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Statin Prescribing Patterns During In-Person and Telemedicine Visits Before and During the COVID-19 Pandemic

Atsushi Mizuno, MD, MBA, MHCI, PhD, Mitesh S. Patel, MD, MBA, Sae-Hwan Park, PhD, Allison J. Hare, BS, Tory O. Harrington, MHCI, Srinath Adusumalli, MD, MSHP, MBMI
Penn Medicine Nudge Unit (AM, SA, SH, AJH, TOH, MSP), Perelman School of Medicine (SA, AJH, TOH, MSP), and The Wharton School (MSP), - all at the University of Pennsylvania, Philadelphia, PA; and the Crescenz VA Medical Center, Philadelphia, PA (MSP)

Keywords

statin; primary care; telemedicine; COVID-19

Statins have been demonstrated to reduce major adverse cardiovascular events, including mortality. About half of patients meeting guideline-based indications for statin therapy have not been prescribed the medication.¹ Recently, the coronavirus disease 2019 (COVID-19) pandemic brought about structural changes in care delivery, including rapid adoption of telemedicine for primary and hyperlipidemia care.² Quality of care delivered via telemedicine visits during the COVID-19 pandemic has not been well-evaluated. In this study, our objective was to evaluate statin prescribing rates for eligible patients before and during the COVID-19 pandemic while care was being delivered through in-person and telemedical channels.

We conducted a retrospective evaluation of statin prescribing rates by primary care physicians (PCPs) at 28 Penn Medicine practice sites in Pennsylvania and New Jersey from October 2019 to September 2020 for patients eligible but not already prescribed a statin. The data that support the findings of this study are available from the corresponding author upon reasonable request. Eligibility criteria developed by our health system were defined as: 1) clinical ASCVD (atherosclerotic cardiovascular disease) diagnosis; 2) history of familial hyperlipidemia; or 3) meeting United States Preventive Services Task Force (USPSTF) guidelines for statin therapy which includes age 40–75 years, at least 1 cardiovascular risk factor (e.g., dyslipidemia, diabetes, hypertension, smoking), and 10-year ASCVD risk score $\geq 10\%$. Patients were excluded if they: 1) were already prescribed a statin; 2) were allergic to statins; 3) had a glomerular filtration rate less than 30 mL/min or were on dialysis; 4) had a prior adverse reaction to statins (including significant liver dysfunction, rhabdomyolysis or other intolerance to statin); 5) were pregnant; 6) were breastfeeding; 7) were on hospice or at the end-of-life; or 8) were on a Proprotein convertase subtilisin/kexin type 9 (PCSK9)

Corresponding author: Atsushi Mizuno, MD, MBA, MHCI, PhD, Penn Medicine Nudge Unit, University of Pennsylvania, atmizu@pennmedicine.upenn.edu, Address: 3400 Civic Center Blvd, 14-176 South Pavilion, Philadelphia, PA 19104.

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inhibitor medication. Monthly changes in the rate of new statin prescribing were evaluated throughout the study period. Multivariate models considering monthly interactions were fit using generalized estimating equations clustered by PCPs alone and adjusted for age, sex, race/ethnicity, median household income, and statin-intensity indication (moderate or high).³ This study was approved by the University of Pennsylvania Institutional Review Board. Analyses were conducted by using R version 4.0.2 (R Foundation for Statistical Computing).

The sample comprised 158 PCPs and 20,374 patient encounters with mean (SD) patient age of 65.8 (11.0) years; 49.4 % were male. Clinical ASCVD diagnosis, history of familial hyperlipidemia, and 10-year ASCVD risk score 10% were observed in 5442 (26.7%), 104 (0.5%), and 14930 (73.3%) encounters, respectively. In-person visit volumes declined during the start of the COVID-19 pandemic while telemedicine visit volumes increased. Telemedicine visits peaked in April 2020 and accounted for 21.9% (N=4467) of the visits during the study period. Among in-person visits, the overall new statin prescribing rate was 3.1%, decreasing from March but recovering to the previous level around August (Figure). The overall statin prescribing rate for telemedicine visits was 3.2%. In adjusted models, statin prescribing rates were significantly higher during telemedicine visits than in-person visits during April 2020 (odds ratio, 2.10; 95% CI, [1.01–4.37]; p-value = 0.047) and May 2020 (odds ratio, 2.32; 95% CI[1.02–5.29]; p-value=0.044). There was no significant difference in prescribing rates between telemedicine and in-person visits during the rest of the study period.

In this study, we found that overall statin prescribing rates were low, presenting an opportunity to improve the delivery of care. Decreased rates of in-person visits during the COVID-19 pandemic were offset by an increased rate of telemedicine visits. During the early pandemic period (April 2020 to May 2020), statin prescription rates were the same or higher during telemedicine visits as compared to in-person visits. This may indicate hyperlipidemia management is an effective use case for telemedical care delivery, particularly as the management of this condition does not always require a physical examination.⁴ Clinicians may also have had more time during telemedicine visits to address chronic conditions like hyperlipidemia as compared to in-person visits. This study has several limitations, including its observational design in a single academic health system and selection bias due to its retrospective nature. As the volume of telemedicine visits decreased in later months, we may have had less power to test for differences in prescribing rates relative to in-person visits. Additionally, among several available guidelines for management of hyperlipidemia, our health system adopted USPSTF guidelines in clinical practice, which could result in limited generalizability. Finally, the overall statin prescribing rate during this study may have been lower due to patient difficulty in obtaining cholesterol testing during the COVID-19 pandemic, which we were not able to directly assess.⁵ Future studies are needed to examine quality of care as clinicians and patients gain more experience with telemedicine.

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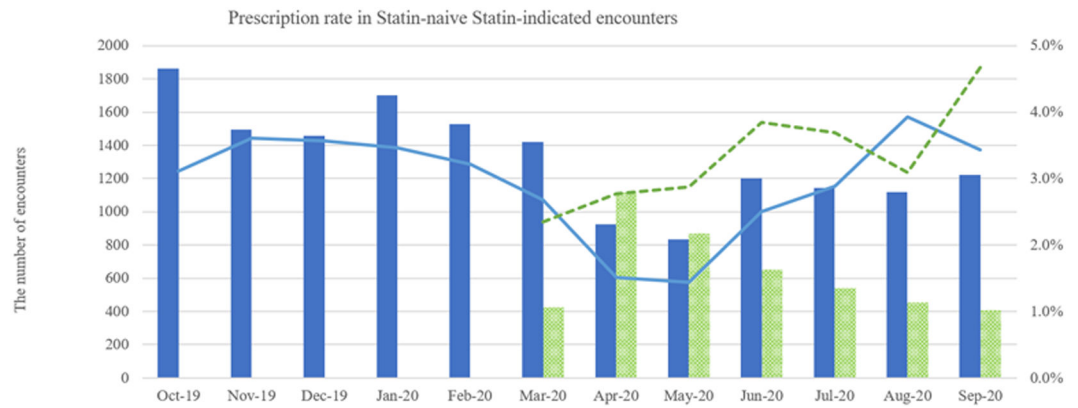
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Non-standard Abbreviations and Acronyms

COVID-19	coronavirus disease 2019
PCPs	primary care physicians
ASCVD	atherosclerotic cardiovascular disease
USPSTF	United States Preventive Services Task Force
PCSK9	Proprotein convertase subtilisin/kexin type 9

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	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20
Total encounters (Office visit)	1863	1496	1456	1702	1526	1421	925	834	1200	1143	1119	1222
Total encounters (Telemedicine)						425	1118	871	651	542	453	407
Prescription rate at Office Visit	3.1%	3.6%	3.6%	3.5%	3.2%	2.7%	1.5%	1.4%	2.5%	2.9%	3.9%	3.4%
Prescription rate at Telemedicine						2.4%	2.8%	2.9%	3.8%	3.7%	3.1%	4.7%
p for interaction (telemedicine*month)						Reference	0.047	0.045	0.235	0.448	0.782	0.261

Figure. Prescription rate among eligible patients. Solid blue bars represent total number of office visits, while dotted green bars represent total number of telemedicine visits. Solid blue line represents statin prescription rate during office visits, while dotted green line represents statin prescription rate during telemedicine visits.