Hyperautomation in Healthcare: perspectives from a joint IFCC – EHMA session

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Abstract

Introduction

This article provides an exploration of hyperautomation's transformative potential in healthcare, building upon the insights gained from the joint session hosted by the European Health Management Association (EHMA) (1) and the Division on Emerging Technologies of the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) (2) at the EHMA congress in Rome on June 6th, 2023. In a rapidly evolving landscape driven by emerging technologies, healthcare stands at the forefront of change (3,4). This article delves into the implications of hyperautomation for health managers, examines its applications in healthcare processes and laboratory medicine, and addresses the important aspects of providing healthcare professionals with the necessary digital skills.

Streamlining Processes and Maximizing Efficiency

Hyperautomation in healthcare holds the promise of transform healthcare processes, empowering managers to streamline operations for enhanced efficiency and accuracy (Figure 1). By harnessing the capabilities of artificial intelligence (AI), machine learning algorithms, and robotic process automation (RPA), healthcare providers can automate tedious manual and pre-analytical tasks, such as sample handling and blood tests. This automation liberates valuable time and resources that can be redirected towards more critical tasks, ultimately elevating the overall quality of patient care. The value of automation is well established in clinical laboratories and the amplification effect is expected from AI at several points (efficiency, prevention of troubleshooting, maximization of the use of staff and resources, design of next generation central laboratory…) (5). Hyperautomation goes beyond mere automation; it adds substantial value to healthcare organizations by

enabling predictive maintenance, enhancing production, and improving quality. Collaborative robots, known as cobots, work alongside human professionals, elevating the standard of care delivered. Through the reconfiguration of business and care pathways, hyperautomation facilitates the creation of intelligent laboratories and drives the development of data-driven processes, thereby revolutionizing decision-making.

Data integration and augmentation of care Services

One of the standout applications of hyperautomation is its ability to augment care services for physicians. Through seamless data integration and analysis, AI algorithms offer personalized treatment recommendations, expanding the scope of healthcare services beyond conventional boundaries. In a recent report, AI algorithm utilizing multiple data sources including clinical, socioeconomic, and behavioral data was developed to predict patients at highest risk for readmission and provide care navigators to prevent rehospitalization. The study showed that the patients had overall 21.0% less adjusted incidence of 30-day rehospitalization compared with matched control encounters, or 69 fewer rehospitalizations per 1000 encounters. These data highlight that the coordination of patient's care continuum is critical for safe and effective transition of care (6). Additionally, the use of cutting-edge technologies like drones for the secure and timely delivery of blood samples enhances the overall management of healthcare services, ensuring patients receive the care they need when they need it (7).

Living in Smart Healthcare Environments

The integration of hyperautomation paves the way for smart healthcare environments, revolutionizing the patient experience. Through interconnected technologies, patients can receive proactive feedback, creating a more engaging and efficient healthcare journey. Atrial fibrillation (AF) is a good example of this new journey where digital companion can help to risk estimation. Smartphone applications have been evaluated as a stand-alone interpretation tool for 12-lead ECG in primary care. Recent data showed that for AF the sensitivity and specificity were 97% and 99%, respectively, in primary care setting (8). High-risk patients can therefore be advised to connect with healthcare professionals for further investigation.

Another example could be through one of the most common chronic diseases, Chronic Obstructive Pulmonary Disease (COPD) new communication tool between healthcare professionals, the patient and his or her caregivers, as well as the method of identifying and verifying new knowledge generated on an ongoing basis in diagnostic and therapeutic processes were used in COPD (9). The patient engagement and elements of artificial intelligence reduces the significant clinical risk of therapy. Intelligent workflows and data-driven processes facilitate the incorporation of user feedback from both patients and healthcare providers. This results in improved accuracy, heightened customer satisfaction, and valuable business intelligence.

Prerequisites and Challenges

For successful implementation of hyperautomation in healthcare, certain prerequisites must be met. High-quality, structured, and standardized data, along with interoperability, are crucial for accurate information exchange. Multistakeholder engagement, involving clinicians, physicians, and patients, is paramount for technology adoption and acceptance. Competency development and education among users, with a focus on a human-centered approach, are vital for seamless integration. Leadership, vision, and a training framework that fosters a data culture and innovation are essential for driving the adoption of these advanced technologies.

Impact on Data Quality and Ethics

The adoption of hyperautomation in healthcare brings forth important considerations regarding data quality, algorithms, and the mitigation of biases associated with AI-driven decision support systems. Ensuring that future systems rely on accurate and reliable data is paramount. Leadership and training play a pivotal role in establishing a data-driven culture, promoting ethical practices, and addressing potential liability concerns.

Opportunities and Risks

Hyperautomation in healthcare presents a wealth of opportunities, including streamlined organizational processes, improved access to care, enhanced quality of care, and the seamless integration of primary and specialized care. It empowers healthcare professionals with greater control, fosters preventive care, and enhances collaboration among them. Quick wins can be achieved through local network opportunities with general practitioners and pharmacies, which are closely connected to citizens and can effectively showcase the benefits of hyperautomation. However, careful management of risks related to patient safety, ethics, and liability is imperative.

Conclusion

In conclusion, hyperautomation is poised to be a transformative force in healthcare. By seamlessly integrating AI, machine learning, and robotic process automation, it equips health managers to optimize processes, enhance efficiency, improve the accuracy of healthcare operations, and ultimately elevate patient safety and experiences. As healthcare continues to evolve, embracing hyperautomation will be crucial in shaping a more efficient, responsive, and patient-centered future.

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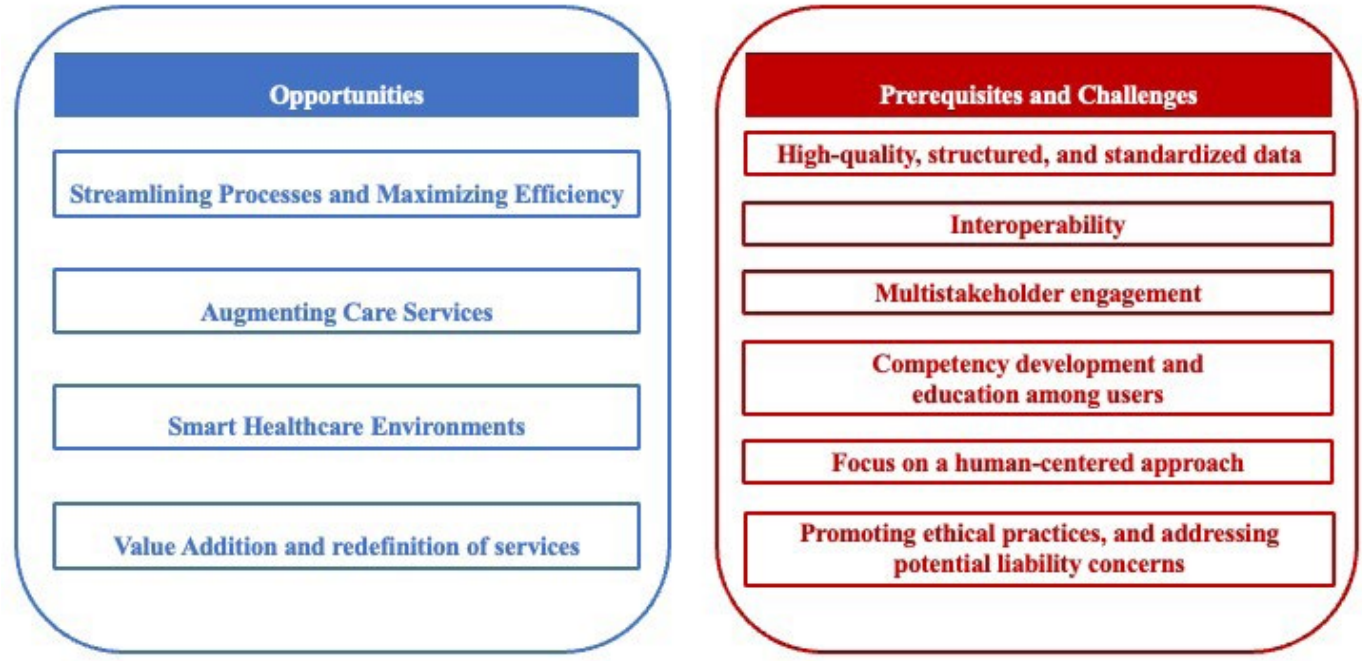
None.

Figure 1: Opportunities and challenges of hyperautomation



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