"WE DON'T CARRY THAT" — FAILURE OF PHARMACIES IN PREDOMINANTLY NONWHITE NEIGHBORHOODS TO STOCK OPIOID ANALGESICS

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ABSTRACT

Background We have observed that many black and Hispanic patients receiving palliative care at a major urban teaching hospital are unable to obtain prescribed opioids from their neighborhood pharmacies. In this study, we investigated the availability of commonly prescribed opioids in New York City pharmacies.

Methods We surveyed a randomly selected sample of 30 percent of New York City pharmacies to obtain information about their stock of opioids. For each pharmacy, U.S. Census estimates for 1997 were used to determine the racial and ethnic composition of the neighborhood (defined as the area within a 0.4-km [0.25-mile] radius of the pharmacy) and the proportion of residents who were more than 65 years old. Data on robberies, burglaries, and arrests involving illicit drugs in 1997 were obtained for the precinct in which each pharmacy was located. We used a generalized linear model to examine the relation between the racial or ethnic composition of neighborhoods and the opioid supplies of pharmacies, while controlling for the proportion of elderly persons at the census-block level and for crime rates at the precinct level.

Results Pharmacists representing 347 of 431 eligible pharmacies (81 percent) responded to the survey. A total of 176 pharmacies (51 percent) did not have sufficient supplies of opioids to treat patients with severe pain. Only 25 percent of pharmacies in predominantly nonwhite neighborhoods (those in which less than 40 percent of residents were white) had opioid supplies that were sufficient to treat patients in severe pain, as compared with 72 percent of pharmacies in predominantly white neighborhoods (those in which at least 80 percent of residents were white) ($P<0.001$).

Conclusions Pharmacies in predominantly nonwhite neighborhoods of New York City do not stock sufficient medications to treat patients with severe pain adequately. (N Engl J Med 2000;342:1023-6.)

PAIN is one of the most common and widely feared symptoms of illness.[1] Studies of diverse populations of patients have found that unrelieved pain is highly prevalent,[2-17] especially among minority groups.[18-20] We have observed that many of our patients, particularly those who are black or Hispanic, have substantial difficulty obtaining commonly prescribed opioids from their neighborhood pharmacies. We conducted a study to determine the availability of commonly prescribed opioids in New York City pharmacies.

METHODS

We surveyed a random sample of 30 percent of pharmacies listed in the 1998 NYNEX Yellow Pages for the five boroughs of New York City[21-25] in order to obtain information about their opioid stock. Using the 1998 *Physicians' Desk Reference*,[26] the Agency for Health Care Policy and Research (AHCPR) guidelines for the treatment of pain from cancer,[27] and advice from a panel of experts in palliative care, we developed a list of commonly prescribed oral and topical opioid analgesic agents, including doses for the treatment of moderate-to-severe pain (Table 1). Opioids were divided into four categories on the basis of the AHCPR guidelines: combination products for the treatment of moderate pain, short-acting opioid tablets for dose-finding in patients with severe pain and for the treatment of breakthrough pain, short-acting opioids in liquid form for the treatment of severe pain in patients with swallowing difficulties or in those in whom precise dose adjustments are required, and long-acting opioids for the extended treatment of severe pain.

Pharmacy stock was categorized as complete, nearly complete, incomplete, or absent. We considered supplies complete if the pharmacy had in stock an agent in each of the four medication categories; nearly complete if the pharmacy had in stock sufficient medication to treat a patient in moderate or severe pain — that is, a long-acting opioid, a short-acting opioid (tablet or liquid), and an opioid combination product; incomplete if the pharmacy lacked either a long-acting or a short-acting opioid preparation; and absent if the pharmacy did not carry any opioids but did stock other prescription medications.

Research assistants contacted the pharmacists by telephone. They were assured that the information they provided would be used for research purposes only, that no record would be kept of the pharmacy's name, and that responses would be kept completely confidential. Information about the study, printed on official stationery of the Mount Sinai School of Medicine, was faxed to the individual pharmacies. Pharmacists were given the option of responding over the telephone or faxing their responses to the research office. To ensure the reliability of the results, 10 responding pharmacists from each borough of New York City were randomly selected, contacted by telephone again, and questioned about a random sample of 10 opioid agents. A comparison of these responses with the original responses yielded complete agreement in all 50 cases.

Pharmacists provided oral informed consent when they were contacted by the research assistant. The study was approved by the institutional review board of the Mount Sinai School of Medicine.

Pharmacists representing pharmacies with inadequate supplies (incomplete or absent supplies) were asked open-ended questions about why they did not carry a full stock of opioid agents. Two of us independently reviewed and classified the reasons given for inadequate supplies. There was complete agreement between the two sets of classifications.

For each of the pharmacies surveyed, we used 1997 U.S. Census block-group estimates and mapping software (MapInfo Professional, version 4.0, MapInfo Corporation) to determine the racial and ethnic composition of the neighborhood in which each pharmacy

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TABLE 1. OPIOID AGENTS AND DOSES.

OPIOID CATEGORY	DOSE
Long-acting opioids	
Fentanyl transdermal patch	25 μg, 50 μg, 75 μg, and 100 μg
Delayed release	
Morphine	15 mg, 30 mg, 60 mg, 100 mg, and 200 mg
Oxycodone	10 mg, 20 mg, 40 mg, and 80 mg
Short-acting opioids — tablet	
Morphine	15 mg and 30 mg
Hydromorphone	2 mg, 4 mg, and 8 mg
Oxycodone	5 mg
Short-acting opioids — liquid	
Morphine	20 mg/ml, 10 mg/5 ml, 20 mg/5 ml, 100 mg/5 ml, and 20 mg/10 ml
Hydromorphone	5 mg/5 ml
Oxycodone hydrochloride	20 mg/ml
Combination products	
Acetaminophen and codeine	325 mg of acetaminophen and 15 mg of codeine, 325 mg of acetaminophen and 30 mg of codeine, and 325 mg of acetaminophen and 60 mg of codeine
Acetaminophen and oxycodone	325 mg of acetaminophen and 5 mg of oxycodone
Aspirin, oxycodone, and oxycodone terephthalate	325 mg of aspirin, 4.5 mg of oxycodone, and 0.38 mg of oxycodone terephthalate

was located (defined as the area within a 0.4-km [0.25-mile] radius of the pharmacy), as well as the median household income, educational level of neighborhood residents, and proportion of persons over the age of 65 years in the neighborhood. We included the variable for age because the prevalence of terminal illness and of chronic painful conditions is higher among the elderly than among younger persons, and therefore the demand for analgesic medications may be associated with the age of the residents in a neighborhood. We chose a 0.4-km radius as the definition of a neighborhood because it represented a reasonable walking distance from a pharmacy. Since one reason for not stocking opioids may be concern about theft or drug abuse,[28] we obtained 1997 data on robberies, burglaries, and arrests involving illicit drugs from the New York City Police Department for the precinct in which each of the pharmacies was located.

Because of the extreme skewness of crime rates, the data were analyzed by subdividing the rates for robbery, burglary, and illicit-drug–related arrests into four groups, which were then analyzed as unordered categorical variables. For the proportion of white residents in a neighborhood, data were divided into four categories on the basis of logical breaks in the histogram and a desire to use round numbers. A neighborhood was categorized as predominantly nonwhite if less than 40 percent of the residents were white, as mixed if 40 to 69 percent were white, as primarily white if 70 to 79 percent were white, and as predominantly white if 80 to 100 percent were white. For black, Hispanic, and Asian residents, the corresponding percentages for the four categories were less than 10 percent, 10 to 19 percent, 20 to 39 percent, and 40 percent or more. Neighborhoods could be categorized according to two or more racial or ethnic groups.

The adequacy of opioid supplies was analyzed according to the categories of racial and ethnic composition. The Cochran–Armitage test for trend was used to determine whether differences in racial composition corresponded to differences in the availability of opioids. A generalized linear model for correlated data (constructed with the Proc Genmod procedure of the SAS software package, version 6.12) was used to analyze the data on the basis of a logit-link function, with the assumption that all census blocks within a precinct were equally correlated with each other. The dependent variable was a binary measure of the adequacy of opioid stock, with adequate stock defined as complete or nearly complete supplies and inadequate stock as incomplete supplies or none. Confidence intervals were based on asymptotic theory.

RESULTS

We identified 503 pharmacies (160 in Manhattan, 130 in Brooklyn, 114 in Queens, 72 in the Bronx, and 27 on Staten Island) from the NYNEX Yellow Pages. Seventy-two of these pharmacies were no longer in business, were duplicate establishments, were located outside the New York City limits, or did not carry prescription medications. Of the pharmacists who represented the remaining 431 pharmacies, 84 refused to participate in the study, leaving a sample of 347 (an 81 percent response rate). Seventy-six percent of the pharmacies represented by respondents were independent, as were 76 percent of the pharmacies represented by nonrespondents. There were no significant differences in opioid supplies between chain and independent pharmacies, and the pharmacists representing chain pharmacies reported no specific corporate policies with regard to stocking opioids. The pharmacies represented by nonrespondents did not differ from those represented by respondents in terms of characteristics of the neighborhood (racial or ethnic composition, median household income, or educational level of residents), characteristics of the pharmacy (independent or chain), or precinct crime rates.

Of the 347 pharmacies, 176 (51 percent) did not have opioid supplies that were sufficient to provide adequate treatment for a patient with severe pain. Thirty-five pharmacies (10 percent) had complete supplies, 136 (39 percent) had nearly complete supplies, 122 (35 percent) had incomplete supplies, and 54 (16 percent) had no opioids in stock. Although 116 of the 122 pharmacies with incomplete supplies (95 percent) had a combination product in stock that could be used for the treatment of moderate pain, only 55 (45 percent) carried a strong opioid preparation that could be used for the treatment of severe pain.

Table 2 shows the adequacy of opioid supplies according to the racial and ethnic composition of the neighborhoods in which the pharmacies were located. The tests for trend for all four categories of opioid supplies were significant ($P \leq 0.01$). Twenty-five percent of pharmacies in predominantly nonwhite neighborhoods (those in which less than 40 percent of residents were white) had adequate opioid supplies, as compared with 72 percent of pharmacies in predominantly white neighborhoods (those in which at least 80 percent of residents were white) (odds ratio for adequate supplies in predominantly nonwhite neighborhoods, 0.13; 95 percent confidence interval, 0.07 to 0.26). Sixty-six percent of pharmacies that had no supplies of opioids were in predominantly nonwhite neighborhoods.

The results of a separate analysis of each ethnic and racial group were similar. The proportion of pharma-

TABLE 2. ADEQUACY OF OPIOID SUPPLIES AT 347 PHARMACIES, ACCORDING TO THE RACIAL AND ETHNIC COMPOSITION OF THE NEIGHBORHOOD.

RACIAL AND ETHNIC COMPOSITION OF NEIGHBORHOOD	TOTAL PHARMACIES	PHARMACIES WITH ADEQUATE OPIOIDS	P VALUE FOR TREND
	no.	%	
White			<0.001
0–39%	110	25	
40–69%	72	56	
70–79%	72	50	
≥80%	93	72	
Black			<0.001
<10%	173	61	
10–19%	53	45	
20–39%	57	42	
≥40%	64	30	
Hispanic			0.002
<10%	89	56	
10–19%	108	54	
20–39%	70	50	
≥40%	80	34	
Asian			0.01
<10%	241	54	
10–19%	74	42	
20–39%	16	44	
≥40%	16	25	

cies with adequate opioid stocks was 30 percent in predominantly black neighborhoods (those in which 40 percent or more of the residents were black) as compared with 61 percent in predominantly nonblack neighborhoods (those in which less than 10 percent of the residents were black) (odds ratio, 0.28; 95 percent confidence interval, 0.14 to 0.54), 34 percent in predominantly Hispanic neighborhoods as compared with 56 percent in predominantly non-Hispanic neighborhoods (odds ratio, 0.38; 95 percent confidence interval, 0.19 to 0.74), and 25 percent in predominantly Asian neighborhoods as compared with 54 percent in predominantly non-Asian neighborhoods (odds ratio, 0.29; 95 percent confidence interval, 0.07 to 0.99). After adjustment for rates of burglary, robbery, and illicit-drug–related arrests at the precinct level and for the percentage of residents over the age of 65 years at the census-block level, pharmacies in predominantly nonwhite neighborhoods were also significantly less likely to have adequate opioid supplies than were pharmacies in predominantly white neighborhoods (odds ratio, 0.15; 95 percent confidence interval, 0.07 to 0.31). In addition, pharmacies in neighborhoods in the highest quartile of burglary rates were less likely to have adequate opioid supplies than were pharmacies in neighborhoods in the lowest quartile of burglary rates (odds ratio, 0.29; 95 percent confidence interval, 0.12 to 0.71).

The pharmacists representing the 176 pharmacies with inadequate opioid supplies were asked why they did not have adequate supplies. Ninety-five pharmacists (54 percent) reported that they had little demand for these medications, 78 (44 percent) cited concern about disposal, 35 (20 percent) cited fear of fraud and illicit drug use that might result in investigations by the Drug Enforcement Administration, 34 (19 percent) cited fear of robbery, and 13 (7 percent) cited other reasons (e.g., problems with reimbursement by health plans and Medicaid).

DISCUSSION

We found that more than 50 percent of a random sample of New York City pharmacies did not have adequate medication in stock to treat a person in severe pain. An analysis adjusted for age and rates of burglary, robbery, and drug-related arrests showed that pharmacies in predominantly nonwhite neighborhoods were significantly less likely to stock opioids than were pharmacies in predominantly white neighborhoods. Two thirds of the pharmacies that did not carry any opioids were in neighborhoods where the majority of the residents were nonwhites. This finding, together with reports[18-20] that nonwhite patients are significantly less likely than white patients to receive prescriptions for analgesic agents recommended by the AHCPR,[27] suggests that members of racial and ethnic minority groups are at substantial risk for the undertreatment of pain.

Pharmacists gave three chief reasons for having inadequate supplies of opioids: regulations with regard to disposal, illicit use, and fraud; low demand; and fear of theft. Open-ended interviews revealed that a major reason for not stocking an adequate supply of opioids, apart from low demand, was the additional paperwork required by state and federal drug-enforcement agencies, the regulatory oversight and monitoring of these medications, and fear of penalties imposed by state and federal agencies. Although this study was conducted in New York, which requires triplicate prescription forms for most opioids, pharmacists did not report that this requirement was a reason for stocking inadequate supplies of opioids. Pharmacists who reported a low demand for opioids or expressed concern about their disposal were most likely to be in predominantly nonwhite neighborhoods.

There are several limitations of this study. First, it was impossible to determine conclusively whether there were differences in pharmacy supplies across neighborhoods of differing ethnic compositions if all other variables were held constant. To the extent that other variables were held constant by means of statistical adjustment, the results suggest that large and statistically significant differences remain in pharmacies' opioid holdings among different ethnic neighborhoods. Second, this study was conducted in New York City and the results may not be generalizable to other areas.

Third, pharmacists in predominantly nonwhite neighborhoods may not have provided accurate re-

ports of their opioid supplies over the telephone. Although we considered using "professional shoppers" to validate our results, we decided that this was an impractical strategy, given the number of pharmacies, the number of agents, and the state requirement of triplicate prescriptions. Nevertheless, we believe that our results are valid because nonrespondents did not differ from respondents with regard to neighborhood characteristics or type of pharmacy (chain or independent), and follow-up telephone calls to a random sample of the respondents showed no discrepancies between their responses and those in the original survey.

Fourth, we did not ask about all opioids but instead concentrated on those that have been recommended as appropriate first-line medications. Thus, it is possible, albeit unlikely, that some pharmacies carried opioids that are useful for the treatment of severe pain (e.g., levorphanol or methadone) but that we did not inquire about. Finally, most of the pharmacists we surveyed stated that they could order and obtain the requested medication for a patient within 72 hours. For patients in severe pain, 72 hours is an unacceptably long period of time.

Our data demonstrate that many New York City pharmacies do not stock sufficient medication to treat patients with severe pain. Furthermore, pharmacies in predominantly nonwhite neighborhoods are significantly less likely to stock adequate supplies of opioids than are pharmacies in predominantly white neighborhoods. These results suggest that nonwhite patients may be at even greater risk for the undertreatment of pain than previously reported. The problem of inadequate supplies of opioids calls for a program to educate pharmacists about the safe and appropriate use of opioid analgesics, as well as an evaluation of regulations that may act as disincentives for pharmacists to stock controlled substances.

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