Injury Prevention: Just the Facts

Installation Injury Summaries for ACTIVE DUTY SOLDIERS

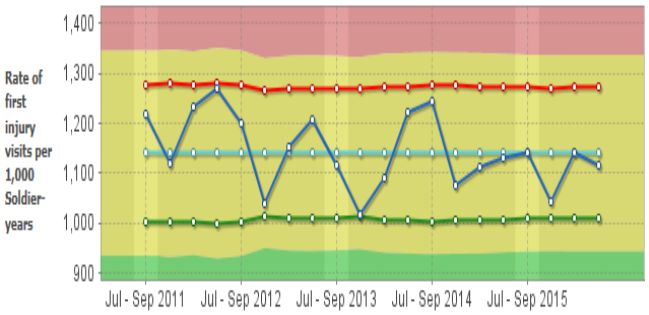
FACT SHEET 12-013-0217

What are Installation Active Duty Injury Summaries?

The APHC Installation Active Duty Injury Summary is an analysis of military medical records for Active Duty Army personnel working on Army or Joint Base installations. Soldiers' new-onset injury rates and injury causes are described for each installation, Major Command, and Army-wide. Each installation's annual Injury Summary includes:

- Number of medical encounters (visits), Soldiers affected, and hospital bed days (current year)
- Injury and overuse injury rates (6 year period)
- Injury rates by age and year (6 year period)
- Injury rates by gender and age (current year)
- Top 5 outpatient injury causes (current year)
- Quarterly injury rates (medical encounters, 4 years)
- Red/amber/green injury rate thresholds[1-3] (*see Figure*)

Figure. Example-Installation Active Duty injury rates with red/amber/green thresholds[1-3]



Summaries are updated quarterly and available online on three CAC-enabled dashboards:

- *Public Health 360 (PH360)*[1]
- *Public Health Management System (PHMS)*[2]
- *Army Strategic Management System (SMS)*[3]

Can't access your installation injury summary?
Contact the APHC Injury Prevention Division (IPD)

Why are Active Duty injury summaries created and how can they be used by installations?

In 2015, nearly 300,000 Soldiers were affected by injuries that resulted in over 1,100,000 medical visits (more than any other medical condition). The use of medical record diagnoses (International Classification of Disease (ICD)), TRICARE claims, and other Active Duty injury data (e.g., safety reports) provides installation personnel with a comprehensive awareness of their injury problem.

Installation-specific summaries help leadership prioritize prevention efforts to focus scarce resources on the leading injury causes, activities, and/or hazards. To complete the overall installation "injury picture", annual installation summaries of *civilian* injury data are also prepared.[4]

What are the data sources?

Medical visits for Active Duty Soldiers are obtained from the Defense Medical Surveillance System (DMSS), maintained by the Defense Health Agency.[5] Injury rates are determined through queries of inpatient and outpatient records (direct medical treatment facilities (MTF) and purchased care (TRICARE) for primary diagnoses of injuries.[6] The top five injury causes are identified from ICD external cause codes included in medical records.[6]

What are the leading Active Duty injury types?

The vast majority of Army injuries are musculoskeletal injuries treated through *outpatient* services, which includes physical therapy. Though the installation Active Duty summaries do not describe specific types of body regions, evidence has repeatedly shown that the *lower extremities* (e.g., foot, ankle, knee, lower leg) and *back* are the most commonly injured.[7-8] The most common injuries are:

- Sprains (injury to joint, usually acute)
- Strains (injury to muscle or tendon, from an acute event or from repetitive overuse)
- Inflammation/pain[5] (from acute event or overuse)

Stress fractures are less frequently reported, but are costly outpatient injuries that are a concern especially during initial entry training.[6,8]

What are the leading causes of Active Duty injuries?

Cause codes in a medical record provide some insight to the conditions or activity causing an injury. Unfortunately, these codes are not often documented.[6] In CY15, less than 15% of injuries had a recorded cause code. Even when documented, a cause code is often only a generic description. The leading cause of *hospitalized* injuries has routinely been motor-vehicle accidents, followed by falls. But because the vast majority of injuries are treated on an *outpatient* basis, the installation summaries focus on *outpatient causes*. Recent data (CY15)[1,2] found the leading causes of outpatient visits (for cause-coded injuries) to be:

- *Overexertion,* 22%
- *Falls,* 16%
- *Being struck by or against something*, 15%
- *Natural and environmental hazards*, 9%
- *Motor vehicle traffic accidents*, 8%

Given the limitations, installations should investigate their leading injury causes to identify high-risk activities or conditions. For example, overexertion injuries may occur as acute or overuse injuries, and during different activities (e.g., physical training, sports, or on the job).[9]

Who are at the greatest risk for Active Duty injuries?

Females typically have higher injury rates than men.[1,2] Rates tend to be higher in Soldiers >45 years of age. Scientific evidence also indicates that Soldiers who have poor physical fitness, start or increase physical training with inadequate progression, have very high or very low body mass index (BMI), very high or very low flexibility, or use tobacco are at greater risk of injury.[10] Risks among different military occupations are still being evaluated.[11]

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How can common Active Duty injuries be prevented?

The general recommendations below can help reduce occurrence of injuries. The Information Sources offer further guidance.

Primary Injury Causes	Common Activities & Hazards[6]	Injury Prevention Recommendations[8,12-16]
OVEREXERTION	**Single acute events** • Lifting, lowering, pushing, pulling items at work, home, in hospital • Physical training/sports -lifting twisting, pivoting too quickly or too much **Repetitive/overuse** • Running, road marching • Work-related activity (lifting, pushing and pulling)	• **Modify workplace procedures**:[12-14] – Eliminate unnecessary movement of material – Assign heavy weight lift jobs to two or more persons – Follow military guidance on weight limits – Use mechanical devices or equipment to minimize manual lifting or lowering (e.g., hand trucks, dollies, conveyors, lifts) • **Use proper individual procedures:**[12-14] – Reduce weights (smaller/lighter containers) – Perform lifts in a smooth and even motion – Keep load close to the body; use the legs to lift – Replace a pull with a push whenever possible • **Gradually increase physical intensity** (frequency, duration, weights) • **Avoid repeat days of intensive activity of same body region** (run/march) • **Reduce excessive training of a single type or body region** (running) [8]
FALLS	• Ice and snow on steps and walkways • Getting in or out of motor vehicles • Improper parachute landings • Playing sports (particularly basketball) • Walking, marching, or climbing on uneven surfaces or while carrying objects	• **Establish system for personnel to report hazards.** Make sure employees know how to report unsafe work site conditions/problems.[15] • **Minimize outdoor hazards**. Keep walking surfaces clear and maintained: – Ensure timely snow/ice removal[15] – Refill and patch cracks and holes on walking surfaces[15] • **Lighting:** Install light fixtures in dimly-lit areas (e.g., steps)[15] • **Use "3-point contact"** for ladders, entering or exiting a vehicle (e.g., 2 feet and 1 hand)[15] • **Getting in/out of military vehicles**: Conduct installation-specific assessments to identify types of motor vehicle-related falls[6] • **Protective equipment**: Promote benefits of using protective equipment in sports (e.g., ankle braces during basketball)[6]
STRUCK BY OR AGAINST	• Hit head on crane at work • Hit by bat, ball, another player	• **Personal protective equipment (occupational and sports)**: Ensure personnel are wearing proper shoes, gloves, helmets/hard hats, mouthguards[14]
NATURAL/ ENVIRONMENTAL FACTORS	• Weather (hot or cold) • Inadequate water intake and/or vigorous exercise causing dehydration • Prior cold or heat-related injury • Animal, insect bites	• **Educate personnel** to be familiar with risk factors associated with heat and cold weather-related illnesses and means to reduce risks • **Clothing and skin protection**: use sleeves and gloves to protect against sun burn and/or environmental (e.g., insect) hazards; wear sunscreen, sunglasses; keep clean and dry in cold weather • **Monitor hydration** and use Work/Rest Water consumption guidance *See more in the APHC Heat and Cold Injury Factsheets, training slides, videos*[16]
MOTOR VEHICLE AND MOTORCYCLE CRASHES	• Excess speed, fatigue, and/or alcohol • Not wearing appropriate protective equipment • Unsafe road conditions • Inexperienced motorcyclist	• Do not drink and drive (designate a driver, call for pick up) • Wear a seat belt at all times • Avoid speeding (especially in rain, ice/snow) • Avoid drowsy driving (plan ahead, get rest, pull over to nap) • Avoid using cell phones/other devices • Take motorcycle training and safety courses • Wear DOT-compliant helmet *See more in the APHC Motor vehicle & Motorcycle Injury Factsheets*[16]

Information Sources:

1. MEDCOM 360 Public Health (PH360) Dashboard. Retrieved from https://pasba.army.mil/MEDCOM360/Dashboard/Map/PH360
2. Public Health Management System (PHMS) Dashboard. Retrieved from https://aphdashboard.amedd.army.mil/Home.asp
3. Army Strategic Management System (SMS). Retrieved from https://www.sms.army.mil/
4. APHC (2017). Installation Injury Summaries: Army Civilians, Fact Sheet 12-012-0217.
5. DHA Epid. & Anal. Div. http://www.health.mil/Military-Health-Topics/Health-Readiness/Armed-Forces-Health-Surveillance-Branch/Epidemiology-and-Analysis
6. Army Injury Surveillance Reports: Explanation of Injuries and Causes. APHC, Updated 2016. http://phc.amedd.army.mil/PHC%20Resource%20Library/ExplanationofCommonInjuryCausesinSurveillance_08-30-2016.pdf
7. Active Duty Army Injury Surveillance Summary. APHC – IPD, 2016. https://phc.amedd.army.mil/whatsnew/Pages/PeriodicPublications.aspx
8. Department of the Army (2011). Technical Bulletin Medical 592: *Prevention and Control of Musculoskeletal Injuries Associated with Physical Training*.
9. Canham-Chervak M et al (2016). Importance of external cause coding for injury surveillance: assessment of overexertion injuries-Army 2014. MSMR 23(11),10-15.
10. Jones BH and Hauschild VD (2015). Physical training, fitness, and injuries: Lessons learned from military studies. JSCR 29(11), S57-64.
11. Anderson MK (2015). Occupation and other risk factors for injury among enlisted U.S. Army Soldiers. Public Health 129; 531-538.
12. APHC (2011). "How to safely carry heavy loads" &" How to safely perform pushing and pulling tasks" http://phc.amedd.army.mil/PHC%20Resource%20Library/
13. National Institute for Occupational Safety and Health (2007). Ergonomic guidelines, manual material handling. https://www.cdc.gov/niosh/docs/2007-131/
14. Department of Defense (2012). Department of Defense design criteria standard. Human engineering. MIL-STD-1472G.
15. APHC (2015). Etiology of Fall-Related Injuries: Review of Narrative Incident Reports, Jan- Dec 2011. Report No. S.0032427.
*Other APHC Products. Retrieved from http://phc.amedd.army.mil/topics/discond/ptsaip/Pages/ArmyInjuryPreventionFactsheetsandTrainingProducts.aspx