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Artificial Intelligence in the detection of medical device failure

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Introduction

One of the main objectives of the Italian Registry for Implantable Prostheses (RIPI) is to provide reliable and high-quality data for monitoring surgical outcomes and supporting patient traceability in case of adverse events related to the implanted device.

The use of Artificial Intelligence (AI) within the data collection system could improve the quality of the device data collected by the registry, allowing a more accurate assessment of surgical outcomes and the improvement of clinical practice.

Material and methods

A project entitled "*Creation of the prototype of the National Registry of Implantable Prostheses (RIPI) data collection platform (π-RIPI)*" has recently been launched within the National Resilience and Recovery Plan (funded by the European Union – NextGenerationEU). It aims to build a platform to support RIPI data collection starting with the development of a component for joint prosthesis identification and characterisation, including an AI module for the real-time retrieval of useful technical information to be integrated in the Registry Component Library (MD Dictionary) by applying web scraping technologies.

Results

The prototype of the RIPI platform component for joint prostheses, integrated by the AI tool, is the result of a close collaboration between the Registry, a leading ICT Company in Italy and the Italian Biomedical Manufacturers Association. It's the first example in Italy of a centralised system for the devices considered by RIPI (joint prostheses as first) and would be accessible to manufacturers and regional registries, and potentially linked to existing international databases.

Discussion

The importance of AI in healthcare data management is being increasingly recognised around the world. AI-based tools can automate several tasks making the process of data collection and update much easier and more accurate. This is particularly relevant in the field of implantable MD and the integration of AI into the RIPI platform will pave the way for more future applications beyond MD failure detection.

Notes