Mass Prophylaxis: A Role for Occupational Health to Prepare for and Respond to Bioterrorism and Influenza

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Learning Objectives

• Understand approaches for managing the provision of mass prophylaxis and recognize principles for managing a point of dispensing

• Comprehend the role of occupational health in “closed” dispensing sites and tasks required for successful operation of a dispensing site

• Review a health care system’s experience implementing a new operational model
Uh-oh

Mass prophylaxis:
Distribution of anti-infective therapies to population potentially exposed but not symptomatic

- Anthrax
- Plague
- Tularemia
- Smallpox
- Influenza
- Meningitis
Tactical Schools of Thought

• **Pull** (people to the drugs)
  – **Point of dispensing**: Fixed, identified location in which mass prophylaxis provided during health emergency
    • Open: All-comers
    • Closed: Hospital personnel only

• **Push** (drugs to people)
  – USPS delivery
  – Pre-positioned antibiotics

Khan & Richter, 2012)
Point of Dispensing (POD)

Logic:
- Steer traffic away from hospital system
- Separate symptomatic from asymptomatic
- Maximize resources in specific locations

Significant public health planning in place:
- 93% written plan for POD
- 87% layout developed
- 84% full-scale exercise

(Khan & Richter, 2012)
(Rebmann, Loux, Swick, Dolgin, et al., 2015)
Health Benefits

• Math models to assess mortality/morbidity impact:
  – Inhalational anthrax: Drug-dispensing capacity key to mortality
  – Anthrax: Hospitalizations $\uparrow$ 2.4% to 2.9% per day beyond 48 hours

(Bravata et al., 2008)
(Hupert et al., 2009)
Effective, But…

• Staffing limitations
  – 43% report sufficient staff for PODs

• Limited planning for closed PODs
  – 42% no training
  – 40% no exercises

(Fletcher, Puerini, Caum, & Alles, 2014)
(Rebmann, Loux, Swick, Reddick, et al., 2014)
Here’s Where You Come In

• Bioterrorism ≠ Plane crash/dirty bomb/traditional surge
  – Biological events biggest barrier to work (48%-65% willing)
  – Radioactive bomb: 72% ED personnel say will work
  – Biological agent: 54% ED personnel say will work
  – Influences during bioterrorism:
    • Family health biggest concern (tops personal health & duty)
    • Duty less significant factor for bioterrorism vs. plane crash or radioactive bomb

• Community relies on healthy clinicians
Managing a Closed POD

- Receiving products
- Setting up space
- Screening recipients
- Dispensing prophylaxis
- Information gathering and sharing
Receiving Product

Ordering Product

• Strategic National Stockpile 12-hour “push packs” for large-scale events
  – 33 containers of oral microbials
  – 1 container medical/surgical supplies
  – 23 containers respiratory supplies
  – 4 containers pediatric supplies
  – 69 containers IV supplies and medications

Managing Product

• Pickup vs. delivery
• Security
• Storage
Setting Up Space

- Bigger is better (usually)
- Choke point to redirect symptomatic patients
- Traffic flow
  - Foot and vehicle
- Technology availability
- Drug storage
  - Temperature/security
- Staff comfort
  - Bathrooms and break rooms
Screening Recipients

• Speed vs. Accuracy
  – Use clinicians to take history? (medical model)
  – Use algorithm to catch red flags? (non-medical model)
Dispensing Prophylaxis

• Communication
  – What to do and where to go
  – What is going on

• Staffing
  – How many people available
  – Who qualified for specific roles

• Special needs
  – Language barriers
  – Auditory/visual impairments
  – Mobility challenges

• Legal issues
  – Emergency Use Authorization (Federal)
  – Investigational New Drug (Federal)
  – State-specific dispensing laws
Information Collection and Sharing

• Information coming in:
  – Who received what drug
  – How many more coming
  – How much medication left

• Information going out:
  – Disease/organism at issue
  – Drug received
  – Crushing pills for pediatrics/people who cannot swallow
  – Consent forms (if required)
A New Approach

- Rapid screening
- Data collection
- Low cost
- Employee/Patient ease-of-use
- POD staff ease-of-use
Dispense Assist 101

• Developed by Johnson County (Kansas) Department of Health and Environment

• Bay Area Screening Algorithm (non-medical model)

• Automated data collection

• http://dispenseassist.net/
BRING THIS VOUCHER WITH YOU

Dispense Assist
Post Exposure Prophylaxis Voucher

Medication: Either Ciprofloxacin or Doxycycline

Demographic Information
First Name: Jane
Last Name: Doe
Telephone: (314) 555-5555
DOB: 01/01/1980
Address: 123 Main Street
City, St Zip: St. Louis, MO 63144
Age: 36
Weight: 135
Sex: Female

Health History Information
1. Is this person allergic to Doxycycline, Tetracycline or any other “cycline” drug? No
2. Is this person allergic to Ciprofloxacin or any other “Fluoro” drug? No
3. Does this person have seizure disorder or epilepsy? No
4. Is this person taking Tizanidine (Zanaflex)? No
5. Does this person have difficulty swallowing pills? No
6. Does this person have renal (kidney) disease? No
7. Does this person have an allergy to amoxicillin? No
8. Is this person pregnant? No

I, the undersigned, certify that all of the above information is correct to the best of my knowledge. I hereby authorize the recipient of this document to share this information with public health entities at the local, state and federal level for purposes of ensuring medication efficacy and safety. I have been offered a copy of Notice of Information Practices.

Client Signature: ____________________________ Date Signed: ______________

Point of Dispensing Use Only:
Medication Provided: □ Doxycycline □ Ciprofloxacin

Do NOT dispense medication!

Thank you for submitting your medication form. Unfortunately, your answers indicate that you are unable to receive any of the medications that are currently available. Please contact your health care provider or your local health department for additional information.

Demographic Information
First Name: Jane
Last Name: Doe
Telephone: (314) 555-5555
DOB: 01/01/1980
Address: 123 Main Street
Age: 36
Weight: 135
City, St Zip: St. Louis, MO 63144
Sex: Female

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Client Signature: ____________________________ Date Signed: ______________

Point of Dispensing Use Only:

Fact sheet: FDA EUA Either Ciprofloxacin or Doxycycline Drug Information Sheet

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## Dispense Assist Pill Data Collection

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Implementing the Plan

Fall 2016 Pilot (3 hospitals flu vaccination)

Results:
1. Hospitals: 113 beds; 258 beds; 42 beds
2. Participants: ~33 volunteers
3. Throughout: ~11 per hour
4. Timing: ~5 minutes (register to exit)
5. Set-up: 90 minutes
6. Most registered at POD site

Lessons Learned:
1. Internet connectivity challenges
2. Opportunity to borrow scanners, computers within hospital
3. Pre-completion of screening forms key
4. Printing challenges
5. Scanning off screens facilitates faster processing
6. More robust testing needed
Implementing the Plan

Spring 2017 Exercise (anthrax antibiotics)

1. Simulated pills to 482 employees/dependents at 6 hospitals
   - Max = 183; Min = 22
   - Throughput: ~65 per hour

2. Waiting time
   - ~2 minutes if pre-completed screening form
   - ~10 minutes if screened at POD site

3. PODs operated ~90 minutes (average staffing was 11 people)

4. Medication ordering: >3 hours to submit final request

5. Downtime procedures required at 1 hospital

Lessons Learned:

1. Ordering process simplifications
2. Communication plan refinement
3. Paperless scanning option
4. POD layout improvements
5. Revisions to downtime screening
Wrapping Things Up

• Think ahead
  – Partnerships and planning

• Remember the goal
  – Not business as usual

• Innovation
  – No perfect solutions, multiple options to try
References

Questions?

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