



# Drug Prescribing in the Elderly Receiving Home Care



Chien-Han Tsao, MD, MS, Chin-Feng Tsai, MD, PhD, Yuan-Ti Lee, MD, PhD,  
Mao-Chung Weng, MD, Huei-Chao Lee, BPharm, MS,  
Ding-Bang Lin, PhD, Chun-Chieh Chen, MD, PhD,  
Meng-Chih Lee, MD, PhD, MPH and Shiu-an-Chih Chen, MD, PhD

## ABSTRACT

**Background:** To compare the prevalence of potentially inappropriate medications (PIMs) using the 2012 and 2003 Beers Criteria in frail older patients receiving home health care services (HHS), and to explore the correlates of PIMs based on the 2012 Beers criteria.

**Materials and Methods:** A total of 145 older patients (mean age,  $80.9 \pm 7.6$  years) with Barthel scale  $\leq 60$  receiving regular HHS from a university hospital between January 2013 and June 2013 were retrospectively enrolled. The 2003 and 2012 Beers criteria were used separately to detect PIMs. Logistic regressions, receiver-operating-characteristic curve analyses and number needed to harm were used, where appropriate.

**Results:** The 2012 Beers Criteria identified more PIM cases than did the 2003 Beers Criteria (66.9% versus 55.9%,  $P < 0.05$ ). Multivariate analysis revealed that PIM identified by the 2012 Beers Criteria was associated with an increased number of medications prescribed ( $P = 0.019$ ) and the presence of psychiatric diseases ( $P = 0.001$ ). Moreover, the area under the receiver-operating-characteristic curve for the number of drugs to predict the risk of PIM was 0.674 ( $P < 0.001$ ) with the optimal cutoff value of 6 medications. After adjusting for age, sex, Charlson comorbidity index and psychiatric disorders, patients taking  $\geq 6$  drugs (adjusted odds ratio, 2.33; adjusted number needed to harm, 3.93;  $P < 0.05$ ) had a significantly higher risk for PIM than those taking  $< 6$  drugs.

**Conclusions:** Our data showed that the 2012 Beers Criteria was more sensitive in detecting PIMs than the 2003 Beers Criteria. Furthermore, frail older patients receiving HHS with polymedication and with psychiatric illnesses had higher risk of PIM when using the 2012 criteria. The number of medications prescribed could be a useful index for risk stratification, and at the same time help physicians to be aware of the high risk for PIM when prescribing 6 or more drugs to frail older adults during in-home visits.

**Key Indexing Terms:** Inappropriate prescribing; Risk factor; Home care services; Frail elderly; Drug prescriptions. [Am J Med Sci 2016;352(2):134–140.]

## INTRODUCTION

Home health care has become an increasingly important medical demand for older people worldwide.<sup>1,2</sup> Various home health care services (HHS) have been available in several countries.<sup>1-6</sup> The HHS in Taiwan is covered and reimbursed by National Health Insurance (NHI), and it offers home medical or nursing care through the combined effort of physician(s) and nurse(s) for immobile patients.<sup>4,6</sup> Immobile patients with  $> 50\%$  of their waking time either in bed or in a chair qualify for HHS through the Taiwan NHI program if that person has a need for specialized care (nursing care for a long-lasting non-healing wound or ostomy care for the respiratory, digestive and urinary systems), chronic diseases requiring long-term nursing care or a need for follow-up nursing care after discharge.<sup>6</sup> These services may be delivered by health care providers with special qualifications based on the facility's resources. These HHS recipients are often physically frail, and the recipients, especially the elderly, with complex comorbid conditions are necessarily treated with polymedication

and may be more prone to inappropriate prescribing, thereby increasing the likelihood of adverse health events.<sup>2,7,8</sup> Nonetheless, few attempts have been made to study the risk of potentially inappropriate medication (PIM) among frail older patients receiving HHS. Of the several explicit methods for assessing PIM in the elderly, the Beers Criteria have become the most commonly used measure in the literature.<sup>4,9-11</sup> The Beers Criteria was developed in 1991 for older nursing home residents, subsequently revised and expanded into community-dwelling elderly people in 1997;<sup>12</sup> then an update was made in 2003, which included 48 individual medications or classes of medications to be avoided in older adults as well as medications not recommended for older adults with 20 diseases or conditions.<sup>9</sup> This update, specifically incorporating new information from scientific literature, also listed 66 commonly used drugs having the potential to lead to severe adverse effects in the general elderly population.<sup>9</sup> Several studies examining the prevalence of PIM use as determined by the 2003 Beers Criteria found that at least 1 PIM was prescribed in

16.9–38.0% of older patients receiving HHS,<sup>1–3,7</sup> however, the criteria were criticized by some investigators who believed that this tool underestimated the use of PIMs because of the lack of drug-disease or some drug-drug interactions from the criteria and because some agents had been withdrawn from the market.<sup>1,13,14</sup> The Beers Criteria were updated in 2012 to consider newly attained evidence about the efficacy and safety of various medications as well as the removal of drugs that were no longer in use.<sup>15</sup> The noted differences in this updated criteria compared to the 2003 version included (1) 20 therapeutic class or medication additions or modifications (e.g., all short-acting benzodiazepines regardless of dose, glyburide, megestrol, metoclopramide and sliding scale insulin) and 7 deletions (e.g., propoxyphene, ethacrynic acid and ferrous sulfate >325 mg/day) in the updated “drugs-to-avoid” list; (2) 47 additions or modifications (e.g., acetylcholinesterase inhibitors or syncope, selective serotonin-reuptake inhibitors or falls or fractures and pioglitazone or rosiglitazone or heart failure) and 21 deletions (e.g., phenylpropanolamine or hypertension and pseudoephedrine or hypertension) in the updated “drug-disease interactions” list and (3) a new category of PIMs to be used with caution in older adults (i.e., aspirin for primary prevention of cardiac events, dabigatran and prasugrel).<sup>14,15</sup> Additionally, the Beers Criteria would be updated regularly via the means of an evidence-based approach using the Institute of Medicine standards and the development of the multi-disciplinary partnerships in geriatric medicine.<sup>14,15</sup>

The objectives of this study, therefore, were to compare the prevalence of PIM using both the 2003 and 2012 Beers Criteria, and to identify independent correlates of the risk of PIM based on the 2012 Beers Criteria in frail older patients receiving HHS.

## MATERIALS AND METHODS

### Study Sample and Measures

This retrospective study was carried out at the Chung Shan Medical University Hospital, an over 1300-bed medical center, after approval was obtained from the Institutional Review Board and the requirement for informed consent was waived. In this hospital, only persons who met the qualifications for HHS according to the NHI program by having marked dependence to accomplish activities of daily living (ADL) could apply for the services. ADL disability was based on the Barthel index (score: 0–100), and a score  $\leq 60$  was defined as marked dependence for ADL.<sup>16</sup> Chronic diseases were defined as medical conditions that cannot spontaneously remit more than 3 months according to the NHI program in Taiwan.<sup>17</sup> If a patient's conditions were stable according to the home care physician's assessment, then a long-term prescription could be given, based on the policy of the Taiwanese NHI Administration.<sup>17</sup> We selected HHS recipients aged 60 years or older following this generally used definition of an older person by the

World Health Organization.<sup>18</sup> Consecutive older HHS recipients who received long-term ( $\geq 4$  weeks) prescriptions for their chronic diseases from January 2013 to June 2013 were included in the study. For those HHS recipients who had more than 1 visit to obtain a prescription refill during the study period, only the first occasion was used in the analysis. In all, 191 persons received HHS during the study period, and 145 recipients met the criteria and were included in our study. Data from the medical record of every patient included demographic information, history details, clinical data and the drugs prescribed. These data were extracted from the medical records by a well-trained physician through an electronic medical record system of this hospital. This data abstractor was blinded to the study hypothesis, and used a standard data abstraction form to review medical records. The abstractor's performance was thoroughly monitored by a senior physician. The 2003 and 2012 Beers Criteria were applied to identify PIMs in study patients.<sup>9,15</sup> The 2012 Beers Criteria in our study did not include the medications that should be used with caution. A total of 2 different geriatricians ascertained the PIM cases based on the 2 criteria by reviewing the computerized database of these patients. We also sampled randomly 20% of our study subjects for the interrater reliability assessment between both geriatricians by using the Kappa ( $\kappa$ ) statistics and the interrater agreement was 100% ( $\kappa = 1.0$ ). The Charlson comorbidity index (CCI) was used to estimate the disease severity of each patient.<sup>19</sup> Categories of comorbid conditions and their corresponding International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) codes are summarized in [Appendix A\(1\)](#).<sup>20</sup>

### Analytical Approach and Statistical Methods

Descriptive statistics were expressed as means  $\pm$  standard deviations or numbers with percentages. Student's *t* test or the Mann-Whitney *U* test was applied to compare continuous data between groups and the  $\chi^2$  test, McNemer test or Fisher exact test was employed to compare categorical variables between groups, where appropriate. These patients receiving HHS were separated into 2 groups—the PIM group (patients having at least 1 PIM) and the non-PIM group (those without any PIM). Logistic regression with purposeful selection of covariates was used to assess the risk factors for PIM using the 2012 Beers Criteria among the older patients receiving HHS, a method addressed by Hosmer et al.<sup>21</sup> The area under the curve of the receiver-operating-characteristic curve analysis was also measured using MedCalc Statistical Software 9.5 (Broekstraat, Mariakerke, Belgium). A *post hoc* power based on the method of Hanley and McNeil was used to estimate for the receiver-operating-characteristic curve analysis.<sup>22</sup> The optimal cutoff point was based on the Youden index (the maximum value of sensitivity + specificity = 1).<sup>23</sup> Sensitivity,

Download English Version:

<https://daneshyari.com/en/article/2863142>

Download Persian Version:

<https://daneshyari.com/article/2863142>

[Daneshyari.com](https://daneshyari.com)