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A direct reading pressure gauge to monitor endotracheal cuff pressure in intensive care patients

A vital task in intensive care is the monitoring of the cuff pressure of endotracheal tubes. Tracheal damage caused by over-inflated cuffs is a well recognized problem. Tissue ischaemia occurs in normal individuals when the cuff pressure exceeds 30 mmHg. It can also occur at lower cuff pressure levels in low cardiac output states in intensive care patients. Monitoring cuff pressure is, important so that the pressure can then be adjusted to a safe level and thereby prevent pressure necrosis of delicate airway structures.

Pressure gauges to measure the cuff pressure are not available locally. We have designed and constructed an electronically operated pressure gauge using a piezo-resistive differential pressure transducer sensitive in the range from 0 to 5 psi (differential) , an instrumentation amplifier, operational amplifiers and a 7 segment LCD

display unit. Our instrument is a low-cost, direst reading, portable, and reliable pressure gauge powered by a 9 V battery. With this pressure gauge,. cuff pressure can be read either in units of cm of water or in units of mmHg in the range from 0 to 70 mmHg.

The instrument has been calibrated against a normal manometer. Future work includes the comparison of the performance and accuracy of this pressure gauge with an expensive instrument available in developed countries.