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ORIGINAL RESEARCH

Planning for Chronic Disease Medications in Disaster: Perspectives From Patients, Physicians, Pharmacists, and Insurers

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ABSTRACT

Background: Recent US disasters highlight the current imbalance between the high proportion of chronically ill Americans who depend on prescription medications and their lack of medication reserves for disaster preparedness. We examined barriers that Los Angeles County residents with chronic illness experience within the prescription drug procurement system to achieve recommended medication reserves.

Methods: A mixed methods design included evaluation of insurance pharmacy benefits, focus group interviews with patients, and key informant interviews with physicians, pharmacists, and insurers.

Results and Discussion: Most prescriptions are dispensed as 30-day units through retail pharmacies with refills available after 75% of use, leaving a monthly medication reserve of 7 days. For patients to acquire 14- to 30-day disaster medication reserves, health professionals interviewed supported 60- to 100-day dispensing units. Barriers included restrictive insurance benefits, patients' resistance to mail order, and higher copayments. Physicians, pharmacists, and insurers also varied widely in their preparedness planning and collective mutual-aid plans, and most believed pharmacists had the primary responsibility for patients' medication continuity during a disaster.

Conclusions: To strengthen prescription drug continuity in disasters, recommendations include the following: (1) creating flexible drug-dispensing policies to help patients build reserves, (2) training professionals to inform patients about disaster planning, and (3) building collaborative partnerships among system stakeholders.

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Key Words: prescription medication, chronic illness, disaster preparedness

More than 6 in 10 Americans have a chronic medical condition,¹ defined as lasting 12 months or longer, constraining independent living, and requiring ongoing medical intervention.² Chronic illness represents 50% of US health care expenditures, with 3 of 4 health care dollars spent on prescription drugs.¹ In 2000, the vast majority of chronically ill Americans took 1 prescription medication (76.5%-96.5%), whereas fewer (14%) used 2 or more medications.³⁻⁵ As the US "baby boomer" generation continues to age, more chronic illness and increased pharmaceutical use and expenditures are expected.⁶

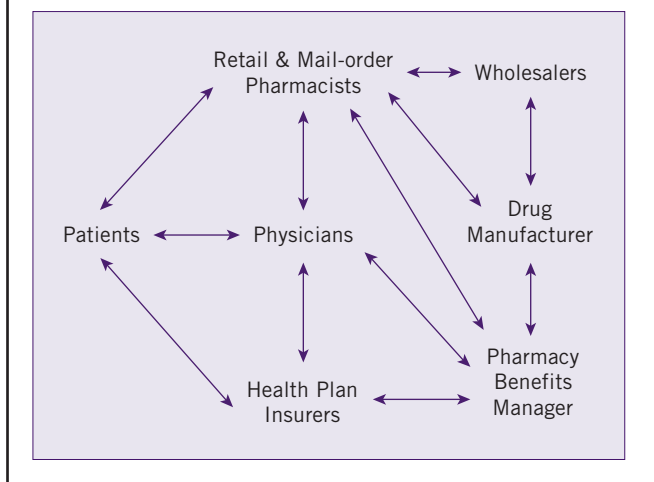
Under routine circumstances, patient access to prescription drugs entails a complex and interdependent system (Figure 1), in which physicians write prescriptions, pharmacists fill prescriptions and stock medications, insurers authorize benefits, wholesalers deliver supplies, and patients navigate this process.⁷ Patients and providers with greater knowledge about this system have greater likelihood of overcoming its barriers of "just-in-time" delivery, changing formularies, and controlling costs to maintain benefits.⁸ Catastrophic disasters can create system barriers of patient surge, ser-

vice delivery breakdowns, and technological failures that affect timely access to prescription medications. Therefore, systemwide preparedness is necessary to ensure prescription drug continuity during a disaster.

This issue was highlighted by Hurricane Katrina of 2005,⁹ in which 68%¹⁰ to 80%¹¹ of recovery shelter evacuees required replacement medications. Prescription drug replacement is not uncommon following disaster because people lack disaster reserves of medication for chronic illness or lack access to their routine stocks on evacuation.¹² In fact, estimates vary regarding the proportion of US households that stockpile prescription medications for disaster, ranging from 50% of Americans having a 3-day supply at home¹³ to 38% of chronically ill people having less than a week's supply on hand.¹⁴ Extended disruption of medications for chronic illness can have serious health consequences of worsening health, drug resistance, or mortality for disaster survivors or evacuees,⁹ particularly if displaced from their usual sources of health care.⁸⁻¹¹ Even if a disaster requires sheltering in place instead of evacuation, 50% of households may have difficulty accessing needed prescrip-

FIGURE

US prescription drug procurement system.



tions (Los Angeles County Department of Public Health, unpublished data, 2007).

People who seek medication reserves may encounter several obstacles. First, there are inconsistent recommendations about how much medication for chronic illness to stockpile at home, with recommendations ranging from a 3-day to 2-week to 1-month supply.¹⁵⁻¹⁸ Second, insurance benefits may impede building medication reserves through restrictions on refill quantities and refill timing, higher copayments for greater mail-order quantities, and out-of-pocket payments to acquire extra supplies (D.C.G., unpublished data, 2005). These policies may negatively affect elderly people, poor people, and people with a disability, who are disproportionately affected by chronic illness, are more vulnerable to negative disaster outcomes, and incur greater access barriers from lack of health insurance or reliance on the public health safety net.¹⁹

In addition, few disaster response agencies have plans for replenishing medications for chronic illness^{11,20} and, instead, focus on fortifying acute-care, lifesaving vaccine and prophylaxis reserves for chemical, nuclear, bioterrorism, and infectious disease disasters.^{21,22} To address this oversight, *Emergency Rx History* was established by the nation's leading pharmacies following Hurricane Katrina as a prescription record-sharing system to help displaced persons and providers access patient medication histories.²³ Likewise, the *Emergency Prescription Assistance Program* was established by the US Department of Health and Human Services and the Federal Emergency Management Agency after hurricanes Ike and Gustav in 2008, to provide uninsured disaster victims with 1 refill for existing prescriptions and replacement of medical equipment lost or left during evacuation.²⁴ Although these efforts improve postdisaster prescription drug replacement, the system can still fail because of electronic communication networks and ground transportation

delays²⁵; failures such as those realized during Hurricane Katrina by traffic congestion; fuel supply shortages; and storm debris barriers.^{20,26} Thus, ensuring that chronically ill people stockpile 14- to 30-day supplies of medications remains an important pillar of individual preparedness.

STUDY PURPOSE

The current study examines disaster-related prescription drug availability and accessibility in Los Angeles County for community-dwelling people with chronic medical illnesses. We reviewed the insurance pharmacy benefits of major insurers in Los Angeles County and interviewed patients, physicians, pharmacists, and insurers for their insights on the following: (1) routine practices or policies concerning prescription medications, including for disaster preparedness; and (2) how these practices or policies might change in case of a disaster. Our research goal was to better understand and recommend options for strengthening disaster management plans at the personal, local, and organizational levels.

METHODS

Investigators from the UCLA School of Public Health, the UCLA David Geffen School of Medicine, and the Los Angeles County Department of Public Health, Los Angeles, California, collaborated on this study, which was a mixed methods design that included review of insurance pharmacy benefits and conducting focus group and key informant interviews. Data were collected between January and June 2007.

Insurance Pharmacy Benefits

We reviewed the 2007 Evidence of Coverage drug insurance policies from 9 insurers who provided more than 88% of health plan coverage in Los Angeles County. Each plan's written policy was assessed for prescription drug dispensing units (30-, 60-, 90-, 100-day), prescription distribution methods (retail or hospital pharmacy, mail-order), generic vs brand prescription costs, and access to and payment for replacement medications (Table 1).

Study Sample

A convenience sample of 158 Los Angeles County adults was recruited through local social service agencies for the elderly, Spanish community, and pediatric illness support groups to ensure a demographically mixed group of prescription medication users. Focus group criteria required participants to self-identify as having a chronic illness or being a caregiver for a child or dependent family member with a chronic condition. Focus group interviews were held in English and Spanish. Participants were primarily female, older than 40 years, and identified as Hispanic or Caucasian (Table 2). Of the participants, about 34% had private insurance, about 23% had public insurance/Medi-Cal, and about 31% were currently uninsured. Half of the participants reported having home disaster kits with a flashlight, first-aid kit, and extra food or water, findings comparable to Los Angeles County survey data on household disaster preparedness (46.7%).²⁷

TABLE 1

Insurance Pharmacy Benefits From Evidence of Coverage Policies (N = 9)

Type of Benefit	Covered Service	Frequency (%)	Cost, \$	
			Generic	Brand
Prescription unit and method of distribution	30-d supply at retail or hospital pharmacy	9 (100)	0-20	5-80
	90-d supply at retail or hospital pharmacy	3 (33)	10-33	40-120
	60-d supply, mail order	1 (11)	20-22	40-80
	90-d supply, mail order	6 (67)	10-33	40-120
	100-d supply, mail order	1 (11)	20	80
Ability for patients to build medication reserves	Yes, use vacation or exception request program	2 (22)	Copayment fee	
	No, but encourage use of mail-order program	5 (56)	Copayment fee	
	No program exists	2 (22)	Out of pocket	

Key informant interviews were conducted with representatives from Los Angeles County, other Southern California communities, and the State of California, whom researchers and their public health partners identified as knowledgeable about the prescription procurement system (Table 2). Eight physicians from practices specializing in general/family medicine, pain management, pediatrics, psychiatry, HIV, and cardiology were interviewed. The 10 pharmacy providers were from national and local networks; the majority provided retail-based services (7 [70%]). Ten insurance executives in pharmacy or benefits divisions representing national and local private for-profit and community nonprofit insurance plans were interviewed.

Interview Guide Development

Focus group and key informant interviews used semistructured interview guides developed from the social and behavioral science literature. Interview questions asked all participants about the following: (1) general perceptions of drug insurance policies, pharmaceutical practices, and household use concerning medications for chronic illness; (2) organizational or household disaster preparedness plans; (3) attitudes toward patients having disaster medication reserves; and (4) perspectives on medication continuity in a disaster.

Data Analysis

Interviews were coded by using codes developed from the outpatient drug insurance framework by Reutzel²⁸ and the quality-of-medical-care framework by Donabedian.²⁹ Reutzel’s key constructs include the following: (1) *interested groups*, the relevant actors in drug insurance programs; (2) *program structure*, the systematic elements that guide decision making; (3) *program policies*, the outputs related to drug insurance program objectives and function; (4) *behavior*, the individual and interdependent characteristics of administrators, enrollees, and service providers; and (5) *outcomes*, the drug insurance program’s consequences, such as cost and revenue or personal satisfaction.²⁸ Donabedian’s concepts include the following: (1) *structure*, the

organizational context of health facilities, people, and finances; (2) *process*, the actions and procedures to meet organizational standards; and (3) *outcomes*, the performance that achieves organizational outcomes.²⁹

All interviews were transcribed verbatim, coded, and entered into ATLAS.ti (Scientific Software Development, 1997) by 2 independent researchers (KAC, BD) (80%-85% agreement). Coding discrepancies were resolved by discussion among the investigators. Once coded, data were aggregated into similar themes, analyzed for common domains of content, and reported as summaries of major findings. Quantitative demographic data and the insurance pharmacy benefits data were analyzed using SPSS 15.0 (SPSS, Chicago, Illinois).

RESULTS

Review of Insurance Pharmacy Benefits

Prescription Drug Dispensing Units.

All insurers provided a minimum 30-day drug-dispensing unit through a retail or in-network pharmacy for a single copayment. For a higher copayment, some insurers also provided retail or mail-order 60- to 100-day dispensing units.

Refill Policies.

On average, insurers’ policies allowed prescription refills through a retail pharmacy after 70% to 75% of the medication had been used and through mail-order after 60% to 70% of use. Under these time frames, a 30-day prescription allowed refill with a 1-week supply remaining and a 60- to 90-day prescription with a 2- or 3-week supply remaining.

Building Medication Reserves.

Only 2 of the 9 insurers’ Evidence of Coverage drug insurance policies clearly stated a “vacation” or “replacement” medication policy that allowed members 1 annual extra medication supply with insurer authorization and additional copayment.

Patient and Caregiver Focus Group Interviews

The 158 patient and caregiver experiences from the 14 focus group interviews reflect a wide variety of chronic illness, such as asthma (~23%), diabetes (~17%), hypertension (~10%), high cholesterol (~10%), arthritis (~9%), and heart disease (~8%) across adults and children (N = 124 responses).

TABLE 2

Key Stakeholder Characteristics	
Key Stakeholder Characteristics	Frequency (%) ^a
Patients and Caregivers^b	158
<i>Types of focus groups</i>	
Parents of children with chronic illness	5
Adults with ≥1 chronic illnesses	5
Elderly adults with chronic illness	4
Females	126 (79.9)
20-39 y	36 (22.8)
40-59 y	60 (38.0)
60+ y	62 (39.2)
African American	23 (14.6)
Asian American	28 (17.7)
Caucasian	33 (20.9)
Hispanic/Latino	56 (35.4)
Other	15 (9.5)
English primary language	115 (72.8)
Spanish primary language	36 (22.8)
<i>Insurance Coverage</i>	
Preferred provider organization (private)	18 (11.4)
HMO (private)	36 (22.8)
Medi-Cal (public)	37 (23.4)
No coverage	49 (31.0)
Yes, household disaster kit	80 (50.6)
No, household disaster kit	75 (47.5)
Physicians	8
Females	4 (50)
Mean age, y	41.8
Family/general medicine	2
Specialist (eg, pediatrics, HIV/AIDS)	4
Psychiatrist	2
Private practice	5 (62)
Public hospital or clinic	2 (25)
Government agency	1 (12)
<i>Weekly work time devoted to</i>	
Clinical activities	70%-100%
Administrative tasks	15%-25%
Education/teaching	10%-25%
Pharmacists	10
Retail service	7 (70)
Mail-order service	3 (30)
Specialty service	3 (30)
National coverage	5 (50)
Local/regional/state coverage	5 (50)
Insurers	9
Public insurer	5 (56)
Private insurer	4 (45)
National policy	6 (67)
Local/Regional policy	3 (33)

^aUnless otherwise indicated.

^bMissing values, – patient nonresponse: ethnicity, 3 (1.9%); language, 7 (4.4%); insurance coverage, 18 (11.4%); and disaster supplies, 3 (1.9%).

Routine Prescription Medication Practices.

Although participants did not fully understand the intricacies of the prescription drug system, they thought that they navigated it relatively well. People with greater difficulty were less acculturated, had fewer educational and financial resources, and lacked health insurance, making them most vulnerable to running out of medications or obtaining insufficient supplies.

Household Disaster Preparedness Plans.

Participants were generally aware of Los Angeles County's disaster risks; however, most had not considered the impact of disaster on their medication needs for chronic illness. Some rationalized they could temporarily do without their medications, others considered transferring prescriptions to national pharmacies for service continuity, and some had made preemptive lists of household medication needs.

Attitudes Toward Medication Reserves.

Participants were motivated to have a disaster medication supply and to prevent personal emergencies of running out. Participants who successfully acquired medication reserves were persons who said their physicians were knowledgeable about the insurance system (~41%), reported having good communication with their retail pharmacists (~32%), or received phone or e-mail reminders for on-time refills from insurers or pharmacies (~27%) (N = 44 responses). Participants' barriers to building medication reserves included having restrictive insurance policies, not understanding these policies, and experiences of poor patient-physician communication. Other important barriers were distrust of mail-order services, different refill schedules for multiple medications, higher out-of-pocket costs for extra supplies, and personal forgetfulness leading to just-in-time refills.

Patients' Conclusions: Prescription Drug System.

Participants attributed their difficulties in accessing routine prescription refills or building disaster reserves to insurers not caring about patients, profit-driven margins for insurers and pharmacists, and the frequent breakdown in the prescription authorization process from physician to pharmacy to insurer.

“Between the two simple steps of the refill and the insurance approval, something is going to go wrong. You can bet on it.”
(adult with chronic condition)

Key Informant Interviews

Table 3 presents a summary comparison of the primary themes from the physician, pharmacist, and insurer key informant interviews. Specific details about each group follow.

Physicians:

The 8 physicians reported good general knowledge about insurance industry benefits as a result of monitoring their reimbursement levels, but physicians were considerably less aware about how the pharmacy sector operated or the middle-management role of pharmacy benefits managers.

TABLE 3

Comparison of Major Themes Across the Key Informant Interviews

Routine Prescription Medication Practices	Physicians	Pharmacists	Insurers
<i>Beliefs about the standard 30-d drug dispensing unit</i>	<ul style="list-style-type: none"> Practice harmful to patients in stable condition with stable medication regimens Approve 60-100 units 	<ul style="list-style-type: none"> Creates impediments to building reserves Willing to dispense 90-d units to clients 	<ul style="list-style-type: none"> Prefer patients not to run low Encourage mail order for larger units
<i>Perceived rationale for 30-d dispensing practice</i>	<ul style="list-style-type: none"> Not for medical purposes Insurer and pharmacist desire to contain costs and risks; make profit 	<ul style="list-style-type: none"> Financial benefit: need less inventory space, clients frequent store (buy other items) More time to counsel clients if higher units 	<ul style="list-style-type: none"> Financial benefit: premiums paid month to month with enrollment Reduces wasted medications if prescription changes
Organizational Disaster Preparedness Plans	<ul style="list-style-type: none"> Practices are underprepared Little formal disaster preparedness education Few practices have experienced service disruption Lack participation in local disaster exercises 	<ul style="list-style-type: none"> Large chains pool resources during crisis; small chains do not Concerns about personal liability and reimbursement Want a policy covering disaster medications similar to the Robert T. Stafford Act 	<ul style="list-style-type: none"> Have internal business continuity plans: mass refill overrides, access patient medication history Lack external agency mutual aid plans Assume pharmacists will take leading role in medication replacement; insurers will reimburse in "good faith" afterward
<i>Preparedness plans and recommendations</i>			
Attitudes Toward Patient Medication Reserves	<ul style="list-style-type: none"> Supportive Write 60- to 100-d units for patients in stable condition with stable medication regimens 	<ul style="list-style-type: none"> Supportive Dispense 60- to 100-d units at retail pharmacy 	<ul style="list-style-type: none"> Supportive Refill on time Use mail order (<10% of patients)
<i>Strategies to build patients' disaster medication reserves</i>	<ul style="list-style-type: none"> Helping insured patients secure extra medications is time-consuming Print electronic prescription record for patient disaster kit Create educational materials; clinical protocols 	<ul style="list-style-type: none"> Concern that insurers will not support higher retail dispensing units Clients cannot afford higher unit copayments Clients may fail to rotate stocks to avoid expiration 	<ul style="list-style-type: none"> Reluctant to support a specific "disaster supply" policy. Patients should refill on time or use current mail-order options
<i>Other issues mentioned about patient disaster preparedness</i>			

Routine Prescription Medication Practices.

Most physicians believed the 30-day drug dispensing standard was not medically indicated for patients in stable condition with stable medication regimens and was harmful to patients' health because the short refill window increased their risk of running out. Physicians thought the insurance companies and pharmacies set the standard to minimize risk, contain costs, and increase profit margins.

Organizational Disaster Preparedness Plans.

Most of the physicians had never participated in disaster drills, received disaster preparedness education, or experienced service delivery interruptions due to disaster and, therefore, were not actively talking with patients or preparing their office for these threats. Physicians reported wanting to help their patients prepare for disaster and identified a need for patient education materials, a user-friendly guide for preparing clinical offices, higher medication dispensing units, and advocacy from professional organizations at state and national levels.

Attitudes Toward Medication Reserves.

Physicians were generally supportive of higher 60- to 90-day dispensing amounts to build patient medication reserves, particularly for chronically ill patients with stable drug regimens. Higher dispensing units would also alleviate clinic staff's time on insurance refill paperwork and pharmacy calls requesting patients' extra medication reserves.

Physicians' Conclusions: Prescription Drug System.

Physicians suggested using electronic records as printable medical and medication histories for patients' disaster kits, recognized that 30-day dispensing limits were not ideal for patients with chronic illnesses who were in stable condition, and emphasized the need for clinician-directed protocols to guide physicians in preparing patients with chronic illnesses for disaster.

"... It'd be great if I'm able to write on the prescription 'This supply is for disaster preparedness.'" (clinician 7)

Pharmacists:

The 10 pharmacy providers worked independent of the health plans and reported filling prescriptions primarily for diabetes, mental health, respiratory conditions, hypertension, chronic pain, HIV/AIDS, and women's health issues.

Routine Prescription Medication Practices.

Like physicians, pharmacists perceived that the 30-day drug dispensing unit impeded consumers' establishment of medication reserves, and they therefore supported higher dispensing units. Although 30-day units were more profitable for retail pharmacies because they required less storage space and generated additional store revenue through frequent customer visits, retail pharmacy executives were willing to adopt 90-day dispensing practices like mail-order pharmacies to increase their competitiveness, decrease clients running low on medication, and increase time to counsel clients.

Organizational Disaster Preparedness Plans.

No federal or California state statutes currently mandate pharmacies to maintain continuity plans or specific drug inventory levels for disaster. Pharmacists believed their existing drug inventory and delivery networks were adequate for regional needs in a disaster but did not have alternatives if their delivery networks failed due to disaster-induced highway collapse, fuel shortage, or traffic congestion. Larger, national retail chains expressed less concern about these challenges because experience had confirmed their ability to pool supply, staff, and data resources from unaffected areas. However, smaller, local, and independent pharmacies said they lacked this resource pooling unless preexisting partnerships were established. Finally, most pharmacists lacked local partnerships with other private industries and public emergency managers, citing perceived lack of time and lack of financial incentives to maintain this outreach.

Attitudes Toward Medication Reserves.

While pharmacists generally approved of consumers building disaster medication reserves, most believed that insurers would not support this practice even if consumers could afford the additional copayment, and some thought consumers would fail to rotate stocks to avoid expiration. Still, all agreed that consumers were responsible for acquiring and maintaining their own disaster medication supply. Pharmacists also agreed on their ethical obligation to replace prescriptions after a disaster, but they were equally concerned about personal and financial liability for these actions. Pharmacists therefore wanted regulations on medication replacement, personal liability protection, and pharmaceutical reimbursement similar to the medical care liability and reimbursement statute of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.³⁰

Pharmacists' Conclusions: Prescription Drug System.

Pharmacists requested greater communication, resource coordination (eg, patient electronic database, partnerships), and leadership (eg, reimbursement protocols, training incentives) among pharmacy retailers and distributors to support disaster preparedness efforts.

“Back during the [Northridge] earthquake, I know that many pharmacists . . . were in with their door open for patients to come.” (*pharmacy regulatory agency*)

Insurers:

The insurers represented national, regional, and local organizations that relied on retail pharmacy networks or contracted with pharmacy mail-distribution systems to fill patient prescriptions.

Routine Prescription Medication Practices.

Like physicians and pharmacists, insurers also preferred that members maintain adequate medication supplies and encouraged members to refill on time or use mail-order

options (60- to 100-day units). However, insurers reported that fewer than 10% of members used mail order and instead opted for last-minute refills through retail pharmacies. Insurers also attributed the 30-day dispensing standards to members' month-to-month enrollment premiums, insurers' desire to reduce members' medication waste if prescription needs changed, and insurers' need to balance available cash assets with drug inventory investments.

Organizational Disaster Preparedness Plans.

Most insurers had business continuity plans, such as backup databases, executive decision making to allow mass refill overrides, and policies to help pharmacies or members reconstruct personal medication profiles. Despite these plans, insurers lacked interindustry, mutual-aid partnerships to share resources in a disaster. For example, local insurers routinely networked only with local rather than national pharmacies, which could limit members' access to medication files and refills if displaced across county or state lines. Likewise, national insurers lacked partnerships with local and state emergency managers, which could delay awareness of member areas hit by disaster. Finally, insurers deferred responsibility for patient medication continuity during a disaster to pharmacists, whom insurers saw as the most direct patient point of contact.

Attitudes Toward Medication Reserves.

Insurers were generally reluctant toward a specific “disaster supply” policy and instead recommended that members use mail order or refill at the earliest allowed date to build extra medication reserves. Alternatively, members could secure additional medication supplies through replacement or vacation services. These services were described in 2 insurers' evidence of coverage policies but verbally reported by 5 additional insurers during their interview. However, accessing these services requires significant time with only the most knowledgeable patients, pharmacists, and providers gaining access to these system benefits.

Insurers' Conclusions: Prescription Drug System.

Insurers realized that their own continuity planning was one piece in a greater prescription drug procurement network and that collaborative outreach with plan providers, pharmacies, and wholesalers was necessary to ensure members' access to needed medications in a disaster.

“Collaborative relationships are important; delivery of pharmaceutical services would need the cooperation of participating pharmacists, retailers and manufacturers, as well as government agencies.” (*national public insurer*)

COMMENT

In Los Angeles County, interviewed stakeholders reported varied levels of preparedness, personal and professional, regarding ensuring continuity of medication supplies for people with

chronic illnesses following a catastrophic disaster. We offer several recommendations to strengthen this continuity.

Recommendation 1: Create more flexible, systemwide policies to maximize patients' ability to build and maintain prescription medication reserves.

Stakeholders agreed that chronically ill patients should maintain sufficient personal medication stocks for routine and disaster situations. Although opinions differ in how much stock to maintain, general agreement indicates 14 to 30-day supplies.^{12,16-18} The primary obstacles to meeting this goal are the 30-day drug dispensing standard and policies that allow prescription refill only after using 70% to 75% of the medication, leaving people with 30-day prescriptions with a medication reserve of 7 days or less. Although changing these standards may be slow, more immediate and systemwide alternatives could minimize these hurdles.

First, insurers could actively promote their vacation medication policy and reduce the time-consuming paperwork to activate this service to help members build an annual 30-day reserve. Insurers could also promote mail-order services or authorize higher retail-dispensing units (60-100 days) to help members maintain routine 14-day stocks. However, insurers would need to resolve members' distrust of drug delivery by mail and affordability of higher copayments for larger prescription units.

Second, retail pharmacies could advocate for higher 60- to 100-day dispensing policies, use computer tracking systems to alert consumers to refill on time (via e-mail, postal mail, or telephone), and actively counsel clients on safe storage and rotation of medication reserves to avoid expiration.

Third, physicians (and pharmacists) could develop office policies to provide patients a routine electronic printout of their medication histories for home disaster kits; focus group participants often forgot medication names and dosages. Electronic records are useful tools for accessing patient histories, particularly in times of disaster, and are encouraged under President Obama's health care initiative in the American Recovery and Reinvestment Act.³¹ Moreover, electronic prescribing can address several challenges raised by study stakeholders by simultaneously linking insurance benefit information to patients' medication needs on electronic prescribing systems, delivering information to physicians about patient eligibility for prescription medication reserves (eg, vacation policies), automating patients' update/refill notices from the pharmacy, and minimizing patients' responsibility to directly inquire about these benefits. Studies also have found that the automated alerts and reminders associated with electronic prescribing can ameliorate problems with medication errors and failure to use medications appropriately.³²⁻³⁴

Finally, the Medicare and Medicaid federal health programs may be well positioned in their marketplace leverage to address these hurdles by promoting higher medication dispensing units, encouraging electronic prescribing practices, and providing the most vulnerable populations with access to medication reserves.

Recommendation 2: Train physicians, pharmacists, and insurers to speak with each other and their patients about disaster planning and building and maintaining prescription medication reserves.

Many of the key informants requested more educational materials (print and Web based), training resources, and industry guidelines to help their organizations talk to chronically ill patients about disasters. Specifically, these professionals needed resources on how to efficiently navigate the prescription drug system during routine and disaster situations. When professionals are trained, they may be better positioned to help their patients build 14- to 30-day medication reserves or replace medications after a disaster by using existing prescription drug networks. Professionals also need resources on medication acquisition for insured and uninsured patient populations. In particular, they need knowledge about the disaster refill services available through Emergency Rx History²³ and the Emergency Prescription Assistance Program.²⁴ Professionals should also be aware of their community's chronic illness needs and work with local pharmacy, medical, and public health providers to maintain appropriate pharmaceutical repositories.³⁵ Finally, it is the professional's responsibility to talk with patients or their caregivers about safe storage and rotation of medication reserves to reduce unintended consequences of poisonings, overdose, and medication expiration.

Recommendation 3: Encourage greater 2-way communication, partnership, and disaster exercises between industry stakeholders and local, state, and federal emergency managers.

In this study, patients, physicians, pharmacists, and insurers acknowledged that greater individual and collaborative action is needed to ensure prescription drug access and continuity in times of disaster. One potential solution involves participation in profession-based disaster response teams, such as the Disaster Medical Assistance Team for medical staff, Pharmacy Emergency Response Team for pharmacists, Business Executives for National Security for businesses, and Citizen Corps or Community Emergency Response Team for patients. Through these teams, participants can network with their affiliates and local emergency managers to improve industry preparedness strategies, build collaborative disaster response plans and protocols, and test these plans through disaster exercises. However, team-based testing alone is not sufficient, and it is the responsibility of local emergency managers and public health agencies to include these teams in their communitywide exercises and plans.

Limitations

This study was limited to stakeholders in Los Angeles County. Participants' opinions and activities may be different in other urban communities. In particular, Los Angeles County maintains a high degree of managed care coverage, which may narrow the perspectives of study stakeholders. The sample was purposively chosen to attain a broad sample of "knowledgeable" stakeholder experiences and was not a random sample. In addition, the distribution of focus group participants' chronic illness was not representative of the distribution of chronic illness among Los Angeles County residents.³⁶ Finally, data collection and analysis used qualitative methods, which inherently have some subjectivity using the researcher's framework of interpretation.

CONCLUSION

Chronic illness prevalence and patients' needs for health-maintenance medications are increasing in the United States. It is therefore the responsibility of all stakeholders within the prescription drug procurement process to develop and strengthen their disaster continuity plans individually and collaboratively to ensure that communities are resilient in times of disaster. This includes communities identifying their prevalence of chronic illness, the types of lifesaving medications required, and the geographic distribution of chronically ill people so that prescription drug continuity plans and resources are implemented effectively. By working together, industry partners, public health, and local, state, and federal emergency managers can apply the lessons learned from this research, as well as from recent US disasters, to improve organizational planning and policy shifts to facilitate patients' abilities to build and maintain reserves of medication for chronic illnesses.

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