

# ***RISK FACTORS FOR PERIODONTITIS***

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# ESSENTIALS OF EPIDEMIOLOGY

- ❑ Groups rather than individuals are the focus of study.
- ❑ Persons *with and without* a particular disease (e.g., periodontitis), and *with and without* the exposure of interest (e.g., smoking), are included, rather than just patients.

## ***RISK FACTOR : DEFINITION***

An environmental, behavioral, or biological factor confirmed by temporal sequence, usually in longitudinal studies, which if present directly increases the probability of a disease occurring, and if absent or removed reduces the probability. Risk factors are part of the causal chain, or expose the host to the causal chain. Once disease occurs, removal of the risk factor may not result in a cure.

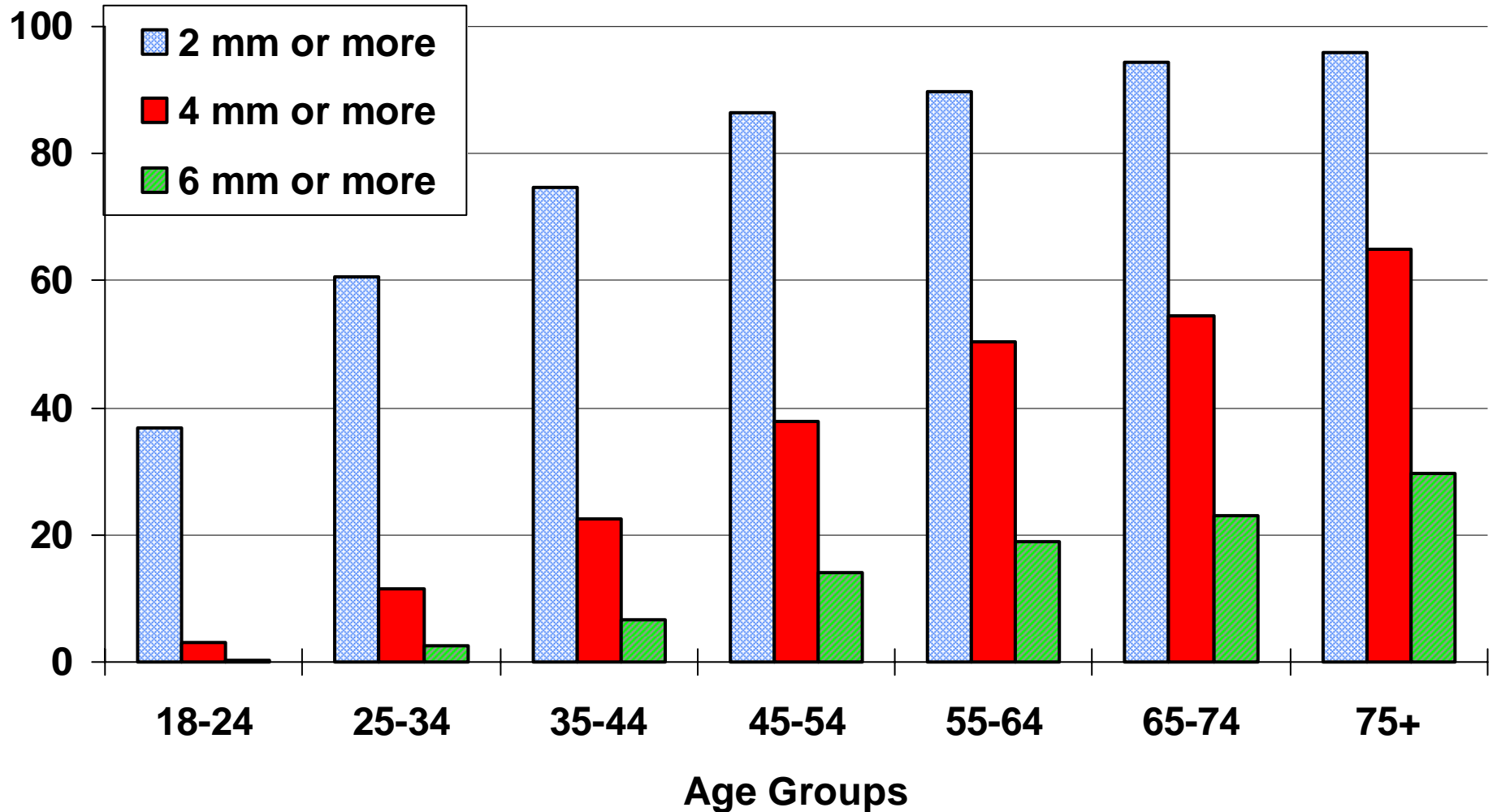
Beck, 1998

# *INDIVIDUAL-LEVEL NON-MODIFIABLE DETERMINANTS OF PERIODONTITIS*

- Age
- Gender
- Race/Ethnicity
- Genetic predisposition
- Socioeconomic status (SES)
- Diabetes (and some other rare systemic conditions)?

# ***MEAN LOSS OF PERIODONTAL ATTACHMENT IN ADULTS, UNITED STATES. FROM NHANES III, 1988-1994***

Percent



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## *GENETICS AND PERIODONTITIS*

- ❑ A specific genotype of the polymorphic interleukin-1 (IL-1) gene cluster is associated with more severe periodontitis.
- ❑ This relationship can be demonstrated only in non-smokers.
- ❑ While there is enough evidence to support a genetic role in periodontitis, its strength is still being determined.
- ❑ A combination of IL-1 genotyping and smoking history may provide a good risk profile for patients.
- ❑ A smoking-genetic interaction may be a contributory factor in severity of periodontitis.

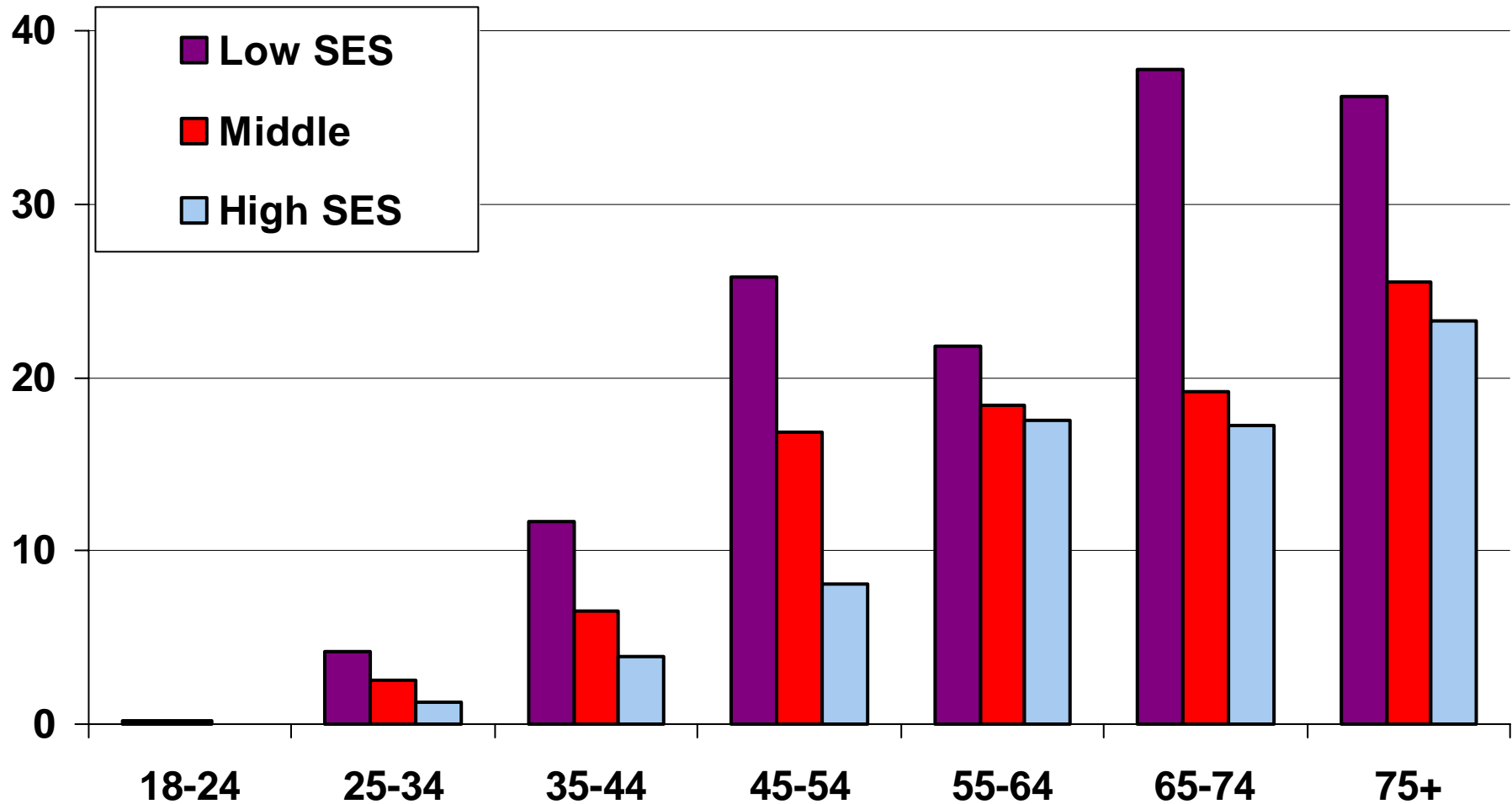
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# ***PREVALENCE OF PERIODONTITIS BY SES AND AGE, UNITED STATES, 1988-94.***

Percent



Age Groups

# *INDIVIDUAL-LEVEL MODIFIABLE RISK FACTORS FOR PERIODONTITIS*

- Tobacco
- Plaque, oral hygiene, microorganisms
- Psychosocial stress
- Diabetes?

# ***TOBACCO USE: A MAJOR RISK FACTOR FOR PERIODONTITIS***

- ❑ Risk of periodontitis with smoking in the order of 2.5 to 6.0
- ❑ 90% of persons with severe periodontitis are smokers.
- ❑ Healing following mechanical treatment slower in smokers.
- ❑ Do smokers get more plaque?
- ❑ Smoking suppresses the vascular reaction and the hemorrhagic response which follows gingivitis.
- ❑ Smoking compromises host response to infection.
- ❑ Interactions between smoking and the IL-1 gene cluster?

# INDIVIDUAL-LEVEL MODIFIABLE RISK FACTORS FOR PERIODONTITIS

Tobacco

***Plaque, oral hygiene, microorganisms***

Psychosocial stress

Diabetes?

# ***PLAQUE DEPOSITS AND PERIODONTITIS***

- ❑ While there is a clear, causal relationship of plaque deposits to *gingivitis*, plaque's role in *periodontitis* is less clear.
- ❑ Good personal oral hygiene can favorably affect microflora in shallow-to-moderate pockets, but has little effect on microflora in deep pockets.
- ❑ Plaque deposits and supragingival calculus correlate poorly with periodontitis in population studies.

# ***SPECIFIC BACTERIA AND PERIODONTITIS***

- ❑ There are cross-sectional associations between putative periodontopathogens and clinical periodontitis, but the presence of specific microorganisms could not predict the development or progression of periodontitis in longitudinal studies for up to 3 years.
- ❑ Efforts to identify causative gram-negative bacteria have not been successful, but more recently a bacterial profile at diseased sites has been found to consistently contain a predominant group of microorganisms (Gram-negative anaerobes).
- ❑ Supragingival plaque can serve as a reservoir for pathogenic microorganisms.
- ❑ Frequent professional supragingival cleaning, added to good personal oral hygiene, has been shown to have a beneficial effect on subgingival microbiota in moderately deep pockets.

# INDIVIDUAL-LEVEL MODIFIABLE RISK FACTORS FOR PERIODONTITIS

- ❑ Tobacco
- ❑ Plaque, oral hygiene, microorganisms
- ❑ ***Psychosocial stress***
- ❑ Diabetes?

## *EXAMPLES: SOCIAL DETERMINANTS OF HEALTH*

- ❑ Loneliness is a risk factor for heart disease.
- ❑ High income differentials in a low-income area lead to excess mortality.
- ❑ Living in a poor neighborhood in an otherwise well-to-do society increases the risk of bad health outcomes.
- ❑ The gap in cardiovascular disease rates between western European countries and those that were formerly part of the Soviet bloc were accentuated sharply around the time of the breakup of the Soviet Union.



# *POPULATION HEALTH*

- ❑ The perspective is to address the entire range of factors that affect health.
- ❑ Population health thus focuses on the social structures and social processes within which all ill-health originates.
- ❑ Oral disease is related to the degree of social deprivation in a geographic area.
- ❑ Social deprivation is broader than SES. To measure social deprivation, British studies have used the numbers of:
  - Elderly people living alone
  - Overcrowded households
  - Households with children under 5 years old
  - Unemployed people
- ❑ Studies use an ecological design.

# ***RISK FACTORS AND DETERMINANTS FOR PERIODONTITIS***

- Tobacco
- Psychosocial stress
- Oral infection with specific gram-negative anaerobes
- Diabetes (and several other rare diseases)
- Genetic predisposition