Cost-related medication nonadherence among elderly emergency department patients

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With the steady and rapid rise in prescription drug costs over the last twenty years, many Americans are unable to afford their medications, especially in the elderly population [1]. These drug costs ultimately affect compliance. Elderly people who face high out-of-pocket drug costs are less likely to purchase the medications they are prescribed or use them appropriately [2]. Failure to take prescribed medications has been linked to higher levels of emergency department admissions, hospital admissions, readmissions, and mortality rates [1-4]. There is limited data on the scope of emergency department patients' noncompliance with prescribed regimens due to cost considerations. The purpose of this study was to assess cost-related medication nonadherence (CRMN) disclosure among elderly emergency department (ED) patients in both urban as well as rural settings.

This is a prospective cross-sectional survey of nonemergent elderly patients (≥65 years) presenting to the ED at one university-affiliated hospital and a rural medical center over a 6-month study period (November 2017–March 2018). The anonymous survey used questions that have been previously tested and validated in ED patients [1]. Patients were asked standardized questions about their current economic situation, risk factors, general health, emotional stress and the availability of social support in their life. To identify patients at risk for CRMN, all participants were asked "Have money concerns ever been a reason you haven't taken a medication?" [1] Discrete variables were analyzed with the use of chi-square test; unpaired *t*-tests and rank sum tests for continuous and ordinal data.[1]

A total of 281 respondents completed the self-administered survey; 200 attended an urban ED and 81 attended a rural ED (Table 1). The mean age was 75.6 years (range 65 to 95 years); 51.6% were male, and 90.4% were Caucasian. Urban respondents were more likely to have a high school degree (94% vs 84%), live in an assisted care facility (20% vs. 7%) and describe their health as good to excellent (59% vs 47%). Patients took an average of 6.4 (± 4.5) medications each day.

Although the clear majority of all respondents (99.0%) had some type of medical insurance, 14.0% (28/200) of patients presenting to an urban ED admitted to CRMN. In comparison, 25.9% (21/81) of rural ED patients experienced CRMN ($p = 0.017$). Risk factors for CRMN were similar in both groups and included polypharmacy, number of recent hospitalizations, a recent decline in functional ability, history of depression or dementia, and lack of social support.

Methods commonly described to pay for medicines included: pharmacy discount programs, spending less on basic needs, borrowing money, skipping doses of medicines to save money, increased credit card debt, and asking a relative to buy medicines [Table 2]. Rural respondents were more likely to spend less on food, heat, or other basic needs and increase credit card debt to pay for medications compared to urban respondents.

EDs serve a substantial proportion of patients who are socioeconomically disadvantaged and may not have the resources to pay for prescription medications. In our study population, 17.4% of elderly patients surveyed described some form of prescription noncompliance due to cost. This is comparable to the 25% rate of CRMN reported by Mazer in their survey of adult patients presenting to an urban academic ED [1]. If this CRMN leads to adverse health outcomes and higher health service costs, then the economic effect could be substantial. A closer look at our data reveals that CRMN was unevenly distributed, with respondents in rural areas at particularly high risk of prescription noncompliance. Patients from a rural community took a greater number of medications daily than those in the urban population, were less likely to have a high school degree, and rated their overall heath as poor. Patients from rural areas may also have less access to community services to help with health care costs, such as patient assistance programs (PAPs), home health services, or Medicare counseling [5].

Table 2 lists several strategies used by the elderly to afford high out-of-pocket drug costs. Although a few of these strategies (copay assistance programs, drug coupons, free samples) often provide robust short-term cost-savings, their long-term effect on patients' out-of-pocket costs is unclear. After the assistance expires or they no longer meet eligibility requirements, patients may find themselves facing the full copay for brand name drugs, which may be burdensome or even prohibitive [6]. The other strategies (borrowing money, medication underuse, and spending less on basic care needs), are likely to lead to depleting financial savings, damaging credit, negatively impacting quality of life, and cause greater disability and helplessness.

Patient advocacy groups contend that out-of-pocket costs ought to be routinely discussed during outpatient visits to mitigate or prevent avoidable financial distress. The prevalence of such discussions is unknown, with wide variation in published estimates with as few as 15% of patients ever discussing their healthcare costs

Table 1
Demographics of survey respondents (N = 281)

	Urban ED (N = 200)	Rural ED (N = 81)
Age (±SD)	75.5 ± 8.1	76.7 ± 7.7
Gender (% male)	101 (50.5%)	44 (54.3%)
Race (% white)	174 (87.0%)	76 (93.8%)
Marital status (% married)	110 (55.0%)	48 (59.3%)
Education (% high school degree)*	188 (94.0%)	68 (84.0%)
Lives at home or apartment (%)*	160 (80.0%)	75 (92.6%)
Overall health rating (% good to excellent)*	118 (59.0%)	38 (46.9%)
ED visits past 12 months	1.7 ± 1.7	2.0 ± 1.6
Hospitalizations past 12 months	0.8 ± 1.2	0.7 ± 1.0
Number of medications per day	5.8 ± 4.3	6.7 ± 5.2
Cost-related medication nonadherence (%)*	28 (14.0%)	21 (25.9%)

* Indicates significance at the $P < 0.05$ level.

Table 2
Methods used to pay for medicines during the past 12 months

	Urban ED (N = 200)	Rural ED (N = 81)
Pharmacy discount programs (coupons)	24 (12.0%)	12 (14.8%)
Borrow money	12 (6.0%)	8 (9.9%)
Spend less on food, heat, or other basic needs*	10 (5.0%)	12 (14.8%)
Taken fewer medicines than prescribed	9 (4.5%)	3 (3.7%)
Skip doses of medicines to save money	7 (3.5%)	7 (8.6%)
Ask friend or relative to buy medicines	7 (3.5%)	5 (6.2%)
Delay picking up prescription*	6 (3.0%)	10 (12.4%)
Increase credit card debt*	4 (2.0%)	9 (11.1%)
Free samples from primary physician	3 (1.5%)	1 (1.2%)
Purchase medicines over the internet	1 (0.5%)	1 (1.2%)
Use a relative's medication	0	1 (1.2%)

* Indicates significance at the $P < 0.05$ level.

with physicians [6,7]. Useful discussions that might result in long-term cost-savings include switching to lower cost alternatives, using generics, and stopping or withholding interventions, drug coupons, changing pharmacies to save money, or prescribing 90-day supplies of medications instead of 30-day supplies [8]. More comprehensible information on insurance coverage and greater price transparency could facilitate identification of cost-saving options [6].

We found that dedicated social work and case management services in the ED are invaluable in helping older patients access prescribed medications at lower costs, while simultaneously addressing a myriad of psychosocial risks and other economic concerns [5]. Social workers also can provide services such as telephoning aged patients after discharge, reinforcing prescription compliance, arranging transportation, and coordinating referrals to community service agencies. Discharge planning without addressing the underlying risk factors for CRMN can drive avoidable ED utilization and hospital readmissions.

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Another dogma dispelled? Antipsychotic treatment of sympathomimetic toxicity

To the Editor,

We would like to congratulate Connors and associates on their excellent systematic review on the use of antipsychotics for sympathomimetic toxicity, which included our emergency department studies comparing droperidol to lorazepam for agitation and experience treating amphetamine toxicity [1-4]. The authors mention a dogma that has persisted for decades regarding this issue: "Some authors discourage using antipsychotics owing to the hypothesis that these medications lower seizure threshold, predispose to cardiac dysrhythmias, and decrease heat dissipation." Emergency physicians who routinely care for agitated patients frequently disregard this opinionated contraindication. Antipsychotics represent an important treatment option, especially when multiple and escalating doses of benzodiazepines fail. Furthermore, as affirmed by the authors, it is usually impossible to ascertain if agitation is precipitated by psychiatric illness or sympathomimetic toxicity in the acute care setting, as these patients often cannot provide a cogent history. The authors' conclusion that no "significant signal of harm" was identified parallels findings from our systematic reviews and experience regarding antipsychotic treatment of amphetamine and cocaine toxicity [5,6].

Dogma, such as forbidding the use of antipsychotics for sympathomimetic toxicity (and also acute ethanol withdrawal), continue to be cited by some physicians despite contrary, limited and/or inconsistent evidence. Systematic reviews, such as the one by Connors et al., are important to gather, critique, and discuss available evidence in an objective manner in contrast to "expert opinion" with preferentially-selected references [1,5,6]. Regrettably, some experts, especially those who have previously published or lectured on the topic, may refuse to reverse or temper their opinions despite the findings of systematic reviews such as these. Fortunately for the advancement of medical knowledge and research, these individuals represent a minority.

The authors write "Pharmacological sedation options are limited to benzodiazepines, ketamine, and antipsychotic medications, though central alpha adrenergic antagonists and NMDA receptor antagonists are in the early stages of evaluation." [1]. We note the authors did not include antihistamines, which are sedating and can preclude akathisia and dystonia from antipsychotics. We also believe lipophilic beta adrenergic antagonists such as metoprolol and combined alpha/beta adrenergic antagonists such as labetalol represent further treatment options, with mitigation of central and peripheral nervous system hyperadrenergic effects [7]. We recognize the use of this class of medication for the treatment of sympathomimetic toxicity is also subject to dogma, as previously highlighted by two of the co-authors of this review in their correspondence regarding the safety of beta-blockers in the acute management of cocaine-associated chest pain, our correspondence, and a dedicated review article [8-10]. We have routinely utilized metoprolol and labetalol in our treatment of agitated, hypertensive, and tachycardic patients with sympathomimetic toxicity over the past several decades with efficacious and safe results.

In addition to dogmatists who forbid the use of antipsychotics for this patient subgroup, we have also encountered a cabal of clinicians who believe inflexibly in benzodiazepine monotherapy. When asked what should be done for the agitated patient who has received multiple and increasing doses of benzodiazepines, their response is simply "Give them more" rather than consider the synergy between the aforementioned medications to achieve sedation with less risk of respiratory depression from excessive