Effects of state surveillance on new post-hospitalization benzodiazepine use

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Abstract

Background. Benzodiazepines (BZD) effectively treat anxiety and insomnia accompanying major health events, including hospitalizations. Prescribing regulations to decrease BZD misuse may negatively impact therapeutic uses.

Objective. To assess the impact of a Triplicate Prescription Program (TPP) on initiation of post-hospitalization BZD prescribing, both overall and among cardiac and cancer patients in the United States.

Design. Interrupted time-series of post-hospitalization BZD dispensing events to enrollees in the US Medicaid program in the states of New York (intervention group) and New Jersey (control group), before and after implementation of a TPP.

Study participants. Community-dwelling Medicaid enrollees in New York State (n = 67,962) and New Jersey (n = 71,701), hospitalized between 1 January 1988 and 30 November 1990.

Intervention. The New York State TPP, implemented on 1 January 1989, requires physicians to prescribe BZD on triplicate prescription forms for state surveillance.

Outcome measures. Rates and duration of new post-hospitalization use of BZD and substitute medications.

Results. Overall, a sudden and sustained 63.5% decrease [95% confidence interval (CI) −58.6% to −68.3%] in new post-hospitalization BZD dispensing—from a baseline rate of 44 discharges with BZD dispensing per 1000 discharges per month—followed the TPP in New York State, without discontinuity in the control state. Patients hospitalized for acute ischemic cardiac events experienced a 72.5% reduction (95% CI −55.5% to −89.4%), and cancer patients a 69.4% reduction (95% CI −36.7% to −100.0%). The TPP did not preferentially reduce BZD use lasting >2 months. Increased substitute use did not offset reductions in BZD use.

Conclusions. By decreasing new short-term post-hospitalization BZD use, the New York State TPP also had unintended effects.

Keywords: benzodiazepines, drug regulation, longitudinal studies, pharmaceutical policy

In the US, concerns about misuse and associated costs have led to increasing numbers of restrictions on prescribing important classes of psychoactive medications. It remains unclear what effects prescribing restrictions have on therapeutically appropriate compared with inappropriate use of medications targeted by them. We present results from a longitudinal, controlled study of the effects of a prescribing regulation on the use of benzodiazepines (BZD) after hospital discharge, particularly among those with major illnesses associated with substantial anxiety and insomnia.

Considerable controversy surrounds the use of BZD. Although they are effective and safe for the short-term treatment of anxiety and insomnia [1,2], their long-term use has been associated with increased risk of dependence and withdrawal symptoms upon discontinuation, and falls and fractures due to gait imbalance and cognitive impairment in the elderly [3,4]. During and after hospitalization, patients frequently experience anxiety and insomnia [5,6], and BZD are indicated for the short-term treatment of these symptoms [1,2]. Conversely, several authors have suggested that hospitalization is a risk factor for inappropriate use of BZD in the community [7–10].

The potential for misuse and abuse of BZD has prompted regulations that limit BZD prescribing. During the past decade, six states in the USA have restricted BZD prescribing [11], and in addition at least 11 state Medicaid programs,
i.e. state-run branches of the US health insurance program for certain low-income and needy people that are jointly funded by the federal and state governments, restrict BZD reimbursement [12]. On 1 January 1989, New York State implemented a Triplicate Prescription Program (TPP), which is still in effect. Physicians in New York must prescribe BZD on serially numbered, triplicate forms. Pharmacists forward one copy of the prescription to the state health authorities for surveillance. The New York State TPP resulted in an immediate and sustained decrease of 55% in the monthly number of BZD recipients in a continuously enrolled Medicaid cohort [13].

Effects of the New York State TPP on post-hospitalization BZD use are unclear. Ideally, the TPP would preferentially reduce potentially inappropriate BZD use and would not impact short-term, post-hospitalization BZD treatment to relieve situational anxiety and insomnia. Of particular concern are patients at high risk of these symptoms, such as patients discharged after treatment of acute cardiac events and cancer. Critics contend that prescribing restrictions can have unintended negative effects, depriving vulnerable populations of needed medications and leading to therapeutically less desirable substitutions [14].

The present study sheds light on the potential desired and unintended effects of the TPP on new post-hospitalization BZD use. We examined the frequency of new post-hospitalization BZD use among all Medicaid enrollees, and among the subgroups of patients treated for acute cardiac events and cancer, 12 months before and 24 months after the implementation of the New York TPP. We also evaluated whether the TPP reduced the proportion of discharges followed by longer-term, post-hospitalization BZD use, and assessed the potential substitution of BZD with other sedative-hypnotic medications, antihistamines, and anxiolytics.

Methods

Study design

On 1 January 1989, New York State implemented the BZD TPP. The neighboring, demographically similar state, New Jersey, did not restrict BZD prescribing. Using a longitudinal, controlled, quasi-experimental design [15], we evaluated whether the New York State TPP affected new BZD use among patients discharged from hospitals, and specifically among those treated for acute cardiac events and cancer.

Cohort definition

The study population consisted of adult Medicaid enrollees (aged ≥19 years) in the intervention state, New York (n = 67,962), and the control state, New Jersey (n = 71,701), who were admitted and discharged from a hospital between 1 January 1988 and 30 November 1990. Eligible enrollees received benefits under the Aid to Families with Dependent Children (AFDC), the Aid to the Permanently and Totally Disabled (APTD), and the Old Age Assistance (OAA) programs. We required cohort members to have been enrolled in Medicaid at least 10 out of 12 months, with no period of residence in a long-term care facility in the year before the TPP. Because the New York State Medicaid program does not maintain person-level medication data for nursing home residents, we also excluded people residing in nursing homes for >1 month during follow-up. Because the New York State Medicaid program is about four times larger than New Jersey’s program, the New York data are derived from a 25% random sample of Medicaid enrollees.

Data sources and study variables

Hospital episodes. Under Medicaid and Medicare, the latter being the US program that provides health insurance for people aged ≥65 years, for those who have permanent kidney failure, and for certain people with disabilities, claims for reimbursement of in-patient services contain admission and discharge dates, and multiple discharge diagnoses. We defined an episode of hospitalization as one that was followed by at least 30 days without a subsequent hospitalization. We classified adjacent hospital episodes (which might occur when patients are transferred from one institution to another) as one episode. Patients could contribute more than one hospitalization during the study period.

Enrollment and demographic data. Medicaid enrollment files were the data source for patient age and gender. Previous validation studies have demonstrated that enrollment data are complete and reliable with regard to patient enrollment status by month [16–18]. Census-based data using zip codes of residence (available for 95% of enrollees in both states) provided information about enrollees’ neighborhoods, including racial composition, classification as rural or urban, and distribution of household incomes.

Measures of BZD use. Reimbursement claims from pharmacies to the Medicaid program for medications dispensed to patients were the source of medication use information. Medicaid medication claims provide reliable and valid [16,19] measures of medication use that are internally consistent and stable over time for both individual drugs and broader therapeutic classes [21]. We linked these Medicaid medication claims to historically complete National Drug Codes to identify dispensed drug products. Dispensing of a BZD within 30 days of hospital discharge, without dispensing of a BZD within the 2 months before hospital admission, indicated new post-hospitalization BZD use.

To calculate duration of post-hospitalization BZD use, we defined a BZD episode based on patterns of use observed in the 1988 New Jersey Medicaid population. The maximum 30-day prescribed supply of BZD can last variable amounts of time. We found that the median duration between dispensings was 26 days, and that the most frequently observed time intervals were 30 and 34 days. We defined BZD episodes as sequences of BZD dispensings with breaks of <62 days between dispensings. We extended the duration of each BZD episode for 30 days beyond the last date of dispensing. We defined short-term BZD use as a BZD episode lasting ≤62 days, and longer-term use as an episode lasting >62 days.
Measures of potential therapeutic substitutes. A reduction in BZD use may be associated with an increase in use of non-BZD psychoactive medications after hospitalization. We assessed the use of potential therapeutic substitutes for BZD, defined by an expert physician panel of psychopharmacologists and internists as desirable (buspirone, sedating antihistamines) and less desirable (barbiturate and non-barbiturate sedative-hypnotics).

For each hospitalization, we determined whether an anxiolytic (buspirone), a sedating antihistamine (chlorpheniramine, diphenhydramine, hydroxyzine, promethazine), a barbiturate sedative-hypnotic, or a non-barbiturate sedative-hypnotic (e.g. amitriptyline with chlordiazepoxide or perphenazine, chloral hydrate, etchlorvynol, gluthetimide, meprobamate and combinations, chloromezolone, or trimeprazine) was dispensed within 30 days after discharge, without the use of substitutes before admission.

Identification of patients in cardiac and cancer risk groups. Patients discharged after major health events might particularly benefit from receiving a BZD to treat symptoms of anxiety or sleeplessness. We selected acute cardiac events and cancer as examples of such health events, using primary and first-secondary discharge diagnosis codes to identify patients discharged after hospitalization for acute cardiac events (International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) codes 410.00–410.92, 411.1, 411.8, 411.81, and 411.89) and malignant neoplasm (ICD-9-CM codes 140–208).

Data analysis

We compared baseline demographic characteristics (age, gender, Medicaid eligibility category, and neighborhood racial composition, residential characteristics, and income), and frequency of hospital discharges after acute cardiac events and cancer treatment in the intervention and control cohorts. We compared changes in post-hospitalization BZD use over time (January 1988 to December 1990) in the study groups [15]. We used segmented regression analyses [21,22] to determine whether overall monthly rates of new post-hospitalization BZD use, and new longer-term use, changed in New York State after the TPP. The regression models controlled for baseline trend and potential confounding due to changes in the proportion of repeat hospitalizations (Table 2).

Using parameter estimates from the time series regression models, we calculated the difference at 3 months after the TPP between observed rates and rates estimated at that time based on pre-TPP level and trend only, controlling for potential confounding by changes in the proportion of repeat hospitalizations over time. We expressed this difference as percentage change from BZD prescribing rates, estimated without the TPP.

We assessed whether the TPP changed post-hospitalization use of therapeutic substitutes in New York State among those who did not use substitutes or BZD before admission.

Results

Baseline characteristics of hospital episodes

During the study period, 67,962 Medicaid enrollees in New York State contributed 112,348 hospital episodes; of these, 100,725 episodes (89.7%) were without prior BZD use. In New Jersey, 71,701 enrollees contributed 120,715 hospital episodes, including 101,591 (84.2%) without prior BZD use. Table 1 shows characteristics of hospitalizations without prior BZD use in both states. More hospitalizations in New York State occurred among older patients (enrolled in OAA), patients living in neighborhoods with fewer numbers of black residents, and patients living in poorer neighborhoods. Sixty-three percent of hospitalizations in each state were first hospitalizations for the enrollee during the study period.

TPP effect on overall post-hospitalization BZD use. Figure 1 shows the monthly proportions of hospital discharges that were followed by new BZD dispensing within 30 days in both states. Before the TPP, these rates were similar, on average 45 new BZD dispensings per 1000 discharges during the baseline year in New York State, and 53 per 1000 in New Jersey. The rate decreased suddenly to ~17 per 1000 on average during the 2 years after the TPP in New York, and remained at this level until the end of the observation period, while it increased slightly and steadily during the observation period in New Jersey, to a rate of 61 per 1000 on average during the last study year. Overall, new post-hospitalization BZD use 3 months after the TPP in New York decreased by 63.5% (95% confidence interval (CI) –58.6% to –68.3%), controlling for baseline trend and potential confounding due to changes in the proportion of repeat hospitalizations (Table 2).

TPP effect on post-hospitalization BZD use among subgroups.

Table 2 also shows estimates of new post-hospitalization BZD use among subgroups of New York Medicaid enrollees at baseline and changes after the TPP. Before the TPP, the rate of discharges followed by new BZD use ranged from 25 per 1000 (among AFDC enrollees) to 99 per 1000 (among patients discharged with acute cardiac diagnoses). Post-TPP reductions in rates of new post-hospitalization BZD use ranged from 50.7% to 79.0%, and were statistically significant in all subgroups. Consistent with previous findings [13], AFDC enrollees had the lowest baseline use and experienced the largest reduction in post-hospitalization BZD use. Patients hospitalized for acute cardiac events and those hospitalized for treatment of cancer had the highest rates of baseline use and experienced among the largest reductions in post-hospitalization BZD use: 72.5% and 69.4% respectively.
Table 1  Baseline characteristics of hospital episodes without prior benzodiazepine use among New York State and New Jersey Medicaid enrollees

<table>
<thead>
<tr>
<th></th>
<th>New York State, n (%)</th>
<th>New Jersey, n (%)</th>
</tr>
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<tbody>
<tr>
<td><strong>Total</strong></td>
<td>100 725 (100.0)</td>
<td>101 591 (100.0)</td>
</tr>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19–44</td>
<td>46 711 (46.4)</td>
<td>59 135 (58.2)</td>
</tr>
<tr>
<td>45–64</td>
<td>18 661 (18.5)</td>
<td>19 275 (19.0)</td>
</tr>
<tr>
<td>≥65</td>
<td>35 353 (35.1)</td>
<td>23 181 (22.8)</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>76 280 (75.7)</td>
<td>79 384 (78.1)</td>
</tr>
<tr>
<td><strong>Eligibility</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AFDC</td>
<td>34 934 (34.7)</td>
<td>43 223 (42.6)</td>
</tr>
<tr>
<td>APTD</td>
<td>33 312 (33.1)</td>
<td>40 348 (39.7)</td>
</tr>
<tr>
<td>OAA</td>
<td>32 479 (32.3)</td>
<td>18 020 (17.7)</td>
</tr>
<tr>
<td><strong>Zip code characteristics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100% urban</td>
<td>80 983 (81.2)</td>
<td>75 868 (78.7)</td>
</tr>
<tr>
<td>≥75% black</td>
<td>10 500 (10.5)</td>
<td>14 205 (14.7)</td>
</tr>
<tr>
<td>≥5% households with income &lt; $15 000</td>
<td>45 876 (46.0)</td>
<td>28 184 (29.2)</td>
</tr>
<tr>
<td><strong>Acute cardiac event</strong></td>
<td>5131 (5.1)</td>
<td>3634 (3.6)</td>
</tr>
<tr>
<td><strong>Cancer</strong></td>
<td>3936 (3.9)</td>
<td>2676 (2.6)</td>
</tr>
</tbody>
</table>

AFDC, Aid to Families with Dependent Children Program; APTD, Aid to the Permanently and Totally Disabled Program; OAA, Old Age Assistance program.

1Total n = 96 380 in New Jersey, and n = 99 726 in New York State for zip-code-based variables.
2Primary or first secondary discharge diagnosis of an acute cardiac event.
3Primary or first secondary discharge diagnosis of malignant neoplasm.

Figure 1  Proportion of hospital discharges (per 1000 discharges) followed by new benzodiazepine dispensing. TPP, Triplicate Prescription Program. Shaded area indicates month before TPP implementation. Discharges during that month may or may not have been affected by the TPP.
Table 2 Estimated monthly proportion of discharges followed by new post-hospitalization BZD use 1 month before implementation of the TPP and post-program reduction among New York State Medicaid enrollees

<table>
<thead>
<tr>
<th>Monthly discharges per 1000 with new post-hospitalization BZD use before TPP</th>
<th>Percentage post-TPP reduction (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>44</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
</tr>
<tr>
<td>19–44</td>
<td>31</td>
</tr>
<tr>
<td>45–64</td>
<td>61</td>
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<tr>
<td>≥65</td>
<td>50</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
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<tr>
<td>Female</td>
<td>43</td>
</tr>
<tr>
<td>Male</td>
<td>47</td>
</tr>
<tr>
<td>Eligibility</td>
<td></td>
</tr>
<tr>
<td>AFDC</td>
<td>25</td>
</tr>
<tr>
<td>APTD</td>
<td>57</td>
</tr>
<tr>
<td>OAA</td>
<td>49</td>
</tr>
<tr>
<td>Zip code characteristics</td>
<td></td>
</tr>
<tr>
<td>&lt;100% urban</td>
<td>47</td>
</tr>
<tr>
<td>100% urban</td>
<td>43</td>
</tr>
<tr>
<td>&lt;75% black residents</td>
<td>46</td>
</tr>
<tr>
<td>≥75% black residents</td>
<td>27</td>
</tr>
<tr>
<td>&lt;5% households with income &lt;$15 000</td>
<td>48</td>
</tr>
<tr>
<td>≥5% households with income &lt;$15 000</td>
<td>38</td>
</tr>
<tr>
<td>Hospitalization for cardiac diagnoses</td>
<td>99</td>
</tr>
<tr>
<td>Hospitalization for cancer</td>
<td>62</td>
</tr>
</tbody>
</table>

AFDC, Aid to Families with Dependent Children program; APTD, Aid to the Permanently and Totally Disabled program; BZD, benzodiazepines; CI, confidence interval; OAA, Old Age Assistance program; TPP, Triplicate Prescription Program.

1Estimated based on time series regression models containing baseline level and trend, controlling for change in monthly proportions of first hospitalizations during the study period.

2Estimated percentage change from predicted baseline value 3 months after the implementation of the TPP, based on time series regression models, controlling for change in monthly proportions of first hospitalizations during the study period.

3Primary or first-secondary discharge diagnosis of an acute cardiac event.

4Primary or first-secondary discharge diagnosis of malignant neoplasm.

Overall (Figure 1) and among all subgroups (data available upon request), reductions in new post-hospitalization BZD use in New York persisted throughout the 24 months post-TPP observation period.

**TPP effect on duration of post-hospitalization BZD use.** In both states, at baseline as well as after the TPP, >60% of new post-hospitalization BZD use was short-term. The proportion of new BZD use lasting >2 months did not change after the TPP in New York, although the confidence interval of the estimate is wide [change = 0.0% (95% CI −60.4% to +58.6%)]. There was no discontinuity in New Jersey.

**TPP effect on frequency of post-hospitalization use of therapeutic substitutes.** Restricting use of BZD may lead to the use of other medications to treat insomnia and anxiety after hospitalization. We therefore investigated post-hospitalization use of sedating antihistamines, barbiturate and non-barbiturate sedative-hypnotics, and the anxiolytic buspirone over time.

Use of antihistamines and barbiturates did not increase during the study period. Some substitution may have occurred with buspirone and non-barbiturate sedative-hypnotics. Among patients without BZD or substitute use before admission, an average of 2 per 1000 discharges were followed by new buspirone use during the baseline year in New York, while an average of 3 per 1000 were followed each year after the TPP (Figure 2). However, buspirone use also increased gradually in New Jersey during the study period.

The use of non-barbiturate sedative-hypnotics increased suddenly from 1 per 1000 on average during the baseline year in New York State to an average of 2 per 1000 during the 2 years after the TPP (Figure 3), while use in New Jersey remained constant at 4 per 1000.

**Discussion**

These data indicate a substantial, sudden, and sustained decrease in new post-hospitalization BZD use of 63.5% after the TPP in New York State. The TPP resulted in relatively
Figure 2 Proportion of hospital discharges (per 1000 discharges) followed by new buspirone dispensing. TPP, Triplicate Prescription Program. Shaded area indicates month before TPP implementation. Discharges during that month may or may not have been affected by the TPP.

Figure 3 Proportion of hospital discharges (per 1000 discharges) followed by new non-barbiturate sedative-hypnotic dispensing. TPP, Triplicate Prescription Program. Shaded area indicates month before TPP implementation. Discharges during that month may or may not have been affected by the TPP.
larger decreases in BZD use among cardiac and cancer patients, who are particularly likely to experience anxiety and insomnia after hospitalization, and who received post-hospitalization BZD more frequently than other patient groups at baseline. About one-third of post-hospitalization BZD episodes lasted >2 months, and the TPP did not preferentially decrease longer term use. Increased use of possible substitutes use did not offset the substantial reductions in BZD use.

The major strength of our study is its strong, controlled, quasi-experimental design. The study is immune to recall bias because information on medication use came from routinely collected claims data. Reimbursement for BZD occurred similarly in both states and did not change over time, so the observed effects are not confounded by other payment policies.

Nevertheless, the study has a number of limitations. Patients could contribute more than one hospitalization to the analyses. Increasing proportions of repeat hospitalizations over time could change the characteristics of aggregated monthly hospitalizations. We adjusted estimates of change in BZD use in New York State for serial changes in the proportion of repeat hospitalizations. There were no indications of events co-occurring with the TPP that could have confounded our results.

Because we used routinely collected claims data, we can only infer patients’ indications for starting a BZD after hospitalization. We also cannot assess the impact of decreased BZD use on patients’ functioning and well-being [24]. Our data are a decade old and prescribing practices for psychoactive drugs may have changed. Nevertheless, the ongoing New York State TPP is still a matter of public debate [25] and our results provide relevant information about the effects of prescribing restrictions, which are increasingly common for BZD and other medications [11]. Although based on poor, predominantly female populations, our results may be generalizable to other populations as well, and there is evidence that the New York State TPP impacted BZD use in other populations [26–30].

Baseline rates in our study are consistent with previous reports that found that 2–14% of hospitalized patients begin taking a BZD in the hospital and continue after discharge [8,10,31,32]. However, most reports of post-hospitalization BZD use are cross-sectional reports from single institutions [8–10,32–37], fail to differentiate duration of post-hospitalization BZD use beyond 1 month [8–10,32–37], and consider hospitalization a risk factor for inappropriate BZD use in the community [7–10,33–35]. Contrary to the findings in one study that recently assessed duration of new post-hospitalization BZD use [7], we found that most new post-hospitalization BZD use lasted <2 months. In fact, consistent with clinical recommendation [2], 50% of new post-hospitalization BZD use consisted of one BZD prescription only. The TPP did not preferentially decrease longer term use. If short-term use of BZD after hospitalization to treat symptoms of anxiety and insomnia associated with major illness is considered appropriate, our study suggests that a large proportion of new post-hospitalization BZD use among Medicaid patients before the TPP may have been appropriate, and was reduced after the TPP.

What may have been the reasons for decreased post-hospitalization BZD prescribing following the TPP? Certainly, ordering and prescribing on triplicate forms increased physicians’ administrative burden. Furthermore, the triplicate forms, and in the future electronic submissions, constitute a constant, visible reminder of physician surveillance by state public health regulators. Physicians may have felt that their clinical judgments were being questioned and thus reduced BZD prescribing for all types of patients for whom these medications may be indicated [13,38].

We have shown that statewide surveillance substantially decreased new post-hospitalization BZD use in the community, particularly among vulnerable populations. Whether these declines are considered desirable or undesirable policy effects depends on one’s view of BZD therapy. Hospitalization is often a major life-changing event that may provoke anxiety and insomnia. Patients undergoing treatment for an acute cardiac event or malignant neoplasm, in particular, experience life-altering conditions and may suffer from associated anxiety. Anxiety and insomnia impact patients’ functioning and well-being [39,40]. These conditions are also amenable to treatment, and BZD constitute a viable treatment option [41,42]. Furthermore, lorazepam, a BZD, prevents cancer-chemotherapy treatment-induced nausea and vomiting [41]. An intervention that creates a barrier to prescribing BZD after hospitalization, without adequate substitution, may thus have negative health-related quality-of-life effects, particularly for vulnerable patient populations.

Substitution with equal or better therapeutic alternatives could prevent potentially negative effects of reduced post-hospitalization BZD use. Buspirone use increased by similar amounts in both states, although more immediately in New York. Thus, initially, buspirone may have been prescribed to replace BZD in some patients. Non-barbiturate sedative-hypnotics have higher potentials for toxic effects, some have adverse cardiac effects, and none have therapeutic advantages over BZD for most patients [41]. Before the TPP, New York State physicians prescribed these less desirable sedative-hypnotics after hospitalization one quarter as frequently as prescribers in New Jersey. After the TPP, prescribing rates in New York State increased to half those in New Jersey. During the first year after the TPP, increased prescribing of substitutes may have offset only a small fraction, up to 9%, of the reduction in BZD use.

Some may argue that post-hospitalization BZD use is generally not appropriate and that BZD may sometimes be used to treat anxiety among patients whose diagnosis of depression is missed. To improve treatment of depression, the TPP would have to have been associated with an increase in the use of antidepressants after hospitalization in New York, over and above any changes in New Jersey. However, this was not the case.

Policies that reduce medication use can increase patient safety and achieve desired effects. Reductions in unnecessary BZD use and abuse can be counted as positive effects of the New York State TPP. However, policies can also have unintended and potentially harmful effects, especially for patients in therapeutic need of restricted medications. If we accept that short-term BZD use can improve health status after hospital discharge, particularly for patients with acute cardiac...
events and cancer, the New York State TPP also had important unintended effects.

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