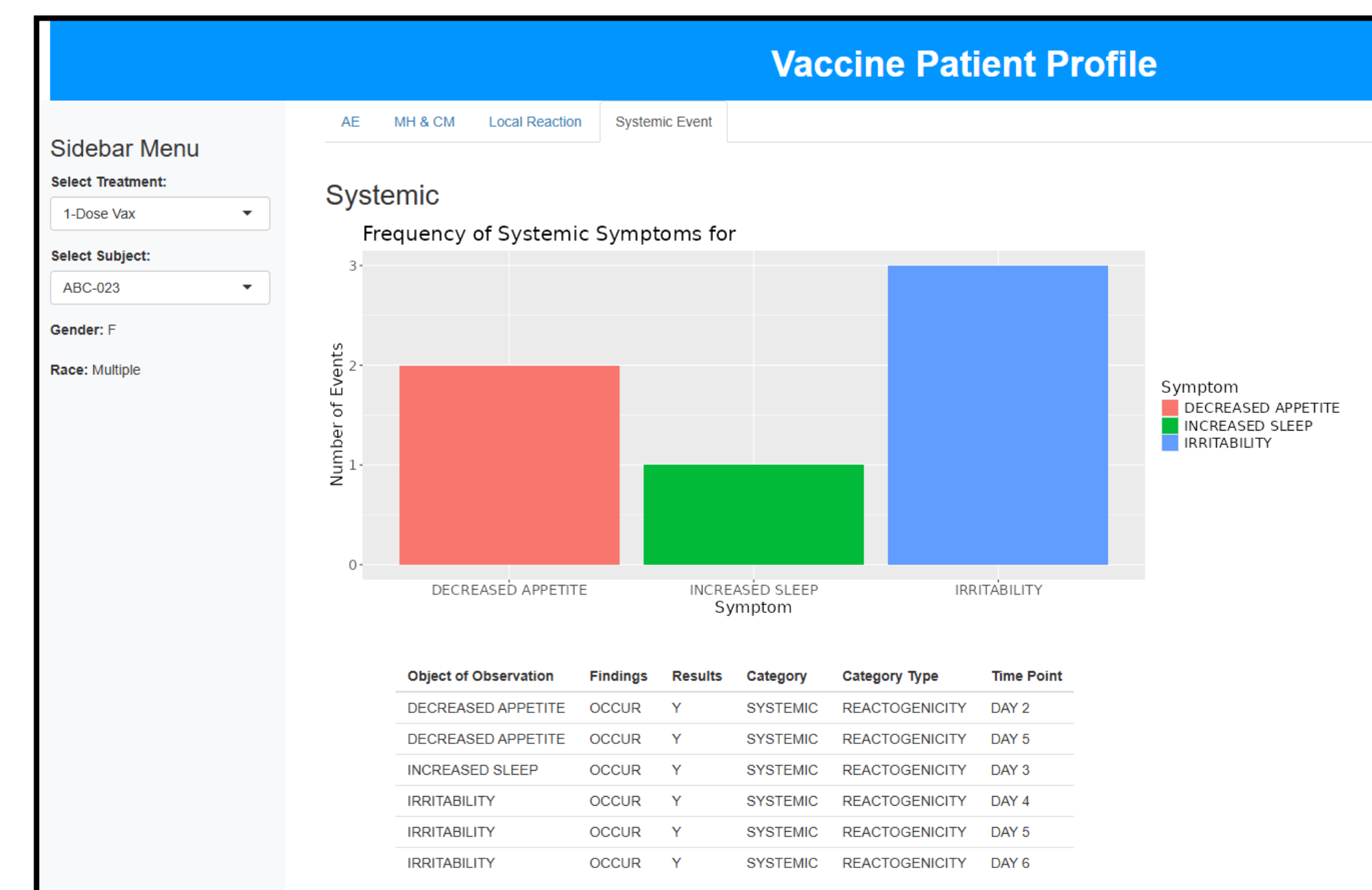
Our app supports oncology and vaccine studies, integrating CDISC datasets (DM, AE, CM, MH, EX, FA) in a modular interface. Users can filter by arm and subject ID to explore AE timelines, labs, meds, history, and reactogenicity. It uses plotly, ggplot2, and DT for interactive visuals and tables, with hover popups for quick clinical insights.

Display 1 – Example of Lab Information



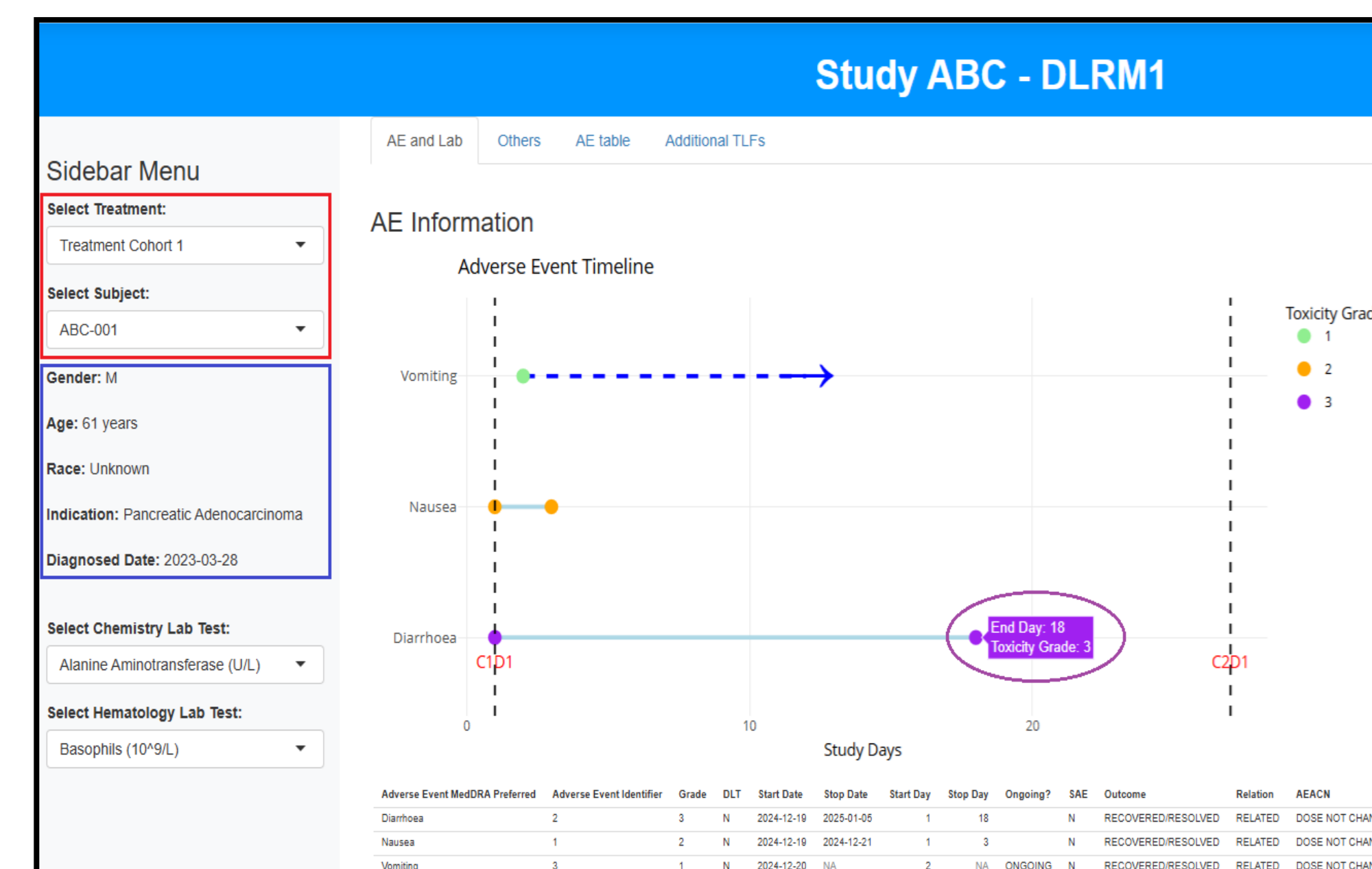
Selecting Subject ABC-003 auto-updates sidebar info. Users can choose lab parameters (red), triggering a chart with dosing events (e.g., Cycle 1 Day 1), reference ranges (UCL/LCL), and highlighted out-of-range values. A detailed lab table below flags these values. Hover tooltips in the chart offer added context.

Display 2 – Example of Systemic Event



Once users select a treatment arm and subject ID, the application automatically generates a bar plot and displays relevant systemic event details. This visualization enhances clarity and helps the team quickly identify patterns, trends, or anomalies in the data.

Display 3 – Example of AE Information



The sidebar (red) lets users select treatment arm and subject ID. Subject info auto-populates (blue). A dynamic AE chart shows dosing events (e.g., Cycle 1 Day 1, Cycle 2 Day 1), with hover tooltips (purple) for context. Below, a detailed AE table supports deeper review.

Conclusion

R Shiny Interactive Patient Profile transforms static SDTM data into dynamic dashboards for CROs and biopharma teams. It helps medical monitors, data managers, and safety reviewers quickly assess patient trends, AEs, and protocol compliance—speeding up decisions and improving data quality. Fully CDISC-compatible, the app supports medical writers and reviewers with transparent, consistent patient profiles and faster issue detection. Intuitive sidebar controls make it easy to use—no coding required.

CONTACT INFORMATION

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