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Case Report: Reducing Polypharmacy in Elderly

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PERMISSION

Title: Reducing Polypharmacy in Elderly

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Abstract

The fast growing in number of elderly in the population is what is causing an increase in the amount of medications prescribed for chronic diseases. Because the chronic disease requires adding medications to treat or stabilize them, the issue of polypharmacy start to emerge. Terrie Y. C. (2014), defines polypharmacy as, "The use of multiple medications by a patient. The number may vary, but generally ranges from 5 to 10." The issue of polypharmacy is of particular concern in older people who, compared to younger individuals, tend to have more disease conditions for which therapies are prescribed. This paper is based on a successful completion of an Objective Structured Clinical Examination (OSCE) and oral defense. A case report was analyzed and the topic, "Preventing Polypharmacy in elderly," was developed. This paper is going to examine this case report highlighting the use of more medications and how it affects elderly patients who are at a greater risk for adverse drug events due to metabolic changes and decreased drug clearance associated with aging and many drugs make it worse. An extensive literature review looking at the definition of polypharmacy, determining the extent and nature of polypharmacy in the elderly, and the effects associated with polypharmacy in general practice. Having a greater understanding that a greater numbers of medications are associated with negative health outcomes will help to further define the effects associated with unnecessary medication use in an elderly patient. Thereby fully evaluating all patient medications at each visit to prevent polypharmacy from occurring.

Background

In our health care system today, polypharmacy among elderly has become a major concern. Elderly with comorbidities, taking multiple medications are at the greatest risk for potential adverse reactions from medications. If elderly patients are taking over-the-counter medications, herbs, and supplements without consulting their primary care provider, they stand at risk of adverse reactions associated with polypharmacy. In connection with the definition, polypharmacy may result from patients visiting multiple providers with prescribing privileges, pharmacies, and continuing to take medications already discontinued by their primary providers. There is a great need for providers to intervene in order to prevent polypharmacy in elderly, by reviewing medication on every visit, gather a through history and conduct a comprehensive system review and physical assessment. Providers should ask open-ended questions regarding all medications that the patient is on including the use of herbal or dietary supplements. In addition, the patient comprehensive patient review and assessment gives providers an opportunity to find out more about any possible adverse reactions patients may be experiencing that may be as a result of medications. Healthcare providers are at an exceptional position as they can detect and intervene early in case of any potentially unnecessary medications and associated adverse drug interactions. Whereas polypharmacy is defined as the use of multiple medications more commonly, more than five to ten, or use of more drugs than are not even clinically indicated and are unnecessary, the effects of polypharmacy on our elderly population is important. Polypharmacy is generally been found associated with poor medication adherence, drug-drug interactions, medication errors and adverse drug reactions which includes falls, hip fractures, confusion and delirium of which has increased the number of emergency room visits and

hospitalization when in essence, this can be prevented (Farrell, Shamji, Monahan, & Merkley, 2013).

The case study in this report involves an 87-year-old female who comes into the clinic for "Follow up after hospital discharge." The patient was in the hospital for three days for UTI and fatigue, also feeling dizzy. History taking revealed, patient lives in ALF, Daughter visits regularly and sets her medications, and has a personal care assistant that checks on her daily. While assessing this patient, I realized that she has dementia and was forgetful with a small element of confusion. She has a history of diabetes, COPD, Anemia, Hypertension, depression and neuropathy. Patient is on twelve different kinds of medication. Today she is complaining of feeling dizzy especially in the morning upon awakening and her blood pressure is 88/40. I question an issue of medication compliance given the number of medication patient is on and comorbidity.

The purpose of discussing this case in this paper is to alert clinicians the need for balancing between over and under-prescribing, especially when they have to prescribe multiple medications to manage clinically complex older adults. In this case, I will focus more on the number of medications and its effects, especially in elderly patients. The case will be used as a model example of a typical elderly patient with chronic conditions and multiple medications, some unnecessary, to show clinicians that there is a need to match the complex needs of older patients with those of disease specific clinical practice guidelines when reviewing medication regimen. The case report will also create awareness to clinicians that, use of a more systemic approach to guide them in modifying medication regimens to the needs of the individual patient while matching medication regimen to the patient`s condition and goals of care are what is needed to prevent polypharmacy in the elderly population. By doing this, clinicians will need to

consider medications that should be discontinued or substituted in every visit as they conduct medication reviews for their patient with a major focus on elderly patients. Considering this case report, I also intend to remind clinicians that they need to reconsider while prescribing or reviewing medication with their patient, the appropriateness of medication late in life. If they have to prescribe late in life, they need to consider the patient`s remaining life expectancy and the goals of care, the need for existing medications and the appropriateness of making the new prescription decision for the patient. Although polypharmacy commonly refers to prescribed medications, considering the use of over the counter medications and herbal supplements when completing the assessment and reviews of medication, is crucial in efforts to prevent polypharmacy.

Case Report

Chief complaint: F/U after hospital discharge.

History of Present illness: E. M is a pleasant 87-year-old Caucasian female who presents to the clinic after a recently discharged from the hospital after a 3 day of stay with UTI and fatigue. Patient today is reporting feeling dizzy and tiredness especially in the morning upon waking or with change of position from laying to sitting. Patient is alert and oriented x3, with some forgetfulness due to dementia otherwise, has good cognition functions for evaluation. Denies any s/sx of UTI during this visit, still has 3 more doses of Nitrofurantoin ER 100 mg left. Of note, patient `s BP today is 88/40, with a heart rate of 50. Patient is on Losartan 50 mg daily with metoprolol 50 mg twice a day. She denies shortness of breath, fevers or chills.

Past Medical History

Dementia, Diabetes, COPD, Anemia, Hypertension, Depression, and Neuropathy

Surgical Hx. Hysterectomy many years ago. Patient unable to provide specific dates

Current medications

Donepezil 5 mg PO daily

Fluticasone proprionate and salmeterol 250/50 1 puff BID

Losartan 50 mg PO daily

Metoprolol 50 mg BID

Gabapentin 300 mg TID

Paroxetine 20 mg PO daily

Quetiapine 200 mg PO BID

Insulin glargine 30 units SQ qhs

Nitrofurantoin ER 100 mg PO BID x 7 days (3 Days left)

Multivitamin PO daily

Iron sulfate 325 mg PO BID

Allergies: NKA

Immunizations

Influenza 11/17/2014

Family History/Personal/Social History:

Patient has a family history of heart disease and HTN but is unable to tell who secondary to dementia. She lives in ALF, Daughter visits regularly and sets her medications, and has a PCA that checks on her daily. Never smoked, no alcohol or illicit drug use.

REVIEW OF SYSTEMS

Constitutional: Reports dizziness and fatigue, denies any syncopal episodes or lightheadedness. Denies any fever or chills, or any problem falling asleep.

Cardiovascular: Denies chest pain, angina or pleuritic pain. Denies any heart palpitations or irregularity in rhythm. No history of heart murmur.

Respiratory: Reports mild SOB with activity, has hx. Of COPD and is on Fluticasone proprionate and salmeterol 250/50.

GI: Denies any changes in appetite, any difficulty swallowing, or chewing. Denies indigestion or constipation, no nausea, vomiting or diarrhea, and no hemorrhoids. No c/o abdominal pain

GU: Denies pain/burning sensation on urination, urgency, frequency, difficulty urinating or incontinence

Musculoskeletal: Independent

Integumentary: Frail skin, bruises easily

All other systems unremarkable, unless noted in the HPI.

PHYSICAL EXAMINATION

VS: BP 88/40, HR 50, Temp 98.6, RR 24, FSBS this morning 107

General appearance: 87-year-old Caucasian female, alert and oriented x3, interactive, and seems to be in no distress. Patient appears to be her age, she is frail and forgetful due to dementia sitting in the chair in no distress stating that she feels much better today compared to when she was in the hospital.

HEENT: Head Normocephalic, atraumatic. Pupils equal and reactive to light. Wears glasses had a routine visit with the eye doctor last week no concerns. Hearing patent although mildly HOH, no hearing aids, no swelling, nares patent bilaterally, No sinus tenderness.

NECK AND THYROID: Supple, no JVD or lymphadenopathy.

CARDIOVERSCULAR: Regular Rate and Rhythm, distant S1S2 heard, no murmurs gallops, or rubs. Trace edema to bilateral lower extremities varicose veins to left extremities wearing compression stocking to bilateral lower extremities.

RESPIRATORY: Lung sounds clear to auscultation in all lung fields. No increased effort in breathing noted no wheezes, rhonchi, or rales.

GI: BS + in all quadrants, no masses palpated, soft, non-tender, no distended, no hepatosplenomegaly.

NEUROLOGIC EXAM: Alert and oriented x3, cooperative. Mood and affect appropriate to situation. Has good cognition functions for evaluation.

SKIN: warm, dry with cool temperature to touch to feet and fingers. Well hydrated, 2 bruises to LUQ from insulin injection.

ETREMITIES: trace dependent edema to bilateral lower extremities, pulses +2 bilaterally. No clubbing.

BACK: Unremarkable

Assessment

1. Polypharmacy
2. Infection
3. Diabetes
4. Medication-induced Hypotension
5. Anemia
6. Hypoglycemia
7. Thyroid

Plan

A plan was developed with the patient based on each diagnosis. In regard to her hypotension with dizziness especially in the morning, it was determined that due to dementia she will benefit more from home care services to help in medication management, it was also determined that this is medication induced Hypotension: metoprolol was decreased to 25 mg PO BID, will continue with Losartan 50 mg daily. Since there was a dose reduction or adjustment, she was educated on common medication side effects especially antihypertensive like metoprolol which included fatigue. She was instructed to continue observing safety when changing positions from lying to sitting due to the potential for orthostatic drug-induced hypotension, and staying hydrated. If symptoms worsen to return to clinic sooner, although will need to be seen again in 2-3 weeks to re-evaluate.

Review of medication was completed in efforts to reduce polypharmacy in this patient. For this visit provider and patient agreed that due to problems with hypotension, it was appropriate to try dose reduction of metoprolol and because she denied pain or any concern, she had been on a high dose of Gabapentin for a long time. It was determined appropriate to decrease metoprolol to 25 mg BID, and decrease gabapentin to 100 mg TID. The effectiveness of this intervention will be reviewed again on the next visit.

For the diagnoses of Anemia, CHF, hypotension, dizziness, lightheadedness, fatigue, diabetes, infection and polypharmacy, lab was ordered to check BMP, BNP, CBC, Iron panel, Thyroid studies and basic EKG for baseline. Results were normal. She will continue with current interventions and reevaluate in subsequent visits. Patient was agreeable to the plan discussed.

A Review of Literature

To better manage the patient in this case study, medication review was completed, to help with the issue of Polypharmacy. A literature review was conducted to determine the best way to reduce polypharmacy in elderly. A search was conducted using the University of North Dakota Harley French Library website. A systematic search of the literature was conducted using the online database CINAHL, Medline, and PubMed. The research articles were generated by utilizing the search entry with the terms of polypharmacy, polypharmacy among the elderly, adverse drug reactions and polypharmacy, and consequences and polypharmacy. After receiving a few research articles, a new search was conducted replacing the term of polypharmacy with multiple medications. These searches generated limited research articles in regard to the topic of polypharmacy. To produce more research articles, the publication dates were modified, which resulted in hundreds of articles to review. Some of the generated research articles were article linkers, which were not available. Of the research articles that were generated, the research articles containing participants < 65 years of age were excluded from the review of literature (ROL). Research articles containing samples of > 65 years of age or older, male and female, prescribed medications, over-the-counter medications, complementary medications, adverse drug reactions, drug-to-drug interactions, and complications associated with polypharmacy were considered for the ROL. The articles in the ROL were chosen based on search criteria and interventions in which valuable methods can be implemented when assessing patients for adverse effects of polypharmacy with the goal of preventing polypharmacy in elderly patients.

Effects of Polypharmacy

Polypharmacy and medication regimen complexities are the factors most commonly associated with most hospital discharge destinations, especially in older adult patients. A great

number of the older population, often use multiple medications, and therefore, clinicians should be trying to help with medication review and taking or eliminating unnecessary medications that predispose them into other risks besides comorbidities. According to a study by Wimmer et al. (2014), high medication regimen complexity was inversely associated with discharge directly to home, while polypharmacy was not associated with discharge destination. Polypharmacy by itself is an independent risk factor for adverse outcomes in elderly patients, including hospitalization, nursing home placement, hypoglycemia, falls, and fractures, malnutrition, pneumonia, and deaths. Older adults make up the largest number of people consuming prescription drugs. They also have decreased tolerance to the effects of medication which puts them at exaggerated effects of medication when compared to younger patients.

Screening and Prevention of Polypharmacy

Older people often experience multiple co-morbidities and are prescribed multiple medications for these conditions. This puts them at an increased risks of adverse drug events, drug-to-drug, and drug-to-disease interactions. The risks increase as their age increases and physiological changes take place which both, have great influence in pharmacodynamics and pharmacokinetics. According to Gallagher & O'Mahony (2008) there are various criteria that have been devised to identify potentially inappropriate medications (PIMs) in older people. These include the Beers`s criteria which has been in use for a long time to detect PIMs and the Screening Tool of Older Persons' inappropriate Prescriptions (STOPP). When compared to the Beers' criteria, adoption of STOPP has been found effective in identifying significantly more PIMs. Adopting STOPP in our practice especially when screening older patients will not only help in screening for PIMs but will be a practice method that can be used to identify adverse drug effects in older people which often present with non-specific symptoms like confusion, falls or

constipation. Although STOPP will not substitute our clinical assessment and judgment, it's very important for clinicians to consider medications as possible causes of most symptoms in older patients. Therefore, in efforts to prevent polypharmacy, if this is born in clinicians` mind, avoidance of unnecessary and potentially harmful cascades like trying to treat extrapyramidal effects of neuroleptic medication in older patients by prescribing an anticholinergic medication would be avoided. Potentially inappropriate prescribing is very common in older patients who present in primary care clinics or in hospitals. Gallagher, et al. (2008), reveals that STOPP criteria, when applied, can identify at least one potentially inappropriate medications in older patients requiring admission to hospital. Identifying adverse effects of inappropriate prescribed medication is very important as this usually contribute to most hospitalization in at least 11.5% of patients when screened with STOPP criteria. STOPP Criteria has been a very effective tool in identifying patients at high risk of inappropriate prescribed medication. According to de Groot et al. (2014), use of STOPP/START in practice by clinicians as one of the assessment tool has shown an increased appropriateness in prescribing especially in the elderly in a clinical setting when administered appropriately.

Efforts to manage polypharmacy is the primary role of practitioners who coordinate patient cares and it is a demanding exercise. To accomplish this, focusing on interventions that aim at improving the implementation of guideline and recommendations for polypharmacy into the practice when individual patient barriers are considered is necessary (Jäger, Szecenyi, & Steinhauser, 2015). A larger number of elderly patients already have multiple chronic diseases for which they are medicated and; taking five or more medications is polypharmacy. If a patient falls into this category, he/she is at a higher risk of potentially avoidable and even potentially harmful adverse drug reactions. To better manage polypharmacy, a multidisciplinary effort and

coordination of multiple prescribers, putting into practice a profound pharmacological knowledge and close monitoring of patients is what is needed. According to Jäger, et al. (2015), these guidelines for preventing polypharmacy in adult and geriatric patients in primary care with a focus on medications process will help greatly in reducing polypharmacy in elderly patients.

i. *Structured medication counseling (SMC).* Providers should give a SMC to patients who are on five medications or more and present with risk factors for medication problems at least once a year. This way a complete inventory of actual medications that patients take and assessment of medication compliance and possible medication-related problems are addressed.

ii. *Consequent use of medication list.* All patients with at least five or more medications should always be encouraged to take with them a complete and updated list of medications patients are actually taking t their appointments.

iii. *Medication reviews to reduce potentially inappropriate medications (PIMs).* A review of patient medications by providers during each visit has been proven as a tool that can provide both explicit and implicit data when trying to find patient compliance to medication. It is recommended that providers regularly review the medication regimen of their patients with identified polypharmacy using a checklist like “medication appropriateness index (MAI)” and or drug-to-avoid lists such as Beer`s in the process of preventing polypharmacy.

Outcomes and effectiveness

Fried, et al. (2014) in their study as part of trying to prevent the issue of polypharmacy, has defined polypharmacy in terms of the number of prescribed medications in elderly persons. While considering age and co-morbidity, reducing polypharmacy considering the number of

prescribed medications patients are taking is crucial. Adjusting patient's medications and or taking away unnecessary medications will bring a better healthcare outcome thus reducing the many cases of falls, fall outcomes, fall risk factors, adverse drug events, hospitalization, mortality and measures of function and cognition. Clinicians need to be aware of polypharmacy, which is considered in terms of number of medication, and the adverse outcome in elderly patients in efforts to prevent polypharmacy in elderly population living in the community.

Adverse drug reactions cause an increased number of morbidity and mortality, especially in elderly patients. Olivia, et al. (2009) while focusing on the effects leading to hospitalization of elderly patients, assessed the incidence of ADRs and its associated factors which lead to hospital admissions in the elderly population, especially those patients aged >/=65 years admitted to the hospital and the result was surprising. Most often ADRs are causes of hospital admission especially for elderly patients due to co-morbidity and presence of chronic diseases. Addressing polypharmacy by primary care providers in each patient`s visits will greatly reduce these hospitalizations which sometimes end up to be fatal. There is a great need for increased availability of information for the general public in regard to potential ADRs related to self-medication, and for clinicians' awareness of ADRs due to drug-drug interactions and polypharmacy to help in fighting polypharmacy especially in elderly population.

According to Williams (2014), older adults are the largest consumers of prescription medications. It is predicted that as the number in age increase so to the number of medication increase. One out of 20 patients is at a high risk of developing a drug-to-drug interaction, with at least half of this interaction from non-prescription medication. Research has also shown that a major and an independent risk factor for adverse outcomes including hospitalization, nursing home placement hypoglycemia, falls with injuries or fractures, pneumonia, malnutrition and

even death in the elderly patients is polypharmacy. Elderly patients don't tolerate well the effects of medications in general. The elderly stand at a greater risk for adverse drug events due to metabolic changes and decreased drug clearance associated with aging which, many medications make worse. Multiple medications in elderly also pose an increased potential for medication to medication interaction, and the possibility of "prescribing cascade" where an adverse drug event will be misinterpreted as a new medical condition and additional medication therapy is then prescribed to treat this medical condition. Multiple medications in elderly too, are the reason for many issues with medication compliance due to changes in vision or cognition in many elderly patients.

Conclusion

According to Planton, & Edlund (2010), Polypharmacy is a major concern in the care of older adults. There are multiple factors that contribute to this issue of polypharmacy, and an initial step in trying to reduce this problem is recognizing these factors. To further reduce the problem of polypharmacy in elderly, efforts to identify individuals at risk for multiple medications, whereas implementing specific strategies in practice, will enable clinicians to develop safe and evidence-based medication regimens that will minimize the risk of adverse drug reactions. Most important in managing older adults is not necessarily trying to find out how many medications they are taking and trying to reduce them, but finding the right medication at the right dosage and for the shortest possible duration on a case-by-case basis is more beneficial. This way clinicians will be much safer and effective in their practice and will improve the quality of life of their elderly patients.

Optimizing therapy for any individual patient may not be as easy or straightforward encounter for most clinicians. This will always be dependent on patient needs and comorbidity.

What makes it harder is the amount of randomized controlled studies that most often involve a single drug without always taking into consideration the confounding effects of various comorbidities and patient preferences. The manner in which clinicians approach prescribing for the younger patient does not always apply well in frail elderly patients who, have several comorbidities such as hypertension, depression, diabetes, myocardial infarction, and even osteoporosis which leads to polypharmacy. To prevent polypharmacy, clinicians need to try an "evidence of a modest reduction in the relative risk of disease-specific outcomes that are associated with individual medications and sometimes a combination of medication" (Kaur, et al. 2009).

An interdisciplinary approach, which would include nurses, physicians, pharmacists, and patients, is needed to effectively manage and reduce polypharmacy and its adverse reactions among the elderly. Although current nursing research material regarding polypharmacy are limited indicated a gap in the number of studies conducted regarding this issue. From the studies reviewed, the results demonstrate that the increasingly health related issue of polypharmacy among the elderly requires the immediate attention of health care professionals who can be pivotal in helping older patients manage their medications while trying to prevent polypharmacy. The best approach to reducing polypharmacy would include; giving clear information to their patient. They need to discuss with patients during visits the need to keep accurate list of all medications, including generic and brand names, dosages, frequency, and why they are taking medication. Patients should be informed that it is important to keep a complete list of providers they see, and local pharmacies they use. Providers also need to instruct and teach patients about each medication, including names, appearance, purpose and effects, side effects, potential adverse effects and interaction of each medication, importance of contacting the healthcare

provider with concerns or questions, potential drug-related problems that warrant emergency care, importance of taking medications exactly as directed, and importance of using only one pharmacy to obtain drugs. Encouraging organization is helpful too in improving compliance. In order to help patients better manage their medications, they should be warned against medication sharing, storing medications in a secure, dry location away from sunlight, refrigerating medications if necessary, disposing of old medications properly, and if appropriate, helping patients establish memory aids. This is especially important for geriatric patients with memory concerns. Advising them to link medication administration to their daily routine or to use color-coded charts, automatic dispensers with bells, or voice-activated message services to remember to take their doses will help in doubling medication and in the long run avoid drug-to-drug interactions (Gallagher, et al. 2008).

Learning Points.

Complex medication regimens and polypharmacy need to be regularly checked because of possible interactions, side effects, inappropriate dependence, and treatment adherence problems. Inappropriate medication prescriptions, as well as drug abuse, should be avoided, at the same time medication omission also can be a problem. Therefore, careful considerations of the following geriatric pharmacology principles should always be born in the prescriber's mind.

- For some medication starting slow and going slow is crucial. The central nervous system is a particularly vulnerable drug target in the elderly.
- Expect the unexpected like the side effects and drug interactions. Confusion is often the presenting symptom caused by almost any of the commonly used drugs. Other common manifestations are constipation, postural hypotension and falls.

The elderly is more prone to tendon damage with the use of quinolones and GI bleeding with NSAIDs.

- Dynamic monitoring is necessary. Medications or dosages may need to be adjusted with changes in weight, renal function, or recurrent illness. Renal functions normally deteriorate with age, but there is large variability among different individuals. For example, when using medications like digoxin and lithium.
- Avoid polypharmacy where possible as it may lead to side effects. Some common medications should be used if only the alternative is missing, including medications like codeine-containing analgesics. More often considering the possibility of drug-drug and drug-disease interactions prior to adding any new medications ought to be considered. For example, medications like NSAIDs can precipitate acute renal failure when used in patients with chronic renal diseases or can exacerbate high blood pressure in hypertensive patients.
- Clinician needs to remember to give patients that present with a problem of polypharmacy a structured medication counseling at least once a year. In the process, clinicians need to complete an inventory of the actually taken medications and assess patients for adherence and any possible problems (Jäger, et al., 2015).
- Clinicians need to ensure that their patient have along with them a list of consequent use of medication and if they don’t should provide one that has a complete and updated list of medications they are on (Jäger, et al., 2015).

- Clinicians need to regularly review medication regimens to reduce polypharmacy and reducing potentially inappropriate medications using tools such as “medication appropriateness index (MAI)”, and or drug to- avoid lists such as “PRISCUS-list” similar to the beers criteria (Jäger, et al., 2015).

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