By studying PICU flowsheets in the context of their actual use, we have defined requirements based on how clinicians track patient data.

Paper flowsheets are designed for ease of data entry, grouping data by source.

Physician daily notes are grouped by system, integrating lab values, medications, vital signs, etc.

Strengths
- Bundles and summarizes key information
- Both structured and flexible
- Portable (locally)

Weaknesses
- Static
- Spatial constraints
- Determining trends and ranges requires many comparisons

The purpose of this study was to apply user-centered design principles to create an electronic flowsheet for pediatric intensive care units that will address the shortcomings of available paper and electronic systems.

**Design Concepts**
- Paper flowsheets are designed for ease of data entry, grouping data by source.
- Physician daily notes are grouped by system, integrating lab values, medications, vital signs, etc.
- Novel graphical elements have been developed for visualizing data trends, acid-base balance, fluid balance, and the Glasgow Coma Scale.

**Objectives**

The objective of this work was to apply user-centered design principles to create an electronic flowsheet for pediatric intensive care units that will address the shortcomings of available paper and electronic systems.

**Proposed Design**

- Consolidate as much information on a single screen as possible
- Use graphics that provide an overview with details-on-demand
- Place related data elements on the same time scale
- Show the relationships among data

**Future Work**

- Continue to add functionality for filtering and customizing views
- Create patient cases for a formative evaluation with attending physicians and for an experiment with residents
- Develop training scenarios for residents, particularly focused on acid-base, electrolyte and fluid balance

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