An innovative laboratory information system interfacing medical equipment to improve monitoring of pulmonary treatment of sick neonates.

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A Laboratory Information System that automatically captures patients data from medical instruments is described. In this system, a specially built interface unit multiplexes data from the RS-232 interfaces of a blood gas analyzer and ten infant mechanical ventilators into an IBM compatible personal computer. A software system is developed to capture, decode, display, analyze and store these data. Blood gases results and ventilatory setting parameters were taken to calculate the oxygenation indices, AaDO₂, and a/A ratio of the patient automatically by the computer. A single monitor is employed for display purpose in a prominent location in the neonatal intensive care unit. Patients data from as many as 10 beds can be accommodated simultaneously within the system at one time. Abnormal data are displayed in a special format to alert the medical staff of critical situations. The captured data are stored in a database for record purpose and to facilitate subsequent data analysis. With the use of such an automatic data capture system, much man power in routine data logging can be saved. Moreover, using similar principles, patients data can be captured and analyzed as often as once every second. That would a valuable tool for immediate identification of some rapidly changing situations that would be impracticable if only manual method is relied on.