

TITLE: Inadvertent Cerebral Spinal Fluid Shunt Valve Reprogramming: Prevalence and the Correlation with Signs, Symptoms, Radiographic Changes, and the Exposure to Magnetic Fields

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RESEARCH PROJECT DESCRIPTION

Surgeons have performed CSF diversionary procedures for over 100 years, diverting flow from brain or spinal CSF spaces to a different organ space. The conceptual appeal of programmable valves has led to its widespread use in the developed world for over 15 years, with dozens of technological variations marketed and adopted by surgeons. The Codman Hakim valve (Depuy Synthes, West Chester, PA) and the Strata valve (Medtronic, Ireland) are the most commonly implanted programmable CSF shunt valves worldwide, with Strata valves more commonly implanted by pediatric neurosurgeons in the United States.

Inadvertent shunt valve re-programmings have gained interest among clinicians, researchers and parents. Small case series and case reports of clinical events have emerged over the past decade, as well as several in vitro experimental studies of the effect of gravitational fields on various shunt valve designs. The frequency with which programmable valves become inadvertently reset as a result of environmental exposure has not been systemically studied and is largely unknown. We hypothesis that patients with more exposure to household items that may electromagnetically affect their shunt valve setting will have a higher incidence of inadvertent reprogramming. Data collection will be ongoing over the next 2 years for this study. The medical student would assist with data collection and monitoring for this study. This is a collaboration with Johns Hopkins All Children's Hospital.