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Benzodiazepine Reduction Program in a Psychiatric Mental Health Setting

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Benzodiazepines Reduction Program

Benzodiazepines (BZD) are often prescribed by mental health and primary care providers for long-term use; however, recommendations from many reputable sources report BZDs should only be short-term use. The National Institute for Health and Care Excellence (NICE) recommends BZD for short-term use with an intermediate to long onset of action BZD (Kapil et al., 2014). Providers can have an array of challenges to reduce, taper, and eventually discontinue BZDs for patients with post-traumatic stress disorder (PTSD), depression, agoraphobia, insomnia, anxiety disorders, panic disorder, and other medical diagnoses. After a patient has been on BZDs for more than two weeks, the patient may develop dependence and tolerance (Baandrup et al., 2018). BZDs are to be prescribed no longer than two weeks, and dependence can occur on BZDs in as little as one month (Stahls, 2017). The danger of BZD dependence rises with increased strength, half-life, and frequency and of the medication management regimen. Dependence may increase in patients with current or past drug abuse. As providers, it is imperative to use evidence-based practice when prescribing medications, using the lowest effective dose (Stahls, 2017).

There are substantial risks of prescribing BZDs, even if it is an appropriate treatment plan for the patient. Since all states do not participate in the prescription monitoring program, risks and poor outcomes for providers and patients are increased as a result. In 2017, 10,010 people died from overdosing with both BZDs and an opioid; over a fifth of the 47,600-total opioid overdoses (Centers for Medicare & Medicaid Services [CMS], 2019). Assessing and educating patients regarding risks and negative outcomes when prescribing BZDs or any controlled medication is essential to improve

patient outcomes. Patients prescribed opioids and BZDs have a greater threat of accidental overdose fatalities, poor treatment outcomes, possible suicide, and increased need for other healthcare services, due to polypharmacy and polysubstance abuse. (CMS, 2019). Other research showed an increased risk of cognitive decline with BZD use in patients (Qian et al., 2019). As a result, providers must assess patients' comorbid conditions and screen for risk of substance abuse and possible suicide.

While there is an awareness of patients' comorbid conditions, there is a need for alternatives to BZDs prescriptions. Cognitive behavior therapy (CBT) should be included for patients with anxiety and PTSD. Relaxation techniques, sleep hygiene, and other alternative medications should be utilized as first-line treatment for diagnoses. CBT and medical taper can improve discontinuation of BZDs. Behavioral correction encouraging and education of good sleep hygiene can help with insomnia and reduce the need of medication.

The purpose of this pilot project was to reduce side effects and adverse effects of long-term BZDs use in a non-profit community health center. The population involved in this project are patients with mental health disorders and on long-term BZDs. The aim of this project was to decrease long-term BZD use in patients currently prescribed BZD longer than one month by 10 percent over four months in a non-profit community health center. The evidence-based practice (EBP) framework identified for the project will be the Institute for Healthcare Improvement (IHI) Plan-Do-Study-Act (PDSA) framework to decrease BZD use in a non-profit community health center. The primary outcome measure of interest was to decrease BZD prescribing by providers. The secondary outcome measure of interest was decreased adverse events in patients who are prescribed

BZDs over the time period of the project. Education of patients in safe BZD use and safe provider prescribing was done to educate both groups. The question that guided this project is in patients aged 18-78 years who have been prescribed BZDs, what is the effect of BZD reduction program in the prescribing and use of BZDs over a four month period?

Review of the Literature

The databases used for literature review resources included CINAHL, Cochrane Database of Systematic Reviews, Ovid, and PubMed. The key search terms were *BZD AND CBT, dependence, opioids, risks long-term use,* and *cognitive decline*. The filter criteria resulted in over 22,206 studies. Inclusion criteria were free full text online, ages 18-78 and publications in the last 20 years. Exclusion criteria were under the age of 18 and patients that are under the care of hospice or end of life care. Number of studies after removing duplications studies, inclusion and exclusion were 928. After reviewing the abstracts of 928 studies for inclusion/exclusion criteria, purpose of the project and study question, 32 were selected for full text review. Of those 32, nine were selected for final inclusion in this review. Two of the studies focused on cognitive decline, four of the studies focused on alternative interventions instead of long-term BZD use and three studies examined risks of prescribing BZD.

BZD use has been associated with increased risk of cognitive decline and adverse effects on cognitive function, including memory disturbances (Wu et al., 2009). The American Geriatric Society recommend that BZD should be avoided in patients over the age of 65 years old (Markota et al., 2016). In a study by Shash et al., (2016) researchers found evidence that patients being prescribed BZD have increased risk for dementia. The purpose of this study was to investigate the correlation between BZD medication use and

the risk of dementia and to focus on BZD medications with shorter half-lives. This longitudinal study examined the association between vascular factors and dementia in noninstitutionalized individuals for patents 65 years of age and older. The data for this study was collected using questionnaires, in person interviews and medical examinations. Results showed that patients prescribed a BZD had a 10% increase risk of dementia, and the risk was higher in BZD with long half-life compared to those with short half-life (Shash et al., 2016).

Another study by Gallacher et al., (2011) examined BZD use and cognitive decline and found that taking a BZD is associated with an increased risk of dementia. The purpose of this study was to investigate the long-term effect of BZD medication use and the risk it may have on dementia. This prospective study used a cohort of males and evaluated the participants five times over 22 years. During the meetings, the researchers gathered full medication histories, repeated measured of multiple cognitive function testing and a clinical diagnosis of dementia. The results of this study showed that taking BZD on a regular basis increased the incidence of dementia (Gallacher et al., 2011). While side effects such as cognitive decline are concerning, decreasing use of BZD medications in clinical practice is not the only possible solution. Other studies found that outcomes can be improved with other evidence-based treatments such as CBT.

In a study by Baillargeon et al., (2003) researchers found that a combination of CBT and BZD tapering produced better outcomes to tapering alone in the management of patients with insomnia and long-term BZD medication use. Guidelines recommend limiting the use of BZD to four weeks (Baillargeon et al., 2003). The researchers randomly assigned study participants to be in two groups; one group received CBT and

BZD tapering, and the second group received BZD tapering alone. The tapering was managed by a physician and monitoring of BZD use was accomplished through blood levels over an 8-week period. The results of the study found that 77% of the participates in group one were able to taper completely off BZDs compared to 38% in group two with tapering alone (Baillargeon et al., 2003).

In a study by Nakajima et al., (2020) researchers suggest that CBT possibly supports in reducing and discontinuing BZD anxiolytics use in patients with mood and anxiety disorders. This study collected medication data from hospital records and compared the dose of the BZD prescription before starting CBT to three months after CBT was initiated with participants. The results of this study found that out of the 66 participants, 13 discontinued BZD and another 21 decreased their dose by 50 percent. This study found a significant discontinuation of BZD and reduction in the use during and following CBT. While the addition of CBT aided the decrease in BZD use, there are still other risks to prescribing BZDs to patients with mood disorders.

In a study by Parr et al., (2010) researchers recognized that long-term BZD use remains a concern and carries significant risks. Participants in the study were prescribed BZDs for over 3 months with the goal of reducing or completely discontinuing BZD use. Participants completed online assessments and were given materials through newsletters on managing withdrawal symptoms and developing alternatives to cope with anxiety. There was also a therapist that was available through e-mail if participants wanted to utilize a counselor. The results of the study showed a reduction or elimination of BZD use with CBT via internet. There were 32 participants involved in the study and 14 completed the program for the full six months. Of the 14 participants, eight reduced BZD

intake by fifty percent and five discontinued BZD use after the six months (Parr et al., 2010).

In a study by Boggs et al., (2019) researchers evaluated the correlation between suicide and concordance with BZD guidelines. The American College of Family Physicians and the American College of Physicians recommend non-BZD for first line treatments for anxiety and sleep disorders (Boggs et al., 2019). The study used a retrospective case-control study design that included participants with a diagnosis of anxiety and/or sleep disorder from eight states who receive services from the Mental Health Research Network. The results of the study found that prescribers who used the BZD guidelines managed patient with anxiety disorders with reduced odds for suicide. Additionally, the researchers found a reduced likelihood for suicide in those with anxiety disorders who had BZD prescriptions for short-term use along with CBT and antidepressant treatment. In addition to suicide, other risks to BZD use have been identified.

According to a study by Kroll et al., (2016) BZD use can also be associated with adverse drug events and higher mortality. Known risk factors for prescribing BZD which lead to adverse outcomes include patients with lung disease, substance use disorder (SUD) and fractures in elderly population, due to increased risk of falls (Kroll et al., 2016). The study setting included 16 hospitals and health centers in Massachusetts and examined electronic health records over a period of one year. The study found that there was an increase likelihood of adverse drug events when a provider prescribed BZD in patients with medical diagnoses that included SUD, depression, chronic obstructive pulmonary disease (COPD), sleep apnea and asthma (Kroll et al., 2016).

In a study by Jessell et al., (2019) researchers found that using BZD with co-occurring SUDs has an increased risk for dependence, misuse, diversion and overdose. From 2002-2016 there has been an increase in overdose deaths with BZDs (Jessell et al., 2019), along with BZD and concurrent opioid. It is important to address the high number of documented patients with SUD being prescribed BZDs, which can be fatal, along with the potential increase of overdose with BZDs (Jessell et al., 2019). Jessell et al., (2019) performed a retrospective chart review of 774 patients that were prescribed at least one BZD. The researchers found that 35.1% had a co-occurring SUD and 31.8% had an anxiety disorder. The American Society of Addiction Medicine (ASAM) and the Centers for Disease Control and Prevention (CDC) recommend that clinicians do not recommend prescribing BZD and opioids together, due to risk of accidental overdose and abuse. Prescription opioids and BZD contain an FDA "black box" warnings on the label highlighting the dangers of using these drugs together. In 2020, the FDA changed the boxed warning for BZD risks of abuse, misuse, addiction, physical dependence and withdrawal reaction (FDA, 2020).

This literature review composed of evidence-based studies, suggests a BZD reduction program could improve the quality of outcomes by using safer alternative methods. Multiple publications gathered through the literature review encouraged and recommended CBT and other alternative approaches to help patients with reducing BZD usage. Some of the literature suggests that long-term use of BZDs can be associated with an increased risk of cognitive decline. BZD usage with co-occurring SUDs has an increased risk for dependence, misuse, diversion and overdose. BZD should be avoided

for any patient on opioid medications, due to the risk of accidental overdose, possible respiratory depression and even death.

The EBP framework chosen to guide this pilot study was the PDSA. This model is focused on four stages: 1) gathering a proactive healthcare team to examine and identify solutions to reduce BZDs usage, 2) testing the pilot program that the team develops, 3) use of the data and methods to study the outcomes and results, 4) systematize the BZD reduction plan and establish future plans to improve patient outcomes. The student PI is an APRN member of the providers in this health care office. Providers met in Fall 2020 and agreed to implement the BZD taper schedule based on the National Center for PTSD (2013), an organization associated with the United States Department of Veterans Affairs. The team agreed to let the student PI guide and implement this BZD reduction guideline.

Method

Design

This was a quality improvement project. The prescribers received a monthly report of provider prescribing, and a prospective medical record review was done on the number of benzodiazepine prescriptions for each provider each month for the four months of the BZD reduction project. Final data review occurred in June 2021.

Setting

The setting was a non-profit organization, one location was selected for this project. The practice is located in a large metropolitan region in the Midwest and sees approximately 2000 patients/year. The location employs one board-certified psychiatrist, five board-certified psychiatric mental health nurse practitioners, six registered nurses,

eight medical assistants, two social workers, and four support staff. Office hours are Monday-Friday and closed on weekends and holidays; however they have two on call nurses for afterhours and weekends.

Sample

The sample was a purposeful sample of patients' prescribed a BZD medication during the four-month study period. Inclusion criteria were patients age 18-years and older, of any race or gender with a scheduled office or telehealth visit during the study period and at least one Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) diagnosis. Exclusion criteria were patients under 18-years and older, of any gender or race who, did not have at least one DSM-5 diagnosis.

Approval Processes

The providers in the office met in Fall 2020 and approved initiation of a BZD reduction guideline which guides this project (Appendix A). Approval process was obtained from the Clinical Scholarly Project practice committee, the UMSL institutional review board (IRB) and the IRB of the healthcare organization where the quality improvement project was conducted. There were minimal to no risks to patients in this quality improvement project, because providers followed the established evidence-based treatment guidelines for prescriptions use of BZDs for their diagnosis. Benefits of this quality improvement project included decreased adverse effects and risks from prescribing BZDs, and improvement of patient outcomes.

Data Collection and Analysis

Prospective medical record review was done on the number of BZD prescriptions for each provider each month for the four-months of the BZD reduction project. Final

data review occurred in June 2021. The collection of the data occurred from the Electronic Medical Record (EMR). Data was collected via EMR and from a report received that lists each provider's number of BZD prescriptions each month. Provider data was de identified by assigning an alpha numeric value for each provider.

Procedures

An education review meeting was held in February 2021 covering the risks of long-term BZDs to providers prior to the start of this quality improvement project (Appendix B). A BZD taper schedule was given to providers based on the National Center for PTSD (2013), an organization associated with the United States Department of Veterans Affairs (Appendix C). These guidelines recommend an initial reduction of 25% for long-term BZD patients, followed by a 5-10% daily to weekly reduction of BZD dose. Each patient, if able, due to COVID-19 restrictions for in person visits, signed a controlled substance agreement form from the organization (Appendix D).

Results

There were four prescribers in this quality improvement project. Prescriber A has approximately seven years of prescribing psychotropic medications in a mental health setting. Prescribers B and C have approximately three years of prescribing psychotropic medications in a mental health setting. Prescriber D has approximately 15 years of prescribing psychotropic medications. The data collected shows the number of medications prescriptions, the percentage of BZD prescriptions in the last 30 days for each month, and the percentage of long-term BZD prescriptions for each month during this quality improvement project (Appendix E). The long-term BZD prescriptions are

more than 30 days of BZD medications. The number of patients that were prescribed BZD was approximately 145.

Provider A had a decrease of 1.5% of total BZD prescriptions and a decrease of 16.89% of BZD prescriptions over 30 days. Provider B had an increase of 24.3% of total BZD prescriptions and a decrease of 3.22% of BZD prescriptions over 30 days. Provider C had an increase of 15.93% of total BZD prescriptions and a decrease of 27.2% of BZD prescriptions over 30 days. Provider D had a decrease of 22.01% of total BZD prescriptions and a decrease of 18.2% of BZD prescriptions over 30 days. The total BZD prescriptions for all four providers was a total decrease of 2.85% (Appendix F). The total BZD prescriptions over 30 days was a total decrease of 16.93% (Appendix G).

Discussion

This quality improvement project implemented suggested BZD taper guidelines and educational materials for providers in a non-profit organization in a large metropolitan region in the Midwest. The goal of this project was to decrease long-term BZD use in patients currently prescribed BZD longer than one month by 10 percent over four months. The results showed that the total BZD prescriptions across the four providers involved in this study were a total decrease of 2.85%. When analyzing the data for prescriptions that were considered long-term, the total decrease of BZD prescriptions was 16.93%. The guideline implementation was successful, not only meeting but exceeding the aim of this quality improvement project.

There were limitations to this quality improvement project. One limitation was that the guidelines given to providers required frequent visits, and due to the organization being understaffed and appointment slots previously occupied when a patient was

expected to follow up, the guidelines were not able to be followed as suggested. Another limitation was due to COVID-19 restrictions, many patients were participating only in telehealth appointments and the control substance agreement was not signed by all patients, and education handouts had to be mailed out to the patients.

One recommendation would be to continue with the implementation of this project and review data over at least a six-month timeframe. There were a total of nine patients that were on long-term BZD and they were able to successfully discontinue BZD during the four-month period. If the implementation continues the total number of patients that are successfully able to discontinue BZD could increase. Implementing these guidelines across the organization for all providers will help maintain and sustain change to continue to reduce the prescriptions of long-term BZD.

Conclusion

In conclusion, implementation of BZD taper guidelines and educational materials can help reduce the long-term BZD risks. Recommending CBT and first-line medications for anxiety, PTSD and other mental health disorders can help with the tapering of BZD medications for patients. This quality improvement project was successful at decreasing the amount of long-term BZD prescriptions over the four-month timeframe, but a longer timeframe might show more patients able to completely discontinue BZD medications.

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Appendix A

BZD Equivalent Doses and Suggested Taper

BZD medication	Approximate Dosage Equivalents	Elimination Half-life
Chlordiazepoxide	**25 mg**	**>100 hr**
Diazepam	**10 mg**	**>100 hr**
Clonazepam	**1 mg**	**20-50 hr**
Lorazepam	**2 mg**	**10-20 hr**
Alprazolam	**1 mg**	**12-15 hr**
Temazepam	**30 mg**	**10-12 hr**

Benzodiazepine Taper:

- **Switching to a longer acting BZD**
- **Reduce dose by 50% for the first 2-4 weeks then maintain on that dose for 1-2 months then reduce dose by 25% every two weeks**

Appendix B

BZD - Patient/Provider - Quick Start Guide (va.gov)

Appendix C

Milestone Suggestions

Example: Alprazolam 2 mg bid

Week 1		**35 mg/day**
Week 2	**Total dose decrease by 25%**	**30mg/day (25%)**
Week 3		**25 mg/day**
Week 4	**Total dose decrease by 50%**	**20 mg/day (50%)**
Week 5-8	**Hold dose**	**Continue at 20 mg/day for 1 month**
Week 9-10	**Current dose reduction of 25% every two weeks**	**15 mg/day**
Week 11-12		**10 mg/day**
Week 13-14		**5 mg/day**
Week 15		**Discontinue**

(Perry et al., 2007)

Appendix D

Treatment with a Controlled Substance Agreement

Controlled substances are drugs that are illegal for sale or use, but may be dispensed only with a prescription. The reason for control and regulation is that controlled substances may be addictive, abused, and cause physical and mental harm (including death). In addition to a controlled substance other medical care may be prescribed to help improve health outcomes.

By signing this document, I am stating that I understand that following these guidelines are important in continuing treatment by use of a Controlled Substance with this provider.

1. I understand that I have the following responsibilities:
    a. I will take medications only at the dose and frequency prescribed.
    b. I will not increase or change medications without the approval of my provider.
    c. I will participate in any program aimed to improve function (including social, physical, psychological and daily or work activities).
    d. I will not ask for controlled substance from other providers.
    e. I will tell my provider all the medications that I am taking.
    f. I will get all medications from one pharmacy.
    g. I will protect my prescriptions and medications. I will keep all medications from children.
    h. I agree to participate in psychiatric or psychological assessments, if recommended.
    i. I will not use illegal or street drugs, medications that are not prescribed to me, or alcohol.
    j. I might be asked to follow through with a 12-step program, counseling or outpatient treatment.
2. I understand that I will agree to random drug screening. A drug screen is a lab test in which a sample of my urine or blood is checked to see what drugs I have been taking.
3. I understand that I will agree to random medication counts. I will bring my medications to every appointment.
4. I will keep my appointment and/or cancel 24 hours prior to my appointment.
5. I understand that my provider may stop prescribing controlled substances or change the treatment plan if:
    a. My symptoms do not improve with the controlled substance.
    b. My behavior is inconsistent with the responsibilities outlined in #1.
    c. I give, sell, or misuse my medications.
    d. I develop rapid tolerance or loss of improvement from the treatment.

e. I obtain a controlled substance from another provider.
f. I refuse to cooperate when asked to get a drug screen.
g. An addiction problem is identified as a result of prescribed treatment or any other addictive substance.
h. I am unable to keep follow-up appointments.

Patient Signature/Date Witness Signature/Date

Appendix E

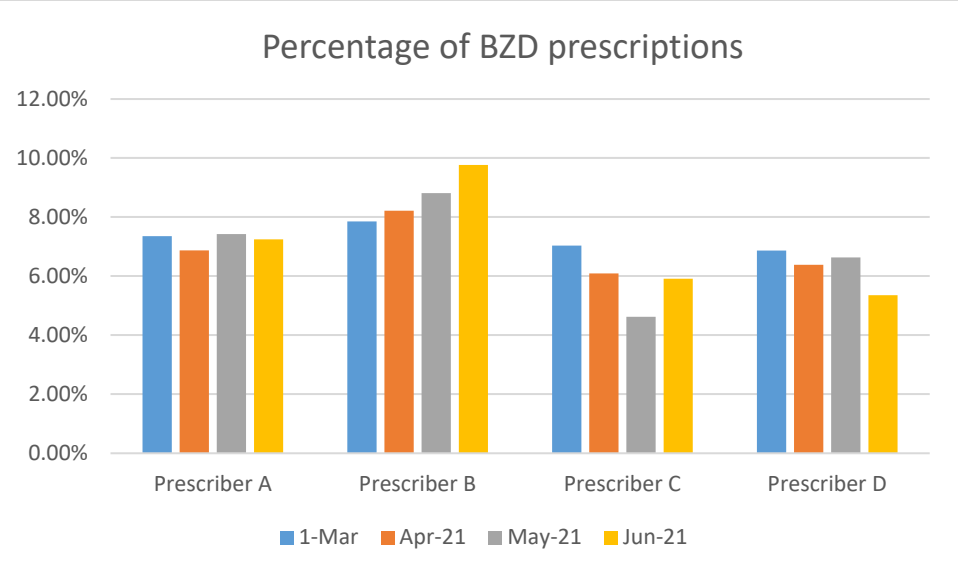
Number of prescriptions and percentages of BZD prescriptions

Prescriber	# of prescriptions	# of BZD prescriptions	# of long-term BZD prescriptions
Prescriber A (Mar-21)	789	58 (7.35%)	35 (4.44%)

Prescriber A (Apr-21)	772	53 (6.87%)	38 (4.92%)
Prescriber A (May-21)	701	52 (7.42%)	34 (4.85%)
Prescriber A (June-21)	677	49 (7.24%)	25 (3.69%)
Prescriber B (Mar-21)	777	61 (7.85%)	41 (5.28%)
Prescriber B (Apr-21)	755	62 (8.21%)	48 (6.36%)
Prescriber B (May-21)	738	65 (8.81%)	45 (6.09%)
Prescriber B (June-21)	666	65 (9.76%)	34 (5.11%)
Prescriber C (Mar-21)	128	9 (7.03%)	8 (6.25%)
Prescriber C (Apr-21)	197	12 (6.09%)	7 (3.55%)
Prescriber C (May-21)	238	11 (4.62%)	5 (2.10%)
Prescriber C (June-21)	220	13 (5.91%)	10 (4.55%)
Prescriber D (Mar-21)	306	21 (6.86%)	20 (6.54%)
Prescriber D (Apr-21)	298	19 (6.38%)	19 (6.38%)
Prescriber D (May-21)	332	22 (6.63%)	20 (6.02%)
Prescriber D (June-21)	299	16 (5.35%)	16 (5.35%)

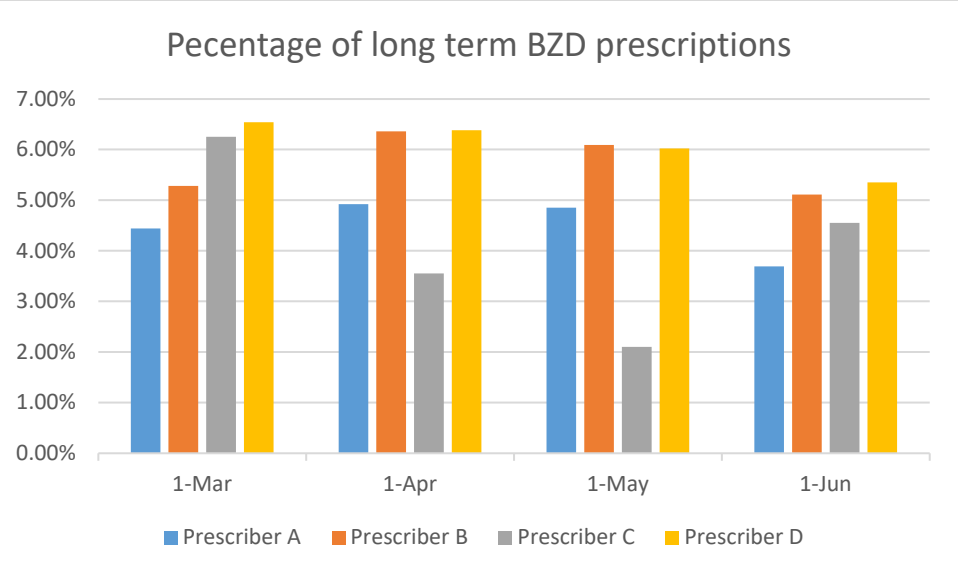
Appendix F

BZD percentage prescriptions



Appendix G

Percentage of long-term BZD prescriptions


Pecentage of long term BZD prescriptions
7.00%
6.00%
5.00%
4.00%
3.00%
2.00%
1.00%
0.00%
1-Mar
1-Apr
1-May
1-Jun
Prescriber A
Prescriber B
Prescriber C
Prescriber D