

# 《“健康中国”智慧医疗生态体系发展战略研究》

## 参考

2022年20期（总第60期）

中国工程科技知识中心医药卫生专业分中心  
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### [动态信息]

#### 1. Group Recommends Policy Changes for Future Telehealth Optimization

【mhealthintelligence】The Bipartisan Policy Center (BPC) released a report that aims to support future telehealth optimization by detailing Medicare usage trends and providing recommendations for policymakers. Located in Washington, DC, the BPC is a think tank focused on providing policy-based solutions to issues in various arenas, including healthcare, education, and infrastructure.

链接:

<https://mhealthintelligence.com/news/group-recommends-policy-changes-for-future-telehealth-optimization>

### [文献速递]

#### 1. Artificial Intelligence Algorithm Qualification: A Quality by Design Approach to Apply Artificial Intelligence in Pharma

作者: TONI MANZANO;

来源: PDA journal of pharmaceutical science and technology

摘要: Quality is defined by the American Society for Quality (ASQ) as "the totality of features and characteristics of a product or service that bears on its ability to satisfy given needs." Therefore, quality is applicable to processes that supply outcomes with values that can be measured. Statistical control is an

effective methodology that provides the outcome of quality of goods, bringing an added value that other methods, like quality by inspection, do not offer. The statistical methods applied to process control have been thoroughly developed, and the mathematics that supports them have been broadly demonstrated. Artificial Intelligence (AI) is a field in which mathematics, statistics, and programming play a joint role, and its results can also be applied to disciplines like quality control. Nevertheless, its utilization is subordinate to the qualification of the implemented algorithms. This research presents a standard procedure to AI algorithms, allowing their usage in regulated environments to ensure the quality of the delivered products or services (e.g., in drugs and medicines manufacturing). The regulated principles are defined by the concept of quality by design (QbD), which is a notion introduced in the pharmaceutical industry as a good practice for process

management under multivariate analysis. This study intended to provide guidance for qualifying AI algorithms using QbD guidelines as the foundation for this purpose.

链接:

[https://pan.ckcest.cn/rcservice//doc?doc\\_id=106602](https://pan.ckcest.cn/rcservice//doc?doc_id=106602)

## **2. Enhancing preclinical drug discovery with artificial intelligence**

作者: Vijayan, R. S. K. ; Kihlberg, Jan; Cross, Jason B. ;  
Poongavanam, Vasanthanathan;

来源: Drug discovery today

摘要: Artificial intelligence (AI) is becoming an integral part of drug discovery. It has the potential to deliver across the drug discovery and development value chain, starting from target identification and reaching through clinical development. In this review, we provide an overview of current AI technologies and a glimpse of how AI is reimagining preclinical drug discovery by

highlighting examples where AI has made a real impact. Considering the excitement and hyperbole surrounding AI in drug discovery, we aim to present a realistic view by discussing both opportunities and challenges in adopting AI in drug discovery.

链接:

[https://pan.ckcest.cn/rcservice//doc?doc\\_id=106603](https://pan.ckcest.cn/rcservice//doc?doc_id=106603)

### **3. Use of Artificial Intelligence in Clinical Neurology**

作者: James M. Hillis; Bernardo C. Bizzo;

来源: Seminars in neurology

摘要: Artificial intelligence is already innovating in the provision of neurologic care. This review explores key artificial intelligence concepts; their application to neurologic diagnosis, prognosis, and treatment; and challenges that await their broader adoption. The development of new diagnostic biomarkers,

individualization of prognostic information, and improved access to treatment are among the plethora of possibilities. These advances, however, reflect only the tip of the iceberg for the ways in which artificial intelligence may transform neurologic care in the future.

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[https://pan.ckcest.cn/rcservice//doc?doc\\_id=106601](https://pan.ckcest.cn/rcservice//doc?doc_id=106601)

#### **4. Artificial intelligence and clinical deterioration**

作者: James, Malycha; Stephen, Bacchi; Oliver, Redfern;

来源: Current opinion in critical care

摘要: To provide an overview of the systems being used to identify and predict clinical deterioration in hospitalised patients, with focus on the current and future role of artificial intelligence (AI). There are five leading AI driven systems in this field: the Advanced Alert Monitor (AAM), the electronic Cardiac

Arrest Risk Triage (eCART) score, Hospital wide Alert Via Electronic Noticeboard, the Mayo Clinic Early Warning Score, and the Rothman Index (RI). Each uses Electronic Patient Record (EPR) data and machine learning to predict adverse events. Less mature but relevant evolutions are occurring in the fields of Natural Language Processing, Time and Motion Studies, AI Sepsis and COVID-19 algorithms. Research-based AI-driven systems to predict clinical deterioration are increasingly being developed, but few are being implemented into clinical workflows. Escobar et al. (AAM) provide the current gold standard for robust model development and implementation methodology. Multiple technologies show promise, however, the pathway to meaningfully affect patient outcomes remains challenging.

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[https://pan.ckcest.cn/rcservice//doc?doc\\_id=106604](https://pan.ckcest.cn/rcservice//doc?doc_id=106604)

## 5. Growing Use and Confidence in Artificial

### Intelligence for Care Delivery

作者: With William Gordon;

来源: NEJM catalyst innovations in care delivery.

摘要: A majority of NEJM Catalyst Insights Council members are confident in AI systems' accuracy and say AI has improved patient health. Now including global data. The use of artificial intelligence (AI) and machine learning (ML) in health care delivery is accelerating. Health care organizations are using AI across a wide range of clinical areas, functional applications, and data types, with provider confidence in the accuracy and effectiveness of AI increasing as clinicians and leaders experience its benefits firsthand. In a December 2021 survey of NEJM Catalyst Insights Council members — who are clinicians, clinical leaders, and executives at organizations



around the world that are directly involved in care delivery — 30% of survey respondents globally say that their organization currently uses AI applications, and another 25% report that they will do so within 2 years. Among U.S. respondents, 35% indicate that they currently use AI applications, up eight percentage points over our 2019 survey on the same topic.

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[https://pan.ckcest.cn/rcservice//doc?doc\\_id=106606](https://pan.ckcest.cn/rcservice//doc?doc_id=106606)

## **6. Recent Applications of Artificial Intelligence in Early Cancer Detection**

作者: Nausheen Khanam ; Rajnish Kumar;

来源: Current medicinal chemistry

摘要: Cancer is a deadly disease that is often caused by the accumulation of various genetic mutations and pathological alterations. The death rate can only be reduced when it is detected in the early stages, because

cancer treatment when the tumor has not metastasized in many regions of the body is more effective. However, early cancer detection is fraught with difficulties. Advances in artificial intelligence (AI) have developed a new scope for efficient and early detection of such a fatal disease. AI algorithms have a remarkable ability to perform well on a variety of tasks that are presented or fed to the system. Numerous studies have produced machine learning and deep learning-assisted cancer prediction models to detect cancer from previously accessible data with better accuracy, sensitivity, and specificity. It has been observed that the accuracy of prediction models in classifying fed data as benign, malignant, or normal is improved by implementing efficient image processing techniques and data segmentation augmentation methodologies, along with advanced algorithms. In this review, recent AI-based models for the diagnosis of the most prevalent cancers

in the breast, lung, brain, and skin have been analysed. Available AI techniques, data preparation, modeling processes, and performance assessments have been included in the review.

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[https://pan.ckcest.cn/rcservice//doc?doc\\_id=106607](https://pan.ckcest.cn/rcservice//doc?doc_id=106607)

## **7. How Artificial Intelligence Use Is Expanding in Health Care**

作者: Jonathan Bees

来源: NEJM catalyst innovations in care delivery.

摘要: Comments from NEJM Catalyst Insights Council members on a survey on artificial intelligence for care delivery. Artificial intelligence (AI) and machine learning (ML) use for health care delivery has gained momentum. In a December 2021 survey of NEJM Catalyst Insights Council members — who are clinicians, clinical leaders, and executives at organizations around the world

that are directly involved in care delivery — 30% of survey respondents globally say that their organization currently uses AI applications and another 25% expect to do so within 2 years. Results for U.S. respondents are slightly higher, with 35% reporting current use of AI applications, which is eight percentage points higher than in our 2019 survey on the same topic (Figure 1).

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## **8. Artificial Intelligence-Based Pharmacovigilance in the Setting of Limited Resources**

作者: Liang, Likeng; Hu, Jifa; Sun, Gang; Hong, Na; Wu, Ge; He, Yuejun; Li, Yong; Hao, Tianyong; Liu, Li; Gong, Mengchun;

来源: Drug safety: An international journal of medical toxicology and drug experience

摘要: With the rapid development of artificial

intelligence (AI) technologies, and the large amount of pharmacovigilance-related data stored in an electronic manner, data-driven automatic methods need to be urgently applied to all aspects of pharmacovigilance to assist healthcare professionals. However, the quantity and quality of data directly affect the performance of AI, and there are particular challenges to implementing AI in limited-resource settings. Analyzing challenges and solutions for AI-based pharmacovigilance in resource-limited settings can improve pharmacovigilance frameworks and capabilities in these settings. In this review, we summarize the challenges into four categories: establishing a database for an AI-based pharmacovigilance system, lack of human resources, weak AI technology and insufficient government support. This study also discusses possible solutions and future perspectives on AI-based pharmacovigilance in resource-limited settings.

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[https://pan.ckcest.cn/rcservice//doc?doc\\_id=106609](https://pan.ckcest.cn/rcservice//doc?doc_id=106609)

## [科技报告]

### 1. Artificial Intelligence and Medical Humanities

发表时间: 2022 年

摘要: The use of artificial intelligence in healthcare has led to debates about the role of human clinicians in the increasingly technological contexts of medicine. Some researchers have argued that AI will augment the capacities of physicians and increase their availability to provide empathy and other uniquely human forms of care to their patients. The human vulnerabilities experienced in the healthcare context raise the stakes of new technologies such as AI, and the human dimensions of AI in healthcare have particular significance for research in the humanities. This article explains four key areas of concern

relating to AI and the role that medical/health humanities research can play in addressing them: definition and regulation of "medical" versus "health" data and apps; social determinants of health; narrative medicine; and technological mediation of care. Issues include data privacy and trust, flawed datasets and algorithmic bias, racial discrimination, and the rhetoric of humanism and disability. Through a discussion of potential humanities contributions to these emerging intersections with AI, this article will suggest future scholarly directions for the field.

链接:

[https://pan.ckcest.cn/rcservice//doc?doc\\_id=106608](https://pan.ckcest.cn/rcservice//doc?doc_id=106608)

## **2. Analysis of international publication trends in artificial intelligence in ophthalmology**

发表时间: 2022 年

摘要: Purpose Artificial intelligence (AI) has entered

the field of medicine, and ophthalmology is no exception. The objective of this study was to report on scientific production and publication trends, to identify journals, countries, international collaborations, and major MeSH terms involved in AI in ophthalmology research. Methods Scientometric methods were used to evaluate global scientific production and development trends in AI in ophthalmology using PubMed and the Web of Science Core Collection. Results A total of 1356 articles were retrieved over the period 1966–2019. The yearly growth of AI in ophthalmology publications has been 18.89% over the last ten years, indicating that AI in ophthalmology is a very attractive topic in science. Analysis of the most productive journals showed that most were specialized in computer and medical systems. No journal was found to specialize in AI in ophthalmology. The USA, China, and the UK were the three most productive countries.



The study of international collaboration showed that, besides the USA, researchers tended to collaborate with peers from neighboring countries. Among the twenty most frequent MeSH terms retrieved, there were only four related to clinical topics, revealing the retina and glaucoma as the most frequently encountered subjects of interest in AI in ophthalmology. Analysis of the top ten Journal Citation Reports categories of journals and MeSH terms for articles confirmed that AI in ophthalmology research is mainly focused on engineering and computing and is mainly technical research related to computer methods. Conclusions This study provides a broad view of the current status and trends in AI in ophthalmology research and shows that AI in ophthalmology research is an attractive topic focusing on retinal diseases and glaucoma. This study may be useful for researchers in AI in ophthalmology such as clinicians, but also for scientists to better

understand this research topic, know the main actors in this field (including journals and countries), and have a general overview of this research theme.

链接:

[https://pan.ckcest.cn/rcservice//doc?doc\\_id=106610](https://pan.ckcest.cn/rcservice//doc?doc_id=106610)