



***TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.***

**Reducing the Spread of Communicable Diseases Among Trainees**

**17 March 2010**

- Introduction
- Team
- Issue identification
  - MANPRINT process
  - Literature Review
  - Survey
  - Site Inspections and SME interviews
- Phase I products
- Phase II plans

- Problem: Previous deaths from Meningitis. Threat of H1N1 and other communicable diseases in the large training community at Ft. Leonard Wood.
- History: MANSCEN Chief of Staff asked ARL for assistance and an “outside” point of view.
- Goal: Use MANPRINT-based evaluation process to identify issues. Develop and implement a suite of hygiene improvements (training/education, procedures, engineering controls) for the Soldier’s working and living environments to reduce the spread of communicable diseases, especially Influenza/H1N1.
- Implementation: Two phases
  - First, rapid and low-cost training, education and procedure improvements, minor physical changes
  - Followed by significant material and/or organizational improvements and an effectiveness study
- Outcome: Protecting lives in Garrison. More efficient training; reduced treatment and lost-time costs; improved quality of life. Exportable to other Army installations.
- Constraints: Cost/benefit; Negligible impact on training schedule

- Army Research Laboratory – Human Research and Engineering Directorate
  - Rob Clark, Andrew Bodenhamer, Alan Davison
- GLW Army Community Hospital Preventive Medicine Division
- Fort Leonard Wood Department of Public Works
- Maneuver Support Center of Excellence - Safety Office
- TRADOC Surgeon's Office
- US Army Public Health Command

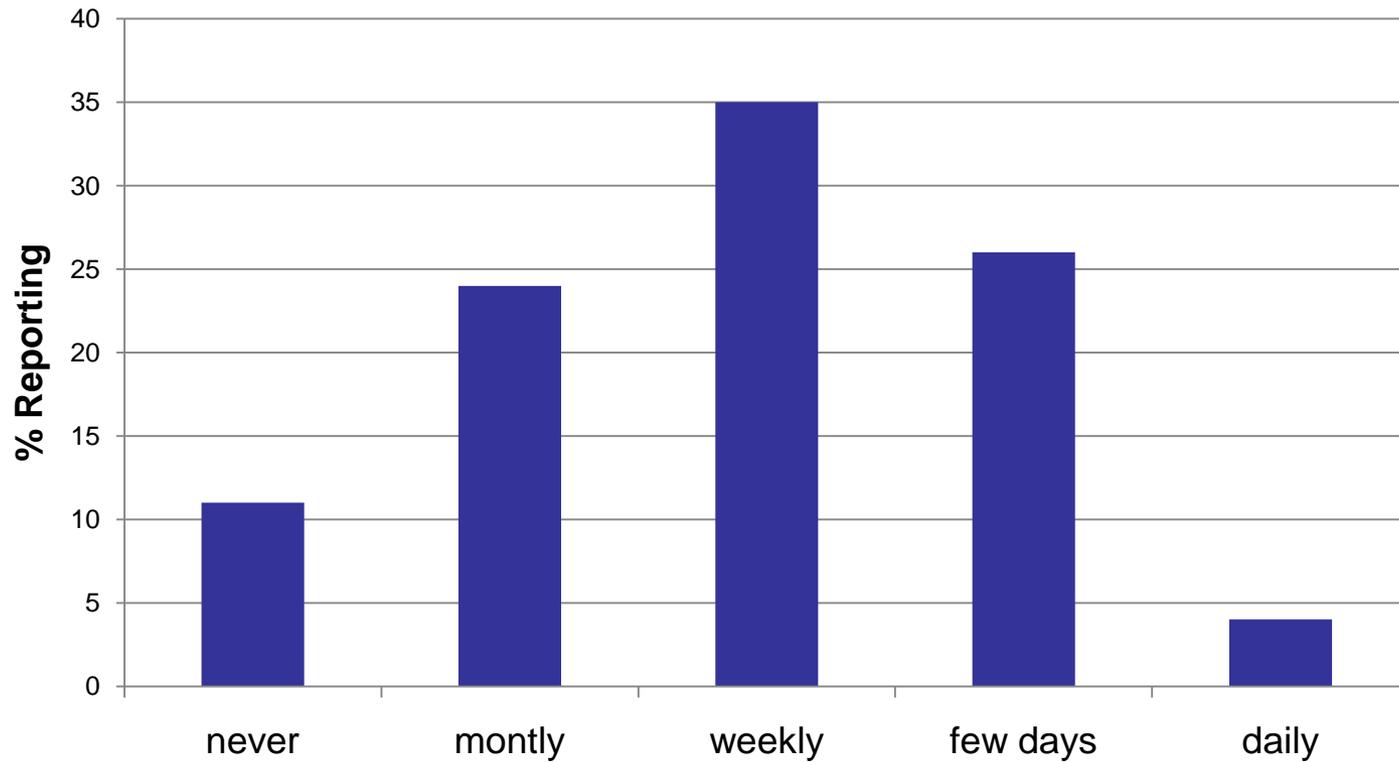


- Frequent and proper hand-washing/sanitizer-use reduces illness rates by 15-45% (Univ. of Colorado Dorm study; Naval Station Great Lakes Trainee study)
- Beyond availability, motivation is key – Risk Factors for non-compliance include: male gender, high workload, lack of role model compliance, infrequent reminders. (University of Virginia study, University of Geneva Hospital study)
- Avoid direct contact with faucet and possible contaminated bathroom surfaces after washing hands (CDC, APIC)
- Closed ventilation systems and “tighter” buildings may sacrifice health for energy efficiency; increased ventilation can decrease illness rates by up to 30% (Army Training Center study)
- UV air sanitation decreased respiratory illness clinic visits by 20% (Naval Station Great Lakes study)
- Flu Virus transmission is primarily close-contact airborne (within 1-2 meters). Transmission through contaminated surfaces possible for the first few hours following contamination (CDC)

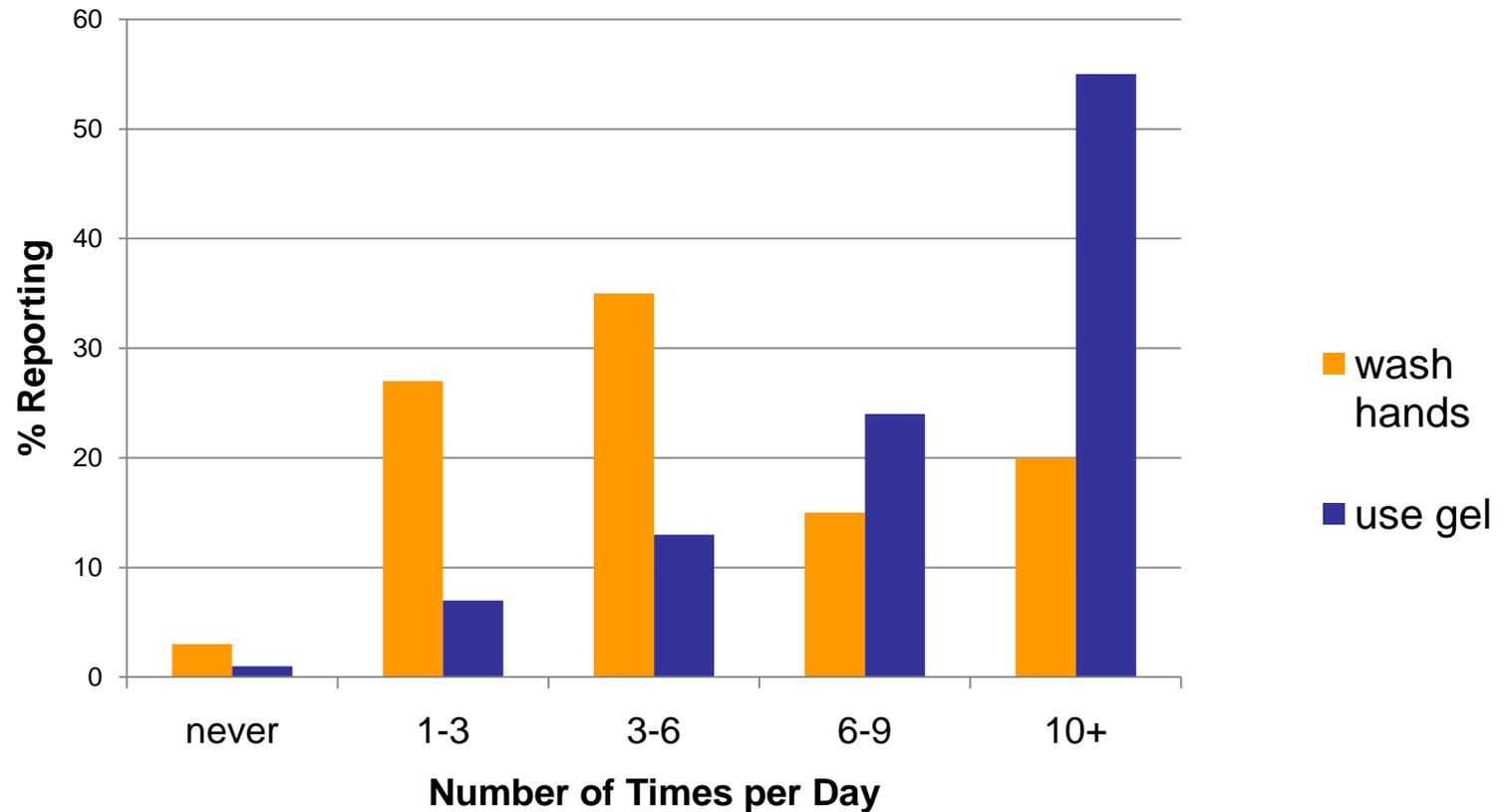
- **Manpower** – Are there enough trainees/cadre/staff to perform all necessary duties?
- **Personnel** – What are the trainees' and cadre's preconceived ideas about preventing the spread of diseases?
- **Training** – What do trainees and cadre need to learn to maintain a healthy living and working environment?
- **HFE** – Are current disease prevention methods being performed efficiently? Are there sufficient supplies and equipment?
- **Safety** – What current disinfecting tasks pose unmitigated risks?
- **Health Hazards** – Are disease transmission factors being adequately mitigated?
- **Habitability** – Are the facilities adequate to support a healthy living and working environment?

- 37 questions
- Given to 188 soldiers, one week prior to graduation.
- Questions about hygiene practices, living and working conditions, and Soldier's suggestions for improvements.

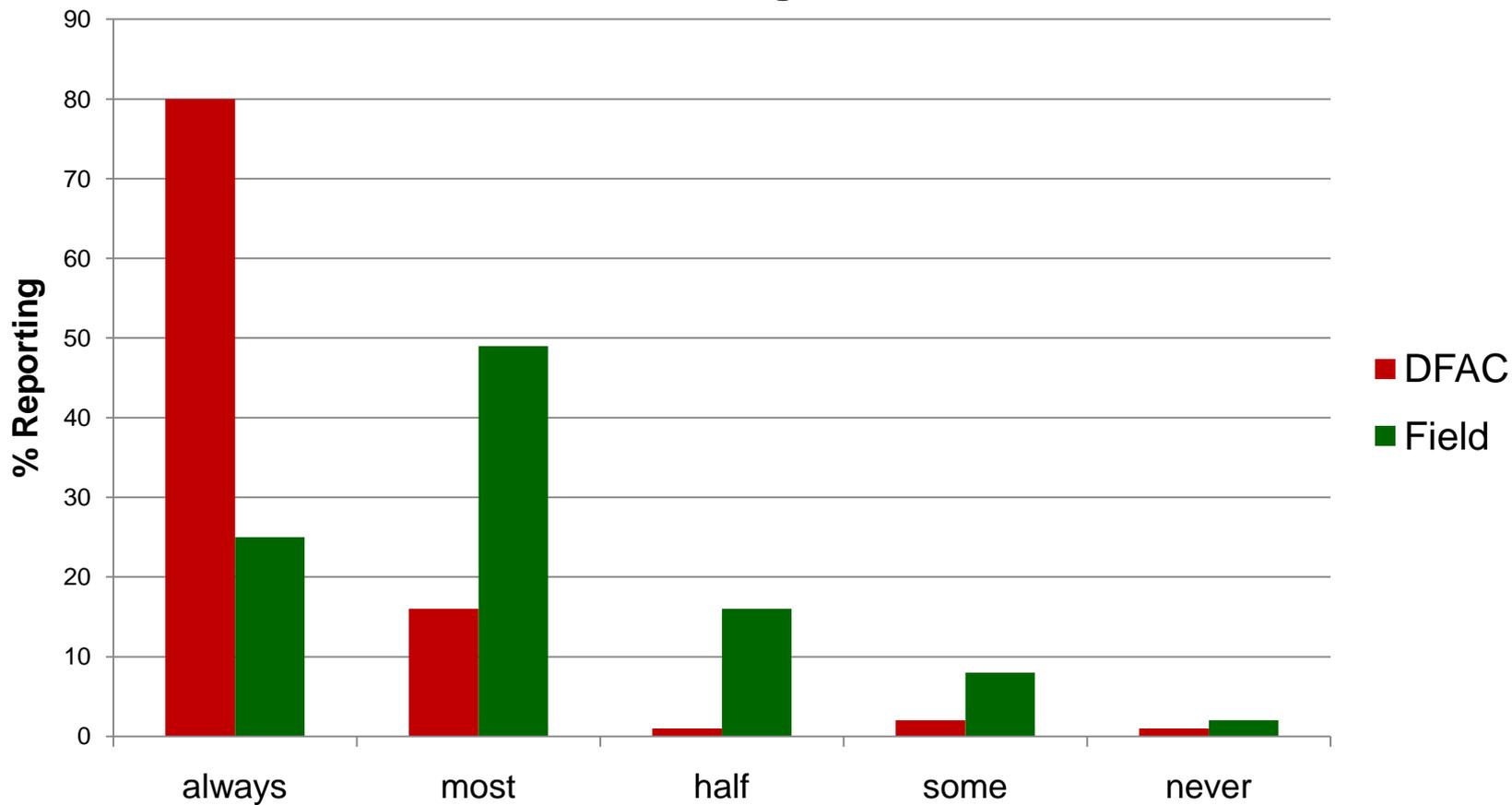
### Frequency of Cleaning Canteen/CamelBak Mouthpiece



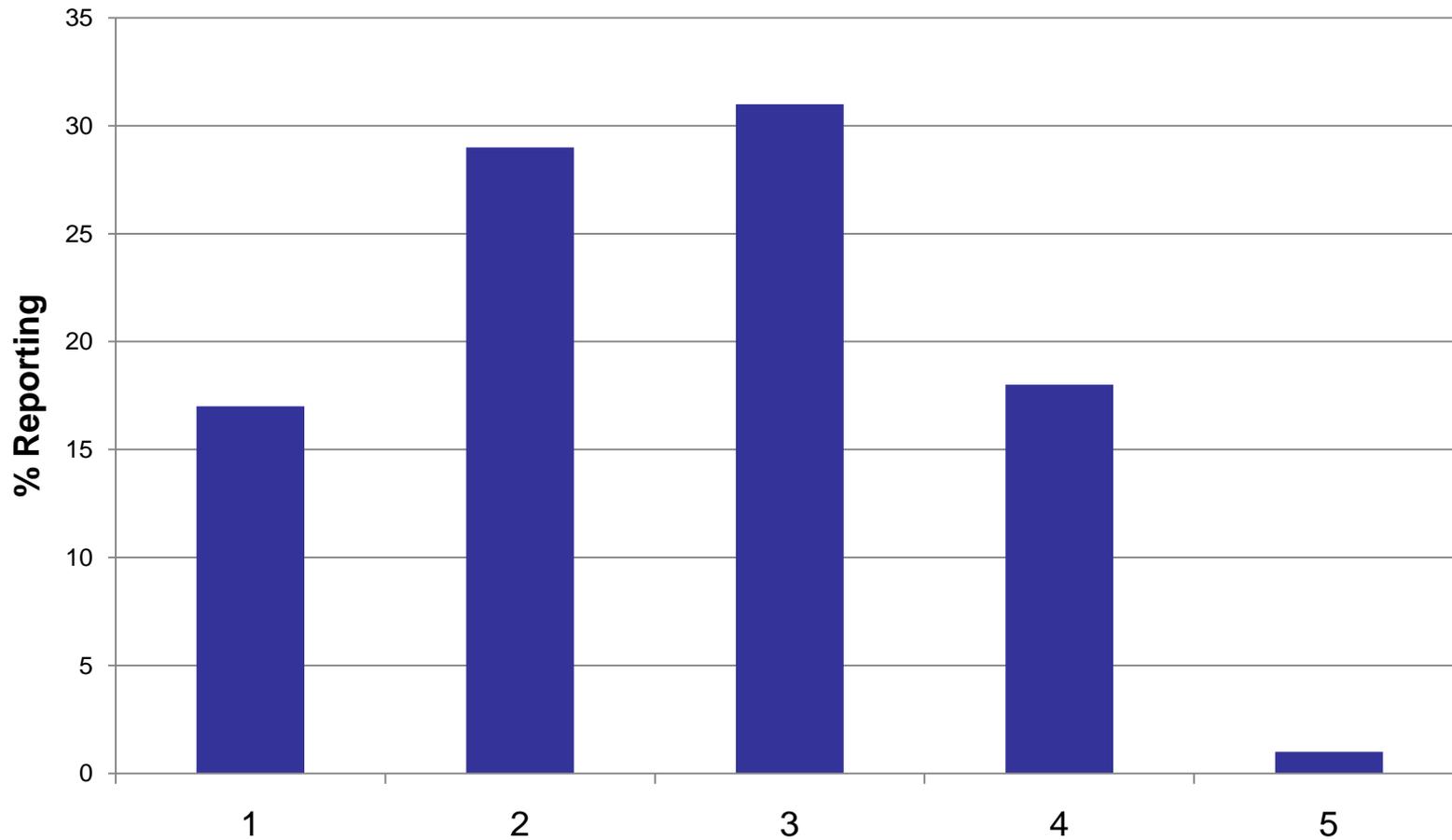
## Hand Hygiene practices



### How often do you clean your hands (wash or use gel) before eating?



### Soldiers using a sink at the same time in the morning



- ~50 barracks, 5 major types
- Toured each type of barracks while empty.
  - Bays, latrines, cleaning closets, classrooms, laundry, etc..
- Interviewed Drill Sergeants and Cadre
- Monitored Soldiers during morning routine in a Renovated Barracks.



Shower/Changing Area



Cleaning Closet



Stair Handrail



## Preventing Infectious Diseases among Trainees – Guidelines Pamphlet

By:

Army Research Laboratory  
 Preventive Medicine  
 Department of Public Works  
 MSCoE Safety Office



### S.O.A.P.

- **S**oap and Water first, sanitizing hand gel/towelette when soap and water not available
- **O**bserve and remind your buddy to wash hands
- **A**rea-keep your sleep and training area clean
  - wipe down shared surfaces with sanitizing towelettes
  - clean and sanitize your barracks using approved procedures
- **P**ractice good hygiene
  - don't share personal items
  - keep your canteen/CamelBak® sanitized
  - cough and sneeze into a tissue or your elbow
  - avoid touching eyes, nose and mouth



### Don't miss training! Wash your hands:

Before you-

- Touch or serve food
- Eat or drink
- Treat a cut, scrape, burn or blister

After You-

- Go to the bathroom
- Cough, sneeze, or blow your nose
- Take care of someone who is sick
- Handle garbage

Wash your hands  
to keep from getting sick and to prevent  
the spread of germs



Wet your hands with clean running water and apply soap.



Rub hands together to make a lather and scrub all surfaces.



Continue rubbing hands for 20 seconds. Sing a small song, such as "Happy Birthday" (twice through to a friend).



Rinse hands well under running water.



Dry your hands using a paper towel or air dryer; if possible, use your paper towel to turn off the faucet.



# Phase 1 Findings

## "Best Practices"



1. Setup CamelBak® and canteen sanitizing station [HFE, HH]
2. Provide hand sanitizing towelettes at DFACs and field sites [HH]
3. Provide disinfecting towelettes at classroom entrances [HH]
4. Provide barracks cleaning products (e.g. sanitizing spray, etc.) [SSE, T]
5. Provide barracks cleaning equipment (e.g. mops, gloves, etc.) [T, HH]
6. Implement revised barracks cleaning procedures [T, SSE]
7. Implement revised barracks cleaning closet organization [HFE]
8. Enforce head-to-toe sleeping and per-person space requirement [T, HH]
9. Provide and place personal hygiene posters [T]
10. Paint barracks handrails white [HH, HFE]
11. Install benches, hangers, shelves in latrines and changing areas [HH, HFE]
12. Implement HVAC maintenance procedures [T, HH]
13. Receive Preventive Medicine brief and field sanitation training [M, P, T]

- Permanent CamelBak/Canteen sanitizing stations
- Touch-less bathroom fixtures
  - Flush valves, sink faucets, soap and paper towel dispensers, light switches, bathroom doors.
- Ventilation upgrades: UV lighting and HEPA Filters
- Training videos at trainee reception facility.
- Epidemiology effectiveness study

