

# ChatGPT for Neurosurgery

- [Subthalamic nucleus or globus pallidus internus deep brain stimulation for the treatment of parkinson's disease: An artificial intelligence approach](#)
- [Clinical feasibility of AI Doctors: Evaluating the replacement potential of large language models in outpatient settings for central nervous system tumors](#)
- [Learning to combine top-down context and feed-forward representations under ambiguity with apical and basal dendrites](#)
- [Do LLMs Have 'the Eye' for MRI? Evaluating GPT-4o, Grok, and Gemini on Brain MRI Performance: First Evaluation of Grok in Medical Imaging and a Comparative Analysis](#)
- [Knowledge Graph-Enhanced Deep Learning Model \(H-SYSTEM\) for Hypertensive Intracerebral Hemorrhage: Model Development and Validation](#)
- [Assessing Diagnostic Precision and Therapeutic Guidance Using Artificial Intelligence in Functional Neurosurgery Cases](#)
- [Artificial intelligence and chordoma: A scoping review of the current landscape and future directions](#)
- [Transforming neurosurgical practice with large language models: comparative performance of ChatGPT-omni and Gemini in complex case management](#)

## Publication trend

2023 64

2024 109

2025 10 prediccion 240

## Utility

[Utility of ChatGPT for Neurosurgery.](#)

## Literature

### 2025

Naylor RM, Braksick SA. [Contemporary Management](#) of [Subdural Hematoma](#). Neurol Clin. 2025 Feb;43(1):65-78. doi: 10.1016/j.ncl.2024.07.003. Epub 2024 Sep 10. PMID: 39547742.

Basaran AE, Güresir A, Knoch H, Vychopen M, Güresir E, Wach J. Beyond traditional prognostics: integrating RAG-enhanced AtlasGPT and ChatGPT 4.0 into [aneurysmal subarachnoid hemorrhage outcome prediction](#). Neurosurg Rev. 2025 Jan 11;48(1):40. doi: 10.1007/s10143-025-03194-w. PMID: 39794551; PMCID: PMC11723888.

Neyazi M, Khajuria RK, Muhammad S. How I do it - focused Sylvian approach for clipping of middle

cerebral artery aneurysms. *Acta Neurochir (Wien)*. 2025 Jan 10;167(1):9. doi: 10.1007/s00701-025-06423-9. PMID: 39789366; PMCID: PMC11717822.

Ungvari A, Gulej R, Patai R, Papp Z, Toth A, Szabó AA, Podesser BK, Sótónyi P, Benyó Z, Yabluchanskiy A, Tarantini S, Maier AB, Csiszar A, Ungvari Z. Sex- specific mechanisms in vascular aging: exploring cellular and molecular pathways in the pathogenesis of age-related cardiovascular and cerebrovascular diseases. *Geroscience*. 2025 Jan 3. doi: 10.1007/s11357-024-01489-2. Epub ahead of print. PMID: 39754010.

5: Zhang Y. Letter to the Editor: "Comparative analysis of GPT-4-based ChatGPT's diagnostic performance with radiologists using real-world radiology reports of brain tumors". *Eur Radiol*. 2025 Jan 2. doi: 10.1007/s00330-024-11280-8. Epub ahead of print. PMID: 39747587.

## 2024

Heisinger S, Salzmann SN, Senker W, Aspalter S, Oberndorfer J, Matzner MP, Stienen MN, Motov S, Huber D, Grohs JG. ChatGPT's Performance in Spinal Metastasis Cases-Can We Discuss Our Complex Cases with ChatGPT? *J Clin Med*. 2024 Dec 23;13(24):7864. doi: 10.3390/jcm13247864. PMID: 39768787; PMCID: PMC11727723.

6: Zong H, Wu R, Cha J, Wang J, Wu E, Li J, Zhou Y, Zhang C, Feng W, Shen B. Large Language Models in Worldwide Medical Exams: Platform Development and Comprehensive Analysis. *J Med Internet Res*. 2024 Dec 27;26:e66114. doi: 10.2196/66114. PMID: 39729356; PMCID: PMC11724220.

7: Nasra M, Jaffri R, Pavlin-Premrl D, Kok HK, Khabaza A, Barras C, Slater LA, Yazdabadi A, Moore J, Russell J, Smith P, Chandra RV, Brooks M, Jhamb A, Chong W, Maingard J, Asadi H. Can artificial intelligence improve patient educational material readability? A systematic review and narrative synthesis. *Intern Med J*. 2024 Dec 25. doi: 10.1111/imj.16607. Epub ahead of print. PMID: 39720869.

8: Picton B, Andalib S, Spina A, Camp B, Solomon SS, Liang J, Chen PM, Chen JW, Hsu FP, Oh MY. Assessing AI Simplification of Medical Texts: Readability and Content Fidelity. *Int J Med Inform*. 2024 Dec 1;195:105743. doi: 10.1016/j.ijmedinf.2024.105743. Epub ahead of print. PMID: 39667051.

9: Bongco EDA, Cua SKN, Hernandez MALU, Pascual JSG, Khu KJO. The performance of ChatGPT versus neurosurgery residents in neurosurgical board examination-like questions: a systematic review and meta-analysis. *Neurosurg Rev*. 2024 Dec 7;47(1):892. doi: 10.1007/s10143-024-03144-y. PMID: 39643792.

10: Almekkawi AK, Caruso JP, Anand S, Hawkins AM, Rauf R, Al-Shaikhli M, Aoun SG, Bagley CA. Comparative Analysis of Large Language Models and Spine Surgeons in Surgical Decision-Making and Radiological Assessment for Spine Pathologies. *World Neurosurg*. 2024 Dec 23;194:123531. doi: 10.1016/j.wneu.2024.11.114. Epub ahead of print. PMID: 39622288.

11: Patil A, Serrato P, Chisvo N, Arnaout O, See PA, Huang KT. Large language models in neurosurgery: a systematic review and meta-analysis. *Acta Neurochir (Wien)*. 2024 Nov 23;166(1):475. doi: 10.1007/s00701-024-06372-9. PMID: 39579215.

12: Lavadi RS, Carnovale B, Tirmizi Z, Gajjar AA, Kumar RP, Shah MJ, Hamilton DK, Agarwal N. Examining the Readability of AtlasGPT, the Premiere Resource for Neurosurgical Education. *World Neurosurg*. 2024 Dec 6;194:123469. doi: 10.1016/j.wneu.2024.11.052. Epub ahead of print. PMID: 39577655.

- 13: Hoffman H, Sequeiros Chirinos J, Khan N, Nickele C, Inoa V, Elijovich L, Elangovan C, Krishnaiah B, Hoit D, Arthur AS, Goyal N. Prediction of Symptomatic Intracranial Hemorrhage Before Mechanical Thrombectomy Using Machine Learning in Patients with Anterior Circulation Large Vessel Occlusion. *World Neurosurg.* 2024 Dec 6;194:123455. doi: 10.1016/j.wneu.2024.11.038. Epub ahead of print. PMID: 39577637.
- 14: Hamamoto R, Komatsu M, Yamada M, Kobayashi K, Takahashi M, Miyake M, Jinnai S, Koyama T, Kouno N, Machino H, Takahashi S, Asada K, Ueda N, Kaneko S. Current status and future direction of cancer research using artificial intelligence for clinical application. *Cancer Sci.* 2024 Nov 18. doi: 10.1111/cas.16395. Epub ahead of print. PMID: 39557634.
- 16: Aydin S, Karabacak M, Vlachos V, Margetis K. Large language models in patient education: a scoping review of applications in medicine. *Front Med (Lausanne).* 2024 Oct 29;11:1477898. doi: 10.3389/fmed.2024.1477898. PMID: 39534227; PMCID: PMC11554522.
- 17: Sarikonda A, Abishek R, Isch EL, Momin AA, Self M, Sambangi A, Carreras A, Jallo J, Harrop J, Sivaganesan A. Assessing the Clinical Appropriateness and Practical Utility of ChatGPT as an Educational Resource for Patients Considering Minimally Invasive Spine Surgery. *Cureus.* 2024 Oct 8;16(10):e71105. doi: 10.7759/cureus.71105. PMID: 39525124; PMCID: PMC11548952.
- 18: Di Ieva A, Stewart C, Suero Molina E. Large Language Models in Neurosurgery. *Adv Exp Med Biol.* 2024;1462:177-198. doi: 10.1007/978-3-031-64892-2\_11. PMID: 39523266.
- 19: Guerra GA, Grove S, Le J, Hofmann HL, Shah I, Bhagavatula S, Fixman B, Gomez D, Hopkins B, Dallas J, Cacciamani G, Peterson R, Zada G. Artificial intelligence as a modality to enhance the readability of neurosurgical literature for patients. *J Neurosurg.* 2024 Nov 8;1-7. doi: 10.3171/2024.6.JNS24617. Epub ahead of print. PMID: 39504543.
- 20: Xu J, Mankowski M, Vanterpool KB, Strauss AT, Lonze BE, Orandi BJ, Stewart D, Bae S, Ali N, Stern J, Mattoo A, Robalino R, Soomro I, Weldon E, Oermann EK, Aphinyanaphongs Y, Sidoti C, McAdams-DeMarco M, Massie AB, Gentry SE, Segev DL, Levan ML. Trials and Tribulations: Responses of ChatGPT to Patient Questions About Kidney Transplantation. *Transplantation.* 2024 Oct 31. doi: 10.1097/TP.0000000000005261. Epub ahead of print. PMID: 39477825.
- 21: Yang ML, Zheng BW, Song JF. Reply to Zhang et al. regarding 'Re: ChatGPT encounters multiple opportunities and challenges in neurosurgery'. *Int J Surg.* 2024 Oct 8. doi: 10.1097/JIS9.0000000000002106. Epub ahead of print. PMID: 39377423.
- 22: Su Z, Tang G, Huang R, Qiao Y, Zhang Z, Dai X. Based on Medicine, The Now and Future of Large Language Models. *Cell Mol Bioeng.* 2024 Sep 16;17(4):263-277. doi: 10.1007/s12195-024-00820-3. PMID: 39372551; PMCID: PMC11450117.
- 23: Sarikonda A, Isch E, Self M, Sambangi A, Carreras A, Sivaganesan A, Harrop J, Jallo J. Evaluating the Adherence of Large Language Models to Surgical Guidelines: A Comparative Analysis of Chatbot Recommendations and North American Spine Society (NASS) Coverage Criteria. *Cureus.* 2024 Sep 3;16(9):e68521. doi: 10.7759/cureus.68521. PMID: 39364514; PMCID: PMC11448007.
- 24: Mankowski MA, Jaffe IS, Xu J, Bae S, Oermann EK, Aphinyanaphongs Y, McAdams-DeMarco MA, Lonze BE, Orandi BJ, Stewart D, Levan M, Massie A, Gentry S, Segev DL. ChatGPT Solving Complex Kidney Transplant Cases: A Comparative Study With Human Respondents. *Clin Transplant.* 2024 Oct;38(10):e15466. doi: 10.1111/ctr.15466. PMID: 39329220; PMCID: PMC11441623.
- 25: Li Y, Li Z. Knowledge, attitude, and practices regarding ChatGPT among health care professionals.

Am J Manag Care. 2024 Sep 1;30(9):e258-e265. doi: 10.37765/ajmc.2024.89604. PMID: 39302259.

26: Tong L, Zhang C, Liu R, Yang J, Sun Z. Comparative performance analysis of large language models: ChatGPT-3.5, ChatGPT-4 and Google Gemini in glucocorticoid-induced osteoporosis. J Orthop Surg Res. 2024 Sep 18;19(1):574. doi: 10.1186/s13018-024-04996-2. PMID: 39289734; PMCID: PMC11409482.

27: Liu J, Liang X, Fang D, Zheng J, Yin C, Xie H, Li Y, Sun X, Tong Y, Che H, Hu P, Yang F, Wang B, Chen Y, Cheng G, Zhang J. The Diagnostic Ability of GPT-3.5 and GPT-4.0 in Surgery: Comparative Analysis. J Med Internet Res. 2024 Sep 10;26:e54985. doi: 10.2196/54985. PMID: 39255016; PMCID: PMC11422746.

28: Wang S, Kinoshita S, Yokoyama HM. Letter: Performance of ChatGPT and GPT-4 on Neurosurgery Written Board Examinations. Neurosurgery. 2024 Nov 1;95(5):e151-e152. doi: 10.1227/neu.0000000000003172. Epub 2024 Sep 6. PMID: 39240116.

29: Arfaie S, Sadegh Mashayekhi M, Mofatteh M, Ma C, Ruan R, MacLean MA, Far R, Saini J, Harmsen IE, Duda T, Gomez A, Rebchuk AD, Pingbei Wang A, Rasiah N, Guo E, Fazlollahi AM, Rose Swan E, Amin P, Mohammed S, Atkinson JD, Del Maestro RF, Girgis F, Kumar A, Das S. ChatGPT and neurosurgical education: A crossroads of innovation and opportunity. J Clin Neurosci. 2024 Nov;129:110815. doi: 10.1016/j.jocn.2024.110815. Epub 2024 Sep 4. PMID: 39236407.

30: Isch EL, Sarikonda A, Sambangi A, Carreras A, Sircar A, Self DM, Habarth- Morales TE, Catterson EJ, Aycart M. Evaluating the Efficacy of Large Language Models in CPT Coding for Craniofacial Surgery: A Comparative Analysis. J Craniofac Surg. 2024 Sep 2. doi: 10.1097/SCS.00000000000010575. Epub ahead of print. PMID: 39221924.

31: Brown EDL, Maity A, Ward M, Toscano D, Baum GR, Mittler MA, Lo SL, D'Amico RS. ChatGPT as a Decision Support Tool in the Management of Chiari I Malformation: A Comparison to 2023 CNS Guidelines. World Neurosurg. 2024 Nov;191:e304-e332. doi: 10.1016/j.wneu.2024.08.122. Epub 2024 Aug 28. PMID: 39214295.

32: Oliveira AL, Coelho M, Guedes LC, Cattoni MB, Carvalho H, Duarte-Batista P. Performance of ChatGPT 3.5 and 4 as a tool for patient support before and after DBS surgery for Parkinson's disease. Neurol Sci. 2024 Dec;45(12):5757-5764. doi: 10.1007/s10072-024-07732-0. Epub 2024 Aug 29. PMID: 39198356; PMCID: PMC11554841.

33: Ali A, Kumar RP, Polavarapu H, Lavadi RS, Mahavadi A, Legarreta AD, Hudson JS, Shah M, Paul D, Mooney J, Dietz N, Fields DP, Hamilton DK, Agarwal N. Bridging the Gap: Can Large Language Models Match Human Expertise in Writing Neurosurgical Operative Notes? World Neurosurg. 2024 Dec;192:e34-e41. doi: 10.1016/j.wneu.2024.08.062. Epub 2024 Aug 15. PMID: 39153569.

34: Hancı V, Ergün B, Gül Ş, Uzun Ö, Erdemir İ, Hancı FB. Assessment of readability, reliability, and quality of ChatGPT®, BARD®, Gemini®, Copilot®, Perplexity® responses on palliative care. Medicine (Baltimore). 2024 Aug 16;103(33):e39305. doi: 10.1097/MD.00000000000039305. PMID: 39151545; PMCID: PMC11332738.

35: Nietsch KS, Shrestha N, Mazudie Ndjonko LC, Ahmed W, Mejia MR, Zaidat B, Ren R, Duey AH, Li SQ, Kim JS, Hidden KA, Cho SK. Can Large Language Models (LLMs) Predict the Appropriate Treatment of Acute Hip Fractures in Older Adults? Comparing Appropriate Use Criteria With Recommendations From ChatGPT. J Am Acad Orthop Surg Glob Res Rev. 2024 Aug 9;8(8):e24.00206. doi: 10.5435/JAAOSGlobal-D-24-00206. PMID: 39137403; PMCID: PMC11319315.

Mitsuyama Y, Tatekawa H, Takita H, Sasaki F, Tashiro A, Oue S, Walston SL, Nonomiya Y, Shintani A, Miki Y, Ueda D. Comparative analysis of GPT-4-based ChatGPT's diagnostic performance with radiologists using real-world radiology reports of brain tumors. *Eur Radiol*. 2024 Aug 28. doi: 10.1007/s00330-024-11032-8. Epub ahead of print. PMID: 39198333.

36: Cheng K, Li W, Zhang N, Liu X, Wu H. Principles and challenges of generative artificial intelligence detection. *Br J Anaesth*. 2024 Oct;133(4):899-901. doi: 10.1016/j.bja.2024.06.037. Epub 2024 Aug 1. PMID: 39095239.

37: Fabijan A, Zawadzka-Fabijan A, Fabijan R, Zakrzewski K, Nowosławska E, Polis B. Assessing the Accuracy of Artificial Intelligence Models in Scoliosis Classification and Suggested Therapeutic Approaches. *J Clin Med*. 2024 Jul 9;13(14):4013. doi: 10.3390/jcm13144013. PMID: 39064053; PMCID: PMC11278075.

38: Mu LJ, Wang TT, Miao YD. Advancements in AI-driven Oncology: Assessing ChatGPT's Impact from GPT-3.5 to GPT-4o. *Int J Surg*. 2024 Jul 23. doi: 10.1097/JIS9.0000000000001989. Epub ahead of print. PMID: 39041947.

39: Daher M, Chalhoub R, Mouawad A, Aoun M, El-Sett P, Kreichati G, Kharrat K, Sebaaly A. In Reply to the Letter to the Editor Regarding "Will ChatGPT be Able to Replace a Spine Surgeon in the Clinical Setting?". *World Neurosurg*. 2024 Aug;188:265. doi: 10.1016/j.wneu.2024.05.088. PMID: 39010352.

40: Ray PP. Letter to the Editor Regarding "Will ChatGPT Be Able To Replace a Spine Surgeon in the Clinical Setting?". *World Neurosurg*. 2024 Aug;188:264. doi: 10.1016/j.wneu.2024.05.073. PMID: 39010351.

41: Mohamed AA, Lucke-Wold B. Apple Intelligence in neurosurgery. *Neurosurg Rev*. 2024 Jul 15;47(1):327. doi: 10.1007/s10143-024-02568-w. PMID: 39004685.

42: Li J, Zong H, Wu E, Wu R, Peng Z, Zhao J, Yang L, Xie H, Shen B. Exploring the potential of artificial intelligence to enhance the writing of english academic papers by non-native english-speaking medical students - the educational application of ChatGPT. *BMC Med Educ*. 2024 Jul 9;24(1):736. doi: 10.1186/s12909-024-05738-y. PMID: 38982429; PMCID: PMC11232216.

43: Krothapalli N, Hasan D, Lusk J, Poli S, Hussain S, de Havenon A, Grotta J, Grory BM. Mobile stroke units: Beyond thrombolysis. *J Neurol Sci*. 2024 Aug 15;463:123123. doi: 10.1016/j.jns.2024.123123. Epub 2024 Jul 2. PMID: 38981417.

44: Lang SP, Yoseph ET, Gonzalez-Suarez AD, Kim R, Fatemi P, Wagner K, Maldaner N, Stienen MN, Zygorakis CC. Analyzing Large Language Models' Responses to Common Lumbar Spine Fusion Surgery Questions: A Comparison Between ChatGPT and Bard. *Neurospine*. 2024 Jun;21(2):633-641. doi: 10.14245/ns.2448098.049. Epub 2024 Jun 30. PMID: 38955533; PMCID: PMC11224745.

45: Cho HS, Lee HS, Jeon YS, Lee WH, Cho KR. Comparative clinical outcomes of irrigation techniques in burr-hole craniostomy for chronic subdural hemorrhage: a multicenter cohort study. *Eur J Trauma Emerg Surg*. 2024 Dec;50(6):3059-3067. doi: 10.1007/s00068-024-02586-9. Epub 2024 Jul 1. PMID: 38951156.

46: Wu H, Sun Z, Guo Q, Li C. The rapid growth of ChatGPT-related publications: A call for international guidelines. *Asian J Surg*. 2024 Dec;47(12):5313-5314. doi: 10.1016/j.asjsur.2024.06.029. Epub 2024 Jun 27. PMID: 38942627.

47: Zhu H, Kong Y. Letter: Performance of ChatGPT and GPT-4 on Neurosurgery Written Board

Examinations. Neurosurgery. 2024 Sep 1;95(3):e80. doi: 10.1227/neu.0000000000003058. Epub 2024 Jun 25. PMID: 38916307.

48: Zhu N, Zhang N, Yin C, Cheng K, Wu H. Letter re: ChatGPT's Gastrointestinal Tumor Board Tango: A limping dance partner? Eur J Cancer. 2024 Aug;207:114174. doi: 10.1016/j.ejca.2024.114174. Epub 2024 Jun 14. PMID: 38901120.

49: Waisberg E, Ong J, Masalkhi M, Lee AG, Tavakkoli A. Future directions of generative artificial intelligence in ophthalmology and vision science. Surv Ophthalmol. 2024 Sep-Oct;69(5):849-850. doi: 10.1016/j.survophthal.2024.06.003. Epub 2024 Jun 14. PMID: 38880399.

50: Zhang H, Wang X, Su S. Re: ChatGPT encounters multiple opportunities and challenges in neurosurgery. Int J Surg. 2024 Sep 1;110(9):6030-6031. doi: 10.1097/JJS9.0000000000001825. PMID: 38874486; PMCID: PMC11392181.

51: Mohamed AA, Lucke-Wold B. Text-to-video generative artificial intelligence: sora in neurosurgery. Neurosurg Rev. 2024 Jun 13;47(1):272. doi: 10.1007/s10143-024-02514-w. PMID: 38867134.

52: Zhang N, Sun Z, Xie Y, Wu H, Li C. The latest version ChatGPT powered by GPT-4o: what will it bring to the medical field? Int J Surg. 2024 Sep 1;110(9):6018-6019. doi: 10.1097/JJS9.0000000000001754. PMID: 38857508; PMCID: PMC11392067.

53: Daher M, Chalhoub R, Mouawad A, Aoun M, El-Sett P, Kreichati G, Kharrat K, Sebaaly A. In Reply to the Letter to the Editor Regarding "Will ChatGPT Be Able to Replace a Spine Surgeon in the Clinical Setting?". World Neurosurg. 2024 Jun;186:281. doi: 10.1016/j.wneu.2024.03.010. PMID: 38850008.

54: Daungsupawong H, Wiwanitkit V. Letter to the Editor Regarding "Will ChatGPT Be Able to Replace a Spine Surgeon in the Clinical Setting?". World Neurosurg. 2024 Jun;186:280. doi: 10.1016/j.wneu.2024.03.001. PMID: 38850007.

55: Daher M, Chalhoub R, Mouawad A, Aoun M, El-Sett P, Kreichati G, Kharrat K, Sebaaly A. In Reply to the Letter to the Editor Regarding "Will ChatGPT be Able to Replace a Spine Surgeon in the Clinical Setting?". World Neurosurg. 2024 Jun;186:272. doi: 10.1016/j.wneu.2024.03.113. PMID: 38850000.

56: Zhu L, Shi G, Liu C. Letter to the Editor Regarding "Will ChatGPT be Able to Replace a Spine Surgeon in the Clinical Setting?". World Neurosurg. 2024 Jun;186:271. doi: 10.1016/j.wneu.2024.03.057. PMID: 38849999.

57: Dagli MM, Oettl FC, Gujral J, Malhotra K, Ghenbot Y, Yoon JW, Ozturk AK, Welch WC. Clinical Accuracy, Relevance, Clarity, and Emotional Sensitivity of Large Language Models to Surgical Patient Questions: Cross-Sectional Study. JMIR Form Res. 2024 Jun 7;8:e56165. doi: 10.2196/56165. PMID: 38848553; PMCID: PMC11193072.

58: Rao SJ, Isath A, Krishnan P, Tangsrivimol JA, Virk HUH, Wang Z, Glicksberg BS, Krittanawong C. ChatGPT: A Conceptual Review of Applications and Utility in the Field of Medicine. J Med Syst. 2024 Jun 5;48(1):59. doi: 10.1007/s10916-024-02075-x. PMID: 38836893.

59: Brown EDL, Ward M, Maity A, Mittler MA, Larry Lo SF, D'Amico RS. Enhancing Diagnostic Support for Chiari Malformation and Syringomyelia: A Comparative Study of Contextualized ChatGPT Models. World Neurosurg. 2024 Sep;189:e86-e107. doi: 10.1016/j.wneu.2024.05.172. Epub 2024 Jun 1. PMID: 38830507.

60: Lawson McLean A. Constructing knowledge: the role of AI in medical learning. J Am Med Inform

Assoc. 2024 Aug 1;31(8):1797-1798. doi: 10.1093/jamia/ocae124. PMID: 38812088; PMCID: PMC11258398.

61: Wehn AC, Krestel E, Harapan BN, Klymchenko A, Plesnila N, Khalin I. To see or not to see: In vivo nanocarrier detection methods in the brain and their challenges. *J Control Release*. 2024 Jul;371:216-236. doi: 10.1016/j.jconrel.2024.05.044. Epub 2024 May 31. PMID: 38810705.

62: Dabbas WF, Odeibat YM, Alhazaimeh M, Hiasat MY, Alomari AA, Marji A, Samara QA, Ibrahim B, Al Arabiyat RM, Momani G. Accuracy of ChatGPT in Neurolocalization. *Cureus*. 2024 Apr 27;16(4):e59143. doi: 10.7759/cureus.59143. PMID: 38803743; PMCID: PMC11129669.

63: Gunes YC, Camur E, Cesur T. Correspondence on 'Evaluation of ChatGPT in knowledge of newly evolving neurosurgery: middle meningeal artery embolization for subdural hematoma management' by Koester *et al*. *J Neurointerv Surg*. 2024 May 24;jnis-2024-021987. doi: 10.1136/jnis-2024-021987. Epub ahead of print. PMID: 38789259.

64: Powers AY, McCandless MG, Taussky P, Vega RA, Shutran MS, Moses ZB. Educational Limitations of ChatGPT in Neurosurgery Board Preparation. *Cureus*. 2024 Apr 20;16(4):e58639. doi: 10.7759/cureus.58639. PMID: 38770467; PMCID: PMC11104278.

65: Waisberg E, Ong J, Kamran SA, Masalkhi M, Paladugu P, Zaman N, Lee AG, Tavakkoli A. Generative artificial intelligence in ophthalmology. *Surv Ophthalmol*. 2025 Jan-Feb;70(1):1-11. doi: 10.1016/j.survophthal.2024.04.009. Epub 2024 May 16. PMID: 38762072.

66: Kumar RP, Sivan V, Bachir H, Sarwar SA, Ruzicka F, O'Malley GR, Lobo P, Morales IC, Cassimatis ND, Hundal JS, Patel NV. Can Artificial Intelligence Mitigate Missed Diagnoses by Generating Differential Diagnoses for Neurosurgeons? *World Neurosurg*. 2024 Jul;187:e1083-e1088. doi: 10.1016/j.wneu.2024.05.052. Epub 2024 May 16. PMID: 38759788.

67: Cheng K, Sun Z, Yin C, Wu H. Comment on Su et al. (2024) 'Assessing question characteristic influences on ChatGPT's performance and response-explanation consistency: Insights from Taiwan's Nursing Licensing Exam'. *Int J Nurs Stud*. 2024 Aug;156:104783. doi: 10.1016/j.ijnurstu.2024.104783. Epub 2024 May 4. PMID: 38744151.

68: Wu H, Sun Z, Li C. It's time to develop a clinical guideline for ChatGPT usage. *Int J Surg*. 2024 Aug 1;110(8):5292-5293. doi: 10.1097/J9.0000000000001576. PMID: 38729131; PMCID: PMC11325915.

69: Wu H, Li W, Chen X, Li C. The professionalism of ChatGPT in the field of surgery: low or high level? *Int J Surg*. 2024 Sep 1;110(9):5859-5860. doi: 10.1097/J9.0000000000001618. PMID: 38729105; PMCID: PMC11392163.

70: Wu H, Li W, Chen X, Li C. Not just disclosure of generative artificial intelligence like ChatGPT in scientific writing: peer-review process also needs. *Int J Surg*. 2024 Sep 1;110(9):5845-5846. doi: 10.1097/J9.0000000000001619. PMID: 38729102; PMCID: PMC11392203.

71: Aamir A, Hafsa H. "Incorporating large language models into academic neurosurgery: embracing the new era". *Neurosurg Rev*. 2024 May 10;47(1):211. doi: 10.1007/s10143-024-02452-7. PMID: 38724772.

72: Shlobin NA, Ward M, Shah HA, Brown EDL, Sciubba DM, Langer D, D'Amico RS. Ethical Incorporation of Artificial Intelligence into Neurosurgery: A Generative Pretrained Transformer Chatbot-Based, Human-Modified Approach. *World Neurosurg*. 2024 Jul;187:e769-e791. doi: 10.1016/j.wneu.2024.04.165. Epub 2024 May 7. PMID: 38723944.

- 73: Gül Ş, Erdemir İ, Hanci V, Aydoğmuş E, Erkoç YS. How artificial intelligence can provide information about subdural hematoma: Assessment of readability, reliability, and quality of ChatGPT, BARD, and perplexity responses. *Medicine (Baltimore)*. 2024 May 3;103(18):e38009. doi: 10.1097/MD.00000000000038009. PMID: 38701313; PMCID: PMC11062651.
- 74: Yan SY, Liu YF, Ma L, Xiao LL, Hu X, Guo R, You C, Tian R. Walking forward or on hold: Could the ChatGPT be applied for seeking health information in neurosurgical settings? *Ibrain*. 2024 Mar 9;10(1):111-115. doi: 10.1002/ibra.12149. PMID: 38682012; PMCID: PMC11045188.
- 75: Pressman SM, Borna S, Gomez-Cabello CA, Haider SA, Haider C, Forte AJ. AI and Ethics: A Systematic Review of the Ethical Considerations of Large Language Model Use in Surgery Research. *Healthcare (Basel)*. 2024 Apr 13;12(8):825. doi: 10.3390/healthcare12080825. PMID: 38667587; PMCID: PMC11050155.
- 76: Lee TK, Park EH, Lee MH. Medical Ethics and Artificial Intelligence in Neurosurgery-How Should We Prepare? *World Neurosurg*. 2024 Jul;187:e199-e209. doi: 10.1016/j.wneu.2024.04.067. Epub 2024 Apr 17. PMID: 38641244.
- 77: Fabijan A, Zawadzka-Fabijan A, Fabijan R, Zakrzewski K, Nowosińska E, Polis B. Artificial Intelligence in Medical Imaging: Analyzing the Performance of ChatGPT and Microsoft Bing in Scoliosis Detection and Cobb Angle Assessment. *Diagnostics (Basel)*. 2024 Apr 5;14(7):773. doi: 10.3390/diagnostics14070773. PMID: 38611686; PMCID: PMC11011528.
- 78: Koester SW, Catapano JS, Hartke JN, Rudy RF, Cole TS, Naik A, Winkler EA, Graffeo CS, Srinivasan VM, Jadhav AP, Ducruet AF, Lawton MT, Albuquerque FC. Evaluation of ChatGPT in knowledge of newly evolving neurosurgery: middle meningeal artery embolization for subdural hematoma management. *J Neurointerv Surg*. 2024 Sep 17;16(10):1033-1035. doi: 10.1136/jnis-2024-021480. PMID: 38604767.
- 79: Zarra F, Gandhi DN, Karki A, Chaurasia B. Letter: Chat-GPT on brain tumors: An examination of Artificial Intelligence/Machine Learning's ability to provide diagnoses and treatment plans for example neuro-oncology cases. *Clin Neurol Neurosurg*. 2024 May;240:108270. doi: 10.1016/j.clineuro.2024.108270. Epub 2024 Apr 2. PMID: 38604084.
- 80: Liu M, Huang F, Zhang C. Letter to the Editor Regarding: "GPT-4 Artificial Intelligence Model Outperforms ChatGPT, Medical Students, and Neurosurgery Residents on Neurosurgery Written Board-Like Questions". *World Neurosurg*. 2024 Apr;184:351. doi: 10.1016/j.wneu.2024.01.155. PMID: 38590062.
- 81: Seas A, Abd-El-Barr MM. Commentary on "Use of ChatGPT for Determining Clinical and Surgical Treatment of Lumbar Disc Herniation With Radiculopathy: A North American Spine Society Guideline Comparison". *Neurospine*. 2024 Mar;21(1):159-161. doi: 10.14245/ns.2448248.124. Epub 2024 Mar 31. PMID: 38569641; PMCID: PMC10992658.
- 82: Shlobin NA, Rosseau G. Opportunities and Considerations for the Incorporation of Artificial Intelligence into Global Neurosurgery: A Generative Pretrained Transformer Chatbot-Based Approach. *World Neurosurg*. 2024 Jun;186:e398-e412. doi: 10.1016/j.wneu.2024.03.149. Epub 2024 Mar 30. PMID: 38561032.
- 83: Stengel FC, Stienen MN, Ivanov M, Gandía-González ML, Raffa G, Ganau M, Whitfield P, Motov S. Can AI pass the written European Board Examination in Neurological Surgery? - Ethical and practical issues. *Brain Spine*. 2024 Feb 13;4:102765. doi: 10.1016/j.bas.2024.102765. PMID: 38510593; PMCID: PMC10951784.

- 84: Kozel G, Gurses ME, Gecici NN, Gökalp E, Bahadir S, Merenzon MA, Shah AH, Komotar RJ, Ivan ME. Chat-GPT on brain tumors: An examination of Artificial Intelligence/Machine Learning's ability to provide diagnoses and treatment plans for example neuro-oncology cases. *Clin Neurol Neurosurg*. 2024 Apr;239:108238. doi: 10.1016/j.clineuro.2024.108238. Epub 2024 Mar 9. PMID: 38507989.
- 85: Lawson McLean A, Wu Y, Lawson McLean AC, Hristidis V. Large language models as decision aids in neuro-oncology: a review of shared decision-making applications. *J Cancer Res Clin Oncol*. 2024 Mar 19;150(3):139. doi: 10.1007/s00432-024-05673-x. PMID: 38503921; PMCID: PMC10951032.
- 86: Ying L, Li S, Chen C, Yang F, Li X, Chen Y, Ding Y, Chang G, Li J, Wang X. Screening/diagnosis of pediatric endocrine disorders through the artificial intelligence model in different language settings. *Eur J Pediatr*. 2024 Jun;183(6):2655-2661. doi: 10.1007/s00431-024-05527-1. Epub 2024 Mar 19. PMID: 38502320; PMCID: PMC11098926.
- 87: Fang Y, Chen J, Wang R. A commentary on: 'Matters arising: authors of research papers must cautiously use ChatGPT for scientific writing'. *Int J Surg*. 2024 Mar 1;110(3):1877-1878. doi: 10.1097/J.S9.0000000000001037. PMID: 38484262; PMCID: PMC10942224.
- 88: Aliyeva A, Sari E, Alaskarov E, Nasirov R. Enhancing Postoperative Cochlear Implant Care With ChatGPT-4: A Study on Artificial Intelligence (AI)-Assisted Patient Education and Support. *Cureus*. 2024 Feb 9;16(2):e53897. doi: 10.7759/cureus.53897. PMID: 38465158; PMCID: PMC10924891.
- 89: Qian C, Wang R, Fang Y. Is ChatGPT Proficient in extracting critical medical information from patient records? *Asian J Surg*. 2024 Jul;47(7):3140-3141. doi: 10.1016/j.asjsur.2024.02.123. Epub 2024 Mar 5. PMID: 38448291.
- 90: Huang H, Li J, Li Z, Xiao Y, Wang S. Rathke's Cleft Cyst Leads to Stunted Growth in Children: A Case Report Written With the Help of ChatGPT. *Cureus*. 2024 Feb 1;16(2):e53384. doi: 10.7759/cureus.53384. PMID: 38440018; PMCID: PMC10911638.
- 91: Nian PP, Saleet J, Magruder M, Wellington IJ, Choueika J, Houten JK, Saleh A, Razi AE, Ng MK. ChatGPT as a Source of Patient Information for Lumbar Spinal Fusion and Laminectomy: A Comparative Analysis Against Google Web Search. *Clin Spine Surg*. 2024 Dec 1;37(10):E394-E403. doi: 10.1097/BSD.0000000000001582. Epub 2024 Feb 20. PMID: 38409676.
- 92: Masalkhi M, Ong J, Waisberg E, Lee AG. Google DeepMind's gemini AI versus ChatGPT: a comparative analysis in ophthalmology. *Eye (Lond)*. 2024 Jun;38(8):1412-1417. doi: 10.1038/s41433-024-02958-w. Epub 2024 Feb 14. PMID: 38355668; PMCID: PMC11126415.
- 93: Bydon M, Johnson SE, Katsos K. Commentary: A Quantitative Assessment of Chat-GPT as a Neurosurgical Triaging Tool. *Neurosurgery*. 2024 Aug 1;95(2):e44. doi: 10.1227/neu.0000000000002880. Epub 2024 Feb 14. PMID: 38353559.
- 94: Gajjar AA, Kumar RP, Paliwoda ED, Kuo CC, Adida S, Legarreta AD, Deng H, Anand SK, Hamilton DK, Buell TJ, Agarwal N, Gerszten PC, Hudson JS. Usefulness and Accuracy of Artificial Intelligence Chatbot Responses to Patient Questions for Neurosurgical Procedures. *Neurosurgery*. 2024 Feb 14. doi: 10.1227/neu.0000000000002856. Epub ahead of print. PMID: 38353558.
- 95: Ward M, Unadkat P, Toscano D, Kashanian A, Lynch DG, Horn AC, D'Amico RS, Mittler M, Baum GR. A Quantitative Assessment of ChatGPT as a Neurosurgical Triaging Tool. *Neurosurgery*. 2024 Aug 1;95(2):487-495. doi: 10.1227/neu.0000000000002867. Epub 2024 Feb 14. PMID: 38353523.
- 96: Masalkhi M, Ong J, Waisberg E, Zaman N, Sarker P, Lee AG, Tavakkoli A. A side-by-side evaluation

of Llama 2 by meta with ChatGPT and its application in ophthalmology. *Eye (Lond)*. 2024 Jul;38(10):1789-1792. doi: 10.1038/s41433-024-02972-y. Epub 2024 Feb 12. PMID: 38347179; PMCID: PMC11226690.

97: Williams SC, Starup-Hansen J, Funnell JP, Hanrahan JG, Valetopoulou A, Singh N, Sinha S, Muirhead WR, Marcus HJ. Can ChatGPT outperform a neurosurgical trainee? A prospective comparative study. *Br J Neurosurg*. 2024 Feb 2:1-10. doi: 10.1080/02688697.2024.2308222. Epub ahead of print. PMID: 38305239.

98: Dubinski D, Won SY, Trnovec S, Behmanesh B, Baumgarten P, Dinc N, Konczalla J, Chan A, Bernstock JD, Freiman TM, Gessler F. Leveraging artificial intelligence in neurosurgery-unveiling ChatGPT for neurosurgical discharge summaries and operative reports. *Acta Neurochir (Wien)*. 2024 Jan 26;166(1):38. doi: 10.1007/s00701-024-05908-3. PMID: 38277081; PMCID: PMC10817836.

99: Zangrossi P, Martini M, Guerrini F, DE Bonis P, Spena G. Large language model, AI and scientific research: why ChatGPT is only the beginning. *J Neurosurg Sci*. 2024 Apr;68(2):216-224. doi: 10.23736/S0390-5616.23.06171-4. Epub 2024 Jan 23. PMID: 38261307.

100: Wu Y, Zhang Z, Dong X, Hong S, Hu Y, Liang P, Li L, Zou B, Wu X, Wang D, Chen H, Qiu H, Tang H, Kang K, Li Q, Zhai X. Evaluating the performance of the language model ChatGPT in responding to common questions of people with epilepsy. *Epilepsy Behav*. 2024 Feb;151:109645. doi: 10.1016/j.yebeh.2024.109645. Epub 2024 Jan 19. PMID: 38244419.

101: Qian C, Fang Y. Re: ChatGPT encounters multiple opportunities and challenges in neurosurgery. *Int J Surg*. 2024 Apr 1;110(4):2471-2472. doi: 10.1097/J9.0000000000001086. PMID: 38241318; PMCID: PMC11019977.

102: O'Malley GR Jr, Sarwar SA, Cassimatis ND, Kumar RP, Munier S, Shill S, Maggio W, Ahmad G, Hundal JS, Danish SF, Patel NV. Can Publicly Available Artificial Intelligence Successfully Identify Current Procedural Terminology Codes for Common Procedures in Neurosurgery? *World Neurosurg*. 2024 Mar;183:e860-e870. doi: 10.1016/j.wneu.2024.01.043. Epub 2024 Jan 12. PMID: 38219799.

103: Langlie J, Kamrava B, Pasick LJ, Mei C, Hoffer ME. Artificial intelligence and ChatGPT: An otolaryngology patient's ally or foe? *Am J Otolaryngol*. 2024 May-Jun;45(3):104220. doi: 10.1016/j.amjoto.2024.104220. Epub 2024 Jan 9. PMID: 38219629.

## 2023

104: Bartoli A, May AT, Al-Awadhi A, Schaller K. Probing artificial intelligence in neurosurgical training: ChatGPT takes a neurosurgical residents written exam. *Brain Spine*. 2023 Nov 29;4:102715. doi: 10.1016/j.bas.2023.102715. PMID: 38163001; PMCID: PMC10753430.

105: Fabijan A, Polis B, Fabijan R, Zakrzewski K, Nowosiławska E, Zawadzka- Fabijan A. Artificial Intelligence in Scoliosis Classification: An Investigation of Language-Based Models. *J Pers Med*. 2023 Dec 9;13(12):1695. doi: 10.3390/jpm13121695. PMID: 38138922; PMCID: PMC10744696.

106: Murphy Lonergan R, Curry J, Dhas K, Simmons BI. Stratified Evaluation of GPT's Question Answering in Surgery Reveals Artificial Intelligence (AI) Knowledge Gaps. *Cureus*. 2023 Nov 14;15(11):e48788. doi: 10.7759/cureus.48788. PMID: 38098921; PMCID: PMC10720372.

107: Sahin MC, Sozer A, Kuzucu P, Turkmen T, Sahin MB, Sozer E, Tufek OY, Nernekli K, Emmez H,

- Celtikci E. Beyond human in neurosurgical exams: ChatGPT's success in the Turkish neurosurgical society proficiency board exams. *Comput Biol Med.* 2024 Feb;169:107807. doi: 10.1016/j.compbiomed.2023.107807. Epub 2023 Dec 10. PMID: 38091727.
- 108: Isakadze M, Zwain B, Velandar AJ, Lovera J. Cytomegalovirus and varicella zoster virus coinfection-associated central hypoventilation syndrome (Ondine's Curse). *eNeurologicalSci.* 2023 Nov 28;34:100488. doi: 10.1016/j.ensci.2023.100488. PMID: 38089428; PMCID: PMC10711190.
- 109: Peng C, Yang X, Chen A, Smith KE, PourNejatian N, Costa AB, Martin C, Flores MG, Zhang Y, Magoc T, Lipori G, Mitchell DA, Ospina NS, Ahmed MM, Hogan WR, Shenkman EA, Guo Y, Bian J, Wu Y. A study of generative large language model for medical research and healthcare. *NPJ Digit Med.* 2023 Nov 16;6(1):210. doi: 10.1038/s41746-023-00958-w. PMID: 37973919; PMCID: PMC10654385.
- 110: Masalkhi M, Ong J, Waisberg E, Zaman N, Sarker P, Lee AG, Tavakkoli A. ChatGPT to document ocular infectious diseases. *Eye (Lond).* 2024 Apr;38(5):826-828. doi: 10.1038/s41433-023-02823-2. Epub 2023 Nov 15. PMID: 37968516; PMCID: PMC10966069.
- 111: Li J, Zhong J, Li Z, Xiao Y, Wang S. Ectopic Pituitary Neuroendocrine Tumor: A Case Report Written With the Help of ChatGPT. *Cureus.* 2023 Oct 13;15(10):e46999. doi: 10.7759/cureus.46999. PMID: 37965416; PMCID: PMC10641033.
- 112: Bečulić H, Begagić E, Skomorac R, Mašović A, Selimović E, Pojskić M. ChatGPT's contributions to the evolution of neurosurgical practice and education: a systematic review of benefits, concerns and limitations. *Med Glas (Zenica).* 2024 Feb 1;21(1). doi: 10.17392/1661-23. Epub ahead of print. PMID: 37950660.
- 113: Chen TC, Multala E, Kearns P, Delashaw J, Dumont A, Maraganore D, Wang A. Assessment of ChatGPT's performance on neurology written board examination questions. *BMJ Neurol Open.* 2023 Nov 2;5(2):e000530. doi: 10.1136/bmjno-2023-000530. PMID: 37936648; PMCID: PMC10626870.
- 114: Haze T, Kawano R, Takase H, Suzuki S, Hirawa N, Tamura K. Influence on the accuracy in ChatGPT: Differences in the amount of information per medical field. *Int J Med Inform.* 2023 Dec;180:105283. doi: 10.1016/j.ijmedinf.2023.105283. Epub 2023 Nov 3. PMID: 37931432.
- 115: Chen Y, Chen L, Wang S. A commentary on 'ChatGPT has made the field of surgery full of opportunities and challenges'. *Int J Surg.* 2024 Feb 1;110(2):1283-1284. doi: 10.1097/JIS.0000000000000882. PMID: 37924499; PMCID: PMC10871599.
- 116: Mannam SS, Subtirelu R, Chauhan D, Ahmad HS, Matache IM, Bryan K, Chitta SVK, Bathula SC, Turlip R, Wathen C, Ghenbot Y, Ajmera S, Blue R, Chen HI, Ali ZS, Malhotra N, Srinivasan V, Ozturk AK, Yoon JW. Large Language Model-Based Neurosurgical Evaluation Matrix: A Novel Scoring Criteria to Assess the Efficacy of ChatGPT as an Educational Tool for Neurosurgery Board Preparation. *World Neurosurg.* 2023 Dec;180:e765-e773. doi: 10.1016/j.wneu.2023.10.043. Epub 2023 Oct 14. PMID: 37839567.
- 117: Stroop A, Stroop T, Zawy Alsofy S, Nakamura M, Möllmann F, Greiner C, Stroop R. Large language models: Are artificial intelligence-based chatbots a reliable source of patient information for spinal surgery? *Eur Spine J.* 2024 Nov;33(11):4135-4143. doi: 10.1007/s00586-023-07975-z. Epub 2023 Oct 11. PMID: 37821602.
- 118: Waisberg E, Ong J, Masalkhi M, Zaman N, Sarker P, Lee AG, Tavakkoli A. Google's AI chatbot "Bard": a side-by-side comparison with ChatGPT and its utilization in ophthalmology. *Eye (Lond).* 2024 Mar;38(4):642-645. doi: 10.1038/s41433-023-02760-0. Epub 2023 Sep 28. PMID: 37770534; PMCID:

PMC10920702.

119: Barrington NM, Gupta N, Musmar B, Doyle D, Panico N, Godbole N, Reardon T, D'Amico RS. A Bibliometric Analysis of the Rise of ChatGPT in Medical Research. *Med Sci (Basel)*. 2023 Sep 17;11(3):61. doi: 10.3390/medsci11030061. PMID: 37755165; PMCID: PMC10535733.

120: Yu QX, Wu RC, Feng DC, Li DX. Re: ChatGPT encounters multiple opportunities and challenges in neurosurgery. *Int J Surg*. 2023 Dec 1;109(12):4393-4394. doi: 10.1097/JS9.0000000000000749. PMID: 37720947; PMCID: PMC10720816.

121: Roman A, Al-Sharif L, Al Gharyani M. The Expanding Role of ChatGPT (Chat- Generative Pre-Trained Transformer) in Neurosurgery: A Systematic Review of Literature and Conceptual Framework. *Cureus*. 2023 Aug 15;15(8):e43502. doi: 10.7759/cureus.43502. PMID: 37719492; PMCID: PMC10500385.

122: Liu J, Zheng J, Cai X, Wu D, Yin C. A descriptive study based on the comparison of ChatGPT and evidence-based neurosurgeons. *iScience*. 2023 Aug 9;26(9):107590. doi: 10.1016/j.isci.2023.107590. PMID: 37705958; PMCID: PMC10495632.

123: Singh A, Das S, Mishra RK, Agrawal A. Artificial intelligence and machine learning in healthcare: Scope and opportunities to use ChatGPT. *J Neurosci Rural Pract*. 2023 Jul-Sep;14(3):391-392. doi: 10.25259/JNRP\_391\_2023. Epub 2023 Aug 16. PMID: 37692807; PMCID: PMC10483215.

124: Májovský M, Mikolov T, Netuka D. AI Is Changing the Landscape of Academic Writing: What Can Be Done? Authors' Reply to: AI Increases the Pressure to Overhaul the Scientific Peer Review Process. Comment on "Artificial Intelligence Can Generate Fraudulent but Authentic-Looking Scientific Medical Articles: Pandora's Box Has Been Opened". *J Med Internet Res*. 2023 Aug 31;25:e50844. doi: 10.2196/50844. PMID: 37651175; PMCID: PMC10502592.

125: Liu N, Brown A. AI Increases the Pressure to Overhaul the Scientific Peer Review Process. Comment on "Artificial Intelligence Can Generate Fraudulent but Authentic-Looking Scientific Medical Articles: Pandora's Box Has Been Opened". *J Med Internet Res*. 2023 Aug 31;25:e50591. doi: 10.2196/50591. PMID: 37651167; PMCID: PMC10502600.

126: Russe MF, Fink A, Ngo H, Tran H, Bamberg F, Reisert M, Rau A. Performance of ChatGPT, human radiologists, and context-aware ChatGPT in identifying AO codes from radiology reports. *Sci Rep*. 2023 Aug 30;13(1):14215. doi: 10.1038/s41598-023-41512-8. PMID: 37648742; PMCID: PMC10468502.

127: Guerra GA, Hofmann H, Sobhani S, Hofmann G, Gomez D, Soroudi D, Hopkins BS, Dallas J, Pangal DJ, Cheek S, Nguyen VN, Mack WJ, Zada G. GPT-4 Artificial Intelligence Model Outperforms ChatGPT, Medical Students, and Neurosurgery Residents on Neurosurgery Written Board-Like Questions. *World Neurosurg*. 2023 Nov;179:e160-e165. doi: 10.1016/j.wneu.2023.08.042. Epub 2023 Aug 18. PMID: 37597659.

128: Ali R, Tang OY, Connolly ID, Zadnik Sullivan PL, Shin JH, Fridley JS, Asaad WF, Cielo D, Oyelese AA, Doberstein CE, Gokaslan ZL, Telfeian AE. Performance of ChatGPT and GPT-4 on Neurosurgery Written Board Examinations. *Neurosurgery*. 2023 Dec 1;93(6):1353-1365. doi: 10.1227/neu.0000000000002632. Epub 2023 Aug 15. PMID: 37581444.

129: Zaed I, Cardia A. Letter: I Asked a ChatGPT to Write an Editorial About How We Can Incorporate Chatbots Into Neurosurgical Research and Patient Care.... *Neurosurgery*. 2023 Oct 1;93(4):e107-e108. doi: 10.1227/neu.0000000000002619. Epub 2023 Jul 27. PMID: 37498091.

130: Rau A, Rau S, Zoeller D, Fink A, Tran H, Wilpert C, Nattenmueller J, Neubauer J, Bamberg F, Reiser M, Russe MF. A Context-based Chatbot Surpasses Trained Radiologists and Generic ChatGPT in Following the ACR Appropriateness Guidelines. *Radiology*. 2023 Jul;308(1):e230970. doi: 10.1148/radiol.230970. PMID: 37489981.

131: D'Amico RS, Shah HA, Langer DJ. In Reply: I Asked a ChatGPT to Write an Editorial About How We Can Incorporate Chatbots Into Neurosurgical Research and Patient Care.... *Neurosurgery*. 2023 Oct 1;93(4):e109. doi: 10.1227/neu.0000000000002620. Epub 2023 Jul 20. PMID: 37470488.

132: Resnick DK. Commentary: Performance of ChatGPT, GPT-4, and Google Bard on a Neurosurgery Oral Boards Preparation Question Bank. *Neurosurgery*. 2023 Nov 1;93(5):e123-e124. doi: 10.1227/neu.0000000000002618. Epub 2023 Jul 19. PMID: 37466324.

133: Lawson McLean A. Towards Precision Medicine in Spinal Surgery: Leveraging AI Technologies. *Ann Biomed Eng*. 2024 Apr;52(4):735-737. doi: 10.1007/s10439-023-03315-w. Epub 2023 Jul 14. PMID: 37450276; PMCID: PMC10940418.

134: Fabijan A, Fabijan R, Zawadzka-Fabijan A, Nowosławska E, Zakrzewski K, Polis B. Evaluating Scoliosis Severity Based on Posturographic X-ray Images Using a Contrastive Language-Image Pretraining Model. *Diagnostics (Basel)*. 2023 Jun 22;13(13):2142. doi: 10.3390/diagnostics13132142. PMID: 37443536; PMCID: PMC10340165.

135: Ray TR, Kellogg RT, Fargen KM, Hui F, Vargas J. The perils and promises of generative artificial intelligence in neurointerventional surgery. *J Neurointerv Surg*. 2023 Dec 19;16(1):4-7. doi: 10.1136/jnis-2023-020353. PMID: 37438101.

136: Zhu Z, Ying Y, Zhu J, Wu H. ChatGPT's potential role in non-English- speaking outpatient clinic settings. *Digit Health*. 2023 Jun 26;9:20552076231184091. doi: 10.1177/20552076231184091. PMID: 37434733; PMCID: PMC10331772.

137: Mishra A, Begley SL, Chen A, Rob M, Pelcher I, Ward M, Schulder M. Exploring the Intersection of Artificial Intelligence and Neurosurgery: Let us be Cautious With ChatGPT. *Neurosurgery*. 2023 Dec 1;93(6):1366-1373. doi: 10.1227/neu.0000000000002598. Epub 2023 Jul 7. PMID: 37417886.

138: Haemmerli J, Sveikata L, Nouri A, May A, Egervari K, Freyschlag C, Lobrinus JA, Migliorini D, Momjian S, Sanda N, Schaller K, Tran S, Yeung J, Bijlenga P. ChatGPT in glioma adjuvant therapy decision making: ready to assume the role of a doctor in the tumour board? *BMJ Health Care Inform*. 2023 Jun;30(1):e100775. doi: 10.1136/bmjhci-2023-100775. PMID: 37399360; PMCID: PMC10314415.

139: Kleebayoon A, Wiwanitkit V. Letter: I Asked a ChatGPT to Write an Editorial About How We Can Incorporate Chatbots Into Neurosurgical Research and Patient Care.... *Neurosurgery*. 2023 Sep 1;93(3):e77. doi: 10.1227/neu.0000000000002588. Epub 2023 Jun 29. PMID: 37382430.

140: D'Amico RS, White TG, Shah HA, Langer DJ. In Reply: I Asked a ChatGPT to Write an Editorial About How We Can Incorporate Chatbots Into Neurosurgical Research and Patient Care.... *Neurosurgery*. 2023 Sep 1;93(3):e78. doi: 10.1227/neu.0000000000002589. Epub 2023 Jun 28. PMID: 37377413.

141: Kuang YR, Zou MX, Niu HQ, Zheng BY, Zhang TL, Zheng BW. ChatGPT encounters multiple opportunities and challenges in neurosurgery. *Int J Surg*. 2023 Oct 1;109(10):2886-2891. doi: 10.1097/JS9.0000000000000571. PMID: 37352529; PMCID: PMC10583932.

142: Tripathi M, Chandra SP. ChatGPT: A Threat to the Natural Wisdom from Artificial Intelligence.

Neurol India. 2023 May-Jun;71(3):416-417. doi: 10.4103/0028-3886.378687. PMID: 37322731.

143: Ali R, Tang OY, Connolly ID, Fridley JS, Shin JH, Zadnik Sullivan PL, Cielo D, Oyelese AA, Doberstein CE, Telfeian AE, Gokaslan ZL, Asaad WF. Performance of ChatGPT, GPT-4, and Google Bard on a Neurosurgery Oral Boards Preparation Question Bank. *Neurosurgery*. 2023 Nov 1;93(5):1090-1098. doi: 10.1227/neu.0000000000002551. Epub 2023 Jun 12. PMID: 37306460.

144: Wu CL, Cho B, Gabriel R, Hurley R, Liu J, Mariano ER, Mathur V, Memtsoudis SG, Grant MC. Addition of dexamethasone to prolong peripheral nerve blocks: a ChatGPT-created narrative review. *Reg Anesth Pain Med*. 2024 Nov 4;49(11):777-781. doi: 10.1136/rapm-2023-104646. PMID: 37295794.

145: Karabacak M, Ozkara BB, Margetis K, Wintermark M, Bisdas S. The Advent of Generative Language Models in Medical Education. *JMIR Med Educ*. 2023 Jun 6;9:e48163. doi: 10.2196/48163. PMID: 37279048; PMCID: PMC10282912.

146: Waisberg E, Ong J, Masalkhi M, Kamran SA, Zaman N, Sarker P, Lee AG, Tavakkoli A. GPT-4 and Ophthalmology Operative Notes. *Ann Biomed Eng*. 2023 Nov;51(11):2353-2355. doi: 10.1007/s10439-023-03263-5. Epub 2023 Jun 2. PMID: 37266720.

147: Májovský M, Černý M, Kasal M, Komarc M, Netuka D. Artificial Intelligence Can Generate Fraudulent but Authentic-Looking Scientific Medical Articles: Pandora's Box Has Been Opened. *J Med Internet Res*. 2023 May 31;25:e46924. doi: 10.2196/46924. PMID: 37256685; PMCID: PMC10267787.

148: Cheng K, Wu C, Gu S, Lu Y, Wu H, Li C. WHO declares the end of the COVID-19 global health emergency: lessons and recommendations from the perspective of ChatGPT/GPT-4. *Int J Surg*. 2023 Sep 1;109(9):2859-2862. doi: 10.1097/J9.0000000000000521. PMID: 37246993; PMCID: PMC10498859.

149: Cheng K, Wu H, Li C. ChatGPT/GPT-4: enabling a new era of surgical oncology. *Int J Surg*. 2023 Aug 1;109(8):2549-2550. doi: 10.1097/J9.0000000000000451. PMID: 37195797; PMCID: PMC10442081.

150: Zamarud A, Park DJ, Haider G, Chang SD, Meola A. Cyberknife Radiosurgery for Synovial Sarcoma Metastasizing to the Spine: Illustrative Case Reports. *Cureus*. 2023 Apr 4;15(4):e37087. doi: 10.7759/cureus.37087. PMID: 37168194; PMCID: PMC10166278.

151: Singh R, Reardon T, Srinivasan VM, Gottfried O, Bydon M, Lawton MT. Implications and future directions of ChatGPT utilization in neurosurgery. *J Neurosurg*. 2023 Apr 28;139(5):1487-1489. doi: 10.3171/2023.3.JNS23555. PMID: 37119117.

152: Zamarud A, Marianayagam N, Sekar V, Chang SD, Meola A. Treatment Outcomes of Leiomyosarcoma Metastasis Affecting the Brachial Plexus: A Comparative Case Report Using Chat Generative Pre-trained Transformer (ChatGPT). *Cureus*. 2023 Mar 26;15(3):e36715. doi: 10.7759/cureus.36715. PMID: 37113342; PMCID: PMC10129366.

153: Verma A, Attry S, Haldenia K, Gupta VK, Bansal P. Currarino Syndrome Presenting in Adulthood: A Rare Case. *Cureus*. 2023 Mar 21;15(3):e36497. doi: 10.7759/cureus.36497. PMID: 37090396; PMCID: PMC10119035.

154: Puthenpura V, Nadkarni S, DiLuna M, Hieftje K, Marks A. Personality Changes and Staring Spells in a 12-Year-Old Child: A Case Report Incorporating ChatGPT, a Natural Language Processing Tool Driven by Artificial Intelligence (AI). *Cureus*. 2023 Mar 20;15(3):e36408. doi: 10.7759/cureus.36408. PMID: 37090271; PMCID: PMC10115215.

- 155: Waisberg E, Ong J, Masalkhi M, Kamran SA, Zaman N, Sarker P, Lee AG, Tavakkoli A. GPT-4: a new era of artificial intelligence in medicine. *Ir J Med Sci*. 2023 Dec;192(6):3197-3200. doi: 10.1007/s11845-023-03377-8. Epub 2023 Apr 19. PMID: 37076707.
- 156: Cheng K, Li Z, Guo Q, Sun Z, Wu H, Li C. Emergency surgery in the era of artificial intelligence: ChatGPT could be the doctor's right-hand man. *Int J Surg*. 2023 Jun 1;109(6):1816-1818. doi: 10.1097/JIS9.0000000000000410. PMID: 37074733; PMCID: PMC10389530.
- 157: He Y, Tang H, Wang D, Gu S, Ni G, Wu H. Will ChatGPT/GPT-4 be a Lighthouse to Guide Spinal Surgeons? *Ann Biomed Eng*. 2023 Jul;51(7):1362-1365. doi: 10.1007/s10439-023-03206-0. Epub 2023 Apr 18. PMID: 37071280.
- 158: Sevgi UT, Erol G, Doğruel Y, Sönmez OF, Tubbs RS, Güngör A. The role of an open artificial intelligence platform in modern neurosurgical education: a preliminary study. *Neurosurg Rev*. 2023 Apr 14;46(1):86. doi: 10.1007/s10143-023-01998-2. PMID: 37059815.
- 159: Cheng K, Sun Z, He Y, Gu S, Wu H. The potential impact of ChatGPT/GPT-4 on surgery: will it topple the profession of surgeons? *Int J Surg*. 2023 May 1;109(5):1545-1547. doi: 10.1097/JIS9.0000000000000388. PMID: 37037587; PMCID: PMC10389652.
- 160: Hegde A, Srinivasan S, Menon G. Extraventricular Neurocytoma of the Posterior Fossa: A Case Report Written by ChatGPT. *Cureus*. 2023 Mar 6;15(3):e35850. doi: 10.7759/cureus.35850. PMID: 37033498; PMCID: PMC10076908.
- D'Amico RS, White TG, Shah HA, Langer DJ. I Asked a ChatGPT to Write an [Editorial](#) About How We Can Incorporate [Chatbots](#) Into Neurosurgical Research and Patient Care.... *Neurosurgery*. 2023 Apr 1;92(4):663-664. doi: 10.1227/neu.0000000000002414. Epub 2023 Feb 9. PMID: 36757199.

From:  
<https://neurosurgerywiki.com/wiki/> - **Neurosurgery Wiki**

Permanent link:  
[https://neurosurgerywiki.com/wiki/doku.php?id=chatgpt\\_for\\_neurosurgery](https://neurosurgerywiki.com/wiki/doku.php?id=chatgpt_for_neurosurgery)

Last update: **2025/01/19 20:59**

