Programmable shunt valve affected by exposure to a tablet computer


Abstract:
OBJECT: The authors investigated the effect of a tablet computer on performance-level settings of a programmable shunt valve. METHODS: Magnetic field strength near the tablet computer with and without a cover was recorded at distances between 0 and 100 mm. Programmable valves were exposed to the tablet device at distances of less than 1 cm, 1-2.5 cm, 2.5-5 cm, 5-10 cm, and greater than 10 cm. For each distance tested, the valves were exposed 100 times to the tablet with the cover, resulting in 500 total valve exposures. The tablet alone, without the cover, was also tested at distances of less than 1 cm for 30 valve exposures. Changes in valve performance-level settings were recorded. RESULTS: The maximum recorded magnetic flux density of a tablet with a cover was 17.0 mT, and the maximum recorded magnetic flux density of the tablet alone was 7.6 mT. In 100 exposures at distances between 0 and 1 cm, 58% of valves had different settings following exposure. At distances greater than 1 cm but less than 2.5 cm, 5% of valves in 100 exposures had setting changes. Only a single setting change was noted in 100 exposures at distances greater than 2.5 cm but less than 5 cm. No setting changes were noted at distances greater than 5 cm, including 100 exposures between 5 and 10 cm, and 100 exposures of more than 10 cm. For the 30 valve exposures to the tablet without a cover, 20 valve performance-level changes (67%) were noted. CONCLUSIONS: Based on these results, exposure to tablet devices may alter programmable shunt valve settings.

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