

Developing Interventions to Increase Patient Portal Enrollment and Assessing Impact on Administrative Burden

Elizabeth Darsan MD, Andria Matthews MD, MPH, Nirali Patel DO, Jared Kozal MD, Smriti Ohri MD, Kenia Mansilla-Rivera MD, Robert Anderson, Emil Coman PhD;
University of Connecticut / St. Francis Family Medicine Residency

BACKGROUND

Electronic health records (EHRs) were developed in order to improve quality of care and patient outcomes. With these EHRs, there have been efforts to improve patient accessibility to their health records, leading to the development of patient portals. These patient portals provide patients with the tools to better understand their health, as well as also support activities such as providing their own input into their medical record, booking appointments, requesting medication refills, and communicating with their healthcare providers, among other basic tasks. As such, there is evidence that these portals have been shown to raise patient satisfaction¹, lead to the discovery of medical errors², improve screenings³, as well as improve patient medication adherence^{2,4}, and outcomes^{5,6,7,8}; however there are some studies that suggest that the evidence is insufficient^{9,10}.

Government policies have led to an increase in enrollment and utilization of patient portals. For instance, the Health Information Technology for Economic and Clinical Health (HITECH) Act allowed for EHR and patient portals to meet the requirements for meaningful use and qualify for financial incentives from Centers for Medicare and Medicaid Services (CMS). While these policies have led to an increase of patient portal availability, patient portal enrollment and utilization lags far behind the near universal usage of EHRs^{11,12,13}. As providers, investigating the barriers to patient portal enrollment and attempting to implement interventions to address those barriers becomes imperative to reap the above listed benefits of patient portal usage.

OBJECTIVE

The objectives of this QI include implementing various interventions to address potential barriers to patient portal enrollment, determining whether practice-wide interventions led to an increase in patient portal enrollment, and correlating patient portal enrollment with administrative burden by assessing whether patient portal enrollment impacts the number incoming office phone calls and total duration of time spent during office calls as a metric.

- ¹Kazley, A. S., Diana, M. L., Ford, E. W., & Meneghini, N. (2020). Is electronic health record use associated with patient satisfaction in hospital? *Health Care Manager Review*, 45(2), 250-260. doi:10.1177/0278330019844244
- ²Dendy, P., Burns-Jones, A., Sullivan, C. S., Jia, A., & Janda, M. (2019). Patient Portals Facilitating Engagement With Inpatient Electronic Medical Records: A Systematic Review. *Journal of Medical Internet Research*, 21(4). doi:10.2196/1779
- ³Wright, A., Poop, E. G., Wald, J., Felowitz, J., Pang, J. E., Schnipper, J. L., ... Middleton, B. (2021). Randomized Controlled Trial of Health Maintenance Reminders Provided Directly to Patients Through an Electronic PHR. *Journal of General Internal Medicine*, 27(1), 85-92. doi:10.1007/s11606-011-1859-6
- ⁴Craetzl, I., Huang, Y., Muelly, T., Freeman, R., Hsu, J., & Reed, M. E. (2020). Association of Mobile Patient Portal Access With Diabetes Mellitus Adherence and Glycemic Levels Among Adults With Diabetes. *JAMA Network Open*, 3(2). doi:10.1001/jamanetworkopen.2019.2429
- ⁵McInnes, D. K., Shimada, S. L., Rao, S. R., Quill, A., Gifford, A. L., ... Justice, A. C. (2013). Personal Health Record Use and Its Association with Antiretroviral Adherence. *Survey of Medical Record Data from 1871 US Veterans Infected with HIV*. *AIDS and Behavior*, 17(9), 3097-3104. doi:10.1007/s10461-013-9950-2
- ⁶Marder, J. P., Salas, A., & Schneid, F. D. (2016). Patient Portal Use and Blood Pressure Control in Newly Diagnosed Hypertension. *The Journal of the American Board of Family Medicine*, 29(4), 452-459. doi:10.3122/jabfm.2016.04.160008
- ⁷Neves, A. L., Freise, L., Larajni, L., Carter, A. W., Darzi, A., & Mayer, E. (2020). Impact of providing patients access to electronic health records on quality and safety of care: A systematic review and meta-analysis. *BMJ Quality & Safety*, 29(2), 1019-1032. doi:10.1136/bmjjqs-2019-102040
- ⁸McInnes, D. K., Shimada, S. L., Marder, A. M., Nazi, K. M., Zhao, S., Wu, J., ... Houston, T. K. (2017). Patient Use of Electronic Prescription Refill and Secure Messaging and Its Association With Undetectable HIV Viral Load: A Retrospective Cohort Study. *Journal of Medical Internet Research*, 19(12). doi:10.2196/mir.6932
- ⁹Goldzweig, C. L., Orshansky, C., Paige, N. M., Towfigh, A. A., Haggstrom, D. A., Maize-Lye, I., Beres, J. M., & Shekelle, P. G. (2013). Electronic patient portals: evidence on how they perform, satisfaction, efficiency, and attitudes: a systematic review. *Annals of Internal Medicine*, 159(10), 670-679. doi:10.7326/m13-0038
- ¹⁰Armenakis, E., Schell-Inderst, P., & Horst, A. (2021). The Impact of Electronic Patient Portals on Patient Care: A Systematic Review of Controlled Trials. *Medical Informatics Research*, 14(6). doi:10.2196/mir.2238
- ¹¹Heath, S. (2014). April 13. Patient Portal Access, Use Reach 52% of Healthcare Consumers. Retrieved from <https://patientengagementhit.com/news/patient-portal-access-use-reach-52-of-healthcare-consumers>
- ¹²Heath, S. (2014). July 30. Patient Adoption Tops 90%, But Strong Patient Use Is Needed. Retrieved from <https://patientengagementhit.com/news/patient-portal-adoption-tops-90%-but-strong-patient-use-is-needed#:~:text=The survey of nearly 1,800 portal access to their patients>
- ¹³Lyles, C. R., Nelson, E. C., Frampton, S., Dykes, P. C., Cembal, J. C., & Sarker, U. (2020). Using Electronic Health Record Portals to Improve Patient Engagement: Research Priorities and Best Practices. *Annals of Internal Medicine*, 172(11). doi:10.7326/m19-0876

METHODOLOGY

This quality improvement involved physicians, residents, and staff of a multi-provider primary care facility, located in an underserved urban neighborhood. The office is divided into three provider/staff patient pools or "teams," denoted by "Green," "Gold," and "Purple." Data was gathered via Epic to determine the percentage of patients enrolled in MyCare patient portal per provider and per team over a 16-month period from 11/2019 to 03/2021. Data was also gathered via telephone company for all inbound calls to the office, in particular number of calls, total duration of calls, and average duration of calls over a 10-month period from May 2020 - March 2021.

2019-2020 interventions:

- Addressing patient awareness of the portal itself through the design
- Creation and advertisement of patient portal flyers in all patient rooms

2020-2021 interventions:

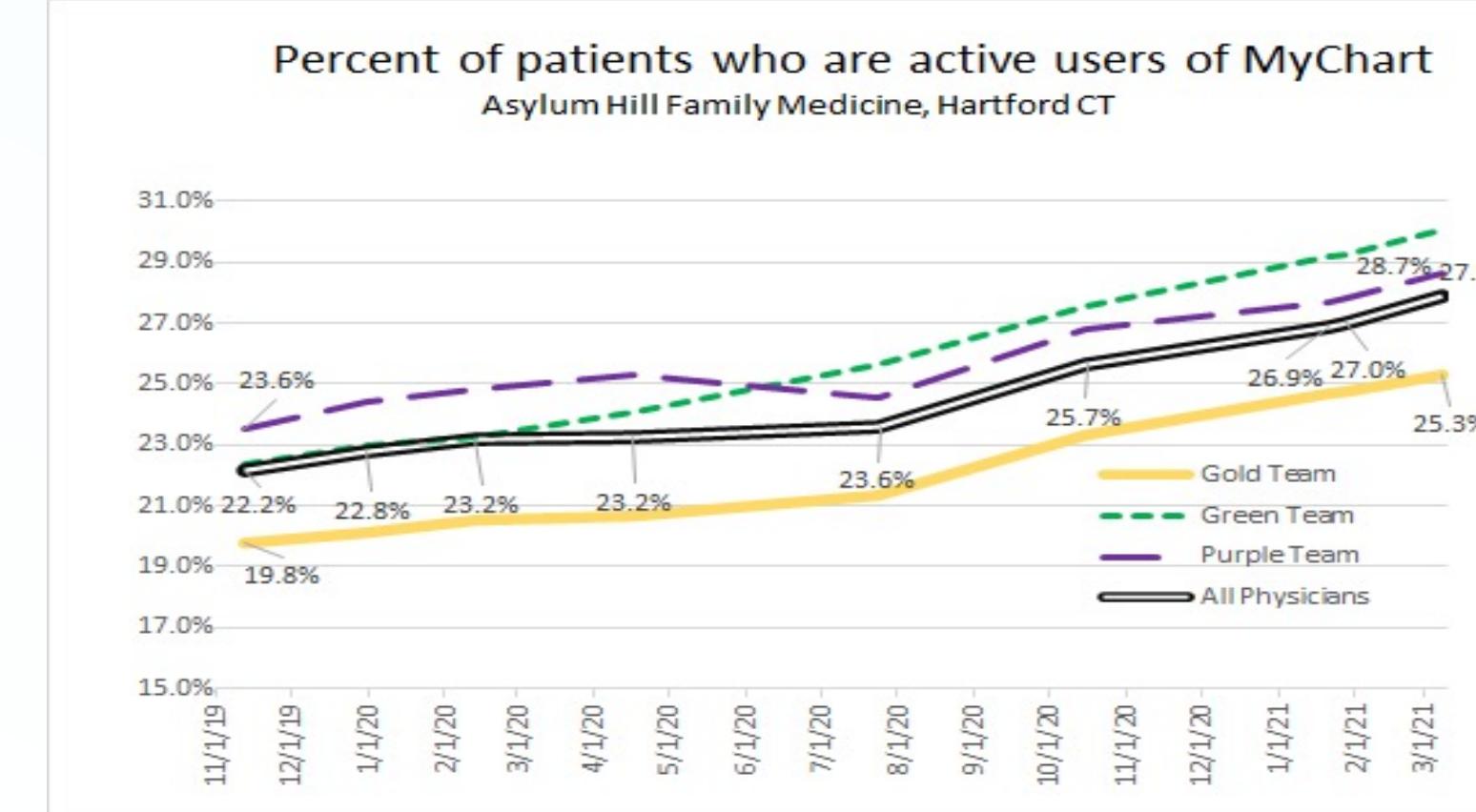
- Staff was notified of their patient portal enrollment percentages per provider and per team via printed reports
- Staff was educated through the creation and presentation of two training videos, one geared toward attendings/residents and another toward clinical staff/administration. The videos addressed interventions to increase provider awareness of patient panels and their patient portal status [active vs not active vs declined] and the benefits of patient portals to both patients and themselves
- Staff was educated regarding multiple methods to sign up patients. Reminders were given during all-practice meetings
- "MyCare Month," a month-long friendly team- and individual-based competitive initiative was instituted to encourage enrollment of patients with recognition given for providers and teams that increased patient enrollment most significantly

RESULTS

Patient enrollment:

November 2019 to March 2021: Total patient enrollment for the practice increased. For the first year, November 2019 to July 2020, patient enrollment increased from 22.2% (which corresponds to 1286/5881) to 23.6% (which corresponds to 1386/5843). For the second year, July 2020 to March 2021, patient enrollment increased from 23.6% (which corresponds to 1386/5843) to 27.6% (which corresponds to 1671/6004).

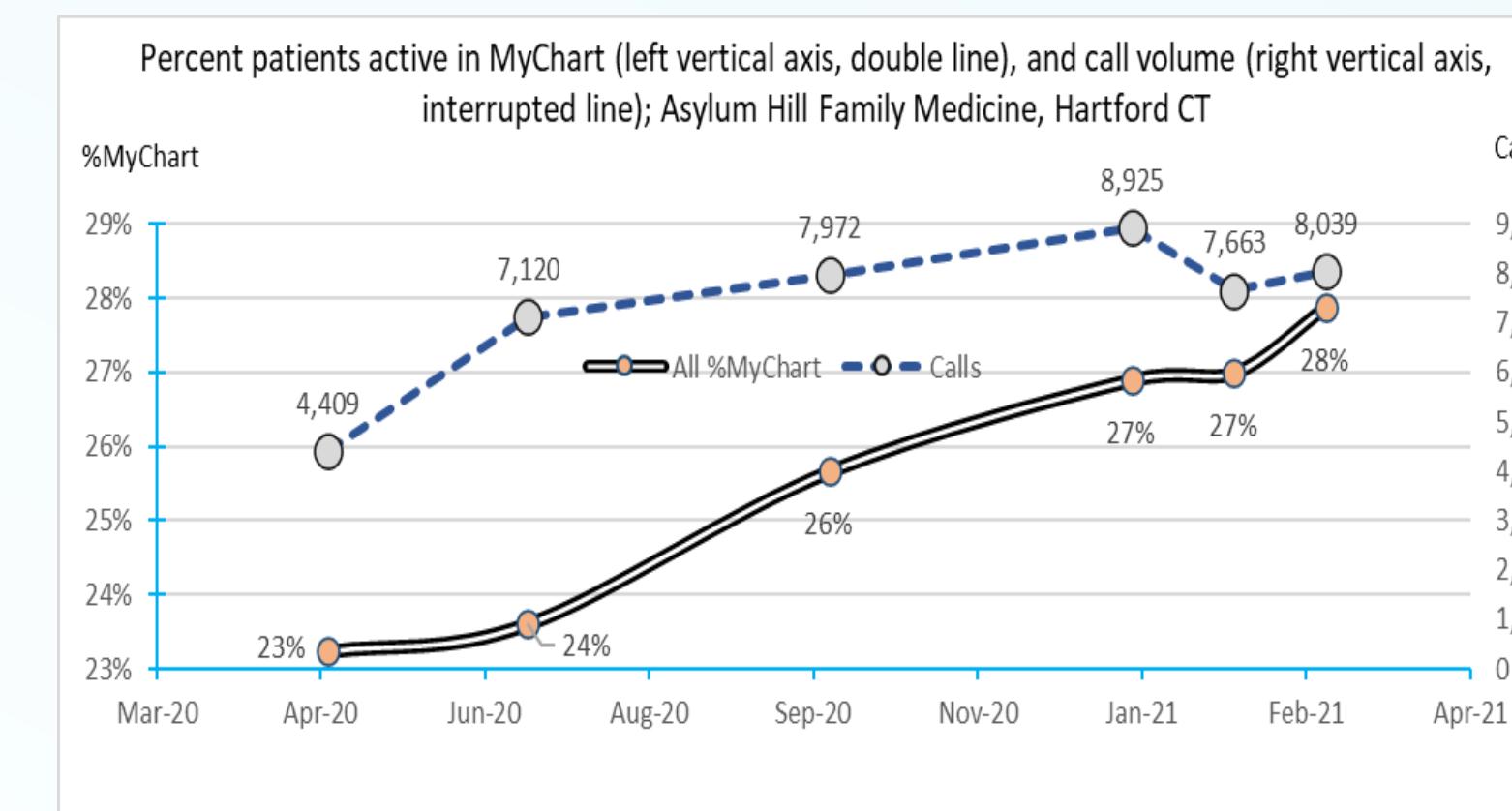
According to a binomial test comparing 27.8% to 22.2%, $p < .001$, this is statistically significant. In fact, for the 3/8/2021, patient pool of $N = 6,004$, even an increase to a 23.3% (or 1,397/6,004, much lower than the observed 1,671/6,004) would be significant according to a two-sided binomial probability test ($p = 0.049$).



Administrative Burden:

May 2020 to March 2021: It was found that the total number of incoming phone calls increased from 4,409 to 8,039. The total duration of time spent on incoming phone calls increased from 45 hours and 31 minutes to 82 hours and 21 minutes. The average duration of calls remained stable at 37 seconds.

There seems to be some relationship between the trend of MyCare Sign-Ups and number of calls over time. $r = .78$; $t = 2.424$, $p = 0.072$



LIMITATIONS

- COVID-19 pandemic, which limited the range of interventions as there was an effort to reduce in-person interactions with each other and patients, as well as the likely cofounding effect it had on the administrative burden.
- As this was a longitudinal project in a practice with yearly incoming/outgoing residents, it can be difficult to change work culture, especially with different levels of learning, unaware of workflow.
- Obtaining a full record of phone calls, particularly those prior to the pandemic as well as outgoing phone call data. Data also revealed that the average duration of calls was 37 seconds, likely reflecting abandoned calls, without knowing how many of these calls were included in the data.

CONCLUSION

Interventions geared towards the patient, and towards staff appear to have resulted in increased patient portal enrollment. Comparing 2019-2020, vs. 2020-2021, interventions geared toward the staff in 2020-2021 resulted in a more significant increase in patient enrollment than the intervention in 2019-2020 which was geared toward patient education. This increase in patient enrollment occurred despite the COVID-19 pandemic which vastly decreased in-person office visits, suggesting that repetition of the efforts made during the pandemic may have an even more significant impact as in-person office visits increase in the coming year. More analysis is pending to determine which specific interventions had the most impact.

In regards to administrative burden, total patient calls and the total duration of time increased significantly between May 2020 and March 2021 despite an increase in MyCare enrollment. However, this is likely due to the COVID-19 pandemic, given the reduction in in-person office visits and the increase in questions from patients regarding COVID-19. Given the seismic shift COVID-19 had on the entire practice, increasing administrative burden exponentially, it is difficult to isolate the impact of MyCare enrollment on administrative burden.

FUTURE PLANS

As this is a longitudinal project, the plan is to continue these interventions, however given the recent update in our EHR, many of the interventions/education aspects will need to be modified. Despite this, the overall importance of the objective to increase patient portal enrollment will be maintained and reevaluated preferably at least on a biannual basis. Future potential areas of investigation would be to determine which patients were more likely to enroll vs not enroll, by correlating with patient-specific factors such as age, gender, education level, etc. Also, while an attempt was made to address awareness of portal itself and portal functions, it would be appropriate to research other potential patient-specific barriers to both portal enrollment and utilization, such as patient capacity to enroll/utilize the portal, their desire relating to the perceived usefulness or ease of use or data protection, technological barriers, and/or a prior negative encounter with the portal, as well as to develop interventions addressing these barriers.