EXECUTIVE SUMMARY
Medication Reconciliation and Exploratory Evaluation of Clients in The MIChoice Home and Community Based Waiver Program

BACKGROUND
Ninety percent of the disabled or elderly rely on prescription medications on a regular basis; and self-medication with natural products and alternative remedies not subject to prescription are becoming more common. The most frequent intervention performed by a doctor is the writing of a prescription. The disabled or elderly have multiple providers (primary care physicians and specialists) each prescribing medications and unaware of other prescriptions leading to potential drug-to-drug interactions. As a result, there is growing concern about drug interactions, polypharmacy, and the cost of unneeded medications and the health related outcomes of medication related issues such as falls, ER visits, hospitalization, nursing home placement, and in general, overall reduction in the quality of life.

There is a sizable and growing body of evidence favoring medication management and reconciliation. Medication management strategies have been identified and tested for home bound elderly with a general algorithm similar to the steps conducted in these project. Recent work has described the prevalence of medication problems among the dually eligible receiving waiver services. (Alkema et al., 2009) and the benefits, such as improved client safety, reductions in duplications of medications and lower costs to clients/payers (A. G. Golden, Qui, & Ros, 2011).

The Center for Home Care Policy Research of New York (2002) indicates that medication errors among clients in home care may be as high as 40%, and one third have medication problems based on use of medication management for home care criteria combined with the BEERS criteria. These criteria define 48 medications and classes of medications that are either ineffective or harmful for persons over 65 years of age (Bain et al., 2008; M. H. Beers, 1997, 2000; M.H. Beers, Dang, Hasegawa, & Tamal, 1989; Fick et al., 2003; Fick, Mion, Beers, & Waller, 2008; Fulmer et al., 1999; A. Golden et al., 2008; Stuck et al., 1994).

To implement medication management within the waiver program several barriers must be overcome. First, clients must be convinced of the importance of this to their health. Once the client is convinced of the need for medication management, their medications, which are scattered, 9% (N=20) must be collected and arranged. This process, if performed correctly, is the fact that many physicians are reluctant to engage in medication reconciliation because of the time involved in the review of the extensive medication lists, and the low level of reimbursement for conducting this type of care. However, there are several v-codes that physicians may use to bill the Medicare program once a year for medication reconciliation services, overcoming the physician perception of inadequate reimbursement. Once the revised medication list is prepared by a primary care physician, clients must be informed of the medications, how and why they need to be taken, the doses per day, and where and how to get the scripts filled. Recognizing that a new set of medications are being offered, methods to check on adherence and appropriate instructions for follow-up care with the primary care physician should occur should there be any reactions to stopping medications, dosage changes, or starting of new medications. Thus, this study was undertaken to evaluate two different approaches to medication management and reconciliation for waiver clients in the State of Michigan.

PRELIMINARY WORK
From our previous analysis of medications, we found that, on average, clients take about eight prescription medications (Standard Deviation [SD] 5.76; Median 7.00). We know that most clients utilize more medications, from the BEERS list (M.H. Beers et al., 1989), more pain, and CNS medications once enrolled in the waiver program (see Table 1).

We also know that, following enrollment in the waiver program, as the number of physicians seen increases, clients, on average, have three physicians prescribing medications (see Table 2) (Haque, Spoelstra, Given, Given, & You, 2010). Finally, we know that the average cost per year for medications for clients in the waiver program is $834.

RESULTS
Assessments of the Medication profiles of clients in the MI Choice waiver program indicated that they were taking a large number of medications (mean of 12 or more) and reviews of the medication list by Geriatricians indicated that medication interactions could explain some of the observed medical outcomes. To learn more about the possible drug-to-drug and drug to disease interactions that may be occurring among these clients' two approaches to medication reconciliation were examined. First, a Family Medicine physician agreed to evaluate medications among a sample of patients some of whom were served by the MI Choice program but all of whom were in her practice. Second, three waiver agencies agreed to allow care managers and social workers to be trained to use HomeMeds software to identify interactions among medications.

Study 1: Following approval from the Michigan State University’s IRB the physician invited 10 patients from her practice to undergo medication reconciliation as part of their regular examination. Patients brought all medications (scripts as well as over-the-counter) in a brown bag to their appointment. This study sought to determine: 1) time needed to conduct medication reconciliation, 2) number of alerts produced by HomeMeds compared to the physician clinical evaluation, and 3) number of medication changes that

### Table 1. Number of Mediations Taken 90 Days Before Enrollment in Waiver Program and 90 Days After

<table>
<thead>
<tr>
<th>Meds Type</th>
<th>90 Days Prior</th>
<th>90 Days After</th>
<th>T-test p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean / Std / Median</td>
<td>Mean / Std / Median</td>
<td></td>
</tr>
<tr>
<td>Total Meds</td>
<td>7.13 / 6.18 / 7.00</td>
<td>7.97 / 5.76 / 7.00</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>BEERS List</td>
<td>0.30 / 0.57 / 0.00</td>
<td>0.33 / 0.58 / 0.00</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Pain Meds</td>
<td>0.44 / 0.77 / 0.00</td>
<td>0.50 / 0.78 / 0.00</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>CNS Meds</td>
<td>0.78 / 1.13 / 0.00</td>
<td>0.91 / 1.17 / 1.00</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

During our survey (N=233) with CMs in September of 2011, 89% (N=198) reported always reviewing the list on initial assessment and 84% (N=188) reported reviewing the list on reassessment. In regard to contacting the primary care physician to verify the medication list, only 16% (N=35) reported doing this. We asked if CMs assessed over-the-counter drugs and 80% (N=178) reported always doing this. In total, 20% always check for drug-to-drug interactions, and 24% (N=53) checked for medications that should not be taken by the elderly. However, 64% (N=143) reported always checking for medication adherence, 19% (N=43) checked for allergies, 25% (N=51) checked for drug dosage changes, or starting of new medications. Thus, this study was undertaken to evaluate two different approaches to medication management and reconciliation for waiver clients in the State of Michigan.
resulted. The physician followed pre-defined steps for the medication management review. For the 10 patients the mean number of medications was 10 with a range of 4-17. Of the 48 discrepancies (Figure) that were identified, this included:

- 28 of the 48, or 58.3% of the discrepancies where the clients had pills on the electronic medical record (EMR) list but clients were not taking them;
- 14 of the 48, or 29.2% of the discrepancies were taking pills that were not on EMR list;
- 6 of the 48, or 12.5% of the discrepancies when clients had a different dose or frequency than what was in the EMR.

Thus, the majority of the discrepancies were those that were listed on the EMR but the clients were not taking the pills, followed by those that clients were taken but were not listed on the EMR. In addition, three clients were hospitalized over the last year; these 3 of the 10 clients reviewed had the most medication list discrepancies. In contrast, when the same information was entered into the HomeMeds software only two alerts were produced and they were related to contraindicated aspirin use in the presence of scripted medications.

Figure Number of Medication Discrepancies between Electronic Medical Record and Client Self-report

**Study 2:** A second study was implemented with three waiver programs. Waiver agents were trained by a vendor from a company that manages an electronic method for medication management that is recommended by AHRQ. While being trained, care managers from the three agencies scheduled appointments with five clients from each of the agencies. Once trained, the care managers went to each patient’s home and conducted a review of their client’s medications by entering each scripted and over-the-counter medication into the program along with patient height, weight and their diagnosed chronic conditions. Once each visit was completed, care managers sent the generated alerts to a clinical pharmacist who reviewed the alerts, returned them to the care manager who then forwarded them to the client’s primary care physician.

There was a mean of 18.8 medications with a range of 9 to 33. The mean number of comorbid conditions was 9.5 with a range of 6 to 12. Four of the 15 clients had allergies, and one of those clients had two allergies to medications.

In total, eight of 15 clients, or 53%, had “alerts” reported by the system. A summary of the alerts included: four clients who had a problem with dizziness and medications, three clients had a problem with confusion and psychotropic drug use, two clients had falls and psychotic medication use problems, and one client had a problem with low pulse and bradycardia agents.

Following the review a participating pharmacist reviewed the alerts. The pharmacist agreed on the eight alerts and letters were sent to the primary care physician. In addition to these eight alerts found by HomeMeds, the pharmacist found three clients with additional problems after reviewing their medication profiles. In the end, 11 clients’ primary care physicians were notified of issues with medications. Two primary care physicians changed medications by phone and one primary care physicians responded by fax, stating that he did not believe that the problem was significant enough to make any changes. Thus primary care physicians were not resistant to receipt of these alerts but neither did the alerts result in any significant medication reconciliations.

When the participating care managers were asked to report on this approach to medication reconciliation, we learned that they did not like the slowness of the program, the time needed to enter the data, and some did not agree with the alerts produced. Several believed that if the program was quicker and not all medications had to be entered each time but only the new ones, then the program might be more acceptable. From these two small evaluation studies of the HomeMeds medication reconciliation program the following impressions are drawn. The program while easy to use, is slow, appears to under report medication interactions, and will be difficult to efficiently integrate into the care manager’s flow of work while they visit clients in their home.

**CONCLUSIONS**

Eight of 15 clients (53%) had alerts in the system in Study-2 compared to two of 10 (20%) in Study-1, a significant difference. The mean number of medications was higher for Study-2 at 18.8 medications compared to 10.8 medication for the Study-1. Eight of 10 (80%) of clients in Study-1 had medications modified in their medication profile compared to only one of 15 (7%) of clients in Study-2 who had their medication profile modified, a significant difference. This is even more clinically significant and notable when taking into consideration the mean number of medications in the two groups, nearly twice as many. However, we do have to note one limitation. The eight primary care physicians who received notices following Study-2 were not used to being sent a letter regarding these types of problems and may have not taken notice of the needed change. Even with that said, we were expecting that the software would prompt more medication profile modifications. Thus, we did not find the electronic system prompted modification of the medication profile as expected.