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## Decreasing Polypharmacy in a Long-Term Care Setting with the Use of the STOPP Tool

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Decreasing Polypharmacy in a Long-Term Care Setting with the Use of the STOPP Tool

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**Abstract**

Polypharmacy is the use of five or more medications. Polypharmacy in older adults can increase fall risk, decrease quality of life, increase adverse reactions and cause a more rapid decline in cognitive function. A literature review revealed that there is benefit to a reduced number of medications taken in the older adult population. This quality improvement project was completed at a long-term care facility in Central Minnesota. The STOPP tool was implemented with the leadership team at the facility which included the Director of Nursing, nursing manager, the PIPP Grant team and the staff development nurse. The project provided education on the use of the Screening Tool of Older People's Prescriptions (STOPP) with the goal of lowering the overall number of medications that were prescribed to residents in the facility. This screening tool assisted staff in determining unnecessary medications prescribed and aided in conversations with nursing staff and providers to help them determine which medications could be discontinued. The STOPP tool will be used by the leadership staff upon new resident admission to help determine the presence of unnecessary medications that will be reviewed by the provider to be considered for discontinuation.

## Decreasing Polypharmacy in a Long-Term Care Setting with the Use of the STOPP Tool

**Focus**

Through meeting with the Director of Nursing (DON) and the Quality in Living Specialist (QIL) at Milaca Elim, a list of possible areas for improvement was made. This list includes: reducing hospital admissions from the facility, reducing the rate of polypharmacy, reducing the number of falls, and establishing a walking program for increased mobility. The area that was chosen to do a quality improvement project on is polypharmacy.

Polypharmacy is the use of five or more medications (Milena, Luigia, Salome, & Stefano, 2016). Polypharmacy has become an increasing problem due to the increase in life expectancy, people experiencing more chronic illnesses, and advancements in science (Maher, Hanlon, & Hajjar, 2014). It is estimated that nearly fifty percent of people age sixty-five and older take one or more medications that are not medically necessary (Maher, Hanlon, & Hajjar, 2014). One study found that the chance of a person being prescribed an inappropriate medication was much higher in those who received more than twelve medications, and that risk increased even higher by fourteen to fifteen percent for each additional medication over twelve (Hudhra et al., 2016). Furthermore, polypharmacy comes with many consequences. Some of the adverse effects of polypharmacy are: increase in healthcare costs, adverse drug events, drug interactions, medication non-adherence, decrease in functional status, cognitive impairment, increase in fall rates, and urinary incontinence (Maher, Hanlon, & Hajjar, 2014).

Due to the number of adverse effects that can result from polypharmacy, Milaca Elim has made it one of their goals to review medication records and reduce the rates of prescriptions for their residents. They recognize the dangers of polypharmacy and that it can reduce the quality of life for residents. An additional motivator for them to reduce the number of medications

residents are on is the PIPP Grant. If Milaca Elim is able to reduce the medications per resident to an average of twelve, they would receive grant money for their facility.

Currently, Milaca Elim's approach to tackling polypharmacy is to have the Nurse Practitioner (NP) and Medical Doctor (MD) do chart checks, have the monthly Pharmacy Technician review medication records, and have the nurse manager do chart reviews. No system is currently in place for the nurses to keep track of which residents have been reviewed. Through research of evidence based practice, this quality improvement project will aim at implementing a tool to help reduce polypharmacy at Milaca Elim.

### **Analysis**

A literature review of polypharmacy confirmed that polypharmacy is the root cause to many health consequences and jeopardizes the safety of those prescribed a plethora of medications. As mentioned earlier, the more medications one is on, the higher the risk of experiencing an adverse medication event (Hudhra et al., 2016). It was found that nursing home residents on nine or more medications are at twice the risk of experiencing an adverse medication reaction than residents taking less than nine medications (Maher, Hanlon, & Hajjar, 2014). Adverse drug reactions lead to increased health problems for the elderly.

Furthermore, a decrease in functional status and ability to perform activities of daily living is correlated with polypharmacy (Maher, Hanlon, & Hajjar, 2014). Additionally, being prescribed many medications can also cause a decrease in cognitive status. One study found that twenty-two percent of elderly patients on five or less medications had cognitive impairment compared to fifty-four percent on ten or more medications (Maher, Hanlon, & Hajjar, 2014). Moreover, the risk of falling also increases with the number of medications one is prescribed. A report of a study completed with nursing home residents revealed that with each medication one

is prescribed, the risk of falling increases by seven percent (Maher, Hanlon, & Hajjar, 2014). These studies show that polypharmacy increases one’s risk of an overall decline.

Reports from Milaca Elim show that their residents experience adverse effects related to polypharmacy. The table below shows Milaca Elim’s numbers for pressure ulcers, hospital admissions, and falls from November 1, 2018 to March 18, 2019. Due to discharges and deaths, the number of medications each resident is on is only available for those that were at Milaca Elim on March 18, 2019.

Adverse Effect	Total Number	Number with data	>5 medications	>12 medications
Pressure Ulcer	19 residents	11 residents	10 of 11 residents	7 of 11 residents
Hospital Admission	30 residents	12 residents	12 of 12 residents	10 of 12 residents
Fall	66 total falls (32 residents)	24 residents	18 of 24 residents	10 of 24 residents

Polypharmacy is a common cause of an increase in fall rates, hospital admissions, and occurrence of pressure ulcers. Thus, the root cause that this quality improvement project will focus on reducing is polypharmacy. As of March 20, 2019, the average number of medications residents at Milaca Elim were prescribed was 14.03 medications. It is Milaca Elim’s goal to reduce this number to an average of twelve or fewer medications.

### **Development**

After thorough research and literature searches, it was found that education, the Beers Criteria, and the Screening Tool for Older People's Prescriptions (STOPP) had evidence for reducing polypharmacy. However, the STOPP tool had the strongest evidence to support its effectiveness. Education on polypharmacy to staff, patients, and families had very limited evidence and few research articles to back it as an intervention.

Furthermore, it was found that even though the Beers Criteria is an effective approach to lowering the potential for inappropriate prescriptions, it is a less sensitive tool than the STOPP tool. One study that was done in a hospital setting showed that the STOPP tool found two hundred forty potentially inappropriate medications while the Beers Criteria found one hundred forty-three potentially inappropriate medications with the same patients (Hudhra et al., 2016). That is almost one hundred more medications that the STOPP tool identified as being potentially inappropriate than the Beers Criteria. Another study with twenty-nine patients revealed that the STOPP tool identified one hundred twelve medications that could be discontinued while the Beers Criteria identified only sixty-three medications to be discontinued (Snyder, Mican, Smith, & Barner, 2014). These studies help show that the STOPP tool is more sensitive than the Beers Criteria.

The STOPP tool was first established in 2008 and revised in 2014 (O'Mahony et al., 2014). It was created due to an increase in adverse drug reactions with the goal of decreasing polypharmacy and inappropriate prescribing (O'Mahony et al., 2014). Nineteen experts with expertise in Geriatric Medicine and Pharmacotherapy created the criteria for the tool (O'Mahony et al., 2014). The tool was revised and approved by all of the experts before being finalized. The STOPP tool is up-to-date and has evidence backing each of its criteria. Its use for reducing

polypharmacy is well backed by evidence. Thus, the STOPP tool was chosen for implementation as it would have the best chance of success.

For implementation, a PowerPoint presentation was developed that shared information on polypharmacy, its contributing factors, the adverse effects of multiple medication use, the impact it has on Milaca Elim, and the use of the STOPP tool. This information was shared with the leadership team at Milaca Elim consisting of the DON, QIL, PIPP Grant nurse, and the Staff Development nurse. The appropriate use of the STOPP tool was discussed with the previously listed individuals. The PIPP Grant nurse, Shinell, was the main nurse working on medication reduction and worked to help further develop the logistics of the project. Some of these logistics included creating an Excel spreadsheet to keep track of what residents have already had their medications reviewed as well as how many they recommended to the NP to discontinue. This was an easier way for Shinell to determine what residents had the most prescribed medications so she knew where to focus her time.

To evaluate this project, a pre-and post-test was administered that assessed the leadership team's knowledge about polypharmacy, the STOPP tool, as well as their comfort level with utilizing the STOPP tool to reduce the medications. It was also assessed if they felt as if the STOPP tool was something they could implement into their practice. These pre- and post-tests were given before presenting the information on polypharmacy to the facility, and then it was administered again approximately three weeks after implementation to determine if the staff had an increased knowledge of polypharmacy, the STOPP tool and implementation of the STOPP tool.

With the implementation of the STOPP tool, there were a few objectives that were hoped to be achieved. First, it was hoped that the staff would have an increased awareness of



polypharmacy. The goal was to achieve this by educating them on what it was, the contributing factors, and the negative impacts it can potentially have on cognitive function. This education was done to coincide with their current goal of receiving the money for the PIPP Grant. The next objective would be to increase their familiarity of the STOPP tool. By educating the staff, it was hoped to increase not only their knowledge of the STOPP tool, but also to increase their comfort level with implementing the STOPP tool within the facility.

### **Dissemination and Evaluation**

During implementation and evaluation phases of this project, it was determined that there were a few barriers to the use of the STOPP tool. The first and main barrier that was noted was the complexity of the STOPP tool. Staff vocalized concern for the length of the tool as well as how cumbersome it would be to use. The STOPP tool would require the nurses to manually go through every drug on the list, determine if the patient was prescribed that medication, and then evaluate the cause for the prescription. They then would have to determine if the reason for prescription is outside of the STOPP tool recommendations and put in a request for discontinuing if necessary. Staff voiced concern that the tool would take up too much of their already limited time and that their time could be better spent providing resident care. The next barrier the facility faced was the staffing provided to work on medication reduction and the PIPP Grant. Milaca Elim had designated one nurse to work on this project one day per week (Wednesdays), while the rest of her time was spent being a floor nurse. Since the tool was seen as time consuming and with the high number of residents at the facility, it would take her a great deal of time to review all prescribed medications on her own. They also did not have a good system in place to track which resident already had their medications reviewed. This was an organizational barrier for the facility and took away from their efficiency. This meant extra time was spent on residents who

already had their medications reviewed. An Excel spreadsheet was developed that enabled them to communicate which resident had been reviewed, as well as the initial amount of medications they were prescribed and the number of medications that was recommended for the NP to consider discontinuing.

There were also a few different barriers on an external level that were out of the direct control of the facility. First, it was determined by the facility that part of the reason that polypharmacy can be so high in this population is due to the fact that MediCare does not cover combination medications. Therefore, residents were taking multiple, separate medications when they could have been taking one combination medication because separate medications tend to have a lower cost associated with them. The next barrier that stemmed from external forces was how the medications themselves were ordered. Many residents get admitted into the hospital, and then return to the facility. When this happens, they have medications that are added to the list or are ordered in different ways. A common example of this could be seen in the way Tylenol was ordered for the residents. Many of the residents had orders for Tylenol that was both as needed (PRN) as well as scheduled. This was a barrier for the project because even though it was the same medication, it counted as two separate medications due to the fact that it was ordered in two different ways. The final barrier seen during this project was the turnover the facility experienced. There was a steady stream of residents who would be admitted, discharged, sent to the hospital or who would pass away, so this decreased the ability to track the medications the residents were on because new residents were always coming to or leaving the facility.

Prior to providing education to leadership nursing staff at the facility, they were asked to fill out a pretest to assess their current knowledge of the STOPP tool and polypharmacy. Questions asked were how familiar they were with polypharmacy and with the STOPP tool, as

well as having them identify how many medications they thought constituted polypharmacy. They were asked how comfortable they would be with the presented implementation of the STOPP tool, and to rate the importance of reducing polypharmacy within the elderly population. About a month later, the previous staff took the test again with the same questions as before. The numbers in the table below show the averages of the results. For the questions, a scale from one to five was used with one being not familiar, not comfortable, or not important at all, and a score of five being very familiar, very comfortable, and rating polypharmacy in the elderly population as very important. This survey was used as an evaluation tool. The presentation was successful in educating staff on identifying polypharmacy, as only one person answered five medications correctly on the pre-test, and everyone answered it correctly on the post-test. It was also successful in addressing why polypharmacy is important in the long-term care setting, what the STOPP tool is, and how the STOPP tool is used.

Questions asked	How familiar are you with polypharmacy?	Are you familiar with the STOPP tool?	Polypharmacy is considered the use of ___ or more medications (5 = correct answer)	How comfortable are you with this implementation of the STOPP tool?	How would you rate the importance of reducing the polypharmacy within the elderly population?
Pre-test	<b>4.25</b>	<b>1</b>	<b>9</b>	<b>1</b>	<b>5</b>
Post-test	<b>4.5</b>	<b>4</b>	<b>5</b>	<b>2</b>	<b>5</b>

As presented in the table, it was found that the nursing leadership staff was still not as comfortable using the STOPP tool a month later. In the lowest scores, one individual gave the

reason that it was not part of their daily tasks to use the STOPP tool, and another individual said it was too complex to use regularly. The planned implementation was to have multiple nurses using this tool and splitting up medication sheets to review, however there was only one nurse who worked on them on certain days. The nurse that is currently working did specifically mention that Alison, the NP who reviews the medication lists, is aware of the STOPP tool, and finds it more appropriate for her to use per the nurse's reports. During implementation, the STOPP tool was not able to be evaluated for effectiveness with the NP due to differing schedules. Another thing to be considered when looking at the data for medication reduction is the type of insurance a resident has and what it can cover. Medications that are the same, and have the same dosage, will count as two if they are on the scheduled medication list and written as PRN or as needed medications as well. To make the process more efficient for the nurse who is doing medication reduction, an excel spreadsheet was created for them to use to organize which residents have been reviewed and how many medications had been decreased. This was easier for the facility to use, as each medication list was individually reviewed to make recommendations for the provider to discharging medications or decreasing the dosage. Things considered included looking at how often medications were being administered, and asking the resident's opinions about the use of certain medications. Milaca Elim has residents on short-term stay for rehabilitation, long-term residents that live there, and hospice patients as well. Due to this, the excel sheet was ever changing as residents were continually being admitted, discharged, and passing away.

The final medication numbers decreased from an average of 14.03 medications per resident from March 20th, 2019 to 13.03 medications as of April 17th, 2019. Even if medications were not discontinued, the importance of medication alignment and polypharmacy is being

addressed by personally interviewing residents who are able to do so. In these interviews, the nurse is going through each individual medication, asking if the resident knows what it is, why they're taking it, and if they feel it has been effective for them. During this time, the residents were educated about the risks of polypharmacy and why this matters in order to increase their understanding and allow autonomy in making their own health care decisions. The facility will continue to do medication reviews to keep decreasing this number.

After completing the quality improvement project, one of the changes that could be done in the future to improve polypharmacy within Milaca Elim would be focusing on medication review within the nursing home. Being that residents take a variety of medications each day, it is important that these medications are aligned with the unique needs of each resident to provide the best possible benefits to the resident. It would be valuable for the facility to hold medication reviews two or three times a year when they hold care conferences for the resident. These meetings would take place in a relaxed atmosphere with the resident, relatives, and care providers to discuss the medical problems that they have, what drugs they take, and why they take the drugs. The care team providers should also discuss the rationale for the medication and explore the resident's and family members' thoughts about the medication as well. By having these conversations, it can help decrease in the many adverse effects of the medications that correlate with polypharmacy and its impact on elders.

### **Conclusion**

In conclusion, this quality improvement project, which focused on the reduction of polypharmacy, highlighted its prevalence and complexity. Nevertheless, research and implementation also highlighted that there are initiatives that can be taken to not only increase the awareness, but also address the issue at hand. One of these initiatives that shows potential is

the implementation and adaptation of the STOPP tool as a consistent component in the review of resident medications. The hope is to see this positively influence the efficacy in treating illness and improve the quality of life for the elderly population.

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