
Are Schools Prepared for Emergencies?

A Baseline Assessment of Emergency Preparedness at School Sites in Three Los Angeles County School Districts

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A survey of emergency preparedness was conducted in three public school districts in urban areas of Los Angeles County. Eighty-three school sites were surveyed using self-administered questionnaires. Although designated respondents generally felt that their schools were well prepared, the survey also revealed the need for improvements in written disaster plans, emergency response training, availability of equipment and supplies, and implementation of the state-mandated Standardized Emergency Management System (SEMS). A significant predictor of compliance with the SEMS guidelines was having experienced the effects of school emergencies in the past.

Keywords: *emergency preparedness; crisis management; urban schools; school safety*

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Since September 11, 2001, there has been a growing awareness that all sectors of our society need to prepare for emergencies and disasters. School emergency preparedness, in particular, has attracted attention in the United States and overseas in light of more recent events, such as the terrorist siege at a school in the Republic of North Ossetia, Russia, in early September 2004 (Hickok, 2004) and multiple school shooting incidents in the United States (Infoplease.com, 2005). In fact, various natural and human-induced hazards pose risks to the health and safety of students and staff at school (e.g., Berkowitz, Haugh, Orr, & Kaye, 2002; Centers for Disease Control and Prevention [CDC], 1999; Provenzo & Frado, 1995). In the face of such risks, schools need to be prepared to manage emergency events to prevent or minimize physical and psychological trauma to their students and staff as well as the surrounding community.

Although schools are not traditional emergency response organizations, they will often be the first responders to events occurring on campus. It has been demonstrated in past disasters that formal emergency responders are frequently unable to reach disaster scenes immediately and that laypersons who happen to be at the scene are the ones to initiate search and rescue, first aid, and transportation of injured people (Auf der Heide, 2003). Moreover, in the case of California, all public employees, which include school teachers and staff, are declared to be disaster service workers subject to disaster service activities (California Government Code, Section 3100). Therefore, schools must have emergency response procedures in place and regularly exercise them. These procedures should include how to request the assistance of local government agencies and emergency responders and how to coordinate actions with them.

The Secretary of Homeland Security developed what is called the National Incident Management System (NIMS) at the request of the president and released it in March 2004. Its purpose is to "enable responders at all levels to work together more effectively to manage domestic incidents no matter what the cause, size or complexity" (Federal Emergency Management Agency [FEMA], 2005a). NIMS establishes a standard set of processes and procedures that emergency responders at all levels of government will use to conduct emergency response operations. For example, NIMS includes the Incident Command System (ICS), which is a standardized organizational structure for managing field response activities in emergencies. Because school districts are an integral part of local government, it is expected that school districts and school sites will also comply with NIMS (FEMA, 2005b). This is to ensure that formal emergency response services are delivered to schools in a timely and effective manner.

The question, then, is how feasible is it for school districts and school sites to implement NIMS? Full compliance would require schools to design

emergency plans and procedures based on NIMS, train their staff on NIMS procedures, and conduct regular exercises using NIMS.

In California, all local governments, including county offices of education, school districts, and community college districts, have been required to use the SEMS for nearly a decade (California Government Code, Section 8607). If schools fail to comply with the Standardized Emergency Management System (SEMS), they are not eligible for reimbursement of response-related costs under state disaster assistance programs. There are many similarities between the SEMS and NIMS protocols, including the use of the ICS and multiagency coordination systems. Thus, although the guidelines are not yet clear, California schools and other schools in the country that have already been using standardized emergency management systems, such as SEMS, should have little difficulty transitioning to NIMS. As for other schools in the country that have not worked with such systems before, the implementation of NIMS may take more time. In this sense, examining the current state of emergency preparedness and SEMS compliance in public schools in California can inform ways in which schools that are new to standardized systems may be able to implement NIMS in the next several years.

More generally, little is known about how and to what extent schools in the United States are prepared for emergencies and disasters. There have been a number of studies that focused on school preparedness for medical emergencies (e.g., Bobo, Hallenbeck, & Robinson, 2003; Gagliardi, Neighbors, Spears, Byrd, & Snarr, 1994; Hazinski et al., 2004; Hohenhaus, 2001). These studies assessed whether school staff were trained to treat and diagnose pediatric medical emergencies, such as trauma, severe breathing problems, diabetes, and cardiac arrest. Some also examined the extent to which schools had the necessary equipment and resources for providing such emergency medical care. However, there is a paucity of studies that examine more comprehensive school emergency preparedness.

One of the very few studies on comprehensive disaster planning in schools involved a content analysis of a sample of disaster plans from state departments of education (Burling & Hyle, 1997). The results showed that policies and regulations on school disaster preparedness varied greatly between states and that many plans were too general. The study also revealed a lack of preparedness efforts, written policies, and outside agency involvement. Having a comprehensive and detailed disaster plan is a critical first step in school preparedness. In addition, paper plans must be accompanied by adequate training, drills/practices, physical resources, and interagency cooperation.

This article reports the major findings from a survey conducted in public schools in three school districts under the jurisdiction of the Los Angeles County Office of Education (LACOE) in March 2004. The survey was part

of LACOE's Emergency Response and Crisis Management Project, which was funded by the U.S. Department of Education. The objective was to obtain a baseline assessment of emergency preparedness and SEMS compliance in the schools participating in the project.

Method

Study Location

Los Angeles County serves nearly 1.7 million students at more than 1,700 school sites in 80 school districts (LACOE, 2005). In addition, there are 13 community college districts. Three unified school districts within the county were chosen by LACOE to be partners in the Emergency Response and Crisis Management Project. The selection was based on convenience factors such as geographical location and existing relationships between LACOE and each of the three districts.

The three participating school districts were unified school districts with 30, 37, and 16 schools, respectively. Thus, a total of 83 public elementary, middle, and high schools were included in the assessment. Based on data available for the academic year of 2003-2004, the total student enrollment for the three districts ranged from about 19,700 for the smallest district to about 32,500 for the largest district. The ethnicity of the student population was overwhelmingly non-White for all three districts. The student population for one district was 90% Hispanic, for the second district, 70% Hispanic and 30% African American, and for the third district, 40% Hispanic and 30% Asian. The percentage of students enrolled in English Learner programs (i.e., special programs for students who are not proficient in English) ranged from 20% to 54%, and the percentage enrolled in free or reduced-price meal programs ranged from 35% to 95% among the three districts. The pupil-to-teacher ratio ranged from 22.4 to 26.8. Detailed demographic data for each district are not disclosed to protect the identity of the districts. Institutional Review Board approval was obtained for this study.

Survey Instrument and Administration

A self-administered questionnaire was developed based on formative research involving semistructured, face-to-face interviews with 21 school administrators and staff from a purposive sample of 12 public schools in Los Angeles County. Project leaders at LACOE and project coordinators from

the three districts participating in the project also contributed substantially to the questionnaire development. The questionnaire contained 36 questions, most of which were closed-ended. Questionnaire topics included respondent characteristics, past experience with school emergencies/disasters, perceived likelihood of future school emergency/disaster, perceived school preparedness, contents of school emergency plan, emergency response training, emergency response roles, drills, school safety committees, emergency equipment and supplies, interagency coordination, and parental involvement in school emergency preparedness. The questionnaires were pilot-tested with seven individuals who, on average, reported that the questionnaire took 15 minutes to complete.

The questionnaire administration took place in March 2004. The questionnaires were administered to 83 public elementary, middle, and high schools in the three school districts participating in the project. Copies of the questionnaire were given to the project coordinators of each district who were responsible for distributing and collecting the questionnaires at their school sites. District coordinators were instructed to give three color-coded questionnaires to the principal of each school site who, in turn, was asked to select one administrative, one certificated, and one classified employee from his or her school to complete a questionnaire. This was done because of concerns that reported policies and practices would differ depending on the staff position of the person who responded to the questionnaire. Once respondents completed their questionnaires, they sealed them in envelopes to protect the confidentiality of their responses. The questionnaires were then collected by the district coordinators and returned to LACOE.

Data Analysis

Frequency distributions were obtained for descriptive purposes. Group means were compared using Pearson's chi-square tests and F tests with a statistical significance level of $p < .05$. Descriptive analyses were performed using SPSS v.12 (SPSS, Inc., 2003).

Regression analyses were performed using SAS v.9.1 (SAS Institute, 2002). The multilevel nature of the data and the resulting statistical dependence among respondents from the same school sites and districts were accounted for statistically.

A multilevel logistic regression analysis was performed to identify factors associated with using the SEMS. Compliance with SEMS was operationalized as a positive response to the question, "Is your school emergency

plan based on the Standardized Emergency Management System (SEMS)?" The variables tested in the model included the school district, school level, staff position, measures of prior emergency/disaster experience, training in SEMS, the number of different kinds of emergency equipment and supplies owned by the school, the number of different kinds of emergency drills the school conducts, and the number of different kinds of local agencies the school coordinates with on disaster planning and emergency management issues. Prior disaster experience was measured in terms of both the number of different kinds of emergency or disaster events experienced in the past and the kinds of effects the school experienced in prior events (e.g., financial loss, physical damage to property, death or injury to students or staff). Continuous variables, such as the number of different kinds of disaster events experienced, were dichotomized at the median for the logistic regression analyses.

In addition, a multilevel linear regression model predicting perceived preparedness was constructed to understand what might explain the variance in perceived preparedness reported by survey participants. Perceived preparedness was measured on a scale of 1 (*not all prepared*) to 10 (*extremely prepared*). The original variable was transformed to better approximate normality. The independent variables tested in the model included the school district, the staff position of the respondent, and variables that relate to preparedness activities: whether the respondent has a personal copy of the school emergency plan; whether the school emergency plan is based on SEMS; whether the respondent has received any kind of emergency response training in the prior 30 months; the number of different kinds of drills that had been conducted at the school during the prior 8 months; the number of different emergency supplies and equipment, including communication equipment, that the school owns; and whether those supplies and equipment had been inspected during the last school year.

Results

Respondent Characteristics

A total of 248 questionnaires was returned from all 83 schools for almost a 100% response rate. There was equal representation of the three staff positions: 81 respondents were school administrators, 84 were certificated personnel, and 83 were classified personnel. Sixty-three percent ($n = 157$) of respondents worked at elementary schools, 17% ($n = 42$) at middle schools, and 20% ($n = 49$) at high schools, reflecting the number of schools at each

level in the three districts. Respondents had worked an average of 6.9 years at their current schools. Average tenure was shortest among administrators.

Past Emergency With Greatest Effect

Table 1 shows the percentage of respondents in each district that reported their school had been affected by a given type of emergency in the past. Overall, the types of emergencies most commonly reported to have affected the school site were injuries among student(s) or staff (96.3%), student violence (85.3%), animals or insects on campus (84.6%), criminal activity in the neighborhood (81.8%), strangers on campus (78.4%), and power failures (75.8%). Gang activity was also one of the most frequently mentioned events in two of the three districts. In general, human-induced emergencies, such as civil disorders, school violence, and campus intruders, were more frequently reported by middle and high school respondents than by elementary school respondents.

The emergencies or disasters most often reported to have had the greatest effect on the schools were neighborhood criminal activity or strangers on campus (20.2%) and school violence or shootings (16.1%). Other types of reportedly significant events were the death or injury of students or staff (9.7%), natural hazards (7.7%; earthquakes, in particular), and gang activity (8.9%). Respondents said that these emergencies primarily resulted in disruption of classes and evacuation. Other effects mentioned were mental health problems and injuries among students and staff and damage to school facilities or property. About 13% of respondents reported that, to their knowledge, there were no emergencies that had significantly affected their school in the past.

Future Emergencies

When asked about the types of emergencies for which their school was least prepared, the most common single response was terrorism or bioterrorism (24.2%). Twenty-five percent of the respondents mentioned multiple kinds of emergencies for which their school was not prepared, including natural disasters, hazardous material spills, and violence-related events.

Perceived Preparedness

Respondents' perceptions of their school's current preparedness level were high, averaging a score of 6.9 on a scale ranging from 1 (*not at all*

Table 1
Percentage of Respondents per School District Who Reported
Emergencies or Disasters That Affected Their Schools
in the Past by Type of Event ($N = 241$)

Type of Event	District			Total
	A	B	C	
Airplane crash	20.5	0.0	2.8	8.9
Animals on campus	88.9	73.9	85.7	84.6
Bioterrorism	1.1	0.0	1.0	0.8
Bombs/bomb threats	24.7	35.6	27.1	27.8
Car accidents	55.1	46.7	35.5	44.8
Hazardous materials	14.4	2.3	14.2	12.1
Civil disorder	12.5	42.9	25.2	23.6
Neighborhood crime	78.4	89.4	81.3	81.8
Earthquake	67.4	64.4	46.7	57.7
Extreme cold	6.7	29.5	29.1	20.8
Extreme heat	29.9	42.2	51.9	41.9
Fire at school	23.9	22.7	44.3	32.8
Fire in neighborhood	27.4	50.0	64.1	48.1
Flood	10.0	44.4	42.2	30.4
Gang activity	45.5	70.2	80.4	63.0
Hurricanes	1.1	0.0	1.9	1.3
Injured student/staff	95.5	95.7	97.2	96.3
Icy conditions	3.3	4.5	16.3	9.2
Power failure	60.7	87.2	83.7	75.8
Suicide or death of student/staff	55.2	48.9	38.1	46.4
Strangers on campus	71.6	82.2	82.4	78.4
School shootings	6.7	17.0	16.0	12.8
Terrorist activity	3.3	0.0	2.9	2.5
Violence by students	77.8	91.5	88.9	85.3
Weapons on campus	61.4	70.2	61.3	63.1
Total N	88	47	106	241

Note: Numbers in bold indicate statistically significant differences in proportions between districts using Pearson's chi-square test and an alpha level of 0.05.

prepared) to 10 (*extremely well prepared*). There were significant differences in average perceptions of school preparedness between the districts: the highest average for a district was 7.5, the lowest was 6.2 ($F_{2, 243} = 8.22$, $p < .01$). Staff position also had a significant effect on perceptions of school preparedness, where classified staff on average rated their school's preparedness higher (7.4) than certificated staff or administrative staff (both 6.7, $F_{2, 243} = 3.48$, $p < .05$).

Depending on the type and magnitude of certain emergency events, schools may be required to shelter their students and staff for up to 72 hours (Burling & Hyle, 1997; California Governor's Office of Emergency Services, n.d.). Given this possibility, respondents were also asked how capable their school was to shelter and care for students for 24 continuous hours on a scale ranging from 1 (*not at all capable*) to 10 (*extremely capable*). The overall average of the responses to this question was 7.2.

School Emergency Plans

Eighty-four percent of respondents said they have a personal copy of their school's current written emergency plan. Almost all administrators (96.3%) reported having a copy of the school emergency plan, whereas certificated staff (81.0%) and classified staff (75.9%) were significantly less likely to have their own copy of the plan (Pearson's chi-square = 13.92, $df = 2$, $p < .01$).

Thirty-eight percent of respondents reported that their school's written plans were designed according to SEMS. Classified and certificated staff were more likely to say the plan is *not* designed according to SEMS or that they do not know whether SEMS is used or not. Approximately 95% said written school plans addressed earthquakes and fires, but only 78% said their school plans addressed violence.

Responsibilities During an Emergency

Respondents were asked about their personal responsibilities during an emergency at their school. Aside from a few respondents ($n = 21$) who said they had no emergency responsibilities or were unclear about their responsibilities during an emergency, most respondents indicated that they were responsible for at least one of the following activities during a school emergency: accounting for students, providing/supervising medical treatment, helping with search and rescue, helping with student release, transporting students or staff to emergency rooms or other health facilities, and communicating with various external groups including parents, the district office, other schools, the media, or local agencies and responders.

Many individuals reported that they would carry out multiple response tasks in the event of an emergency. This was the case, in particular, with elementary school principals. Ninety percent, 87%, and 40% of the elementary school administrators in the three districts, respectively, said they were responsible for four or more different activities during an emergency.

In addition, whereas those who had received recent training in CPR and/or first aid were more likely to say they would provide or supervise medical care during emergencies, substantial numbers of persons who had not received recent emergency medical training also said they would perform this particular role.

Emergency Response Training

Although the majority of respondents in all districts said they had received in-service training on general and event-specific emergency response procedures during the 30 months prior to the survey, less than 50% of respondents said they had received training specifically in cardiopulmonary resuscitation (CPR), first aid, SEMS, or search and rescue during the same period (see Figure 1). Reported levels of recent training differed significantly between school districts. Across the three districts, administrators were most likely to be trained in SEMS (43.0%) but least likely to be trained in CPR (25.0%) or in first aid (25.0%) (see Figure 2). In contrast, more than 50% of classified staff reported being trained in CPR and first aid, but less than 25% had recently been trained in SEMS or search and rescue. Less than 30% of certificated staff reported recent training in any of the emergency response skills or procedures.

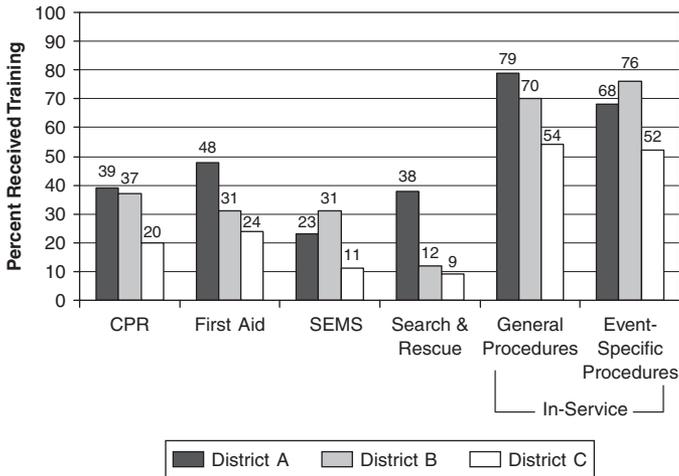
Emergency Drills

The reported frequency of emergency drills conducted at the school site during the prior 8 months varied by type of drill and by school level (see Figure 3). Elementary and middle school respondents generally reported conducting a higher frequency of drills. Fire drills were conducted most often, followed by earthquake drills and lockdown drills. Districtwide drills were performed least often.

School Safety Committees

All but five respondents reported that their school has a school safety committee. Most of these committees reportedly include the school principal or assistant principal and teachers as members. Sixty percent to 65% indicated that nurses and custodians were also on the committee, whereas about 50% said parents and 30% said local emergency responders were included in the committee. Students were more likely to be involved in the committee in middle schools (33.3%) and high schools (29.2%) than in elementary schools (9.6%). Security staff were also more likely to be on the

Figure 1
Percentage of Respondents Trained During Past 30 Months
by Type of Training and School District



safety committee in middle schools (69.2%) and high schools (77.1%) than in elementary schools (49.4%). In contrast, parents were most likely to be included in safety committees at middle schools (66.7%) compared with elementary (50.0%) and high schools (33.3%).

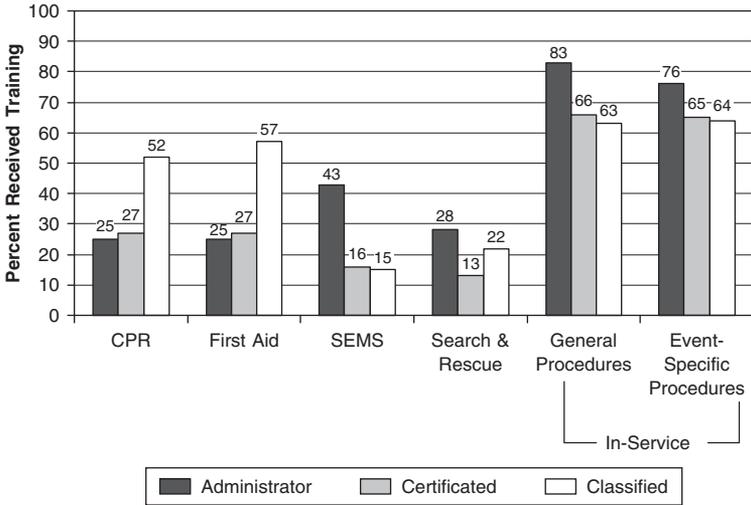
Mode of Emergency Communication

Nearly all respondents indicated that bells and two-way radios were used in their schools to communicate during emergencies. The use of cell phones, regular telephones, and the intercom system were reported significantly less frequently, except in one district where the use of all of the above devices was reported to a similar extent. Computers, cable systems, pagers, and broadcast systems were least mentioned as a mode of emergency communication.

Emergency Supplies and Equipment

Questions were asked about whether the school had the following emergency material, supplies, or equipment: emergency alert system, evacuation

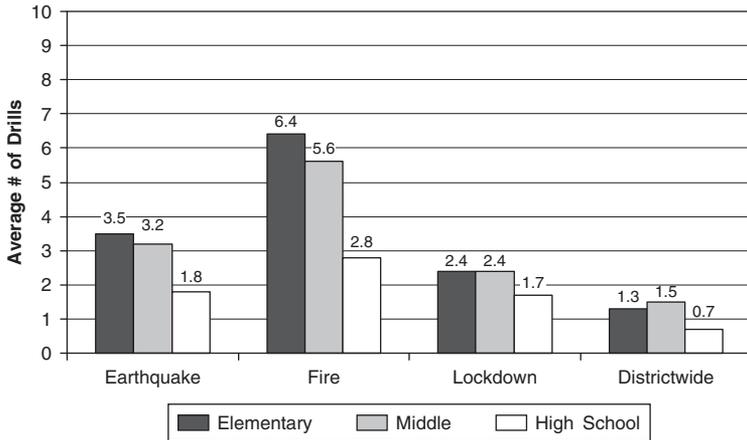
Figure 2
Percentage of Respondents Trained During Past 30 Months
by Type of Training and Staff Position



plan, sheltering plan, first aid supplies, food, flashlight and batteries, rescue equipment, and supplies for children with special needs. Whereas about 90% of respondents indicated that their school had an evacuation plan and first aid supplies, 70% said they have flashlights and batteries, about 50% reported having an emergency alert system and food, and less than half of the respondents said they had a sheltering plan, rescue equipment, or supplies for children with special needs. The availability of these supplies and equipment was consistently higher in one district compared with the other two districts. There were also statistically significant differences in the availability of emergency alert systems and flashlights and batteries reported by different staff, where classified staff were more likely to say that these equipment were available at their school compared with administrative or certificated staff (69.2% vs. 43.0% vs. 53.0%, Pearson’s chi-square = 11.08, $df = 2$, $p < .01$ for emergency alert systems; 85.9% vs. 73.4% vs. 66.3%, Pearson’s chi-square = 8.42, $df = 2$, $p < .05$ for flashlights and batteries).

When asked whether the emergency equipment and supplies had been inspected during the prior year, 62.0% of administrative staff responded

Figure 3
Reported Numbers of Earthquake, Fire, Lockdown, and Districtwide Drills Conducted During Past 8 Months by School Level



affirmatively, compared with 48.1% of classified staff and 35.7% of certificated staff. Many of the classified staff (41.8%) and certificated staff (53.6%) said that they did not know the answer to this question.

Interagency Cooperation

Respondents were asked to indicate the local organizations or agencies with which their school cooperates on emergency preparedness and response issues. They could choose all that applied to their school from a list that included the County Office of Emergency Management, city offices/managers, sheriff's department, fire department, police department, health care agencies, public health department, the Red Cross, LACOE, other local schools, and private businesses or companies. The police department (49.6%), fire department (47.6%), and sheriff's department (42.7%) were most frequently mentioned. Some respondents also indicated working with city offices/managers (17.7%), health care agencies (17.3%), LACOE (20.6%), or other local schools (27.4%). Very few respondents reported that their school cooperated with the Red Cross (9.7%), the County Office of

Emergency Management (8.1%), the local public health department (6.0%), or private businesses (3.2%). When respondents were asked with which agencies their school had prearranged agreements with regard to emergency response, the numbers were smaller but the overall pattern was similar, where interagency agreements with the police department (37.1%), fire department (33.9%), and sheriff's department (35.5%) were most common.

Parental Involvement

Only between 15% and 25% of respondents across the three districts said that parents were not involved in school emergency preparedness. There were no significant differences in reports of parental involvement between elementary, middle, and high schools. When they are involved, parents reportedly serve on advisory committees (60.2%), help develop school safety plans (61.4%), or donate equipment and supplies (45.2%). Less common parent activities included fundraising for equipment and supplies (29.5%), participating in emergency response training (22.3%), and supervising students during actual emergencies (19.3%).

Multilevel Logistic Regression Analysis: Predictors of SEMS Compliance

The full and reduced logistic regression models predicting SEMS compliance are shown in Table 2. The odds of reporting that their school follows SEMS guidelines did not differ significantly by school district or by staff position. In addition, neither the extent of emergency equipment and supplies owned by the school nor the variety of emergency drills conducted at school sites had an effect on the odds of having an emergency plan that was based on SEMS.

The odds of being compliant with SEMS requirements were significantly higher for high schools compared with elementary schools, for schools that experienced a greater extent of emergency/disaster effect in the past compared with those that experienced less or no effect in the past, and for schools that coordinate with a greater number of local agencies compared with those that coordinate with fewer or none of the local agencies on disaster planning and emergency preparedness issues. Although the extent of prior effects from emergency/disaster events was associated with higher odds of SEMS compliance, the number of prior emergency/disaster events experienced was associated with lower odds of being compliant with SEMS.

Table 2
Logistic Regression Analysis Predicting Standardized Emergency Management System (SEMS) Compliance (N = 245)

Predictor Variable	Full Model		Reduced Model	
	Odds Ratio	95% CI	Odds Ratio	95% CI
District A	0.77	0.27–2.18	0.63	0.26–1.56
District B	0.96	0.34–2.65	0.89	0.35–2.23
Middle school	1.12	0.49–2.56	1.14	0.49–2.64
High school	2.50*	1.13–5.53	2.61*	1.19–5.72
Certificated staff	0.85	0.39–1.85	—	—
Classified staff	0.87	0.44–1.75	—	—
Number of prior disaster events (high vs. low)	0.40**	0.20–0.77	0.39**	0.20–0.77
Number of prior disaster effects (high vs. low)	2.60**	1.26–5.38	2.70**	1.29–5.66
SEMS training (trained vs. not trained)	7.07**	3.34–14.94	7.08**	3.59–13.98
Number of kinds of emergency equipment and supplies (high vs. low)	0.71	0.33–1.56	—	—
Number of kinds of drills conducted (high vs. low)	0.92	0.47–1.80	—	—
Number of local coordinating agencies (high vs. low)	2.51**	1.30–4.86	2.23**	1.24–4.03

Note: CI = confidence interval.

* $p < .05$. ** $p < .01$.

Multilevel Regression Analysis: Predictors of Perceived Preparedness

Table 3 shows the full and reduced regression models predicting levels of perceived preparedness. Note that the direction of the coefficients should be interpreted with care: The transformation of the original variable partly involved reversing the direction of the variable so that higher perceptions of preparedness were indicated by a lower value on the scale. Thus, a negative coefficient indicates a positive association with perceived preparedness.

Perceptions of preparedness did not differ significantly by school district, nor were they associated with SEMS compliance or the respondent's recent training experience. Certificated staff and classified staff, in particular, perceived higher levels of preparedness than administrative staff, and those who had a personal copy of the school emergency plan perceived

Table 3
Linear Regression Analysis Predicting Levels of
Perceived Preparedness (N = 246)

Predictor Variable	Full Model	Reduced Model
	Estimated Coefficient	Estimated Coefficient
Intercept	3.164**	3.066**
District A	0.013	-0.014
District B	-0.020	-0.043
Certificated staff	-0.175**	-0.181**
Classified staff	-0.318**	-0.317**
Have personal copy of plan (yes vs. no)	-0.246**	-0.261**
Have SEMS-based plan (yes vs. no)	-0.011	—
Received emergency response training (yes vs. no)	-0.176	—
Number of the kinds of drills conducted (continuous)	-0.071*	-0.076*
Number of the kinds of emergency equipment and supplies (continuous)	-0.038**	-0.039**
Inspected equipment and supplies (yes vs. no)	-0.126*	-0.126*
Number of local coordinating agencies (continuous)	-0.022	-0.025*

Note: Due to the transformation of the original dependent variable, a negative coefficient indicates a positive association between the predictor variable and perceived preparedness adjusting for all other variables in the model.

* $p < .05$. ** $p < .01$.

higher levels of preparedness than those without a personal copy of the plan. Furthermore, the number of different kinds of drills conducted, the number of different kinds of emergency supplies and equipment maintained at the school site, and the number of different types of local agencies and groups that the school coordinates with were all independently associated with higher levels of perceived preparedness. Last, respondents who reported that the emergency equipment and supplies had been inspected during the prior school year perceived higher levels of preparedness than those who did not report as such.

Discussion

This study assessed school emergency preparedness in a total of 83 public elementary, middle, and high schools in three school districts in Los

Angeles County. Despite the geographical proximity of these three districts, they differ in their past experiences of school emergencies and disasters. For instance, districts vary in their reports of an airplane crash, civil disorder, extreme weather, fire, and floods affecting their schools in the past. However, some of the most frequently mentioned emergencies, as well as those that have had the greatest effect on the schools, are violence- or crime-related events across all districts. We do not have the information available to determine if this is something unique to these particular districts, or if it is similar to the experiences of schools in urban areas of any major U.S. city, or if it is even common in schools from other environments. Regardless, readers should keep in mind the nature of the past experiences of these schools and the type of emergencies that they most often encounter as the results of this study are discussed.

In general, the survey participants think that their schools are well prepared for future emergencies and disasters. They also think they are quite capable of caring for students for 24 continuous hours in an emergency situation. However, the responses to specific questions about school preparedness do not seem to sufficiently support these confidence levels.

First, compliance with the state-mandated guidelines of the SEMS is low across all schools and districts. Specifically, school emergency plans frequently do not conform to SEMS, and SEMS training is inadequate, especially among nonadministrative staff. Even taking into account the fact that school principals often must take a primary or secondary role in multiple emergency response functions, there still appears to be excessive multitasking in emergency situations, in particular, among school administrators. In addition, interagency coordination, which is a core element of SEMS and the key to any successful multiagency operation, is not commonly reported among schools. In cases where it is practiced, it is limited to coordinating with just the traditional first responders (i.e., fire department and law enforcement). Thus, the assessment results show that the schools need to make improvements in their emergency plans, trainings, assignment of emergency response roles, and coordination with local agencies to conform with the SEMS guidelines as well as to perform effectively and efficiently in emergency response.

Second, many respondents had received no recent training in emergency response procedures. This is of particular concern given the frequent turnover of school staff, in particular administrators, and the tendency of school staff, regardless of their position, to take on multiple responsibilities during an emergency. Some schools may have designated crisis response teams and provide training only to those team members. However, according to California State

Law, all public employees are designated disaster service workers when a state of emergency is declared (California Government Code, Sections 3100-3109). Thus, schools should ensure that all personnel are trained in general emergency response procedures and should also provide them with opportunities to obtain further training.

Third, in terms of conducting training exercises and drills, the California Education Code mandates that elementary schools must conduct drop-and-cover earthquake drills at least once each quarter and secondary schools at least once each semester (California Education Code, Section 35297). Fire drills are mandated once a month in elementary schools, four times every school year in intermediate schools, and twice every school year in secondary schools (California Education Code, Section 32001). There are no mandates concerning other types of drills, but it is clear from the past experiences of schools that preparedness for other types of events is important as well. Results of the assessment show that lockdown drills and districtwide drills are not conducted as often as fire and earthquake drills. It is also apparent that drills are significantly less frequently conducted at the high school level. This finding is somewhat unsettling given the survey results that showed secondary schools to be most at risk for violence- and crime-related emergencies. Schools, districts, and state policy makers need to consider how policies and practices on school emergency training and exercises might be improved to more closely simulate the kinds of situations that pose the greatest risks to schools.

Fourth, all schools report the availability of some kind of communication device for use in an emergency, but the seemingly high dependence on two-way radios and telephones is of some concern. Anecdotal evidence suggests that two-way radios are often incompatible between school sites, district offices, and local emergency response agencies. It is also common for telephone service to be interrupted or overloaded during times of emergency (Burling & Hyle, 1997; Provenzo & Frado, 1995). Thus, investment in two-way radio systems that allow all district and school sites to communicate with each other and with relevant external emergency response personnel would be money well spent. In addition, schools should explore other more dependable methods for communicating between personnel and sites.

Last, most respondents indicate that an evacuation plan and first aid supplies are available at their school site. However, fewer respondents say their schools have flashlights and batteries, and only about half or less of the respondents report having a sheltering plan or food, among other things. These results do not seem to justify the level of perceived capability to care for

students for 24 continuous hours in an emergency. Another part of the problem is that, although classified staff are more likely to report that certain equipment or supplies are available at their school compared with administrative staff, they are less likely to report that those items have been inspected during the prior year. We cannot determine whose reports are more accurate, but it is clear that schools need to improve their inventory of emergency equipment and supplies and make sure that they are up to date and in good condition.

Perhaps the participants' confidence in their school's level of preparedness comes from sources other than having done the preparedness activities the survey asked about. The problem is that this sense of self-efficacy or self-confidence might suppress their motivation to perform what are considered important preparedness activities. It must be emphasized that the activities we addressed in the survey, which include planning, training, practicing, maintaining essential equipment and supplies, and coordinating with local emergency response agencies, are critical in building and strengthening the school's capacity to respond to emergencies.

The results of the logistic regression analysis showed that high schools were more likely to have school emergency plans that followed the SEMS guidelines compared with elementary schools. Taken together with the finding that high schools conduct drills least frequently and elementary schools do so most frequently, this might mean that high school staff are more familiar with the logic and concept of SEMS but less familiar with the appropriate behavioral actions to take in a disaster event, and vice versa for elementary schools. Applying SEMS to the school's emergency plan and practicing the procedures outlined in the plan are both important aspects of emergency preparedness.

It is interesting that whereas schools that reportedly experienced a wider range of emergency and disaster events in the past were less likely to use SEMS, schools that experienced a wider range of disaster *effects* from prior events, including financial loss, physical damage to school property, and physical and emotional effects on students and staff, were more likely to follow SEMS guidelines. A possible interpretation is that schools that have experienced a wide range of events, especially without receiving much effect from those events, have developed a sense of immunity or self-efficacy, such that they do not see the added benefit of using SEMS. Whereas, those schools that have experienced extensive effects from previous events recognize that SEMS will help reduce the effect of future events and therefore are more likely to implement SEMS.

The strongest predictor of SEMS compliance was SEMS training. That is, respondents who said they had attended trainings on SEMS in the prior

30 months were more likely to report that their school emergency plan was based on the SEMS model. From our data, it is not clear whether the respondents received SEMS training before or after their SEMS-based school plan was developed. Thus, the results could mean that those who attended the trainings subsequently helped develop a school plan that followed SEMS guidelines or that those whose schools adopted a SEMS-based plan subsequently received the appropriate training. Regardless, it is a positive finding because it means that SEMS training and the development of SEMS-based plans are going hand-in-hand for the most part.

Similarly, schools that have interagency relations with a wide range of local agencies and groups are more likely to use the SEMS guidelines. Again, it could be that schools adopt a SEMS-based plan first, which then leads them to extend their network of interagency coordination, or that schools that already coordinate extensively with local agencies are more likely to conform their school plans to SEMS. In either case, it indicates that SEMS-compliant schools have broader interagency relationships compared with non-SEMS-compliant schools. Again, it is emphasized that interagency coordination is one of the key features of SEMS and is crucial to successfully conducting a multiagency response to a school emergency.

The second regression analysis indicated that perceptions of preparedness correspond well with the extent to which some preparedness activities are actually undertaken. Survey participants reported higher levels of perceived preparedness if they had a personal copy of the school emergency plan, if their school conducted various kinds of drills, if their school owned a wide variety of emergency equipment and supplies, if those equipment and supplies had been inspected during the prior school year, and if their school cooperated with numerous local agencies and groups on emergency preparedness issues.

However, perceived preparedness was not associated with whether the school emergency plan was compliant with SEMS or with whether the respondent was recently trained in emergency response skills. Thus, perceived preparedness would not be an appropriate proxy for assessing SEMS compliance or the extent to which school staff have been trained in emergency response procedures. The regression analysis also indicated that perceptions of preparedness differ by staff position, where administrative staff perceive lower levels of preparedness compared with other staff. It is unknown what explains this difference or whose perceptions are more realistic. However, this draws attention to the fact that the informant's position in the school may affect the kind of information that is reported and the way in which the information is presented about school emergency preparedness. It is best if the person who is

most knowledgeable about disaster planning and emergency preparedness at the school site can be identified before data are collected.

Perhaps one of the most promising findings from this assessment is that all schools report that they have a school safety committee and that parents are involved in school emergency preparedness in one form or another. This may be because the state requires the development of comprehensive school safety plans by a school site council or school safety planning committee, which should include administrators, teachers, classified personnel, and parents (California Education Code, Section 32281). Having a school site council devoted to school health issues has been associated with the presence of some key school health policies and programs in U.S. schools (Brener, Kann, McManus, Stevenson, & Wooley, 2004). It has also been demonstrated that broad stakeholder involvement in planning processes produces stronger plans that have a greater potential for implementation (Burby, 2003). Therefore, a school safety committee with active parental involvement might be a valuable resource that can help promote school emergency preparedness.

Limitations

This assessment was conducted with three school districts geographically clustered in Los Angeles County, California. They are not representative of schools and districts elsewhere in the county, in California, or in the United States. To make generalizations, this assessment would have to be conducted with a representative sample of the school population that we wish to make inferences about.

Also, the questionnaire respondents from each school may have provided socially desirable answers to the questionnaire because they were aware that LACOE was administering the survey. However, there is no way to determine the extent to which social desirability affected the results of this survey.

Another limitation of this study is that it does not provide much insight into why there are differences in the ways schools prepare for disasters and the extent to which they are prepared. The literature suggests that factors like urban or rural environment, district size, prior disaster experience, or the presence of school safety committees might be associated with levels of school emergency preparedness (Brener et al., 2004; Dahlhamer & D'Souza, 1997; Jones, Brener, & McManus, 2003). However, there was little or no variability in those factors among the schools that were studied, so the associations could not be tested.

Implications

Even though nearly a decade has passed since the use of the SEMS was mandated for all school districts and schools in California, we found that SEMS compliance was low in three school districts located in the urban areas of Los Angeles County. This suggests that it may take several years until districts and schools nationwide are in full compliance with the newly mandated NIMS, especially where standardized emergency management systems have never been introduced before. Further research should try to identify the factors related to SEMS compliance as well as to school emergency preparedness in general. The fact that there were significant differences between school districts, in terms of SEMS compliance, emergency training, and preparedness activities, suggests that district-level support may be a critical factor in strengthening school preparedness. Districts can support schools by sponsoring trainings, offering technical support, and providing funding and other resources (Small et al., 2001).

In the aftermath of the events of September 11, 2001, the U.S. Department of Education developed the Emergency Response and Crisis Management Program to provide local educational agencies with funds to improve and strengthen emergency response and crisis management plans, including training in emergency response procedures and coordinating with local government and other agencies (U.S. Department of Education, 2005). More than 300 grants of \$50,000 to \$500,000 have been awarded since 2003. A study of how those funds were used and the effect it had on local school emergency preparedness would also contribute to the understanding of how we might improve levels of emergency preparedness in our nation's schools.

Conclusion

This baseline study implies that much more work is needed to improve emergency preparedness and compliance with pertinent laws in Los Angeles County schools and districts.

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