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# Telemedicine and hypertension management: Impact of COVID-19 on an institutional quality initiative



Dear Editor:

Hypertension is among the most devastating diseases with the greatest potential for treatment and reversibility. Recent worldwide estimates of age-standardized prevalence of hypertension have been appreciated to be 34% in men and 32% in women aged 30–79 years.<sup>1</sup> Hypertension is also a well-known risk factor for the development of coronary heart disease, which has been implicated as the leading cause of death in the United States.<sup>2</sup> With the emergence of the COVID-19 pandemic, a large portion of healthcare was transitioned to telemedicine which allowed access for patients to continue managing their chronic illnesses from the comfort and safety of their homes.<sup>3</sup> Prior to the start of the COVID-19 pandemic, our institution sought to improve outpatient metrics for hypertension in patients presenting to Internal Medicine Primary Care clinics through a quality improvement (QI) project. The aim of our QI initiative was to increase the percentage of patients between 18 and 85 years of age with known hypertension to have a goal blood pressure (BP) of <140/90 mmHg in greater than 68% of the four Internal Medicine Primary Care clinics at our institution. During the QI period, the COVID-19 pandemic occurred resulting in the transition of majority of care to telemedicine.

Our QI initiative spanned from January 2020 through December 2020. Metrics were obtained through populated data used for evaluation of quality metrics by our institution. Exemption was provided by the institutional review board. From January 2020 through February 2020 patient visits were face-to-face with BP readings obtained upon initial presentation by trained medical assistants and nursing staff. Elevated readings were re-obtained by the medical staff during the clinical encounter to ensure accuracy. Home BP logs and antihypertensive medications were also reviewed. The clinical encounters would end with education on healthy lifestyle and dietary modifications along with educational material and any adjustments in antihypertensive medications, if required. Furthermore, patients were educated on how to use a blood pressure machine if needed, as well as encouraged to bring their home machine if required for calibration during nursing visits or primary care physician visits. Selection and dosing of medications was set by a uniform protocol that all clinics had to follow. In March 2020, during the beginning of the peak of the COVID-19 pandemic, our institution implemented telemedicine for all ambulatory visits. Visits for BP management were dependent upon the patients accurately measuring their

BP at home, being compliant with their medications, and trying to follow a healthy lifestyle despite social restrictions. Telemedicine encounters for our Internal Medicine Primary Care clinics continued until June 2020 where we transitioned back to face-to-face visits. From January 2020 to February 2020 the average percentage of all Internal Medicine Primary Care clinics reaching goal BP was 70%. The average percentage of Internal Medicine Clinics reaching goal BP from March 2020 to May 2020 was 61%. The average percentage of Internal Medicine Clinics reaching goal BP from June to December 2020 was 55% (Fig. 1).

The impact of the COVID-19 pandemic on the management of this important group of patients was apparent. Despite just having two months of face-to-face visits prior to transitioning to telemedicine visits, our patients surpassed our aim of 68% meeting goal BP criteria. There was a sudden decline once telemedicine was implemented with a slow rise of patients starting to meet goal BP during the transition period from telemedicine to face-to-face, but still less than prior. The drop in patients meeting goal BP during the initial phase of transition from face-to-face visits to telemedicine can be appreciated by the absence of in person BP readings, since not all patients were reporting their daily readings to their primary care physician. Most concerning was the steady but slow rise in clinics meeting goal BP after transitioning back to face-to-face visits. Medication adjustments continued to be made according to the uniform protocol established at the start of our QI initiative prior to transitioning to telemedicine which may have contributed to this rise. This slow rise if appreciated at the individual level is concerning for patients having an elevated BP. Although, some studies have demonstrated that telemedicine has a beneficial role in hypertension management, many were single center with large population studies currently lacking.<sup>4</sup> From our experience, as well as, from recommendations of expert consensus,<sup>5</sup> an implementation strategy to address continued BP management in a telemedicine setting is through frequent ambulatory monitoring and physician update either through electronic medical record (EMR) messaging or telephone communication with clinic staff. Subsequently, with frequent telemedicine monitoring, medication dosages can be adjusted if a standard protocol is set among all clinics. Most important, is empowering and training patients in accurately measuring their BP on a routine basis prior to any event that results in the absence of in-person events. This can be done either through community-based health care initiatives, as well as, during

Percentage of Combined Internal Medicine Clinics Reaching Goal BP of <140/90 mmHg

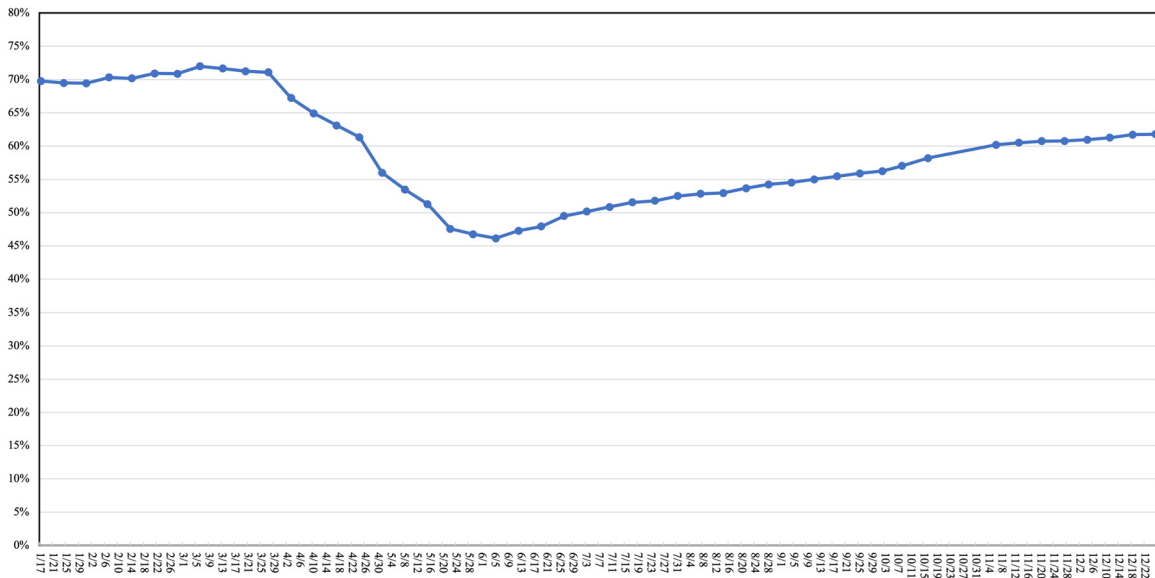


FIG. 1. Linear plot demonstrating percentage of clinics per date that reached target blood pressure (BP) goal of <140/90 mmHg in all Internal Medicine Primary Care Clinics combined. Dates ranged from 1/17/20 through 12/22/20. Dates in month and date are demonstrated on the x-axis. Percentages are demonstrated on the y-axis.

routine semi-annual or annual visits that would have occurred prior to transitioning to telemedicine. Home BP machines could have also been calibrated during these visits. Lastly, given the social toll the pandemic had, it is understandable that proper physical activity and dietary compliance was a challenge. One way to have addressed this during telemedicine visits, is to have provided ways for patients to do at home exercises, especially given the abundance of fitness electronic applications.<sup>6</sup> Dietary compliance could have been addressed by providing simple healthy recipes that follow the Dietary Approaches to Stop Hypertension (DASH) diet.<sup>7</sup>

Telemedicine overall has had a positive impact by providing safe means of managing diseases.<sup>8</sup> Unfortunately, in hypertensive patients, the time it took to recover from transitioning back from telemedicine medicine encounters to face-to-face visits was appreciated by the steady rise yet overall low average of clinics reaching goal BP. Both patient and provider education should be implemented to ensure consistent management of this critical group of patients in various clinical settings.

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