



SUMMARY

U.S Emergency Services Field Training Exercise

AMES NASA Research Center, Moffett Field
Mountain View, CA
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PARTICIPANTS

Team fEMR: A nonprofit organization that has lead development of a free and open source electronic medical records system, fEMR, designed for use in mobile clinics. Team fEMR also aggregates data on institutions who participate in short-term medical clinics in austere settings in an effort to study and improve quality of care, and to collaborate on best practices.

FEMA- (US&R) Urban Search & Rescue:

Members of US&R rescue patients from disaster scenarios at the scene. They are typically firefighters, paramedics, EMT's, doctors or other healthcare professionals in their hometown, and become federal employees upon deployment.

(CalMAT): "Modeled after the successful federal DMAT program, California Medical Assistance Teams (CAL-MATs) are a group of highly trained medical professionals and other specialists organized and coordinated by the State Emergency Medical Service Authority (EMSA) for rapid field medical response in disaster." (<http://www.emsa.ca.gov/CAL-MAT>)

(EMSA) Emergency Medical Service Authority: "Provides leadership in developing and implementing EMS systems throughout California." (EMSA.CA.gov) Oversees CAL-MAT.

(VA) Veterans Affairs: Ordered to facilitate transportation of victims out of the affected area.

National Guard: Set up the medical tents, and generally provides protection in for medical services in disaster scenarios.



Figure 1: US&R members carrying equipment after practicing patient scenarios in the field.

OVERVIEW

The annual field training exercise (FTX) at Moffett Field in Mountain View, California is the introductory course that members of US&R are required to take. The course is one week long, with classroom lectures and individual patient scenarios at the beginning of the week, and an all-day, post-earthquake simulation day on Thursday. The event mimics a 7.3 magnitude earthquake where US&R is called to extrapolate patients from collapsed buildings. Volunteer patients are used, dressed in life-like wounds, and buried under actual rubble. Several other federal and state-level organizations have joined this event- the largest of its kind in America- and utilize it to test new equipment; to rehearse disaster responses; and for continuing education credits for their participants.

Two participants from CalMAT and US&R used the fEMR system during their medical relief trip to Peru and thought the system might also be applicable to disaster scenarios. Team fEMR was invited to stay at the NASA Ames Research Center for the week of the FTX event. The objectives were to:

- ✓ Provide training sessions on how to use fEMR
- ✓ Provide learning objectives and quiz questions for continuing education credits to all who attended fEMR training sessions
- ✓ Integrate fEMR into the field training event
- ✓ Survey end-users and standardized patients on their perception of fEMR



Figure 2: Medical tents set up by the California National Guard.



Figure 3: A collapsed building used for extrapolating standardized patients.

REQUESTS FOR TEAM fEMR

1.) Programmatic data aggregation

- US&R currently builds their training program based on anecdote
- US&R requested that Team fEMR aggregate data about training programs to facilitate communication regarding best practices
- Data potentially collected by fEMR during real disasters could also be used for information sharing
- Team fEMR currently aggregates programmatic data for institutions who participate in short-term medical missions

2.) Use of fEMR in disaster scenarios

- Variable environments and unpredictable times
- Large amount of end-users and large medication inventory

3.) Interface with federal systems

- Patient tracking system implemented post-Katrina after families were separated while being rescued
 - Keeps track of where patients are transported
 - This system would want to also track any medical information collected at the scene, and would need to interface with fEMR
- A central location deploys more resources as necessary during a disaster. fEMR would need to be able to update this central location regarding types and amount of different diagnoses



Figure 4: Communications truck run by CalMAT.



Figure 5: Search and rescue dog in training with owner.



Figure 6: Hole through which US&R practices rescuing patients.

FEEDBACK

The following is a suggested list of "bells & whistles" type changes that would need to be met in order for fEMR to meet the needs of first-responders during an emergency event:

1.) Pharmacy

- a. Each encounter needs to remain open until a discharge order is processed.
- b. Par levels be put in to trigger reorders promptly
- c. Develop a way to ascertain that a med has already been dispensed to prevent duplicate dispensing and possible duplications or omissions of administration
- 2. There needs to be a way to verify administration/dispensing periodically, such as every x hours

2.) Formulary

- a. Construct the formulary in two search functions:
 - 2. Alphabetically by generic name
 - 3. Develop therapeutic category list so providers could search for what is available, such as antibiotics
- b. Expand the list of dosage forms- some meds have several available dosage forms such as tablets, liquid, and injections
- c. The strength field needs to have a decimal place
- d. The units field needs to be expanded
- e. Eliminate gr (not used anymore)
- f. Units may need to be spelled out to conform to safe medical abbreviations
- g. Add the option of "each"

3.) Medical

- a. Only one person should be able to access the record at one time
- b. The frequency for ordering should be ONCE or ONCE PRN

4.) Reporting

- a. Create a queue for pending pharmacy orders
- b. Color-coded bed (red, yellow, green, or black)
- c. Track patient-to-bed
- d. Snapshot reporting of:
 - 2. Number & age range of patients
 - 3. Diagnoses
 - 4. Meds prescribed

CONCLUSION



Figure 7: Team fEMR co-founders Sarah Draugelis and Kevin Zurek pictured with US&R instructor Scott McKenney.

Team fEMR was able to create an intranet signal that was utilized without inhibiting clinic flow. Though power from the generator stopped immediately prior to beginning the exercise, the power source was switched to a solar panel, which provided enough power to successfully run fEMR and all associated equipment. US&R members were able to scribe in the field as they were extrapolating patients from the rubble. As patients were brought to the medical tents, CalMAT participants were able to update the medical records. Participants were surveyed on their perception of fEMR before and after implementation of fEMR into the FTX, and standardized patients were also surveyed after their part of the exercise was complete. Overall, implementation of fEMR into the FTX was successful.

Team fEMR will now work in collaboration with Penny Miller, NP, (CalMAT) to publish a peer-reviewed article about the integration of fEMR into the FTX. Team fEMR will also collaborate with the VA, CalMAT, US&R, and other relevant organizations to determine next steps should fEMR would be deployed to real disasters.



Figure 8: US&R members being introduced to their instructors



Figure 9: CAL-MAT members at a morning briefing.