Medication Therapy Management Goes Hi-Tech: Implementing Automated Software Improves Pharmacy Efficiency

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**Background:** With the Centers for Medicare & Medicaid Services mandate that all Medicare Part D benefit sponsors must offer members a medication therapy management program, pharmacists were facing new challenges of data collecting using software applications that had limited use for the new program. 

**Objective:** Health Net pharmacists initiated an automated software application to increase the efficiency of the medication therapy management program, the integrity of the member profiles, and the ability to provide accurate reporting of drug-related issues.

**Methods:** Pharmacists were integral contributors to the automated software program; they developed the clinical algorithms, screen layout and transitions, and program functionality. Together with a programming company—Cognizant Technology Solutions—they created a web-based software application to accommodate an increasing number of eligible members and ensure accuracy of the information; they also performed testing of the final product.

**Results:** The new program includes member demographics and qualifying parameters that are uploaded monthly. All drug-related problems are now displayed and updated automatically by the software application. Assessment questions are answered and saved within the software, and reporting functions allow for quick and accurate results. Consequently, the number of drug regimen reviews and drug problems identified has increased by more than 300%.

**Conclusion:** The automated software application is capable of maintaining and updating medication claims, sending and receiving faxes to physicians and pharmacies, and allows for documentation of patient-specific freeform text. Each profile is extensive and allows the pharmacist to get all necessary information from a single source. [AHDB. 2008;1(8):16-23.]

In 2006, the Centers for Medicare & Medicaid Services’ (CMS) ruling went into effect, mandating that all Medicare Part D prescription benefit sponsors must offer their members a medication therapy management (MTM) program. Among other requirements, CMS mandates Part D sponsors to have an MTM program to reduce the risk of adverse events and ensure optimum therapeutic outcomes for targeted beneficiaries through improved medication use. CMS gives basic guidelines of requirements for eligibility into the program. The patient must be taking multiple ≥2 Part D medications and have multiple ≥2 chronic diseases. Each MTM program identifies how many and which medications and diseases will be used in determining eligibility; a member must also have a likely annual drug spending of ≥$4000.

Health Net’s 2006-2008 MTM program defines eligibility as ≥5 chronic medications, which includes any medication with a ≥60-day supply in a 90-day period and ≥3 chronic diseases from these conditions—heart failure or hypertension, chronic obstructive pulmonary disease or asthma, diabetes, hyperlipidemia, and depression. All diagnoses are inferred from drug therapy by necessity, because medical claims data are not available for Part D-only members.

**New MTM Program, Old Software**

After CMS published the MTM requirements in 2005, Health Net asked a multidisciplinary team—
comprised of pharmacists, physicians, psychologists, and nurses—to develop its MTM program based on several sources: a consensus statement from 11 national organizations; published results from an executive session between the Academy of Managed Care Pharmacy and the American Society of Health-System Pharmacists; and a standard stepwise process (Table 1).

Health Net leveraged internal strengths and an existing software tool that had been designed to assist case managers with tracking the status and progress of mental health patients. The pharmacists adapted this tool for MTM use to enter patient-specific notes in freeform text, create custom assessments, document problems, goals, interventions, and outcomes in a readily reportable format, and track and assign patients to a work queue.

The pharmacists assisted in devising the custom assessments about overall health status, medication compliance, and access to healthcare issues. Data were captured in predefined fields to facilitate reporting. MTM nurses used the information gathered in each assessment to triage patients for appropriate disease management, assistance program, or behavioral healthcare purposes. Questions in the compliance assessments helped determine if patients were having adverse reactions, had difficulty with copayments, required additional education, or would benefit from a reduced tablet burden. As appropriate, the nurses scheduled patient calls with the MTM pharmacists to assist in changing drug regimens and facilitate communication with their physicians (Table 2).

The pharmacists established categories of problems, goals, and interventions to enter into the existing system. For example, with the broad problem category therapeutic duplication, the linked goal could be to remove a duplicated drug, as in a patient taking 2 angiotensin-converting enzyme (ACE) inhibitors who should be taking only 1. The intervention may then be to educate the patient or contact the physician. Outcomes were categorized as “achieved,” “not achieved,” or “no longer relevant,” and coded manually by the pharmacist (Table 3).

With technical staff already dedicated to maintaining the software, creating the custom assessments, and providing monthly reports, the original tool seemed a suitable solution for a new program that was designed from scratch.

**Illustrative Case Report**

The following case illustrates the impact of the multidisciplinary approach and workflow used in an MTM program.

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**KEY POINTS**

- With the mandate to provide MTM programs to Medicare Part D beneficiaries, pharmacists faced new challenges of collecting important patient-specific medication information using old, inefficient, and costly systems.
- Mired in manual procedures with the old software, pharmacists at Health Net completed about 200 MTM reviews monthly of members joining the program, although they had an average of 1500 potential members becoming eligible each month.
- The new automated MTM program—created in cooperation between pharmacists and a programming company—increased pharmacy efficiency significantly; drug regimen reviews and drug problems identified increased by 300%.
- Health Net pharmacists now review 50 member profiles daily compared with 50 weekly reviews with the old software system.
- Part D sponsors would benefit from customizing their MTM programs to cover the large spectrum of eligibility criteria, enrollment methods, and intervention types.

A 71-year-old woman living alone received a letter inviting her to participate in the MTM program. She called the program and scheduled a call with an MTM nurse. Before the nurse returned the call, pharmacists evaluated the member's drug regimen. She had pharmacy claims for glipizide, metformin, amlodipine, atorvastatin, paroxetine, and famotidine; she had no claims for an ACE inhibitor and had not been compliant with her amlodipine regimen. The pharmacist provided a list of questions for the nurse to validate doses and diagnoses and listed potential drug therapy recommendations. When the nurse contacted the member, she complained of headaches and nausea, as well as difficulty getting to see her doctor. She reported that her blood pressure was 210/90 mm Hg.

The nurse arranged for an appointment with the member’s primary care physician and facilitated transportation, as well as educated the member on the importance of medication adherence. The pharmacist faxed the medication recommendations to the physician’s office before the visit. An ACE inhibitor was added by the physician as recommended by the MTM pharmacist. At follow-up with the MTM nurse a few weeks later, the patient's blood pressure had dropped to 162/85 mm Hg.

Participation in the MTM program led to positive outcomes for this member. The nurse’s interventions, the pharmacist’s review, and the coordination with the patient’s physician led to optimizing her medication therapy.
Mired in Manual Procedures

Early into the effort, however, the MTM pharmacists realized that the adapted software had significant limitations. Although medication claims history was available, it was not conducive to a comprehensive drug regimen review. It also was not possible to build drug-related problem (DRP)-identifying algorithms into the system. Without these features, the potential existed for pharmacist variability in each review. The notes in freeform text were long and duplicative. Documenting the problems, goals, and interventions took place in separate systems, which required pharmacists to search through many screens to form a full clinical picture and determine what required follow-up. The system could not create or store any external communications.

Virtually the entire MTM process was manual. Pharmacists had to copy medication claims onto custom files, identify DRPs by hand, create a quick-reference list of all documented DRPs to simplify patient follow-up calls, and print faxes sent to and received...
MTM Goes Hi-Tech

from physicians. The pharmacists used multiple systems to incorporate procedures, but the systems did not communicate well with each other. The pharmacists also maintained hard copy files for each opt-in member and created, printed, and faxed documents manually. Mired in these manual procedures, the pharmacists completed an average of 50 reviews each week. Although this amounted to 200 reviews monthly, an average of 1500 members were becoming eligible for the MTM program each month. The need for automation became apparent.

Health Net's original MTM program enrollment method was opt-in, with welcome letters sent to eligible members inviting them to participate. By the end of 2006, the total number of actively enrolled MTM members was 865, 7.8% of the 11,124 eligible members, with the success of DRP resolution more than 95%. As a result, Health Net Pharmaceutical Services (HNPS) planned to increase enrollment to be able to improve more member lives.

In 2007, CMS approved a hybrid opt-in/opt-out enrollment methodology, in which high-risk members were automatically enrolled in the program. “High-risk” was defined by HNPS as any member with ≥10 chronic medications or who is being treated with drugs indicated for Alzheimer's disease, psychoses, or peripheral vascular disease. Since the manual process could not handle increased enrollment, HNPS leaders agreed to automate the program, with the ultimate goal of incorporating all the systems and processes into a comprehensive software application.

### Automating the MTM

The MTM team considered several options. The first was to evaluate the possibility of enhancing the existing tool and incorporating external algorithms and internal print fulfillment. Since the original tool was developed by a vendor and was used by multiple health

<table>
<thead>
<tr>
<th>Question</th>
<th>Answer type</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you take any over-the-counter medicine, herbs, or natural products for headache, muscle pain, nausea, constipation, diarrhea, others?</td>
<td>Yes/No</td>
<td>Evaluate for DRPs for medications not found in claims history</td>
</tr>
<tr>
<td>Does any of your medicine(s) make you feel sick?</td>
<td>Yes/No</td>
<td>Evaluate for adverse drug events</td>
</tr>
<tr>
<td>Do you feel confident about how and when you should take your medication?</td>
<td>Yes/No</td>
<td>Trigger compliance assessment</td>
</tr>
<tr>
<td>Do you get your medicine filled at more than 1 pharmacy?</td>
<td>Yes/No</td>
<td>Determine if there are care coordination issues</td>
</tr>
<tr>
<td>How many times in the past month (or week) have you forgotten to take your medicine?</td>
<td>Drop-down</td>
<td>Assist with drug regimen review for potential therapeutic alternatives</td>
</tr>
<tr>
<td>For which of the following reasons do you need help getting a regular supply of your medicine?</td>
<td>Multiple selection</td>
<td>Determine if access may be affecting compliance and what type of intervention would best assist the patient</td>
</tr>
<tr>
<td>Do you have other difficulties accessing either pharmacy and/or PCP services?</td>
<td>Yes/No</td>
<td>Determine if other barriers exist to patient obtaining care</td>
</tr>
</tbody>
</table>

**Table 2 Sample Questions from the Assessment Questionnaires**

<table>
<thead>
<tr>
<th>Problems</th>
<th>Goals</th>
<th>Interventions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug–drug interaction</td>
<td>Educate patient</td>
<td>Patient contact</td>
</tr>
<tr>
<td></td>
<td>Educate provider</td>
<td>Call to patient</td>
</tr>
<tr>
<td></td>
<td>Change regimen</td>
<td>Letter to patient</td>
</tr>
<tr>
<td>Gaps in care</td>
<td>Educate patient</td>
<td>Physician contact</td>
</tr>
<tr>
<td></td>
<td>Add ACE/ARB in diabetes</td>
<td>Fax</td>
</tr>
<tr>
<td></td>
<td>Add ACE/ARB in heart failure</td>
<td>Call</td>
</tr>
<tr>
<td></td>
<td>Add beta-blocker in heart failure</td>
<td>Disease management referral</td>
</tr>
<tr>
<td></td>
<td>Add statin in diabetes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Add controller agent in asthma</td>
<td></td>
</tr>
</tbody>
</table>

**Table 3 Sample Drug-Related Problems, Goals, and Intervention Type**

DRPs indicates drug-related problems; PCP, primary care physician.

ACE indicates angiotensin-converting enzyme; ARB, angiotensin receptor blocker.
plans, customized changes were severely limited. The second option was to purchase software from a vendor that specialized in MTM program–specific tools. Although it was possible to incorporate customized changes, and several evidence-based algorithms were available, it would have required too many changes to the current business flow. The team would still require some use of the original software to communicate with MTM, and the cost was somewhat prohibitive. The third option was to create customized software within Health Net. The team chose the third option because:

- The software would fit the workflow
- It could be modified as Part D and MTM evolved
- One system could incorporate all aspects of the program
- Customized reports could be created
- Cost was reasonable.

The MTM pharmacists worked in conjunction with a programming company—Cognizant Technology Solutions—to build a new automated system. The pharmacists discussed every aspect of their process with business analysts, answering questions such as: What is being done? Why is it being done? What is expected of the new system? The pharmacists documented all aspects of the planned project to ensure they captured all functions appropriately.

Whenever a member requires contact or needs an updated review, the workflow queue eliminates the need for manual tracking. The system captures and updates medication claims and updates DRPs each month.

A key function of the new system is DRP identification. For the DRPs originally identified manually, the pharmacists devised algorithms based on specific drugs or drug classes, refill patterns, member demographics, current evidence-based best practices, formulary status, generic availability, and standard quality metrics.

After the pharmacists created and documented the business rules based on typical drug regimen review and patient–pharmacist interactions, the pharmacists determined which data to store in the system and how to display data, where to make entries, what to store as predefined fields for reporting purposes, what notes should be specific, and how to queue priority reviews.

Similar to the original program, the pharmacists created prompts and specific questions that the nurses could use to assess patients’ reaction to therapies and determine the severity of a drug interaction or age-related contraindication. Nurses could enter responses into the system in a standard format that easily incorporated the back-end database.

The pharmacists then determined the best way to order and filter data, how to create manual entries with standardized text to facilitate future reporting, and how to flag entries as manual versus automated. They devised an automatic reminder system for members requiring follow-up review and created all of the reporting requirements, including CMS-mandated reports of eligibility and plan involvement information, plus reports for member intervention tracking to monitor the MTM program’s success, and procedural reports to track the number of members reviewed in a specified time period.

The new software was released in May 2007. Each month, based on eligibility requirements, members load into the system automatically and claims are run through a series of predefined algorithms. Specific DRPs that the system recognizes are displayed on the member homepage for pharmacists to review and act on. The specific interventions and goals for each member are also captured. Whenever a member requires contact or needs an updated review, the workflow queue eliminates the need for manual tracking. The system captures and updates medication claims and updates DRPs each month. Its scalability enables the addition of other medications, such as herbals, over-the-counter, or other classes that the MTM pharmacists learn a patient is taking. The system reports program results easily and generates, sends, and receives physician and pharmacy faxes automatically as well.

The system homepage displays all eligible members and serves as a work queue for the MTM pharmacists. Members can be filtered to view by those requiring initial review, callbacks, or follow-up reviews.

The member homepage (Figure) displays the identified DRPs and the general category, such as drug–drug interaction, medication descriptions, and the medications that triggered the DRP; based on the clinical algorithms. The system currently identifies DRPs once monthly, but the pharmacist’s review can occur at any time until the following month, so a potential lag of updated information exists, depending on when the reviews occur. Therefore, the pharmacist reviews current medication claims to ensure there are no new medications that could have triggered another DRP and that the DRPs are still current. Using different
tabs, the pharmacist can view medication claims, specific goals and interventions made, in- and outbound fax, and any notes from behavioral health coaches who have spoken with the member. The pharmacist can leave notes for the next reviewing pharmacist, and there is an area for documenting allergy information.

**Results: Benefits of Automated MTM**

The new automated system increased Health Net's MTM program efficiency of review consistency, customized algorithms to identify DRPs, reduction of human error, enhanced reporting, electronic data storage with the elimination of the need for hard copies, and the ability to perform far more reviews. The team's average member reviews has increased from 50 weekly reviews to 50 per day.

Health Net’s current MTM program has changed from a hybrid opt-in/opt-out program in 2007 to an entirely opt-out program in 2008, capturing data from every eligible member, at least until they request to be omitted. The 2008 program includes customized letters sent to each member after the pharmacist’s review. And as a result of the constant increase in Medicare population, the number of eligible members for Health Net’s 2008 MTM is estimated to exceed 80,000. The current goal of the 6 full-time MTM pharmacists increased from 50 reviews per day by 3 pharmacists combined to 60 reviews per day by each pharmacist. Further automation is in progress to facilitate these additional member reviews (Table 4).

**Future Goals**

The current system still involves several manual applications, which interferes with efficiency and patient outcomes, such as a potential 1-month lag between DRP identification or review. Our pharmacists are working on system enhancements to allow for a 1-day lag with DRPs. Member eligibility will be virtually instantaneous, as the system will link to the Health Net eligibility system, eliminating the need for pharmacists to manually verify eligibility.

Intervention outcomes will be tracked automatically. For example, when a noncompliance issue is identified and the intervention is to educate the patient on compliance, the system will follow up to determine whether compliance improved. If the goal is to fill a therapeutic gap (eg, controller medications in asthma), the system will evaluate claims to see if the specific class of medications was initiated.

The system will incorporate in patient-specific letters all DRPs that it identifies and the pharmacists verify. The system will store letters in a daily queue and send the files to a central distribution center for print fulfillment. The system also will store the letters within each patient profile so the pharmacists can refer specifically to what the members receive if they call with questions.

By the end of 2008, the MTM pharmacists expect the results to far surpass those of the first 2 years combined. Because it is now an opt-out program, the participation rate should be well above 95%.

**Table 4 MTM Program Eligible and Participating Members**

<table>
<thead>
<tr>
<th>Enrollment variable</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention method</td>
<td>11,124</td>
<td>58,123</td>
<td>~80,000 anticipated</td>
</tr>
<tr>
<td>MTM program eligible</td>
<td>865</td>
<td>4471</td>
<td>~76,000 anticipated</td>
</tr>
<tr>
<td>Member participating in MTM, N</td>
<td>7.8</td>
<td>7.7</td>
<td>&gt;95 anticipated</td>
</tr>
</tbody>
</table>

*By mid-2006, the MTM program switched to an opt-in/opt-out high-risk enrollment method.

MTM indicates medication therapy management.
although the percentage of DRP resolution remains unknown, the magnitude of results should far exceed previous results simply by the number of lives that will be touched in 2008.

The computer algorithms developed to identify specific DRPs have significantly shortened the review time of the MTM pharmacists, while ensuring interventions correspond to evidence-based medicine.

Implications for MTM Programs

MTM programs cover a large spectrum of eligibility criteria, enrollment methods, and intervention types. Any of these aspects can be customized to meet the needs and fit the budget of the Part D provider. In 2008, the Academy of Managed Care Pharmacy (AMCP) published an update to its 2006 consensus statement on MTM programs, which included results from its new validation study. In the updated statement it was noted that MTM programs are still in a formative stage, with no specific “best practices” or quality assurance standards, but the important features and operational aspects outlined in the document should be considered when developing or modifying MTM programs.

Using a multidisciplinary team within a health plan to coordinate care has several advantages, including referral to disease management, home healthcare and behavioral health services, documentation of member participation in other clinical quality improvement programs, automatic drug approvals, authorizations and overrides within the benefit, and treating the patient as a whole. The disadvantage is the lack of face-to-face communication, which was encouraged in the first MTM program consensus statement and was removed from the second version. The assessments outlined here have enabled our MTM staff to drill down to specific underlying causes of DRPs and tailor interventions to meet member needs. The computer algorithms developed to identify specific DRPs have significantly shortened the review time of the MTM pharmacists, while ensuring interventions correspond to evidence-based medicine. The link of all operational aspects through the use of one system greatly increased the number of members who could be served. Incorporating faxes, letters, telephonic notes, assessments, and interventions ensures that all communications are appropriately documented and care is individualized. These aspects are all in line with the elements outlined by the AMCP.

With a lack of medical claims data available for Part D members, full pharmacoeconomic analyses of programs are not yet possible. As a result, surrogate markers such as the resolution of DRPs serve as a measurable way to determine if program objectives are being met.

Programs have shifted away from opt-in enrollment methods (51.0% in 2006 compared with 14.6% in 2008). Automation is one way to provide an opt-out program to a large number of members while maintaining the integrity of individualized patient care. Other plans use a variety of automated customized features in their MTM programs. According to McMahan, Humana includes a cost-saving calculator to inform members of the magnitude of cost-saving opportunities. Programs evaluating the transition to automation should consider several factors in choosing a platform or deciding to build software internally, including:

- Does the software enable the MTM program to meet its overarching purpose?
- Are significant changes to business processes required to utilize the software?
- Is the software customizable to meet the existing program structure?
- Does the software allow for end-user outcomes reporting?
- Does the software facilitate CMS reporting?
- Will the software enable the program to provide services to a larger number of members?
- How are interventions recorded and tracked in the system?
- Is there sufficient support staff to manage upgrades or issues?

Approximately 50% of MTM programs use internal staff only. For programs using community or consultant pharmacists, a software system should also facilitate billing for services rendered.

Conclusions

Health information technology can assist in determining member risk levels and stratifying patients into appropriate interventions. Pharmacy data are recognized in the industry as being timely, accurate, and easy to use for data mining. Integrating pharmacy data into personal health records and introducing MTM recommendations through secure health plan websites can be an effective way to reach out to members. In Health Net’s MTM program, automation enabled outreach to more eligible members, while continuing high-touch
telephone support, without significantly increasing the cost to administer the program. The new automated software has allowed the program to maintain and update medication claims more efficiently, enhanced the communication between physicians and pharmacies, and provided all the necessary patient-specific information from a single source.

References

Stakeholder Perspective
Automated MTM Programs

Payers: With the advent of medication therapy management (MTM) programs for Medicare Part D Plans in 2006 came an additional challenge and opportunity for pharmacists to take action on behalf of their plan members. The Health Net MTM program details a progressive and positive team approach to deliver optimal pharmaceutical care to members using automated systems. In designing a program that addresses the complex nature of pharmacy management, including documentation, follow-up on drug-related problems (DRPs) and closing the loop with providers and patients, the 2008 upgrades using technology are noteworthy advances.

Several key factors have allowed Health Net to set up a scalable and sustainable solution that may also be an option for other MTM programs: creating documentation shortcuts, following evidence-based guidelines, and extensive process upgrades as the program continued to grow; applying algorithms, automated management reports, nurse support, and various media formats for communication and engaging patients—with a 95% rate of fulfillment, a tremendous rate in this population.

Many payers applied much simpler approaches, but those lack the level of attention and benefit demonstrated in Health Net’s MTM program. Payers have also experienced capacity and capability gaps that made MTM a considerable obstacle to overcome. The program outlined in this article offers advantages for patients with DRPs in a systematic and prioritized manner.

Health Net may benefit from presenting the economic/business case to deliver and implement this program in terms of per member per month and cost avoidance. The business case should also include the amount of plan resources needed to implement the technology solution and provide lessons learned for others in the industry. This effort is an exceptional clinical and business approach to MTM and needs to be applauded.

Additional variables that may improve the adoption of this approach include patient satisfaction, educational techniques for working with Medicare Part D members to educate and communicate effectively, and ultimately payers moving quickly to paying for performance outcomes, which would greatly enhance the overall result of this program.

The Centers for Medicare & Medicaid Services, the Academy of Managed Care Pharmacy, and managed care pharmacists recognize the tremendous effort and benefit that pharmacists working on the team represent in this endeavor and the value that pharmacy MTM can provide in an organized, creative, and progressive environment.

Providing even greater evidence and support for the value of pharmaceutical care and creating the benchmark for this service provision, Health Net may consider applying similar methods to commercial populations as the business case evolves.

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