



**Preventive Medicine for
Field Operations I**

**Personal Hygiene and
Safe Site Selection.**

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NDMS Response Team Training Program

Preventive Medicine Objectives

Upon conclusion of this session the student should be able to:



- Identify criteria for safe site selection and set-up.
- Identify criteria for food and water safety.
- Recognize the importance of waste management.
- Recognize the importance of the health and disease surveillance.



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Personal Hygiene

- Hand washing – fecal/oral habits (eating, smoking, hand to mouth etc.)
- Bathing & oral hygiene
- Use of clean clothing (underclothes & socks)
- Maintain dry change of clothes
- No unprotected sexual activity



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Food Safety

- **Food:**
 - **MREs for up to 72 hours**
 - **Approved sources (prepared/hot)**
 - Identified within 48 hours
 - Catering/contract service within 72 hours
 - **Personal sources (non perishable and vermin proof)**
 - **Proper management of waste packaging and food**



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Food Safety:

Temperature Control: Protect, Hot, Cold

- **Physically protect from foreign particles/vermin/insects**
- **Securely wrap meats to prevent liquids/juices from leaking**
- **Maintain cold food items below 41°F (5°C)**
- **Maintain hot foods above 140°F (60 °C)**
- **Consume cooked foods within 2 hours**



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Food Safety:

Using Dry Ice

- **25 lbs. keeps a 10 cu. ft. freezer (full) safe for 3-4 days**
- **50 - 100 lbs keeps an 18 cu. ft. freezer (full) safe for 2 days**
- **CO₂ robs oxygen - Don't go into a closed area containing dry ice!**
- **Do not handle ice with bare hands, wrap foods for longer life and to prevent freezer burn on foods.**
- **CO₂ can attract biting insects (mosquitoes, ticks)**



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Site Selection: recommendations

- 23,000 sq. ft. (approx.150ft x 150 ft)
- Minimal slope
- Out of flood plain - proper drainage
- High ground for communication support
- Vehicle access/helipad (min 250 yard proximity)
- Secure and with adequate sanitary conditions
- Preferably with a suitable water supply
- Free of vectors and toxic plants, if possible



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Site Set Up

- Tents and shelters:
 - Medical treatment
 - Administration and communication
 - Patient reception
 - Patient holding
 - Billeting area
 - Dining area
 - Laboratory and pharmacy



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Water Supply

Water Uses

- Drinking water
 - Existing potable sources - test chlorine residual
 - Bottled water
 - Treated water - emergency treatment, NDMS/Western Shelter treatment unit
 - 4 to 8 liters per day per person (drinking in moderate climates)



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Water Supply

Water Uses

- **Personal hygiene – showers and hand wash**
 - 6 to 7 liters per day per person (personal hygiene)
- **Food preparation and laundry**
 - 5 to 10 liters per day per person (food prep/cleanup & laundry)



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Water Supply

- **Source: Pressurized (municipal system), surface water, ground water**
- **Treatment: Arctic Clear portable treatment unit (filter and UV radiation)**
- **Storage: Provide residual chlorine**
- **Distribution**



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Water Supply

- **Disinfection of bulk drinking water supply**
 - 0.2 to 1.0 ppm (mg/l) residual after 30 minutes
- **Sanitizing storage containers/distribution lines**
 - 50 to 100 ppm (mg/l) (inspect and clean container first, allow 1-24 hours contact time)



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Water Supply

- Operate the AC 201-2: SOP according to manual
 - Use a raw water source and the pump system
 - Use a pressurized water source (municipal system or well) **Note: install inline pressure regulator**
- Sanitize a water storage container (e.g., use a clean 35 gallon trash can)
- Chlorinate water produced from the AC 201-2 stored in a sanitized container - 1ppm chlorine residual
- Purchase a chlorine tester and test for chlorine residual



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Latrines

- Latrines: Quantity, proximity & locations
 - Separate patient and response team facilities
 - 100 yards (90 meters) downwind (prevailing) from dining/medical treatment/billet area
 - 100 ft (30 meters) from water sources
 - Monitor and clean daily to ensure hygiene - access for pumping service
 - Provide hand wash capability



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Latrines

- Latrine types:
 - "Cat hole" (itinerate, single use)
 - Slit Trench (long term, difficult to construct - site considerations)
 - Portable camping toilet system
 - "Porta-Pottie" (best option, long term, requires contract services)
 - Others (Pruss, E. Giroult, 1999)



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Solid Waste Management

- Various size (32 or 90 gallons, 3 cubic yard)
- Fly tight lids
- Washable material
- Elevated 6 inches above ground
- Commercial trash removal service to sanitary landfill/incinerator



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Liquid Waste Management

- Grey water - Preferred method
 - Direct discharge to sanitary sewer
 - Storage bladders with pumping contract
- Grey water - Alternate Methods
 - May require engineering support and permit from local jurisdiction)
 - Seepage pits
 - Surface discharge
 - Sediment control
 - Through soaker hose or 1000 feet through natural vegetated area



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Medical Waste Management

- Identify and segregate regular solid waste from medical waste
- Minimize, package, and label medical waste bags
- Place sharps in appropriate containers
- Double bag and seal in rigid leak proof container
- Follow blood borne pathogen standard
- Decant liquid medical waste into full strength bleach solution
- Designate dry, secured areas for interim storage
- Removal- commercial contractor &/or MOU with medical facility. Avoid transportation when possible.





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DMAT Personnel Accident and Disease Surveillance

- Heat/cold injury
- Microbial infection (fungal, viral, bacterial)
- Rash
- Cough
- Fever
- GI disturbance (diarrhea, vomiting)
- Injury
- Insect bites (tick, mosquito, spider, lice)
- Mental health

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PM Maintenance Plan

Safety Officer is responsible for

- Monitoring and assessment of hazardous and unsafe conditions
- Has authority to intervene and correct
- Refer to course DMAT Core 124:Team Safety

Plan includes:

- Duty Rosters with daily checklists
- Tent/structure stability – check daily
- Latrine serviceability – check twice daily
 - cleanliness
 - adequate unit number
 - waste disposition






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PM Maintenance Plan

Water supply – check twice daily

- Serviceability
 - filtration unit function
 - potable water residual chlorine
 - minimum cache volume
- Trash and medical waste disposition – check daily

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PM Maintenance Plan

- Food – check continuously**
- On site/appropriate storage
 - Consumption discipline-72 hour rule (off MREs)

- Power Support Adequacy**
- 2 hour check
- SOPs and site safety**



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Summary

Deployment Preventive Medicine

- Establish safe sites, evaluate and manage risks
- Maintain food and water safety
- Maintain balanced work/rest cycles
- Support and maintain personal hygiene
- Manage waste appropriately (regular and medical)
- Accident and Disease Surveillance



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Conclusion

Protect and preserve individual and unit strength.

Create and maintain safe environmental and ecological conditions for field operations.



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