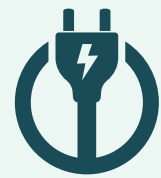


INDUCTION COOKING SAFETY & IMPLANTED MEDICAL DEVICES



THE SWITCH IS ON



SUMMARY

Research shows that induction is safe to use for individuals with implanted medical devices like pacemakers. Physicians still recommend exercising caution. Consult with a medical professional to determine what's right for you.

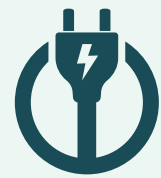
CONTEXT & BACKGROUND

A pacemaker is a small medical device implanted in the chest to help regulate irregular heartbeats by sending electrical signals to the heart. The American Heart Association¹ notes that many types of consumer electronics and the technologies they use have the potential to interfere with pacemakers and implantable cardioverter defibrillators (ICDs) and caution patients to either limit their use or maintain a safe distance in order to avoid harm. One such technology noted is magnets. Induction hobs use electricity to generate a medium-frequency magnetic field that excites the ferrous contents of cookware to heat them from within.

Though the electromagnetic field (EMF) generated by induction hobs is largely limited to the immediate area above the glass cooksurface, the target of much of the research in this area is focused on if there is stray magnetic field that escapes to the larger area around the cooksurface and into the body of the user and if that has an effect on cardiovascular implantable electronic devices (CEIDs). Research on the potential interference between the EMF induction hobs generate and CEIDs like these suggests that there is potential for interference but many variables impact the potential risk and maintaining a safe distance is always an option to decrease risk.

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NON-HUMAN TESTING

Driessen et al.² conducted a 2019 review of existing research on the topic and concluded that electromagnetic fields (EMFs) generated by induction may have the potential to interfere with CEIDs though the risk potential is largely influenced by the strength of the fields, frequency, modulation, and characteristics of the CEIDs themselves such as model, type of implant and its sensitivity, lead configuration, and implantation site. Similarly, Irnich and Bernstein³ conducted non-human studies of induction hobs and pacemakers and found that when positioned concentrically on the cooktop, small cookware produces the largest stray EMF but measured voltage was always below a set target of 100 mV in a simulated human. When placed eccentrically, voltages up to 800mV could be induced but easily mitigated by increasing the distance between the measurement and the induction hob of about 1.15 feet. Other non-human testing research by Tiikkaja et al.⁴ found that unipolar pacemakers were more susceptible to EMFs than bipolar models.



HUMAN TESTING

In contrast to these studies suggesting potential for interference, Binggeli et al.⁵ and Rickli et al.⁶ conducted human induction interference tests using patients with ICDs and pacemakers, respectively. These studies positioned participants about 0.7 feet away from the induction hob, bending the upper body over it while in use on various power settings from low to maximum. The former study with ICD patients also did the same tests with a hand on the cookware while in use. Both studies concluded that there was no risk of interference with these implanted CEIDs from use of induction, even at close proximity to the EMF.

Generally, stray medium-frequency EMFs are not thought to have a negative impact on health for individuals without CEIDs at levels produced by induction hobs, though research in this specific area is limited.⁷

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GENERAL EMF SAFETY

Though research has demonstrated operating induction hobs with CEIDs can be done safely, many still recommend exercising caution. Dr. Mike Knapton of the British Heart Foundation⁸ notes that because interference is possible operators should maintain a distance of 2 feet. In their non-human testing, Hirose et al.⁹ found that interference was no longer a risk at just under 1.2 feet and recommended maintaining a distance of 1.6 feet. That being said, aforementioned human testing put individuals with implanted CEIDs as close as possible (about 0.7 feet) to induction hobs and measured no interference with devices.

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