BROWN
School of Public Health

DEPARTMENT OF HEALTH SERVICES, POLICY & PRACTICE

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The Honorable Dr. Mehmet Oz
Administrator
Centers for Medicare & Medicaid Services
Department of Health and Human Services
Hubert H. Humphrey Building
200 Independence Avenue, SW, Room 445-G
Washington, DC 20201

RE: Comments on the CMS Improving Technology to Empower Medicare Beneficiaries Request for Information

Dear Administrator Oz:

Thank you for the opportunity to provide comments on CMS's request for information on how best to advance patient-centered digital health infrastructure. We appreciate the Center for Medicare and Medicaid Services (CMS) efforts to identify challenges and explore ways to ensure that seniors and families have access to digital tools to help them make informed choices and manage chronic conditions.

My name is Dr. Ateev Mehrotra, and I am Chair of the Department of Health Services, Policy, and Practice at the Brown University School of Public Health. My research focuses on delivery innovations such as retail clinics, e-visits, and telemedicine, and assessing their impact on quality, costs, and access to health care. This public comment is informed by relevant research conducted by me and other colleagues, as well as other research from the Brown School of Public Health and outside organizations.[1]

My response focuses on patient portals, which have become a critical means for seniors to track information about their care and communicate with their clinicians. While extremely valuable, the growth of patient portals has led to unintended consequences. My comment focuses on addressing two key issues: helping patients understand complex medical information and finding sustainable ways to pay for clinician messaging.

The Value of Patient Portals

The 21st Century Cures Act, passed by Congress in 2016, mandated the immediate release of health information to patients. Patients can now access the results of their laboratory and radiology tests on a patient portal soon after

[1] *The opinions and conclusions expressed in this public comment are the author's alone and do not reflect those of Brown University, the Brown University School of Public Health or any of the research sponsors.*

the test is completed and read by a physician. There has been a rapid growth in the proportion of Americans who access and utilize their online information; in 2022, 73% of Americans reported they were offered access to their online medical records by their clinicians.[2] This access is highly valued by Americans, with the vast majority reporting that it strengthened their agency in care.[3] With access to portals, patients are also more likely to follow up on abnormalities in the reports.[4]

Using Artificial Intelligence to Help Patients Interpret Test Results

However, there have been some unintended negative consequences of releasing information on patient portals. It is sometimes difficult for patients to interpret their test results, and this is particularly an issue with text-based reports such as those from radiology tests, which are designed for communication between medical experts.[5] The complexity of the information presented, combined with the use of medical jargon, can lead to undue patient confusion and increased anxiety. Patients may unnecessarily contact their clinician for clarification.[6] Clinicians, such as primary care physicians, play an important role in interpreting these reports for their patients; however, patients typically see the results before the clinician can provide an interpretation. There is a critical need for tools to help patients understand and interpret their medical data, thereby preventing unintended consequences while fostering positive engagement in their care.

One strategy to simplify radiology reports is to leverage emerging artificial intelligence (AI) technology. AI tools can automate the "simplification" of radiology reports into plain-language that a layperson can understand.[7] Recent breakthroughs in large language models (LLMs) offer a potentially scalable and low-cost alternative to prior efforts using rule-based natural language processing. Recent work has shown that ChatGPT-4 can generate

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[2] Strawley C, Richwine C. Individuals' access and use of patient portals and smartphone health apps, 2022. U.S. Department of Health and Human Services, Office of the National Coordinator for Health Information Technology 2023.https://www.healthit.gov/data/data-briefs/individuals-access-and-use-patient-portals-and-smartphone-health-apps-2022 (access 11 Mar 2024).

[3] Pillemer F, Price RA, Paone S, et al. Direct release of test results to patients increases patient engagement and utilization of care. PLoS One 2016;11(6):e0154743. doi:doi.org/10.1371/journal.pone.0154743, Norris EC, Halaska C, Sachs PB, et al. Understanding patient experiences, opinions, and actions taken after viewing their own radiology images online: web-based survey. JMIR Form Res 2022;6(4):e29496. doi:10.2196/29496, Wood KE, Pham HT, Carter KD, et al. Impact of a switch to immediate release on the patient viewing of diagnostic test results in an online portal at an academic medical center. J Pathol Inform 2023;14:100323. doi:10.1016/j.jpi.2023.100323, Baun C, Vogsen M, Nielsen MK, et al. Perspective of patients with metastatic breast cancer on electronic access to scan results: mixed-methods study. J Med Internet Res 2020;22(2):e15723. doi:10.2196/15723

[4] Giardina TD, Baldwin J, Nystrom DT, et al. Patient perceptions of receiving test results via online portals: a mixed-methods study. J Am Med Inform Assoc 2017;25(4):440-446. doi:10.1093/jamia/ocx140, Pillemer F, Price RA, Paone S, et al. Direct release of test results to patients increases patient engagement and utilization of care. *PLoS One* 2016;11(6):e0154743. doi:doi.org/10.1371/journal.pone.0154743

[5] Zhang Z, Citardi D, Xing A, et al. Patient challenges and needs in comprehending laboratory test results: mixed methods study. *J Med Internet Res* 2020;22(12):e18725. doi:10.2196/18725, Giardina TD, Baldwin J, Nystrom DT, et al. Patient perceptions of receiving test results via online portals: a mixed-methods study. *J Am Med Inform Assoc* 2017;25(4):440-446. doi:10.1093/jamia/ocx140

[6] Baun C, Vogsen M, Nielsen MK, et al. Perspective of patients with metastatic breast cancer on electronic access to scan results: mixed-methods study. J Med Internet Res 2020;22(2):e15723. doi:10.2196/15723, Pillemer F, Price RA, Paone S, et al. Direct release of test results to patients increases patient engagement and utilization of care. *PLoS One* 2016;11(6):e0154743. doi:doi.org/10.1371/journal.pone.0154743,

[7] Kuckelman IJ, Wetley K, Yi PH, et al. Translating musculoskeletal radiology reports into patient-friendly summaries using ChatGPT-4. *Skeletal Radiol*2024;53(8):1621-1624. doi:10.1007/s00256-024-04599-2, Lyu Q, Tan J, Zapadka ME, et al. Translating radiology reports into plain language using ChatGPT and GPT-4 with prompt learning: results, limitations, and potential. *Vis Comput Ind Biomed Art* 2023;6(1):9. doi:10.1186/s42492-023-00136-5

accurate, complete, and concise summaries of musculoskeletal MRIs, brain MRIs, chest radiology, cardiovascular MRIs, and breast imaging reports.[8]

In our own work, we used a generative AI tool to automatically simplify radiology reports to a plain language version and randomized 2,000 participants to viewing an original radiologist report or an AI-generated plain language report. AI simplification had clear benefits. With AI-generated plain language reports, participants were significantly more likely to have higher comprehension and correct follow-up timeline. AI boosted their confidence, reduced both the perceived difficulty of comprehension and perceived anxiety. These improvements were largest among those with lower education and older adults. Despite these clear improvements, participants were ambivalent about the AI simplification, and a slight majority still preferred the original report written by the radiologist.

This body of work highlights an important opportunity to integrate AI simplification into patient portals. But it also emphasizes that there needs to be more work on the optimal way of integrating AI simplification and what impact it has on care utilization. In all of this work, we must address the AI skepticism that our research and that of others have highlighted.

How do we address "death by patient portal"?

Physician care is tethered to the electronic health record (EHR), and EHR-based tasks consume nearly half of clinic time and frequently spill over outside of clinic hours. This has come at a cost. More "work outside of work" time has been associated with burnout.[9] Reducing physician EHR burden and related work outside of work has become a policy priority for professional societies, health systems, and frontline physicians, and recent federal efforts have specifically sought to reduce EHR time through regulatory and payment policy.[10]

Patient-initiated portal messages are a key driver of EHR time. The volume of portal messages increased substantially at the onset of the COVID-19 pandemic. For physicians, patient portal messages can impose cognitive burden and distraction and "attention overload." [11] The result has been an acute crisis described as

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[8] Kuckelman IJ, Wetley K, Yi PH, et al. Translating musculoskeletal radiology reports into patient-friendly summaries using ChatGPT-4. *Skeletal Radiol* 2024;53(8):1621-1624. doi:10.1007/s00256-024-04599-2, Lyu Q, Tan J, Zapadka ME, et al. Translating radiology reports into plain language using ChatGPT and GPT-4 with prompt learning: results, limitations, and potential. *Vis Comput Ind Biomed Art* 2023;6(1):9. doi:10.1186/s42492-023-00136-5, Li H, Moon JT, Iyer D, et al. Decoding radiology reports: Potential application of OpenAI ChatGPT to enhance patient understanding of diagnostic reports. *Clin Imaging* 2023;101:137-141. doi:10.1016/j.clinimag.2023.06.008, Salam B, Kravchenko D, Nowak S, et al. Generative pre-trained transformer 4 makes cardiovascular magnetic resonance reports easy to understand. *J Cardiovasc Magn Reson* 2024;26:101035. doi:10.1016/j.jocmr.2024.101035 Maroncelli R, Rizzo V, Pasculli M, et al. Probing clarity: AI-generated simplified breast imaging reports for enhanced patient comprehension powered by ChatGPT-4o. *Eur Radiol Exp* 2024 Oct 30;8(1):124. doi:0.1186/s41747-024-00526-1

[9] Adler-Milstein J, Zhao W, Willard-Grace R, Knox M, Grumbach K. Electronic health records and burnout: Time spent on the electronic health record after hours and message volume associated with exhaustion but not with cynicism among primary care clinicians. *Journal of the American Medical Informatics Association : JAMIA*. 2020;27(4):531. doi:10.1093/JAMIA/OCZ220; Peccoralo LA, Kaplan CA, Pietrzak RH, Charney DS, Ripp JA. The impact of time spent on the electronic health record after work and of clerical work on burnout among clinical faculty. *J Am Med Inform Assoc*. 2021;28(5):938-947. doi:10.1093/jamia/ocaa349

[10] Apathy NC, Hare AJ, Fendrich S, Cross DA. Early Changes in Billing and Notes After Evaluation and Management Guideline Change. *Ann Intern Med*. Published online February 22, 2022:M21-4402. doi:10.7326/M21-4402; Maisel N, Thombley R, Overhage JM, Blake K, Sinsky CA, Adler-Milstein J. Physician Electronic Health Record Use After Changes in US Centers for Medicare & Medicaid Services Documentation Requirements. *JAMA Health Forum*. 2023;4(5):e230984. doi:10.1001/jamahealthforum.2023.0984

[11] Akbar F, Mark G, Warton EM, et al. Physicians' electronic inbox work patterns and factors associated with high inbox work duration. *Journal of the American Medical Informatics Association*. 2021;28(5):923-930. doi:10.1093/jamia/ocaa229; Lieu TA,

“death by patient portal” as physicians were asked to manage a rapid increase in volume of work that is – for the most part – uncompensated.[12]

This has raised the critical question of how to pay for portal messages. While billing codes exist for physicians to bill payers for select portal responses in a fee-for-service model, adoption has been low across private payers and traditional Medicare, with fewer than 3% of messages billed at early adopting health systems.[13]Physicians feel that the administrative burden of fee-for-service billing for individual messages outweighs the low reimbursement per message.

To inform the debate about alternative methods of paying for portal messages, we have used a combination of data from a national EHR vendor as well as data specific to a large academic health system to study the distribution of messages.Our findings reveal that the distribution of patient-initiated portal messages is highly skewed at both the patient and physician levels. More than 20% of messages were sent by the top 1% of high volume patients, and PCPs in the top quartile received over five times more patient-initiated portal messages than the median PCP.

Given the skewed distribution of messaging volume, capitation or a flat per-patient “messaging premium” may – in the absence of some form of messaging-related “risk-adjustment” – considerably under- or over-pay certain physicians depending on their place within the volume distribution.

New alternative payment models are required. One option is partial capitation where physicians receive a fixed fee to cover the median amount of messaging work (e.g., a flat payment equivalent to the weekly time cost of the 10 messages received by the median primary care physician). Physicians with higher-than-average portal message volume can bill additional messages fee-for-service, or in capitation “tiers” based on historical messaging volume. While such a model may slightly over-compensate very low message volume physicians, this may be an acceptable trade-off for reduced administrative complexity.

Summary

Patient portals offer a powerful means to engage patients in their care, but their growth has introduced new challenges that require thoughtful policy solutions. Tools like AI-generated plain language simplification can help patients better understand their health information and mitigate confusion and anxiety, particularly among older adults and those with lower educational attainment.

Warton EM, East JA, et al. Evaluation of Attention Switching and Duration of Electronic Inbox Work Among Primary Care Physicians. *JAMA Netw Open*. 2021;4(1):e2031856. doi:10.1001/jamanetworkopen.2020.31856; Akbar F, Mark G, Prausnitz S, et al. Physician Stress During Electronic Health Record Inbox Work: In Situ Measurement With Wearable Sensors. *JMIR Medical Informatics*. 2021;9(4):e24014. doi:10.2196/24014; Nijor S, Rallis G, Lad N, Gokcen E. Patient Safety Issues From Information Overload in Electronic Medical Records. *J Patient Saf*. 2022;18(6):e999-e1003. doi:10.1097/PTS.0000000000001002

[12] Stillman M. Death by Patient Portal. *JAMA*. 2023;330(3):223-224. doi:10.1001/jama.2023.11629

[13] Holmgren AJ, Oakes AH, Miller A, Adler-Milstein J, Mehrotra A. National Trends in Billing Secure Messages as E-Visits. *JAMA*. Published online January 10, 2024. doi:10.1001/jama.2023.26584. Dunlay SM, Sangaralingham LR, Lampman MA, et al. Implementation of Billing for Patient Portal Messages as E-visits in a Large Integrated Health System. *Ann Intern Med*. 2025;178(1):11-19. doi:10.7326/ANNALS-24-01711; Liu T, Zhu Z, Holmgren AJ, Ellimoottil C. National trends in billing patient portal messages as e-visit services in traditional Medicare. *Health Affairs Scholar*. 2024;2(4):qxae040. doi:10.1093/haschl/qxae040. Holmgren AJ, Byron ME, Grouse CK, Adler-Milstein J. Association Between Billing Patient Portal Messages as e-Visits and Patient Messaging Volume. *JAMA*. 2023;329(4):339-342. doi:10.1001/jama.2022.24710

At the same time, we must address the growing burden on clinicians created by uncompensated portal messaging. Without sustainable payment models, we risk further exacerbating clinician burnout. CMS has a critical opportunity to lead in both areas—supporting innovation that enhances patient comprehension while advancing reimbursement models that reflect the reality of modern digital care delivery.

We appreciate the opportunity to provide feedback on this critical issue and appreciate CMS' efforts to identify challenges and explore ways to ensure that seniors and families have access to digital tools. We welcome the opportunity to engage further or provide additional data as needed. Should you have any questions about our comments, please contact me at ateev_mehrotra@brown.edu or Jared Perkins, Director of Health Policy Strategy, at jared_perkins@brown.edu.

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