



San Francisco Department of Public Health
 Charles Schwab & Co., Inc. *charles* SCHWAB
 San Francisco Department of Emergency Management

2007 Mass Antibiotic Dispensing Exercise (MADE07)

April 4, 2007



After Action Report

Contents of Report

Executive Summary	1
Section 1: Exercise Overview.....	3
Section 2: Exercise Design Summary.....	5
Section 3: Evaluation Findings.....	10
Section 4: Conclusions.....	33
Appendices.....	34
Corrective Action Plan.....	In separate document for internal use

EXECUTIVE SUMMARY

The full-scale Mass Antibiotics Dispensing Exercise (MADE-'07) took place on April 4, 2007 and was developed to test the capability of San Francisco Department of Public Health's (SFDPH) plan for rapid mass prophylaxis dispensing in a mass outdoor aerosolized anthrax release scenario, as mandated by the Cities Readiness Initiative (CRI). The exercise planning team was composed of two City and County of San Francisco public agencies, SFDPH, San Francisco Department of Emergency Management (SFDEM), and one private corporation, Charles Schwab & Co., Inc., who provided the site and employees as mock patients receiving prophylaxis for this exercise.

The primary purpose of the MADE-'07 exercise was to test the screening processes, layout and materials for antibiotic dispensing at public Point-of-Dispensing (POD) sites, which needs to provide a throughput of 2,000 people per hour per POD in order to meet CRI's objective for dispensing antibiotics to our daytime population of 1.2 million people in 48 hours. San Francisco had developed a detailed POD model using theoretical time and medical contraindication estimates in the San Francisco population to determine how many staff would be needed at each POD to achieve our throughput goal. In order to achieve high throughput, it is a head-of-household model (allowing one person to pick up medications for multiple people) that primarily uses signs, not forms, to help sort patients into the correct line for medication pick-up. We sought to use this exercise to provide us with empirical data for our model. We also tested our just-in-time training plan for POD staff. Through this partnership with Charles Schwab & Co., Inc., we set up a quarter-scale clinic to test whether our current plan was able to produce a throughput of 500 patients per hour.

The following objectives were developed for MADE '07.

- Objective 1: Evaluate just-in-time training of POD staff.
- Objective 2: Evaluate POD layout for effective use.
- Objective 3: Evaluate POD screening.
- Objective 4: Evaluate POD dispensing.
- Objective 5: Demonstrate effective collaboration between public and private sectors.

Major Strengths

The major strengths identified during this exercise are as follows:

- The main layout and flow of patients, using paperless screening, for those getting only doxycycline to line A, and all others to line B, worked well. Use of the multi-person screening form in particular demonstrated accuracy and speed. 920 antibiotic courses were accurately delivered to 261 patients during the two-hour exercise clinic.
- Very rapid dispensing of doxycycline in Dispensing Line A (our doxycycline-only dispens-

ing line, the single most important core requirement for accomplishing our throughput plans) was demonstrated. Average dispensing time per individual was 14 seconds. Incorporating data obtained from the exercise, we now know that through our current model, we have the capacity to dispense 6,700 courses of antibiotics per hour at each POD. The exercise illustrated that, under optimal conditions, the course capacity is more than 3-times the person-based throughput capacity.

- Screening for those with possible contraindications using a Screening Form was accomplished rapidly and accurately.
- Useful quantitative data of time variables affecting staffing and throughput were collected, which until now had been based on estimates rather than empirical data.
- Our just-in-time training plan worked well, especially the use of a mock clinic run-through where staff alternately played the role of patient or clinic staff and had many opportunities for questions/answers to clarify protocols.
- Layout for the clinic can be simplified, especially in Area B where patients picked up for individuals with contraindications to doxycycline.

Primary Areas for Improvement

Throughout the exercise, several opportunities for improvement in SFDPH's ability to respond to the incident were identified. The primary areas for improvement, including recommendations, are as follows:

- Improve and augment specificity of screening criteria signs.
- Develop more specialized training plans for those working in certain parts of the clinic, focus on content and scripts for some positions, especially line monitors and screeners.
- Re-estimate distribution of position and staff based on incorporating data from exercise into flow sheet/staff estimator model.

Conclusion

Overall, this was an extremely successful exercise with respect to both demonstrating the likely success of implementing our basic POD dispensing plan, and providing sought-after information for improving the plan and basing it on empirically-founded estimates of screening and dispensing time, proportions of people using lines A and B, and training practices.

Special Acknowledgment

Special thanks and gratitude are extended to all of the divisions within Charles Schwab and Co., Inc. that helped make this unique exercise possible. Public/private partnerships of this nature are extremely valuable toward preparing communities for emergencies.

SECTION 1: EXERCISE OVERVIEW

Exercise Details

Exercise Name

Mass Antibiotic Dispensing Exercise (MADE '07)

Type of Exercise

Full-scale exercise

Exercise Start Date

April 4, 2007

Exercise End Date

April 4, 2007

Duration

9 hours

Location

8th floor of office building of Charles Schwab & Co., Inc.
215 Fremont St.
San Francisco, CA 94105

Sponsor

San Francisco Department of Public Health and Charles Schwab & Co., Inc.

Program

Cities Readiness Initiative Grant

Mission

Prevent, Protect, Respond

Capabilities

The capability to protect the health of the population through a mass prophylaxis campaign following an event. This capability includes the provision of appropriate follow-up medical care, as well as risk communication messages to address the concerns of the public.

Scenario Type

Bioterrorism Agent A release

Participating Organizations

San Francisco Department of Public Health
San Francisco Department of Emergency Management
Charles Schwab & Co., Inc.

Exercise Planning Team

San Francisco Department of Public Health

- Amy Pine, Director, Communicable Disease Prevention Unit
- Randy Reiter, Mass Prophylaxis Planner
- Rita Shiao, Bioterrorism Epidemiologist
- Ruth Reda, Exercise Planning intern

San Francisco Department of Emergency Management, the Division of Emergency Services

- Michael McKinley, Senior Emergency Planner

Charles Schwab & Co., Inc.

- Corporate BCM
- Corporate Property
- Corporate Schwab
- STech/TIS
- Corporate Communications

Number of Participants

- 43 Staff
- 4 Controllers
- 10 Evaluators
- 0 Facilitators
- 30 observers from other agencies; + 5 Schwab observers
- 261 Victim Role Players (includes observers, who went through clinic as patients)

SECTION 2: EXERCISE DESIGN SUMMARY

Exercise Purpose and Design

The exercise was designed to test the ability of our rapid public POD dispensing model to dispense 500 doses of antibiotics per hour¹ (a quarter-scale of our current citywide plan). The goal of the exercise evaluation was to collect information to develop better, empirically based quantitative estimates for the model's screening and dispensing times and the number and distribution of staff needed to meet throughput goals. We partnered with a private corporation, Charles Schwab & Co., Inc., which provided their site for the set up of a scaled-down version of a POD and provided their employees as volunteer POD patients.

SFDPH has an in-house-developed POD flow process model (Appendix 4) that was used to quickly determine scaled-down staff needs for the exercise to meet the throughput goals (see Appendices 1-3 for POD layout descriptions). A large factor in the planning of this exercise was our desire to measure how quickly people were distributed and processed through the stations associated with both Line A and Line B. We wanted to use this exercise to refine our flow and staffing model and base its patient flow parameters as much as possible on empirically derived data.

Due to space and time limitations and the desire to focus solely on measuring screening and dispensing times, we did not exercise special needs capabilities included in our current POD plans, such as capabilities to address those with disabilities and/or those who do not speak English. This exercise also did not include non-dispensing components of POD operations such as administration, coordination with Infectious Disease Emergencies Response Incident Command Structure (IDER ICS) based in SFDPH, most intra-POD communications, pharmacy and drug delivery, or facilities set-up and maintenance.

Exercise Objectives, Capabilities, and Activities

Capabilities-based planning allows for exercise planning teams to develop exercise objectives and observe exercise outcomes through a framework of specific action items that were derived from the Target Capabilities List (TCL). The capabilities listed below form the foundation for the organization of all objectives and observations in this exercise. Additionally, each capability is linked to several corresponding activities and tasks to provide additional detail.

Description: The capability to protect the health of the population through a mass prophylaxis campaign following an event. This capability includes the provision of appropriate follow-up medical care, as well as risk communication messages to address the concerns of the public.

Outcome: Appropriate prophylaxis and vaccination strategies are implemented in a timely man-

¹ At the time of the experience, our PODs were designed to dispense 2,000 doses/hour in a POD with a size of 10,000 square feet. The "café" where this exercise took place was in an area of 1,600 square feet.

ner upon the onset of an event, with an emphasis on the prevention, treatment, and containment of the disease. Prophylaxis and vaccination campaigns are integrated with corresponding public information strategies.

ESF/ANNEX Relationship: ESF#8: Public Health and Medical Services

UTL Taxonomy Location: Respond, Care for Public, Distribute Prophylaxis

Associated Critical Tasks:

Function ID	Sequence #	Task
Res.B.5	4.2.2	Disseminate health and safety information to the public.
Res C.1	1.1.2.6	Create plans and systems for mass movement of patients.
Res C.2	3.2	Coordinate dispensing of mass therapeutics and/or vaccines.
Res C.2	4	Implement local, regional, and State prophylaxis protocols for distribution of prophylaxis.
Res C.2	4.2.3	Provide prophylactic protection and/or immunizations to all responders and their families, including nongovernmental personnel supporting relief efforts.

From the above-mentioned capabilities, the following exercise objectives were developed:

- Objective 1: Evaluate just-in-time training of POD staff
- Objective 2: Evaluate POD layout for effective use
- Objective 3: Evaluate POD screening
- Objective 4: Evaluate POD dispensing
- Objective 5: Demonstrate effective collaboration between public and private sectors

Scenario Summary

After a Biowatch-detected outdoor release of anthrax, an emergency is declared and the decision made to provide antibiotics prophylactically to all persons in San Francisco. Antibiotics are requested from the Strategic National Stockpile, the public notified and Point of Dispensing (POD) sites are set up throughout the City, per our existing plan. The exercise simulates activities that would take place in the public/clinic area of a POD during one two-hour time span in the day after the PODs are opened.

Exercise Timeline on April 4, 2007:

8:00 – 8:30	POD staff check-in
8:30 – 9:45	Background presentation to POD staff and general training
9:45 – 10:15	Area-specific training held in small groups on clinic floor

10:15 – 11:30	Mock clinic run-through using POD staff only
11:30 – 12:00	Debrief; last minute training and clarification
12:00 – 1:00	Lunch
1:00 – 3:00	Clinic open to mock patients
3:15 – 4:00	Hotwash with all POD staff, observers and evaluators
4:00 – 4:45	Staff checkout and clean-up

Evaluation Methods

A team of 10 evaluators, who observed the staff training as well as different areas during POD operations, evaluated this exercise. All evaluators were trained one week before the exercise on expected POD operations and evaluation tools.

Evaluation tools used include (See Appendix 5 for samples):

- **Time cards:** Each patient was given an index card upon entry into the POD with a time-stamp of their entry time. They were also asked to give information about the size of their household, number of people <18 and <100 lbs (requiring pediatric dosing), and number of people <9 (needing ciprofloxacin). Time out of clinic was also recorded upon their exit. Patients were instructed to fill out real information about the household for which they were picking up medications, but not to use real names if they were concerned about confidentiality.
- **Evaluator observation:** Each area of the clinic was observed by one or more evaluators, who used structured Exercise Evaluation Guides. Areas of evaluation included: consistency of staff techniques in directing patients; screening patients; dispensing medications; noting areas with bottlenecks; noting types of questions patients were asking while in line, etc.
- **Timing:** Evaluators stationed at dispensing tables were asked to time the length of patient interactions with clinic staff.
- **Screening form:** Patients picking up antibiotics for anyone not able to take doxycycline were sent to Line B. There they were instructed to fill out a Screening Form that included questions about each patient's potential contraindications and age/weight for pediatric patients (Appendix 5). We used this information to determine the prevalence of contraindications in this exercise population, accuracy of antibiotic assignment by screening staff and screening time, as well as the relationship these variables have to one another.
- **Patient experience survey:** All patients were asked to fill out a survey about their POD experience upon exiting the clinic. Patients were asked about the clarity of signs and instructions and interactions with the clinic staff.

- **Videotape:** 2 cameras stationed at potential bottleneck points videotaped patient flow.
- **Staff experience survey:** All staff were given a survey at the end of the day to rate the effectiveness of the morning training session, clarity and helpfulness of job action sheets and other protocols, clarity of signs, communication among clinic staff, and other suggestions for improving clinic operations.
- **Group Debrief:** At the conclusion of clinic operations, all clinic staff participated in a 1-hour debriefing session to share their clinic experiences.

Exercise Artificialities

Areas that we could not fully test:

- Public information would be key to informing people about a real event and what they should know about, do and expect at PODs. Patients were provided with minimal information about the POD on the Schwab website prior to the exercise; therefore, we could not test whether existing public information materials we had developed were adequate to inform the public in a real situation.
- We did not include any players that simulated a crowd in a climate of fear, threat, crowding, rumors, and uncertainty, which one would expect in a real event. Therefore, our flow estimate from this exercise may be considered a “best case scenario”.
- We were not able to estimate patient arrival rates to a POD during a real event, as patients (Schwab employees) were scheduled to arrive at the exercise at pre-set times.
- Because we did not have enough patients to simulate crowded clinic conditions, we could not fully:
 - Test the clarity and effectiveness of signs to sort patients into the correct line. There was very little back-up in the clinic, so patients were not forced to stop and read signs providing information and instructions.
 - Identify potential bottlenecks.
 - Measure “total time in clinic” under scenarios where patients may have to spend time waiting in line.
- Since we only dispensed for 2 hours, we could not test the impact from such functions as restocking, rotating staff, shift changes, POD dispensing support functions, communications with IDER or outreach to public media.

Caveats about exercise population

- We expect the Charles Schwab working population to differ from a general San Francisco / Bay Area population in the following respects:
 - More likely to be picking up for a household with young children
 - All are able to speak and read/write English
 - Have a higher level of education, and also general and medical literacy
 - More likely to be healthy
 - Fewer elderly, disabled or isolated people
 - Smaller proportion of SF residents than would be expected to use PODs
 - Self-selected to participate - Schwab employees volunteered for this exercise

Other artificialities:

- In general our POD staff were highly skilled clinical staff. This would not be the case during an actual emergency, so the adequacy of our training materials for use by non-clinical staff were not fully tested.
- Because the exercise was only 2 hours, we could not test the sustainability of the rapid processing rate. We did not test how staffing breaks would impact clinic throughput.

SECTION 3: EVALUATION FINDINGS

The areas analyzed in this exercise evaluation are as follows:

- Area 1: Training
- Area 2: POD layout
- Area 3: Screening Training
- Area 4: Dispensing
- Area 5: Public Information
- Area 6: Staff recruitment
- Area 7: Exercise Planning

Appendices include all training, screening and evaluation tools used during the exercise, as well as detailed summaries of evaluation results.

- Appendix 1: POD layout
- Appendix 2: “How A POD Works” handout
- Appendix 3: POD flow and staffing model (before and after exercise)
- Appendix 4: Screening forms and tools
 - Evaluation tools
 - POD/public messages
- Appendix 5: Analysis of evaluation results
- Appendix 6: Staff recruitment tools
 - Schwab employee recruitment tools

AREA 1: TRAINING

Capability Summary:

Just-in-time staff training was done almost entirely the morning of the exercise, to better approximate the training conditions during a real POD activation. Certain specific individuals, deemed *Area Leaders*, received some information 1-4 days before the exercise about the tasks in their respective areas, but there was no in-person presentation of this information until the exercise itself. An overall agenda for the day is found in Section 2 of this report.

Training methodology was cited by SFDPH staff as the most positive part of their exercise experience. Feedback from staff evaluation forms illustrated that overall, training on the clinic layout, operations, roles and tasks were adequate for staff to do their jobs. The staff evaluation forms also provided us with many specific ideas of what we can do to improve training in the future.

What we did and why:

The entire morning was devoted to training. Staff were told to arrive at 8am. At check-in, staff were given a vest, a packet of relevant information for the day, a pen, and a nametag. Nametags had a small picture of either a yak or a zebra to create a group of patients and a group of staff to practice each of these roles in a mock clinic. Training began at 9am and there were 5 general segments:

- 1) **Overall presentation:** purpose of exercise, “what is a POD”, POD layout, and an overview of all POD areas and operations.
- 2) Next, each staff member was instructed to **read their job action sheet**. Past exercises had demonstrated that often, staff do not read their job action sheets. Therefore, reading the job action sheet was incorporated into the training agenda.
- 3) Staff then divided into groups to **train on specific tasks** in the area to which they were assigned. This included the **Entry/Exit Area, Area A** (for all patients with no contraindications to doxycycline in their group), **Area B** (for any patient whose group members had an allergy to doxycycline and/or ciprofloxacin) and **Administration**.
- 4) Next, staff divided into two groups - Group Y (those with yak icons) and Z (those with zebra icons) for a **mock clinic run-through**. Those in group Y were considered patients first, and those in group Z acted as staff (and worked the positions to which they were assigned for the exercise). Patients walked through the POD, doing everything they would do to pick up for people in a real emergency. Then group Z became patients and group Y became staff. Evaluators also took their assigned positions and practiced conducting evaluation during this time.
- 5) The final training segment was an overall **question and answer session** and quick debriefing after the mock clinic run-through. This particular session, after everyone had had a chance to see the clinic from both a patient and staff perspective (and ask questions about protocols) was extremely valuable.

The POD clinic was open for two hours to receive mock patients, from 1-3pm. After the clinic, there was another debriefing session in which even more retrospective training took place. In the post-exercise evaluation, all SFDPH staff who participated in this exercise indicated that they now understand what takes place at a POD, how a POD is managed, and how antibiotics can be dispensed quickly and accurately.

Strengths:

- 1) The mock clinic and its debrief was very useful to clarify procedures for staff.
- 2) Staff appreciated the opportunity to express concerns, both during training and in the debriefing.
- 3) Job action sheets were clear and easy to understand.
- 4) Generally, staff felt that the trainers provided clear explanations to help understand the context and reason for why certain protocols exist.

What we learned:

Feedback from staff and exercise evaluators reiterated that our just-in-time training was successful. It also gave us recommendations and suggestions on how we could improve training. This includes more specificity for some job action sheets, more content for Area trainings, and less time spent on the overall mass prophylaxis plan (an area on which we would not focus in a real emergency).

In summary we learned:

- 1) Before-event training of individuals involved with staff registration is very important because more efficient registration leaves more time for training staff on their tasks. Efficient registration may also be more important for an exercise because in a real situation, lots of time may be available for training while waiting for the SNS materiel to arrive.
- 2) The model of dividing into two groups of staff and patients and doing a clinic run-through works very well, especially when it is followed by a question and answer session afterward. Some staff requested additional question and answer times between each training session.
- 3) More planning attention needs to be devoted to the concept of Area trainings. Area trainers, and possibly area leaders, could benefit from pre-event training, and each Area may benefit from smaller subgroup trainings for staff with similar tasks.
- 4) Because many of the staff had a clinical background, it was difficult for them to comprehend a more “austere care” model of POD operations emphasizing throughput rather than individual care. During initial POD operations, some staff spoke to each patient unnecessarily, slowing down POD operations and sometimes making contradictory statements to patients or predisposing them to enter one line over another. While they were trying to be helpful, sometimes they sent patients to the wrong line.

Changes and Recommendations:

- 1) Train Registration personnel, Area Leaders, and Area trainers in advance (pre-event). These are the people who would have to train staff in an emergency.
- 2) Keep job action sheets specific and simple, preferably to one page. Remove from the Job Action Sheets all instructions that are applicable to all staff and place them on other training materials.
- 3) Devote ample time to Area-specific training. We plan on training screeners and dispensers separately because the protocols and specific job duties are more complex. Consider having Area Leaders walk staff through their clinic area and point out the job of each staff person briefly, to give everyone context for their work. Also, create sample form as part of training materials or consider filling out sample forms together.
- 4) Retain training strategy of dividing into clinic staff and patients for clinic run-through. Follow up with a question and answer session facilitated by person who knows exactly what does and does not happen at a POD.
- 5) Incorporate feedback from staff and evaluators into job action sheets and train-the-trainer materials.
- 6) Emphasize the “bottom line” of clinic throughput often during training, that high throughput is essential to prevent disease. A marked difference was observed in dispensing times after this point was emphasized to Area A dispensers after the clinic run-through: dispensing times for each transaction were decreased by almost half during actual clinic operations as a result of this clarification. On a related note, this may require reassuring staff to trust that others are doing their jobs in other areas of the POD and that much work and research have gone into protocol development, to minimize their tendency to second-guess medically-related instructions such as for drug interactions, etc.
- 7) Develop additional scripts to guide what staff, especially line monitors, should or should not say to patients. Emphasize protocol regarding ad-libbing, or chatting with patients unnecessarily.
- 8) For future exercises only: take time to explain ground rules / assumptions for exercise, specifically what parts of the plan are not being tested. For example, during the exercise, we received many comments from staff concerned that we were not providing multi-lingual services when, in fact, exercise planners had purposefully decided not to exercise this function of our overall plan.

Outstanding Issues

While we have determined all of the key components of an effective training, we have not yet worked out the process for training 2,000 staff members at once, which would be the case should all PODs planned for San Francisco be activated.

AREA 2: LAYOUT

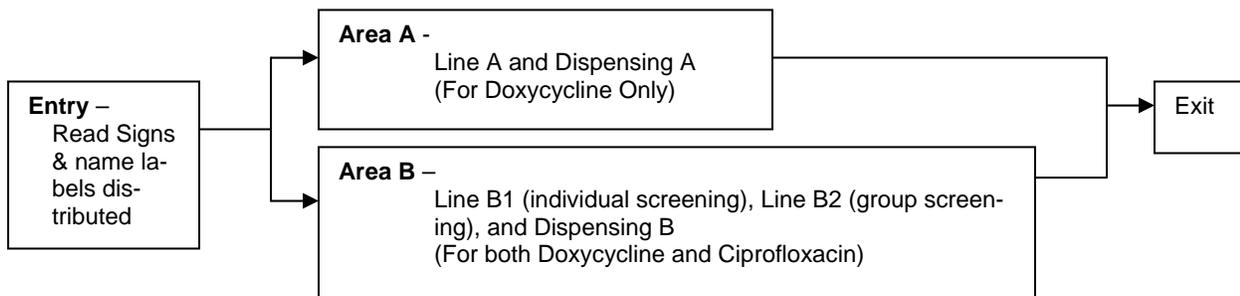
Capability Summary:

We tested the basic physical layout design for our POD, including:

- 1) Patient flow through lines, choice/decision points, screening areas, dispensing areas
- 2) Signs
- 3) Set-up and take-down
- 4) Associated equipment and supplies

What we did and why:

- 1) Patient flow: set up 3 main areas (see Appendix 1 for clinic layout):
 - Entry [hall from elevator to café area];
 - Area A line and dispensers (express, doxycycline only line) [right side of café area];
 - Area B (for anyone with contraindications to doxycycline and/or ciprofloxacin)[left and far side of café area]. Area B included lines B-1 (one person's antibiotic) and B-2 (antibiotics for multiple people) (each with screening staff), dispensers, and consultation.



- 2) Signs (Instructions, directions, screening questions, information) – in halls and café, on walls and easels. Signs were the main instrument to instruct patients to self-sort into line A or B.
- 3) Set-up and take-down: Schwab Property Management staff were responsible for clearing the café and setting-up tables and chairs, using a layout scheme sent by SFDPH (Appendix 1). Lines, signs, materials and supplies were set up and taken down by SFDPH exercise planners one day before the exercise. Three Schwab employees spent 1.5 hr for base set up; exercise was ¼ scale for regular public POD. Base takedown was also done in about 1 hour by Schwab employees, with remainder of the set-up done by exercise staff in about 1 hour.
- 4) Associated equipment and supplies: Name labels, screening forms, staff information and protocols, POD descriptors, pens, evaluation materials, staff vests, food and drinks, were provided and set up by SFDPH planning staff on April 3 from 2-4:30 pm (after base set-up by CS staff) and April 4 from 7-8:30 am.

Strengths:

- 1) Patient flow: basic plan worked well, but not tested under great load
- 2) Signs: generally worked well; need some more detail (see below)
- 3) Set-up and take-down: basic floor plan for tables and chairs (basic set-up) was properly set up by untrained staff from Schwab based on an overall layout diagram sent to them, which they found tremendously useful and of the adequate level of detail. Takedown was also done readily by exercise staff (delineators, signs, and equipment and supplies) and CS staff (tables and chairs).
- 4) Associated equipment and supplies: Generally worked well, with no deployment problems.

What we learned:

- 1) Patient flow:
 - Overall, 261 patients went through the quarter-scaled clinic in 2 hours, representing approximately 920 doses of antibiotics dispensed.
 - More patients than expected entered line B (model estimate was 10%; 36% of exercise patients went to this line). This may be due to artificialities in the exercise population (see Section 2 for discussion), which had a higher proportion of young families with children under 9 years old needing ciprofloxacin.
 - Most patients were in and out of the clinic within 10 minutes. While this measurement was made with a sparse number of patients, this represents a “best case scenario” of how long it may take for a patient to go through the clinic.
 - Improve line A/B screening info on Entry line. Signs were sometimes put out of order and there was general confusion about what constituted a drug allergy that would direct one to line B rather than A.
 - Improve training and monitoring of line monitors sending people to dispensing stations (A & B). Some patients noted that it was distracting to receive both verbal and written instructions while in the entry line; however, this may not be as much of a problem when a line has formed and there is more time for patients to absorb the instructions.
 - Some patients thought that they were expected to visit every station in the clinic. Prevent un-referred patients from going to consultation
 - The physician “Consultation” station was positioned in the layout after Area B Dispensing. The Consultation station should be moved so that patients who need physician advice encounter it before the dispensing station.
 - Very low use of line B-1 because most people picked up for more than 1 person.
 - Clearly separate “Consultation”, for which one needs a specific referral to visit, vs. “Pediatric Consultation” (also rename “Pediatric Consultation” to “Pediatric Questions”), which any patient with questions about pediatric dosing may visit. Nine out of 261 patients visited the consultation station and 38 visited pediatric consultation.

2) Signs

- A screening sign along the entry line referred to “allergies” rather than “drug allergies.” This was by far the most confusing sign to both patients and staff. At the start of the exercise, some line monitors would instruct patients with *any* allergies to go to line B, rather than specific allergies or medical conditions. Drug allergy criteria needs to be much more specific and simple.
- More signs were needed to direct general flow. Evaluators noted that the last 3-4 seconds of a particular transaction was spent describing to patients where to go next.
- Some patients were also concerned about suspected pregnancies, as the sign regarding pregnancy did not address this.
- Some patients were unclear about where to go if they have a patient who was over 9 years old but less than 100 lbs.

3) Set-up and take-down:

- Base set-up (tables and chairs, lines) should be do-able from adequate layout diagram.
- Planning staff did line set-up and on-site modifications of line configuration was done successfully to accommodate longer A line. Line setup by a team with no prior knowledge of POD protocols has not yet been tested

4) Associated equipment and supplies:

- Needed more cardboard backing (these are used as a writing surface for individual name labels) distribution on Entry line.
- Neither equipment and supplies distribution from trailers nor re-packing into POD trailers were tested.
- Paddles for dispensers to indicate availability would have been useful.
- Staff also suggested getting a loudspeaker for announcements and giving training instructions.
- Because many patients were picking up medications for large groups, consider having paper bags for carrying all of the unit-of-use bottles away.

Changes and recommendations:

1. Patient flow:

- Eliminate line B-1 and eliminate the need for n individual screening form in Area B. Consolidate line B to one line, using just one form, the multi-person screening form, for all persons (including those just picking up for themselves only) with contraindication(s) to doxycycline
- Move Consultation so the station is positioned before Area B Dispensing and not accessible to unreferred patients.

- Move the Pediatric Consultation station to after A and B Dispensing. Consider moving it to outside the clinic so patients have a chance to read the instructions and formulate more specific questions about the protocol.
2. Signs: Have more signs, and/or more detailed, clear and specific signs:
- Entry line signs and instructions to monitors: greater emphasis on going to line A unless meeting any screening criterion to go to Line B.
 - Have separate signs for individual screening criteria (Entry line, Area A screens) with criteria to clarify how patient should respond (e.g., allergy criteria).
 - Clarify “allergic” criteria.
 - Consider having icons on signs to help direct low literacy patients.
 - Have more instructions specifically about what to do, and not to do, including:
 - Keep line moving
 - Not go to consulting unless told to do so/sent there
 - Consider signs listing tetracyclines (Entry line) and cyclosporins (Line B) for “allergies” screens.
 - Consider signs listing contraindicated current concomitant medications.
 - Have signs saying where to get further information.
3. Set-up and take-down
- Have separate set-up layouts (layers) in POD playbook showing:
 - i. *Tables and chairs*
 - ii. *Then, add lines*
 - iii. Then, add signs
 - Plan for base set-up crews to arrive 4-6 hours before expected receipt of SNS antibiotics; expect 2 hours for base set-up.
 - Leave 2 hours after first shift staff training and deployment to PODs to distribute equipment and supplies, prior to receipt of SNS antibiotics.
4. Associated equipment and supplies
- Test mobilizing supplies from POD kit trailers, setting them up, then re-packing trailers.

Outstanding Issues:

None.

AREA 3: SCREENING

Capability Summary:

At the heart of high throughput in this public POD design is providing adequate instruction to patients to allow self-selection into the proper line using signs and floating staff. For all patients who are not picking up for anyone with a doxycycline contraindication, they self-select to line A and receive their medications quickly and efficiently. Others are screened for contraindications to ciprofloxacin using a form and pre-set protocol (Appendix 3); after receiving a drug recommendation for each patient, they are given the proper antibiotics, again as efficiently and quickly as possible.

What we did and why:

- 1) Screen 1 (entry area, **contraindication to doxycycline screen**): All patients self-select whether they should go to Line A or B, the latter of which is for anyone with a contraindication to doxycycline. This is done via several copies of signs, each listing the 3 criteria, posted along the Entry line. At this time in the entry line, patients also fill out one sticker for each individual in their group, and the weight and age information for all children. Most patients do not have any contraindications to doxycycline and end up in Line A. Line A monitors check name labels of those waiting in Line A and highlight any labels that are supposed to get pediatric doxycycline.
- 2) Screen 2 (Line B, **contraindication to ciprofloxacin screen**): Patients not going through Line A go to either Line B1 (for individuals only) or Line B2 (for groups where at least one person has an issue with doxycycline) and are screened to see which patient in their group should be given ciprofloxacin, doxycycline, or sent to Consulting. This is done for line B-1 via several copies of signs, each listing the 3 screening criteria, posted along B-1 line; patients are asked to stop at Special Screener to get “Consult” card if they answer “yes” to any of 3 ciprofloxacin screening questions, and to proceed to end of line B (to be given ciprofloxacin by dispensers). For line B-2, screening is done by signs and by listing of all screening criteria (for doxycycline and for ciprofloxacin) on a screening form for patients to fill out, checking off all contraindications for each person they list on form (each form can accommodate 10 people). Patients give this form to a Screener, who uses the Antibiotic Screening Protocol to check off the appropriate antibiotic or “Refer to Consult” for each person listed before they are sent to either Consultation or dispensing B station.
- 3) Screen 3: (Consultation, **doxycycline & ciprofloxacin contraindications re-screen**) Patients sent to Consultation by line B screeners/screening protocols for having self-selected having both a contraindication to doxycycline (screen 1) and a contraindication to ciprofloxacin (screen 2) are queried by Consultant, using Consultation protocol, to clarify their conditions and to determine, first, if indicated contraindications truly qualify as contraindications to either drug. Then the Medical Consultant decides what antibiotic or combination of antibiotics and what additional medical information, instructions or advice the patient should be given. Patients getting POD antibiotics are then sent to dispensing B stations.

Strengths:

- 1) Screen 1: Worked very well to separate people without contraindications to doxycycline (Line A) versus all others (Line B1 or B2). However, we could not test whether anyone going through Line A should have gone to Line B instead. Through examination of the screening forms, we could determine that almost all patients in line B-2 did belong in that line.
- 2) Screen 2: Line B-2: our screening form worked very well and efficiently, in terms of speed and accuracy of dispensing decisions made, despite a short training time for these screeners. Most screening sessions took on average 40 seconds, with no screening session taking more than 85 seconds (for groups of up to 15 people per patient). Review of the multi-person screening form showed that 3 patients, out of 411 courses dispensed, were given a contraindicated drug.
- 3) Screen 2: Line B-1: Not adequately tested due to small numbers, but minimal demand indicated that this line was not needed.
- 4) Screen 3 (Consultation): Strength of exercise was that it tested this process and allowed us to identify needs for improvement, in training, information and process (see below).

What we learned:

- 1) Screen 1: Worked very well to separate people needing to go to Line B (includes B1 and B2) for any contraindication to doxycycline. We could not adequately test the usefulness of our signs to direct patients because there were not enough patients at any one time to form lines, where they could have time to read each sign for themselves. Feedback indicated the value of (1) adding signs with individual contraindication criteria, including specified criteria for determining an “allergy to tetracycline”; and (2) creating more specific and scripted messages for line monitors to help people sort to Line A or B.
- 2) Screen 2: Line B-2:
 - The Screening form worked well in terms of speed and accuracy. Time in screening Line B-2, which included filling out form and having it reviewed by a screener, averaged about 3 minutes. This does not reflect waiting time but does indicate that the form can be completed and screened quickly. Actual screening time was approximately 30 seconds, increasing with the size of group, and did not differ according to whether there were children in the group. The median group size for which an individual patient was collecting medication was 4 people.
 - Almost 70% of the 411 individuals listed on the Screening Form through line B did not have any contraindication to doxycycline. Most who did have contraindications to doxycycline were children under 9. Of the 132 people with documented contraindications, 90% (N=119) were contraindicated to doxycycline only, 7% N=(9) were contraindicated to ciprofloxacin only and 3% (N=4) were contraindicated to both antibi-

- otics.
- 95% of individuals screened in line B received a recommendation for the correct drug, given their listed medical conditions. Out of the 17 misassignments, 5 patients received an antibiotic that could have been harmful to them.
 - The main source of screening errors occurred on pediatric dosing (out of 17 antibiotic misassignments, 13 were of this error). Documentation showed that screeners were most often confused about what drug to recommend when a child was over 8 but under 100 lbs.
- 3) Screen 2: Line B-1: No evaluation done due to small numbers (only 2 of 261 patients went into this line).
- 4) Screen 3 (Consultation):
- 10% of individuals receiving drugs from Line B (5% of people at the POD) were referred to Consultation, to which patients were sent if anyone in their group had contraindications to both doxycycline and ciprofloxacin. Some patients self-referred to consultation because they were concerned about procuring medications for their pets.
 - Protocols for Consultation staff good but still needed work, toward both ascertaining applicability of screening conditions, and what to do about combinations of contraindications. The Consultation log form was useful but needs further revision to reflect the Consultation process. Consultation sessions averaged 4 minutes.

Changes and recommendations

- 1) Consider putting concomitant drug contraindications/interactions for doxycycline into Screen 1 (for doxycycline) and into Entry screening signs and into the Multi-Person Screening Form in PODs.
- 2) Put specific mention of “stroke” and “brain injury” back into Screen 2 (for ciprofloxacin) and into line B signs and multi-person screening form in PODs.
- 3) Use signs with more specific information, such as criteria for drug allergies and lists of tetracycline-like drugs to improve clarity and accuracy of patient responses to screening questions.
- 4) Put texts for the signs and the Screening form on the internet during a real emergency so that people may fill these out before arriving at the POD.
- 5) Screen everyone in Line B, whether picking up for one or more than one person, using the Multi-Person Screening Form.
- 6) Reverse current formatting of Screening Form, so antibiotic contraindications listed follow order of screening in POD, i.e., doxycycline first, ciprofloxacin second.
- 7) In addition to the screening guide, tape reminder messages about age and weight cut-offs onto screener table to facilitate this decision.

- 8) Improve completeness and accessibility of protocols for consultation, for both ascertaining applicability of screening conditions, and for what to do about combinations of contraindications.
- 9) Create information on what to do about medications for pets.

Outstanding Issues:

- 1) Work with regional mass prophylaxis planners to reach agreement on regional screening standards so that dispensing remains consistent throughout the diverse Bay Area counties.
- 2) Devise policy for prophylaxis of pets and state this in screening process. (Several people came to consultation for prophylaxis for pets.)

AREA 4: DISPENSING

Capability Summary:

Dispensing antibiotics quickly is key for high patient throughput in this model. Overall, medication for approximately 920 individuals was dispensed to 261 patients attending the clinic. Data from a sample of the patients shows that on average, it took 14 seconds to dispense one course (10-day supply) of antibiotics. Staff did very well with quick dispensing after it was emphasized that their role was to strictly dispense rather than provide medical counseling or education.

What we did and why:

- 1) **Area A:** Patient hands the dispenser the set of name labels (that they completed while in the Entry Line) that include highlighted ages and weights for youth <18 and <92 pounds (Line Monitors were instructed to highlight pediatric labels where the child was <18years old and <92 lbs.). The dispenser then puts each label on one packet of doxycycline and gives those packets to the patient. For each highlighted label, dispenser also gives a pediatric oral syringe and doxycycline pediatric instruction sheet on how to make and provide proper pediatric dose by crushing doxycycline pills and mixing with liquid. Dispenser writes child's name and marks proper dose, based on child's weight, on the pediatric instruction sheet.
- 2) **Area B:** Patient gives the completed and corresponding set of name labels to dispenser. Dispenser then puts each label on one packet of doxycycline or ciprofloxacin, as indicated on right columns of the Screening Form completed by Line B screener and/or Consultation staff and gives those packages to patient. For each label with pediatric dose indicated (by line B screener), dispenser also gives a pediatric syringe and doxycycline or ciprofloxacin pediatric instruction sheet on how to make and provide proper pediatric dose by crushing pills, mixing with liquid, and measuring proper dose. Dispenser writes child's name and marks proper dose, based on child's weight, on the pediatric instruction sheet.

Strengths:

- 1) **Area A:** Dispensing was fast, especially in Area A. From a sample of patients with evaluation data, the average time for dispensing was 13.1 seconds/course. No transaction took more than 2 minutes. This is crucial because speed of Area A dispensing is the number one design goal for PODs to achieve maximum throughput. Evaluators also observed that dispensers were consistent with the way they interacted with patients, according to protocol.
- 2) **Area B:** Dispensing in Area B was also rapid, averaging 17 seconds/course, and each complete transaction took between 24 seconds and 3.5 minutes, depending on the size of the group.

What we learned:

- 1) **Area A:** During training, evaluators noticed that A dispensers were speaking with patients at length and informed exercise leaders of this fact at lunch. We then specifically directed Area

A Leader to inform area dispensers not to engage in conversation because speed of dispensing is so critical in this area. If this had not been identified and corrected prior to the dispensing part of the exercise, our dispensing time data would not have been valid. Specific advice to this effect needs to be included in written (job action sheets) and verbal components of dispenser training.

We did not have capacity to qualitatively evaluate accuracy of pediatric dispensing. Evaluators observed inconsistencies in this area, including some dispensers offering the pediatric syringe as an option for everyone rather than one for each child. Dispenser training should address more clearly pediatric dispensing and need for consistency in following the protocol. 17% (of 511 courses dispensed in A) were pediatric and dispensers did not consistently highlight the correct dosage on the pediatric instruction sheets.

- 2) **Area B.** A somewhat higher proportion than expected of people (35%), and of total courses dispensed, came via area B dispensers. Dispensing was slower than screening, which was unexpected. Evaluators and dispensers indicated there was some loss of speed related to keeping track of which person on the form the dispenser was working on.

Area B dispensing time was sensitive to no. of courses being dispensed:

<u>No. of courses</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5+</u>
Ave. time (sec.)	32	52	80	111
Ave. time/course (sec.)	16	17	20	22

66% of courses dispensed through Area B were for adult doxycycline.

- 3) Overall dispensing results:

<u>Doxycycline</u>	<u>% of all courses</u>
Adult	75.7%
Pediatric	10.3%
<i>Allergic to doxycycline</i>	<i>1.5%</i>)
<i>Doxycycline-only contraindication</i>	<i>12.9%</i>)

<u>Ciprofloxacin (based on line B data only)</u>	
Adult	3.2%
Pediatric	10.9%
<i>Allergic to ciprofloxacin*</i>	<i>0.9%</i>)
<i>Ciprofloxacin-only contraindication</i>	<i>1.0%</i>)

Doxycycline & ciprofloxacin contraindication 0.4%

*Note that “allergic to doxycycline” is based on everyone being screened for doxycycline; but “allergic to ciprofloxacin” is only based on screening for those who went through line B, and omits all who were dispensed through line A.

- 4) This multi-person-pickup POD exercise demonstrated to us that even though our prior plan estimated a throughput of 2,000 patients per hour per POD, it is actually 3.4 times that number of people, about 6,900 courses per hour that is feasible.

Changes and recommendations:

- 1) Area A:
 - Incorporate into written (JAS) and verbal training the need for speed in dispensing, and that dispenser's role is to dispense, but not to advise or converse with patients. Write scripts about what are acceptable things for dispensers to say and what requires them to refer patients to other sources of information, which can be available or listed at POD after dispensing stations. Create scripts for dispensers that indicate questions they can answer for patients versus questions they should refer to other sources.
 - Clarify standard pediatric dosing protocols.
- 2) Area B:
 - Revise the layout of the screening form to help dispensers keep track of which line they are working on.
 - Add visual aids to the screening form to delineate and keep track of line numbers, with accompanying instructions on the job action sheets.
 - Provide more training on uniform pediatric dosing procedure and use of instruction sheets / syringes.
 - Place medications within easy reach of dispensers (higher up, off floor, not requiring reaching).
- 3) Other:
 - Consider posting a questions station **outside** of the clinic exit so that dispensers can refer patients to it should they have any questions.

Outstanding Issues:

Clarify pediatric dose highlighting protocols for dispensers in Areas A and B.

AREA 5: PUBLIC INFORMATION

Capability and Area Summary:

Public information is extremely important but was not tested during this exercise. In general, we have produced risk communication messages that would be broadcast on every media outlet (print media, television, radio, internet, podcasts) but those messages were not used during this exercise.

We did produce some information briefly explaining what a mass prophylaxis response is, the exercise scenario, and what happens at a POD (Appendix 4). This information was then posted on the Schwab intranet site but we are unable to determine how many Schwab employees accessed the information.

What we learned:

- 1) Post more signs with information about how to answer screening questions, especially ones about allergies, classes of antibiotics, or other conditions affecting their decisions at the POD.
- 2) Post public information at site (but at the exit of the POD, so as not to create crowds or interfere with flow).
- 3) Importance of emphasizing to staff in training the key operating principles of PODs, i.e., speed of throughput.

AREA 6: STAFF RECRUITMENT

Capability Summary:

SFDPH was responsible for the recruitment and training of POD staff, all of whom were SFDPH employees who volunteered to participate in this exercise. The SFDPH-developed staffing model determined that for the anticipated throughput of the exercise (500 people per hour) an overall staff of 41 persons was needed. This included staff that would serve as check-in staff and trainers before the clinic opened.

While Schwab staff were not needed to help with actual POD operations, Schwab did provide security and property management staff to ensure access to their building and good coordination between SFDPH and Schwab during the exercise.

What we did and why:

- 1) The SFDPH Deputy Director, who sent an email to all SFDPH staff asking for their participation, recruited staff. Staff were paid as if it were a regular workday despite working in a different location. We did not recruit staff by skill sets. Job action sheets were protocol-driven and explained the critical tasks for each position. All staff were to get prior approval for their participation from their supervisor.
- 2) We received responses from 68 staff who received supervisory approval to participate in this exercise. We selected 48 staff to fill the 41 positions needed for POD operations on exercise day. The 48 employees were asked to also register all of their skill and contact information in the DPH-purchased staff management system, Disasterhelp.net, which would allow them to use the software to check-in and track their work hours on the exercise day (in the event our Personnel section ever needed these records). Registration on Disasterhelp.net also allowed coordination with what job action sheets should be printed for each staff member as a part of the check-in process on exercise day.
- 3) All 48 employees also received advance electronic communication (one week before and one day before) with more specific instructions about where to arrive, what to wear, how to check-in, etc. (Appendix 6). Area Leaders also received additional advance email information that specified the functions they would be performing, the goals of the area they would oversee, and their training responsibilities for their staff during the exercise.
- 4) The day of the exercise, 37 employees reported to the exercise site (77% show rate). One of those who did not arrive was the Personnel Check-in Supervisor, who was responsible for overseeing all position assignments during the exercise. To ensure adequate staffing, 2 staff persons who arrived at the exercise site, but did not go through the pre-registration process, and a SFDPH observer were asked to fill in for the employees who did not show up.

Strengths:

- 1) Using email to recruit staff is an easy means of identifying volunteers. It was especially effective to have the email originate from the SFDPH Deputy Director. 33/38 (87%) staff found the pre-exercise communication clear.
- 2) Most SFDPH staff who volunteered for the exercise cited this as a positive experience and felt more prepared to respond to a future mass prophylaxis event. 27/38 (71%) were interested in participating in future exercises. (More information in Appendix 5) In that regard, no additional push was necessary from the Deputy Director to recruit more staff.
- 3) 24/38 (63%) staff found the Disasterhelp.net registration process easy to follow.

What we learned:

- 1) We already assumed that significant over-recruitment is necessary for an actual disaster because there is great uncertainty in staff availability or willingness to serve during a disaster. Now we know that it is just as necessary for an exercise.
- 2) While our staffing plans and training materials were designed for staff with little or no clinical background (as clinical staff would most likely be needed in other capacities during an emergency), most of the staff who volunteered for this exercise had clinical background. Consequently, some who served in non-clinical roles such as line monitors and dispensers felt that their skills were underutilized.
- 3) There was not enough inter-organizational planning around information technology requirements for the registration process. Printers were not connected to the check-in laptops provided by Charles Schwab; therefore, they could not print out the job action sheets associated with their assigned positions.

Changes and Recommendations:

- 1) Over-recruit staff for an exercise just as one would for a real emergency.
- 2) Thoroughly plan out staff check-in and registration process in advance of the exercise by having back-up paper-based systems and extra staff to account for no-shows.
- 3) For future exercises, emphasize in recruitment messages that staff may be asked to fill positions which may not require the skills they are using in their current work. This may decrease any frustration that staff may feel regarding being underutilized. Also emphasize that this is a major function of using an incident command structure for emergency response.

Outstanding Issues

Since this exercise, the City and County of San Francisco has contracted with a new staff-management vendor, Collaborative Fusion, to register staff, assign them to relevant positions based on their skills and deploy them. This decision, made by the Department of Human Resources, was not based on the performance of Disasterhelp.net during the exercise. Protocols will be adjusted to work with this new system over the coming months.

AREA 7: EXERCISE PLANNING

Capability Summary:

Since 2004, the San Francisco Department of Public Health (SFDPH) has received funding through the federal Cities Readiness Initiative program to create the infrastructure to prophylax our entire county population with preventive antibiotics in 48 hours in the event of a bioterrorism emergency such as an anthrax attack. While SFDPH planners believed that their plan for dispensing to such large numbers of people (1.2 million people is the target capability) was adequate, the plan on which that capacity had been estimated had never been tested until this exercise.

Multi-disciplinary planning for this exercise took place from January – April 3, 2007. The planning team of six people represented three different entities: San Francisco Department of Public Health, San Francisco Department of Emergency Management and Charles Schwab & Co., Inc.

Weekly SFDPH-SFDEM meetings focused on exercise design and objectives, delineation of tasks and status updates.

What we did and why:

- 1) Coordination for this exercise began after a presentation from SFDPH to large businesses in San Francisco about the SFDPH mass prophylaxis plan and the fact that it had never been tested. An offer was made by the Manager of Continuity of Operations for Charles Schwab & Co., Inc. to test the plan in their facility using their employees as mock patients.
- 2) Approval and confirmation of conducting the exercise came from the executive vice-presidency level at Charles Schwab & Co., Inc. Once official approval was confirmed, representatives from SFDPH and SFDEM began exercise planning through weekly meetings. Periodic, as-needed updates were exchanged with the Manager of Continuity of Operations from Charles Schwab & Co., Inc., who was the liaison to other department managers at Charles Schwab. These updates were done via emails and telephone conversations.
- 3) SFDPH staff went on two site visits to Charles Schwab to: 1) present the idea of the exercise to upper management and 2) conduct a walkthrough of the space that would be used for the exercise in order to take photographs and make measurements of the employee “café,” which has a maximum capacity of 183 people and access to an outdoor terrace. Given the space available to us, the planning team decided to test a ¼-scale version of the POD plan.
- 4) Detailed planning of equipment needed was done by the SFDPH team and relayed to the Property Department at Charles Schwab, who provided all chairs/tables, training rooms, easels and staff to help with initial POD set-up. SFDPH provided and purchased any additional materials needed for the exercise. SFDPH staff also bagged and labeled M&M candies, which served as “doxycycline” and “ciprofloxacin” for the exercise. See Appendix 5 for a description of how long it took to prepare the M&M candies for the exercise.
- 5) Each entity was responsible for communicating to their staff about the exercise; SFDPH was

responsible for recruiting its employees to serve as POD staff and Charles Schwab was responsible for recruiting their employees to serve as mock patients. SFDPH also provided “pre-event” flyers (Appendix 6) to be shared with Schwab employees about the exercise and what would be expected of them during the exercise. This information, along with recruitment information created by the Schwab liaisons, was posted on their intranet site. An advertising flyer was also created and emailed to all staff (Appendix 6).

- 6) A decision was made to exclude television and print media from the exercise because they were considered a security risk within the building where the exercise took place.
- 7) Setup for the exercise was done the day before, on April 3, 2007. Room setup was done primarily by Charles Schwab & Co. staff followed by SFDPH staff setting up line markers, signs, and station supplies., See Appendix 1 & 2: POD layout for a more detailed discussion of set-up for the exercise.
- 8) This exercise included a strong evaluation component; both quantitative and qualitative strategies were incorporated to measure the effectiveness of all POD activities. A team of ten evaluators, who received a 2-hour training on POD operations and evaluation strategies, conducted evaluation activities.
- 9) Total staff time devoted to exercise planning and evaluation is estimated to be:
 - SFDPH: 650 Hours (divided among three primary people)
 - SFDEM: 30 Hours
 - Charles Schwab & Co., Inc.: 125 Hours

Strengths:

- 1) The planning process alone led to improvements in our overall mass prophylaxis plan. For example, thinking through the specifics of patient movement through the POD led us to streamline the process for identifying which dispensed medicine belonged to which patient in the multi-person pickup POD by having patients fill out name stickers for each person in their group. We also refined the wording of existing signs, the medical consultation protocol and created materials for medical screening and pediatric dosing instructions.
- 2) Weekly meetings to report on completed tasks and define next steps were good for exercise planning.
- 3) Senior leadership at both SFDPH and Charles Schwab were supportive of the exercise.

What we learned:

- 1) More formal and frequent coordination with Charles Schwab planning staff would have been useful to more explicitly divide up responsibilities for exercise planning and clarify

expectations. One aspect for which this would have been especially useful was in the area of mock patient recruitment. While the target level of recruitment was 500 patients in order to stress the POD to fully test throughput, liaisons at Charles Schwab had some difficulties recruiting employees (April is tax season and therefore a very busy time for employees; also, the exercise took place at the end of trading hours, and it was difficult to convince employees to stay beyond their working hours to participate in the exercise). This difficulty in recruitment was not apparent to SFDPH planners until one week before the exercise date, after much staff time had been devoted to exercise planning. While many lessons were learned from the 200 mock patients who attended the exercise, much of which will be incorporated to improve future dispensing models, we were not able to observe whether the POD layout and staff would be able to meet the throughput of 500 patients per hour under stressful conditions.

- 2) There was confusion regarding the status of planning and communication that occurred within each of the entities involved. This led to misunderstandings regarding timelines and planning milestones before the exercise. Planning milestones should have been more explicitly clarified up front.
- 3) While initially planning to invite the San Francisco mayor and Mr. Charles Schwab to participate in this exercise, their presence would have attracted media and it was decided that having media on-site would present a security risk to the Schwab building where the exercise was to be conducted. During post-exercise debriefing, it was revealed that having the presence of high-profile personnel at the exercise would have encouraged employee participation for both agencies. This may be a useful strategy to draw a larger mock patient pool for future exercises.
- 4) The post-exercise survey for all mock patients who attended the clinic indicated that many were not aware of why they were at the clinic, or actions expected of them once they arrived at the clinic (e.g. common questions include: “Why am I taking this medicine?” “Who am I supposed to pick up for? Can I pick up for my neighbor?” “Will people in line get me sick?” “What options do I have besides taking drugs?”). While pre-event messages were created, this indicated that they may not have been widely circulated to all Schwab employees.

Changes and Recommendations:

- 1) Ensure that SFDPH and external entities involved in planning agree in advance on exercise objectives, planning milestones and the threshold for which further exercise planning may not be beneficial to either party; consider formalizing this agreement. Also set regular and frequent in-person meetings with staff from all involved organizations to increase the level of understanding and transparency for both inter- and intra-organizational communications. If this is not possible for all meetings, at least ensure that a liaison from each organization is present during main planning meetings.
- 2) Consider having public information officers or public relations representatives from participating organizations discuss the costs and benefits of involving high-profile personnel and media involvement in future exercises.

- 3) Ensure that a strategy is jointly developed by staff from all organizations regarding incentives and pre-event messaging to mock patients. Also ensure that messaging and signs are developed to communicate with non-participants who may be affected by the organization hosting future exercises (e.g. other workers who occupy the building hosting the exercise, etc.).

Outstanding Issues:

None.

SECTION 4: CONCLUSIONS

The exercise was enormously useful and we are now working on incorporating the many small and detailed improvements as well as all lessons learned into our overall mass prophylaxis planning.

Overall, the exercise

- Improved and simplified our POD layout.
- Taught us that screening and dispensing can be done quickly and accurately.
- Gave us confidence in our training approach and materials.
- Provided us with empirically based time and population estimates that are now incorporated into our staffing model.
- Illustrated that the course capacity is more than 3x person-based throughput capacity (>6,000 courses/hr./POD).
- Gave us confidence we can meet and exceed our throughput goals.

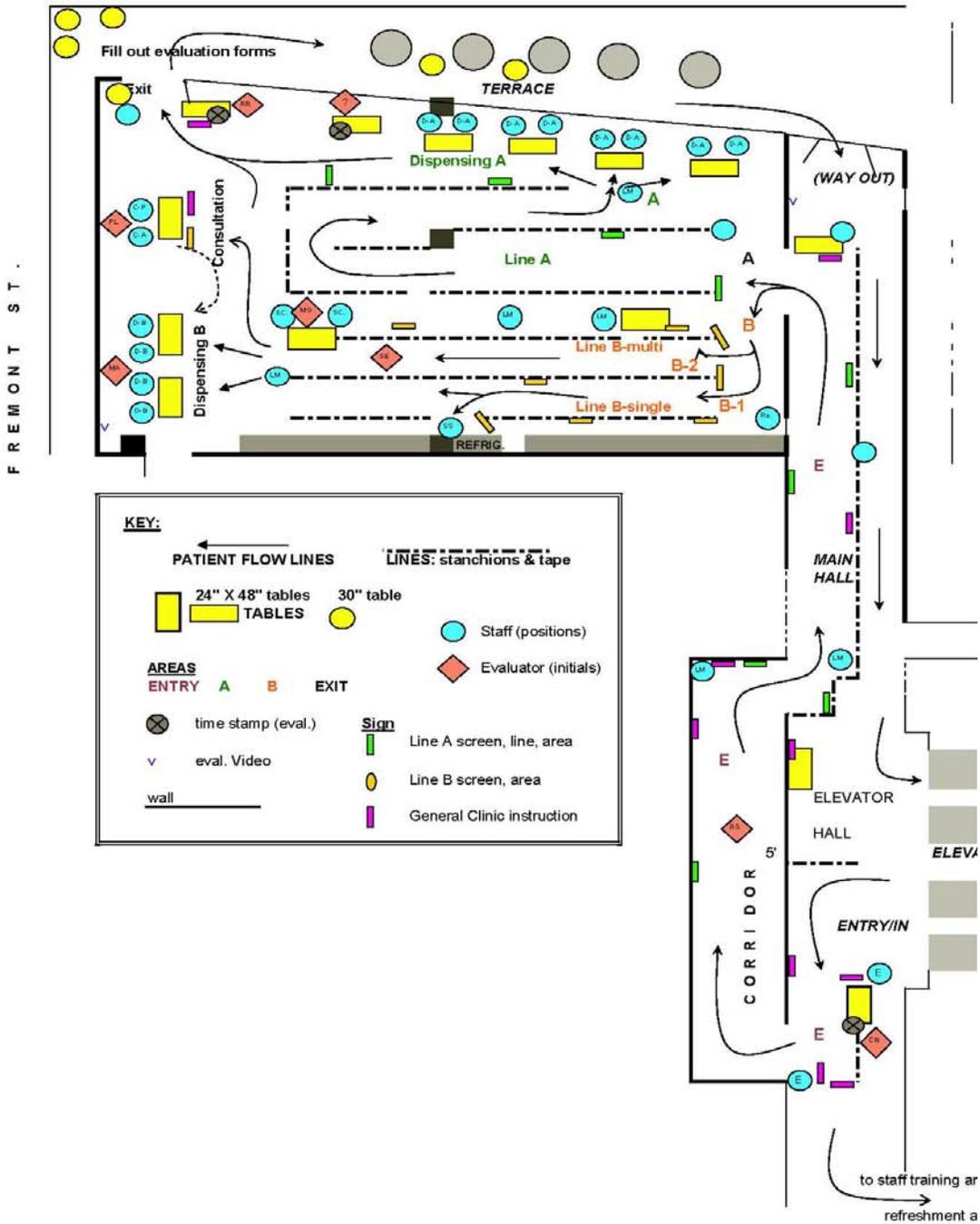
Partnering with Charles Schwab and Co., Inc. was also extremely useful and productive. Each entity provided crucial assistance and input. We also learned about how to set transparent milestones and work together toward common goals. As a direct result of this exercise, both the San Francisco Department of Public Health and Charles Schwab and Co., Inc. personnel who participated in the exercise left with positive impressions of our overall preparedness level and confidence that we, as a community, have a handle on how to dispense quickly and appropriately.

APPENDIX 1: EXERCISE POD LAYOUT

MADE '07 POD Dispensing Exercise--Dispensing Area Layout

SFDPH/Charles Schwab & Co., Inc Mass Antibiotic Dispensing Exercise

April 4, 2007



C:\Documents and Settings\carmen.nolasco\Desktop\CS_exercise_layout, CS dispensing area ex. layout, 3/28/2007

CDPU, SFI

APPENDIX 2: HOW A POD WORKS

CRI: Cities Readiness Initiative

POD: Points of Dispensing

CRI PODs are large-scale emergency antibiotic dispensing sites set up in an emergency of potential large-scale exposure to an infectious disease agent that can be prevented by rapidly starting preventive antibiotics. The CRI scenario requires planning to provide antibiotics to everyone within 48 hours. In SF, we are planning to provide 1.2 million courses of doxycycline or ciprofloxacin within 36 hours (leaving 12 hours for us to receive the antibiotics from the federal strategic stockpile). That means a dispensing capacity of 2,000 courses per hour through about 20 PODs located throughout SF.

This will take a lot of resources, so the PODs must maximize the speed and efficiency of dispensing operations. The design of CRI PODs is driven by balancing 3 needs: the overarching need to “get pills into people” very quickly to prevent possibly large numbers of cases of fatal disease, balanced by minimizing serious adverse reactions to some people with contraindications to one or the other antibiotic, and the need to do both as efficiently, with as few resources, as possible. Therefore, two important features of our design are:

- Most people do not have to fill out any written forms (only name labels)
- People can (and are encouraged to) pick up antibiotics for multiple people, including family members and others who can’t readily get to PODs themselves

Only a small proportion of people have contraindications to either doxy or cipro. The PODs are designed to give doxy to everyone who should not avoid it (expected to be well over 80%), and then among the others, to give cipro to the rest, except those few who have a contraindication to both antibiotics.

This is accomplished by 2 sets of screenings: First, everybody is screened to identify to rapidly send those who can take doxy directly to doxy dispensing areas. Others with contraindications to doxy will then be screened for contraindications to cipro. Those who can will be given cipro, while those with contraindications to both drugs will be sent to consulting to see whether they really cannot be given either drug safely.

This process takes place in 3 main areas: Everyone goes through the Entry area where they are screened for doxy, and then through either Area A for doxy dispensing or Area B for further screening and dispensing.

In the following, *patient decisions or actions are in italics*, and POD components or staff positions are underlined.

ENTRY

- People enter and are given *name labels to fill out* for each person to be given antibiotics.
- To help evaluate the exercise (but not in a real POD), people are also given an Evaluation Card with “time in” punched and asked to *answer a few questions* about how many people they are getting antibiotics for, and how many might need pediatric doses.
- People *read signs* telling them that they should go to Area A or B depending on whether or not anyone they are picking up antibiotics for has any of the **contraindications to doxy**, which are:
 - Allergy to doxy or any other tetracycline antibiotic
 - Being pregnant or breastfeeding
 - Being less than 9 years old
- Those with no one having any of the above conditions continue to Line A.
- Those with anyone with any of these conditions are instructed to go to Area B
- Line monitors help answer questions and direct people along the Entry line.

AREA A

People in this area are going to get doxy because no one they are getting antibiotics for has contraindications for it.

- **Line A:** People move through this line toward dispensing stations.
- Line monitors check their name labels to make sure they are completed and to highlight labels of anyone between age 9 and 17 who is to get a pediatric dose of doxy.
- **Dispensing A:** People are sent by line monitors to Area A Dispensing stations as they open and *give dispensers their name labels and Evaluation Cards*. Dispensers then give them courses of doxy for each person listed, and put a name label on each. For those marked for pediatric doses, they are also given an oral syringe and a pediatric doxy preparation sheet, on which the dispenser marks the proper dose for the child (dose based on child’s weight).
- After getting their medicines and their Evaluation Card back, the person moves toward the Exit. Near the exit they *turn in the Evaluation Card* at the Area A evaluation station to be time stamped and collected.

AREA B

People in this area are getting antibiotics for at least one person who has contraindications for doxy.

At the beginning of the Area B line they are to go into one of two Area B lines:

- Line B1, to left, for people picking up antibiotic for ONE PERSON only; or

- Line B2, toward center of room, for people picking up antibiotics for MORE THAN ONE PERSON.
- **Line B-1**: Person reviews signs listing contraindications for cipro and telling them to continue ahead in line toward Dispensing if none apply, but to stop at *Special Screener* (sitting along Line B-1) if any ***cipro contraindications*** apply to them. These are:
 - Allergic to cipro or any other “-floxacin” antibiotic
 - Kidney disease
 - History of epilepsy or seizures
- **Special Screener** will ask about which screening conditions apply (noting answers on their Log) and give person a green “Consulting” card to show to Dispensing area line monitor at end of line.
- **Line B-2**. Person stops at table at beginning of line and asked to fill out a “Patient Section” of the one-page “Multi-Person Screening Form” (MPSF), on which they are to list each person (up to 10) they are picking up antibiotics for and for each, check off which if any doxy or cipro contraindications apply to them, and whether each is under age 18 and also under 100 pounds; for those, they are also asked to write age and weight.
- **Multiple Person Screener**. Toward end of Line B-2 person stops at Multiple Person Screening table and gives their completed screening form to the Screener. Screener then uses Antibiotic Screening Key and Instructions protocols to fill in “For Clinic Use Only” section of form, checking which antibiotic each person listed is to get, which are to get pediatric doses, and which are to go to “Consulting” to determine proper antibiotic. Person then takes completed form to Dispensing B area.
- **Dispensing B area line monitor**. At end of lines B-1 and B-2, this person controls flow of people from the lines to Dispensing B and Consulting stations, sending people to stations as they open. Those with a Multi-Person Form with any person marked for Consulting, or with green Consulting card, are sent to Consulting. Others are sent to Dispensing B stations.
- **Dispensing B**. Person gives dispenser all papers: labels, Evaluation Card and Multi-Person Form (if they have one). Dispensers then give them courses of cipro for individuals without Multi Person Forms, or doxy or cipro as marked by Multiple Screener for each person listed, on the form, and puts a name label on each. For those marked for pediatric doses, they are also given an oral syringe and a pediatric doxy or cipro (as appropriate) preparation sheet, on which the dispenser marks the proper dose for the child (by weight).
- **Consulting**. Those referred to Consulting by the Special Screener of Multiple Screener will be questioned to determine what contraindications they believe they have and whether what they are presenting actually rules them out, by our POD Consulting Protocols and the Consultant’s medical evaluation, from getting cipro or doxy. If not, consultant will dispense cipro or doxy to individuals from line B-1 with green Consult cards, or note what to dispense (and initial) on Multi Person Form. (They may also give out special instructions or write alternative prescriptions if necessary.) Persons with Multi Person Forms are then sent back to nearest Dispensing B station for dispensing.

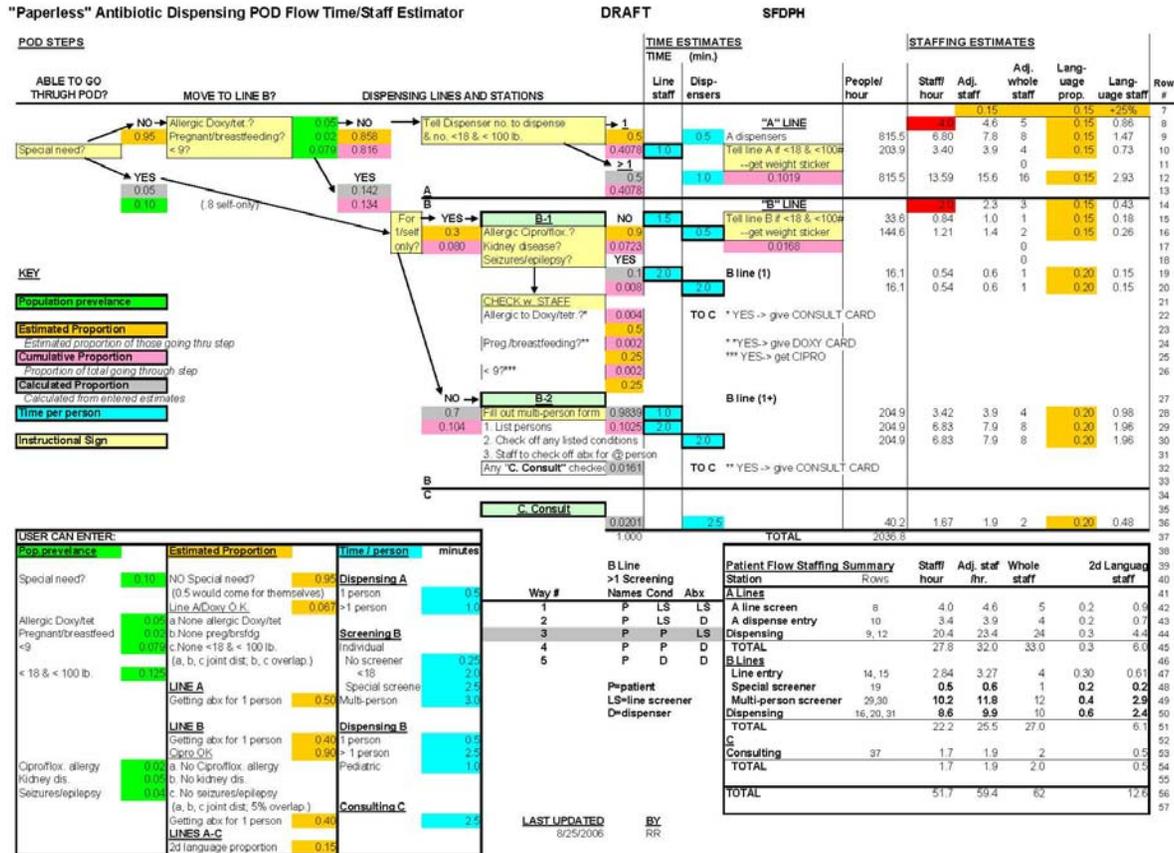
EXIT

- After getting their medicines and their Evaluation Card back from Dispensing B or Consulting, the person moves to the Exit. Near the exit those from Area B *turn in the Evaluation Card at the Exit evaluation station* to be time stamped and collected.
- Everyone *picks up a Public Health Information sheet* at Exit table
- *Everyone picks up an Evaluation Form at the Exit and fills it out* before they leave the 8th floor and leave in the collection boxes near the elevators. If it is not raining there will be some tables on Terrace to use to fill out evaluation forms.
- *Exit café* through rear door onto Terrace, turn right and right again into hall leading to exit from 8th floor via elevator.
- If person has time to go through POD again, they should continue through elevator lobby back to Entry table and *identify to Entry staff that they have gone through once* and would like to do so again, this time not as themselves but based on a script provided to them by Entry staff. If using a script, at end person should staple it to a new completed Evaluation form before leaving 8th floor.

APPENDIX 3: POD FLOW AND STAFFING MODEL

Before Exercise:

CRI: San Francisco's Minimal Medical Model



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** DRAFT **

RR, SFDPH, CDCP

GENERAL INSTRUCTIONS

to use with Antibiotic Screening Key

FOR EACH PERSON LISTED, CHECK FOR ANTIBIOTIC CONTRAINDICATIONS (columns C-G).			
<u>Group</u>	<u>Nos.</u>	<u>Description of contraindication conditions</u>	<u>Clinic Box Check</u>
A	(1)	If NO antibiotic contraindications (no boxes C-G checked); AND person is age 9 or older. ...if person is under age 9 (8 or younger):	Doxy Ped. Cipro*
C	(2-8)	If any ONE OR MORE of Cipro contraindications (orange/shaded columns C, D, or E), ARE CHECKED, AND NO Doxy contraindications (white/unshaded columns F or G), ...if person is between 9 and 17 and under 92 pounds: ...if person is under 9:	Doxy Ped. Doxy* Consulting
D	(9-11)	If any ONE OR BOTH of Doxy contraindications (white/unshaded columns F or G), ARE CHECKED, AND NO Cipro contraindications (orange/shaded columns C, D, or E) ...if person is under 18 and under 70 pounds	Cipro Ped. Cipro*
B	(12)	If person has ANY (one or both) of Doxy contraindications (white/unshaded columns F or G) CHECKED, AND ANY (one or more) Cipro contraindications (orange/shaded columns C, D, or E)	Consulting

* see Pediatric Dose Screening Key below.

Pediatric Dose Screening Key

IF PEDIATRIC BOXES CHECKED, CHECK WHETHER PEDIATRIC PREPARATION NEEDED

- Use Antibiotic Screening Key to determine proper antibiotic for person based on antibiotic contraindications (above).
- Determine whether people under 18 need pediatric preparations based on following criteria:

for Doxy:	under 18 AND under 92 pounds
for Cipro:	under 18 AND under 70 pounds
- Anyone **NOT** meeting **BOTH** of these criteria should get regular adult dose of proper antibiotic, so check "Doxy" or "Cipro" box..

Anyone meeting **BOTH** of these criteria should get pediatric preparation, so check "Pediatric Doxy" or "Pediatric Cipro" box AND "Special instructions" box.

Pediatric preparation includes:
 - Bottle of antibiotic pills
 - 10 mL oral syringe
 - Pediatric instructions: "How to Prepare Doxycycline/Ciprofloxacin for Children"

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ANTIBIOTIC SCREENING KEY

(For use with Multi-Person Screening Form or Special Screening Log Sheet)

"CONDITION" REFERS TO SET OF ANTIBIOTIC CONTRAINDICATIONS CHECKED FOR EACH PERSON LISTED ON FORM		ANTIBIOTIC CONTRAINDICATIONS					PEDIATRIC INFO			FOR CLINIC USE ONLY						
		GROUP C			GROUP D		GROUP P									
		CIPRO CONTRAINDICATIONS			DOXY CONTRAINDICATIONS					DISPENSE			CONSULT			
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
CONDITION		ANTIBIOTIC CONTRAINDICATIONS			PEDIATRIC INFO			DOXY	DOXY	CIPRO	CIPRO	SPECIAL INSTRUCTIONS	GO TO CONSULT	CONSULT		
CON. DI. TION #		ALLERGIC TO CIPRO or any fluoroquinolone	History of SEIZURES or EPILEPSY	KIDNEY DISEASE	ALLERGIC TO DOXY or any tetracycline	PREGNANT or BREAST-FEEDING	LESS THAN age 18	AGE (if under 18)	WEIGHT (if under 100 pounds)	DOXYCYCLINE	DOXY PEDIATRIC	CIPROFLOXACIN	CIPRO PEDIATRIC	SPECIAL INSTRUCTIONS	GO TO CONSULT	CONSULT INITIALS
A NO CONTRAINDICATION BOXES CHECKED																
1	No pediatric boxes checked															
	Pediatric boxes checked						X	xx	xx							
1	...child 9-17 years old						X	9-17	less than 92 lb.		√			√		
1	...child under age 9						X	8 or younger	less than 70 lb.				√	√		
EITHER CIPRO CONTRAINDICATION(S) OR DOXY CONTRAINDICATION(S), BUT NOT BOTH																
C GROUP C -- CIPRO CONTRAINDICATION(S) ONLY --> get DOXY																
2-8	Any combination of Cipro contraindications (columns C,D, or E); NO Doxy c/I (cols F,G)	(X)	(X)	(X)							√					
2-8	No pediatric boxes checked	(X)	(X)	(X)							√					
2-8	Pediatric boxes checked	(X)	(X)	(X)			X	17 or younger	less than 92 lb.		√			√		
D GROUP D -- DOXY CONTRAINDICATION(S) ONLY --> get CIPRO																
9-11	Either or both of Doxy contraindications (columns F or G); NO Cipro c/I (columns C,D, or E)				(x)	(x)						√				
9-11	No pediatric boxes checked				(x)	(x)						√				
9-11	Pediatric boxes checked				(x)	(x)	X	17 or younger	less than 70 lb.				√	√		
B CONTRAINDICATIONS TO BOTH DOXY AND CIPRO --> CONSULTING																
12	Any ONE or MORE Cipro contra-indications (green, cols C,D or E) PLUS ONE or BOTH Doxy contra-indications (orange cols F or G)	(x)	(x)	(x)	(x)	(x)									√	
PEDIATRIC PREPARATIONS																
Once proper antibiotic is determined, give pediatric preparations to people meeting these criteria:																
	for DOXYCYCLINE						X	17 or younger	less than 92 lb.		√			√		
	for CIPROFLOXACIN						X	17 or younger	less than 70 lb.				√	√		
If they do not meet these criteria, give them regular adult doses of pills.																

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RR, SFDH

APPENDIX 4: EVALUATION TIMECARD

(OTHER TOOLS ARE AVAILABLE UPON REQUEST)

Staff use: Script?	Time In:	Staff use: Script?	Time In:
<p>Patient Instructions:</p> <ol style="list-style-type: none"> 1. Fill out the information in this box while you are standing in line. <ul style="list-style-type: none"> ▪ Unless asked to do otherwise, answer the following questions as if you were getting antibiotics for your family and/or others as you would in a real emergency. 2. Hand the card to the dispenser when you get your medicine. 3. Turn in this card when you exit the clinic. <p>Patient Questions</p> <ol style="list-style-type: none"> 1. I am picking up antibiotics for ____ (#) people. <i>(This number should match the number of name labels you fill out)</i> 2. Of these, ____ (#) are 18 years old or younger AND weigh less than 100 lbs. 3. Of these, ____ (#) are younger than 9 years old. 	Evaluation Time Card MADE07 Exercise	<p>Patient Instructions:</p> <ol style="list-style-type: none"> 1. Fill out the information in this box while you are standing in line. <ul style="list-style-type: none"> ▪ Unless asked to do otherwise, answer the following questions as if you were getting antibiotics for your family and/or others as you would in a real emergency. 2. Hand the card to the dispenser when you get your medicine. 3. Turn in this card when you exit the clinic. <p>Patient Questions</p> <ol style="list-style-type: none"> 1. I am picking up antibiotics for ____ (#) people. <i>(This number should match the number of name labels you fill out)</i> 2. Of these, ____ (#) are 18 years old or younger AND weigh less than 100 lbs. 3. Of these, ____ (#) are younger than 9 years old. 	Evaluation Time Card MADE07 Exercise
<p>For evaluation staff use only:</p> Dispenser: _____ <input type="checkbox"/> A Dispensing Time: ____ : ____ <input type="checkbox"/> B	Line: <input type="checkbox"/> A <input type="checkbox"/> B	<p>For evaluation staff use only:</p> Dispenser: _____ <input type="checkbox"/> A Dispensing Time: ____ : ____ <input type="checkbox"/> B	Line: <input type="checkbox"/> A <input type="checkbox"/> B

Last revised: FINAL

APPENDIX 4: POD / PUBLIC MESSAGES

Information to Share with Charles Schwab Employees Regarding Mass Antibiotics Dispensing Exercise (MADE) '07

What will be happening on April 4, 2007? A carefully evaluated exercise with Charles Schwab employees acting as mock patients to test the efficiency and mechanics of the San Francisco Department of Public Health's plan to rapidly dispense antibiotics to very many people in an emergency.

Federal agencies have established as a priority emergency preparedness goal that cities and regions across the country plan for providing prophylaxis (preventive medicine in the form of antibiotics or vaccinations) in a very short time to everyone present whenever an emergency occurs.

There are some infectious disease emergencies that might require dispensing antibiotics to everyone in San Francisco within 48 hours. San Francisco has been planning for this extreme scenario and has created the capacity to dispense antibiotics to 1.2 million people in 36 hours. Such a plan requires rapid and large-scale dispensing to large numbers of people. For the past three years, we have been developing and modifying our plan to do this. However, we have not yet been able to test how well and how fast we could dispense antibiotics to an untrained public. This exercise will provide this test.

The evaluation of this exercise will provide crucial qualitative and quantitative data to:

- Assess our overall dispensing layout and practices in order to make them as efficient and effective as possible
- Refine our staffing and capacity model so that its components are based on evidence rather than assumptions.

The day of the exercise, Schwab employees who have volunteered to participate will come to the employee lounge on the 8th floor of 215 Fremont to represent patients picking up antibiotics, as if they were coming to a public health emergency clinic in a real emergency. Because of space limitations, groups of employees will be assigned to come at staggered times between about 1 and 3 pm.

The scenario that day will be that the San Francisco Department of Public Health (SFDPH) is responding to an outdoor release of a disease agent that is highly infectious but not contagious from person to person. (This would apply for an agent such as anthrax.) If such an event really happened, the City might declare a public health emergency and announce to the public that everyone should come to emergency dispensing sites to receive free antibiotics to prevent their getting this disease. We would then set up dispensing sites around San Francisco (and the region). These will be called Point of Dispensing or POD sites.

That is the background script for this exercise. We will be setting up and testing a scaled-down version of a public POD site at Schwab on April 4. The "antibiotics" that will be dispensed that day will not be real pills, they will, instead be M&M candies. Schwab volunteers will be the "patients", and SFDPH would like you to come through the POD as you think you would in real life, so that we can make this as realistic a test of our plan as possible.

The SFDPH would like to reiterate that this is an exercise. The likelihood of mass dispensing to occur because of a citywide exposure to an infectious agent is **extremely** low. By planning for a worst-case scenario, the Health Department can be better prepared for any level of emergency of this type.

On April 4, however, SFDPH will be acting as if it is a real scenario. In a real scenario, the following messages would be saturating all television, print and radio media outlets. This information would also be on numerous websites. This information applies to all Schwab employees who will be participants that day:

- 1) The POD is a multi-person pickup POD. You should pick up antibiotics for anyone and everyone that you might pick up for in an emergency. This could include people living in your home, relatives living outside of your home, disabled neighbors, etc.
- 2) The two antibiotics dispensed at the POD are doxycycline and ciprofloxacin.
- 3) Anyone picking up antibiotics should know whether any of the people for whom they are picking up are allergic to either doxycycline (or any “-cycline” drug, like tetracycline) or ciprofloxacin (or any “-floxacin” drug).
- 4) People who are picking up for any children who are less than age 18 and weigh less than 100 pounds should know the ages and weights for those children.
- 5) At a POD, the following happens:
 - a. You are given name labels and asked to complete one for each person for whom you are picking up.
 - b. Signs direct you to one of two lines ~ A or B. Line A is for everyone who can take doxycycline (which is most people). Signs tell you who should not get doxycycline. Line B is for anyone picking up antibiotics for anyone who may have an issue or reason not to take doxycycline.
 - c. If you are in line B and picking up for multiple people, you will have to complete a form that asks about people’s allergies, whether they have kidney disease, or whether they have a history of seizures.
 - d. Patients then go to dispensers, where they get bags of antibiotics. The name labels are affixed to the bags so that once you get home, you will know whose medicine belongs to whom. For children who need lower doses, a special instruction sheet is handed out to ensure that they get the proper dose.
 - e. You exit the POD with your antibiotics.
- 6) All antibiotics are free. There are plenty to go around so there is no need for hoarding.

- 7) Information sheets about the antibiotics will not be available at the POD. For more information about doxycycline and ciprofloxacin, go to the SFDPH website at XXXXXXXX. These would also be widely distributed through the internet and print and broadcast media.
- 8) You will receive 20 pills, signifying a 10-day supply. Take one pill, two times per day, until all of the pills are gone.

Your experiences and your feedback from going through this exercise will be invaluable to us in ensuring that we are developing the best, most workable and efficient emergency plan. We deeply appreciate the cooperation of Charles Schwab Inc. and especially of you, the volunteer participant, in helping San Francisco Dept. of Public Health do the best job possible of protecting and promoting the health of the people of San Francisco and the Bay Area.

Appendix 5
Summary of Quantitative Analysis

OUTLINE

- A) Pre-exercise antibiotic packaging activity
- B) Patient population description
- C) Screening time
- D) Dispensing time
- E) Patient experience
- F) Staff experience

A. Pre-exercise antibiotic packaging activity:

1) Filling paper envelopes with 3-day course of antibiotics (6 pills)

Information based on one 10-min session with 6 people

	Average packets per 10 minutes	Average time to fill each envelope	Adding time for sta- pling envelopes*
Total average	30.3 packets / 10 min	1 packet every 20 sec	1 packet every 26 sec
Average for traditional “pouring” method (N=3)	25.7 packets / 10 min	1 packet every 24 sec	1 packet every 30 sec
Average for modified “scoop” method (N=2)	36 packets / 10 min	1 packet every 17 sec	1 packet every 23 sec

* Stapling 66 envelopes took 5 min 6 sec = 6 sec to fold and staple each envelope; this was completed by a separate staff person after envelopes were filled.

2) Filling baggies with 10-day course of antibiotics (20 pills)

Information based on two 10-min sessions with 6 people

	Average packets per 10 minutes	Average time to fill each envelope
Total average	16.3 packets / 10 min	1 packet every 38 sec
Average for traditional “pour- ing” method (N=4)	15.8 packets / 10 min	1 packet every 38 sec
Average for modified “scoop” method (N=6)	17.7 packets / 10 min	1 packet every 34 sec
Average for modified “manila folder” method (N=2)	13.5 packets / 10 min	1 packet every 44 sec

B. Patient population description

Data sources: ps = patient survey (N=258)
 ec = evaluation cards (N=261)
 sf = Line B multi-person screening form (N=84)

Line assignments	From Patient Survey	%	From evaluation timecards*	%
Line A	162	62.8	90	65.5
Line B	93	36.0	26	34.5
No data about line assignments	3	1.2	145	--
Total	258	100	261	100

* Evaluation cards only contained line designations for a sample of patients

Proportion who visited the pediatric consultation table during exercise ^{ps}	N	%
Yes	38	14.7%
No	188	72.9%
No data	32	12.4%
Total	258	100

Proportion of people picking up medicine for people outside of their home ^{ps}	N	%
Yes	79	30.6
No	147	57.0
No data	32	12.4
Total	258	100

Proportion of doses for those with no contraindication to doxycycline ^{ec, sf}	N
Line A (% in line A)	511 (100.0%)
Line B (% in line B)	276 (66.8%)
Total (% of all doses dispensed)	787 (85.5%)

Languages spoken by patient population ^{ps}	N
English only	154
English + another language:	
Chinese	11
Spanish	11
Vietnamese	1
Tagalog	5
Hindi	4
Other (with count of 2 or fewer)	14
Another language only:	
Chinese (Cantonese or Mandarin)	10
Spanish	2
Other (with count of 1)	2
No data	48
Total	258

B. Patient population description

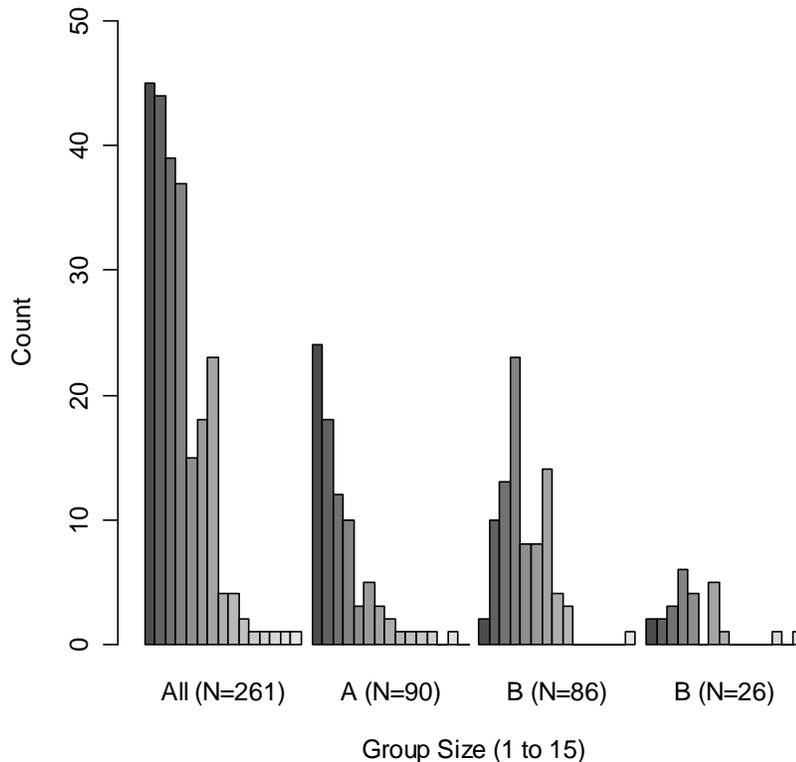
Size of group for which each patient is collecting antibiotics	Total ^{ec}	Line A (sample) ^{ec}	Line B (sample) ^{ec}	Line B (all) ^{sf}
Mean	3.8 persons	3.3 persons	5.2 persons	4.9 persons
(95% CI)	(3.5, 4.1)	(2.8, 3.9)	(3.9, 6.5)	(4.4, 5.4)
Median	3 persons	2 persons	4 persons	4 persons
(25 th , 75 th %tile)	(2, 5)	(1, 4)	(3, 7)	(3, 7)
Minimum, Maximum	1, 15	1, 14	1, 15	1, 15
Group Size				
1	45 (17.2%)	24 (26.7%)	2 (7.7%)	2 (2.3%)
2	44 (16.9%)	18 (20.0%)	2 (7.7%)	10 (11.6%)
3	39 (14.9%)	12 (13.3%)	3 (11.5%)	13 (15.1%)
4	37 (14.2%)	10 (11.1%)	6 (23.1%)	23 (26.7%)
5	15 (5.7%)	3 (3.3%)	4 (15.4%)	8 (9.3%)
6	18 (6.9%)	5 (5.6%)	0	8 (9.3%)
7	23 (8.8%)	3 (3.3%)	5 (19.2%)	14 (16.3%)
8	4 (1.5%)	2 (2.2%)	1 (3.8%)	4 (4.7%)
9	4 (1.5%)	1 (1.1%)	0	3 (3.5%)
10+	7 (2.8%)	4 (4.4%)	2 (7.7%)	1 (1.2%)
Missing	25 (9.6%)	8 (8.9%)	1 (3.8%)	0
Total	261	90	26	86
Total # of doses dispensed	920*	511[#]	409⁺	

* 25 patients with missing group size information were counted as group size 1 in total sum

⁺ Total was taken from information from the Multiperson Screening Form (total of 411 individuals) and numbers going to the special screener line (2), subtracting those who were not assigned a drug (4)

[#] number = total doses dispensed – information from line B

Group Size Distribution, Total and by Line



B. Patient population description

For those with groups > 1 person, number of those in group who are =<18 years old AND weigh <100 lbs:

All patients (N=261)

Grpsize	# < 18 & < 100 lbs										Total	
	0	1	2	3	4	5	6	7	10	<NA>		
1	29	6	0	0	0	0	0	0	0	0	10	45
2	32	6	2	0	0	0	0	0	0	0	4	44
3	19	14	1	1	0	0	0	0	0	0	4	39
4	14	9	12	0	1	0	0	0	0	0	1	37
5	6	1	3	3	0	1	0	0	0	0	1	15
6	7	4	1	2	2	0	1	0	0	0	1	18
7	6	5	5	2	2	1	0	0	0	0	2	23
8	2	2	0	0	0	0	0	0	0	0	0	4
9	2	1	0	0	0	0	0	0	1	0	0	4
10	2	0	0	0	0	0	0	0	0	0	0	2
11	1	0	0	0	0	0	0	0	0	0	0	1
12	1	0	0	0	0	0	0	0	0	0	0	1
13	0	0	0	0	0	0	0	0	0	1	0	1
14	0	0	0	1	0	0	0	0	0	0	0	1
15	0	0	0	0	0	0	0	0	0	0	1	1
<NA>	0	1	0	1	0	0	0	0	0	0	23	25
Tt1	121	49	24	10	5	2	1	1	1	47	261	

For those picking up for >1 person:	Total
Mean # 18 y.o. or under and <100 lbs (95% CI)	1 persons (0.8, 1.5)
Median (25 th , 75 th %tile)	0 persons (0, 1)
Minimum, Maximum	0, 10
Total	216

Line A (N=90)

Grpsize	# < 18 & < 100 lbs										Total	
	0	1	2	3	4	5	6	7	10	<NA>		
1	18	4	0	0	0	0	0	0	0	0	2	24
2	15	2	0	0	0	0	0	0	0	0	1	18
3	6	3	1	0	0	0	0	0	0	0	2	12
4	8	0	2	0	0	0	0	0	0	0	0	10
5	3	0	0	0	0	0	0	0	0	0	0	3
6	3	1	0	0	0	0	0	0	0	0	1	5
7	2	0	0	0	0	0	0	0	0	0	1	3
8	2	0	0	0	0	0	0	0	0	0	0	2
9	1	0	0	0	0	0	0	0	0	0	0	1
10	1	0	0	0	0	0	0	0	0	0	0	1
11	1	0	0	0	0	0	0	0	0	0	0	1
12	1	0	0	0	0	0	0	0	0	0	0	1
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	1	0	0	0	0	0	0	0	1
15	0	0	0	0	0	0	0	0	0	0	0	0
<NA>	0	1	0	0	0	0	0	0	0	0	7	8
Tt1	61	11	3	1	0	0	0	0	0	0	14	90

For those picking up for >1 person in Line A:	Total
Mean # 18 y.o. or under and <100 lbs (95% CI)	0.3 persons (0.2, 0.4)
Median (25 th , 75 th %tile)	0 persons
Minimum, Maximum	0, 3
Total	66

Line B (N=26)

Grpsize	# < 18 & < 100 lbs										Total	
	0	1	2	3	4	5	6	7	10	<NA>		
1	1	1	0	0	0	0	0	0	0	0	0	2

B. Patient population description

2	0	2	0	0	0	0	0	0	0	0	2
3	2	1	0	0	0	0	0	0	0	0	3
4	1	4	1	0	0	0	0	0	0	0	6
5	0	0	2	2	0	0	0	0	0	0	4
6	0	0	0	0	0	0	0	0	0	0	0
7	0	2	2	0	0	0	0	0	0	1	5
8	0	1	0	0	0	0	0	0	0	0	1
9	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	1	0	1
14	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	1	1
<NA>	0	0	0	0	0	0	0	0	0	1	1
Ttl	4	11	5	2	0	0	0	0	1	3	26

For those picking up for >1 person in Line B:	Total
Mean # 18 y.o. or under and <100 lbs (95% CI)	1.7 persons (0.9, 2.6)
Median (25 th , 75 th %tile)	1 person (1, 2)
Minimum, Maximum	0, 10
Total	24

For those with groups > 1 person, number of those in group who are =<9 years old

- should have been sent to Line B to receive ciprofloxacin
- 2 people with someone < 9 years old in their group went to Line A

All patients (N=261)

Grpsize	# < 9 years old							Total
	0	1	2	3	4	9	<NA>	
1	32	0	0	0	0	0	13	45
2	34	3	1	0	0	0	6	44
3	26	7	0	1	0	0	5	39
4	19	9	6	0	0	0	3	37
5	10	2	1	1	0	0	1	15
6	8	4	3	2	0	0	1	18
7	10	4	5	1	1	0	2	23
8	2	2	0	0	0	0	0	4
9	2	1	1	0	0	0	0	4
10	2	0	0	0	0	0	0	2
11	1	0	0	0	0	0	0	1
12	1	0	0	0	0	0	0	1
13	0	0	0	0	0	1	0	1
14	1	0	0	0	0	0	0	1
15	0	0	0	0	0	0	1	1
<NA>	0	1	0	0	0	0	24	25
Ttl	148	33	17	5	1	1	56	261

For those picking up for >1 person with anyone in the group 18 y.o. or under & <100 lbs:	Total
Mean # < 9 years old (95% CI)	1.0 persons (0.8, 1.2)
Median (25 th , 75 th %tile)	1 person (0, 1)
Minimum, Maximum	0, 9
Total	141

B. Patient population description

Courses of antibiotics dispensed

Estimate of Total doses dispensed

Total = 916

- Doxycycline (adult) = 693
- Doxycycline (pediatric) = 94
- Ciprofloxacin (adult) = 29
- Ciprofloxacin (pediatric) = 100

Estimate of doses dispensed from Line A

Total doses dispensed in Line A = 511

- Doxycycline (adult) = 511 – 85 = 426
- Doxycycline (pediatric) = 511 * (15/90) = 85
 - 15/90 taken from number of those seen in line A who were <18 and <100 lbs (sample captured through evaluation cards)

Actual doses dispensed from Line B

Total doses dispensed from Line B = 413

Group size distribution		Courses of antibiotics dispensed*			
Group size in Line B-multi	Number of groups	Doxycycline (adult)	Doxycycline (pediatric)	Ciprofloxacin (adult)	Ciprofloxacin (pediatric)
2	10	13	0	4	3
3	13	22	0	6	11
4	23	54	5	5	29
5	8	25	0	2	11
6	8	26	1	4	17
7	14	70	2	6	18
8	4	25	0	0	5
9	3	21	0	1	3
15	1	11	1	0	3
Total	84	267 (66.1%)	9 (2.2%)	29 (6.9%)	100 (24.8%)

* 4 individuals from line B were not assigned an antibiotic based on consultant screening

C. Screening Time Information

Line B Patient Characteristics

Contraindications							N	
Individuals on form with no contraindications							279 (67.9%)	
Individuals on form with any contraindication to doxycycline only							119 (29.0%)	
Individuals on form with any contraindication to ciprofloxacin only							9 (2.2%)	
Individuals on form with contraindications to both doxycycline and ciprofloxacin							4 (1.0%)	

Group size distribution		Prevalence of contraindications					Age criteria	
Group size in Line B-multi	# groups	Allergy to doxy	Pregnant / breastfeed	Allergy to cipro	Seizures / epilepsy	Kidney disease	<18 years old	<9 years old
2	10	0	4	0	0	0	3	3
3	13	2	5	0	0	0	11	11
4	23	3	3	2	1	1	35	26
5	8	3	0	1	0	1	17	10
6	8	0	4	2	0	1	21	13
7	14	3	1	0	1	0	27	20
8	4	1	0	1	0	0	7	4
9	3	2	1	2	0	1	3	3
15	1	0	0	0	0	0	4	2
Total individuals (line B-multi)	411	14 (3.4%)	18 (4.4%)	8 (1.9%)	2 (0.5%)	4 (1.0%)	128 (31.1%)	92 (22.4%)
% of total doses dispensed during exercise	920 (100%)	1.5%	2.0%	0.9%	0.2%	0.4%	13.9%	10.0%

Consultation	N
# of patients visiting consultation during exercise	12
# of doses represented	44
<i>Reason for consultation:</i>	
▪ Allergy to ciprofloxacin and/or and pregnant (or possibility of pregnancy)	3
▪ Pet concerns	2
▪ Group member with many allergies (specific drug allergy unknown)	2
▪ Group member with allergy to both ciprofloxacin, doxycycline and penicillin	2
▪ Medical condition of concern (e.g. cancer, history of liver transplant, kidney problems – about to undergo dialysis)	2
▪ Allergy to penicillin and either doxycycline or ciprofloxacin	1
▪ Concern about elderly group member sensitive to medications	1
▪ Allergy to amoxicillin	1
▪ Came from pediatric consultation because no instruction sheets for pediatric dosing were given by the dispenser (Line B)	1
Time spent at consultation: (group sizes not available)	
Mean (95% CI)	N=9 3.9 min (2.2, 5.6)
Median (25 th , 75 th %tile)	3.5 min (2.0, 5.5)
Minimum, Maximum	0.6 min, 8.8 min
Disposition:	
Number of instances in which patient was told to take either doxy or cipro anyway	7
Number of instances in which patient was prescribed a drug other than doxy or cipro, with clinician follow-up	5

C. Screening Time Information

Screening statistics:

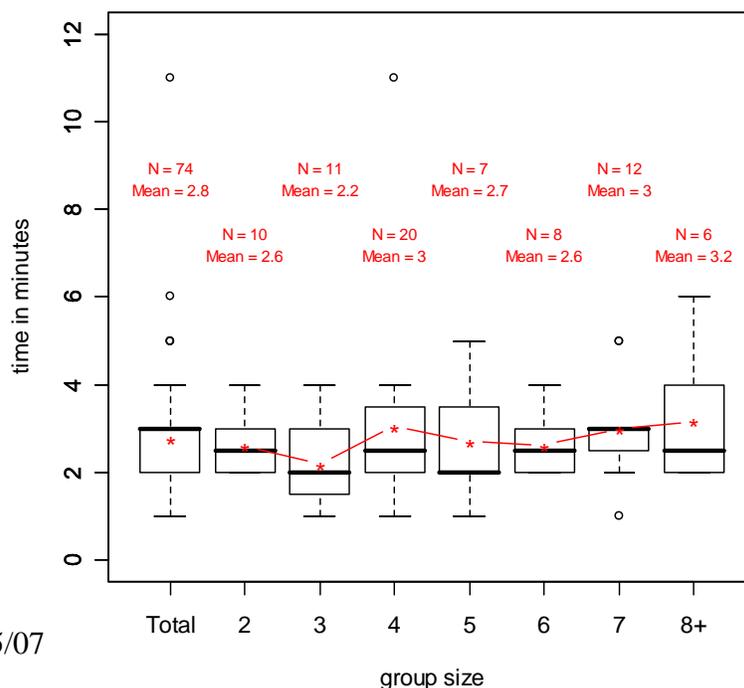
Accuracy in screening	N	Screener 1 Screened for 127 doses	Screener 2 Screened for 195 doses	Screener 3 Screened for 58 doses
# of patients who were recommended:				
Correct drug	394 (95.9%)	118 (92.9%)	190 (97.4%)	57 (98.3%)
Incorrect drug	17 (4.1%)	9 (7.1%)	5 (2.6%)	1 (1.7%)
Reasons for incorrect drug assignment:				
Confusion regarding the age/weight cutoff for pediatric cipro dosage	9	4	3	1
Patient listed a contraindication to the as- signed drug on the form	3	3	0	0
Correct drug given at the wrong dosage (adult rather than pediatric)	4	2	2	0
Patients who received a drug that would have been harmful given their medical profile	5	3	2	0
Reason:				
Contraindication to assigned drug	3	3	0	0
Correct drug given at wrong dosage (adult rather than pediatric)	2	0	2	0

Time spent in Line B2: proxy for how long it takes to fill out screening form

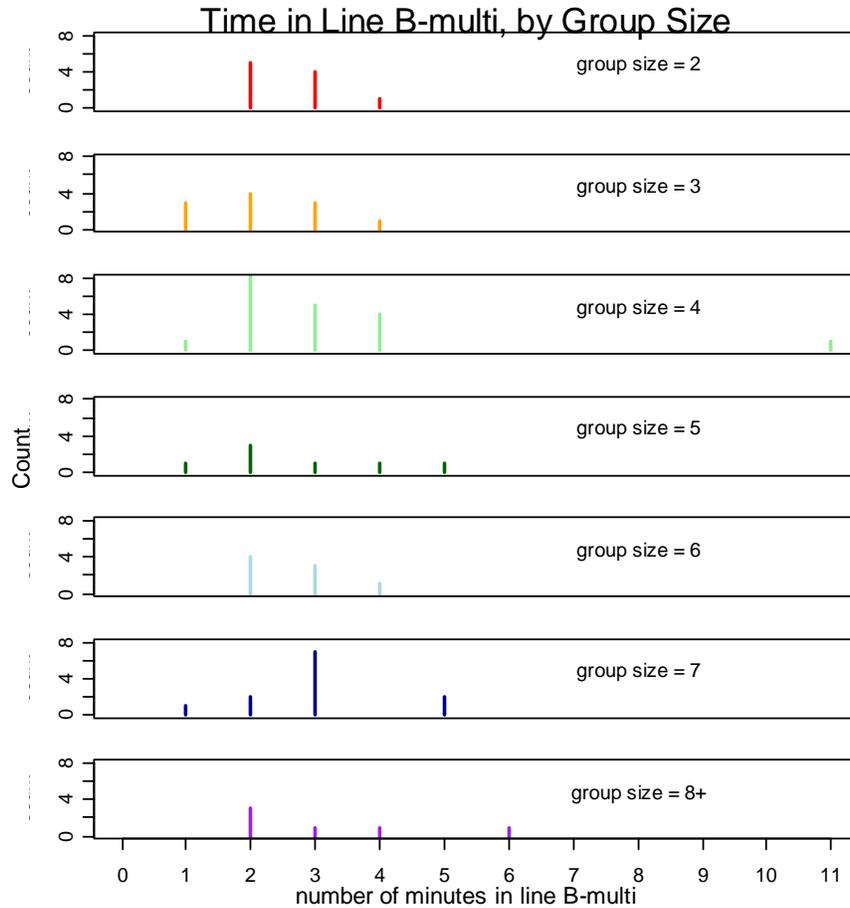
Time spent in line B2	Total	Group size = 2	Group size = 3	Group size = 4	Group size = 5	Group size = 6	Group size = 7	Group size = 8+
Mean	2.8 min	2.6 min	2.2 min	3.1 min	2.7 min	2.6 min	3 min	3.2 min
(95% CI)	(2.5, 3.1)	(2.2, 3.0)	(1.7, 2.7)	(2.2, 3.9)	(1.8, 3.7)	(2.1, 3.1)	(2.4, 3.6)	(2.1, 4.3)
Median	3 min	2.5 min	2 min	2.5 min	2 min	2.5 min	3 min	2.5 min
(25 th , 75 th %tile)	(2, 3)	(2, 3)	(1.5, 3)	(2, 3.3)	(2, 3.5)	(2, 3)	(2.8, 3)	(2, 3.8)
Min, Max (min)	1, 11	2, 4	1, 4	1, 11	1, 5	2, 4	1, 5	2, 6
Total	74*	10	11	20	7	8	12	6

* 2 entries omitted due to data error, 8 unknown

Median time spent in Line B2, by group size



C. Screening Time Information

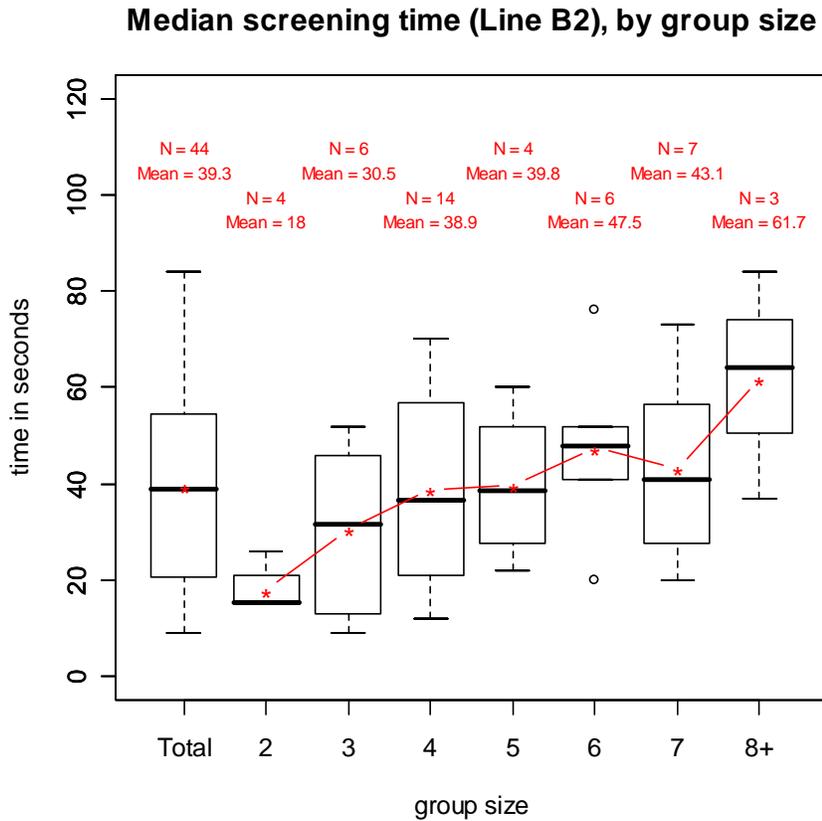
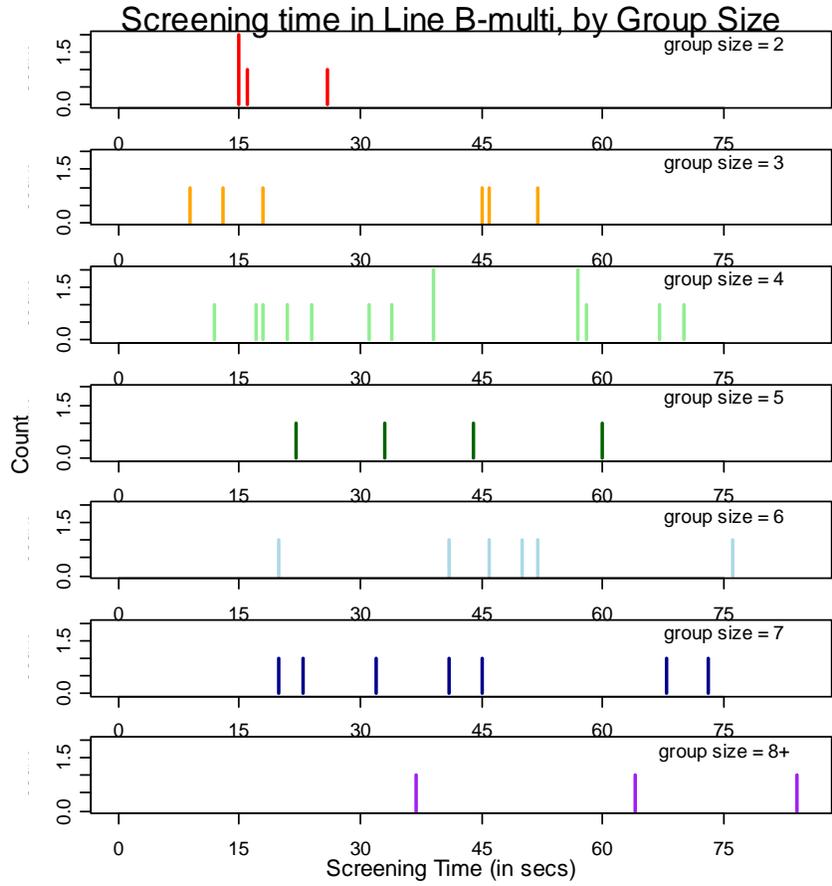


Time spent in actual screening session:

Time spent screening (sec)	Total	Group size = 2	Group size = 3	Group size = 4	Group size = 5	Group size = 6	Group size = 7	Group size = 8+
Mean	39.3 sec	18 sec	30.5 sec	38.9 sec	39.8 sec	47.5 sec	43.1 sec	61.7 sec
(95% CI)	(35.0, 43.6)	(14.7, 21.3)	(20.1, 40.9)	(30.8, 46.9)	(28.5, 51)	(35, 60)	(32.3, 54)	(45.3, 78.0)
Median (25 th , 75 th)	39 sec (20.8, 53.3)	15.5 sec (15.0, 18.5)	31.5 sec (14.3, 45.8)	36.5 sec (21.8, 57.0)	38.5 sec (30.3, 48)	48 sec (42.3, 51.5)	41 sec (27.5, 56.5)	64 sec (50.1, 74)
Min, Max	9, 84	15, 26	9, 52	12, 70	22, 60	20, 76	20, 73	37, 84
Total	44	4	6	14	4	6	7	3

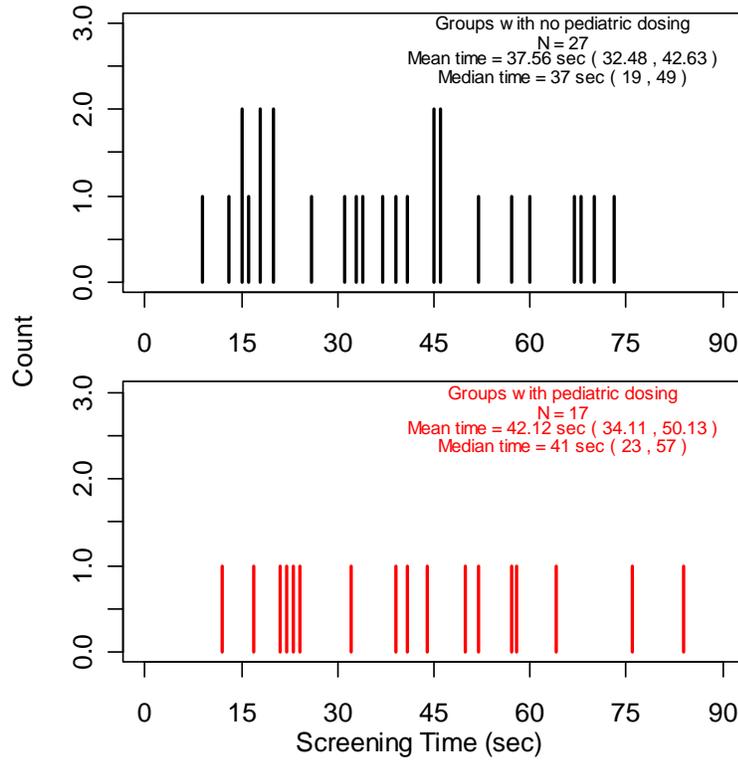
Screening time	Hour 1	Hour 2
Mean (95% CI)	35.8 sec (29.8, 41.8)	41.8 sec (36.1, 47.6)
Median (25 th , 75 th %tile)	36.5 sec (18.0, 47.5)	41 sec (25, 54.5)
Minimum, Maximum	9 sec, 73 sec	15 sec, 84 sec
Total # of doses dispensed for those with screening time recorded	106	99
Avg time / dose	8.2 sec / dose (6.6, 9.8)	8.8 sec / dose (6.9, 10.8)
Total	24	19

C. Screening Time Information

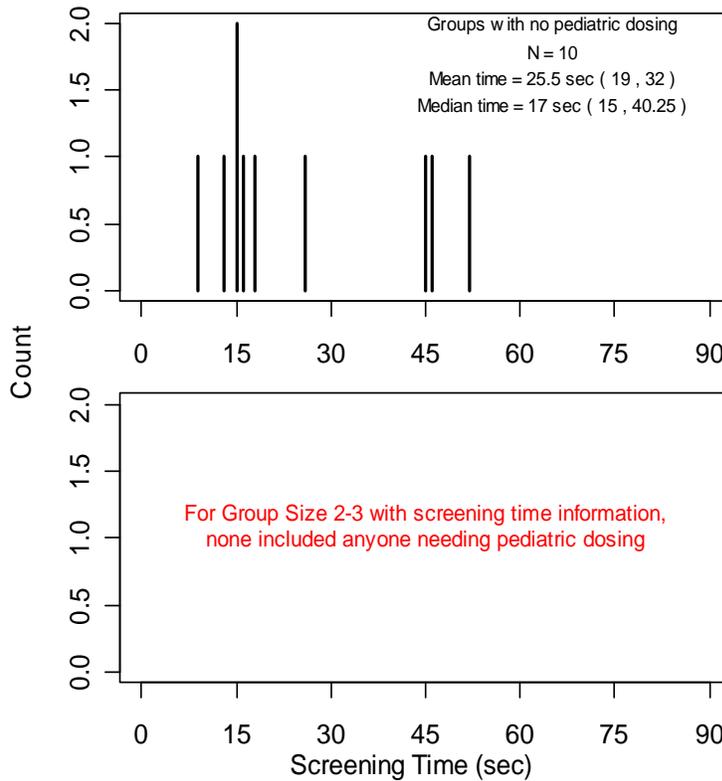


C. Screening Time Information

Screening Time by Pediatric dosing

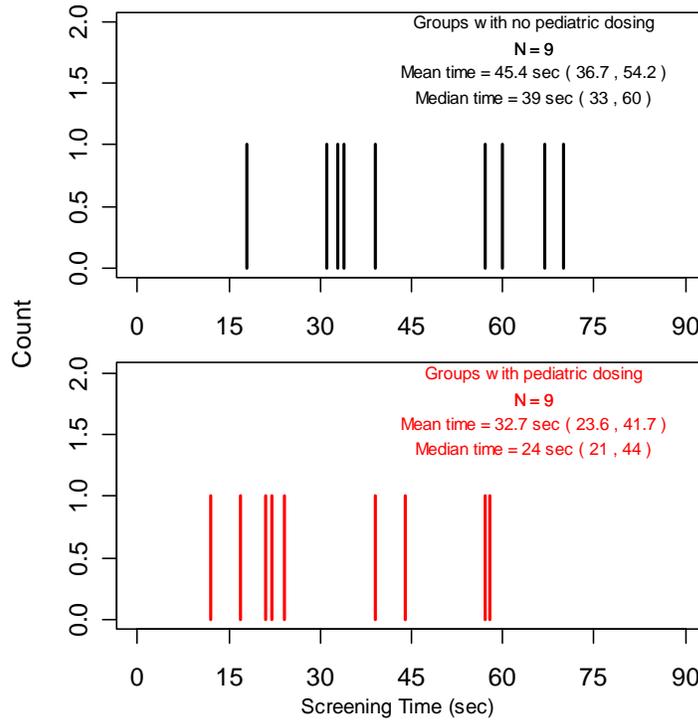


Screening Time for Group Size 2-3 by Pediatric dosing

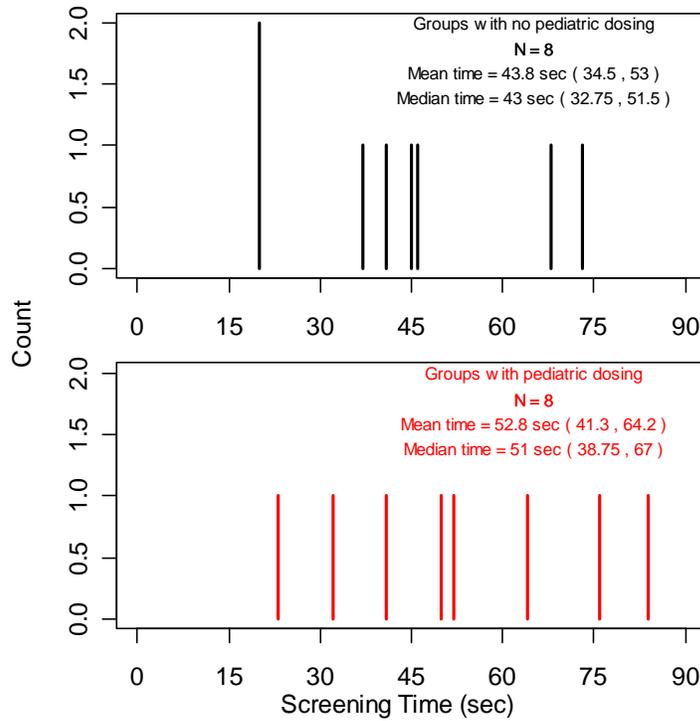


C. Screening Time Information

Screening Time for Group Size 4-5 by Pediatric dosing



Screening Time for Group Size 6+ by Pediatric dosing



C. Screening Time Information

Screening time	Total	Screener 1	Screener 2	Screener 3
Mean	39.3 sec	30.8 sec	46.8 sec	40.5 sec
(95% CI)	(35.0, 43.6)	(23.3, 38.4)	(41.1, 52.4)	(35.7, 45.3)
Median	39	20 sec	46 sec	39 sec
(25 th , 75 th %tile)	(20.8, 53.3)	(16, 40)	(33, 58)	(35.8, 43.8)
Min, Max	9, 84	9, 76	15, 84	32, 52
Median group size	4	4	5	4.5
Total # of doses dispensed for those with screening time recorded	211	86	102	23
Avg time / dose	8.6 sec / dose (7.3, 9.8)	7 sec / dose (5, 9)	10 sec / dose (8.6, 11.4)	8.5 sec / dose (2.7, 14.3)
Total	44	19	21	4

* 2 observations were missing dispenser assignments

Mean screening time, by screener

