

Assessment of a Mental Health Residential Rehabilitation Treatment Program As Needed Medication List

Michelle Bury, BS, PharmD; Matthew Haas, PharmD, BCPP, BCPS; Janel Larew, PharmD, BCPS; and Angela Paniagua, PharmD, BCPS, CGP

Providing access to many over-the-counter medications seemed to improve patient and provider satisfaction while reducing emergent care costs for rehabilitation program residents.

The Mental Health Residential Rehabilitation Treatment Program (MHR RTP) is an essential part of the mental health services offered at the Clement J. Zablocki VAMC (ZVAMC) in Milwaukee, Wisconsin. Across the nation, there are about 250 MHR RTPs, which are designed to provide rehabilitation and treatment services to veterans ranging in age from 18 to 80 years, with medical conditions, mental illness, addiction, or psychosocial deficits.¹ About 900 patients were admitted to the ZVAMC MHR RTP in 2013.

BACKGROUND

Prior to 2010, pharmacy administrators recognized that many MHR RTP patients were inappropriately using emergency care services (ECS) to obtain treatments for simple ailments that often required only the use of over-the-counter medications. This was likely associated with the Safe Medication Management (SMM) Policy as defined in

Professional Services Memorandum VII-29.^{2,3} This policy states that MHR RTP patients are not allowed to bring in any home medications—all medications are reconciled and readministered on admission in an effort to reduce diversion.

A lack of 24-hour-per-day provider availability forced patients to find treatment elsewhere. A 6-month review was completed in 2010, which identified all of the MHR RTP patients who used ECS, their chief medical condition, and the medication(s) that were administered to each patient. This review identified a total of 254 ECS visits made by MHR RTP patients during this period. Twenty percent of these visits resulted in prescriptions for over-the-counter medications. As a result, an as needed (PRN) medication list was created for patients to have medications readily available for simple ailments with nursing oversight (Box). The goal of the PRN medication list is to reduce the amount of unnecessary ECS visits,

decrease unnecessary cost, and improve treatment efficiency and overall patient care.

Treatment Programs

The ZVAMC MHR RTP has 189 beds divided among 7 different 6-week treatment programs, including General Men's Program (GEN), Substance Abuse Rehabilitation (SAR), Post-traumatic Stress Disorder (PTSD), Women's Program (WOM), Operation Enduring Freedom/Operation Iraqi Freedom/Operation New Dawn (OEF/OIF/OND), Domiciliary Care for Homeless Veterans (DCHV), and Individualized Addiction Consultation Team (I-ACT).⁴

The treatment programs within the MHR RTP at the ZVAMC address goals of rehabilitation, recovery, health maintenance, improved quality of life, and community integration in addition to specific treatment of medical conditions, mental illnesses, addictive disorders, and homelessness. Various levels of care are available through the program, based on the needs of each veteran. This care generally provides methods to enhance patients' functional status and psychosocial rehabilitation.

Dr. Bury is a mental health clinical pharmacy specialist and at the time the article was written was a PGY2 psychiatric pharmacy resident, **Dr. Haas** is the PGY2 psychiatric pharmacy residency director and mental health clinical pharmacy specialist, **Dr. Larew** is a mental health/home-based primary care and Multiple Sclerosis Clinic clinical pharmacy specialist, and **Dr. Paniagua** is the pharmacy clinical manager and PGY1 pharmacy residency director, all at the Clement J. Zablocki VAMC in Milwaukee, Wisconsin.

A SMM program is used to ensure safe and effective medication use for all patients in the MHRRT². As a result, the patients are admitted to the MHRRT with inpatient status, and the medication delivery procedure varies based on the veteran's ability to take medication independently. Veterans are assisted in developing self-care skills, which include comprehensive medication education. The goal of the SMM program is to give patients the assistance to eventually manage their medications independently.

MHRRT Staffing

The MHRRT must have adequate staffing in order to provide safe and effective patient care. Program staffing patterns are based on workload indicators and a bed-to-staff ratio.⁴ The MHRRT is a multidisciplinary program; however, the only providers who can address medication issues are the 1.2 full-time employee equivalent MHRRT psychiatrists. Unfortunately, the psychiatrists are not available for triage on nights, weekends, or holidays.

The role of the psychiatrist is to focus on the mental health needs of the MHRRT patients, not the primary care medical concerns, which are the main reason for ECS visits. With the current model, providers are sometimes unavailable to meet the emergent needs of patients in the MHRRT, and patients may be forced to choose between using ECS or leaving the concern unaddressed. Patients' needs vary from mild to serious emergent needs but may not necessarily require full emergency assessments. For example, if a patient has a headache and a physician is not available to write an order for acetaminophen, the patient may need to visit the ECS to obtain a medication that otherwise would have been readily available at home. The restrictions

As Needed Medication Item List (Indication)

Upon admission the following as needed orders may be included in the admission order:

- Acetaminophen tablets 650 mg po q6h (pain, fever)
- Aluminum hydroxide, magnesium hydroxide, simethicone suspension 15 mL po q4h (heartburn)
- Cetylpyridinium Cl 0.07% throat lozenges 1 po q2h (sore throat)
- Docusate/Senna tablets 1 po q12h (constipation)
- Guaifenesin liquid 15 mL po q4h (cough)
- Ibuprofen tablets 400 mg po q6h (pain, fever)
- Loperamide capsules 4 mg at onset of symptoms, 2 mg q4h, max 8 caps/24h (diarrhea)
- Loratadine tablets 10 mg po daily (allergy symptoms)
- Milk of magnesia suspension 30 mL po (constipation)
- Ondansetron tablets 4 mg po q12h (nausea)
- Ranitidine tablets 150 mg po q12h (heartburn)
- Trazodone tablets 50 mg po qhs (insomnia)

are designed to promote medication safety, prevent medication diversion and misuse, and be in compliance with regulatory agencies (eg, The Joint Commission and the Commission on Accreditation of Rehabilitation Facilities).

ECS Use

During fiscal year 2010, pharmacy administrators discovered that many patients were using ECS to obtain medications for nonemergent conditions. Inappropriate and unnecessary use of ECS by MHRRT patients delayed treatment, increased wait times for veterans in need of emergent care, and increased the cost of caring for simple ailments. To put this into perspective, the average cost of all conditions at the ZVAMC during the 2013 fiscal year was \$657 per ECS visit, while the total cost of ECS was about \$14 million.

In response to the inappropriate ECS use, the ZVAMC created a PRN medication list in 2010, which is offered to all MHRRT patients, with the goal of reducing the number of patients inappropriately using ECS for minor ailments and providing

more efficient and cost-effective patient care.² The MHRRT PRN medication list is initially evaluated by the admitting psychiatrist or nurse practitioner and mental health clinical pharmacy specialist completing the admission orders for appropriateness based on each patient's comorbidities, medication regimen, and past medical history. For example, if a new patient with liver dysfunction is admitted to the MHRRT, acetaminophen would not be made available due to an increased risk of hepatotoxicity. The other PRN medications would still be available for the patient if clinically appropriate.

Once the PRN medications are ordered, the MHRRT nurse can assess a patient's condition and administer the medication(s) to the patient as indicated. For instance, if a patient requests ibuprofen for pain, the nurse will document an initial pain score and administer the ibuprofen dose. As a result, the patient obtains more efficient and convenient care and does not need to wait for a provider to become available or use ECS. Per ZVAMC policy, the nurse has 96 hours to reassess the PRN

Table. Sample Demographics

Demographic	2010 (n = 131)	2013 (n = 137)
Average age, y (SD)	55 (9)	51 (12)
GEN patients, No.	56	57
SAR patients, No.	75	80
Average length of stay, d	95	45

Abbreviations: GEN, General Men's Program; SAR, Substance Abuse Rehabilitation.

medication effectiveness; however, this is typically done within the same shift. Since the implementation of the PRN medication list, no formal assessment has been completed.

To the authors' knowledge, the ZVAMC is the only MHR RTP in the VHA system that incorporates a PRN medication list in the admission orders to reduce unnecessary ECS visits. After completing a thorough literature review and contacting the national VA mental health pharmacist listserv, no studies discussing the use of PRN medication lists in this setting were identified, and no sites offered information as to a similar practice in place.

METHODS

A randomized, retrospective case-controlled study involving a chart review was completed for patients admitted to the MHR RTP at the ZVAMC pre- and postimplementation of the MHR RTP PRN medication list between April 2010 and August 2010 and between April 2013 and August 2013, respectively. The ZVAMC is a teaching institution. This study was approved by the ZVAMC institutional review board.

Patients were eligible for the study if they were male, aged > 18 years, and admitted during the study pe-

riod for treatment in the GEN or SAR programs at the ZVAMC for at least 4 weeks. Patients were excluded if they were female, admitted to the hospital after being seen by ECS, or if they were receiving treatment in the following programs: PTSD, WOM, OEF/OIF/OND, DCHV, and I-ACT. Patients studied in 2010 served as the control group, and patients studied in 2013 were the treatment group.

Objectives

The primary objective of this study was to evaluate the use of the current PRN medication list. Secondary objectives included the evaluation of the use of ECS by patients admitted to the MHR RTP pre- and postimplementation of the PRN medication list, the potential cost reduction due to avoided ECS use, and nurse and patient satisfaction with the PRN medication list.

Data

A list of all patients admitted to the MHR RTP at the ZVAMC between April and August of 2010 and 2013 was generated using the Veterans Health Information Systems and Technology Architecture (VISTA) system. The Computerized Patient Record System (CPRS) was used to evaluate the patient for inclusion and collect pertinent data. The PRN medication list was implemented on September 15, 2010. Data collection terminated as of September 14, 2010, regardless of discharge status. All data collected for this study were entered and stored in a database created by the authors. A table with set criteria to review was created for the 2010 and 2013 group to ensure standard-

ization. The pharmacy resident reviewed all of the patient charts. The following data were collected for each patient in the 2010 group:

- Demographic data: Patient name, last 4 digits of their social security number, age
- Program information: Admitted to GEN or SAR program, admission and discharge date, duration of stay, reason for discharge
- ECS data: Date, type of visit, chief condition, medications administered during the visit, whether the visit resulted in a hospital admission, and whether the visit was avoidable
- Avoidable visit: visit in which the patient received or could have received medication(s) that are on the PRN medication list at the ECS visit to treat their illness

The same information was collected for each patient in the 2013 group in addition to the following: PRN medication data (medications administered from the PRN medication list and the number of times each medication was administered if applicable); and ECS data (along with the aforementioned data, it was noted if PRN medications were taken prior to the ECS visit).

In addition, nurse and patient satisfaction with the PRN medication list were assessed via a simple satisfaction survey. The survey was given to 120 patients admitted to the MHR RTP as well as to 32 nurses at the time of distribution. A cover letter on each survey explained the study and informed the patient that the survey was voluntary and anonymous. Satisfaction was based on 10-point scale, with 1 (lowest) and 10 (highest) in satisfaction. Additional questions were asked to identify areas of improvement (see eAppendixes A and B for

patient and nurse surveys, respectively, available at www.fedprac.com).

Statistical Analysis

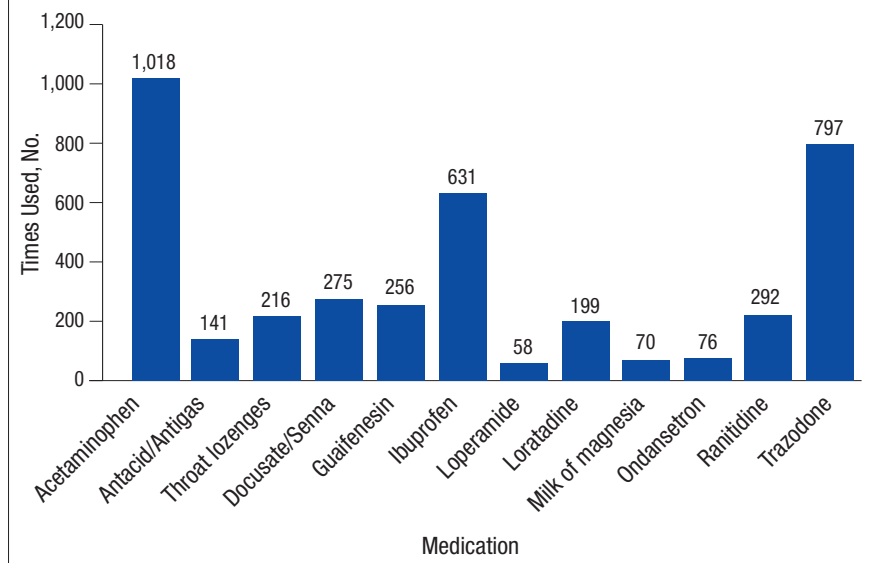
Descriptive statistics were used to analyze collected data. The primary outcome was assessed for the group admitted postintervention by calculating the average number of times each medication on the PRN medication list was used per patient during their length of stay (LOS) as applicable. The administration totals for each medication on the PRN medication list during the postintervention study period were also recorded.

Secondary outcomes were assessed by comparing the recorded total number of ECS visits pre- and postimplementation. Additionally, the average number of ECS visits per admission and the number of avoidable ECS visits were recorded for each study group. The cost reduction from avoided ECS use was estimated by calculating the total cost of ECS used pre- and postimplementation. The difference between the number of avoidable ECS visits in the pre- and postintervention groups was assessed for statistical significance by using a chi-square test. The 2013 cost saving estimation was based on the average ECS visit cost in the 2013 fiscal year (\$657). Of note, power for this study could not be calculated as this has not been studied prior; therefore, no precedence has been set.

RESULTS

On completion of the data collection, 583 patients were assessed for inclusion into the study, 325 in the 2010 preimplementation group and 258 in the 2013 postimplementation group. A total of 200 patients were randomized in each group ($n = 400$); however, 69 (35%) and 63 (32%) were excluded from the 2010 group and

Figure. Total Number of Times Each Medication Was Used ($n = 137$)



2013 group, respectively. Sample demographics are described in the Table.

PRN Medication and ECS Use

Between April 1, 2013, and September 14, 2013, 3,959 doses of PRN medications were administered to MHR RTP patients who were included in the study (Figure). Prior to accessing ECS for their problem, 22 (36%) of the 61 patients who used ECS had trialed the PRN medication(s).

When comparing the total number of ECS visits, the 2010 group had 145 visits and the 2013 group had 96 visits. The preimplementation group averaged 1.1 ECS visits per MHR RTP admission, whereas the postimplementation group averaged 0.7 ECS visits per admission. The difference in the number of avoidable ECS visits was statistically significant, with the 2010 group totaling 15 avoidable visits, while the 2013 group totaled 1 ECS visit ($P = .0045$).

It was estimated that 9 (9.3%)

ECS visits were avoided due to the PRN medication list in 2013. Using 137 patients, who were included in the postimplementation group, it can be calculated that \$5,867 was saved due to the PRN medication list, or \$42.83 per patient in 2013. Using the 2013 MHR RTP census of 898 patients, the financial impact of the PRN medication list can be extrapolated to produce an estimated annual cost savings of \$38,461.

Patient and Nurse Satisfaction

Of the 120 patients given the patient satisfaction questionnaire, 28 (23%) patients responded. Of the respondents, 25 (89%) stated they were aware of the PRN medication list. The median rank of satisfaction reported was 8 on a 10-point scale. Twenty-two (79%) patients felt that the PRN medication list had or may have reduced the need to go to ECS or urgent care. Twenty-three (82%) patients recommended not removing any drugs listed on the PRN medication list.

Of the 32 registered nurses and licensed practical nurses working in the MHR RTP, 7 (22%) responded to the nurse satisfaction questionnaire. Of the respondents, 6 (86%) stated they discuss the PRN medication list during admission assessments every time or most of the time. The median rank of satisfaction was 9 on a 10-point scale. Four (57%) nurses felt patients had a clear understanding of the PRN medication list, and 100% of nurses stated they had enough guidance on situations to administer the medications. Seven (100%) stated that the PRN medication list had not caused adverse events; however, 5 (71%) stated that the list had been used inappropriately.

DISCUSSION

This retrospective case-controlled study of 400 patients revealed high use of the PRN medication list and a cost avoidance of nearly \$40,000. Although this represents a small reduction of the annual ECS budget, the PRN medication list also improved patient care by providing more efficient and convenient access to medications. The most commonly used medications were acetaminophen, trazodone, and ibuprofen. In addition, the nursing and patient surveys demonstrated an overall satisfaction with the current PRN medication list. It is important to note that the number of avoidable ECS visits decreased significantly after the implementation of the PRN medication list in 2010.

Roughly 35% of patients in each group were excluded from the study. The main exclusion criteria included a < 4-week LOS, being admitted to the hospital, being female, and being admitted prior to the study period. Women veterans were treated through different programs prior to the implementation of the PRN medication list; therefore, they were excluded

to decrease variability. Only patients in the GEN and SAR programs were included, because they were well established prior to and after the intervention. The other programs, which included PTSD, WOM, OEF/OIF/OND, DCHV, and I-ACT, accounted for about one-third of MHR RTP admissions. However, they were not all available or structured similarly in 2010. Including the other programs would have increased variability.

Survey Results

Although the response rates were low, the patient and nurse satisfaction surveys revealed useful information that may assist in identifying the strengths and weaknesses of the current program. More rigorous surveying needs to be conducted to make the results more generalizable. Fifty percent of patients reported using a PRN medication on a daily basis or 3 times per week. However, 28.6% stated they never used the PRN medication list, which was thought to be an overestimation due to an incomplete understanding of what medications are on the PRN medication list. This finding does not correlate with the high use demonstrated with the actual number of PRN medications used.

Two patients marked “other,” one reported using the list when they “need the medication,” and another did not mark an answer. Similarly, 57.1% of the nursing staff reported offering a PRN medication on a daily basis and discussing the list on admission every time. However, 28.6% of nursing staff stated they do not complete admission assessments or work in the medication room, most likely because they are licensed practical nurses and do not have those responsibilities. Interestingly, when asked about medications that should be removed from the PRN medication list, 1 nurse suggested remov-

ing trazodone, which was the second most used drug. Some of the medications patients suggested adding to the PRN medication list included creams for dry skin or fungal infections, calcium carbonate, and pain medications such as tramadol, aspirin, and naproxen. Nurses suggested adding aspirin, diphenhydramine, and nicotine gum. These responses will aid in enhancing the current PRN medication list by potentially increasing the types of medications offered.

Limitations

This study has several limitations that may affect its interpretation. The study was retrospective in nature and had a short study period. The data were collected from a single specialty program, which decreases the study's generalizability, as not all VAMCs have a MHR RTP. Also, the average LOS in 2010 was longer than in 2013. This was related to the restructuring of the MHR RTP in the spring of 2013 to allow for more condensed programming. As a result, it may be reasonable to infer that there were more ECS visits prior to implementation of the PRN medication list due to the longer LOS in 2010. This confounding variable was minimized by normalizing the calculation for the number and percent of ECS visits avoided.

The patient population was limited to male veterans and the satisfaction questionnaires had low response rates. The low patient response rate may have been due to a lack of incentive, decreased health literacy, or possibly lack of time. The low nurse response rate may have been due to limited time and also lack of incentive. A larger response rate may have increased the PRN medication list use and satisfaction reported. This study looked at the change in the number of ECS visits; but, it did not investi-

gate any changes in the number of primary care visits. Patients were able to go to their primary care appointments during their stay in the MHRRTTP and may have received medications listed on the PRN medication list at these appointments, which could have been avoided. Last, the accuracy of the documentation in CPRS may be unclear and may have subjected the study to bias. Unfortunately, ECS does not use bar code medication administration, so the administration of medications has to be manually written into the ECS visit note. This method may be vulnerable to human error.

Future Directions

Future directions from this study include discussing the results with the MHRRTTP staff and identifying areas of improvement to enhance the medication list. Some discussion points include the reasoning to remove trazodone and examples of inappropriate use. Furthermore, the questions asked by patients and general suggestions made by the nursing staff identified that increased patient education of the PRN medication list should be implemented during the admission assessment process. This would improve patient understanding

and awareness of the PRN medication list, because some patients did not know about the list or what medications it included. Moving forward, the results of this project may provide incentive for future implementation of PRN medication lists at other VA MHRRTTPs.

CONCLUSION

This study confirms that the MHRRTTP PRN medication list has been highly used since its implementation in 2010. The study also suggests that the nursing staff and patients are satisfied with the current process. Furthermore, these findings illustrate the PRN medication list's success at decreasing unnecessary use of ECS and its association with avoiding cost. Further studies are needed to support the results seen in this analysis. Although these discoveries are preliminary, they may provide incentive for future implementation of PRN medication lists at other VA MHRRTTPs. ●

Acknowledgements

Michelle Bury had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Author disclosures

The authors report no actual or potential conflicts of interest with regard to this article.

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