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A New Paradigm for Managing Information in the ICU in Response to the 80 hour Work Week

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Objectives: With the onset of the eighty hour work week, efficient data transfer between teams has increased in complexity. To assist with the information transfer between Intensive Care Unit (ICU) teams and to increase the availability of key information that might otherwise be under represented, the Critical Care Alert and Display (CCAD) system was developed. **Setting:** The software design was done at the Harvard-MIT Computational Physiology Laboratory. **Design:** The CCAD system was designed using a fully de-identified temporal ICU research database. The software program was written using Microsoft Visual Studio.NET™. **Results:** Histograms were generated from the database to evaluate the frequency of abnormal values per ICU patient day. 2000 patients were selected from the database and sixty common ICU parameters were specified for analysis. There were a total of 56 abnormal values (alerts) generated per ICU patient-day. When looking specifically at the complete blood count (CBC), 2.9 alerts were generated per ICU patient-day. Table 1 provides statistical characterization for CBC laboratory results and alerts per ICU patient-day. **Conclusions:** The histograms were useful in optimizing the software and understanding the type of abnormal values generated for each patient in the ICU. A software programs such as the CCAD system might be able to assist the clinicians to better manage the large amount of information.

Table 1: CBC Results and Alerts per ICU Patient-Day

	# Values	Median +/- Std	# Alerts	High Alert Limits	Low Alert Limits
WBC	3.3	24.5 +/- 17.9	1.0	15	5
Hematocrit	5.2	30.3 +/- 3.6	0.5	40	25
Hemoglobin	3.6	10.1 +/- 1.2	0.16	15	8
Platelets	3.5	197 +/- 112.7	1.2	600	150

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