House District 48th

Senate District ____

THE TWENTY- FOURTH LEGISLATURE
HAWAI'I STATE LEGISLATURE
APPLICATION FOR GRANTS & SUBSIDIES
CHAPTER 42F, HAWAI'I REVISED STATUTES

Log No: 45-O

For Legislature's Use Only

Type of Grant or Subsidy Request:

☒ GRANT REQUEST – OPERATING ☐ GRANT REQUEST – CAPITAL ☐ SUBSIDY REQUEST

"Grant" means an award of state funds by the legislature, by an appropriation to a specified recipient, to support the activities of the recipient and permit the community to benefit from those activities.

"Subsidy" means an award of state funds by the legislature, by an appropriation to a recipient specified in the appropriation, to reduce the costs incurred by the organization or individual in providing a service available to some or all members of the public.

"Recipient" means any organization or person receiving a grant or subsidy.

STATE DEPARTMENT OR AGENCY RELATED TO THIS REQUEST (LEAVE BLANK IF UNKNOWN): _____

STATE PROGRAM I.D. NO. (LEAVE BLANK IF UNKNOWN): _____

1. APPLICANT INFORMATION:

Legal Name of Requesting Organization or Individual:
EnablingHealth Solutions of the Pacific

Dba:

Street Address: 1750 Kalakaua Avenue, Suite 3126

Mailing Address: 1750 Kalakaua Avenue, Suite 3126
Honolulu, Hawaii 96826

2. CONTACT PERSON FOR MATTERS INVOLVING THIS APPLICATION:

Name: MR. TY HOOPER

Title: Director

Phone # (808) 620-6450

Fax # (808) 239-2143

e-mail pachawaiihlth@yahoo.com

3. TYPE OF BUSINESS ENTITY:

☒ NON PROFIT CORPORATION
☐ FOR PROFIT CORPORATION
☐ LIMITED LIABILITY COMPANY
☐ SOLE PROPRIETORSHIP/INDIVIDUAL

4. FEDERAL TAX ID #: [redacted]

5. STATE TAX ID #: [redacted]

6. SSN (IF AN INDIVIDUAL): _____

7. DESCRIPTIVE TITLE OF APPLICANT'S REQUEST:

An educational outraeach program to help Hawaii's seniors and their healthcare professionals and caregivers to promote safe medication use for seniors and minimize the risks of adverse drug events in seniors. A secondary study of "potentially inappropriate medication use in older adults" and the occurance of drug interactions of medications for seniors in Hawaii will be analyzed.

8. FISCAL YEARS AND AMOUNT OF STATE FUNDS REQUESTED:

FY 2008-2009 $ 74,600

9. STATUS OF SERVICE DESCRIBED IN THIS REQUEST:

☒ NEW SERVICE (PRESENTLY DOES NOT EXIST)
☐ EXISTING SERVICE (PRESENTLY IN OPERATION)

SPECIFY THE AMOUNT BY SOURCES OF FUNDS AVAILABLE AT THE TIME OF THIS REQUEST:

STATE $ 0
FEDERAL $ 0
COUNTY $ 0
PRIVATE/OTHER $ 0

TYPE NAME & TITLE OF AUTHORIZED REPRESENTATIVE:

[redacted]
AUTHORIZED SIGNATURE

MR. TY HOOPER, DIRECTOR
NAME & TITLE

01/22/08
DATE SIGNED

Application for Grants and Subsidies

If any item is not applicable to the request, the applicant should enter "not applicable".

I. Background and Summary

This section shall clearly and concisely summarize and highlight the contents of the request in such a way as to provide the State Legislature with a broad understanding of the request. Include the following:

1. A BRIEF description of the applicant's background;

   EnablingHealth Solutions of the Pacific (ESP) is a registered 501(c) (3) not-for-profit organization with a mission to serve Native Hawaiians, Pacific Isladers including Asians, Caucasians and other significant minority ethnic groups of the Hawaiian Islands in maximizing the quality of health and quality of life through health management, health education, research, staff trainging, enhancing health delivery systems, and fiscal management of healthcare budgets.

2. The goals and objectives related to the request;

   The primary goal and objective of this request for grant-in-aid is to reach out to seniors and healthcare providers that service seniors throughout the Hawaiian islands and to provide useful medication education and information by a doctor of pharmacy with board certification in geriatric pharmacy, which should ultimately prevent seniors from experiencing adverse drug events and subsequently, a related acute hospitalization or admission to a nursing home.

   A secondary goal will be to gather benchmark information on how many seniors in the community are taking medications that are adversely interacting with each other, and also how many seniors are taking medications that are on the list of "Potentially Inappropriate Medication Use in Older Adults", published in *The Archives of Internal Medicine*, December 2003, and adopted by the Centers for Medicare and Medicaid Services(CMS) in their interpretive Guidance in their State Operations Manual.

3. State the public purpose and need to be served;

   The public purpose of this medication education program, is to reach out to Hawaii's seniors and help them to reduce their risk of experiencing adverse drug events. Many seniors take multiple medications and visit

more than one physician, and the multiple physicians taking care of this patient, do not usually communicate with other healthcare providers prescribing other medications which may adversely interact with each other. Another factor contributing to adverse drug events and drug interactions is that seniors often go to different pharmacies or order medications through mail-order services to get the best bargain, however this practice eludes sophisticated drug interaction software programs from detecting potentially serious drug interactions. Through face-to-face education programs, it is presumed that the overall quality of life for seniors can be optimized and the cost of related healthcare expenditures on adverse drug events can be minimized.

4. Describe the target population to be served; and

The target population to be served are seniors residing in the ten assisted living facilities in Hawaii), seniors who visit senior centers (CCH Lanakila Multi-Purpose Senior Center, Kaneohe Community & Senior Center, Kapahulu Center, and Makua Alii Senior Center, Moilili Senior Center, ORI Anuenue Hale, Inc, and the Waikiki Community Center). Seniors who belong to senior clubs and organizations, such as AARP-Honolulu, HGEA reitrees unit, HSTA retirees and NARFE seniors will also be a target population.

Another significant target population includes the licensed caregivers and healthcare staff of the Department of Health which licenses facilities which include 463 adult residential care homes (ARCH) with less than 6 residents, 20 Type II ARCHs with more than 6 residents, 34 develpmental disability domiciliary homes (DDDH), 50 skilled nursing and intermediate care facilities (SNF/ICF) with over 4300 beds, 8 adult day health centers and 23 home health agencies. The Department of Healthcare Assurance has never had a clinical pharmacist on staff and therefore has relied on volunteer training by a doctor of pharmacy. The healthcare staff of the community health centers on all islands are also targeted for medication education for seniors.

5. Describe the geographic coverage.

The geographic coverage will include six of the islands of Hawaii including the island of Hawaii, Kauai, Maui, Molokai, Lanai and Oahu.

II. Service Summary and Outcomes

The Service Summary shall include a detailed discussion of the applicant's approach to the request. The applicant shall clearly and concisely specify the results, outcomes, and measures of effectiveness from this request.

1. Describe the scope of work, tasks and responsibilities;

   The scope of work for the actual education of seniors, residential caregivers and the healthcare providers and staff of the Department of Health will require a board certified geriatric doctor of pharmacy. Ancillary assistance will be accomplished by a registered nurse trained in working with seniors. This may include helping seniors to fill out questionnaires and helping to communicate essential information. EnablingHealth Solutions of the Pacific, Inc. (ESP) will schedule appointments and programs and coordinate all logistics for the programs. ESP will also manage the budget for these programs.

2. The applicant shall provide a projected annual timeline for accomplishing the results or outcomes of the service;

   After grant funding is confirmed, a schedule of programs will be set for the 2008- 2009 fiscal year. The programs will be divided into four quarters and ESP will coordinate all activities. The outcomes data described on page 1 will be analyzed, provided to the state agency that may benefit and impact change and then published in a reputable healthcare journal in 2009.

3. The applicant shall describe its quality assurance and evaluation plans for the request. Specify how the applicant plans to monitor, evaluate, and improve their results; and

   Quality Assurance and evaluation monitoring will be done by call back to the programs director or manager. Feedback and suggestions will be collected and applied to subsequent programs.

   Questionnaires will be compiled from all seniors attending education programs. All Questionnaires will be in compliance with HIPAA guidelines.

4. The applicant shall list the measure(s) of effectiveness that will be reported to the State agency through which grant funds are appropriated (the expending agency). The measure(s) will provide a standard and objective way for the State to assess the program's achievement or accomplishment. Please note that if the level of appropriation differs from the amount included in this application that the measure(s) of effectiveness will need to be updated and transmitted to the expending agency.

   The list of measurable outcomes will consist of providing statistics as follows: 1. Total number of seniors, caregivers and healthcare professionals who attended a program or training session. 2. The number of seniors who presented with interacting drugs that have potential for adverse drug events and 3. the number of seniors who

presented with a drug on the "Potentially Inappropriate Medication Use in Older Adults".

III. Financial

Budget

1. The applicant shall submit a budget utilizing the enclosed budget forms as applicable, to detail the cost of the request.

2. The applicant shall provide its anticipated quarterly funding requirements for the fiscal year 2008-2009.

Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total Grant
18,650	18,650	18,650	18,650	74,600

IV. Experience and Capability

A. Necessary Skills and Experience

The applicant shall demonstrate that it has the necessary skills, abilities, knowledge of, and experience relating to the request. State your experience and appropriateness for providing the service proposed in this application.. The applicant shall also provide a listing of verifiable experience of related projects or contracts for the most recent three years that are pertinent to the request.

The director of EnablingHealth Solutions of the Pacific, Inc. (ESP) has over 30 years of experience working in the healthcare industry and possesses an MBA in International Business and Healthcare Systems from the University of Southern California. The director was on the advisory panel which helped to initially investigate the need for a regional healthcare center for Windward Oahu, Koolau region.

ESP has in the past two years received funding in educational grants to provide medication education utilizing a board certified geriatric doctor of pharmacy to the following groups:

1. The State of Hawaii, Department of Healthcare Assurance
2. Lanai Community Hospital
3. Waimanalo Health Center
4. Arcadia Retirement Residence
5. Ka Punawai Ola
6. Life Care Center of Kona
7. Life Care Center of Hilo

8. University of Hawaii Family Practice and Community Health Center
9. Island Nursing Home
10. Kaiser Geriatric Medicine

In addition to ESP, the clinical Pharm.D. that ESP has done collaborative work with has conducted nurmorous programs to the following groups:

1. National Active and Reitred Federal Employees Association
2. The State of Hawaii, Department of Helathcare Assurance
3. The State of Hawaii, Office of Health Care Assurance, Care Homes and Assisted Living Facilities.
4. The State of Hawaii, Department of Health, Injury Prevention and Control Program.

B. Facilities

The applicant shall provide a description of its facilities and demonstrate its adequacy in relation to the request. If facilities are not presently available, describe plans to secure facilities. Also describe how the facilities meet ADA requirements, as applicable.

The physical office for ESP is conducted out of a home office. There are no plans to rent or purchase additional facilities as ESP's programs are all conducted at external location sites.

V. Personnel: Project Organization and Staffing

A. Proposed Staffing, Staff Qualifications, Supervision and Training

The applicant shall describe the proposed staffing pattern and proposed service capacity appropriate for the viability of the request. The applicant shall provide the qualifications and experience of personnel for the request and shall describe its ability to supervise, train and provide administrative direction relative to the request.

EnablingHealth Solutions of the Pacific, Inc. will contract services to the appropriate healthcare professionals licensed in the State of Hawaii. ESP will maintain copies of State Professional licenses and curriculum vitaes on each of its contracted associates. Attendance rosters for all programs conducted are kept of file.

B. Organization Chart

The applicant shall illustrate the position of each staff and line of responsibility/supervision. If the request is part of a large, multi-purpose organization, include an organizational chart that illustrates the placement of this request.

The director of EnablingHealth Solutions of the Pacific, Inc. will oversee all activities and financial accountability as a project manager. Staffing is limited to its board of directors, who serve without compensation. For this grant-in-aid request, independent contractual agreements will be made with its two healthcare professionals.

VI. Other

A. Litigation

The applicant shall disclose any pending litigation to which they are a party, including the disclosure of any outstanding judgement. If applicable, please explain.

ESP, Inc. has no relationship to any pending litigation to which they are a Party. There are no outstanding judgements against ESP, Inc.

B. Licensure or Accreditation

Specify any special qualifications, including but not limited to licensure or accreditation that applicant possesses relevant to this request.

There are no special qualifications or licensure or accreditation that is required of EnablingHealth Solutions of the Pacific, Inc. to conduct its business or manage its grants.

OUTCOMES CHART

DATE: __01_/__22_/___2008__

PROJECT TITLE: An Educational Outreach Program to Help Hawaii's Senior and their Caregivers and other Healthcare Professionals to Promote Safe Medication Use and Minimize the Risks of Adverse Drug Events.

Grant #: _____

PROJECT GOAL – Provide a brief statement of the overall goal of the project in terms of the targeted population and the services the project has set out to provide: The targeted population is all seniors residing in the State of Hawaii, caregivers of seniors in state licensed facilities through the Department of Health training programs, the Department of Healthcare Assurance healthcare professionals.

Project activities planned/undertaken?	Short-term outcomes planned/documented	Longer-term outcomes documented/anticipated	Methods for documenting activities/outcomes	Rate success in achieving objective (Final Report Only)
Objective # 1 - To:				1 2 3 4 5
Group education, and training at multiple sites at senior meeting places, the Department of Health agencies and training sessions.	Provide information to attendees that assists them in preventing drug interactions and adverse drug events. HIPAA compliant questionnaires to help analyze prevalence of use of "potentially inappropriate medication use in older adults" and drug interactions.	Long Term documented outcomes beyond one year cannot be assessed at this time without determining prevalence of problems stated in the short-term outcomes.	HIPAA compliant questionnaires, Attendance rosters and program lists.	**Comments:**
Objective # 2: To:				1 2 3 4 5

BUDGET REQUEST BY SOURCE OF FUNDS
(Period: July 1, 2008 to June 30, 2009)

Applicant: EnablingHealthcare Solutions of the Pacific, Inc

BUDGET CATEGORIES	Total State Funds Requested (a)	(b)	(c)	(d)
A. PERSONNEL COST				
1. Salaries	15,000	15,000	15,000	15,000
2. Payroll Taxes & Assessments				
3. Fringe Benefits				
TOTAL PERSONNEL COST	**15,000**	**15,000**	**15,000**	**15,000**
B. OTHER CURRENT EXPENSES				
1. Airfare, Inter-Island	1,000	1,000	1,000	1,000
2. Insurance				
3. Lease/Rental of Equipment	900	900	900	900
4. Lease/Rental of Space				
5. Staff Training				
6. Supplies	500	500	500	500
7. Telecommunication	450	450	450	450
8. Utilities				
9. Photocopying	800	800	800	800
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
TOTAL OTHER CURRENT EXPENSES	**3,650**	**3,650**	**3,650**	**3,650**
C. EQUIPMENT PURCHASES	**0**	**0**	**0**	**0**
D. MOTOR VEHICLE PURCHASES	**0**	**0**	**0**	**0**
E. CAPITAL	**0**	**0**	**0**	**0**
TOTAL (A+B+C+D+E)	**18,650**	**18,650**	**18,650**	**18,650**

SOURCES OF FUNDING	
(a) Total State Funds Requested	74,600
(b)	
(c)	
(d)	
TOTAL REVENUE	**74,600**

Budget Prepared By:

[redacted] 808-239-6353

Name (Please type or print) Phone

ROBERT FARROW 01/18/08

Signature of Authorized Official Date

[redacted] - C.F.O.

Name and Title (Please type or print)

BUDGET JUSTIFICATION
PERSONNEL - SALARIES AND WAGES

Applicant: EnablingHealthcare Solutions of the Pacific, Inc.

Period: July 1, 2008 to June 30, 2009

POSITION TITLE	FULL TIME EQUIVALENT	ANNUAL SALARY A	% OF TIME BUDGETED TO REQUEST B	TOTAL SALARY BUDGETED IN REQUEST A x B
Project coordinator	1	$90,000.00	15.00%	$ 13,500.00
Independent Contractor: Doctor of Pharmacy	0.5	$110,000.00	35.00%	$ 38,500.00
Independent Contractor: Registered Nurse	0.5	$40,000.00	20.00%	$ 8,000.00
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
				$ -
TOTAL:				60,000.00

JUSTIFICATION/COMMENTS:

BUDGET JUSTIFICATION - EQUIPMENT AND MOTOR VEHICLES

Applicant: EnablingHealthcare Solutions of the Pa Period: July 1, 2008 to June 30, 2009

DESCRIPTION EQUIPMENT	NO. OF ITEMS	COST PER ITEM	TOTAL COST	TOTAL BUDGETED
LCD projector and computer rental			$ -	3600
			$ -	
			$ -	
			$ -	
			$ -	
TOTAL:				3,600

JUSTIFICATION/COMMENTS:

DESCRIPTION OF MOTOR VEHICLE	NO. OF VEHICLES	COST PER VEHICLE	TOTAL COST	TOTAL BUDGETED
Not Applicable			$ -	
			$ -	
			$ -	
			$ -	
			$ -	
TOTAL:				

JUSTIFICATION/COMMENTS:

BUDGET JUSTIFICATION
CAPITAL PROJECT DETAILS

Applicant: EnablingHealthcare Solutions of the Pacific, Inc.

Period: July 1, 2008 to June 30, 2009

FUNDING AMOUNT REQUESTED						
TOTAL PROJECT COST	ANY OTHER SOURCE OF FUNDS RECEIVED IN PRIOR YEARS		STATE FUNDS REQUESTED		FUNDING REQUIRED IN SUCCEEDING YEARS	
	FY: 2005-2006	FY: 2006-2007	FY:2007-2008	FY:2008-2009	FY:2009-2010	FY:2010-2011
PLANS						
LAND ACQUISITION						
DESIGN						
CONSTRUCTION						
EQUIPMENT						
TOTAL:						

JUSTIFICATION/COMMENTS:

Not applicable at this time

DECLARATION STATEMENT
APPLICANTS FOR GRANTS AND SUBSIDIES
CHAPTER 42F, HAWAI'I REVISED STATUTES

The undersigned authorized representative of the applicant acknowledges that said applicant meets and will comply with all of the following standards for the award of grants and subsidies pursuant to section 42F-103, Hawai'i Revised Statutes:

(1) Is licensed or accredited, in accordance with federal, state, or county statutes, rules, or ordinances, to conduct the activities or provide the services for which a grant or subsidy is awarded;

(2) Comply with all applicable federal and state laws prohibiting discrimination against any person on the basis of race, color, national origin, religion, creed, sex, age, sexual orientation, or disability;

(3) Agree not to use state funds for entertainment or lobbying activities; and

(4) Allow the state agency to which funds for the grant or subsidy were appropriated for expenditure, legislative committees and their staff, and the auditor full access to their records, reports, files, and other related documents and information for purposes of monitoring, measuring the effectiveness, and assuring the proper expenditure of the grant or subsidy.

In addition, a grant or subsidy may be made to an organization only if the organization:

(1) Is incorporated under the laws of the State; and

(2) Has bylaws or policies that describe the manner in which the activities or services for which a grant or subsidy is awarded shall be conducted or provided.

Further, a grant or subsidy may be awarded to a non-profit organization only if the organization:

(1) Has been determined and designated to be a non-profit organization by the Internal Revenue Service; and

(2) Has a governing board whose members have no material conflict of interest and serve without compensation.

Further, the undersigned authorized representative certifies that this statement is true and correct to the best of the applicant's knowledge.

[redacted] of the Pacific, Inc.
(EnablingHealthcare Solutions of the Pacific, Inc.)

[redacted] 01/21/08
(Signature) (Date)

[redacted]
(Ty Hooper) (Director)

An Educational Outreach Program to Help Hawaii's Seniors and their Caregivers and other Healthcare Professionals to Promote Safe Medication Use and Minimize the Risks of Adverse Drug Events. In Addition, "Potentially Inappropriate Medication Use in Older Adults" and the Occurance of Drug Interactions of Medications that Seniors are Taking will be Analyzed.

EnablingHealth Solutions of the Pacific, Inc.
A Non-Profit 501 (c)(3) Organization

Preface

The American Society of Aging and The American Society of Consultant Pharmacists have stated that medications are arguably the single most important health care technology to prevent illness, disability, and death in the older population. Of all age groups, older persons with chronic diseases and conditions benefit the most from taking medications, and yet risk the most from failing to take them properly and suffer consequences of adverse drug events. ." If adverse medication related events were a disease, it could be termed an epidemic as it accounts for more than 10% of older adult hospital admissions, nearly one-fourth of nursing home admissions, and 20% of preventable adverse drug events among older persons in the ambulatory setting. To support this statement, NBC News reported in 2002, that "almost a quarter of older Americans are sent to hospitals or nursing homes because of problems with medications, and the cost of adverse drug reactions—in human casualties is estimated at 100,000 annually; the annual cost in dollars is a stunning $177 billion. There are countless number of articles and studies that support these statistics.

A 2000 study of nursing home patients, for example, found that of the 20,000 fatal or life-threatening medication reactions, 80% were preventable. Furthermore, The American Society of Consultant Pharmacists Reasearch and Education Foundation published it's findings in the Archives of Internal Medicine in 1997, The Fleetwood Phase I, which was the first pharmacoeconomic analysis of the cost of medication related

problems in US nursing facilities and found that for every dollar spent on medications in nursing facilities, two dollars are spent to treat medication-related problems.

From the Seniorcarepharmacist website, The following information was posted:

Seniors at Risk:
Medication-Related Problems Among Older Americans

More than 200,000 people die and another 2.2 million are injured each year because of medication-related problems—and seniors are the most susceptible.

WHY?

- **Seniors take more medications than any other age group.** Seniors between ages 65 and 69 have, on average, 13.6 prescriptions filled per year. Those between 80 and 84 years old have 18.2 prescriptions filled per year.
- **The physiological changes of aging can alter how a body processes and reacts to a certain medication.** In the aging body, the liver and kidneys may not as easily metabolize medications. In addition, changes in the distribution of fat and muscle can make seniors more susceptible to adverse drug events.
- **Seniors have more chronic diseases and multiple conditions, so they use more prescription and over-the-counter drugs.** More than 77% of seniors between the ages of 65 and 79 suffer from one or more chronic diseases. The number rises to 85% for those over age 80.

While it is extremely important to ensure that medications are appropriately and adequately managing the disease, it is equally important to ensure that the medication regimen is not contributing to those common geriatric problem-areas that may lead to excess disability, loss of independence, and decrease in quality of life. Senior care pharmacists protect the health and quality of life of seniors by preventing medication-related problems.

Additional facts about seniors and their medication practices is that they often see multiple physicians who prescribe medications without consulting each other for drug interactions and the potential for causing adverse outcomes. Also, from previous polls of large groups of Hawaii's seniors, such as the National Active and Retired Federal Employees Association, and many of the independent seniors residing in assisted living facilities, it is clear that the majority of these seniors obtain their prescriptions from multiple sources such as different pharmacies or order medications through mail-order services in search of the best bargains and furthermore, they did not know a pharmacist whom they could ask medication related questions,. These practices by seniors may lead to very costly outcomes in other areas of healthcare utilization since detection of serious medication related problems are eluded from sophisticated drug interaction software programs that screen for problems in the course of dispensing a prescription at any pharmacy. In support of the value of medication reviews by a pharmacist, the Fleetwood Phase I study by the American Society of Consultant Pharmacists found that consultant pharmacist-conducted drug reviews increased the number of patients who experienced an optimal therapeutic outcome by 43% and saved as much as $3.6 billion annually in costs associated with avoided medication-related problems.

The information provided is just a small percentage of all the published data serving as testimony for the need to provide continued education and training for medication use for seniors, their caregivers and healthcare providers overseeing care for seniors.

SeniorCarePharmacist.com™
Helping You Make the Best Use of Your Medicines

What Is a Medication-Related Problem?

Click here to **download** this as an Acrobat PDF document

A medication-related problem is an event or situation involving drug therapy that negatively interferes with a patient's health.

Medication-related problems can be categorized eight ways:

- **Untreated conditions**
  The patient has a medical condition that requires drug therapy but is not receiving a drug for that condition.

- **Drug use without indication**
  The patient is taking a medication for no medically valid condition or reason.

- **Improper drug selection**
  The patient's medical condition is being treated with the wrong drug or a drug that is not the most appropriate for the special needs of the patient.

- **Subtherapeutic dosage**
  The patient has a medical problem that is being treated with too little of the correct medication.

- **Overdosage**
  The patient has a medical problem that is being treated with too much of the correct medication.

- **Adverse drug reactions (ADRs)**
  The patient has a medical condition that is the result of an adverse drug reaction or adverse effect. In the case of older adults, ADRs contribute to already existing geriatric problems such as falls, urinary incontinence, constipation, and weight loss.

- **Drug interactions**
  The patient has a medical condition that is the result of a drug interacting negatively with another drug, food, or laboratory.

- **Failure to receive medication**
  The patient has a medical condition that is the result of not receiving a medication due to economic, psychological, sociological, or pharmaceutical reasons.

These problems can cause, aggravate, or contribute to common and costly geriatric problems. Senior care pharmacists identify and prevent medication-related problems through careful evaluation and monitoring of patients' drug regimens. Click here to find a senior care pharmacist in your area.

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ORIGINAL INVESTIGATION

Updating the Beers Criteria for Potentially Inappropriate Medication Use in Older Adults

Results of a US Consensus Panel of Experts

Donna M. Fick, PhD, RN; James W. Cooper, PhD, RPh; William E. Wade, PharmD, FASHP, FCCP; Jennifer L. Waller, PhD; J. Ross Maclean, MD; Mark H. Beers, MD

Background: Medication toxic effects and drug-related problems can have profound medical and safety consequences for older adults and economically affect the health care system. The purpose of this initiative was to revise and update the Beers criteria for potentially inappropriate medication use in adults 65 years and older in the United States.

Methods: This study used a modified Delphi method, a set of procedures and methods for formulating a group judgment for a subject matter in which precise information is lacking. The criteria reviewed covered 2 types of statements: (1) medications or medication classes that *should generally be avoided* in persons 65 years or older because they are either ineffective or they pose unnecessarily high risk for older persons and a safer alternative is available and (2) medications that should not be used in older persons known to have *specific medical conditions.*

Results: This study identified 48 individual medications or classes of medications to avoid in older adults and their potential concerns and 20 diseases/conditions and medications to be avoided in older adults with these conditions. Of these potentially inappropriate drugs, 66 were considered by the panel to have adverse outcomes of high severity.

Conclusions: This study is an important update of previously established criteria that have been widely used and cited. The application of the Beers criteria and other tools for identifying potentially inappropriate medication use will continue to enable providers to plan interventions for decreasing both drug-related costs and overall costs and thus minimize drug-related problems.

Arch Intern Med. 2003;163:2716-2724

From the Department of Medicine, Center for Health Care Improvement (Drs Fick and Maclean); and Office of Biostatistics (Dr Waller), Medical College of Georgia, Augusta; Department of Veterans Affairs Medical Center, Augusta (Dr Fick); Department of Clinical and Administrative Pharmacy, College of Pharmacy, University of Georgia, Athens, (Drs Cooper and Wade); and Merck & Co Inc, West Point, Pa (Dr Beers). *The authors have no relevant financial interest in this article.*

TOXIC EFFECTS of medications and drug-related problems can have profound medical and safety consequences for older adults and economically effect the health care system. Thirty percent of hospital admissions in elderly patients may be linked to drug-related problems or drug toxic effects.[1] Adverse drug events (ADEs) have been linked to preventable problems in elderly patients such as depression, constipation, falls, immobility, confusion, and hip fractures.[1,2] A 1997 study of ADEs found that 35% of ambulatory older adults experienced an ADE and 29% required health care services (physician, emergency department, or hospitalization) for the ADE.[1] Some two thirds of nursing facility residents have ADEs over a 4-year period.[3] Of these ADEs, 1 in 7 results in hospitalization.[4]

Recent estimates of the overall human and economic consequences of medication-related problems vastly exceed the findings of the Institute of Medicine (IOM) on deaths from medical errors, estimated to cost the nation $8 billion annually.[5] In 2000, it is estimated that medication-related problems caused 106 000 deaths annually at a cost of $85 billion.[6] Others have calculated the cost of medication-related problems to be $76.6 billion to ambulatory care, $20 billion to hospitals, and $4 billion to nursing home facilities.[2,7,8] If medication-related problems were ranked as a disease by cause of death, it would be the fifth leading cause of death in the United States.[9] The prevention and recognition of drug-related problems in elderly patients and other vulnerable populations is one of the principal health care quality and safety issues for this decade.

CME course available at www.archinternmed.com

The aforementioned IOM report has focused increased attention on finding solutions for unsafe medication practices, polypharmacy, and drug-related problems in the care of older adults. There are many ways to define medication-related prob-

(REPRINTED WITH CORRECTIONS)

lems in elderly patients, including the use of lists containing specific drugs to avoid in the elderly and appropriateness indexes applied by pharmacists or clinicians.[1,10,11] Systematic review of the evidence-based literature on medication use in elderly patients is another approach to defining the problem, but the number of controlled studies on medication use in elderly patients is limited.

The use of consensus criteria for safe medication use in elderly patients is one approach to developing reliable and explicit criteria when precise clinical information is lacking. The two most widely used consensus criteria for medication use in older adults are the Beers criteria and the Canadian criteria.[12-14] The Beers criteria are based on expert consensus developed through an extensive literature review with a bibliography and questionnaire evaluated by nationally recognized experts in geriatric care, clinical pharmacology, and psychopharmacology using a modified Delphi technique to reach consensus. The Beers criteria have been used to survey clinical medication use, analyze computerized administrative data sets, and evaluate intervention studies to decrease medication problems in older adults. The Beers criteria were also adopted by the Centers for Medicare & Medicaid Services (CMS) in July 1999 for nursing home regulation. Previous studies have shown these criteria to be useful in decreasing problems in older adults.[15-19] These criteria, though controversial at times, have been widely used over the past 10 years for studying prescribing patterns within populations, educating clinicians, and evaluating health outcomes, cost, and utilization data.[20-23]

A recently published study of potentially inappropriate medication (PIM) use with the Beers criteria in a Medicare-managed care population found a PIM prevalence of 23% (541/2336). Those receiving a PIM had significantly higher total, provider, and facility costs and a higher mean number of inpatient, outpatient, and emergency department visits than comparisons after controlling for sex, Charlson Comorbidity Index, and total number of prescriptions.[20] Other studies have found that specific PIMs such as nonsteroidal anti-inflammatory drugs (NSAIDs) and benzodiazepines have been associated with adverse outcomes and increased costs.[18] In contrast, a recent study on the relationship between inappropriate drug use, functional status decline, and mortality in 3234 patients from the Duke cohort did not find an association with mortality and inappropriate drug use as determined by the Beers criteria after controlling for covariates.[24]

In summary, these criteria have been used extensively for evaluating and intervening in medication use in older adults over the past decade. However, with the continuous arrival of new drugs on the market, increased knowledge about older drugs, and removal of older drugs from the market, these criteria must be updated on a regular basis to remain useful. Since the criteria were published in 1997, there has been an increase in the number of scientific studies addressing drug use and appropriateness in older adults, but there is still a lack of controlled studies in the older population and particularly in patients older than 75 years and patients with multiple comorbidities.[23]

The purpose of this initiative was to revise and update the Beers criteria for ambulatory and nursing facility populations older than 65 years in the United States. There were 3 main aims: (1) to reevaluate the 1997 criteria to include new products and incorporate new information available from the scientific literature, (2) to assign or reevaluate a relative rating of severity for each of the medications, and (3) to identify any new conditions or considerations not addressed in the 1997 criteria.

Below are the Beers criteria published in 1997. In parts 1 and 2, we are first asking you to rate your level of agreement on these 1997 criteria.

Please answer the following questions regarding the use of medications *in adults 65 years or older:*

Please give one of the following answers:

1=Strongly Agree 2=Agree 3=Unsure 4=Disagree 5=Strongly Disagree
0=Unable to offer an opinion

1) Propoxyphene (Darvon) and combination products (Darvon with ASA, Darvon-N, and Darvocet-N) should be avoided.

1 2 3 4 5 0

Sample survey question.

METHODS

There were 5 phases in the data collection for this study: (1) the review of the literature, (2) creation and mailing of the round 1 questionnaire, (3) creation of the second-round questionnaire based on round 1 and expert panel feedback, (4) convening of the expert panel and panel responses to the second-round questionnaire, and (5) completion and analysis of a third and final mailed questionnaire that measured the severity ratings of the PIMs to create the final revised list.

The criteria reviewed covered 2 types of statements: (1) medications or medication classes that *should generally be avoided* in persons 65 years or older because they are either ineffective or they pose unnecessarily high risk for older persons and a safer alternative is available and (2) medications that should not be used in older persons known to have *specific medical conditions.* The 2 statements each used a 5-point Likert scale and ask respondents to rate their agreement or disagreement with the statement from strongly agree (1) to strongly disagree (5), with the midpoint (3) expressing equivocation. The second type of question asked the respondents to evaluate the medication appropriateness given certain conditions or diagnoses (**Figure**). All questions included an option to not answer if the respondent did not feel qualified to answer. This methodology was similar to that used by Beers et al[13] in the creation of the first 2 iterations of the criteria. The methodology used in the third iteration of the Beers criteria only differed in the number of panelists (13 in 1991; 6 in 1997; and 12 in 2002) and the use of a third-round survey for the severity ratings, which was done (in person) in the 1997 update of the criteria.

RESEARCH DESIGN

The modified Delphi method is a technique to arrive at a group consensus regarding an issue under investigation that was originally developed at the RAND Corporation (Santa Monica, Calif) by Olaf Helmer and Norman Dalkey.[25] The Delphi method is a set of procedures and methods for formulating a group judgment for a subject matter in which precise information is lacking (such as medication use in older adults). The Delphi method provides a means to reach consensus within a group of experts. The method relies on soliciting individual (often anonymous) answers to written questions by survey or other type of

communication. A series of iterations provides each individual with feedback on the responses of the others in the group. The final responses are evaluated for variance and means to determine which questions the group has reached consensus about, either affirmatively or negatively.

LITERATURE REVIEW

The selection of articles for formulating the survey involved 3 steps and was phase 1 of the study. First, we identified literature published since January 1994 in English, describing or analyzing medication use in community-living (ambulatory) older adults and older adults living in nursing homes. From that, we created a table and bibliography. We used MEDLINE, searching with the following key terms *adverse drug reactions, adverse drug events, medication problems,* and *medications and elderly* for all relevant articles published between January 1994 and December 2000. Second, we hand searched and identified additional references from the bibliographies of relevant articles. Third, all the panelists were invited to add references and articles after the first survey to add to the literature review. Each study was systematically reviewed by 2 investigators using a table to outline the following information: type of study design; sample size; medications reviewed; summary of results and key points; quality, type and category of medication addressed; and severity of the drug-related problem.

EXPERT PANEL SELECTION

The panel of members were invited to participate via letter by the 4 investigators and a consultant and represented a variety of experience and judgment including extensive clinical practice, extensive publications in this area, and/or senior academic rank. They were also chosen to represent acute, long-term, and community practice settings with pharmacological, geriatric medicine, and psychiatric expertise. Lastly, they were selected from geographically diverse parts of the United States. We initially invited (via regular mail) 16 potential participants with nationally and/or internationally recognized expertise in psychopharmacology, pharmacoepidemiology, clinical geriatric pharmacology, and clinical geriatric medicine to complete our survey. Our response rate for the initial invitation to participate as a panelist was 75% (12/16). Our final panel thus consisted of 12 experts who completed all rounds of the survey.

DATA COLLECTION AND ANALYSIS

We used the systematic review of the literature to construct the first round questionnaire. The first-round survey contained 4 sections. Parts 1 and 2 reviewed the latest 1997 criteria. Parts 3 and 4 were medications added for the 2002 update for medications alone (part 3) and medications considering diagnoses and conditions. Parts 3 and 4 included 29 new questions about medications or medication classes and conditions. The last question in part 4 asked panel members to add medications to the list. The panel was then surveyed via Delphi technique to determine concordance/consensus with the round 1 survey and invited to add additional medications prior to and during the second-round meeting.

We created the second and third questionnaires (severity ratings) from panel input and the results of the previous round survey. We completed all mailed and face-to-face rounds between October 2001 and February 2002. We constructed the questionnaire statements according to the original Beers criteria published in 1991 and the updated criteria published in 1997. The instructions accompanying the survey asked the respondents to consider the use of medications *only* in adults 65 years and older. The second-round survey included the statements included from round 1 and any statements added by the experts from the first round. In the second round and the face-to-face meeting, the respondents were given information about their answers and the anonymous answers of the other members of the group and were given the opportunity to reconsider their previous response.

After analyzing the responses from the first round of the survey, we examined each question for inclusion or exclusion in the revised criteria or for further consideration in the second round of the survey. We calculated the mean rating and corresponding 95% confidence interval (CI) of each statement or dosing question collected from the first round of the survey. Those statements whose upper limit of the 95% CI was less than 3.0 were included in the updated criteria. Those statements or dosing questions whose lower limit of the 95% CI was greater than 3.0 were excluded from the updated criteria. Statements whose 95% CI included the value of 3.0 were included for further determination in the second-round face-to-face meeting.

The face-to-face meeting was convened on December 10, 2001, in Atlanta, Ga. Each panel member was given the results of the first-round survey and the added medications (from the other panel members) to review approximately 10 days before the meeting. For statements that needed further examination (neither included or excluded during round 1), each rater was given his or her previous rating and the mean rating of the group of experts in the second survey.

Any additional statements or dosing questions that had been made on the open-ended portion of the first round of the survey by any expert was included in the survey for the second round. Forty-four questions were added by expert panelists during round 1 of the survey, and 9 questions were added during the round 2 in-person survey and voted on during the in-person meeting. These questions/medications made up part 5 of the survey. Twenty-four questions from parts 3 and 4 had 95% CIs greater than 3.0 after the round 1 survey. During the second-round face-to-face meeting, the group debated these remaining statements and then rerated them using the same Likert scale. The mean rating and 95% CI were calculated. The technique used for the first round for inclusion or exclusion of the statement or dosing question in the updated criteria was used. Those statements whose 95% CI included 3.0 were excluded from the updated criteria. Lastly, in January 2002, we surveyed panelists on a 5-point scale for the severity of the potential medication problem.

RESULTS

The final criteria are listed in **Table 1** and **Table 2**. Table 1 contains 48 individual medications or classes of medications to avoid in older adults and their potential concerns. Table 2 lists 20 diseases or conditions and medications to be avoided in older adults with these conditions. Sixty-six of these potentially inappropriate drugs were considered by the panel to have adverse outcomes of high severity. New conditions and diagnoses that were addressed this time included depression, cognitive impairment, Parkinson disease, anorexia, and malnutrition, syndrome of inappropriate antidiuretic hormone secretion, and obesity.

A total of 15 medications/medication classes were dropped or modified from the 1997 to the 2002 update from the round 1 survey. Most of the medications dropped since 1997 were those that were associated with diagnoses or conditions. The following medications were voted to be dropped

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Table 1. 2002 Criteria for Potentially Inappropriate Medication Use in Older Adults: Independent of Diagnoses or Conditions

Drug	Concern	Severity Rating (High or Low)
Propoxyphene (Darvon) and combination products (Darvon with ASA, Darvon-N, and Darvocet-N)	Offers few analgesic advantages over acetaminophen, yet has the adverse effects of other narcotic drugs	Low
Indomethacin (Indocin and Indocin SR)	Of all available nonsteroidal anti-inflammatory drugs, this drug produces the most CNS adverse effects	High
Pentazocine (Talwin)	Narcotic analgesic that causes more CNS adverse effects, including confusion and hallucinations, more commonly than other narcotic drugs. Additionally, it is a mixed agonist and antagonist.	High
Trimethobenzamide (Tigan)	One of the least effective antiemetic drugs, yet it can cause extrapyramidal adverse effects	High
Muscle relaxants and antispasmodics: methocarbamol (Robaxin), carisoprodol (Soma), chlorzoxazone (Parafflex), metaxalone (Skelaxin), cyclobenzaprine (Flexeril), and oxybutynin (Ditropan). Do not consider the extended-release Ditropan XL.	Most muscle relaxants and antispasmodic drugs are poorly tolerated by elderly patients, since these cause anticholinergic adverse effects, sedation, and weakness. Additionally, their effectiveness at doses tolerated by elderly patients is questionable.	High
Flurazepam (Dalmane)	This benzodiazepine hypnotic has an extremely long half-life in elderly patients (often days), producing prolonged sedation and increasing the incidence of falls and fracture. Medium- or short-acting benzodiazepines are preferable.	High
Amitriptyline (Elavil), chlordiazepoxide-amitriptyline (Limbitrol), and perphenazine-amitriptyline (Triavil)	Because of its strong anticholinergic and sedation properties, amitriptyline is rarely the antidepressant of choice for elderly patients.	High
Doxepin (Sinequan)	Because of its strong anticholinergic and sedating properties, doxepin is rarely the antidepressant of choice for elderly patients.	High
Meprobamate (Miltown and Equanil)	This is a highly addictive and sedating anxiolytic. Those using meprobamate for prolonged periods may become addicted and may need to be withdrawn slowly.	High
Doses of short-acting benzodiazepines: doses greater than: lorazepam (Ativan), 3 mg; oxazepam (Serax), 60 mg; alprazolam (Xanax), 2 mg; temazepam (Restoril), 15 mg; and triazolam (Halcion), 0.25 mg.	Because of increased sensitivity to benzodiazepines in elderly patients, smaller doses may be effective as well as safer. Total daily doses should rarely exceed the suggested maximums.	High
Long-acting benzodiazepines: chlordiazepoxide (Librium), chlordiazepoxide-amitriptyline (Limbitrol), clidinium-chlordiazepoxide (Librax), diazepam (Valium), quazepam (Doral), halazepam (Paxipam), and chlorazepate (Tranxene)	These drugs have a long half-life in elderly patients (often several days), producing prolonged sedation and increasing the risk of falls and fractures. Short- and intermediate-acting benzodiazepines are preferred if a benzodiazepine is required.	High
Disopyramide (Norpace and Norpace CR)	Of all antiarrhythmic drugs, this is the most potent negative inotrope and therefore may induce heart failure in elderly patients. It is also strongly anticholinergic. Other antiarrhythmic drugs should be used.	High
Digoxin (Lanoxin) (should not exceed >0.125 mg/d except when treating atrial arrhythmias)	Decreased renal clearance may lead to increased risk of toxic effects	Low
Short-acting dipyridamole (Persantine). Do not consider the long-acting dipyridamole (which has better properties than the short-acting in older adults) except with patients with artificial heart valves.	May cause orthostatic hypotension	Low
Methyldopa (Aldomet) and methyldopa-hydrochlorothiazide (Aldoril)	May cause bradycardia and exacerbate depression in elderly patients	High
Reserpine at doses >0.25 mg	May induce depression, impotence, sedation, and orthostatic hypotension	Low
Chlorpropamide (Diabinese)	It has a prolonged half-life in elderly patients and could cause prolonged hypoglycemia. Additionally, it is the only oral hypoglycemic agent that causes SIADH.	High
Gastrointestinal antispasmodic drugs: dicyclomine (Bentyl), hyoscyamine (Levsin and Levsinex), propantheline (Pro-Banthine), belladonna alkaloids (Donnatal and others), and clidinium-chlordiazepoxide (Librax)	GI antispasmodic drugs are highly anticholinergic and have uncertain effectiveness. These drugs should be avoided, especially for long-term use.	High
Anticholinergics and antihistamines: chlorpheniramine (Chlor-Trimeton), diphenhydramine (Benadryl), hydroxyzine (Vistaril and Atarax), cyproheptadine (Periactin), promethazine (Phenergan), tripelennamine, dexchlorpheniramine (Polaramine)	All nonprescription and many prescription antihistamines may have potent anticholinergic properties. Nonanticholinergic antihistamines are preferred in elderly patients when treating allergic reactions.	High
Diphenhydramine (Benadryl)	May cause confusion and sedation. Should not be used as a hypnotic, and when used to treat emergency allergic reactions, it should be used in the smallest possible dose.	High
Ergot mesylates (Hydergine) and cyclandelate (Cyclospasmol)	Have not been shown to be effective in the doses studied	Low
Ferrous sulfate >325 mg/d	Doses >325 mg/d do not dramatically increase the amount absorbed but greatly increase the incidence of constipation.	Low
All barbiturates (except phenobarbital) except when used to control seizures	Are highly addictive and cause more adverse effects than most sedative or hypnotic drugs in elderly patients.	High

(continued)

Table 1. 2002 Criteria for Potentially Inappropriate Medication Use in Older Adults: Independent of Diagnoses or Conditions (cont)

Drug	Concern	Severity Rating (High or Low)
Meperidine (Demerol)	Not an effective oral analgesic in doses commonly used. May cause confusion and has many disadvantages to other narcotic drugs.	High
Ticlopidine (Ticlid)	Has been shown to be no better than aspirin in preventing clotting and may be considerably more toxic. Safer, more effective alternatives exist.	High
Ketorolac (Toradol)	Immediate and long-term use should be avoided in older persons, since a significant number have asymptomatic GI pathologic conditions.	High
Amphetamines and anorexic agents	These drugs have potential for causing dependence, hypertension, angina, and myocardial infarction.	High
Long-term use of full-dosage, longer half-life, non-COX-selective NSAIDs: naproxen (Naprosyn, Aveprox, and Aleve), oxaprozin (Daypro), and piroxicam (Feldene)	Have the potential to produce GI bleeding, renal failure, high blood pressure, and heart failure.	High
Daily fluoxetine (Prozac)	Long half-life of drug and risk of producing excessive CNS stimulation, sleep disturbances, and increasing agitation. Safer alternatives exist.	High
Long-term use of stimulant laxatives: bisacodyl (Dulcolax), cascara sagrada, and Neoloid except in the presence of opiate analgesic use	May exacerbate bowel dysfunction.	High
Amiodarone (Cordarone)	Associated with QT interval problems and risk of provoking torsades de pointes. Lack of efficacy in older adults.	High
Orphenadrine (Norflex)	Causes more sedation and anticholinergic adverse effects than safer alternatives.	High
Guanethidine (Ismelin)	May cause orthostatic hypotension. Safer alternatives exist.	High
Guanadrel (Hylorel)	May cause orthostatic hypotension.	High
Cyclandelate (Cyclospasmol)	Lack of efficacy.	Low
Isoxsuprine (Vasodilan)	Lack of efficacy.	Low
Nitrofurantoin (Macrodantin)	Potential for renal impairment. Safer alternatives available.	High
Doxazosin (Cardura)	Potential for hypotension, dry mouth, and urinary problems.	Low
Methyltestosterone (Android, Virilon, and Testrad)	Potential for prostatic hypertrophy and cardiac problems.	High
Thioridazine (Mellaril)	Greater potential for CNS and extrapyramidal adverse effects.	High
Mesoridazine (Serentil)	CNS and extrapyramidal adverse effects.	High
Short-acting nifedipine (Procardia and Adalat)	Potential for hypotension and constipation.	High
Clonidine (Catapres)	Potential for orthostatic hypotension and CNS adverse effects.	Low
Mineral oil	Potential for aspiration and adverse effects. Safer alternatives available.	High
Cimetidine (Tagamet)	CNS adverse effects including confusion.	Low
Ethacrynic acid (Edecrin)	Potential for hypotension and fluid imbalances. Safer alternatives available.	Low
Desiccated thyroid	Concerns about cardiac effects. Safer alternatives available.	High
Amphetamines (excluding methylphenidate hydrochloride and anorexics)	CNS stimulant adverse effects.	High
Estrogens only (oral)	Evidence of the carcinogenic (breast and endometrial cancer) potential of these agents and lack of cardioprotective effect in older women.	Low

Abbreviations: CNS, central nervous system; COX, cyclooxygenase; GI, gastrointestinal; NSAIDs, nonsteroidal anti-inflammatory drugs; SIADH, syndrome of inappropriate antidiuretic hormone secretion.

or modified from the criteria by the panelists since the 1997 publication: phenylbutazone, oxybutynin chloride, β-blockers, corticosteroids with persons with diabetes; sedative-hypnotics in persons with chronic obstructive pulmonary disease; β-blockers in persons with asthma; β-blockers in persons with peripheral vascular disorder; β-blockers in persons with syncope and falls; narcotics in persons with bladder outflow obstruction; and theophylline sodium glycinate in persons with insomnia (**Table 3**). Oxybutinin was modified by not including the extended-release formula, which the panel believed had fewer adverse effects. Reserpine was changed to be avoided only at doses greater than 0.25 mg, and disopyramide phosphate avoidance now only refers to the non–extended release formulation. New information about β-blockers in elderly patients led the panel to drop this class of drugs from the list. The other criteria dropped involved use of drugs in the setting of a comorbid condition or drugs that are off the market. The expert panelists could not reach consensus about adding questions regarding setting maximum dosages for sedative-hypnotics, antipsychotics, selective serotonin reuptake inhibitors, and tricyclic antidepressants that do not have specific recommendations from the manufacturer, though there was agreement that consideration of changes in pharmacokinetics were important in older patients in preventing problems caused by excessive dosages and usage.

This update also includes several medications that have new information or have come to market since the last study of the Beers criteria was published (1997), including selective serotonin reuptake inhibitors, amiodarone, and fluoxetine hydrochloride. The panel also voted to add methyltestosterones, amphetamines, and bupropion hydrochloride to the list of medications to be avoided in older adults. Tables 1 and 2 state why medications were added since 1997, and Table 3 summarizes all the changes to the

Table 2. 2002 Criteria for Potentially Inappropriate Medication Use in Older Adults: Considering Diagnoses or Conditions

Disease or Condition	Drug	Concern	Severity Rating (High or Low)
Heart failure	Disopyramide (Norpace); and high sodium content drugs (sodium and sodium salts [alginate bicarbonate, biphosphate, citrate, phosphate, salicylate, and sulfate])	Negative inotropic effect; Potential to promote fluid retention and exacerbation of heart failure	High
Hypertension	Phenylpropanolamine hydrochloride (removed from the market in 2001); pseudoephedrine, diet pills, and amphetamines	May produce elevation of blood pressure, secondary to sympathomimetic activity	High
Gastric or duodenal ulcers	NSAIDs and aspirin (>325 mg) (coxibs excluded)	May exacerbate existing ulcers or produce new/additional ulcers	High
Seizures or epilepsy	Clozapine (Clozaril), chlorpromazine (Thorazine), thioridazine (Mellaril), and thiothixene (Navane)	May lower seizure thresholds	High
Blood clotting disorders or receiving anticoagulant therapy	Aspirin, NSAIDs, dipyridamole (Persantin), ticlopidine (Ticlid), and clopidogrel (Plavix)	May prolong clotting time and elevate INR values or inhibit platelet aggregation, resulting in an increased potential for bleeding	High
Bladder outflow obstruction	Anticholinergics and antihistamines, gastrointestinal antispasmodics, muscle relaxants (oxybutynin [Ditropan], flavoxate [Urispas]), anticholinergics, antidepressants, decongestants, and tolterodine (Detrol)	May decrease urinary flow, leading to urinary retention	High
Stress incontinence	α-Blockers (Doxazosin, Prazosin, and Terazosin), anticholinergics, tricyclic antidepressants (imipramine hydrochloride, doxepin hydrochloride, and amitriptyline hydrochloride), and long-acting benzodiazepines	May produce polyuria and worsening of incontinence	High
Arrhythmias	Tricyclic antidepressants (Imipramine hydrochloride, doxepin hydrochloride, and amitriptyline hydrochloride)	Concern due to proarrhythmic effects and ability to produce QT interval changes	High
Insomnia	Decongestants, theophylline (Theodur), methylphenidate (Ritalin), MAOIs, and amphetamines	Concern due to CNS stimulant effects	High
Parkinson disease	Metoclopramide (Reglan), conventional antipsychotics, and tacrine (Cognex)	Concern due to their antidopaminergic/cholinergic effects	High
Cognitive impairment	Barbiturates, anticholinergics, antispasmodics, and muscle relaxants; CNS stimulants; dextroAmphetamine (Adderall), methylphenidate (Ritalin), methamphetamine (Desoxyn), and pemoline	Concern due to CNS-altering effects	High
Depression	Long-term benzodiazepine use; Sympatholytic agents: methyldopa (Aldomet), reserpine, and guanethidine (Ismelin)	May produce or exacerbate depression	High
Anorexia and malnutrition	CNS stimulants: DextroAmphetamine (Adderall), methylphenidate (Ritalin), methamphetamine (Desoxyn), pemoline, and fluoxetine (Prozac)	Concern due to appetite-suppressing effects	High
Syncope or falls	Short- to intermediate-acting benzodiazepine and tricyclic antidepressants (imipramine hydrochloride, doxepin hydrochloride, and amitriptyline hydrochloride)	May produce ataxia, impaired psychomotor function, syncope, and additional falls	High
SIADH/hyponatremia	SSRIs: fluoxetine (Prozac), citalopram (Celexa), fluvoxamine (Luvox), paroxetine (Paxil), and sertraline (Zoloft)	May exacerbate or cause SIADH	Low
Seizure disorder	Bupropion (Wellbutrin)	May lower seizure threshold	High
Obesity	Olanzapine (Zyprexa)	May stimulate appetite and increase weight gain	Low
COPD	Long-acting benzodiazepines: chlordiazepoxide (Librium), chlordiazepoxide-amitriptyline (Limbitrol), clidinium-chlordiazepoxide (Librax), diazepam (Valium), quazepam (Doral), halazepam (Paxipam), and chlorazepate (Tranxene); β-blockers, propranolol	CNS adverse effects. May induce respiratory depression. May exacerbate or cause respiratory depression	High
Chronic constipation	Calcium channel blockers, anticholinergics, and tricyclic antidepressant (imipramine hydrochloride, doxepin hydrochloride, and amitriptyline hydrochloride)	May exacerbate constipation	Low

Abbreviations: CNS, central nervous systems; COPD, chronic obstructive pulmonary disease; INR, international normalized ratio; MAOIs, monoamine oxidase inhibitors; NSAIDs, nonsteroidal anti-inflammatory drugs; SIADH, syndrome of inappropriate antidiuretic hormone secretion; SSRIs, selective serotonin reuptake inhibitors.

Beers criteria since 1997, including medications that were added, dropped, or modified.

COMMENT

This study is an important update of previously established criteria that have been widely used and cited.[16,20,22,23,26-29] The application of the Beers criteria and other tools for identifying PIM use will continue to enable providers to plan interventions for decreasing both drug-related costs and overall costs and thus minimize drug-related problems.[9,30] Such tools are also vitally important to managed care organizations, pharmacy benefit plans, and both acute and long-term health care in-

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Table 3. Summary of Changes From 1997 Beers Criteria to New 2002 Criteria

Medicines Modified Since 1997 Beers Criteria
1. Reserpine (Serpasil and Hydropres)*
2. Extended-release oxybutynin (Ditropan XL)†
3. Iron supplements >325 mg†
4. Short-acting dipyridamole (Persantine)‡
Medicines Dropped Since 1997 Beers Criteria
Independent of Diagnoses
1. Phenylbutazone (Butazolidin)
Considering Diagnoses
2. Recently started corticosteroid therapy with diabetes
3. β-Blockers with diabetes, COPD or asthma, peripheral vascular disease, and syncope or falls
4. Sedative hypnotics with COPD
5. Potassium supplements with gastric or duodenal ulcers
6. Metoclopramide (Reglan) with seizures or epilepsy
7. Narcotics with bladder outflow obstruction and narcotics with constipation
8. Desipramine (Norpramin) with insomnia
9. All SSRIs with insomnia
10. β-Agonists with insomnia
11. Bethanechol chloride with bladder outflow obstruction
Medicines Added Since 1997 Beers Criteria
Independent of Diagnoses
1. Ketorolac tromethamine (Toradol)
2. Orphenadrine (Norflex)
3. Guanethidine (Ismelin)
4. Guanadrel (Hylorel)
5. Cyclandelate (Cyclospasmol)
6. Isoxsuprine (Vasodilan)
7. Nitrofurantoin (Macrodantin)
8. Doxazosin (Cardura)
9. Methyltestosterone (Android, Virilon, and Testrad)
10. Mesoridazine (Serentil)
11. Clonidine (Catapres)
12. Mineral oil
13. Cimetidine (Tagamet)
14. Ethacrynic acid (Edecrin)
15. Desiccated thyroid
16. Ferrous sulfate >325 mg
17. Amphetamines (excluding methylphenidate and anorexics)
18. Thioridazine (Mellaril)
19. Short-acting nifedipine (Procardia and Adalat)
20. Daily fluoxetine (Prozac)
21. Stimulant laxatives (may exacerbate bowel dysfunction (except in presence of chronic pain requiring opiate analgesics)
22. Amiodarone (Cordarone)
23. Non-COX-selective NSAIDs (naproxen [Naprosyn], oxaprozin, and piroxicam)
24. Reserpine doses >0.25 mg/d
25. Estrogens in older women
Considering Diagnoses
26. Long-acting benzodiazepines: chlordiazepoxide (Librium), chlordiazepoxide-amitriptyline (Limbitrol), clidinium-chlordiazepoxide (Librax), diazepam (Valium), quazepam (Doral), halazepam (Paxipam), and chlorazepate (Tranxene) with COPD, stress incontinence, depression, and falls
27. Propanolol with COPD/asthma
28. Anticholinergics with stress incontinence
29. Tricyclic antidepressants (imipramine hydrochloride, doxepine hydrochloride, and amitriptyline hydrochloride) with syncope or falls and stress incontinence
30. Short- to intermediate- and long-acting benzodiazepines with syncope or falls
31. Clopidogrel (Plavix) with blood-clotting disorders receiving anticoagulant therapy
32. Tolterodine (Detrol) with bladder outflow obstruction
33. Decongestants with bladder outflow obstruction
34. Calcium channel blockers with constipation
35. Phenylpropanolamine with hypertension
36. Bupropion (Wellbutrin) with seizure disorder
37. Olanzapine (Zyprexa) with obesity
38. Metoclopramide (Reglan) with Parkinson disease
39. Conventional antipsychotics with Parkinson disease
40. Tacrine (Cognex) with Parkinson disease
41. Barbiturates with cognitive impairment
42. Antispasmodics with cognitive impairment
43. Muscle relaxants with cognitive impairment
44. CNS stimulants with anorexia, malnutrition, and cognitive impairment

Abbreviations: CNS, central nervous system; COPD, chronic obstructive pulmonary disease; COX, cyclooxygenase; NSAIDs, nonsteroidal anti-inflammatory drugs; SSRIs, selective serotonin reuptake inhibitors.

*Reserpine in doses >0.25 mg was added to the list.

†Ditropan was modified to refer to the immediate-release formulation only and not Ditropan XL and iron supplements was modified to include only ferrous sulfate.

‡Do not consider the long-acting dipyridamole, which has better properties than the short-acting dipyridamole in older adults (except with patients with artificial heart valves).

stitutions. However, to remain useful, criteria must be regularly updated and must take into account the ever-increasing, evidence-based literature in the area of medication use in older adults.

The argument in favor of using explicit criteria in prescribing practice is overwhelming: improvements in therapeutic practices and reduction in medication-related ADEs will increase the quality of care and enhance patient outcome at the same time as optimizing resource utilization and promoting fiscal prudence. These criteria, though widely used, have been controversial because of their adoption by nursing home regulators and have been criticized at times as too simplistic and limiting the freedom of physicians to prescribe.[31-35] However, we believe that thoughtful application of the updated 2002 Beers criteria and other tools for identifying PIM use can enable providers and insurers to plan interventions aimed at decreasing drug-related costs and overall health care costs, while reducing ADE-related admissions in elderly patients[9,30] and improving care. The updated Beers criteria will enable everyone from individual physicians to health care systems to integrate the new criteria-based prescribing recommendations into their organic, mechanical, and electronic information systems.

The proponents of explicit criteria and evidence-based prescribing are among the biggest players in the health care industry: the IOM, the CMS, the Agency for Healthcare Research and Quality (AHRQ), and the American Association of Health Plans (AAHP), to name but four.[36,37] Indeed, finding a voice of dissent is challenging. In "Crossing the Quality Chasm" the IOM[38] presents a template for the future, when the traditional values of physician integrity, altruism, knowledge, skill, and dedication to lifelong patient care are seamlessly integrated into an information era of point-of-care, computerized decision support that facilitates appropriate care using the available resources. The updated Beers criteria are one component of that movement, enabling all parties, from providers to insurers, to integrate our recommendations into their clinical information systems.

Given the aforementioned, there appears to be a potential niche for the Beers criteria in fulfilling the missions of the IOM, CMS, AHRQ, and AAHP. However, translating research into measurable quality improvement may be more challenging. In the first instance, despite the much-lauded public statements about quality by many (including the above organizations), there is widespread recognition that perhaps cost containment is the principal driver of change in the health care world.[39] Individual health care providers and organizations will demand objective evidence that implementation of the updated Beers criteria (or, indeed, other inappropriate medication guides) will result in objective, quantifiable improvements in the clinical effectiveness and cost-effectiveness of health care services. To date, despite extensive literature demonstrating association—based on retrospective studies on administrative data—there is an absence of rigorous, prospective research in this field. We (D.M.F., J.L.W., and J.R.M.) are completing a randomized controlled study among a Medicare managed care population at this time, using the 1997 medication criteria for older adults. Well-controlled studies are needed that show prospectively that using these criteria make a difference in patient outcomes.[31]

These criteria have some limitations, however, and must be regularly updated to remain useful to both clinicians, health care administrators, and researchers. These criteria are meant to apply to the general population of patients 65 years and older, thus some that are not appropriate for significantly older or more frail persons do not appear in this list. These criteria are not meant to regulate practice in a manner to which they supersede the clinical judgment and assessment of the physician or practitioner. In addition, defining inappropriate medications by specific lists of medications rather than other mechanisms may miss some problems such as the underuse and interactions of drugs in older people.[26,40] A true meta-analysis was not conducted for this study. Lastly, this study has the same limitations previously documented regarding the use of the Delphi technique.[25,41]

A further challenge to adoption of the Beers criteria will come from the information systems and information technology sector. Despite phenomenal advances in hardware and software, decision support systems continue to have significant limitations, and presenting the right information to the right person at the point of clinical need remains a challenge for the information systems and information technology engineer, the behavior change specialist, and the medical profession.[42]

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Corresponding author and reprints: Donna M. Fick, PhD, RN, Center for Health Care Improvement, Department of Medicine, Medical College of Georgia, HB 2010, 1467 Harper St, Augusta, GA 30912 (e-mail: dfick@mail.mcg.edu).

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Correction

Error in "Results" Section. In the Original Investigation by Fick et al titled "Updating the Beers Criteria for Potentially Inappropriate Medication Use in Older Adults," published in the December 8/22 issue of the ARCHIVES (2003; 163:2716-2724), an error occurred in the "Results" section on page 2720. The second full sentence in the left column should have read "Reserpine was changed to be avoided only at doses greater than 0.25 mg, and disopyramide phosphate avoidance now only refers to the non–extended release formulation." This correction was made previously to online versions of this article.

- **Letters of Appreciation and Feedback Rating for Medication Information and Training Programs Completed in 2007**
- **Letters of Requests for Additional Educational Sessions and Training Programs**

NARFE
National Active and Retired Federal Employees Association

410 Magellen Avenue, Apt 602
Honolulu, HI 96813-1853

1518 (Kaimuki Chapter)

December 12, 2007

Joy Higa, Pharm.D.
45-267 Pahikaua Street
Kaneohe, HI 96744-2347

Dear Joy:

From a grateful and impressed group of federal retirees, please accept our sincere "mahalo nui loa" for your interesting presentation today at the Oahu Country Club. Membership in NARFE (National Active and Retired Federal Employees) Association is a cross-section of active and retired personnel from the various federal agencies not only in Hawaii but worldwide.

Joy, this is no "oseiji/hoomalimali" – your Power Point presentation and talk on medications was exceptional in many ways. It was straightforward and crystal clear. It was well planned and equally well presented. No program in months has met such an attentive reception or produced so much enthusiastic comment on the part of our members. You made each attendee more conscious and aware the importance of checking before taking any medications. It was a good "wake-up call" to educate us in the maintenance of our health.

As soon as you send the documents to Winnie Nakamura at win888@hawaiiantel.net, she will disseminate to the members who have e-mail capability. Frances Shirota, President-Elect, will make copies of the document for distribution to other members and guests.

Again, on behalf of the members of the Kaimuki Chapter, please accept our gratitude and thanks.

Sincerely,

[redacted]

Barbara T. Ricketts
President

YAHOO! MAIL Classic

Print - Close Window

From: "winnie nakamura" <win888@hawaiiantel.net>

To: "Joy Higa" <joy_higa@yahoo.com>

Subject: Re: handouts for members

Date: Fri, 14 Dec 2007 05:55:33 -1000

Joy, enjoy your well-deserved vacation. I have e-mailed to about 10 who provided me their e-mail addresses.. Yes, let's keep in touch.

Aloha nui,
Winnie

---- Original Message ----
From: Joy Higa
To: winnie nakamura
Sent: Thursday, December 13, 2007 10:31 PM
Subject: Re: handouts for members

Winnie,
Wow, you sure keep busy, even if you are retired. I am leaving for vacation tomorrow and won't be back to after the new year. I would love to help your group out, but need to find out how many attendees so that I can write to the university or other organization to support my efforts. Lets keep in touch and I will be back on Jan 2, 2008.
Aloha,

winnie nakamura <win888@hawaiiantel.net> wrote:

> Joy, it certainly was a pleasure meeting you yesterday. Your presentation was superb and the feedback from the attendees was overwhelming. Arigato!
>
> Appreciate your promptness in sending the attachments. I will e-mail to those members who provided me their e-mail address. Others indicated that they will send me their e-mail address. There were a number of members who do not have e-mail capability, but signed up to obtain information. This list was provided to Frances Shirota, newly installed President-elect. Frances will ensure that copies are made of the documents and distributed accordingly.
>
> Joy, could you mail me couple of your business card as well as a biography? I would like to suggest to our Kailua Christian Church support group coordinator as well as to the President of our Kailua Senior Citizens to ask you to speak to these groups. The KCC support group meet on a Saturday at 9:30 a.m. The Kailua Senior Citizens meet every Tuesday at 9:30 a.m.
>
> Again, mahalo nui loa.
>
> Winnie Nakamura
> Advisor, NARFE Kaimuki Chapter
> (former secretary to the Commanding General at Tripler Army Medical Center; retired Protocol and Community Relations Officer at Tripler)
> a "has been" (president of the Kaimuki Chapter, NARFE, and 2d VP for the NARFE Federation of Chapters,
> Telephone: 261-6181 (home); 256-9154 (cell)
>
> > ---- Original Message ----
> > **From:** Joy Higa
> > **To:** win888@hawaiiantel.net
> > **Sent:** Thursday, December 13, 2007 10:22 AM
> > **Subject:** handouts for members
> >
> > Hi Winnie,

YAHOO! MAIL Classic

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Subject: Fall Prevention Conference Tuesday, October 23rd ...REMINDER

Date: Wed, 3 Oct 2007 08:36:01 -1000

From: "Michaels, Stanley J." <stanley.j.michaels@doh.hawaii.gov>

To: rutiz@hanabuildingprogram.com, JCINTER@cfs-hawaii.org, food_for_you@hotmail.com, joy_higa@yahoo.com, ridley@hawaii.rr.com, dnakamae@hawaii.edu, bonnie@grahambuilders.com, keith@pacmedhawaii.com, lavonda@mee-lee.com, ecorpuz@isi-hawaii.com, jpietsch@hawaii.edu, kevin@ohanapacificrehab.com, kmiles@queens.org, mcompton@kkv.net, moisrctr@hawaii.rr.com, ec.pua@hawaiiantel.net, kmiles@queens.org

CC: ektash@doh.hawaii.gov, lester.matsumoto@doh.hawaii.gov, curtis.inouye@doh.hawaii.gov, kenneth.fukuhara@doh.hawaii.gov

Aloha All,

Our sincere thanks for your upcoming participation. Just a quick reminder to all presenters.

PANELISTS....Eric is in the final stages of conversations with Dr. Berg, your moderator. We will email the question she will pose...very soon.

PRESENTERS...**We must have a copy of your Power-Point presentation in my office by Tuesday, October 16** for me to deliver to the Sheraton to pre-load onto **their** laptops and projection equipment for your presentation.

Sheraton will load and immediately discover if there are any compatibility problems with your particular file. I would hate for you to discover that on the morning of the conference. There will be a host from the DOH at your specific session to assist you with announcements, keeping track of time, and to formally introduce you to your attendees. You will have a special table marked PRESENTERS/VIPS to check in where you will pick up your folder, badge, etc. and where you can have your Sheraton parking validated for free.

We want this to be seamless for you and to allow you to do your best. So please make a copy of your PowerPoint, copy it onto a CD, and mail to me ASAP please...! (address below) You cannot convert to a PDF and email as that may severely restrict your ability to project the slides you wish. I need a copy of your PowerPoint on CD or thumb/stick/flash drive.

My extreme thanks to Rick and Gene whose PowerPoint files have already arrived. Looking forward to the 23rd.

Please call 587-5667 immediately if you have any difficulty meeting this deadline.

Mahalo...

Stan Michaels
Injury Prevention and Control Program
Hawaii Department of Health
1250 Punchbowl St, Room 214
Honolulu, HI 96813
(808) 587-5667

Fall Prevention: Implementing What Works
October 23, 2007

Evaluation Summary for: **JOY HIGA - The Relationship of Falls and Your Medications**

		Strongly agree 1	Agree 2	Disagree 3	Strongly disagree 4	Doesn't apply 5	Blank	Total
1	The material was well organized and presented clearly	27 (60%)	17 (38%)	1 (2%)	0 (0%)	0 (0%)	0 (0%)	45
2	The presenter was knowledgeable about the topic	35 (78%)	10 (22%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	45
3	The presenter was effective in engaging the audience	27 (60%)	18 (40%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	45
4	The presentation was interesting	28 (62%)	17 (38%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	45
5	The material presented was new to me	21 (48%)	18 (40%)	4 (8%)	1 (2%)	1 (2%)	0 (0%)	45
6	The presentation was a significant learning experience to me	24 (53%)	18 (40%)	3 (7%)	0 (0%)	0 (0%)	0 (0%)	45
7	I will be able to apply what I've learned in this presentation	25 (56%)	20 (44%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	45
8	I would recommend the presentation to others	27 (60%)	18 (40%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	45

9 Comments or suggestions?

Great session! Very informative
Dr. Higa is very good at reviewing what is known as well emphasizing new information. Very knowledgeable of medications and responded to all questions comprehensively. 3

Invited her to speak to our 100 CMs @ DDD CMSB
More info on stats in HI would be helpful / More about alcohol/meds/falls
Explain medical terminology: eg hypotension (orstatic); half life; TIA; ataxia
Too much focus on anemia -- not enough on medication. 5

Too short! 1

Handout with your excellent slides!
Need copies to read again & share to co-workers about all the topics.
Please provide handouts. Anemia! - Interesting
...needed to have highlighted handouts -- like last slide "clinical accepted strategies, etc."
Handouts would have been very helpful to prevent ↑ notetaking so audience could... listen... attentively
Is it possible to obtain a soft copy of Dr. Higa's presentation -- JGROPPENBACHER@hhsc.org Mahalo!
Jennifer Gorppenbacher, Social Services, Leahi Hospital 11

Drilling - very disturbing. Room isn't completely noise free. Heat activity in neighboring room. Jack hammer noise - detracted from presentation. Hotel needs to better schedule work. Noise in adjoining room very distracting, plus drilling. Speakers need to use microphones correctly. Great speaker & presentation. Unfortunately, repairs interfered. (very annoying noise!) 4

"*Kohatsu, Clare C.*" <*clare.kohatsu@doh.hawaii.gov*> wrote:

Hi, Joy. Congratulations on your great winning record this HTL season! You and your team did well during the season.

Anyway, I met with Sharon Pang from the Association of Residential Care Administrators (ARCA), who is setting up ARCA's annual training day for their residential care home members. The Expo will be on July 28, 2007 (Saturday) at the Ala Moana Hotel. Sharon is looking for speakers for 50 minutes breakout sessions. I did tell her that in polling the OHCA Licensing Section regarding issues from care home inspections, medication administration and documentation was an area of concern. Proper time intervals for daily multidose medications and documentation on PRN medications was brought up by OHCA staff.

If you are available to assist the association on this training day, please let me know and I will forward your e-mail to Sharon . Don't feel pressured in any way regarding this. I'm not involved with this organization, but met with Sharon to assist her with possible topics and speakers. Mahalo and best regards.

Clare Kohatsu
Office of Health Care Assurance
1250 Punchbowl Street , Room 340
Honolulu, HI 96813
Phone: 586-4080
Fax: 586-4090
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