A Cost Comparative Analysis of Electronic Consultations for Health First Colorado Members

Overview

In April 2018, the University of Colorado School of Medicine (CUSOM), launched an electronic consult (eConsult) program that was modeled after Project CORE (Coordinating Optimal Referral Experiences), a program initiated by the American Academy of Medical Colleges (AAMC). Since 2018, CUSOM has grown the program internally and has expanded the use of eConsults to community based PCPs across Metro Denver. CUSOM's eConsult program has been partially funded by an Interagency Agreement between the Colorado Department of Health Care Policy and Financing (HCPF) and CUSOM. eConsults are asynchronous telehealth communication exchanges initiated by a primary care provider (PCP) with a specialist provider regarding a specific clinical question for a patient of the PCP. eConsults increase access to specialty care and reduce cost of care by eliminating the need for face-to-face specialty consultation or, in the event a specialty visit is still required, increasing the efficiency of patient encounters as specialists are already familiar with their situation. These exchanges through electronic medical records (EMRs) facilitate high-quality care within the primary care setting, keeping patients in their own community without the need to attend a separate specialty care appointment. The addition of eConsults to primary care medical homes provides an effective mechanism to support care management, whole patient care, appropriate specialty referrals, and shared decision making.

Since implementing eConsults in 2018, the CUSOM program has expanded to encompass:

- 268 PCPs from 35 different primary care clinics, including CUSOM, University of Colorado Health Medical Group (UCHMG), and STRIDE Community Health Center clinics.
- 90 specialist across 26 unique specialties covering a wide array of medical conditions, including Allergy and Immunology, Cardiology, Clinical Pharmacy, Dermatology, Endocrinology, Gastroenterology, Hepatology, Infectious Disease, Medical Oncology, Nephrology, Neurology, Obstetrics-Gynecology, Ophthalmology, Otolaryngology, Orthopedics, Pain, Palliative Care, Physical Medicine and Rehabilitation, Psychiatry, Pulmonary, Sleep, Stroke, Survivorship, UroGynecology, Urology, and Wound Care.
- Over 130 condition based templates that PCPs can use to request eConsults, along with a free text eConsult template for PCPs to utilize if they have a clinical question outside of one of the condition specific templates.

Early evidence from the CUSOM eConsult program suggests:

- 86% of PCPs find eConsults easy to use and as time efficient as placing a standard referral.
- 80% of eConsults are answered in less than 2 business days.
- PCP and specialist satisfaction with the use of eConsults is very high with 89% of PCPs reporting being highly satisfied with the specialist's response.
- Patients saved over $90,000 in transportation cost from avoided trips to see specialists on the Anschutz Medical Campus.

This report contributes to this early evidence of the effectiveness of the CUSOM eConsult program by examining the health care cost and utilization of patients with an eConsult compared to patients with a standard referral for a specialist visit. While several published studies have examined various models of eConsults and have reported a range of outcomes related to improved access to specialist care, reduced wait times for care and reduced travel burden for patients,[1,2,3,] thus far only a few studies have xamined the relationship of eConsults to cost and utilization of care. Findings from a cluster-randomized controlled trial of eConsults in a statewide federally qualified health center (FQHC) in Connecticut

indicated eConsults saved approximately 10% of total cost of care for Medicaid patients with a cardiology eConsult[4] and, on average, $84 per member per month (42%) for Medicaid patients over 3 to 6 months following an eConsult for Dermatology, Endocrinology, Gastroenterology and Orthopedics[5]. The results from this analysis are aimed at understanding the effectiveness of eConsults and to inform continued policy discussions.

Methods

To assess the relationship between eConsults and health care cost and utilization, the CUSOM eConsult program provided information on eConsults and specialist referrals covering the period from April 2018 through September 2020 for 2,941 Health First Colorado (Medicaid) members. This information was linked to Health First Colorado member eligibility and fee-for-service claims using data provided to the CUSOM under an existing Interagency Agreement that included paid claims through September 2020. To provide adequate time for providers to submit claims for services rendered (claims run-out), we restricted the analyses to the 1,485 patients with their initial eConsult or referral (hereafter referred to as their first encounter) from April 2018 through February 2020. We selected the February 2020 end date to capture three months of each member's post-first encounter health care experiences and allow for a four-month claims run-out period.

Three other exclusions were applied to the 1,485 members with linked data.

1. We excluded Health First Colorado members with one or more months of eligibility in the Medicare-Medicaid eligibility category in the 12 months before, the month of, or the 3 months after the first encounter.
2. We excluded members with Health First Colorado coverage under a capitated plan in one or more months in the 12 months before, the month of, or the 3 months after the first encounter.
3. We excluded first encounters with an eConsult or referral to one of the following specialties: Medical Oncology, Ophthalmology, Orthopedic, Pain Clinic, Palliative Care, Pharmacy, Physical Medicine Rehabilitation, Stroke, Survivorship, UroGynecology and Wound Care.

The first two exclusions were applied to ensure our cost and utilization measures reflect a member's health care experiences. The third exclusion was required because these specialties have a small number of eConsults or referrals during the analysis period.

After applying these exclusions, the analysis examined cost and utilization in the 3 months following a first encounter for 858 Health First Colorado members. These members had a first encounter for the following specialties: Allergy, Cardiology, Dermatology, Ears Nose Throat, Endocrinology, Gastroenterology, Hematology, Hepatology, Infectious Disease, Nephrology/Renal, Neurology, Obstetrics/Gynecology, Psychiatry, Pulmonary, Rheumatology, Sleep Medicine and Urology.

We examined four cost measures and three utilization measures to assess the cost savings and utilization differences of eConsults compared to in-person referrals. The four cost of care measures examined were:

1. Total Cost of Care excluding capitated behavioral health and dental services costs
2. Cost of Emergency Department (ED) services
3. Cost of Primary Care (PC) services
4. Pharmacy costs.

Each cost measure represented the average per member per month (PMPM) cost in the three months following the first encounter.

Three utilization measures were also measured over the three months analysis period following the first encounter:

1. At least one ED encounter in the three months
2. At least one PC visit in the three months
3. Any pharmacy costs in the three months.

Regression models were applied to assess the association between eConsults and each of the seven outcome measures. In addition to an indicator of an eConsult relative to a referral, the regression models included member's age and average PMPM total cost of care over the 12 months before the first encounter, as well as a series of indicators for the specialty of the eConsult/referral of the first encounter.

Key Findings

The findings below reflect preliminary analyses for each cost and utilization measure.

Total Cost of Care

- eConsults were associated with a 9.35% reduction in PMPM total cost of care over the subsequent three months; however, this relationship was not statistically significant (p-value of 0.47).
- This suggests, that for those members with an eConsult, there was a $240 cost savings per month or $720 over the three months following their initial eConsult.

Emergency Department (ED) Services

- eConsults were associated with a 4.12 % reduction in the proportion of members experiencing an ED encounter over the subsequent three months; however, this relationship was not statistically significant (p-value of 0.38).
- For those members with an ED encounter, eConsults increased ED cost by approximately 29%, however, this effect was not statistically significant (p-value of 0.23).
- Overall, for those members with an eConsult, this suggests there was an increase in ED cost of $14 per month over the three months following their initial eConsult.

Primary Care (PC) Services

- eConsults were associated with a 3.01 % reduction in the proportion of members with at least one PC visit over the subsequent three months; however, this relationship was not statistically significant (p-value of 0.43).
- For those members with at least one PC visit, eConsults increased PC costs by approximately 6%, however, this effect is not statistically significant (p-value of 0.57).
- Overall, for those members with an eConsult, this suggests there was an increase in PC costs of $12 per month over the three months following their initial eConsult.

Pharmacy

- eConsults were associated with a 5.13 % increase in the proportion of members with pharmacy claims over the subsequent three months; however, this relationship was not statistically significant (p-value of 0.10).
- For those members with a pharmacy claim, eConsults increased pharmacy cost by approximately 5%; however, this effect was not statistically significant (p-value of 0.75).
- Overall, for those members with pharmacy costs, this suggests there was an increase in these costs of $59 per month over the three months following their initial eConsult.

Policy Implications

Although the relatively small number of Health First Colorado members with a CU Medicine eConsult or specialist referral between April 2018 and February 2020 limits the statistical significance of any association between eConsults and our health care cost and utilization measures, our findings suggest:

- eConsults reduce total cost of care over the three months following the first eConsult compared to patients with an initial specialist referral.
- The lower total cost of care combined with higher ED, PC and pharmacy cost implies savings are resulting from lower cost of specialist care, ancillary services, and/or hospitalizations.

Overall, these findings suggest eConsults programs for Health First Colorado members be continued and additional analyses be conducted. We anticipate these additional analyses with increasing numbers of econsult encounters by Health First Colorado members will increase the power to detect differences in health care cost and utilization. Additionally we will be able to identify the sources of these savings, the logic related to the trends in increased primary care costs and add additional specialties to the analyses.

---

[1] Chen A, Kushel M, Grumbach K, Yee H. A safety-net system gains efficiencies through "eReferrals" to specialists. Health Aff (Millwood). 2010; 29(5):969–71.

[2] Liddy C, Afkham A, Drosinis P, Joschko J, Keely E. Impact of and satisfaction with a new eConsult service: a mixed methods study of primary care providers. J Am Board Fam Med. 2015; 28(3):394–403.

[3] Barnett ML, Yee HF Jr, Mehrotra A, Giboney P. Los Angeles safety-net program eConsult system was rapidly adopted and decreased wait times to see specialists. Health Aff (Millwood). 2017; 36(3):492–9.

[4] Anderson D, Villagra V, Coman EN, Zlateva I, Hutchinson A, Villagra J, et al. A cost-effectiveness analysis of cardiology eConsults for Medicaid patients. Am J Manag Care. 2018; 24(1):e9–16.

[5] Anderson D, Villagra VG, Coman E, et al. Reduced cost of specialty care using electronic consultations for Medicaid patients. Health Aff (Millwood). 2018;37(12):2031-2036. doi:10.1377/hlthaff.2018.05124.