TIMER©: Tool to Improve Medications in the Elderly via Review

Confirm all current medications, including Prescription, Herbal remedies, Vitamins, and OTCs, and how patients are taking them

A. SAFETY *(Determine if there are any adverse effects or potentially inappropriate medication)*

1. **SCREENING FOR INDICATIONS** (A) Does every medication have an indication?
(B) Is every indication being treated?

2. **SCREENING FOR SYMPTOMOLOGY** Determine if symptoms are attributable to allergy, side effect or adverse drug events. (Weingart SN, et al. Arch Intern Med. 2005 Jan 24; 165(2):234-40.)

A. "Tell me about any symptoms that you may have been experiencing in the last few months."
B. "In the past few months, have you experienced any of the following symptoms?" If symptoms are present, evaluate if related to medication

- Headache/pain
- Problems with sleep
- Change in mood
- Muscle aches
- Fatigue
- Dizziness/balance problems
- Hives/rash
- Stomach or gastrointestinal
- Incontinence/urinating prob-
- Sexual problems

3. **SCREENING FOR ADVERSE DRUG EVENTS** "Describe what side effects, unwanted reactions or other problems you may have experienced from medications in the last six months."

4. **SCREENING FOR POTENTIALLY INAPPROPRIATE MEDICATION OR COMBINATIONS DRUG INTERACTION**
Review medications for potential drug interactions, including the top drug interactions below based on prevalence and risk of adverse event.

Object Drug	Precipitant Drug	Prevalence[1] 1-10, 1 is most prevalent
Warfarin	NSAIDs	1
Warfarin	Sulfa Drugs	2
Warfarin	Macrolides	3
Warfarin	Quinolones	4
Warfarin	Phenytoin	5
ACE inhibitors	Potassium supplements	6
ACE inhibitors	Spironolactone	7
Digoxin	Amiodarone	8
Digoxin	Verapamil	9
Theophylline	Quinolones	10

Reference: [1]M3 Project (Multidisciplinary Medication Management Project), Lesher, BA, "Clinically Important Drug Reactions", Prescriber's Letter 2004 Jun, 11: Detail-Document #:200601

Object Drug	Precipitant Drug	Risk of Adverse Event[2] 1-10 , 10 is greatest risk
Carbamazepine	Propoxyphene	8.4
Thiopurines	Allopurinol	8.0
Warfarin	Sulfinpyrazone	7.2
Benzodiazepines	Azole antifungal agents	7.0
Pimozide	Macrolide Antibiotics	6.0
Nitrates	Sildenafil	6.0
Warfarin	Fibric Acids	6.0
Warfarin	Cimetidine	6.0
Ergot Alkaloids	Macrolide Antibiotics	5.8
Pimozide	Azole antifungal agents	5.6
Anticoagulants	Thyroid hormones	5.6
Anticoagulants	Salicylates	4.8

Reference: [2]Malone DC, et al. J Am Pharm Assoc (Wash DC). 2004 Mar-Apr; 44(2):142-51.

5. **SCREENING FOR DRUGS TO BE AVOIDED IN THE ELDERLY** Review Beer's list "Drugs to be Avoided in the Elderly"

6. **SCREENING FOR DRUG DUPLICATIONS** Review ALL medications, including OTCs to confirm that there is no inappropriate therapeutic duplication. Pay particular attention to multiple narcotics, multiple NSAIDs, and combination products containing analgesics. Ensure that duplicate usage is consistent with practice.

RECOMMENDATION
If any safety indicator is present, especially if it is a change within the last 6 months, action is required.

Potential Course of Action
1. Discontinue drug and recommend alternate drug therapy to physician
2. Educate patient about what to watch for and what action to take.

B. ADHERENCE *(Determine adherence by asking screening questions and reviewing dispensing records)*

SCREENING FOR NONADHERENCE (Horne R, Weinman J. J Psychosom Res. 1999;47:555-67. Morisky et al. Med. Care 1986:24:67-74.)

Select from: Never, Rarely, Sometimes, Often, Very Often

1. "Everyone forgets to take their medications. How often does this happen to you?"
2. "Everyone says that the miss out a dose of their medication or adjust it to suit their own needs. How often do you do this? Why?"
3. "Has your physician told you to change how you take any of your medications?"
4. "Has your physician told you to stop taking any of your medications?"

RECOMMENDATION
1. If forgetful, consider adherence aids with reminder ques such as medication boxes or alarms.
2. If intentional nonadherance, determine cause and provide patient education to address need/effects of medications or need/effects of illness.

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C. ATTAINING THERAPEUTIC GOALS

1. **SCREENING FOR CARDIOVASCULAR RISK MANAGEMENT**. Major risk factors for coronary heart disease (CHD), exclusive of LDL Cholesterol that modify LDL goals. Predetermined: Increasing age (men >45years, women >55 years), Male sex , Family history of premature CHD (CHD in male first degree relative <55 years; CHD in female first degree relative <65 years). Modifiable: Smoking, high blood cholesterol, hypertension (BP >140/90 mmHg or on anti-hypertensive medication), physical inactivity, obesity, diabetes mellitus, low HDL cholesterol (<40 mg/DL, HDL cholesterol >60 mg/dL counts as a negative risk factor and removes one risk factor from the total count.).

EVALUATE TREATMENT GOAL Obtain the following information and test results, reviewing clinical values and cardiovascular risk. Note: The Framingham risk equation attempts to determine percent risk of a heart attack or stroke over 10 years and is available at: http://hin.nhlbi.nih.gov/atpiii/calculator.asp?usertype=prof

CHD Risk Equivalent: Clinical CHD, Symptomatic carotid artery disease, Peripheral arterial disease, Abdominal aortic aneurysm

Diagnosis	Cardiovascular Risk Category	Treatment Goal			
		Lipids: LDL	Lipids: Non-LDL (Total-HDL)	Blood Pressure	HbA1c
Diabetic	Diabetes is considered a CHD risk equivalent	<100 mg/dL		<130/80 mmHg	<7.0%
Non-Diabetic	Coronary Heart Disease (CHD) and CHD risk equivalent (10-year risk for CHD >20%)	<100 mg/dL	<130 mg/dL	<140/90 mmHg	
	Multiple (2+) Risk Factors (10-year risk ≤ 20%)	<130 mg/dL	<160 mg/dL		
	0-1 Risk factor (10-year Risk Factor <10%)	<160 mg/dL	<190 mg/dL		

Reference: American Diabetes Association. ATPIII Guideline National Cholesterol Education Program (NCEP). JNC-7. American Heart Association.

B. RECOMMENDATION
If the patient has not achieved the recommended goal, action is required.

Potential Course of Action
1. Consider non-adherence to current therapy and/or under-treatment.
2. Consider need for additional or alternative therapy, and recommend

2. SCREENING FOR COMPLICATION MANAGEMENT ***(review potential complications)***

A. Determine the presence or absence of syndromes by asking, "Describe how you have been feeling lately?"
B. Review common geriatric syndromes and rule out drug-induced causality.

Common Syndromes		Drug-Induced Causes	Potential Course of Action
Pain* 0-10 Numeric Pain Intensity Scale	Mild 1-3/10		1. Clarify the type of pain the patient is experiencing. 2. Recommend acetaminophen. 3. Non-opioid analgesics, fixed dose ***
	Moderate 4-6/10		Opioid (consider adjunct analgesic)
	Severe 7-10/10		Refer to guideline for 24 hour and breakthrough pain management***
Constipation Determine frequency of combinations with drugs producing anti-cholinergic effects.		Opioids, Acetaminophen-NSAID combinations*** Anticholingerics	1. Reduce drug-induced causes 2. Recommend bowel regimens utilizing osmotic laxatives and/or stool softeners, lower dose bulk forming agents with adequate liquid intake**
		Calcium supplementation**	
Muscular soreness and stiffness		Statins	1. Recommend acetaminophen for musculoskeletal pain. 2. Avoid multiple NSAIDs.
Osteoporosis		Corticosteroids	1. Recommend measure bone density scan and treat accordingly (use supplements to prevent bone loss and rebuild bone). >age 50 need 1200 mg calcium daily and daily vitamin D at age 51-70 400 IU and > age 70 600 IU. 2. Refer patient to physician
Falls		Analgesics, antipsychotics, benzodiazepines, anticonvulsants, antparkinson agents, antidepressants, cardiovascular agents (including diuretics, anti-arrhythmic***), oral hypoglycemics**	1. Identify individuals likely to fall, based upon review of inappropriate medication or combination screening. 2. Discontinue or modify drug regimen. 3. Utilize assistive devices, fall prevention programs, exercise to improve strength.

C. RECOMMENDATIONS
If drug-induced causes, action must be taken.

Potential Course of Action
1. Discontinue drug and recommend alternative drug therapy to physician.
2. Educate patient about what to watch for and what action to take.

D. COST AND COVERAGE (generic and therapeutic substitution)

Screen if patient has Rx insurance and consider formulary considerations. Upon review, determine if a lower-cost product would be appropriate.

References: Core competencies for the care of older patients: recommendations of the American Geriatrics Society. The Education Committee Writing Group of the American Geriatrics Society. Acad Med. 2000 Mar;75(3):252-5. *Koda-Kimble, Mary Anne, Yee Young, Lloyd, Kradjan , Wayne A., Guglielmo, B. Joseph, Alldredge ,Brian K., Corelli, Robin L., 2005, *Applied Therapeutics: The Clinical Use of Drugs*, 8th Edition, Lippincott Williams & Wilkins, Philadelphia. ** Delafuente JC, Stewart RB, eds. Therapeutics in the elderly. 3rd ed. Cincinnati:Harvey Whitney Books Co., 2001. *** J Am Geriatr Soc. 1998 May;46(5):635-51. The management of chronic pain in older persons: AGS Panel on Chronic Pain in Older Persons. American Geriatrics Society.