

**Intervention and Prevention of
Weather Related Injuries at
Wright Patterson Air Force Base, Ohio
January 1997 through January 2000**



Diane R. Erickson, RN, BS

Colonel Douglas C. Fuller, M.D., MPH

Introduction

- **Diane Erickson RN has served WPAFB, OH for seven years as an Occupational Nurse with emphasis on epidemiology**
 - **Work Related Injury/illness Trending, Analysis and Reporting, and as the Office-Ergonomics Program Manager**
- **Douglas Fuller MD has been the Occupational Medicine Flight Commander for 15 months**
 - **Oversite of 14,000 Civilian and Active Duty workers and their health/occupational exposures**

Introduction

- Wright-Patterson AFB is a scientific think-tank for the Air Force (intel., laser, toxicol. research)
- Track all mishap events for purpose of epidemiology (lost and limited duty time)
- Compare all new data to patterns found in the past - predict risk factors that lead to injury
- Optimize capabilities to complete AF mission through a safe and healthy workplace

Weather Related Injuries

Falls

- **leading cause of occupational injuries in U.S.**
- **cause of 15% of all disabling conditions** (Bureau of Labor Statistics, 1992)

Ice caused 60% of falls at WPAFB

- **2 weather systems caused injuries that resulted in 466 lost duty days and 1166 limited duty days**

Worker's Comp cost per fall = \$13,096 (National Council on Compensation Insurance, 1998)

Falls due to Ice Conditions

Significant Factors **

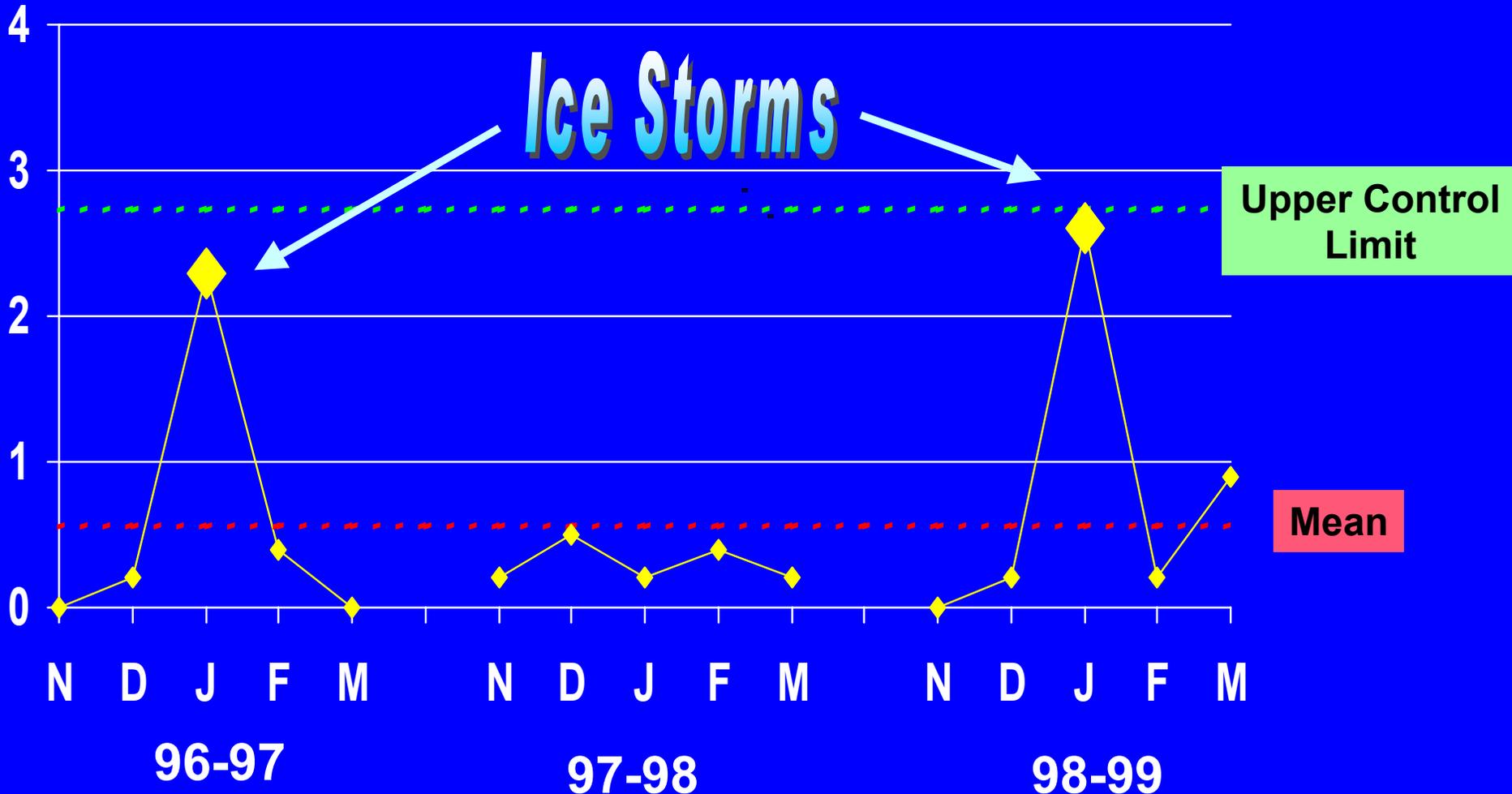
- presence of subfreezing temperatures the previous night
- depth of snow of the ground on the day of the fall
- precipitation the day before and 0500 hr temps between 20-35°F (occurring together the risks increase)

** research authored by Brian Knapp, MD. (1997) “Formulation of a Predictive Model for Ice-related Falls by Identifying Significant Weather-Related Risk Factors at a Midwestern Air Force Base”

Weather Related Injury Rate

Winter Seasons (Nov to Mar)

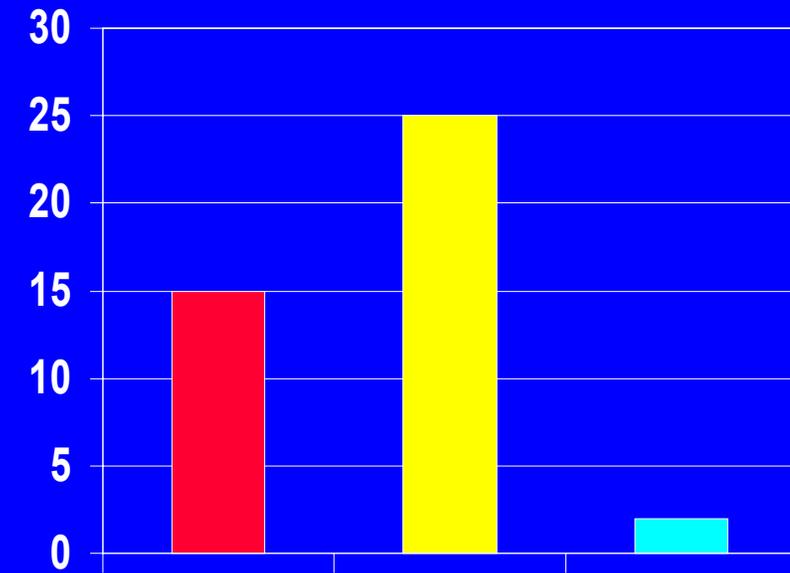
Rate/K Pop.



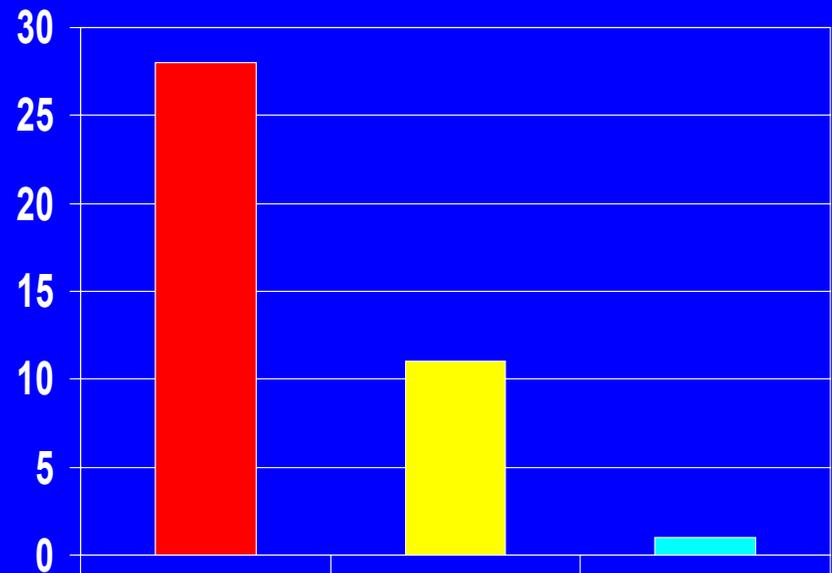
Weather Related Injuries

Place of Mishap

Jan 1997 (n = 42)



Jan 1999 (n = 41)



Sidewalks

Parking Lots

Steps

Sidewalks

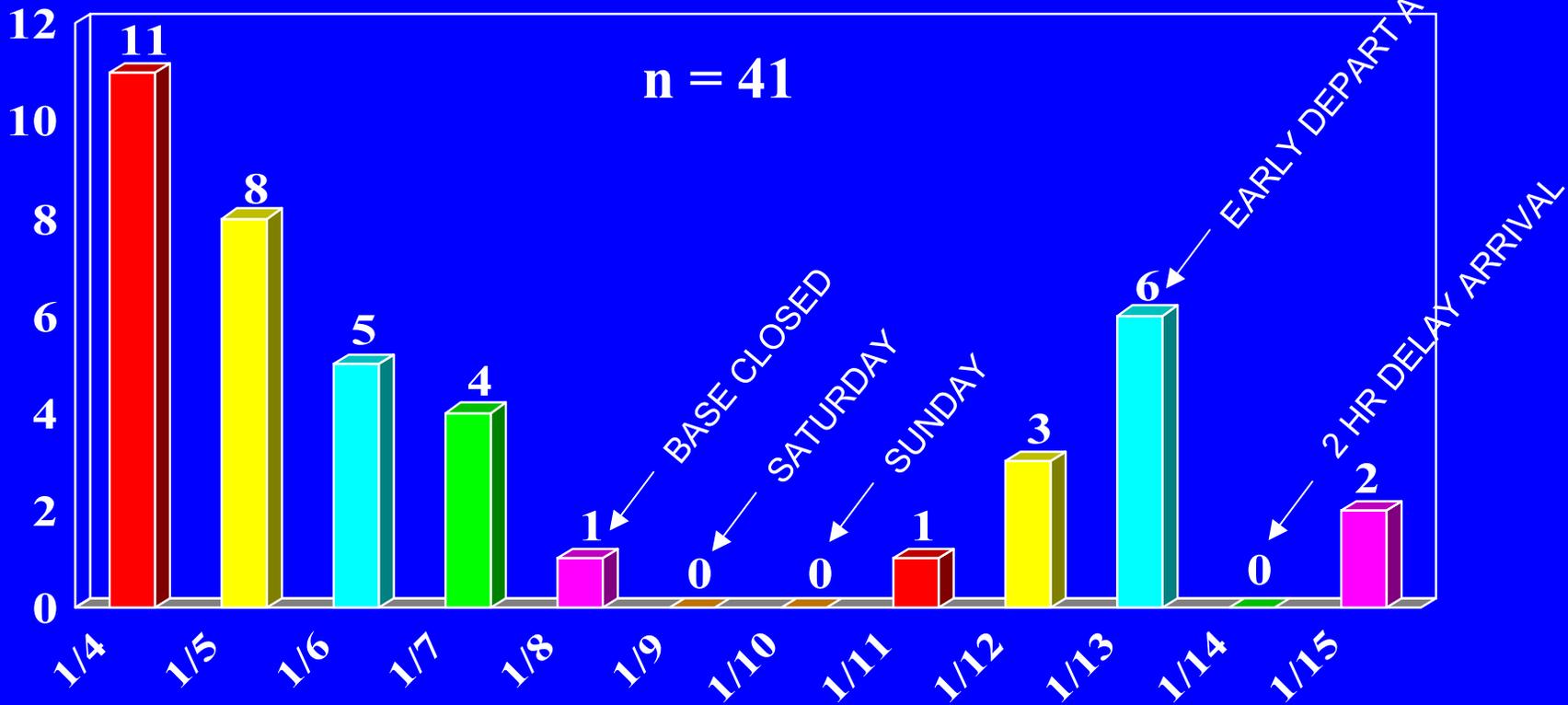
Parking Lots

Steps

Weather Related Injuries - Jan 4-15, 99

Events per Day of Week

Injuries



MONDAY

WINTER STORMS ON SUN, JAN 3 AND AGAIN WED, JAN 13 (1000 HR)

Recommendations For Winter Safety

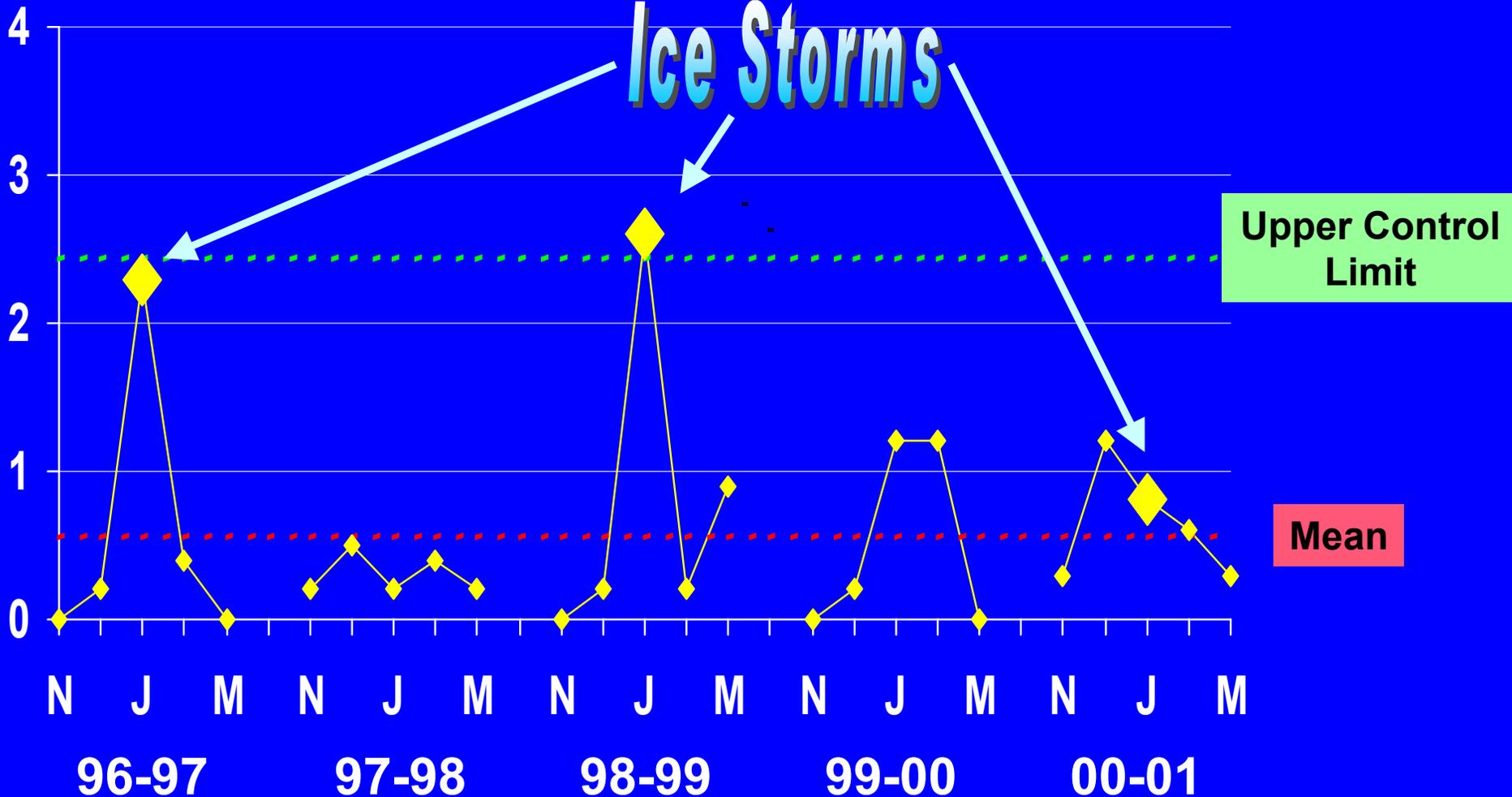
- Fewer injuries occur when arrival is after sunrise
- Fewer injuries occur when parking lots and sidewalks are cleared and salted
- Prudent use of modified arrival and departure times when precipitation accompanies 5 AM temps $< 35^{\circ}$

(Briefed Jan 18 --- 36 hrs later got 8" snow --- Base closed Jan 20)

Weather Related Injury Rate

Winter Seasons (Nov to Mar)

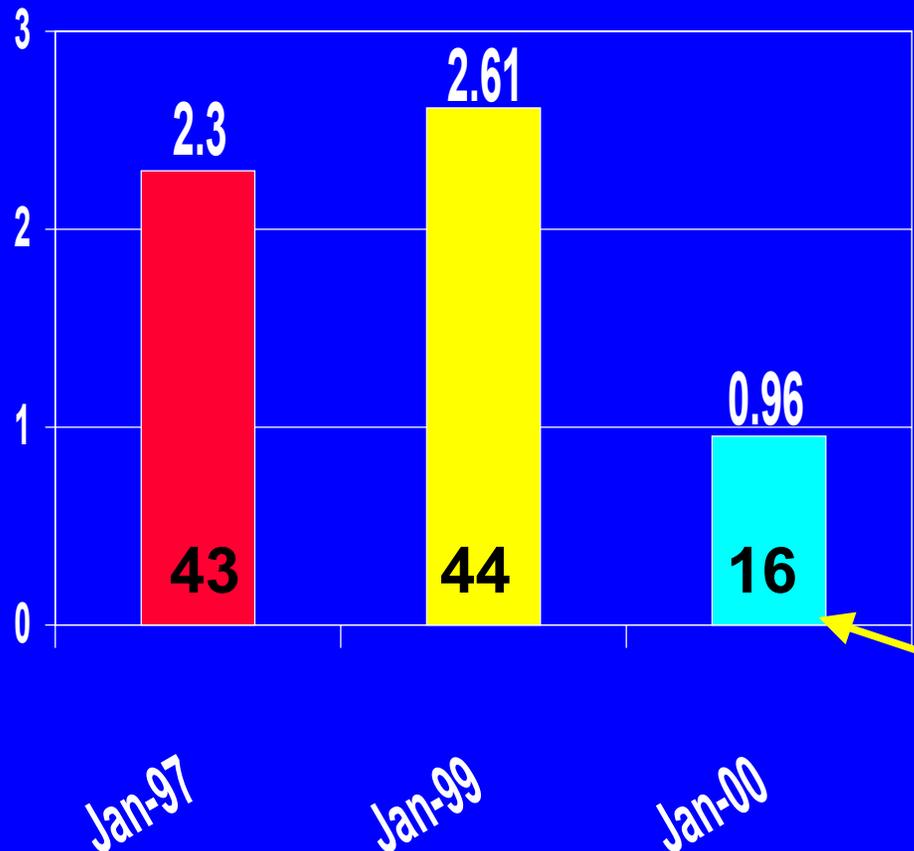
Rate/K Pop.



Weather Related Injuries

Year to Year Comparison

Rate / K Pop.



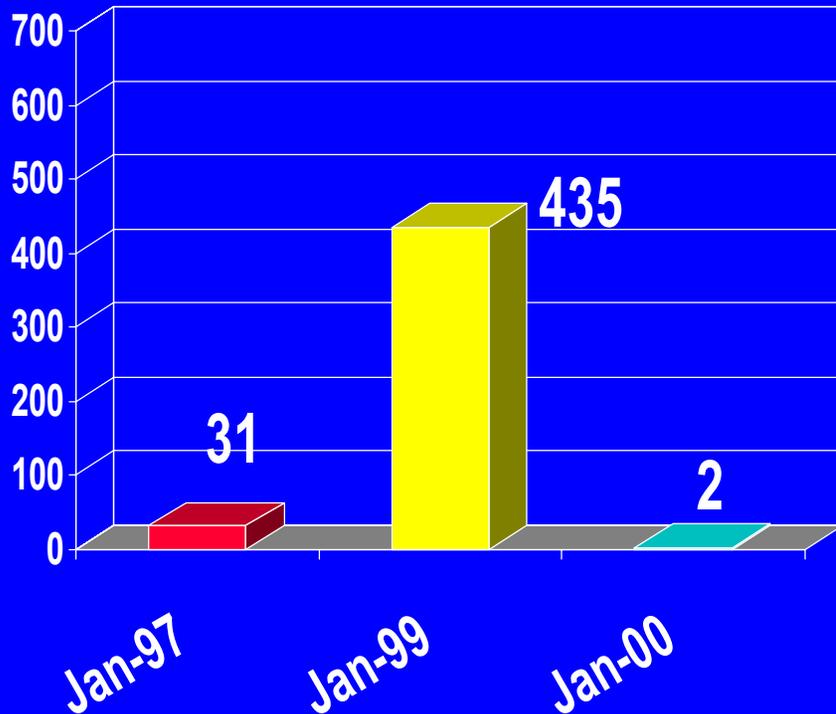
- Jan 18th - Briefed Base Occup. Safety and Health Council on past weather-related morbidity

- 8 inches of snow Jan 19 and Base Commander closed the base Jan 20

Events

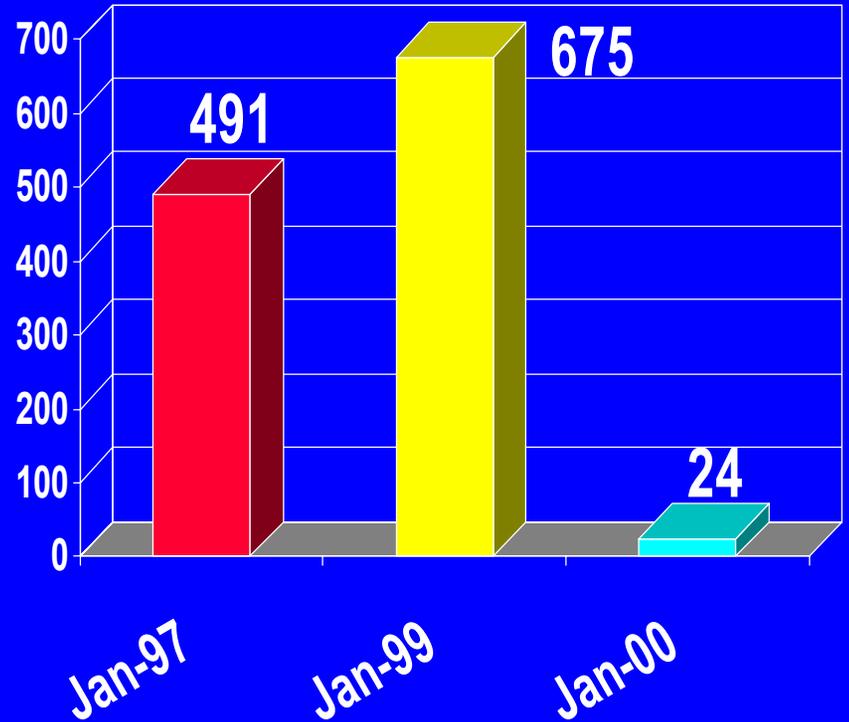
Weather Related Injuries

Days



Lost Days

Days



Limited Days

Discussion

- **Focus plan around ice formed on sidewalks and parking lots**
 - Track where and when events happen
- **Consider unique weather conditions in your area (i.e. Ohio black ice)**
- **Balance costs of working vs. down-time**
 - Cost of one day base closure: \$3M
 - Estimate of injuries/costs: \$0.5M
- **Difficult to estimate what MAY occur**
- **Not all storm systems have the same risks**

Conclusions

Prevention of weather related injuries requires:

- Early morning temperatures**
- Accurate precipitation measurements**
- Timing of road crew maintenance**
- Leadership authorized to delay or shut down operations when weather conditions meet criteria**

Contact Information

Diane R. Erickson RN, BS
Injury / Illness Epidemiology

Douglas C. Fuller, Col, USAF, MC, SFS
Occupational Medicine Flight Commander

74AMDS/SGPO
2325 5th Street
Wright Patterson AFB, OH 45433
WP: 937-255-4824