Artificial Intelligence Update #2

14 September 2023

Welcome to the latest copy of the AI Update. The aim of this publication is to bring together a range of recently published research and guidance that will help you make evidence-based decisions.

Accessing Articles

The following abstracts are taken from a selection of recently published articles.
If the article is available electronically, then there will be a blue link in the abstract. [Press CTRL and click to open the link. You will need to be registered for NHS Athens (see below) to be able to access the full text.] If the full text is not available electronically we should be able to obtain the document through our document supply services. Please fill in the pre-populated form or contact the library using the details below.

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We also have other services to help you keep up-to-date: www.eastcheshirenhslibrary.net/keep-up-to-date.html.
Please contact Holly if you would like more information, or further evidence searches: holly.cook3@nhs.net.

Contents

Guidance and Statements

New principles on use of AI in education
Russell Group
04 July 2023
https://russellgroup.ac.uk/news/new-principles-on-use-of-ai-in-education/

Guidance to civil servants on use of generative AI
Cabinet Office
Published 29 June 2023
https://www.gov.uk/government/publications/guidance-to-civil-servants-on-use-of-generative-ai/guidance-to-civil-servants-on-use-of-generative-ai

The economic potential of generative AI: The next productivity frontier
McKinsey Digital
June 14, 2023
https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the-economic-potential-of-generative-ai-the-next-productivity-frontier#introduction

Preparing your organisation for AI use
CIPD
30 Jun, 2023
https://www.cipd.org/uk/knowledge/guides/preparing-organisation-ai-use/

Artificial Intelligence: Development, risks and regulation
House of Lords Library
Tuesday, 18 July, 2023
https://lordslibrary.parliament.uk/artificial-intelligence-development-risks-and-regulation/

Synopsis of tools

ChatGPT is a large language model (LLM) chatbot developed by OpenAI. GPT = Generative Pre-Trained Transformer. It is trained on a massive dataset of text and code and can generate human-like text in response to a wide range of prompts and questions. It is not connected to the internet and can make stuff up to fill gaps in its 'knowledge'.

Bing AI also uses GPT-4 (a LLM) to answer questions in a conversational way. It will reference its sources which include: The internet, it's own knowledge base and conversation history.

Google Bard is a more powerful and versatile LLM than GPT. It will answer questions in a similar way but it is trained on a dataset that includes both text and code (GPT is trained on text only). It also has access to real-time internet while GPT does not.

Elicit is a little different and uses machine learning and natural language processing (NLP) to help you find relevant research papers. It will then summarise the paper and extract key information such as formulas or statistical tests. It is a good alternative to using a clinical database (such as medline) if you want to find papers quickly.

Consensus also uses machine learning to identify research papers that will answer a specific research question. Based on the result of the papers it will provide a 'consensus' answer to your research question. It only searches for published research via Semantic Scholar so it is more reliable that the GPT tools. There is currently a 6 month lag of data due to indexing - this is good as there is indexing 😊

Humata uses NLP to analyse text in a document/research paper. You can upload a PDF and ask it questions such as 'what are the results of this trial' or was NNT used? It will also generate new writing (rewords) based on existing documents.

Popular articles

AI is a Lot of Work
New York Magazine
June 20, 2023
https://nymag.com/intelligencer/article/ai-artificial-intelligence-humans-technology-business-factory.html

AI prompt engineering: learn how not to ask a chatbot a silly question
The Guardian
Sat 29 Jul 2023
https://www.theguardian.com/technology/2023/jul/29/ai-prompt-engineering-chatbot-questions-art-writing-dalle-midjourney-chatgpt-bard#:~:text=Prompt%20engineering%20involves%20considering%20the,response%20may%20even%20surpass%20expectations.

Making the invisible visible: what can we do about biased AI in medical devices?
The BMJ
16 August, 2023
https://www.bmj.com/content/382/bmj.p1893

AI in medicine: creating a safe and equitable future
The Lancet
August 12, 2023
https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(23)01668-9/fulltext

Research – a selection of papers from Medline and PsycInfo (< 3 months, most recent first) *Topics – diagnosis, radiology, patient discharge, examination,*

1. Identifying subtypes of heart failure from three electronic health record sources with machine learning: an external, prognostic, and genetic validation study

Authors: Banerjee, Amitava;Dashtban, Ashkan;Chen, Suliang;Pasea, Laura;Thygesen, Johan H.;Fatemifar, Ghazaleh;Tyl, Benoit;Dyszynski, Tomasz;Asselbergs, Folkert W.;Lund, Lars H.;Lumbers, Tom;Denaxas, Spiros and Hemingway, Harry

Publication Date: 2023

Journal: The Lancet. Digital Health 5(6), pp. e370-e379

Abstract: **Background:** Machine learning has been used to analyse heart failure subtypes, but not across large, distinct, population-based datasets, across the whole spectrum of causes and presentations, or with clinical and non-clinical validation by different machine learning methods. Using our published framework, we aimed to discover heart failure subtypes and validate them upon population representative data.; **Methods:** In this external, prognostic, and genetic validation study we analysed individuals aged 30 years or older with incident heart failure from two population-based databases in the UK (Clinical Practice Research Datalink CPRD] and The Health Improvement Network THIN]) from 1998 to 2018. Pre-heart failure and post-heart failure factors (n=645) included demographic information, history, examination, blood laboratory values, and medications. We identified subtypes using four unsupervised machine learning methods (K-means, hierarchical, K-Medoids, and mixture model clustering) with 87 of 645 factors in each dataset. We evaluated subtypes for (1) external validity (across datasets); (2) prognostic validity (predictive accuracy for 1-year mortality); and (3) genetic validity (UK Biobank), association with polygenic risk score (PRS) for heart failure-related traits (n=11), and single nucleotide polymorphisms (n=12).; Findings: We included 188 800, 124 262, and 9573 individuals with incident heart failure from CPRD, THIN, and UK Biobank, respectively, between Jan 1, 1998, and Jan 1, 2018. After identifying five clusters, we labelled heart failure subtypes as (1) early onset, (2) late onset, (3) atrial fibrillation related, (4) metabolic, and (5) cardiometabolic. In the external validity analysis, subtypes were similar across datasets (c-statistics: THIN model in CPRD ranged from 0·79 subtype 3] to 0·94 subtype 1], and CPRD model in THIN ranged from 0·79 subtype 1] to 0·92 subtypes 2 and 5]). In the prognostic validity analysis, 1-year all-cause mortality after heart failure diagnosis (subtype 1 0·20 95% CI 0·14-0·25], subtype 2 0·46 0·43-0·49], subtype 3 0·61 0·57-0·64], subtype 4 0·11 0·07-0·16], and subtype 5 0·37 0·32-0·41]) differed across subtypes in CPRD and THIN data, as did risk of non-fatal cardiovascular diseases and all-cause hospitalisation. In the genetic validity analysis the atrial fibrillation-related subtype showed associations with the related PRS. Late onset and cardiometabolic subtypes were the most similar and strongly associated with PRS for hypertension, myocardial infarction, and obesity (p<0·0009). We developed a prototype app for routine clinical use,

which could enable evaluation of effectiveness and cost-effectiveness.; **Interpretation:** Across four methods and three datasets, including genetic data, in the largest study of incident heart failure to date, we identified five machine learning-informed subtypes, which might inform aetiological research, clinical risk prediction, and the design of heart failure trials.; **Funding:** European Union Innovative Medicines Initiative-2.; Competing Interests: Declaration of interests BT is an employee of Bayer and was previously an employee of Servier. TD is an employee of Bayer. AB is supported by research funding from the National Institute for Health Research (NIHR), British Medical Association, AstraZeneca, and UK Research and Innovation. HH is supported by Health Data Research UK (grant number LOND1), which is funded by the UK Medical Research Council, Engineering and Physical Sciences Research Council, Economic and Social Research Council, Department of Health and Social Care (England), Chief Scientist Office of the Scottish Government Health and Social Care Directorates, Health and Social Care Research and Development Division (Welsh Government), Public Health Agency (Northern Ireland), British Heart Foundation, and Wellcome Trust; and is a NIHR Senior Investigator. AB, SD, FWA, and HH are funded by the NIHR University College London Hospitals Biomedical Research Centre.

Access or request full text: https://libkey.io/10.1016/S2589-7500(23)00065-1

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37236697&custid=ns023446

2. Seasonality of acute kidney injury phenotypes in England: an unsupervised machine learning classification study of electronic health records

Authors: Bolt, Hikaru;Suffel, Anne;Matthewman, Julian;Sandmann, Frank;Tomlinson, Laurie and Eggo, Rosalind

Publication Date: 2023

Journal: BMC Nephrology 24(1), pp. 234

Abstract: **Background:** Acute Kidney Injury (AKI) is a multifactorial condition which presents a substantial burden to healthcare systems. There is limited evidence on whether it is seasonal. We sought to investigate the seasonality of AKI hospitalisations in England and use unsupervised machine learning to explore clustering of underlying comorbidities, to gain insights for future intervention.; **Methods:** We used Hospital Episodes Statistics linked to the Clinical Practice Research Datalink to describe the overall incidence of AKI admissions between 2015 and 2019 weekly by demographic and admission characteristics. We carried out dimension reduction on 850 diagnosis codes using multiple correspondence analysis and applied k-means clustering to classify patients. We phenotype each group based on the dominant characteristics and describe the seasonality of AKI admissions by these different phenotypes.; **Results:** Between 2015 and 2019, weekly AKI admissions peaked in winter, with additional summer peaks related to periods of extreme heat. Winter seasonality was more evident in those diagnosed with AKI on admission. From the cluster classification we describe six phenotypes of people admitted to hospital with AKI. Among these, seasonality of AKI admissions was observed among people who we described as having a multimorbid phenotype, established risk factor phenotype, and general AKI phenotype.; **Conclusion:** We demonstrate winter seasonality of AKI admissions in England, particularly among those with AKI diagnosed on admission, suggestive of community triggers. Differences in seasonality between phenotypes suggests some groups may be more likely to develop AKI as a result of these factors. This may be driven by underlying comorbidity profiles or reflect differences

in uptake of seasonal interventions such as vaccines. (© 2023. BioMed Central Ltd., part of Springer Nature.)

Access or request full text: https://libkey.io/10.1186/s12882-023-03269-0

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37558976&custid=ns023446

3. Perineural invasion detection in pancreatic ductal adenocarcinoma using artificial intelligence

Authors: Borsekofsky, Sarah;Tsuriel, Shlomo;Hagege, Rami R. and Hershkovitz, Dov

Publication Date: 2023

Journal: Scientific Reports 13(1), pp. 13628

Abstract: Perineural invasion (PNI) refers to the presence of cancer cells around or within nerves, raising the risk of residual tumor. Linked to worse prognosis in pancreatic ductal adenocarcinoma (PDAC), PNI is also being explored as a therapeutic target. The purpose of this work was to build a PNI detection algorithm to enhance accuracy and efficiency in identifying PNI in PDAC specimens. Training used 260 manually segmented nerve and tumor HD images from 6 scanned PDAC cases; Analytical performance analysis used 168 additional images; clinical analysis used 59 PDAC cases. The algorithm pinpointed key areas of tumor-nerve proximity for pathologist confirmation. Analytical performance reached sensitivity of 88% and 54%, and specificity of 78% and 85% for the detection of nerve and tumor, respectively. Incorporating tumor-nerve distance in clinical evaluation raised PNI detection from 52 to 81% of all cases. Interestingly, pathologist analysis required an average of only 24 s per case. This time-efficient tool accurately identifies PNI in PDAC, even with a small training cohort, by imitating pathologist thought processes. (© 2023. Springer Nature Limited.)

Access or request full text: https://libkey.io/10.1038/s41598-023-40833-y

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37604973&custid=ns023446

4. Transforming healthcare documentation: Harnessing the potential of AI to generate discharge summaries

Authors: Clough, Reece Aj;Sparkes, William A.;Clough, Oliver T.;Sykes, Joshua T.;Steventon, Alexander T. and King, Kate

Publication Date: 2023

Journal: BJGP Open

Abstract: **Background:** Hospital discharge summaries play an essential role in informing GPs of recent admissions to ensure excellent continuity of care and prevent adverse events, however, they are notoriously poorly written, time-consuming and can result in delayed discharge.; **Aim:** To evaluate the potential of AI to produce high-quality

discharge summaries equivalent to the level of a doctor who has completed the UK Foundation Programme.; Design & Setting: Feasibility study using 25 mock patient vignettes.; **Method:** Using the 25 mock patient vignettes, 25 ChatGPT and 25 junior doctor written discharge summaries were generated. Quality and suitability was determined through both independent GP evaluators and adherence to a minimum dataset.; **Results:** Of the 25 AI written discharge summaries 100% were deemed by GPs to be of an acceptable quality compared to that of 92% for the junior doctor summaries. They both showed a mean compliance of 97% with the minimum dataset. In addition, the ability of GPs to determine if the summary was written by ChatGPT was poor, with only a 60% accuracy of detection. Similarly, when run through an AI detection tool all were recognised as being very unlikely to be written by AI.; **Conclusion:** AI has proven to produce discharge summaries of equivalent quality as a doctor who has completed the UK Foundation Programme, however, larger studies with real-world patient data with NHS-approved AI tools will need to be conducted. (Copyright © 2023, The Authors.)

Access or request full text: https://libkey.io/10.3399/BJGPO.2023.0116

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37699649&custid=ns023446

5. Evaluating the limits of AI in medical specialisation: ChatGPT's performance on the UK Neurology Specialty Certificate Examination

Authors: Giannos, Panagiotis

Publication Date: 2023

Journal: BMJ Neurology Open 5(1), pp. e000451

Abstract: **Background:** Large language models such as ChatGPT have demonstrated potential as innovative tools for medical education and practice, with studies showing their ability to perform at or near the passing threshold in general medical examinations and standardised admission tests. However, no studies have assessed their performance in the UK medical education context, particularly at a specialty level, and specifically in the field of neurology and neuroscience.; **Methods:** We evaluated the performance of ChatGPT in higher specialty training for neurology and neuroscience using 69 questions from the Pool-Specialty Certificate Examination (SCE) Neurology Web Questions bank. The dataset primarily focused on neurology (80%). The questions spanned subtopics such as symptoms and signs, diagnosis, interpretation and management with some questions addressing specific patient populations. The performance of ChatGPT 3.5 Legacy, ChatGPT 3.5 Default and ChatGPT-4 models was evaluated and compared.; **Results:** ChatGPT 3.5 Legacy and ChatGPT 3.5 Default displayed overall accuracies of 42% and 57%, respectively, falling short of the passing threshold of 58% for the 2022 SCE neurology examination. ChatGPT-4, on the other hand, achieved the highest accuracy of 64%, surpassing the passing threshold and outperforming its predecessors across disciplines and subtopics.; **Conclusions:** The advancements in ChatGPT-4's performance compared with its predecessors demonstrate the potential for artificial intelligence (AI) models in specialised medical education and practice. However, our findings also highlight the need for ongoing development and collaboration between AI developers and medical experts to ensure the models' relevance and reliability in the rapidly evolving field of medicine.; Competing Interests: Competing interests: None declared. (© Author(s) (or their employer(s)) 2023. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published

by BMJ.)

Access or request full text: https://libkey.io/10.1136/bmjno-2023-000451

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37337531&custid=ns023446

6. AutoPrognosis 2.0: Democratizing diagnostic and prognostic modeling in healthcare with automated machine learning

Authors: Imrie, Fergus;Cebere, Bogdan;McKinney, Eoin F. and van der Schaar, Mihaela

Publication Date: 2023

Journal: PLOS Digital Health 2(6), pp. e0000276

Abstract: Diagnostic and prognostic models are increasingly important in medicine and inform many clinical decisions. Recently, machine learning approaches have shown improvement over conventional modeling techniques by better capturing complex interactions between patient covariates in a data-driven manner. However, the use of machine learning introduces technical and practical challenges that have thus far restricted widespread adoption of such techniques in clinical settings. To address these challenges and empower healthcare professionals, we present an open-source machine learning framework, AutoPrognosis 2.0, to facilitate the development of diagnostic and prognostic models. AutoPrognosis leverages state-of-the-art advances in automated machine learning to develop optimized machine learning pipelines, incorporates model explainability tools, and enables deployment of clinical demonstrators, without requiring significant technical expertise. To demonstrate AutoPrognosis 2.0, we provide an illustrative application where we construct a prognostic risk score for diabetes using the UK Biobank, a prospective study of 502,467 individuals. The models produced by our automated framework achieve greater discrimination for diabetes than expert clinical risk scores. We have implemented our risk score as a web-based decision support tool, which can be publicly accessed by patients and clinicians. By open-sourcing our framework as a tool for the community, we aim to provide clinicians and other medical practitioners with an accessible resource to develop new risk scores, personalized diagnostics, and prognostics using machine learning techniques.
Software: https://github.com/vanderschaarlab/AutoPrognosis.; Competing Interests: The authors have no competing interests to declare.

Access or request full text: https://libkey.io/10.1371/journal.pdig.0000276

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37347752&custid=ns023446

7. Artificial intelligence and the doctor–patient relationship expanding the paradigm of shared decision making

Authors: Lorenzini, Giorgia;Arbelaez Ossa, Laura;Shaw, David Martin and Elger, Bernice Simone

Publication Date: 2023

Journal: Bioethics 37(5)
Abstract: Artificial intelligence (AI) based clinical decision support systems (CDSS) are becoming ever more widespread in healthcare and could play an important role in diagnostic and treatment processes. For this reason, AI-based CDSS has an impact on the doctor–patient relationship, shaping their decisions with its suggestions. We may be on the verge of a paradigm shift, where the doctor–patient relationship is no longer a dual relationship, but a triad. This paper analyses the role of AI-based CDSS for shared decision-making to better comprehend its promises and associated ethical issues. Moreover, it investigates how certain AI implementations may instead foster the inappropriate paradigm of paternalism. Understanding how AI relates to doctors and influences doctor–patient communication is essential to promote more ethical medical practice. Both doctors' and patients' autonomy need to be considered in the light of AI. (PsycInfo Database Record (c) 2023 APA, all rights reserved) (Source: journal abstract)

8. Identifying key multi-modal predictors of incipient dementia in Parkinson's disease: A machine learning analysis and Tree SHAP interpretation

Authors: McFall, G. Peggy;Bohn, Linzy;Gee, Myrlene;Drouin, Shannon M.;Fah, Harrison;Han, Wei;Li, Liang;Camicioli, Richard and Dixon, Roger A.

Publication Date: 2023

Journal: Frontiers in Aging Neuroscience 15
Abstract: Persons with Parkinsonâ€™s disease (PD) differentially progress to cognitive impairment and dementia. With a 3-year longitudinal sample of initially non-demented PD patients measured on multiple dementia risk factors, we demonstrate that machine learning classifier algorithms can be combined with explainable artificial intelligence methods to identify and interpret leading predictors that discriminate those who later converted to dementia from those who did not. Method: Participants were 48 well-characterized PD patients (M baseline age = 71.6;

9. Challenges and ethical considerations to successfully implement artificial intelligence in clinical medicine and neuroscience: A narrative review

Authors: Monteith, Scott;Glenn, Tasha;Geddes, John R.;Achtyes, Eric D.;Whybrow, Peter C. and Bauer, Michael

Publication Date: 2023

Journal: Pharmacopsychiatry
Abstract: This narrative review discusses how the safe and effective use of clinical artificial intelligence (AI) prediction tools requires recognition of the importance of human intelligence. Human intelligence, creativity, situational awareness, and professional knowledge, are required for successful implementation. The implementation of clinical AI prediction tools may change the workflow in medical practice resulting in new challenges and safety implications. Human understanding of how a clinical AI prediction tool performs in routine and exceptional situations is fundamental to successful implementation. Physicians must be involved in all aspects of the selection, implementation, and ongoing product monitoring of clinical AI prediction tools. (PsycInfo Database Record (c) 2023 APA, all rights reserved) (Source: journal abstract)

Access or request full text: https://libkey.io/10.1055/a-2142-9325

10. Can the application of machine learning to electronic health records guide antibiotic prescribing decisions for suspected urinary tract infection in the Emergency Department?

Authors: Rockenschaub, Patrick;Gill, Martin J.;McNulty, Dave;Carroll, Orlagh;Freemantle, Nick and Shallcross, Laura

Publication Date: 2023

Journal: PLOS Digital Health 2(6), pp. e0000261

Abstract: Urinary tract infections (UTIs) are a major cause of emergency hospital admissions, but it remains challenging to diagnose them reliably. Application of machine learning (ML) to routine patient data could support clinical decision-making. We developed a ML model predicting bacteriuria in the ED and evaluated its performance in key patient groups to determine scope for its future use to improve UTI diagnosis and thus guide antibiotic prescribing decisions in clinical practice. We used retrospective electronic health records from a large UK hospital (2011-2019). Non-pregnant adults who attended the ED and had a urine sample cultured were eligible for inclusion. The primary outcome was predominant bacterial growth ≥104 cfu/mL in urine. Predictors included demography, medical history, ED diagnoses, blood tests, and urine flow cytometry. Linear and tree-based models were trained via repeated cross-validation, re-calibrated, and validated on data from 2018/19. Changes in performance were investigated by age, sex, ethnicity, and suspected ED diagnosis, and compared to clinical judgement. Among 12,680 included samples, 4,677 (36.9%) showed bacterial growth. Relying primarily on flow cytometry parameters, our best model achieved an area under the ROC curve (AUC) of 0.813 (95% CI 0.792-0.834) in the test data, and achieved both higher sensitivity and specificity compared to proxies of clinician's judgement. Performance remained stable for white and non-white patients but was lower during a period of laboratory procedure change in 2015, in patients ≥65 years (AUC 0.783, 95% CI 0.752-0.815), and in men (AUC 0.758, 95% CI 0.717-0.798). Performance was also slightly reduced in patients with recorded suspicion of UTI (AUC 0.797, 95% CI 0.765-0.828). Our results suggest scope for use of ML to inform antibiotic prescribing decisions by improving diagnosis of suspected UTI in the ED, but performance varied with patient characteristics. Clinical utility of predictive models for UTI is therefore likely to differ for important patient subgroups including women <65 years, women ≥65 years, and men. Tailored models and decision thresholds may be required that account for differences in achievable performance, background incidence, and risks of infectious complications in these groups.; Competing Interests: The authors have declared that no competing interests exist.

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Access or request full text: https://libkey.io/10.1371/journal.pdig.0000261

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=37310941&custid=ns023446

11. Effect of an artificial intelligence decision support tool on palliative care referral in hospitalized patients: A randomized clinical trial

Authors: Wilson, Patrick M.;Ramar, Priya;Philpot, Lindsey M.;Soleimani, Jalal;Ebbert, Jon O.;Storlie, Curtis B.;Morgan, Alisha A.;Schaeferle, Gavin M.;Asai, Shusaku W.;Herasevich, Vitaly;Pickering, Brian W.;Tiong, Ing C.;Olson, Emily A.;Karow, Jordan C.;Pinevich, Yuliya and Strand, Jacob

Publication Date: 2023

Journal: Journal of Pain and Symptom Management 66(1)
Abstract: Context: Palliative care services are commonly provided to hospitalized patients, but accurately predicting who needs them remains a challenge. **Objectives:** To assess the effectiveness on clinical outcomes of an artificial intelligence (AI)/machine learning (ML) decision support tool for predicting patient need for palliative care services in the hospital. **Methods:** The study design was a pragmatic, cluster-randomized, stepped-wedge clinical trial in 12 nursing units at two hospitals over a 15-month period between August 19, 2019, and November 17, 2020. Eligible patients were randomly assigned to either a medical service consultation recommendation triggered by an AI/ML tool predicting the need for palliative care services or usual care. The primary outcome was palliative care consultation note. Secondary outcomes included: hospital readmissions, length of stay, transfer to intensive care and palliative care consultation note by unit. **Results:** A total of 3183 patient hospitalizations were enrolled. Of eligible patients, A total of 2544 patients were randomized to the decision support tool (1212; 48%) and usual care (1332; 52%). Of these, 1717 patients (67%) were retained for analyses. Patients randomized to the intervention had a statistically significant higher incidence rate of palliative care consultation compared to the control group (IRR, 1.44 [95% CI, 1.11–1.92]). Exploratory evidence suggested that the decision support tool group reduced 60-day and 90-day hospital readmissions (OR, 0.75 [95% CI, 0.57, 0.97]) and (OR, 0.72 [95% CI, 0.55–0.93]) respectively. **Conclusion:** A decision support tool integrated into palliative care practice and leveraging AI/ML demonstrated an increased palliative care consultation rate among hospitalized patients and reductions in hospitalizations. (PsycInfo Database Record (c) 2023 APA, all rights reserved) (Source: journal abstract)

Access or request full text: https://libkey.io/10.1016/j.jpainsymman.2023.02.317

12. Artificial intelligence in radiology

Authors: Hosny, Ahmed;Parmar, Chintan;Quackenbush, John;Schwartz, Lawrence H. and Aerts, Hugo J. W. L.

Publication Date: 2018

Journal: Nature Reviews. Cancer 18(8), pp. 500-510

Abstract: Artificial intelligence (AI) algorithms, particularly deep learning, have demonstrated remarkable progress in image-recognition tasks. Methods ranging from convolutional neural networks to variational autoencoders have found myriad applications in the medical image analysis field, propelling it forward at a rapid pace. Historically, in radiology practice, trained physicians visually assessed medical images for the detection, characterization and monitoring of diseases. AI methods excel at automatically recognizing complex patterns in imaging data and providing quantitative, rather than qualitative, assessments of radiographic characteristics. In this Opinion article, we establish a general understanding of AI methods, particularly those pertaining to image-based tasks. We explore how these methods could impact multiple facets of radiology, with a general focus on applications in oncology, and demonstrate ways in which these methods are advancing the field. Finally, we discuss the challenges facing clinical implementation and provide our perspective on how the domain could be advanced.

Access or request full text: https://libkey.io/10.1038/s41568-018-0016-5

URL: https://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=mdc&AN=29777175&custid=ns023446

Background Papers (same as last month – just left in for reference)

Artificial Intelligence: How to get it right
NHS
October 2019
https://transform.england.nhs.uk/media/documents/NHSX_AI_report.pdf

Understanding healthcare workers' confidence in AI
NHS AI Lab & Health Education England
May 202
https://digital-transformation.hee.nhs.uk/binaries/content/assets/digital-transformation/dart-ed/understandingconfidenceinai-may22.pdf

Artificial Intelligence in Healthcare
Academy of Medical Royal Colleges
January 2019
https://www.aomrc.org.uk/wp-content/uploads/2019/01/Artificial_intelligence_in_healthcare_0119.pdf

AI and Healthcare
UK Parliament POST
December 2020
https://researchbriefings.files.parliament.uk/documents/POST-PN-0637/POST-PN-0637.pd

Artificial intelligence in healthcare: Applications, risks, and ethical and societal impacts
European Parliament
June 2022
https://www.europarl.europa.eu/RegData/etudes/STUD/2022/729512/EPRS_STU(2022)729512_EN.pdf

No longer science fiction, AI and robotics are transforming healthcare
PriceWaterHouseCoopers
https://www.pwc.com/gx/en/industries/healthcare/publications/ai-robotics-new-health/transforming-healthcare.html

Shaping the future of digital technology in health and social care
The King's Fund
07 April 2021
https://www.kingsfund.org.uk/publications/future-digital-technology-health-social-care