1-1-1997

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Abstract

Currently 12% of the population are over the age of 65 and receive more than one third of all prescription medications. These clients are at risk for polypharmacy which defined in the current literature is greater than four or more medications taken on a daily basis (this includes prescription and over the counter (OTC) medications). Polypharmacy places a client at increased risk for adverse drug reactions which can lead to injury and death. This survey of 109 Nurse Practitioners (NPs) identified whether older adults were assessed for polypharmacy. The number of respondents was 64, or 59%. During routine history and physicals 94% of the NPs asked their clients about prescription medications. Eighty one to eighty six percent inquired about at least five commonly used OTC medications and tobacco use. Ninety two percent asked clients if they knew how and when to take a particular medication, yet only 50% asked clients if they knew which side effects to report; whether or not they could afford a prescription; or who was actually responsible for administering a medication. This study identified interventions that when applied to the NP's practice can decrease the incidence of polypharmacy in the older adult.

Identifying Polypharmacy in the Older Adult:

A Survey of Nurse Practitioners

Purpose of the Study

Approximately 12% of the population are over the age of 65, yet greater than 33% of all prescription drugs are taken by older adults. The average number of medication prescriptions given to an elderly person is 13-15 per year, and sometimes as many as 17. Death, hip fractures, mental impairment, and neuroleptic-induced parkinsonism can occur as both a direct or indirect result of adverse drug reactions in the elderly.[1,2] The risk for adverse drug reactions rises with an increase in the number of medications. This multiple number of medications is referred to as polypharmacy. Polypharmacy is defined by most sources as four to five medications per day. These medications may include both prescription and over the counter (OTC) medicines.

One factor which makes single medication and multiple medications dangerous as a person ages is a decrease in organ function, therefore requiring smaller dosages to manage disease states. The Department of Health and Human Services[3] calls on physicians, nurses, pharmacists and other health care providers to help reduce the risk of adverse drug reactions in the older adult through careful reviews of medication use and client counseling. As primary caregivers are asked to see a greater number of patients per day, standardized assessment forms are a convenient tool to guide the routine history and physical exam. Although they are designed to obtain the necessary data to assess mental and physical function, they often do not include questions relating to the special needs of the elderly, such as polypharmacy, elder abuse, cognitive function, depression, or subtle changes in sensory perceptions. Many altered system

dysfunction's are a direct result of medication side effects but are often attributed to the belief that these are normal progressions of old age.

The purpose of this study was to determine if the Family and Adult Primary Care Nurse Practitioner (NP) assess clients over the age of 65 for the risk of polypharmacy. The results of the study obtained important information that can be applied to the care of the older adult. If NP's are aware of the problems related to polypharmacy in the older adult, many adverse drug reactions which may result in injury or death can be avoided.

Literature Review

A high incidence of adverse drug reactions and drug interactions occur with polypharmacy in the elderly client.[2] When two drugs are taken, the potential for an adverse drug interaction is 6%. That risk increases to 50% when five drugs are used, and up to 100% with eight or more drugs in the regime.[1] The risk of adverse effects from medications is two to three times higher in the elderly client. A change in an older adult's level of functioning is often the earliest sign of an adverse medication effect.[4] Ten to thirty percent of geriatric hospital admissions are due to medication toxicity and 1 of 1,000 older patients admitted to the hospital die of an adverse drug reaction.[5]

Current literature identifies several factors which influence the risk of polypharmacy in the older adult. Nurses who provide care to the older adult are in an ideal situation for promoting the safe use of medications.[1] As primary care providers, NPs have the opportunity to identify unsafe or inappropriate medication use in the older adult population. It is noted that organ dysfunction is not directly related to chronological age, yet may be one factor which influences an increased risk for drug related problems.[6] Renal insufficiency will increase blood levels of drugs

eliminated by the kidney, with non-steroidal anti-inflammatories (NSAIDs) and angiotensin-converting-enzyme (ACE) inhibitors being two of the many drug categories for concern. Since the elderly client is also more susceptible to cardiac arrhythmia's, Digoxin and other positive inotropic agents must be monitored.[7] To identify true renal function, both creatinine clearance and serum creatinine levels must be monitored.[6] Dosages of drugs excreted by the kidney should be reduced if the patient has lost 30% or more of their kidney function.[2] If a drug requires renal clearance and only the young adult dosage is known, a formula known as the Cockcroft-Gault formula can be utilized to estimate creatinine clearance.[2,5,6,7]

Clinical drug trials often do not include the older adult creating a deficit of information about the efficacy and safety of drugs in this population. The actual incidence and severity of toxicity are not known until after there has been widespread use.[2,5] To avoid adverse effects, it is best to begin most medications at a low dose and increase slowly as needed. This is especially important with antihypertensive and psychoactive drugs where patient sensitivity may be unpredictable and consequence severe.[5]

Aparasu and Fliginger[8] performed a nationwide cross-sectional survey to estimate the prevalence of inappropriate medication prescribing by office-based physicians for patients 65 years or older. Their findings revealed that office-based physicians prescribed at least one inappropriate medication to approximately 8% of their elderly patients. Their conclusions raised concerns regarding the quality of care for the elderly in ambulatory settings. They suggested that effective educational and regulatory strategies are needed to improve the quality of prescribing for the older adult, with programs such as drug utilization reviews and formulary management implemented to safeguard against inappropriate use of prescription drugs.

Many of the major drug groups need to be carefully monitored in the older adult. Gambert, Grossberg and Morley[6] identified many common drug related problems including: (a) bleeding dysfunction, (b) gastrointestinal (GI) bleeding, (c) orthostatic hypotension, (d) hypoglycemia, and (e) malnutrition. Bleeding dysfunction can be accentuated if there is an alteration in nutritional status, or if the client does not avoid certain foods known to interact with anticoagulants. If the client is at significant risk for falls, the risk of bleeding complications may outweigh the benefits of therapy. NSAIDs pose a risk for both GI bleeding and renal insufficiency.[6,7] Orthostatic hypotension can be associated with changes in barorecptor sensitivity, venous valvular incompetence, dehydration, or drugs with anticholinergic or antiadrenergic activity, such as tricyclic antidepressants. Hypoglycemia may be related to underuse of oral hypoglycemic agents by physicians as they are concerned about hypoglycemia in the older diabetic patient. Hyperglycemia causes confusion and cognitive dysfunction which leads to poor compliance. Gambert, et al.[6] suggested once daily dosing of oral hypoglycemics to reduce the risk of side effects. Malnutrition can be due to the side effects of certain antidepressants and most anticholinergic drugs. Significant weight loss has been associated with fluoxetine, and anticholinergic drugs can interfere with digestion.

Eliminating unnecessary medications and replacing fixed-combination drugs to simplify the clients drug regime were also recommended by Gambert, et al.[6] They suggest a drug review with the client bringing in his medications from home and eliminating those drugs with no medical indication; identify redundancies such as two types of nonsteroidal anti-inflammatories and consider eliminating one of them; dispose of any expired medications; and consider the medical appropriateness of other existing prescriptions. Consider replacing combination medications

such as antihypertensive/diuretic, antidepressant/antianxiety, and antidepressant/antipsychotics with individual components as appropriate.[6]

Hanlon, et al.[9] performed a randomized controlled trial of Clinical Pharmacist interventions in an attempt to improve inappropriate prescribing of medications in elderly outpatients with polypharmacy. Two hundred and eight patients aged 65 years or older with polypharmacy (identified as >5 chronic medications), were studied. Patients in the randomized control group received usual care. This consisted of a clinic nurse reviewing patients' current medications before their visit, the physician visit, and followed by a review of any medications modified during the physician visit with the clinic nurse. Patients in the intervention group received usual care plus clinical pharmacist care. The pharmacist worked with the patient and other health care professionals to design, implement, and monitor a therapeutic plan. The pharmacist formulated prioritized written recommendations based on current medication use and drug-related problems identified when meeting with patients and caregivers. After the physician visit, the clinical pharmacist educated the patient regarding any drug related problems detected and reinforced the physicians' instructions. Patient's compliance was encouraged using medication reminder packages or calendars, and written patient education materials. At the end of one year a 23% reduction of inappropriate prescribing was observed in the experimental group.

Miller[4] identified adverse medication effects that may interfere with function in the older adult. Cognitive impairment can be related to antidepressants, antipsychotics, antianxiety, and other medication types. Urinary incontinence is related to diuretics and anticholinergics. Vision impairment can be a result of digitalis, antiarthritics or phenothiazine. Hearing impairment can be a side effect of mycin antibiotics, salicylates, or loop diuretics. Mobility problems could be

from sedatives, antianxiety agents, antipsychotics or ototoxic medications. Lastly, sexual dysfunction, e.g. impotence, could be from antihypertensives, antipsychotics, antidepressants or alcohol. A nursing goal for the older adult experiencing a change in function as a result of an adverse medication reaction, is to improve their level of functioning. One intervention identified by Miller[4] is to decrease the number of medications, as the possibility of adverse effects is directly related to the number of medications being taken.

Another factor influencing polypharmacy is the client with multiple health problems who sees several physicians and has different medications prescribed by each. That same client may use more than one pharmacy to fill these prescriptions, leaving the pharmacist without a complete medication profile and the risk of missing the potential for drug interactions.[10]

When obtaining a health history it is important to inquire about all non-prescription medications use as well as prescription. Many clients do not think of OTC's as drugs because they do not require a physician's prescription. Non-prescription medications and substances include alcohol, tobacco, vitamins, ophthalmic and topical preparations, and liquid formulations such as cough syrup.[6] Lee[10] suggested asking the client several questions related to non-prescription medications. For example: (a) why do you take this and how often?, (b) do you believe this medication helps you?, (c) who recommended the drug?, and (d) does your physician know you take it? This can also be the time to inquire about alternative medicines.

Over-the-counter medications also contribute to polypharmacy in the older adult. It has been documented that older adults may use twice as many OTC's as prescription medications. OTC's are used for both common daily symptoms as well as for chronic conditions. This is the most common self-care response for adults of all ages. Conn[11] interviewed 186 adults aged 65-99

years to explore those factors which predict the use of over-the-counter medications. Predictors of older adults' use of OTC medications included mood, social relationships, health and demographics. The findings concluded that OTC use and frequency were predicted by the total number of symptoms experienced. These findings were noted as significant to providers as they need to consider the importance a patient's symptoms are in making self-care decisions. The study also noted that patients who saw their physicians more frequently were less likely to self medicate with OTC's than those who did not. Patients who did not see a physician regularly often utilized self-care methods as a substitute for professional health care.[11]

The older adult experiences certain age related changes that are responsible for the alterations in pharmacokinetics and pharmacodynamics. Pharmacokinetic reactions occur when one drug influences the absorption, metabolism, or excretion of another drug. Pharmacodynamic reactions occur when a drug enhances or decreases the actions of another drug or impairs the body's reaction to the effects of another medication.[1] To avoid adverse drug reactions it is important for the primary care provider to give careful consideration when assessing the need for drug therapy, to write careful prescriptions, and to monitor the client for drug efficacy and adverse events. French[2] offered several suggestions to reduce the risk of adverse drug reactions: (a) write safe prescriptions by always starting with the lowest reasonable dose, titrating to the desired effect to achieve therapeutic goals, (b) keep the dosing regime simple, the fewest number of drugs the better, with the least frequent schedule, (c) closely monitor for adverse effects, and (d) consider a change in cognition, affect or behavior to be suspicious. In addition, give the client a portable prescription record with thorough directions for route, dose, time, and adverse effects to report.

In some cases a medication may be indicated for only a short period of time so the provider needs to be careful to stop the drug once it is no longer needed.

Lack of adherence and misuse of medication also occur frequently in the older adult leading to polypharmacy or adverse medication reactions. Multiple medications may be used if the client has financial problems. The client may not seek medical care for needed prescriptions or refills and might take over-the-counter drugs, take another persons medications, or take outdated medications. Clients may also share information about medications that were effective in relieving their own symptoms, encouraging others not to consult with their physicians.[1] Lack of adherence can occur in the older adult as they may not be able to follow the medication regime due to cognitive, functional and social factors. They may forget to take the drug, may have difficulty swallowing pills, or trouble simply opening the bottle of medication. The client may skip doses of certain medications due to unwanted side effects, such as with diuretics, for their own convenience or feeling of self control.[5] Undermedication may occur if the client believes they are cured, or if the medication causes unwanted side effects. Overmedication can occur when a client feels they are not getting better fast enough and take the medication at shorter intervals than prescribed.[1,7]

Many factors to be assessed by nurses include disease conditions, functional limitations and environmental conditions to provide restorative care and functional enhancement to the older adult.[4] Miller[4] identified adverse drug reactions as a less obvious factor which can be subtle or overlooked in older adults. One important nursing intervention is to decrease the potential for harmful drug interactions and increase adherence to the therapeutic regime. Appropriate drug therapy has proven to be beneficial for the older adult with symptom relief, improved functional

capacity, pain control, and reduced illness.[2] The aim for nursing is to improve the safety and quality of life for the older adult, while helping the older adult to perceive themselves as worthy individuals and become more satisfied with their life condition.[1] Nurses can identify the potential for lack of adherence based on factors such as cognitive or sensory impairment, and include safeguards to ensure safe administration of medications. This may include involving a spouse or companion to aid in the administration of medications, or have a large print copy for medication instructions.

Methodology

The target population for this study was recruited through a state organization of Nurse Practitioners' data base. Adult Primary Care and Family Nurse Practitioner members were invited to participate. Over 600 names were listed in this category. A random sampling of study subjects was obtained by using zip codes yielding the final sample of 109 NP's. A letter was mailed to the potential subjects describing the study and requesting voluntary participation. A statement regarding confidentiality for all participants was included. The two page survey included questions regarding demographic data, number of clients over the age of 65, and specific questions related to standard of practice when considering pharmacological intervention in the elderly client. Participants were encouraged to give feedback regarding the survey tool and make comments related to the subject matter (see Appendix A for survey tool).

Results

In the final sample of 64 respondents, 38 worked in clinic settings including county, HMO, and OB/GYN clinics; 22 respondents worked in private practice, three worked in urgent care/ER settings, and one NP worked in Occupational Health. The mean number of years worked in their

current setting was 6.52, with 28 of the respondents having worked between 1 and 5 years. Twenty five years was the longest anyone had worked as an NP, with the mean number being 8.84 years. The majority of respondents, 41, had a Bachelor of Science in nursing as their primary education in nursing, 15 respondents had obtained an Associate Degree, 7 obtained Diplomas, and 1 respondent obtained a Masters Degree in Nursing as their primary education in nursing. Eighty percent or 51 respondents had ultimately obtained their Masters Degree in Nursing.

The greatest number of clients over the age of 65 seen by the NP on a weekly basis was 41 or more as stated by 3 of the respondents. Thirty three percent of respondents saw 6-10 clients over the age of 65 per week, 23% saw 11-20, 22% saw 5 or less, and 16% saw 21-40. Sixty eight percent of the respondents said the number of complete history and physicals performed on these clients in one week was 0-2.

Sixty six percent of the respondents used a standardized assessment tool for completing their history and physicals. Of these respondents only 48% acknowledged that the standardized form included a space large enough for listing all of a clients medications. Ninety four percent of the NPs responded that they routinely identified prescription medications when obtaining a client's history. Eighty one to eighty six percent routinely identified their clients use of acetaminophen, ibuprofen, aspirin, inhalers and tobacco. Sixty eight to seventy five percent of respondents also inquired about their clients use of antacids, vitamins, and tobacco, and 50-60% inquired about laxatives, stool softeners, eye drops, cold remedies, topical preparations, and sleep remedies. Thirty six to forty five percent also included anti diarrhea medications and cough suppressants (see Table 1). With regard to prescription medications, 92% (n=59) of the respondents asked

their clients how and when they take a particular medication, while 75% (n= 48) questioned their clients regarding why the medication was prescribed. Fifty percent or less routinely ask; "Who is responsible for administering this medication?", "can you afford to fill the prescription?", and "do you know which side effects to report to your primary care provider?".

The most frequent lab tests ordered for a complete physical exam were a chemistry panel, including BUN, Creatinine, and liver function studies, a CBC, and TSH levels. Twelve percent or less routinely order Magnesium, B12, Folate, or a VDRL. Three respondents noted they order B12 and folate levels if indicated.

Prior to prescribing a medication 91% (n=58), assess cognitive function of their client. Most of the respondents assessed mobility limitations, nutritional status including dehydration, and swallowing ability. Fifty six percent (n=36) assess urinary incontinence, 50% (n=32) assess for hearing impairment, and 41% (n=26) assess sexual dysfunction or impotence (see Table 2). Of note, additional comments included assessing for sexual dysfunction if a medication being prescribed had a known side effect for this symptom.

With regard to prescribing new medications to an elderly client, 89-95% of the respondents always start with the lowest available dosage, consider single ingredient medications instead of combination medications such as antihypertensive/diuretics, avoid concomitant use of NSAIDs and ASA, and substitute acetaminophen for pain relief when the goal of therapy is pain relief versus anti-inflammatory effects. The majority answered they use long acting formulas to reduce the number of daily dosages such as for calcium channel blockers or oral hypoglycemics. Less than 1/2 of the respondents determine dosage of medications based on body weight (see Table 3).

The vast majority of respondents answered "yes" to questions regarding impaired cognitive function a possible medication side effect, or depression a side effect of multiple medications. Over half reported they were aware that Digoxin, even at therapeutic levels could impair mental status.

Discussion

This study identified many behaviors of the NP when considering medication therapy for their clients. Limitations included variability in individual performance related to practice setting and patient population, and a questionnaire without known psychometric properties. Nationwide research is needed to identify whether or not polypharmacy is identified in the older adult by NPs and other primary care providers. Further research would identify medications most commonly prescribed as well as those noted as having the greatest frequency of side effects. Another area of potential inquiry is related to which methods the NP utilizes to ensure adherence to the prescribed medication regime. These questions may have provided valuable information that could also be used in practice.

As cited in the literature review, not taking medications as directed contributes to the incidence of adverse drug reactions. The results of this study indicate one of the less frequently asked questions regarding prescription medications was identifying the person responsible for administering the medication. Also less frequently asked was whether a client knew which side effects to report to their practitioner. The current literature supports that side effects can be a result of improper drug interactions or result in injury and death.[1,2] This is an important part of client teaching when prescribing any new medication or when reviewing a current medication regime. Affordability can also influence whether or not a client takes medications as prescribed.

Some respondents pointed out they did not ask if the client could afford the prescribed medication as their facility provided for those unable to afford them.

Hanlon et al.[9] suggested that when determining medications and dosing it can be helpful to consult with a clinical pharmacist to decrease the incidence of possible adverse reactions. The NP's participating this survey indicated they consider single ingredient medications when appropriate, begin with the lowest possible dosage, use long acting formulas when able to reduce the number of doses daily, and avoid concomitant use of NSAIDs and ASA. Less than half of the respondents determined dosage based on body weight. It was not determined if they routinely consulted with a clinical pharmacist.

Although 95% of the respondents noted they consider cognitive function as a possible medication side effect, an important unasked question might have addressed which lab tests are considered when a client presents with cognitive impairment. Although the change in cognition could be a medication side effect, it is important to rule out other treatable causes of dementia as suggested by Fretwell.[12] Metabolic disorders not readily identified by a comprehensive chemistry panel such as thyroid disease or poor oxygenation status, can be tested to rule out treatable dementia. Other lab tests rule out central nervous system infections such as syphilis with a VDRL, or an HIV test for HIV dementia. Nutritional deficiencies are tested by obtaining B12, folate and thiamin levels. Medication blood levels may also be indicated for the older adult to rule out the possibility of polypharmacy versus metabolic disorders as a cause for cognitive dysfunction.

Upon review of this study's results, more research is needed to identify specific effects of medications in the older adult. Many clients require what is considered polypharmacy to manage

their disease states, when alternative means may be identified to better manage their care.

Conclusion

In the United States of America, 12% of the population are over the age of 65, yet receive one third of all prescription medications.[3] To insure safe, effective care of the older adult, NP's need to consider the possibility of adverse drug reactions as a result of polypharmacy.

In many cases, the NP is the one who has the opportunity to look at all aspects of a clients' care during a complete history and physical exam. The NP may be the only person who identifies deficits in a clients medical regime and implements an appropriate plan of care. A multidisciplinary approach including the NP, the client, family members or caregivers, pharmacists, physicians and other primary care providers can help eliminate over prescribing of medications for the older adult.

When obtaining the medication history it is important for the NP to include OTC medications and identify why the client is taking these particular medications. This can be a vital piece of information as the client may be self treating a symptom which may require medical attention, or may be using OTC's to treat a prescription medication side effect.

To ensure safe care for our older adult clients, the NP should consider those factors which lead to lack of adherence such as sensory or cognitive deficits, potential unwanted side effects, or the inability to afford the medications prescribed. The NP is obligated to educate their clients about those side effects which need to be reported so appropriate action can be taken to reduce the risk of other adverse reactions. With education and a multidisciplinary approach, NP's can provide the appropriate medication management to facilitate optimal care for our growing aging population.

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Appendix A

GERIATRIC POLYPHARMACY ASSESSMENT SURVEY

Describe your work setting e.g., clinic, private practice... _____

_____

How many years have you worked in this setting? _____

Number of years as an NP? _____

Primary education in nursing:
☐ diploma ☐ associate degree ☐ bachelors degree

Highest level of education in nursing:
☐ associate ☐ bachelors ☐ masters ☐ doctorate

Approximately how many clients aged 65 and over do you see in one week? _____

How many complete history & physical exams do you perform on <u>these</u> clients in one week?

_____

Do you utilize a standardized tool for completing routine history and physical exams?
☐ yes ☐ no

If you use a standardized form, does it include a space large enough to list all of a clients medications?
☐ yes ☐ no

Check those medications and/or substances routinely identified when obtaining a medical history:

☐ eye drops	☐ aspirin	☐ antacids	☐ sleep remedies	☐ inhalers
☐ topical preparations	☐ ibuprofen	☐ anti diarrhea	☐ alcohol	
☐ vitamins	☐ acetaminophen	☐ laxatives	☐ tobacco	
☐ cold remedies	☐ stool softeners	☐ cough suppressant	☐ prescription	

With regard to prescription medications, do you ask the following questions of your clients?

Do you know why the medication was prescribed?	☐ yes ☐ no
How and when do you take this particular medication?	☐ yes ☐ no
Who is responsible for administering this medication?	☐ yes ☐ no
Can you afford to fill the prescription for this medication?	☐ yes ☐ no
Do you know which side effects to report to your primary care provider?	☐ yes ☐ no

OVER

For elderly clients receiving a complete physical exam which of the following lab tests are done?

☐ chemistry panel including BUN, CREATININE, and liver function studies
☐ CBC
☐ Magnesium
☐ B12
☐ Folate
☐ VDRL
☐ TSH

Prior to prescribing a medication do you assess the client for:

☐ Nutritional status, including dehydration
☐ Cognitive impairment
☐ Visual impairment
☐ Hearing impairment
☐ Mobility limitations
☐ Urinary incontinence
☐ Sexual dysfunction, e.g., impotence
☐ Swallowing ability

When prescribing a new medication to an elderly client do you:

Always start with the lowest available dosage?	☐ yes ☐ no
Determine dosage based on body weight?	☐ yes ☐ no
Consider using single ingredient medications, not one included in "combo" e.g., antihypertensive/diuretic?	☐ yes ☐ no
Use long acting formulas to reduce the number of daily dosages e.g., calcium channel blockers, or oral hypoglycemics?	☐ yes ☐ no
Avoid concomitant use of NSAIDs and ASA?	☐ yes ☐ no
Substitute acetaminophen for pain relief if goal of therapy is pain relief vs. anti-inflammatory effects?	☐ yes ☐ no

Do you consider impaired cognitive function a possible medication side effect?

☐ yes ☐ no

Do you consider depression a possible side effect of multiple medications?

☐ yes ☐ no

Are you aware that Digoxin, even at therapeutic blood levels can impair mental status?

☐ yes ☐ no

Thank you for your participation in this study. If you have any additional comments please include them on the back of this page. Your feedback is appreciated.

Table 1

Medication and substances identified during a medical history

% of NP's response (n=64)			
Prescription	94	Sleep remedies	61
Tobacco	86	Topical preparations	56
Aspirin	84	Cold remedies	56
Ibuprofen	83	Stool softeners	53
Acetaminophen	81	Eye drops	53
Inhalers	81	Laxatives	50
Alcohol	66	Cough suppressant	45
Vitamins	66	Anti diarrhea	36
Antacids	64		

Table 2

Prior to prescribing new medications NP's check the following:

	%
Cognitive impairment	91
Mobility limitations	73
Nutritional status	72
Swallowing ability	72
Visual impairment	72
Urinary incontinence	56
Hearing impairment	50
Sexual function	41

Table 3

New Medication Considerations

Item	% " Yes"
Consider single ingredient medications instead of combination medications	95%
Avoid concomitant use of NSAIDs and ASA	95%
Substitute acetaminophen for pain relief when goal of therapy is pain relief versus anti-inflammatory effects	94%
Always start with the lowest dosage	89%
Use long acting formulas to reduce the number of daily dosages	86%
Determine dosage based on body weight	48%