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**Letter to the Editor**

# Opportunities and obstacles of electronic health records in Italy: towards enhanced surgical care

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The potential of Electronic Health Records (EHRs) to streamline patient care and surgical procedures, improve interprofessional collaboration, and ultimately optimise healthcare delivery is a topic that has increasingly dominated recent international academic and clinical discussions [1-3]. This letter aims to shed light on the necessity of embracing this change, specifically focusing on the Italian context and on Otolaryngology in particular. It will assess its potential benefits, present the challenges that have emerged in the Italian scenario, and suggest ways to navigate these hurdles.

## Electronic Health Records

An EHR is a digital version of a patient's paper chart. EHRs are real-time, patient-centered records that make information available instantly and securely to authorised users. While an EHR does contain the medical and treatment histories of patients, an EHR system is built to go beyond standard clinical data collected in a provider's office and can be inclusive of a broader view of a patient's care. EHRs function as a critical nexus within healthcare systems, connecting diverse entities responsible for managing patient health needs. The digitisation of healthcare information, including patient paper medical diaries, imaging, and other clinical data, streamlines interprofessional collaboration and bolsters coordination efforts [2]. By consolidating sources of patient information, EHR aims to facilitate more efficient and secure exchange of patient data among healthcare providers [4].

## General and specific advantages of EHRs

Research from around the globe supports the notion that EHRs can significantly enhance the quality of care. Specifically focusing on other European nations with similar healthcare systems, the implementation of EHRs in French hospitals demonstrated a significant positive correlation with improved patient records, shortened information delays, and enhanced pain and nutritional status evaluations [5]. Similarly, a study conducted in Italy found that physicians and nurses recognised the potential benefits of EHRs, despite some resistance to their use [6]. Therefore, EHRs are more than mere digital versions of paper records, with a clear potential impact in both clinical and scientific areas.

At the clinical level, EHRs have the power to revolutionise healthcare delivery by making patient health information accessible, reliable, and efficient – which

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serves as a valuable tool for healthcare professionals [2,7]. The benefits of EHRs extend to the management of drug prescriptions and clinical risk, as highlighted by a recent study conducted in two private hospitals in Northern Italy [1]. The transition from paper-based drug charts to digital records yielded marked improvements in the accuracy and appropriateness of prescriptions, minimised transcription errors, and curtailed the risk of medication errors. Also, the easy intuitive access to a Patient Summary (usually a core element of EHRs) highlights immediately relevant data such as immunisation, drug allergies, previous surgeries or current drug therapies, as recorded by any authoritative sources such as general practitioners and other hospitals, in every phase of the management of surgical cases. The digitisation process may also reduce nursing staff workload, which allows them to focus more on patient care, and optimise the management of drug inventories in hospital pharmacies, which can also lead to cost savings and increased efficiency [1]. Moreover, moving the EHR towards a greater number of encoded documents with machine readable parts (e.g., Clinical Document Architecture) with respect to mere digitalised documents (e.g., scanned papers) enables the creation of more intelligent services within the EHR such as Clinical Decision Support as required by the international standard ISO/HL7 10781 Electronic Health Record System Functional Model (EHR-S FM) Release 2 [8].

Such clinical advantages are specifically evident in Otolaryngology (Tab. I). In particular, residents would have more time for core training, which can be fundamental in light of the known issues of surgical training in Italy. Moreover, Otolaryngology as an eminently interdisciplinary surgical branch, could clearly benefit more than others from the improved interprofessional collaboration fostered by the EHR.

At the research level, the systematic use of EHR has the clear potential of reliably acquiring a huge amount of data. Such potential could be exponentially increased by the application of FAIR principles (data and metadata must be Findable, Accessible, Interoperable, and Reusable) to metadata inclusion and to data acquisition [9].

## Barriers to the implementation of EHRs

However, despite the promise held by EHRs, numerous barriers stand in the way of their full-scale implementation and use. These challenges are both technical and human-centric, including resistance to change and lack of adequate training, especially in the Italian reality [6,10].

**Table I.** Impact of EHRs on otolaryngological care.

| Aspect of care | Without integrated EHRs | With integrated EHRs |
|---|---|---|
| Record keeping | Time-consuming manual entries, physical storage, increased chance of error | Rapid, accurate digital records, easily stored, shared, and retrieved |
| Interprofessional collaboration | Inefficient communication between different healthcare providers, potential for missed information, which is even more relevant in Otolaryngology as an eminently interdisciplinary surgical branch with close interactions with a large number of surgical and non-surgical specialties | Streamlined sharing of patient data, less chance of miscommunication. Clear specific benefit for Otolaryngology more than other specialties from heightened collaboration fostered by the EHR |
| Drug management | Paper-based drug charts can lead to transcription errors, medication errors, and inefficient inventory management | Improved accuracy of prescriptions, minimised errors, and efficient inventory management |
| Patient safety | Risk of errors due to miscommunication or lost information | Improved patient safety due to consolidated, accessible patient records |
| Time management | Significant time spent on manual transcribing of paperwork, less time for direct patient care – especially for trainees | Reduction in paperwork enables increased time for patient care, learning, and essential clinical tasks |
| Cost efficiency | Higher costs associated with paper records management and inefficiencies | Potential cost savings from improved efficiencies and reduction in errors or repeat procedures and imaging |
| Surgical outcomes | Potential risks due to lack of shared information and comprehensive patient information | Minimise unnecessary procedures, reduce risks, and improve outcomes due to access comprehensive patient histories and interprofessional communication |
| Surgical training | Time spent by residents in transcribing paper records | More time spared for core training and learning the specialty |
| Data collection for research | Absence of a shared language and domain-specific vocabularies, difficulty to impose shared ontologies according to the FAIR principles | Easy creation and widespread use of shared ontologies according to FAIR principles, for clinical data collection and generation of high-level evidence |

According to previous reports, these barriers include low interoperability of healthcare system infrastructures, the absence of a shared language and domain-specific vocabularies for clinical communication (a common ontology which should follow the above mentioned FAIR principles) among diverse healthcare providers, and absence of models for administrative process management [10].

In addition, the Italian case also involves the federation of 21 different regional systems whose interoperability is expected to be implemented by the Integrating the Healthcare Enterprise Information Technology Infrastructure technical specifications and has a long history of privacy issues that in some cases have slowed the creation, feeding and deployment of the Italian EHR. For example, only since May 2020 has it been possible to remove the consent for the creation and feeding of the European Social Fund (Article 11 of Decree-Law No. 34 of May 19, 2020), while in August 2022 the negative opinion of the guarantor temporarily halted the development of the new database called Ecosistema Dati Sanitari in use in the Italian EHR 2.0 (Fascicolo Sanitario Elettronico Italiano 2.0). These barriers, among others, hinder the wide-scale adoption of EHRs and their resultant benefits. Moving forward, overcoming these obstacles would necessitate concerted efforts from both policymakers and healthcare providers. Additionally, in the Italian scenario, which is oriented to data storage, more emphasis should be put on data processing and artificial intelligence with the above cited aim of developing effective clinical Decision Supporting Systems.

## Conclusions

The transition to EHRs presents an imperative and transformative opportunity to improve surgical care in Italy, especially within the realm of Otolaryngology. The nuances of Otolaryngology, with its complex surgical procedures and a wide spectrum of patient presentations, demands a dynamic, efficient, and accurate method of handling patient data. Interprofessional collaboration facilitated by EHRs, crucial in a field as collaborative as Otolaryngology, could minimise errors and ultimately enhance the quality of patient care.

However, the path to this vision is not without its challenges, primarily of a technical and human-centric nature. This transition requires not only the necessary technological adaptations, but also an essential shift in mindset and culture within our sector, which has traditionally been slower to embrace digital transformations. It requires the readiness to engage with a new way of managing and sharing information that could seem intimidating at first but holds significant advantages in the long run. We have a unique responsibility to champion this change – and, in doing so, will serve as a model for other surgical specialties. Our role does not stop at embracing this shift within our own clinics and hospitals; it extends to actively advocating for the widespread adoption of EHRs across the entire Italian healthcare sector.

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