

Sources of Challenges in Medical and Public Health Communication and Information Sharing during a Statewide Improvised Explosive Device Exercise

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About Cal PREPARE EXLAB

The California Exercise Laboratory (EXLAB) is a research program of Cal PREPARE, a CDC center for Public Health Preparedness and Emergency Response (PERRC). EXLAB is an ongoing, cost-effective, and capability-based “laboratory” for researchers to study high-priority, all-hazards public health systems research questions using biannual statewide operations-based exercises

Introduction

The State of California has a complex public health and medical system. In addition to being the most populous state (>38 million) in the nation, California is also the third largest state geographically, with 61 health jurisdictions (58 counties and 3 cities) spread across 158,854 square miles of beaches, mountains, forests, and deserts. No stranger to disasters, California makes preparedness a statewide priority. As part of its planning and preparedness process, California conducts two statewide exercises – the Statewide Medical and Health Exercise and the Golden Guardian Exercise.

2010 Medical and Health Exercise. During the Statewide Medical and Health exercise, each operational area uses the same scenario to test specific capabilities. In 2010, this scenario was an improvised explosive device. While statewide exercises occur simultaneously, each operational area conducts their exercise independently or in collaboration with one or more other jurisdictions. Exercise designers are encouraged to build exercise events that best test their preparedness systems. The Statewide Medical and Health exercise provide a unique opportunity to study the public health and medical emergency response system due to the participation of private and public organizations at the local, regional, and state levels.

EXLAB Research Steering Committee & Research Priorities. EXLAB research is guided by the priorities set by our Research Steering Committee, a statewide advisory group composed high-level decision makers from medical and health agencies at the state and local levels, including: public health, emergency medical services, health and human services, and hospitals. The following research priorities were established by the Steering Committee: (1) Communication/Information Sharing, (2) Organizational Roles and Responsibilities, (3) Medical Surge.

Communication Challenges. Timely and effective intra-organizational and inter-organizational communication and information sharing capabilities have been identified as an essential capacity for public health and medical emergency response. Communication capabilities are necessary to report situation and resource status, request mutual aid resources, distribute countermeasures, and allocate mutual aid resources into local and regional medical and health systems [1]. This poster presents the results of a survey conducted immediately following the 2010 Medical and Health Exercise exercise to further describe the nature of communications challenges experienced within medical and health system in California by hospitals, local health departments, local emergency medical services agencies, and regional disaster medical and health specialists.

Methods

Target & Sample Population. In an effort to better understand the medical and health response system in California, our target population consisted of the following organizations and agencies: Local Health Departments, LHD (n=61), Local Emergency Medical System Agencies, LEMSAs (n=31), Hospitals (n=530). In the absence of a regional medical and health organization/agency, the following functional role was also in our target population: Regional Disaster Medical and Health Coordinator/ Specialists (n=6). All LHDs, LEMSAs, and RDMHC/S were included in the recruited sample using publicly available lists. Hospitals affiliated with the California Hospital Association were included in the recruited sample (n=375).

Survey. EXLAB researchers developed a survey with the following four primary domains, all related to the 2010 Medical and Health Exercise: (1) Participation, (2) Transmission of hospital bed availability data, (3) Organizational Roles and responsibilities of organizations/agencies, and (4) Communications challenges. This survey was reviewed by the EXLAB Research Steering Committee and was pilot-tested by representatives from each of the target organizations. Modifications to the survey were made, based on these reviews.

Representatives from each of the organizations within our sampling frame received an invitation to the web-based via email. Data collection began on November 19, 2010 (the day following the 2010 Statewide Exercise) and ended on December 17, 2010.

Data Analysis. Survey data were downloaded from the web survey provider and identifying information was replaced with unique numeric codes prior to analysis. Data were analyzed in Stata 11 (StataCorp LP, College Station, TX). Qualitative data were independently coded by two EXLAB researchers (JH, MP) to classify statements into themes, categories, and sub-categories. All coding discrepancies were resolved. This research was approved by the UC Berkeley Committee for Protection of Human Subjects.

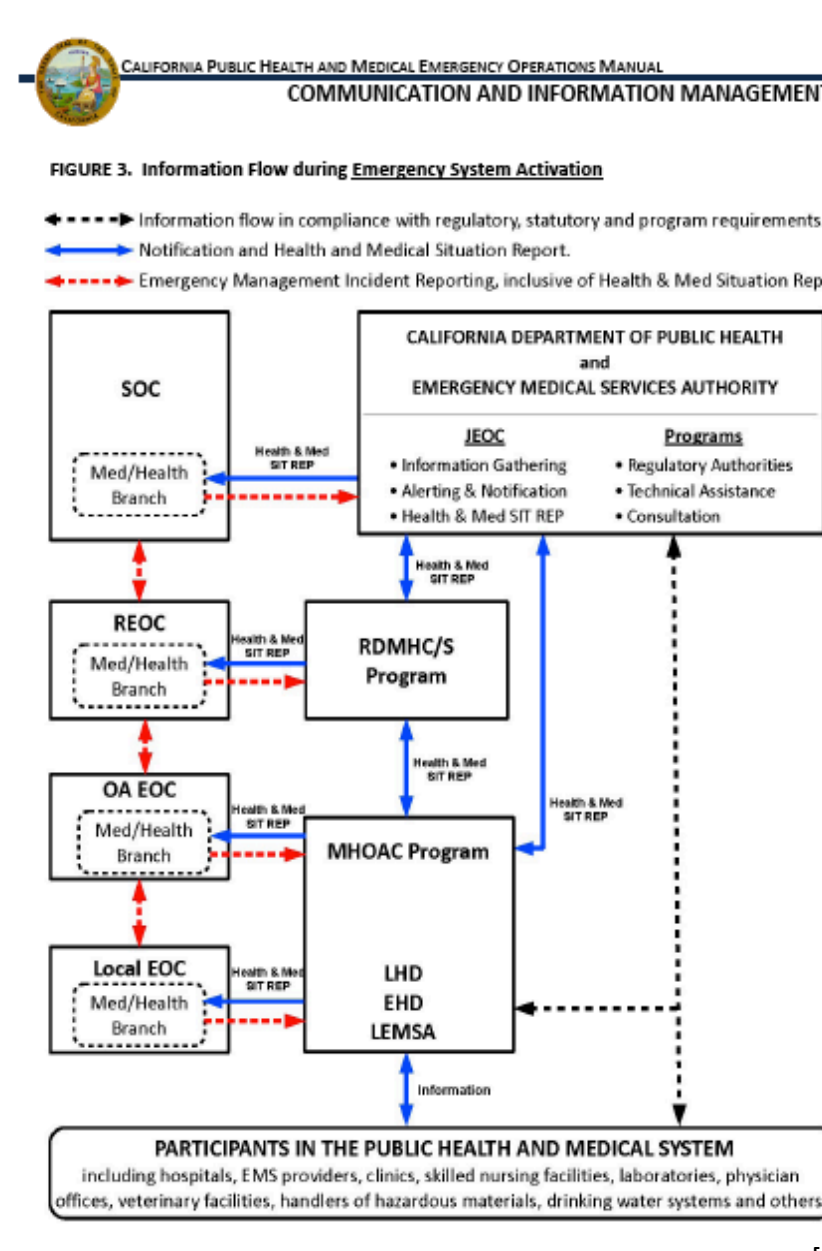
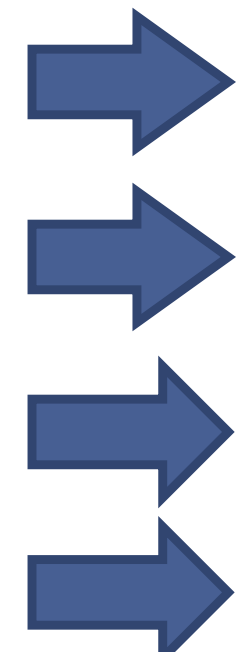
Research Sample

Overall

- 39% of recruited organizations/agencies (n=184)

Response rate by target organization/agency

- 77% of LEMSAs (n=24)
- 52% of LHDs (n=31)
- 34% of CHA Hospitals (24% of all California Hospitals, n=128)
- Response rate by target role
- 83% of RDMHC/S (n=5)



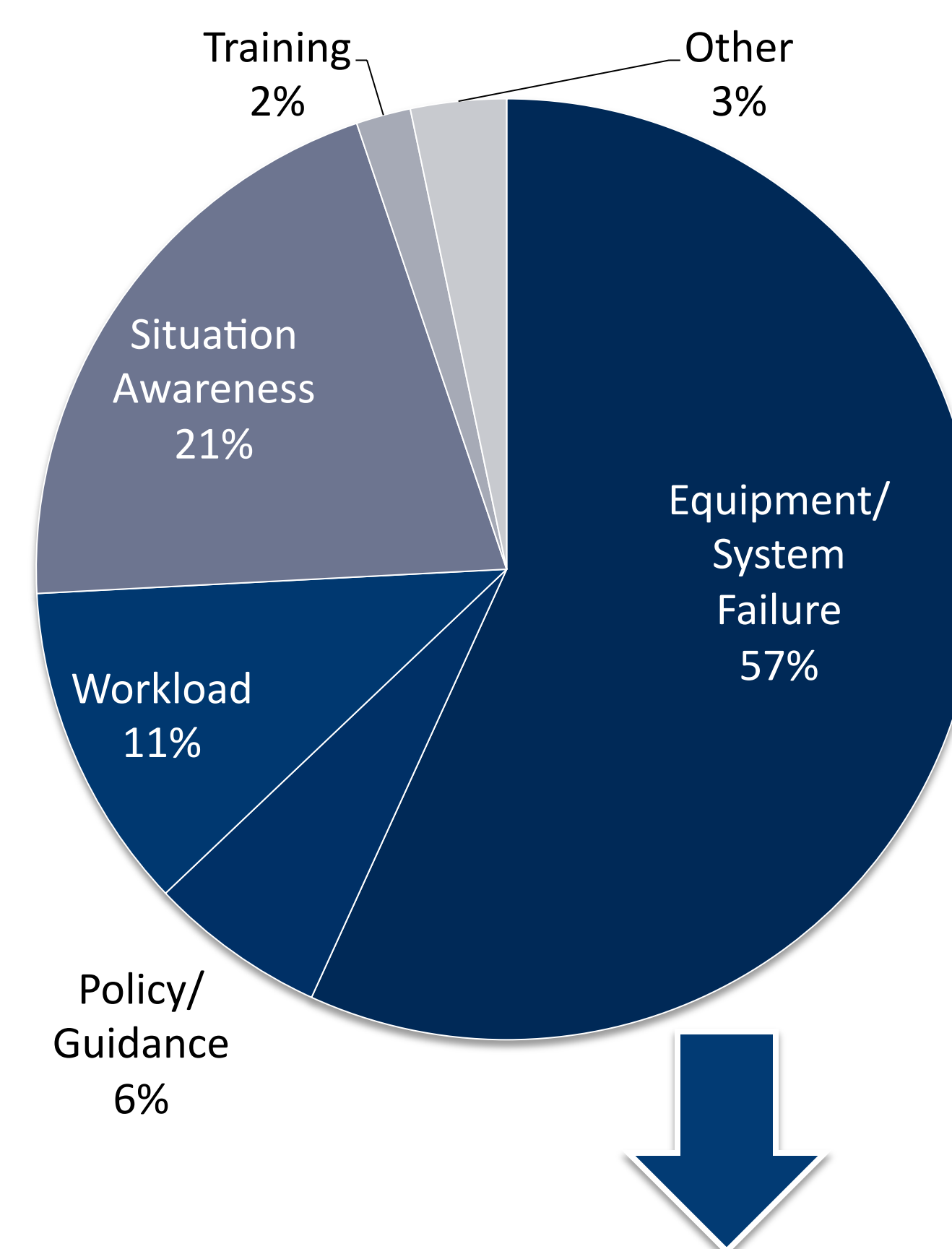
Preliminary Findings

Question 1: Most significant communications challenge

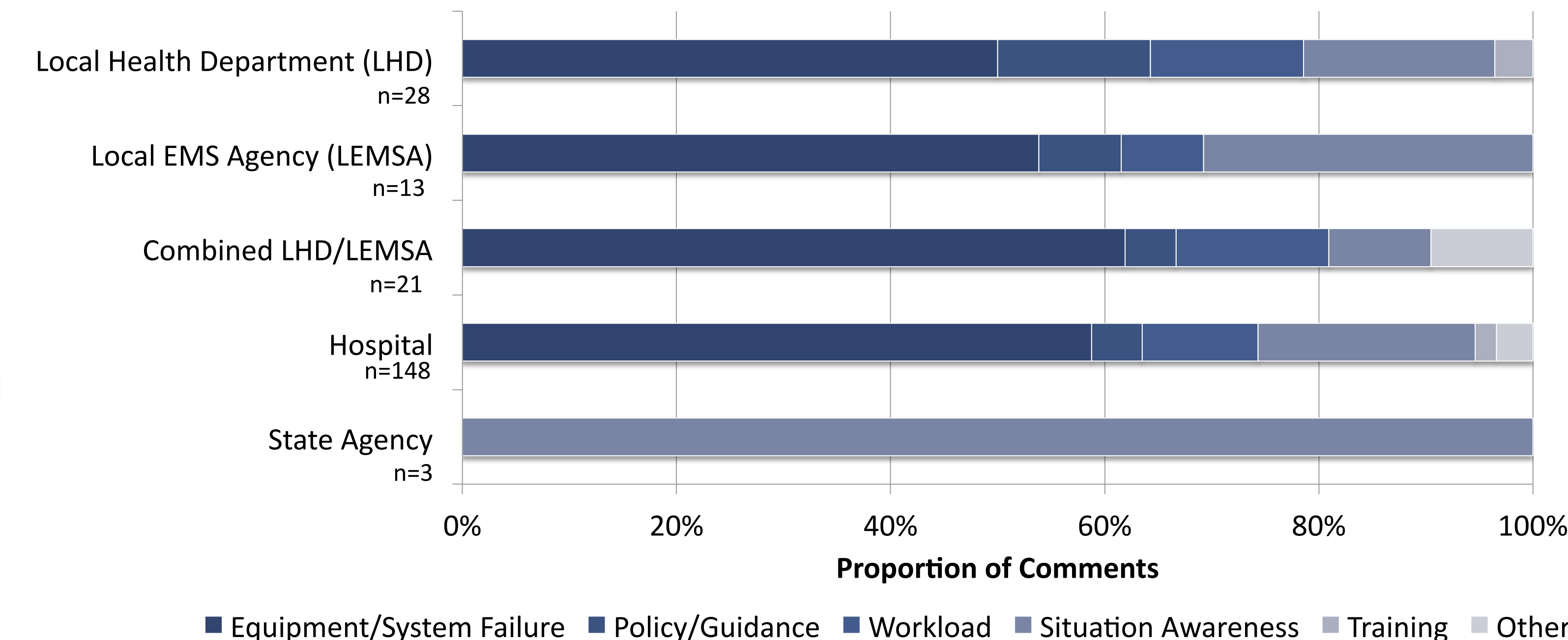
“During this exercise, what was your organization/agency's most significant communication challenge?”

Number of Statements =213, An additional 16 participants indicated “No communications challenges” and 11 responses strictly related to the exercise design, not shown here.

Responses - Overall



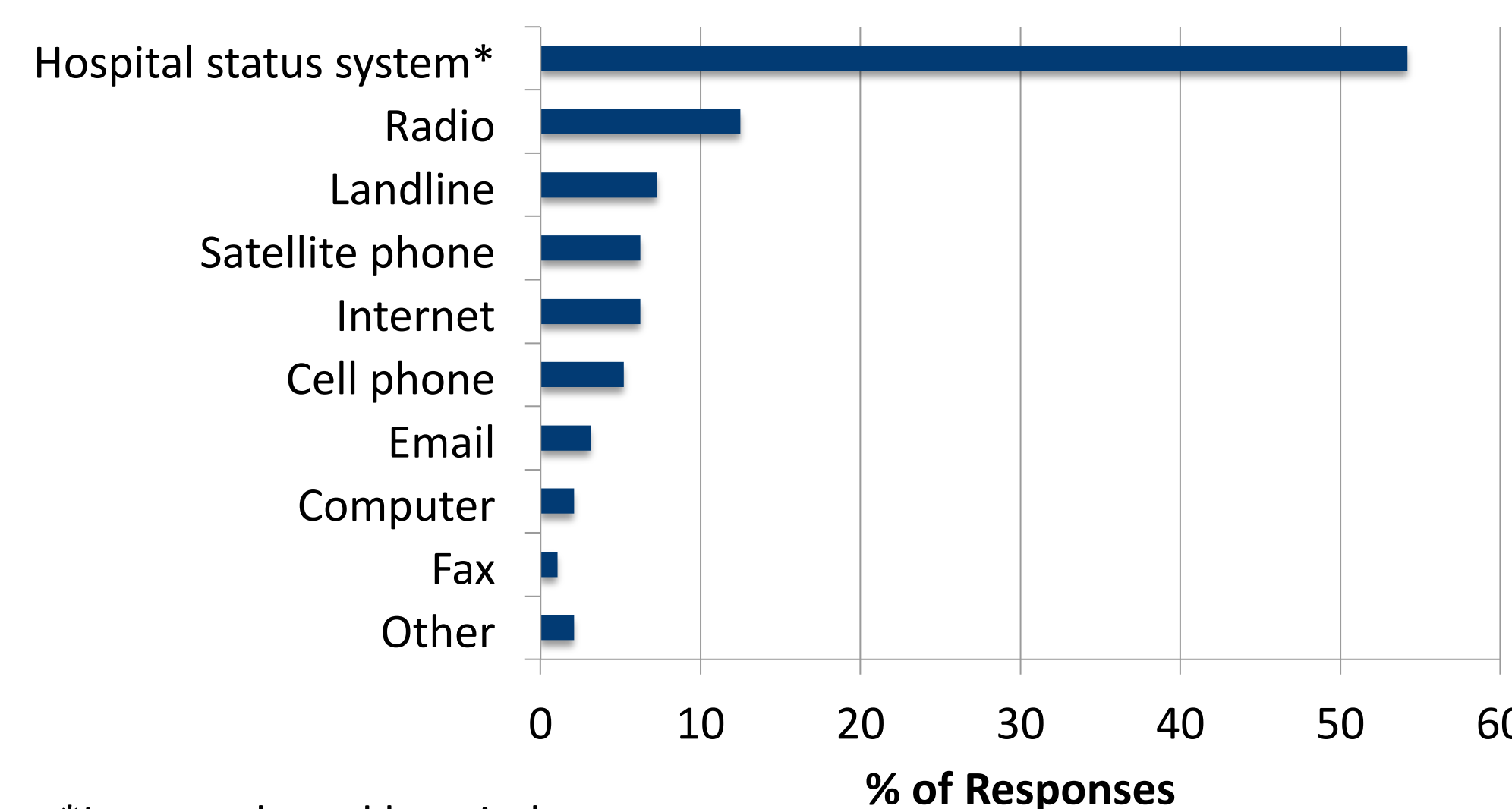
Responses – By Agency



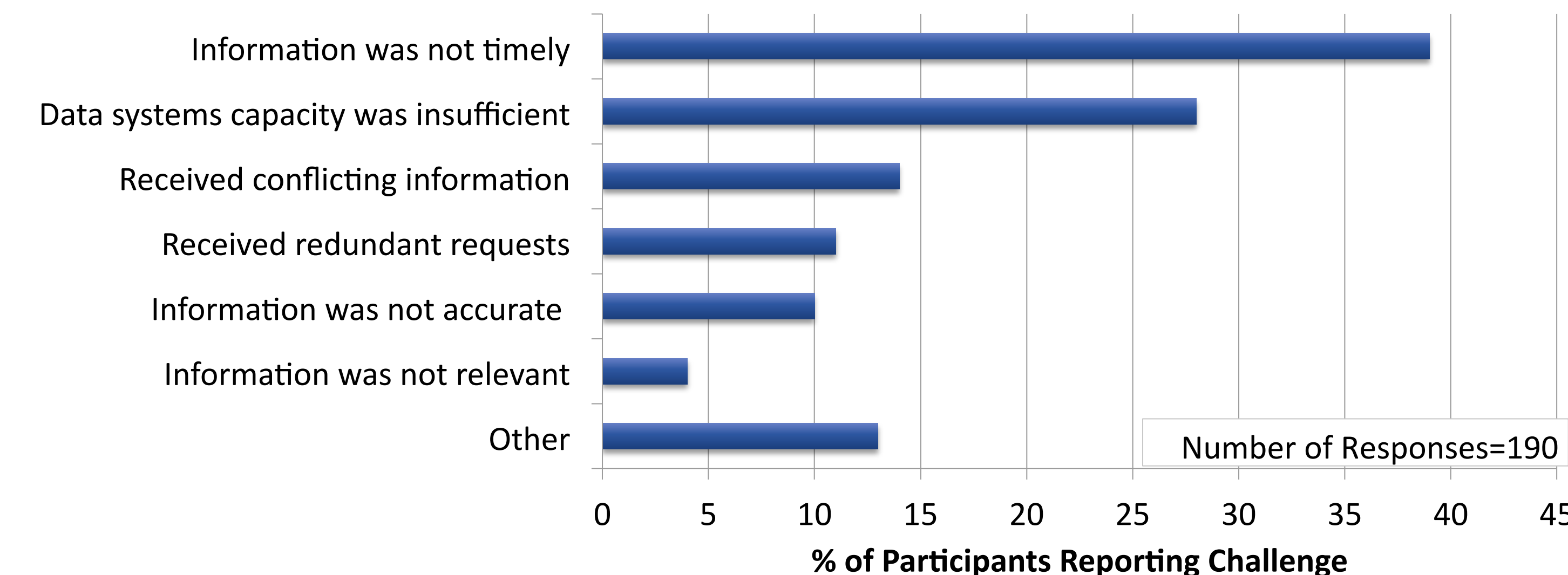
Question 2: Inter-organizational communications and information sharing

“Did your organization/agency identify any of the following challenges in inter-organizational communications or information sharing during the exercise?”

Type of Communication Equipment/System



*Internet-based hospital status system



Discussion

This poster presents a descriptive analysis of the communications challenges experienced by hospitals, local health departments, and local EMS agencies during the 2010 Statewide Medical and Health exercise. When given the opportunity to describe their “most significant communications challenge” during the exercise, more than half of responses referred to a complete or partial failure of communications equipment or systems. Of these, internet-based hospital status systems were the most commonly cited failure. Additionally, when asked about challenges to inter-organizational communications, untimely information and insufficient data systems capacity were most commonly reported. In support of these findings, many participants cited that the failure of internet-based hospital status systems required them to collect data manually, repeatedly enter information, or rely on a back-up system (e.g. radio, fax, or runner) in order to receive or input their hospital bed availability. One respondent said, “We were OK with our internal communications. However, when the [Internet-based hospital status] system became overloaded by the number of participating hospitals, the system experienced great problems and significant delays. It was frustrating for staff who tried several times to input the HAVBed [Hospital Bed Availability] Information via the [Internet-based hospital status] system. HAM Radio communications were activated and the information was relayed.” Back-up processes may be slower, more complicated, more prone to human error, and they do not provide for simultaneous viewing of aggregated data local, regional, and state levels. Respondents also commonly noted that equipment failures resulted in interrupted inter- and intra-organizational communications.

Feedback from EXLAB Research Steering Committee. These results were presented to the EXLAB Research Steering Committee, many of whom either participated in and/or were involved in the design of the exercise. One member noted that the Internet-based hospital status system failure was attributable to an unusually high level of Multi-Casualty Incident (MCI) polling, which overwhelmed the system and created challenges for the hospital bed availability polling. Overwhelmingly, Steering Committee members felt that they needed additional information about the source of these communication challenges, and whether these were internal (e.g. local connectivity) or system-wide. Additionally, Steering Committee members wanted to be able to better understand the communications challenges unrelated to hospital bed availability polling. Each of these issues will be explored further. Additional analysis of the 2010 Medical and Health Exercise will be reported in the near future.

Acknowledgements

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