

# Guideline, Education, and Peer Comparison to Reduce Prescriptions of Benzodiazepines and Low-Dose Quetiapine in Prison

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## Abstract

Benzodiazepines (antianxiety medications) and quetiapine (an antipsychotic medication) are subject to abuse in prison. Quetiapine is also expensive and has serious side effects. The prescription of these medications in prison for anxiety and insomnia is not the preferred choice. In order to reduce these prescriptions, the University of Medicine and Dentistry of New Jersey–University Correctional HealthCare (UCHC), working within the New Jersey Department of Corrections, provided its psychiatrists with a guideline to the treatment of insomnia in prison. The guideline discouraged pharmacological treatment of insomnia. UCHC then anonymously compared the prescribing practices of its psychiatrists to each other, and educated the psychiatrists about the disadvantages of benzodiazepines and low-dose quetiapine in prison. These techniques reduced the numbers of inmates prescribed benzodiazepines by 38% after 20 months and reduced the numbers of inmates prescribed low-dose quetiapine by 59% after 22 months.

## Keywords

benzodiazepine, antipsychotic, quetiapine, physician profiling, education, peer comparison

## Introduction

The New Jersey Department of Corrections (NJDOC) manages New Jersey's approximately 25,000 state prisoners in 13 prisons throughout the state. University Correctional HealthCare (UCHC), a branch of the University of Medicine and Dentistry of New Jersey, provides the medical and mental health care to those inmates. The NJDOC by policy requires continuous quality improvement (CQI) in

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its health care operations. As an example of CQI, the NJDOC Pharmacy and Therapeutics Committee, with participation from UHC, issued a guideline for the treatment of insomnia in prison.

To further the aims of this guideline, UHC profiled its psychiatrists' prescribing practices. Physician profiling—the comparison of an individual physician's practice with a benchmark in order to improve quality of care through improved patient outcomes and/or lower cost—is a ubiquitous CQI tool (Reinke, 2007). Insurance companies (O'Reilly, 2006), pharmaceutical companies (Prescription Project, 2008), medical practices (Wigder, Cohan Ballis, Lazar, Uργο, & Dunn, 1999), correctional systems (Szykula & Jackson, 2005), individual states (Florida Department of Health, 2010; Massachusetts Group Insurance Commission, n.d.), and the federal government (National Practitioner Data Bank, n.d.) use physician profiling. Profiling can address any number of aspects of physicians' practices, including, for example, cost-per-episode of illness, type and numbers of prescriptions, and improvement in markers for chronic disease (e.g., blood pressure in persons with hypertension, or hemoglobin A1C in persons with diabetes). The typical benchmark in physician profiling is the average for any given index.

UHC, in this case, assessed its psychiatrists' prescriptions of benzodiazepines and low-dose (100 mg or less daily) quetiapine. Benzodiazepines and quetiapine were formulary medications in the NJDOC. Benzodiazepines were reviewed because they are a controlled substance subject to abuse and diversion (Burns, 2009). According to a review of diagnoses in August 2008, approximately two thirds of New Jersey state prisoners on the special needs (psychiatric) roster abuse drugs. This figure is consistent with other studies showing high comorbidity of mental illness and substance abuse among prisoners (Abram & Teplin, 1991; Gunter et al., 2008; Peters, Greenbaum, Edens, Carter, & Ortiz, 1998). Given this potential for abuse, and given alternative effective nonpharmacological treatments, the prescription of benzodiazepines for the treatment of insomnia and anxiety in prison is not the preferred choice.

Low-dose quetiapine was also reviewed. Quetiapine is classified as an antipsychotic medication and is approved by the Food and Drug Administration for the treatment of the major mental illnesses schizophrenia and bipolar disorder. In addition, even though quetiapine has not been approved for the treatment of anxiety and insomnia, many psychiatrists prescribe it at a low dose (typically 100 mg or less) to treat these conditions. These "off-label" uses of quetiapine are questionable. Quetiapine exposes inmates to metabolic side effects that can lead to diabetes and cardiovascular disease (American Diabetes Association, 2004; Lieberman et al., 2005), and the evidence indicates that such effects are not dose-related. At the time this study was conducted, quetiapine was available only in brand form as Seroquel. Seroquel is expensive: The average wholesale prices of 50 mg and 100 mg tablets were approximately \$4.50 each (NJDOC, internal correspondence, Mental Health Unit Cost Comparison, 2009). In comparison, the average wholesale price of a 100-mg tablet of the generic antihistamine hydroxyzine, which is also commonly prescribed off-label for anxiety and insomnia, was 5 cents. Finally, clinicians at UHC and nationwide express concern that quetiapine is abused in jails and prisons for its sedative effect (Pierre, Shnyder, Wirshing, & Wirshing, 2004; Pinta & Taylor, 2007; Waters & Joshi, 2007).

We hypothesized that when, in the context of the above-mentioned guideline, we educated psychiatrists about the shortcomings of benzodiazepines and quetiapine and allowed these psychiatrists to compare their prescribing practices with those of their peers, the psychiatrists would decrease their prescriptions of benzodiazepines and low-dose quetiapine.

## **Method**

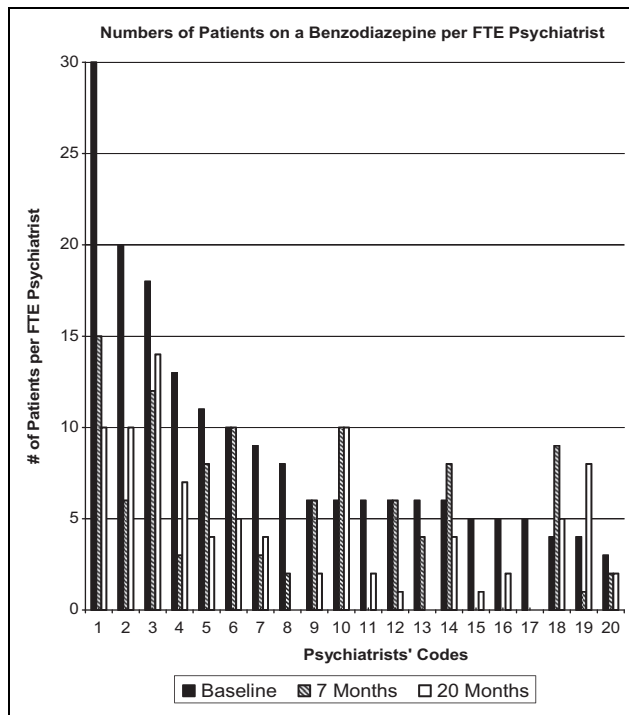
Before the study began, the NJDOC issued a guideline for the evaluation and treatment of insomnia. This guideline encouraged the nonpharmacological treatment of insomnia. Psychiatrists were instructed to refer inmates with simple insomnia, with or without mild anxiety or depression related

to adjustment to prison, to sleep hygiene groups and brief psychotherapy, rather than to start medication. These groups and psychotherapy were led by psychologists and social workers.

### *Benzodiazepines*

We subsequently counted (at baseline) the number of patients on each psychiatrist's caseload for which the psychiatrist prescribed a benzodiazepine. We adjusted the numbers based on each psychiatrist's doing full-time equivalent (FTE) work. This adjustment allowed us to compare the practices of full-time psychiatrists with part-time psychiatrists. We ranked the psychiatrists from highest frequency prescriber to lowest frequency prescriber (based on full-time work) and coded the psychiatrists' names (Figure 1). Each psychiatrist was shown the ranking table and given his code via individual email but was not shown his colleagues' codes. Thus, each psychiatrist knew where he ranked among his colleagues but was spared the potential embarrassment of others knowing where he ranked. If the psychiatrists so desired, they might have shared their rankings among themselves. This study did not assess whether the psychiatrists shared their rankings. The psychiatrists were also given the mean and median numbers for each interval of measurement.

The psychiatrists were given the reasons (noted in the Introduction section above) why the prescription of a benzodiazepine for treatment of anxiety or insomnia in the prison is not the preferred choice. The psychiatrists were asked to minimize this use and to refer inmates to sleep hygiene groups and to therapists for psychotherapeutic treatment of anxiety. Psychiatrists were informed that outliers remaining at the second assessment would be individually counseled. We repeated the study 7 months and 20 months after the initial study and compared the



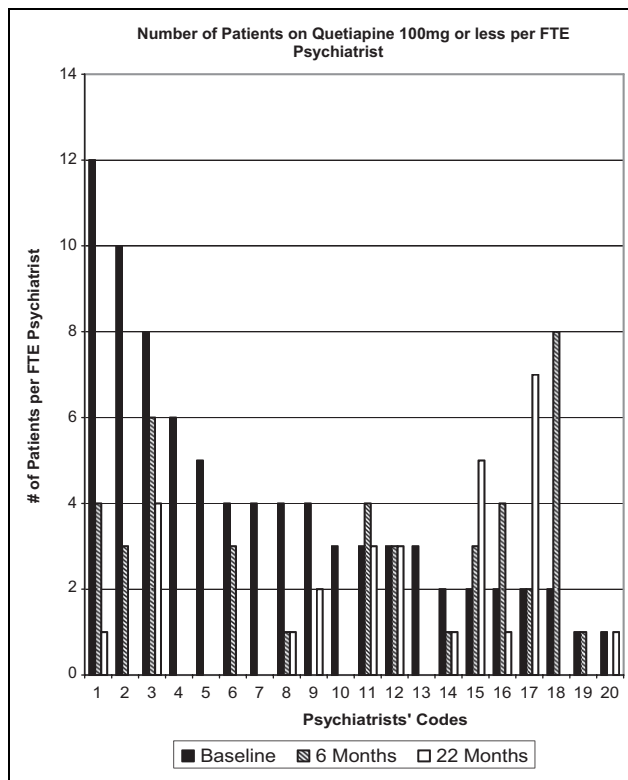
**Figure 1.** Prescriptions of benzodiazepines. For ease of illustration, the top 20 prescribers at baseline are shown. The remaining 16 prescribers at baseline who are not shown all had an equal or fewer numbers of patients on a benzodiazepine than the 20th prescriber (i.e., equal to or less than 3 patients).

prescribing practices of each psychiatrist at each interval. We did not inform the psychiatrists that there would be a third assessment at 20 months. The absolute reduction (without adjustment to FTE for each physician) in the numbers of inmates prescribed a benzodiazepine at baseline, at 7 months, and at 20 months was determined.

### Quetiapine

The methodology was similar for quetiapine. We counted the number of patients on each psychiatrist's caseload who had been prescribed low-dose quetiapine (100 mg or less daily). We considered any prescription of quetiapine 100 mg daily to be for purposes other than insomnia. We again standardized each psychiatrist's count by presenting the count on an FTE basis. We ranked the psychiatrists from highest frequency prescriber to lowest frequency prescriber, showed the psychiatrists the ranking table with names coded to protect anonymity (Figure 2), and informed the psychiatrists of the mean and median numbers.

The psychiatrists were taught why the prescription of low-dose quetiapine for insomnia is not preferred and were asked to minimize this use. Psychiatrists were informed that outliers remaining at the second assessment would be individually counseled. We again encouraged the psychiatrists to refer inmates to sleep hygiene groups and therapy. We repeated the study 6 months and 22 months after the initial study and compared the prescribing practices of each psychiatrist at each interval. We did not inform the psychiatrists that there would be a third assessment at 22 months.



**Figure 2.** Prescriptions of quetiapine. For ease of illustration, the top 20 prescribers at baseline are shown. The remaining 10 prescribers at baseline who are not shown all had an equal or fewer numbers of patients on quetiapine than the 20th prescriber (i.e., equal to or less than 1 patient).

**Table 1.** Benzodiazepine Prescriptions per FTE Psychiatrist at Three Intervals

Time	Baseline vs. 7 Months	Baseline vs. 20 Months	7 Months vs. 20 Months
Time 1 (M)	5.63	5.63	3.27
Time 2 (M)	3.27	3.44	3.44
<i>p</i> Value	.0005	.003	n.s.

**Table 2.** Quetiapine Prescriptions per FTE Psychiatrist at Three Intervals

Time	Baseline vs. 6 Months	Baseline vs. 22 Months	6 Months vs. 22 Months
Time 1 (M)	2.9	2.9	1.7
Time 2 (M)	1.7	1.1	1.1
<i>p</i> Value	.0294	.0065	n.s.

The absolute reduction for each physician (without adjustment to FTE) in the numbers of inmates prescribed low-dose quetiapine at baseline, at 6 months, and at 22 months was determined.

## Results

### Benzodiazepines

For the benzodiazepine study, 36 psychiatrists were with UCHC at all 3 intervals (baseline, 7 months later, and 20 months later). The average caseload for each FTE psychiatrist was 125 patients. Clonazepam was the benzodiazepine overwhelmingly prescribed. The mean and median numbers of patients for whom each FTE psychiatrist prescribed a benzodiazepine were as follows: at baseline, 5.6 and 4; at 7 months, 3.3 and 2; and at 20 months, 3.4 and 2. These numbers highlight the fact that a few psychiatrists prescribed considerably more benzodiazepines than their peers. Using a signed rank-order test, the difference between the means at baseline and at 7 months is statistically significant ( $p < .0005$ ; Table 1). The difference between the means at baseline and at 20 months is also statistically significant ( $p < .003$ ). The difference between the means at 7 months and at 20 months is not statistically significant. Relative to baseline, the differences between these means reflect 39% and 38% absolute reductions (i.e., without adjustment to FTE status of physicians) in the numbers of inmates prescribed a benzodiazepine at 7 months and 20 months, respectively.

### Quetiapine

For the quetiapine study, 30 psychiatrists were with UCHC at all 3 intervals (baseline, 6 months later, and 22 months later). The average caseload for each FTE psychiatrist was 125 patients. The mean and median numbers of patients for whom each FTE psychiatrist prescribed quetiapine were as follows: at baseline, 2.9 and 2; at 6 months, 1.7 and 1; and at 22 months, 1.1 and 0. Similar to the benzodiazepine results, these numbers reflect the fact that a few psychiatrists prescribed considerably more low-dose quetiapine than their peers. Using a signed rank-order test, the difference between the means at baseline and at 6 months is statistically significant ( $p < .0294$ ; Table 2). The difference between the means at 6 months and at 22 months is not statistically significant. The difference between the means at baseline and at 22 months is statistically significant ( $p < .0065$ ). Relative to baseline, the differences between these means represent 38% and 59% absolute reductions (i.e., without adjustment to FTE status of physicians) in the numbers of inmates prescribed low-dose quetiapine at 6 months and 22 months, respectively.

## Discussion

A medical truism has it that physicians are difficult to manage. Physicians by training and perhaps by temperament are accustomed to making difficult decisions on their own. They value autonomy. Perhaps for these reasons, there is little evidence that clinical guidelines by themselves alter the behavior of physicians (Eve, Golton, Hodgkin, Munro, & Musson, 1996). On the other hand, physicians respect their peers, and few physicians are loners or pioneers. The successes of physician profiling in general—which does change the behavior of physicians across all areas of medicine, including psychiatry—may be attributable partly to the principle of social norming or, more simply, peer pressure.

There may be additional reasons for the success of this intervention. The profiling did not merely provide abstract means and medians. A picture in form of a graph was offered: Physicians may, like everyone else, find a picture more compelling than words. The ranking also introduced competition: No one likes to be last. The competition was made more legitimate in that these psychiatrists work in the same system, with the same types of patients. The nature of the targeted behavior also lent itself to modification. Even though the psychiatrists in this study were explicitly educated about the downsides of benzodiazepines and low-dose quetiapine in prison, the psychiatrists probably already were aware of these downsides. The use of benzodiazepines and quetiapine is a well-known controversy among correctional psychiatrists. Many correctional health systems have moved benzodiazepines and quetiapine off their formularies. (Months after this study was completed, the NJDOC and UCHC took quetiapine off the formulary for the reasons mentioned above but principally because risperidone [another atypical antipsychotic] had gone generic and was substantially less expensive.) The high-frequency prescribers in this study would probably have endorsed the idea that the use of benzodiazepines and low-dose quetiapine in prison was a practice that required caution. They simply might not have known the extent to which they were outliers, notwithstanding their expressed caution. Finally, UCHC psychiatrists are salaried employees working in an institutional setting. UCHC psychiatrists understand that they are subject both to supervision and to these CQI initiatives as part of UCHC's routine business.

Whether the psychiatrists shared their initial anonymous rankings with one another is uncertain. The author did not attempt to stop or assess this sharing and was not concerned if the sharing did occur. In this naturalistic study, the author could not have stopped the sharing if he had wanted to. Moreover, the author did not want to stop sharing as the point of the study was to convince physicians to change their ways by accepting the legitimacy of the intervention. If the physicians wished to discuss their rankings with one another, that was fine. To have attempted to stop physicians from sharing information would have been anathema to the spirit of the study.

Psychiatrist and patient demographics (e.g., hepatic insufficiency, geriatric patients, adverse drug reactions, etc.) were not assessed in this study as, in the end, such differences were considered unlikely to have affected the overall results. That is, some psychiatrists may have had a disproportionate number of patients who might have benefitted, or conversely, who might not have benefitted, from a benzodiazepine or low-dose quetiapine. Over the entire state, the numbers of such patients would not have changed appreciably from one assessment interval to the next.

The psychiatrists were also explicitly asked to minimize their prescriptions of benzodiazepines and quetiapine. This could have caused problems based on the Hawthorne effect in which the participants may alter their behavior because they are in a study. The persistence of these results at 20 months and longer when the psychiatrists no longer had an expectation that they were being studied suggests that the Hawthorne effect does not account for the results.

This study combined a guideline, education, and physician profiling using peer comparison to achieve lasting changes in prescribing among correctional psychiatrists. Surprisingly, the author of this study found only one other published study in the medical literature (Wigder et al., 1999) that successfully introduced a clinical guideline by way of peer comparison. Another study suggested

that information exchange with colleagues was an important determinant of physicians' prescribing practices (Ljungberg, Lindblad, & Tully, 2007). Whether it was the guideline itself, the education itself, the peer comparison itself, or some combination of the three that resulted in the changes in this study is uncertain. This study did not attempt to answer these questions by forming control groups. This is a limitation of the study.

However, given the above-mentioned evidence suggesting that clinical guidelines by themselves are ineffective in changing physician behavior, and given that the staff psychiatrists were aware at the outset of the study of at least some the disadvantages of benzodiazepines and quetiapine, reason suggests the peer comparison was necessary for the success of the intervention. The innovation of this study was the combination of the legitimacy conferred by the guideline and the education of the physicians, and the peer comparison that motivated physicians toward the legitimate goal. In any case, the ease with which a guideline, education, and peer comparison effected change in physicians' prescribing patterns, and the magnitude and duration of these changes, suggest that these techniques should be used together more often.

### Declaration of Conflicting Interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article. For information about *JCHC*'s disclosure policy, please see the Self-Study Exam.

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