Analysis of Provider-generated Revenue and Impact on Medication Reconciliation from a Pharmacist-led Chronic Care Management Service

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Background
On January 1, 2015, the Centers for Medicare and Medicaid Services (CMS) began paying for chronic care management (CCM) services under the Medicare Physician Fee Schedule. CCM allows for qualified health care professions to bill for non face-to-face time spent with Medicare beneficiaries who have two or more chronic conditions. This service is billed based on minutes spent caring for an enrolled patient per calendar month, with a minimum billing threshold of 20 minutes. Table 1 highlights the available CCM billing codes and the associated revenue.

CCM can be billed to Medicare utilizing incident-to billing, allowing clinical staff such as clinical pharmacists, registered nurses (RNs), licensed practical nurses (LPNs), and licensed master social workers (LSCSWs) to provide the service. Clinical staff can be employed by the qualifying physician's office or under a contractual agreement.[1] Clinical staff can perform CCM services outside of the qualifying provider's office under general supervision. This allows for unique opportunities for community pharmacists to provide and be reimbursed for clinical services without the restriction of needing to be physically located within the qualifying providers' office. Participation in CCM has the potential to benefit both providers' offices and pharmacies through increased revenue. Increased revenue can result from improved quality measures, new appointment referrals, or monies earned from CCM billing itself.

Published data on pharmacist-provided chronic care management services is limited, especially led by community-based pharmacists. Current literature related to revenue describes both direct and indirect revenue sources. An independent pharmacy in North Carolina recently published data demonstrating their impact on their chronic care management provider contract through improvement in select quality measures.[2,10] The pharmacist was hired by the community pharmacy and works in collaboration with a physician office 3 days per week to perform Annual Wellness Visits (AWV) and CCM follow-up. Improvement in quality measures has the potential to increase reimbursement and therefore revenue through value-based payment systems, with Yon et al demonstrating a potential increase of $16,920.[11]

The number of patients was not identified in this study. Direct revenue has been described in a 2020 study, which reported a total revenue of $5,842 generated over a 9-month study period and included 26 patients.[10] Of note, patients in this study were also patients of the pharmacy.

Medication reconciliation is necessary to create the most accurate medication list possible to maximize patient care and minimize error. There is numerous data to support the positive impact that a pharmacist-led medication reconciliation can have on medication list accuracy. Many studies have suggested that the majority of errors are attributed to medications remaining on the medication list that the patient is no longer taking.[5,8] Johnson et al retrospectively compared pharmacy fill records and EHR medications lists at the Family Medicine Center in Oklahoma City over 13 months. A total of 100 patients were included. Over this time, a total of 581 discrepancies were identified by the pharmacist, with 41% of discrepancies represented by inactive medications.[5] Stewart et al identified 219 patients from a Catholic Charities Free Health Care Center over a 13-month study period. Over the study timeframe, pharmacists identified 219 medication discrepancies, with 51.5% represented by medication not charted.[8] Another study by Steward et al further assessed this data to identify discrepancies at follow-up, showing that discrepancies inevitably persist following a single medication reconciliation, with medication omissions persisting and the total number of discrepancies with medications listed in the EHR increasing. Many of these follow-up discrepancies were attributed to physician changes since the last appointment or medications with automatic stop dates.[9] These findings support the importance of frequent pharmacist follow-up on medication lists, which is possible through programs such as pharmacist-led CCM. Medication list accuracy is especially important for CCM patients as it is an essential component of the Continuity of Care Document, a comprehensive plan that is required by CMS to be created and shared with other members of the patient's care team during transitions of care such as outpatient referrals, emergency room visits, and hospital admissions.

Objectives
The primary aim of this study was to measure the average revenue generated per patient from CCM billing and referrals for office visits made by the pharmacy on behalf the PCMH from April 2018 through June 2019.

The secondary aim of this study was to assess the number of medication reconciliations completed from April 2018 through June 2019, and identify the types and frequencies of medication discrepancies identified during each medication reconciliation. Types of discrepancies in this study included medication no longer being used by the patient, medication omission, strength mismatch, therapeutic duplication, and dosing mismatch.

Practice Description
Realo Drugs (hereafter referred to as "Realo") is a group of 18 independent community pharmacies serving eastern North Carolina who share a common owner. Realo is fully committed to improving patient care and incorporating clinical services into daily workflow. Services provided by the company include, but are not limited to: medication synchronization, comprehensive medication reviews, immunizations, adherence packaging, home visits, diabetes self-management education, diabetes prevention classes, veterinary medicine, specialty pharmacy, care transition management, and chronic care management. Realo has 3 pharmacy locations which are part of the UNC Community-based PGY1 residency program.

Realo Drugs in Jacksonville, North Carolina is an independent community pharmacy with involvement in CCM services. In October 2017, a contract was signed with a patient-centered medical home (PCMH) of

more than 24 clinics across the state of North Carolina with services beginning in April 2018. Realo provides CCM services for 10 of these offices. This Realo location employs 1 clinical pharmacist and 1 pharmacy resident who are responsible for managing this clinical service from within the pharmacy. The majority of patient interactions are performed via phone.

Practice Innovation
The clinical pharmacist serves as the primary care coordinator for the enrolled patient. As care coordinator, the pharmacist is provided with access to the electronic health record via an individual login and is responsible for tracking time spent with the patient, documenting encounters, and billing for the service. Qualified patients are identified and enrolled by the qualifying provider, and patient information and consent is provided to the pharmacy. Patients do not have to fill their medications with Realo to qualify for this pharmacist-driven program. After receiving the patient information, the pharmacist performs the initial patient call which involves completion of a health risk assessment and comprehensive medication review. The pharmacist provides monthly follow up with each patient which may include but is not limited to medication reconciliation, coordinating referrals, identifying community resources, requesting appointments, communicating medication refill requests, providing vaccine recommendations and screening for falls risk, COPD exacerbations, and depression. The pharmacist documents and bills patient interventions at the end of each month. The pharmacy receives a percentage of the total reimbursement received by the PCMH for each CCM code billed.

For this study, the electronic health record (EHR) system was utilized to identify the multiple sources of revenue resulting from the CCM partnership between the PCMH and the community-based pharmacy. A password-protected intervention and revenue tracker was maintained by the pharmacist to document (1) the number of appointment referrals made by the pharmacist to the physician resulting in a completed in-office appointment and (2) the number and types of CCM billing codes submitted each month. The referral appointments were determined by retrospectively assessing the EHR and identifying any messages sent to the provider by the pharmacist requesting an appointment on the patient's behalf. If an appointment was scheduled and completed, the amount of reimbursement by Medicare to the provider office was tracked. Through access to the EHR, information was collected regarding the amount billed to Medicare, the amount reimbursed by Medicare and any secondary insurance, and the copay the patient was responsible for. Leveraging this information, the associated CPT code billed for the visit was documented in addition to the revenue received by the clinic from that particular visit. It is important to note that the maximum allowable reimbursement was not always received. In addition, less is received when the service was billed under a mid-level provider. The EHR was also used to track medication list changes made by the pharmacist. The EHR utilized by the PCMH tracks any changes made to a patient's medication list and marks the individual user's name who made the change. Using this information, the number and types of medication list changes made by either the clinical pharmacist or pharmacy resident were gathered and assessed. Medication discrepancy categories were determined based on what has been previously reported in the literature and based on what information was accessibly via the EHR.

Evaluation
A total of 112 patients were included in this study. Only 23% of these patients were also patients of the pharmacy. The average patient age was 68 years with 74% being female. The average time in the program was 10 total months. The most common disease states included hypertension, hyperlipidemia, and diabetes. Of note, not all patients had a billed CCM service each month due to inability to reach the patient or not meeting the billable time threshold. Patient demographics are highlighted in Table 2.

The primary results demonstrate the total revenue generated from a pharmacist led CCM program from the inception of the program, beginning April 2018, through June 2019. All 112 patients included in this study were billed for CCM services at least once over the study period. Patients enrolled in the program but unavailable for contact by the pharmacist were not included in the results. A total of $26,148 was generated from all revenue sources over fifteen months, averaging $15.56 per patient per month. The majority of the revenue was generated from non-complex patient encounters, representing approximately 80% of total revenue. The revenue generated from complex patient encounters and appointment referrals each represented approximately 10% of total revenue. The total revenue breakdown is presented in Graph 1 and Table 3.

During the 15-month study period, 239 medication reconciliations were performed for 199 patients. Out of the 239 medication reconciliations performed, 609 medication discrepancies were identified. The discrepancies were broadly categorized into (1) patent no longer takes medication listed, (2) patient takes medication not listed, and (3) strength/dose mismatch. Around two-thirds of the medication discrepancies, 67%, were categorized as "patient no longer takes medication listed". The second most common discrepancy was "patient takes medication listed" at 21%, followed by "strength/dose mismatch" at 10%. These results are highlighted in Graph 2. The medication discrepancies were further analyzed to identify the types of medications most often cited. These were categorized as maintenance medications, short course medications, as needed medications, over the counter medications, and herbals/supplements. The majority of medication discrepancies identified and changed by the pharmacist, 39%, were identified as maintenance medications (see Table 4).

Practice Implications
This data adds to the current literature by demonstrating the potential revenue that can be generated through CCM services provided by a community-based pharmacy, with this data focusing on direct revenue. In addition to revenue, this data also supports the need for pharmacist involvement to continually improve medication list accuracy.

Discussion
Over fifteen months with a total of 112 patients, a total of $26,148 was generated from CCM services. All 112 patients included in this study were billed for CCM services at least once over the study period. When comparing the direct revenue reported in this study to the Hoehns et al study, the total revenue from this data was less when considering the amount of revenue per patient per month ($24.97 versus $15.56). There are multiple factors which may contribute to this difference in revenue. With fewer patients in the study by Hoehns et al, there may have been more time to focus on and bill for more time leading to more revenue. In addition, this current study continued longer (15 months versus X months). It's possible that with extra time in the CCM program, patients may require less time each month which could result in less revenue per patient.

This data displays the impact a pharmacist can have on medication list accuracy through a pharmacist-led medication reconciliation. An average of 2.5 discrepancies were found per reconciliation completed. A majority of medications were ones that remained on the patient's medication list after discontinuation by the provider. This is consistent with other reported data on pharmacist-led medication reconciliations.[5,10] With the majority of medication discrepancies classified as maintenance medications, this further demonstrates the value of frequent review and updating of a patient's medication list by a pharmacist.

Limitations to the data presented include an inability to directly correlate all pharmacist-generated appointments. As this was a retrospective analysis, it was not always possible to determine if a patient's appointment was a result of pharmacist intervention. As a result, this could lead to an underrepresentation of total revenue. In addition, it is possible that the longer patients are enrolled in CCM, the less time or involvement they will need in the program. As a result, revenue from CCM can fluctuate, especially if there are not new patients consistently being enrolled in the program making it hard to predict revenue at a given point in time. Since the pharmacist was not physically located in the physician practice to serve as a constant reminder to providers and staff about CCM, it is possible that new patient enrollment was not at a priority. Over time, this could lead to a decrease in enrollment and thus decrease in revenue. In addition, medication reconciliations were only tracked by the pharmacist if an intervention was made. Therefore, the number of medication reconciliations presented may be an underestimation of the number of medication reconciliations performed over the study period.

Conclusion
This data can be used to demonstrate to potential provider partners the amount and sources of revenue that can be provided through CCM services. In addition, more frequent review and updating of a patient's medication list can improve patient care and optimize continuity of care during care transitions. Future studies should evaluate resources invested by pharmacy staff for CCM to determine long-term sustainability of the program.

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