

Novel Electronic Technologies in Medicine: Non-invasive Treatments

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The mind-boggling growth of novel technologies in medical sciences has turned the recent years, more than ever, into the collaboration arena for specialists from electronics and medicine. Although the precedence of employing knowledge and technologies of electronics dates back to the past decades, but the use of advanced modern electronic systems in medical treatments, particularly in non-invasive and minimally-invasive treatments, has indeed been one of the prominences of modern medicine in dealing with diseases.

The technologies employed for the non-invasive treatment scheme have impacted many lives, and so have become very widespread, with the aim of eliminating or minimising the need for physical insertion into the body and consequential damages to the skin, tissues and organs. The use of these technologies have been considered in four main categories of: wound management, drug delivery, non-invasive sensing and wearable monitors; amongst which non-invasive sensors seem to be widely adopted in medical treatments; thanks to their high flexibility, low cost, ease of use, and the short time-frame for availability of results.

Considering the key role of the advanced tools and systems in implementing novel non-invasive treatment techniques, this article attempts to introduce some of the electronic systems used for such treatments, discussing their operation mechanisms, advantages and limitations, market dynamics, etc. The paper also provides an overall image of the present and future of medical electronics as well as offering grounds for cultivating such scientific research activities.

Keywords: Medical electronics, non-invasive treatments, minimally-invasive treatments, wound management, drug delivery, implantable sensors, wearable monitors.

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