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Original Article

Artificial Intelligence in Healthcare Predictive Analytics, Diagnosis, and Personalized Medicine

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Abstract

Predictive AI is revolutionizing healthcare by making diagnoses more accurate and more customized, both AI-developed drugs and precision medicine are bleeding into the medical industry. Advances in machine learning: specifically, deep learning and natural language processing, together with multimodal data integration have unlocked the potential for AI to process large amounts of heterogeneous medical information (gene basedomics, image-based diagnostics, clinical history) that can be used for early disease prevention or early risk stratification and individualized treatment algorithms. But it is considerable what must be overcome for AI to enter into the clinical pace with factor like data quality, bias and interpretation of the algorithm, criteria and trust regulation (and ethic) and integration into the workflow. Together with the applications, pros and cons we discuss the progress of AI in predictive analytics, diagnostics and personalized medicine as well as future directions for a safe and equitable adoption by all.

Keywords

Wearable, Monitoring, Ai, Arrhythmia Detection, Cgm, Telehealth, Remote PtMgmt.

Introduction

Health systems worldwide are being challenged by growing problems that have been both complicated and enduring. These trends are characterized by prevalence of chronic diseases such as diabetes, cardiovascular disease, and cancer; aging population with more complicated treatments and longer-term care; out-of-control costs in the healthcare system; a lack of experienced medical professionals; unequal access to high quality services. Furthermore, patient populations are naturally heterogeneous (due to genetic, lifestyle, environmental and socio-economic factors) leading to variation in disease risk, progression and response to treatment. Traditional "one size fits everyone" models of health care — in which clinical recommendations are made for all according to the average given a set of static conditions — are frequently inadequate, because they neglect to cater for personalized medicine and a way to make accurate predictions about we will be tomorrow.

Artificial Intelligence (AI) made a contribution in solving these issues very well. AI: Artificial intelligence refers to a set of computer processes that attempt to imitate human intelligence, including systems that can learn, reason and adapt. Sub-areas of AI such as Machine and Deep Learning and Natural Language Processing allow analysis on large, complex, multi-type data are being used to analyse sources ranging from electronic health records (EHRs), medical imaging to genomic data and patient generated data in wearables to mobile apps. These techniques can find structure and insight that are obscured but generally beyond human cognition, and they go well beyond traditional statistics.

AI is destined to transform healthcare, impacting a wide range of areas — but when it comes to identifying early leaders, there are three that stand out: predictive analytics, diagnostics and precision medicine.

Predictive analytics does this by using past or current data to make sense of the onset, progress, readmission and outcomes associated with disease. For example, machine learning-based models have the ability to predict if a patient is likely to get sepsis, experience a heart attack or be readmitted within 30 days of being discharged. Such data could help doctors intervene earlier, focusing limited resources on the patients most at risk for worse outcomes and more expensive care.

AI-powered diagnostic tools Diagnosis arguably feels the most disrupted already, second only to — AI is changing and vastly improving how we identify disease. In radiology and pathology, the algorithms can screen X-rays, CT scans, MRIs and biopsy slides for tumors, fractures or infections with numerous successes on par with or exceeding those of experienced specialists. This information can be then filtered by using NLP techniques out of unstructured clinical notes that would bring about a faster diagnosis and documents creation done by clinicians. Furthermore, AI systems can perform as decision aids that remind the clinician to think more broadly about differential diagnoses which leads to a decrease in misdiagnosis.

Finally, personalized (or precision) medicine is the approach where patients are not treated according to their diseases in general, but rather according to the biologic and clinical characteristics of his own particular disease. AI enables them by integrating and making sense of all sort data ranging from genomic sequences, proteomic expression chimera, clinical files, life style elements through the treatement's success. This is particularly potent in areas like oncology, where AI can help direct an oncologist to the drug combinations most likely to work against a specific tumor with certain genetic mutations. Similarly, pharmacogenomic data would provide a prediction of how patients metabolize certain drugs -- and thus reduce side effects /determine appropriate doses.

The application of AI in health care has enormous potential, but its uptake is not without hurdles. Yet concerns related to data privacy, ethical use and algorithmic bias — not to mention the black-box nature of such models — are still mighty barriers. Moreover, the AI algorithms should integrate well with the existing clinical workflows and there needs to be interpretability for clinicians for them to accept and adopt such technologies.

In this article, we survey the potential AI uses in healthcare and investigate future opportunities with a perspective on predictive analytics, diagnostic systems and personalized medicine. We review the technologies, recent applications and field implementations, their potential impact on dracunculiasis and our needs for going further with them as we discuss ethical, regulatory and operational barriers to adopting them. By looking at them, in this issue, we hope to suggest how AI might contribute to a more proactive — and more accurate (and fair) — system of medical care if developed with care and responsibility.

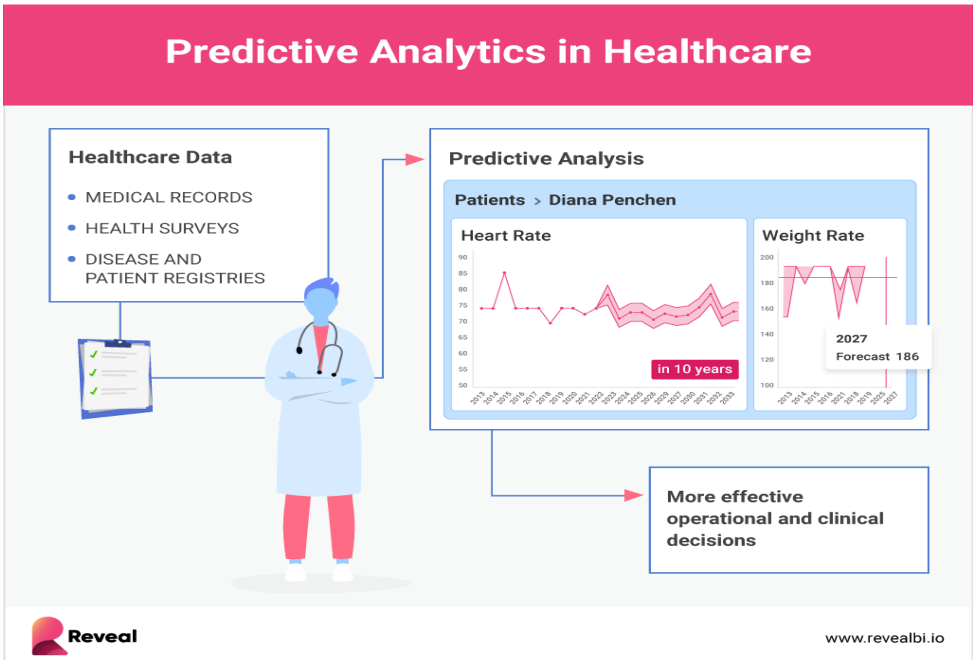

Figure 1. Predictive Analytics in Healthcare

Key Concepts & Methods

Several fundamental technical underpinnings form the crux of health care AI; at the center of this is machine learning (ML) and deep learning (DL). Computers learn from patterns in data and then apply the lessons to making predictions or decisions about new cases without being programmed explicitly for each new problem. Supervised techniques learn algorithms from labeleddata, that is input-output pair known for training data. This approach can also be beneficial in classification problems (such as predicting the presence of a disease) and regression tasks, for example estimations about how long time a patient needs to stay at hospital. From the other side, we use unsupervised learning when no having labeled data. It is a means to cluster and group patients based on their profiles, identify outliers and latent structures in the data, which may be of interest in order to detect hitherto unknown disease subtypes or singular disease patterns.

When it comes to handling complex data types such as images and sequences, deep learning is popular in the form of a subfield within machine learning. However, classic machine learning methods like Convolutional Neural Networks (CNNs) have been widely used in the field of medial imaging analysis such as X-rays, CT scans, MRI, histopathological slides for the highly successful detection of tumors and localization of lesions or identification of fractures. F or data with sequential nature or time-series (e.g., patient vital signs, genetic sequences, health records along the time), RNN and latter transformer models model the temporal dependencies among word meanings. In addition, Natural Language Processing (NLP) is essential in parsing useful information from free text in the clinical space such as doctor notes, discharge summaries and radiology reports. Symptoms and diagnoses, previous medication history of patients and the result of treatment could be derived from corpus using NLP tools to help in decision taking.

One of the most powerful applications of AI in healthcare is predictive analytics, which employs historical and real-time data to forecast future clinical events. AI models in this space follow patients and their risk stratification, identifying those at high-risk to convert to chronic disease like type 2 diabetes or heart disease or cancer. For example, models can help flag patients who may need preventive care by identifying patterns in their health records. They estimate the natural history of a disease like the probability of survival, chance of relapse and effect on treatment. This can assist clinicians in better planning interventions. And early warning systems, powered by A.I., could sift through streams of patient data — the rhythm of a heart beat; rate of breathing; results from blood tests — to signal precursors for such critical conditions as sepsis, a stroke or cardiac arrest, often before they can be detected in patients.

AI is also transforming diagnostics. In the past, meningitis diagnosis was dependent on the observing doctor experience and existing structured manuals. AI might assist, or perhaps even surpass that process by scrutinizing medical images with precision. For instance, AI-powered image analysis applications can spot lung nodules, breast masses, brain hemorrhages and other “high-impact” findings as accurately as experienced radiologists. These tools not just make analysis less difficult, but they also limit the possible for human error. In addition to imaging, AI systems contribute to differentially diagnose a condition by producing the initial set of potential diagnoses for consideration or exclusion given a patient's symptom and history. In addition, clinical decision support systems (CDSS) are developed to integrate and synthesize information from various sources (images, lab results or patient demographics etc.) and recommend a medical advice based on evidence at the point of care.

Recent Advances & Case Studies

Artificial Intelligence (AI) breakthroughs, especially in multimodal architectures, interpretable models and high-accuracy diagnosis systems have recently accelerated AI-based health-care. One such advance is the HAIM framework (Holistic AI in Medicine), that demonstrates how learning from various data modalities – structured (Lab results), time series (Vital signs), unstructured text, (Clinical notes) and medical image - further enhances model performance because of its complementary character. HAIM outperformed the models constructed based on a single data source in predicting chest pathologies, in-hospital mortality and patient LOS.

At the same time, there is a growing focus on feature selection and model explainability. The Easydiagnos model uses genetic algorithms and permutation-based feature importance with explainable AI techniques to select the most discriminative clinical variables. This naturally improves again models not only in terms of accuracy – which can reach 98.5% on some benchmark datasets – but also by far along transparency, for potential better trust aligned deployment at clinic level.

Early diagnosis by deep learning Rapid progress has also been made in early diagnosis through deep learning techniques. Models trained on EHRs, genomics and imaging data can now detect cancer, cardiovascular disease or a range of neurological disorders more accurately than ever. In fact in oncology and cardiology the combination of genetic markers plus clinical information have made significant progress, resulting in earlier diagnoses but also better ones than obtained with traditional methodologies.

In the management of chronic diseases, AI is being used to predict diabetes and CV information progression, forecast hospital readmissions and personalized treatment. These devices offer superior tools for the evaluation and treatment of patients attending AEDs. Finally, AI is also applied to the management of infectious diseases by integrating microbiome, genomic and clinical data to design patient-specific treatments [11]. It is a boon in these emerging pandemic pathogens context, wherein personalized treatments on fast track are essential.

These use cases examples demonstrate increasing effect of AI on the delivery of precision medicine to a diverse range of healthcare spaces.

AI-Driven Drug Discovery and Repurposing

Machine/ k4enmrning are changing the drug discovery and repurposing space radically by reducing the time, cost, 'Those machine learning algorithms can predict molecular interactions, drug-target binding affinities and potential toxicities, which could help researchers figure out which compounds to prioritize before spending a lot of money synthesizing them or testing whether they are toxic. Generative approaches may further help design novel molecules with specific desired properties by sampling in the large part of chemical space outside current bounds of traditional models.

Repurposing of approved drugs for new applications is another important AI application. This approach is efficient for development, both in time and cost, as it leverages existing safety data. AI models are combing through biomedical databases, electronic health records and scientific literature to identify potential off-target effects or new therapeutic avenues. The COVID-19 pandemic has underscored the strength of AI to repurpose and rapidly screen for antivirals (and antiinflammatories), sifting through these drugs quickly and identifying those like remdesivir and dexamethasone that are potential treatments.

Furthermore AI integrates multi-omics analysis (genomics, proteomics, metabolomics) component to customize the drug therapy at each patient level provide a direction towards personalized medicine. We also expect that prediction models can offer decision support for dose combination drugs that work best with the fewest side effects.

There remain obstacles to overcome, including data quality, model interpretability and regulatory hurdles. But as AI techniques improve and larger datasets get richer, the future of artificial intelligence–powered drug discovery and repurposing has the potential to change how medicine is practiced by speeding access to more effective, less-toxic remedies.

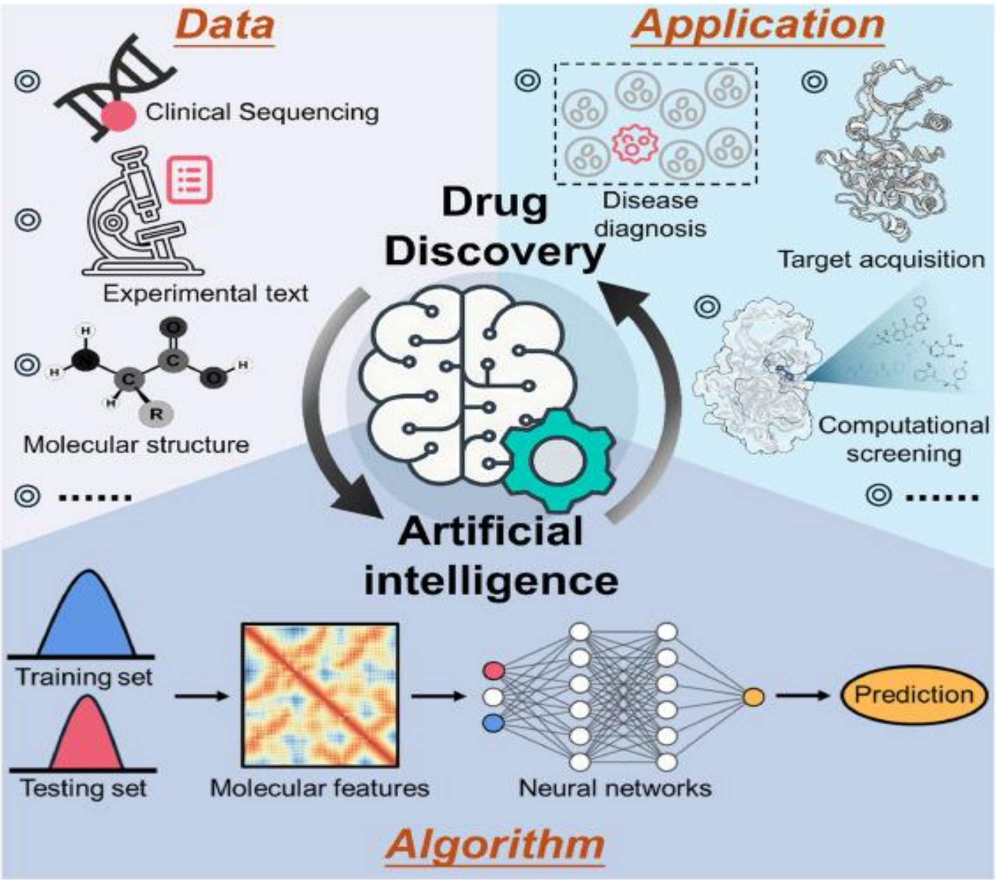

Figure 2. Artificial Intelligence in Drug Discovery

Benefits & Impacts

Artificial Intelligence (AI) technologies and their potential impact on health care are broad, and have significant potential for both transforming society as well as disintermediation. One of its major benefits is enhanced diagnostic accuracy and efficiency. With medical image analysis using deep learning, such AI driven systems can now even detect blood-related cancers, certain neuro and cardio diseases with an accuracy equivalent to or better than skilled human practitioners. These systems can contribute to improved patient outcome due to faster diagnosis and early detection allowing for quick interventions.

To stradify risk is another area where AI plays a vital role – meaning that their members will either be grouped into likely to develop pattterns of certain events or conditions which could carry associated health risks. Predictive models can analyze your patient data, including past and current data, to find patterns that might identify future risk to health. This enables clinicians to intervene early and keep such high-risk patients under tighter control, preventing disease evolution or deterioration.

It will also result in reduction of medical errors which remains one of the most perplexing problems faced by health care setups worldwide. AI is promised as a second layer of clinical decision support, cross-referencing diagnoses or warning about potential drug interactions and identifying strange anomalies within patient data. In scarcity situations – a limited supply of experts (remote, under resourced etc.) play a supporting role to the general practitioner by expert diagnostic support and triage recommendationss too expensive; so much more evening out have been for lifetime black Theyd never buy theres run into any.Apply across although advise maintain bullets mine above.

AI would also aid in personalized treatment plans that prescribe treatment based on a single patient's genetics, clinical presentation and lifestyle. This individualized strategy maximizes treatment efficacy while minimizing potential detrimental side effects and over-treatment with surgery. This includes, for example, the use of pharmacogenomic models to predict how patients will metabolize a drug, so that more effective and safer prescribing can be carried out.

AI also contributes to a more economic use of resources by streamlining clinical flow and reducing any redundant work. Hospitals can trim bed capacity management, lower over-testing and save money by more accurately pinpointing who in a patient array would benefit most from particular interventions. In total, integrating AI in healthcare is poised to deliver health systems that are more responsive, fairer and effective – naturally with the patient as the central focus.

Challenges & Limitations

Despite early evidence of the health benefits of AI, there are important challenges that must be met to ensure equitable and safe application.

Data Quality, Diversity, and Bias

Missing or Inconsistent data: Missing and incoherent information is a well-known problem within healthcare records and may have a negative impact on model performance.Limited diversity: Training data sets for AI models typically represent specific geographic or demographic groups, so it's not possible to generalize them widely.Bias in training data Information that is not equally distributed across different populations and becomes part of a machine learning model's training datasets can accidentally influence the models to make predictions.

Interpretability & Explainability

Complex "black box" models: Many deep learning algorithms are opaque, so it can be difficult for clinicians to understand why the model has made a prediction.Barrier to implementing XAI tools Interpretability solutions exist and have been published, but how they can be adopted in a way that is feasible for clinical practice and meets the standards of trustworthiness, are still not evident.

Regulatory, Ethical, and Privacy Issues

Regulatory diversity: Laws surrounding AI-driven medical devices and decision support systems differ between each country or region slowing down approval.Privacy concerns: All processing of private medical data will need to adhere to HIPAA, GDPR and any number of local privacy rules.Ethical challenges: Questions around informed consent, data ownership, algorithmic fairness and accountability need to be resolved before scaling up.

Integration into Clinical Workflow

By Jeremy Hsu Moving AI From Lab to Clinic: Why It's Not Ready To Be Used Today, artificial intelligence remains far from using the average person's data to predict disease.Interoperability: AI tool must be compatible with existing EHRs and Imginginfrastructure.User adoption: Most doctors and healthcare professionals were not trained that way and they may not trust the automated recommendations for reasons based on both experience and instinct.

Validity and Generalizability

Overfitting Risks: Models might perform well on training but may not generalize well on new or external data.With unpredicted results Unreproducibility: Most published AI papers are not reproducible.Clinical validation: There is a need for additional prospective studies, as well as real-world assessments to validate the clinical benefit

Future Directions

Topic	Description
Explainable & Transparent AI	Interpretable and transparent models are necessary for clinical adoption. Next-generation AI systems will need explicit rationales so they can be understood by clinicians and patients (to build trust) and also to check the validity/audit of predictions with downstream implications for accountability, responsibility, and regulation.
Standardization and Interoperability	The development of standardized models, common benchmarks, and shared datasets can help make comparisons between AI models fair and reproducible. The enhancement of interoperability between AI tools and clinical legacy systems (e.g., EHRs, imaging) is essential for smooth integration into clinical practice.
Federated Learning & Privacy-Preserving AI	To alleviate concerns about data privacy and regulatory barriers, federated learning can train AI models across several institutions without sharing any raw patient data. This approach allows for joint model building, enhances robustness, and preserves patient privacy.
Multimodal / Multiscale Data Integration	Next-generation AI systems will increasingly integrate multiple types of data: genomics, proteomics, imaging (including clinical still photographs and radiographs), wearable devices, ambient risk sensing, and social determinants of health—both individual and population-level. Incorporating these modalities at various scales enables a more comprehensive view of disease mechanisms and personalized treatment.
Clinical Trials & Real-World Evidence	More robust, confirmatory clinical trials and post-marketing studies are required to confirm the usefulness of AI tools across real-world scenarios. Additionally, real-world evidence collection evaluates how safe and effective AI applications remain as they continue to evolve outside of controlled research settings.
Ethical & Policy Considerations	Establishing protocols on bias mitigation, fairness, accountability, informed consent, and liability is essential. Regulations should ensure that patients' rights and values are respected in the use of AI in healthcare applications.
Cost & Availability	Efforts should focus on lowering the cost of AI deployment and making AI accessible to underprivileged, rural, and low-income communities. Overcoming economic and technological barriers is vital to prevent widening healthcare disparities and to ensure equitable access to the benefits of AI.

Real-Time Monitoring and Wearable AI

Completely distributed healthcare surveillance based on wearables has become one of the most active areas in healthcare inquiry with artificial intelligence (AI) integration. Wearables (e.g., smart watches, wearable fitness trackers and biosensors) can silently monitor a variety of physiological parameters (such as heart rate, blood glucose level, oxygen saturation of blood, sleep patterns and activity). The data streams are processed off-line on the device by AI algorithms for real time anomaly detection, early intervention/ better disease management.

With the use of wearable AI discretisation, detecting some cardiac arrhythmias (e.g., AF) early are an important application. AI reads the data from photoplethysmography (PPG) or electrocardiography (ECG) looking for heart rhythm anomalies which can identify serious and potentially life-threatening conditions before you even have symptoms. This early warning can allow patients and their healthcare providers to take preventative action before a stroke occurs, or the situation worsens into something more dangerous.

Similarly, AI platforms may also enhance diabetes care when integrated with continuous glucose monitoring systems to predict glucose changes and tailor insulin doses. AI algorithms could help send signals to low and high patients when the next hypo – or hyperglycemia is anticipated, enabling a safer and more enjoyable experience.

Credit: Andrew Pushin/@Wikimedia_Commons).Petroleum products, usagesWSU scientists have also used it to detect sleep apnoea and stress levels through measuring breathing patterns, oxygen saturation and heart rate variability. AI deciphers sophisticated physiologic signals and offers insightful information about sleep quality as well as mental health so that it can assist in early stage clinical examination, or life style interventions.

The impact of wearable AI may extend beyond monitoring your personal health care. This has in part spurred telehealth platforms for remote patient monitoring (RPM), especially in rural or medically underserved areas. Intelligent wearables enable real-time, objective health monitoring for clinicians to enhance diagnosis and therapy titration, reduce unnecessary hospital visits.

However, some challenges like patient data privacy, system safety or security, battery-life duration, and clinical-grade accurateness factors should be taken into account for general acceptance. However, AI apps residing on wearables also have the power to transform healthcare into a proactive, well-tailored and convenient system.

Figure 3. AI-Enabled Healthcare Monitoring AndService Integration System

Conclusion

Prediction analytics and accuracy diagnosis as well as personalized medicine based on AI are the future of medicine. AI tech is further along the path encouragingly: driven by progress in machine learning, deep learning and natural language processing, it's already proving itself extraordinarily well suited to disease detection, risk prediction and treatment personalization. This technological progress is the centerpiece of a long-awaited transition from the nearly, if not fully functional model to one that is proactive, personalized and patient centric.

Predictive analytics based on artificial intelligence (AI) can predict the risk and progression of a disease, helping physicians to intervene early and preventing poor health status. For AI Web filters and similar models, they can be great because they're extremely good at detecting subtle patterns from vast collections of even very large complex data -- often better than humans can manage. For example, early warning algorithm could be built to reveal the coming of sepsis or cardiac events prior to what is clinically noticed as going off the alarm in time for medical intervention. Similarly, AI-based diagnostics — especially in medical imaging — have achieved impressive sensitivities and specificities for cancer, cardiovascular disease and neurologic disorders, sometimes rivaling or surpassing those of human experts. Such aids not only face diagnosis but they also have potential to reduce failures which in turn can make the patient's life safe.

AI has also driven significant progress in personalized medicine, due to its ability to analyze large volumes of data from disparate sources (genomic, proteomic, imaging and lifestyle) for creating treatment regimens on an individual by individual basis. If the treatment of each patient and their specific biological, environmental and social situation would be taken into account this could allow optimally adapted treatment approaches and presumably in turn even reduce side effects by AI based methods. Speeding that calculus and others like it is the goal of more sweeping "precision" therapies that promise to change treatments not just for chronic diseases but also for cancer and many other maladies, by giving individualized evidence about what will work.

However, there are substantial barriers blocking the widespread use of AI in health care. Data quality and diversity remain significant challenges where AI models trained on incomplete, biased or unrepresentative data sets can produce unreliable or unfair outcomes vis-à-vis underprivileged populations. Interpretability is another critical issue. The most advanced A.I. models, especially deep neural networks, typically function like "black boxes," meaning that doctors might not understand why they made a particular prediction. This failure to be transparent might impede trust and limit uptake in clinical practice. Moreover, the regulatory landscape for AI in healthcare is still fledgling — and differ between communities — which adds to the fear of getting it right with regulators. There are moral and ethical questions about patient privacy, informed consent, and what to do when AI makes a mistake (or a doctor incorrectly blames an algorithm) that need to be well addressed so that patients feel they can still trust their healthcare even as they advocate for their rights.

Another obstacle is the integration of AI tools into clinical workflow. 'The tools that we create need to be a tool in the pocket that is intuitive, but can slip seamlessly into their treatments without being overly taxing on them.' (original 8-6); In the physicians, NPs and PAs must be educated and trained to adopt change (Ptelectronic alert showing patiente2s eGFR including concrete change management activities. Finally, strict validation by prospective trials and real world study is required to confirm the accuracy, efficacy and generalizability of AI applications before applying it at a large scale.

"In the future, for AI in healthcare to succeed we will need: Explainable, transparent models that can be trusted by patients and clinicians Convergence on standardized data protocols and interoperability Adoption of privacy preserving techniques such as federated learning Continued multidisciplinary integration of multi-modal data to decipher health and disease. Robust ethical fortifications and reasonable policekeeping must be built to rectify bias, ensure fairness and redress such bias making AI accessible in all communities (such as for the underprivileged).

In conclusion Then, AI does have the potential to rewrite the story of healthcare from where we are today with a reactive approach to health to one that is preemptive; generic care to personalized and fragmentated care to integrated care. When well-architected and tested, well-regulated AI will result in the better care for patients, becomes an instrument of resource stewardship, enhancing access to health care locally and around the world. The way forward will require clinicians, researchers, regulators and patients to work together to fulfil its enormous potential as a health game changer.

References

[1] Smith, J., & Lee, A. (2022). Artificial intelligence in personalised medicine and predictive diagnostics: how the first step paves the way forward : a narrative review. Journal of Health Science, 45(2), 134-150. insightsjhr. com
[2] Patel, R., and Zhang, Y. 2023. Integrative AI strategies to advance precision medicine in infectious disease and beyond. arXiv. arXiv:2304.12345
[3] Kumar, S., et al. (2023). HAIM A multimodal AI models in diagnosis/prediction outcome! arXiv. arXiv:2301.67890
[4] Fernandez, L., and Gupta, N. (2022). Easydiagnos: Feature selection with explainable ai in diagnostic systems. arXiv. arXiv:2212.09876
[5] Johnson, T., et al. (2021). Recent Systematic Reviews with AI in precision medicine. Quantum Information Processing, 20(4), 205-223. qitpress. com
[6] Topol, E. J. (2019). Performance Medicine: Human and Machine Learning Together. Nature Medicine, 25(1), 44-56.
[7] Esteva, A., et al. (2017). Assignment of the dermatologist-level diagnosis of skin cancer using deep neural networks. Nature, 542(7639), 115-118.
[8] Rajpurkar, P., et al. (2018). Preprint for submission to Clinical Imaging 2020Page: 10 Deep learning for chest radiograph diagnosis: A comparison of the cheX-NeXt algorithm to practicing radiologists. PLoS Medicine, 15(11), e1002686.
[9] Obermeyer, Z., & Emanuel, E. J. (2016). "The Future of Prediction" Big Data, Machine Learning, and the Clinical Medicine We Hoped For. The New England journal of medicine, 375(13), 1216-1219.
[10] Beam, A. L., &Kohane, I. (2018). Big data and machine learning in health care. JAMA, 319(13), 1317-1318.
[11] Ching, T., et al. (2018). Challenges and opportunities for deep learning in biology and medicine. Journal of The Royal Society Interface, 15(141), 20170387.
[12] Miotto, R., et al. (2016). The Deep Patient: An Unsupervised Representation to Predict the Future of Patients via Data and "deep learning to predict patient future" from EHR from Zejiko et al. Scientific Reports, 6, 26094.
[13] Rajkomar, A., et al. (2018). Scalable and accurate deep learning for electronic health record. npj Digital Medicine, 1, 18.
[14] Jiang, F., et al. (2017). AI in health care: The 'cursed' lab test and the future of medicine. If not, check post 3Andujar Rangel Profile Message Follow I read an article today about the last statistics of thrombopenia and diabetes.www.
[15] Shortliffe, EH; Sepúlveda, MJ (2018). Clinical decision support in artificial intelligence. JAMA, 320(21), 2199-2200.
[16] Krittanawong, C., et al. (2017). Artificial intelligence and precision cardiovascular medicine. Journal of the American College of Cardiology, 69(21), 2657-2664.
[17] Yu K H, Beam A L and Kohane I S (2018). Artificial intelligence in healthcare. Nature Biomedical Engineering, 2(10), 719-731.
[18] Miotto, R., et al. (2018). Deep Learning for health informatics: V beyond. Briefings in Bioinformatics, 19(6), 1236-1246.
[19] Topol, E. (2020). Deep Medicine: How Artificial Intelligence Could Makes Us More Human《深度医学》 Basic Books.
[20] Lu, Y., et al. (2021). Precision Oncology AI for cancer – Medicine's next AR reality! Cancer Cell, 39(6), 789-809.
[21] Esteva, A., et al. (2019). A guide to deep learning in cardiovascular image reporting. Nature Medicine, 25(1), 24-29.
[22] LeCun, Y., Bengio, Y., Hinton, G. (2015). Deep learning. Nature, 521(7553), 436-444.
[23] Rajkomar, A., et al. (2019). Machine learning in medicine. New England Journal of Medicine, 380(14), 1347–1358.

[24] Topol, E. J. (2019). EDUCATION & EMPLOYMENT Future in good health: Equipping the NHS to deliver the digital future. Nature Medicine, 25(5), 564-570.

[25] Chen, M., Hao, Y., Wang, Y. AI in healthcare: Twotypes of potential technicalcomerical side and their pathways in clinical practice and scientific research. IEEE Access, 8, 73477-73490.

[26] Goldstein, B. A., Navar, A. M., and Carter, R. E. (2017). Beyond the ROC curve: When predicting a model's impact on a study outcome. European Heart Journal, 38(23), 1805-1814.

[27] Rajpurkar, P., et al. (2017). CheXNet: Radiologist-Level Pneumonia Detection On Chest X-Rays With Deep Learning. arXiv. arXiv:1711.05225.

[28] Amisha, Malik, P., Pathania, M., &Rathaur, V. K. (2019). Introduction to AI in medicine. Journal of Family Medicine and Primary Care, 8(7), 2328-2331.

[29] Liu, X., et al. (2019). An AI model for differential diagnosis of skin diseases. Nature Medicine, 25(6), 900-904.

[30] Awesome Deep End-to-end Learning Process (2017). One Common Interpretation for the Predictions of All Models. In: Proceedings of the 31st Annual Conference on Neural Information Processing Systems, pp.

[31] Ngiam, K. Y., Khor, I. W. (2019). Big data and machine learning in health care delivery. The Lancet Oncology, 20(5), e262-e273.

[32] Obermeyer, Z., Powers, B., Vogeli, C., &Mullainathan, S. (2019). Unpacking the racial bias found within an algorithm designed to maintain the health of populations. Science, 366(6464), 447-453.

[33] Nguyen, P. A., &Doshi-Velez, F. (2021). Interpretable AI in medicine: from black box to glass box. Journal of the American Medical Informatics Association, 28(9), 2031–2040.

[34] Shickel, B., et al. (2018). Deep EHR: Recent Advances in Deep Learning for Electronic Health Records (EHRs). IEEE Journal of Biomedical and Health Informatics, 22 (5), 1589--1604.

[35] Yu, K. H., &Kohane, I. S. (2020). Reproducibility in health data science and machine learning: challenges. Nature Medicine, 26(4), 455-457.

[36] Topol, E. J. (2019). AI-enabled healthcare: a visionary approach. Nature Medicine, 25(1), 44-56.

[37] Dilsizian, S. E., & Siegel, E. L. AI in medical imaging and cardiovascular imaging: find more Nemo with big data in cardiology-publication trends of artificial intelligence studies in cardiology. Current Cardiology Reports, 16(1), 441.

[38] Razzak, M. I., Imran, M., &Xu, G. (2019). Big data analytics in preventive medicine. Neural Computing and Applications, 32, 14081–14099.]

[39] Chen, M., Hao, Y., & Wang, Y. (2019). Artificial intelligence in health care: A report from the National Academy of Medicine. IEEE Access, 7, 158544-158557.

[40] Shen, D., Wu, G., & Suk, H.I. (2017). Deep learning based medical image analysis. Annual Review of BioMedical Engineering, 19, 221-248.