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***Sustaining the Combat Capability of America's Air Force***



**Dental Caries Risk in the  
United States Air Force**

**U.S. AIR FORCE**

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***Integrity - Service - Excellence***



# UNITED STATES AIR FORCE

- In 1999-Medical/Dental Services underwent significant change in delivery of care
  - Primary focus was moving from reactive, treatment-oriented approach to more efficient pro-active prevention-based system
  - Changes in doctrine/policy with emphasis on
    - Development/implementation of programmed tools to assess population needs/health status
    - Management of disease conditions with ability to evaluate health status improvement and delivery system effectiveness
- Under direction of USAF Surgeon General
  - Population-Based Health Plan developed
    - Brought together policies, programs, tools necessary to deliver population health



# DENTAL POPULATION HEALTH

- Initiative to decrease dental disease
  - Not uniform within USAF population but skewed
- Increase fitness of Airmen
- Impart better understanding of health to Airmen
- Refocus efforts to those at risk for future disease
- Identify those at highest risk for disease
  - Education
  - Prevention
  - Treatment interventions
- Use metrics to describe the oral health
  - Tool to aid Dental Treatment Facilities (DTFs) in understanding the dental health needs of their patients
  - Validate improvement



# DENTAL POPULATION HEALTH METRICS (DPHM)

- Began collecting DPHM during periodic dental exam
  - Purpose was to
    - Understand health needs of population
    - Identify those at highest risk
    - Allow us to employ targeted prevention/intervention activities
    - Improve the population health of the AF by guiding dental clinicians to more effective preventive strategies
- Recording
  - Caries risk assessment
  - Periodontal Screening and Recording score
  - Tobacco use
- Reported at the AF, MAJCOM, base and patient levels



# DPHM

- Target
  - Identify the most appropriate population subgroups for our limited resources
  - Prioritize limited resources to those health problems determined to be the most important
  - Best available, evidence-based prevention and treatment options to address health problems
- Monitor
  - Oral health surveillance ability
    - To gauge where increased resources are needed
    - To better assess the overall dental health of the AF



# AIR FORCE DENTAL SERVICE

- Overall strategy was to allow efficient disease management with emphasis on prevention
  - Resulting in decreased percentages of population with disease, thus decreasing costs
- Analyzing data over time would allow AF to measure general oral health improvement
- Goal was to raise oral health and dental readiness of AF population





# CARIES RISK ASSESSMENT

- USAF assessment is based on the American Dental Association (ADA) recommendations
  - Patients classified into low, moderate, and high risk categories
- ADA emphasized
  - That patients should be routinely evaluated for presence/absence of risk indicators for disease process
  - Patients/groups identified as high-risk would be prescribed a more intense prevention program
    - Potentially achieving a clinically significant impact
  - Targeting interventions has implications for costs of services to patients, employers, and publicly supported programs





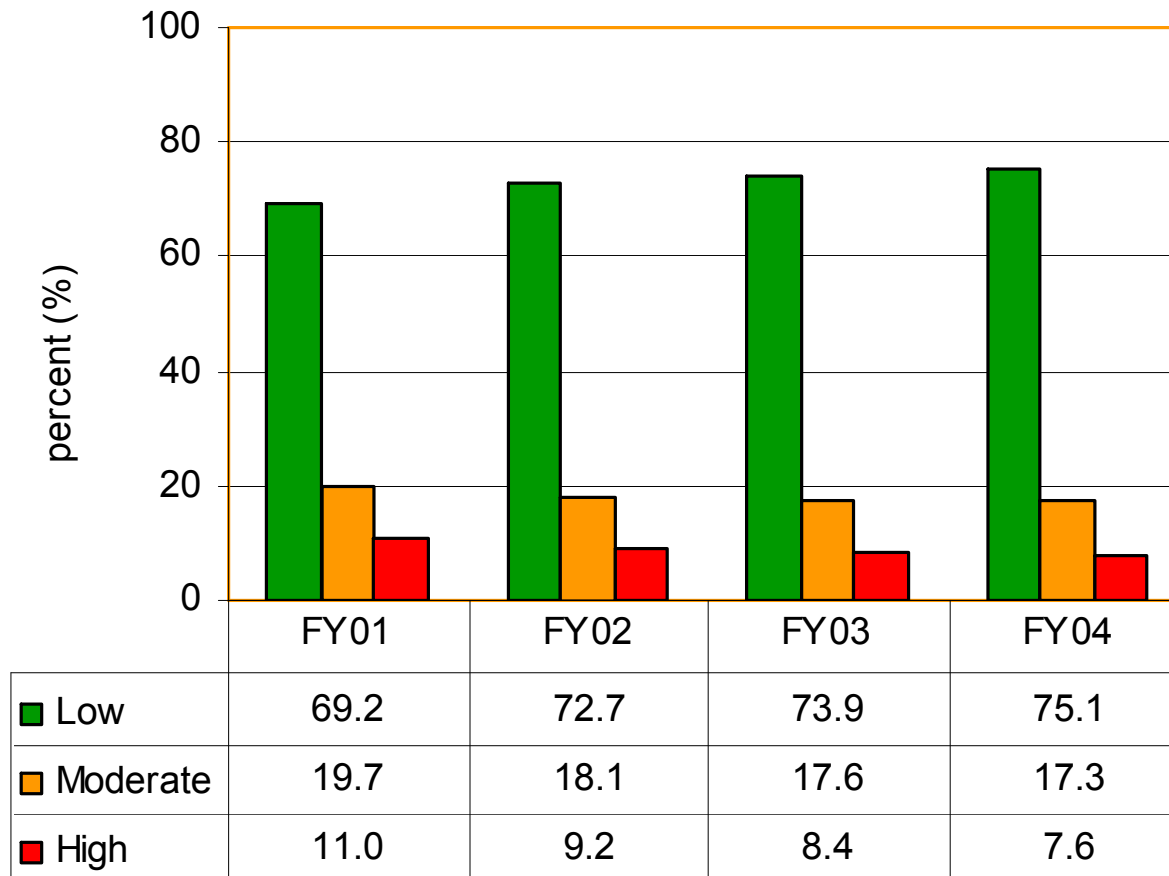
# CARIES RISK ANALYSIS

- Describe dental caries risk of active duty AF from October 2000 through September 2004 across selected demographic variables
- Data obtained by cross-referencing two databases
  - Dental files from Population Health Support Division
  - Personnel files from USAF Personnel Center
- Dental files
  - Caries risk, tobacco use
- Personnel files
  - Gender, age, rank group, education level, race, marital status, years of military service, career field
- Evaluated two groups
  - Entire population (273,000-336,000)
  - Four-year cohort (147,893)



# CARIES RISK FOR ENTIRE POPULATION

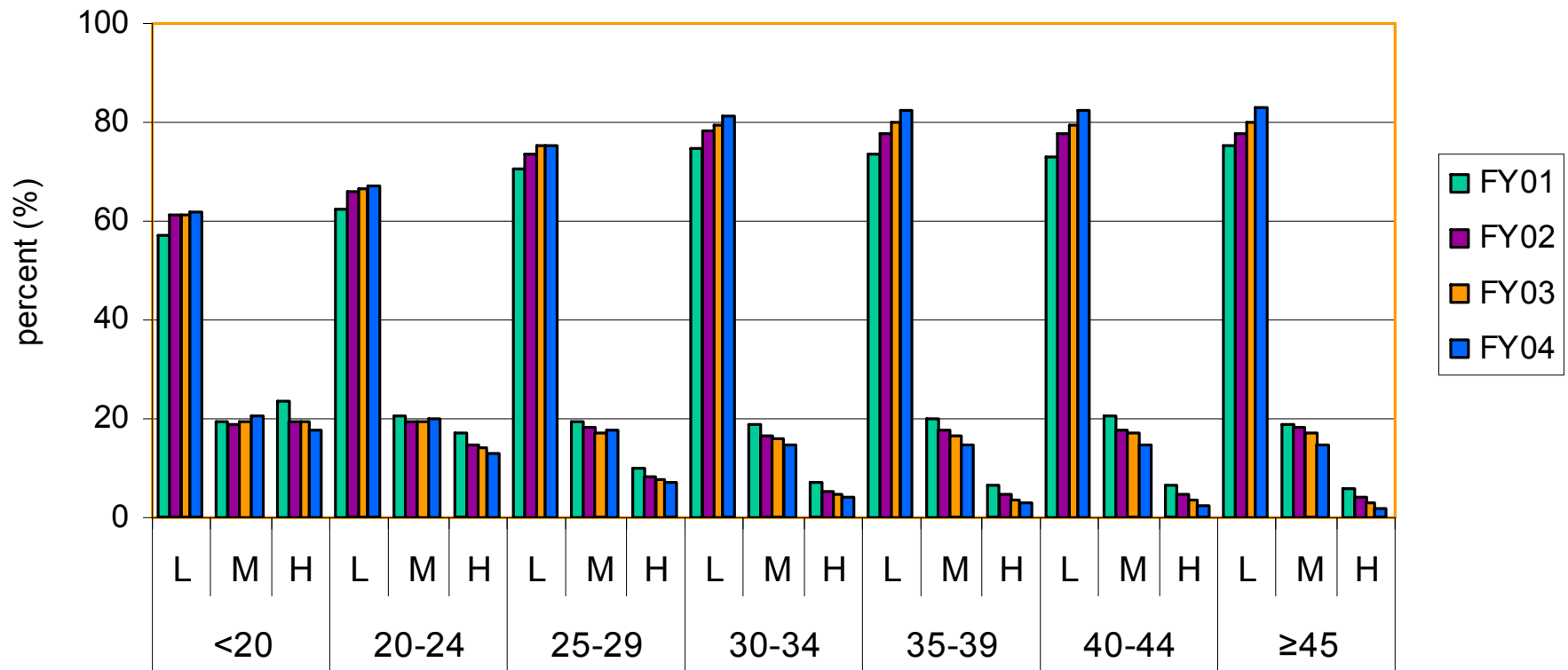
Figure 1: Distribution of caries risk FY01-FY04 overall





# CARIES RISK BY AGE GROUP

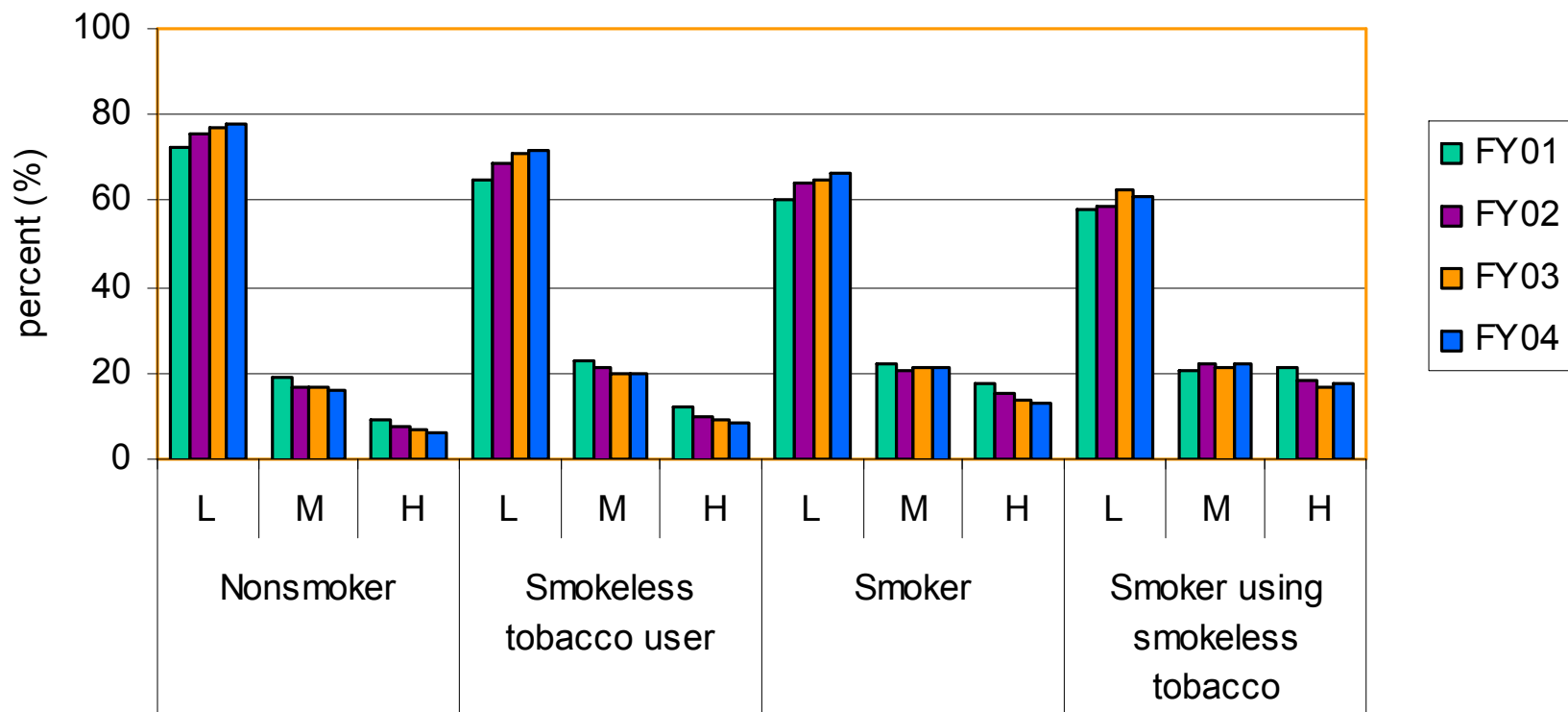
Figure 2: Distribution of caries risk FY01-FY04 by age group





# CARIES RISK BY TOBACCO USE

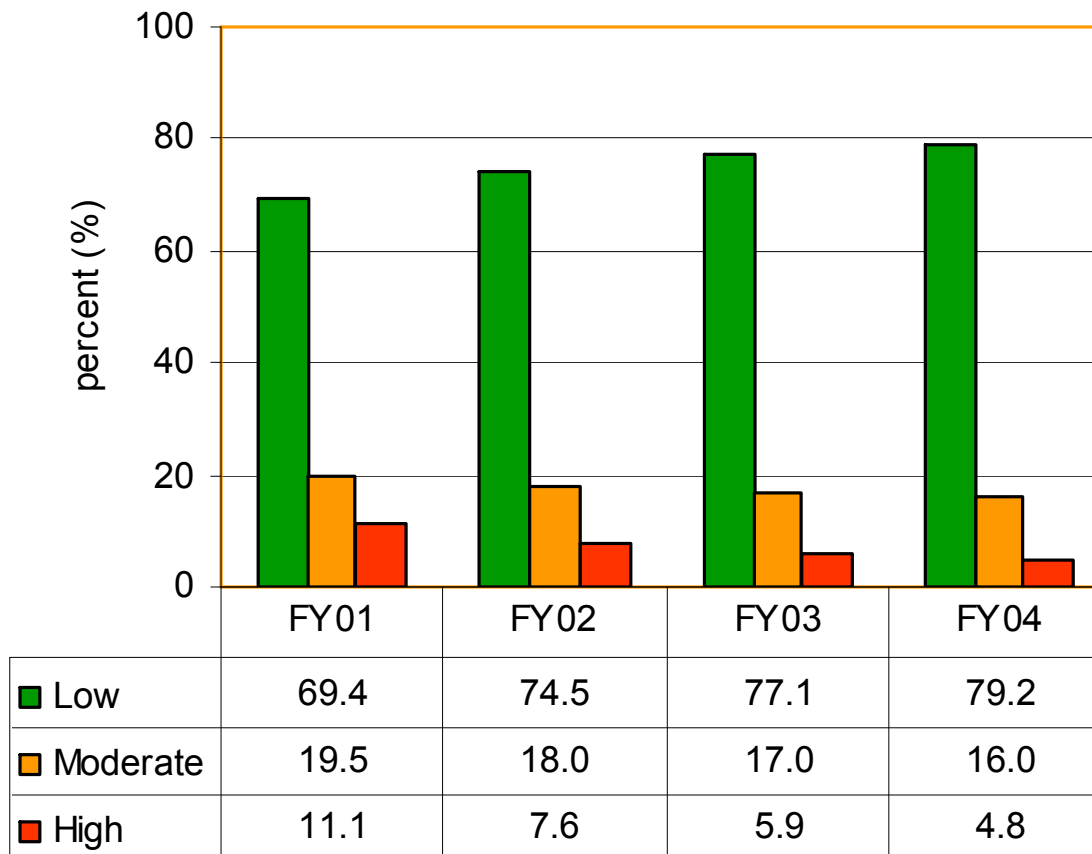
**Figure 3: Distribution of caries risk FY01-FY04 by smoking status**





# CARIES RISK FOR FOUR-YEAR COHORT

**Figure 4: Distribution of caries risk: FY01-FY04 for the four-year cohort**





# FOUR-YEAR COHORT CHANGES IN CARIES RISK

Caries risk	No change	Better	Worse
All (n=147,893)	64.6%	23.5%	11.9%
Low (n=102,636)	84.4%	-----	15.6%
Moderate (n=28,902)	20.9%	73.3%	5.8%
High (n=16,355)	17.3%	82.7%	-----



# OTHER FINDINGS

- High caries risk inversely related to
  - Age, rank, education, and years in service
- High caries risk more prevalent in
  - Junior enlisted troops-younger, have less education, and are new to AF
- Caries risk of many younger AF members probably relates to level of dental care received prior to entry
- Tobacco users were found to have an elevated caries risk
  - Most prevalent among young enlisted troops
    - May be due to lack of routine oral hygiene or placing less value on general health



# WHAT AND WHY

- Caries risk in USAF has decreased
- Caries risk reduced for AF members with extended time in service
  - Probably due to cumulative effect of mandatory periodic dental exam, comprehensive dental treatment provided at no cost to the Service member
- Due to dental population health improvement approaches by AF
- Extensive efforts by entire AFDS
  - Senior leadership buy-in of population health principles
  - Comprehensive training provided to dental providers and technicians
  - Local base health promotion activities





# WHAT AND WHY

- Informal calibration of dental examiners by use of monthly Clinical Practice Assessment & Indicators
  - Peer Review
- Periodic inspections of AF preventive dentistry programs by the Health Services Inspection Team
- Unique aspects of military dentistry allows use of sealants/fluoride varnish/chlorhexidine/nutritional counseling/frequent recall
- The caries risk status of AF recruits has not changed significantly over the past 5 years



# CONCLUSIONS

- Prevention/treatment of dental caries is essential to maintain AF's war-fighting capability, while preserving dental readiness
- Caries risk decreasing in AF indicating a gain in oral health
- Caries risk assessment
  - Can improve oral health and increase dental readiness
  - Provides for greater efficiency of dental care in terms of outcomes for money, resources and time
- Risk-based approach is a sound public health strategy
  - Targeting preventive/interceptive care to patients at risk
    - Potentially reducing DoD expenditures

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# **QUESTIONS?**



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