## Index

Page numbers followed by italicized b, f, and t indicate boxes, figures, and tables, respectively.

### A

**Access**
- barriers to
  - for elderly, 263, 265
  - insurance and, 12–13, 268
  - children and, 253
  - elderly and, 265
  - as reason for nonutilization, 84f–86f
  - removal of, 4, 12–13, 19, 268, 286
  - and dental care utilization, among military vs. civilian population, 83, 87, 88f

**ACE** See Administration for Children and Families

**Acids**
- and caries, 37–38
- saliva and, 27
- and tooth surfaces, 31

**Actinobacillus actinomycetemcomitans**
- and adult periodontitis, 40
- and bacteremia, 104
- and early-onset periodontitis, 42, 205
- and periodontal disease, 203f

**Administration for Children and Families (ACF),** 226, 226t

**Adolescents/young adults,** 257–258. See also 

**Children**

**Adult periodontitis, 40–42**
- bacterial activity in, 40, 203t, 204–205
- diagnosis of, 204–205, 204f
- immune response to, 40–41
- progression of, 40
- rapidly progressing, 40, 41, 207
- refractory, 42
- susceptibility factors, 41
- systemic antibiotics for, 207

**Adult respiratory distress syndrome (ARDS),** 105

### African Americans. See also Race/ethnicity
- cancer in
  - incidence of, 68, 68f
  - survival rates for, 68–69, 69f
- congenital malformations in, 72, 72f
- dental care among
  - nonutilization of, 83, 84t
  - utilization of, 80t, 81–82, 81t
- dental caries in, 63–64, 63f, 64f
- as dental personnel, 236–237, 237f
- oral and pharyngeal cancers in
  - diagnosis of, 69, 69f
  - by sex, 68, 68f
- oral health status of, 74–75
- periodontal disease in, 65–66, 66f
- and ratings of oral health, 144
- tobacco use by, 260b
- tooth loss in, by economic status, 67, 67f
- toothaches among, prevalence of, 73

### Age
- and canker sores, prevalence of, 71, 71f
- and dental care
  - nonutilization, 83, 84t
  - utilization, 80–81, 81t
- and dental caries, by economic status and race/ethnicity, 63–64
- and injuries, 72–73
- and insurance coverage, 231
- and oral-facial pain, prevalence of, 73, 73f
- oral health data on, 2–3
- oral health vulnerabilities according to,
  - 249–267
- and oral herpes lesions, prevalence of, 70–71, 71f
- and periodontal disease, 65–66, 65f, 203t
- adult periodontitis, 41
  - by race/ethnicity, sex, and economic status, 65–66
Index

Age (continued)
and ratings of oral health, 144
and tooth loss, 66
Agency for Healthcare Research and Quality (AHRQ), 171, 172, 213, 225, 226t
Aging, and craniofacial complex, 31–32
AHRQ. See Agency for Healthcare Research and Quality
AIDS. See also HIV infection
        Candida infections with, 43
        esophageal candidiasis with, 101
        and oral cancer, 46
Alcohol, 191t
        community programs, 171
        as general health risk factor, 10
        in mouthwash, and oral cancer, 210
        and oral cancer, 44–45, 46, 169, 208t, 209, 209t
        tobacco and, combination of, and oral cancer, 45, 208t, 209
Allodynia, 52
Allografts, 208–209
Alloplasts, 209
Allopurinol mouthwash, and mucositis, 106
Alpha tocopherol, 47, 251b
Alveolar bone. See also Jaw; Oral bone
        aging and, 31–32
        loss of, 32
        osteoporosis and, 102–103
        risk factors for, 203t
        smoking and, 41
        nutrition and, 250b
        regeneration of, 208–209
Amelogenesis imperfecta, 49, 278
American Indians/Alaska Natives
        children of, oral health of, 76–77
        as dental personnel, 236, 237t
        oral and pharyngeal cancers and, by sex, 68, 68f
        oral clefts, 77
        oral health status of, 76–77
        Pima tribe, in diabetes-periodontal disease study, 113–114
        and precancerous lesions from smokeless (spit) tobacco, 70
        and ratings of oral health, 144
American Society of Anesthesiologists, classification of patient's risk, 196, 197t
Americans Stop Smoking Intervention Study for Cancer Prevention (ASSIST), 171
Anaerobes, gram-negative, 39
Andersen behavioral model, 248–249, 248f
Anodontia
        in ectodermal dysplasias, 50
        hereditary, 49
Antibiotics
        and disruption of oral homeostasis, oral candidiasis and, 42
        systemic, for periodontitis, 206t, 207
Antibodies. See also IgA antibody; Immunoglobulins
        in adult periodontitis, 40–41
        in mucosal immune system, 28
        oral fluids in diagnostic tests for, 103, 103t
Anticipatory guidance, for children, 236
Antigenic components, in identification of periodontopathic bacteria, 203
Antimicrobial agents, for periodontal diseases, 206t, 207
Antimicrobial components, in saliva, 27
Antioxidants, 47
Apert's syndrome, 49
Aphthous ulcers, recurrent, lesions caused by, 100t
Apoptosis
        and oral cancer, 15, 46
        Sjögren's syndrome and, 51
ARDS. See Adult respiratory distress syndrome
Arthritis, jaw manifestations of, 52
Ascorbate, and gingivitis, 250b
Asians/Native Hawaiians/Pacific Islanders. See also Chinese Americans; Vietnamese Americans
        as dental personnel, 236, 237t
        oral and pharyngeal cancers and, by sex, 68, 68f
        oral health status of, 76–77
Aspartate aminotransferase, in adult periodontitis, 205
Assaults. See Violence
ASSIST. See American Stop Smoking Intervention Study for Cancer Prevention
Association of State and Territorial Dental Directors (ASTDD), 226–227
ASTDD. See Association of State and Territorial Dental Directors
Autografts, 208
Autoimmune disorders, 212
Sjögren's syndrome, 51

B

B cells, 28
Bacteremia
        infective endocarditis and, 107–108
        and microthrombosis, 117–118
        and oral infection, 104–105
Bacteria. See also specific bacteria
        in adult periodontitis, 40, 41, 204–205
        in dental caries, 37–38
        in early-onset periodontitis, 42, 205
        in gingivitis, 39
        gram-negative, and adult periodontitis, 40
        in heart disease, 117–118
lesions caused by, 99t
in periodontal disease, 202, 203t, 204–205
in refractory periodontitis, 42
Bacteroides forsythus
in adult periodontitis, 40, 205
in periodontal disease, 203t
BANA test, in identification of periodontopathic bacteria, 205
Behçet’s syndrome
lesions caused by, 100t
and RAU, 44
Benzpyrene, 45
Betel nuts, and oral cancer, 45
Biofilm, 26, 37, 104. See also Plaque
and gingivitis, 39
Biomarkers
future of, 279
for oral cancer, 210
Biomimetics, 279
Biopsy
for mucosal disease diagnosis, 212
for oral cancer diagnosis, 210
Birth control medication, and gingivitis, 39
Birth defects, craniofacial, 47–50
clinical management of, 210–211
cultural reactions to, 141
point mutations and, 31
prevalence of, 71–72
prevention and control of, 172–173, 210–211
strategies for, 156t
secondary to other developmental disorders, 49
Bone grafts, 208–209
Bone loss. See Alveolar bone, loss of; Oral bone, loss of
Boston-type craniosynostosis, 49
Brain abscesses, oral flora and, 105
Branchial arch(es), 29
altered morphogenesis of, birth defects caused by, 47–48
Bruxism, 52, 190, 191t
Burkitt’s lymphoma, viral causes of, 45
C
Calcium
metabolism of, disturbances in, oral manifestations of, 101
and periodontal disease, 203t, 250b–251b
Calcium channel blockers, and gingivitis, 39, 107
Calcium
and adult periodontitis, 40
and gingivitis, 39
Campylobacter, and gingivitis, 39
Canadian Task Force on the Periodic Health Examination, 156–158
Cancer. See also specific type
oral and pharyngeal, 44–47, 209
health care providers’ knowledge about, 179
HPV and, 43, 45–46, 208t, 209, 210
prevention and management of, 47, 169–172
community-based interventions, 170–171
early diagnosis in, 171–172
nutrition in, 210, 251b
provider-based, 210
strategies for, 156t
public knowledge about, 178–179
quality of life with, 136, 142
risk factors in, 44–47, 208t, 209–210, 209t
nutrition and, 251b
statistics on
incidence rates, 67, 68, 68f, 74
mortality rates, by state, 70, 70t
site-specific, 69–70
sources for, 62
stage of diagnosis of, by race/ethnicity, 69, 69f
survival rates, 67–69, 74
tobacco and, 259b, 260b
therapies. See also Chemotherapy; Radiation treatment
combined, and oral mucositis, 106–107
types of
incidence rates for, 68, 68f
survival rates for, 69, 69f
Candida albicans
and oral cancer, 46, 209
and oral candidiasis, 42
Candida infections, 42–43
Candidal angular cheilosis, 43
Candidiasis
esophageal, 101
lesions caused by, 99t
oral, 42–43
with HIV, 42, 43, 71, 101
prevalence of, 71
Canker sores, 43–44. See Recurrent aphthous ulcers (RAU)
prevalence of, 71, 71f
Capnocytophaga, and prepubertal periodontitis, 42
Capnocytophaga ochracea, and localized juvenile periodontitis, 42
Capsaicin, 25
for oral mucositis pain, 106
Carbamazepine, and tic douloureux, 52
Index

Cardiovascular disease, oral infection and, 115–120
  animal studies, 117–118
  mechanisms of action in, 115–117
  population-based studies, 118–120, 119t
Caries. See Dental caries
  Carious lesions, precavitated, in restored teeth, diagnosis of, 198
  Carotenoids, 47, 251b
  Cavities, 37. See also Dental caries
  CDC. See Centers for Disease Control and Prevention
  Celiac disease, oral manifestations of, 101
  Cements, glass ionomer, in dental caries treatment, 201
  Center for Policy Alternatives, 268
  Centers for Disease Control and Prevention (CDC), 225, 226t
  Cervical cancer, human papillomavirus (HPV) and, 43, 45
  Cervicofacial actinomycosis, lesions caused by, 99t
  Chediak-Higashi syndrome, and periodontal disease, 41
  Chemotherapeutic agents, in plaque reduction, 199
  Chemotherapy
    oral candidiasis and, 42
    oral infections from, 105
    oral ulcers and oral mucositis from, 26
  Chickenpox, oral lesions with, 98t
  Children
    anticipatory guidance for, 256
    craniofacial birth defects in. See Birth defects, craniofacial
    dental caries in, 2, 38, 252
      by economic status and race/ethnicity, 63–64
      dental risk and protective factors for, 257t
      dental sealants for, 167–168, 168t
    with disabilities, 79, 253
    enamel fluorosis in, 160
    fluoride for
      in dietary supplements, 162–163, 164t
      in mouthrinses, 165
      in school water, 162
      from supplement programs, 164–165
    future of oral care and, 277–278
    injuries and, 258t, 722
    insurance coverage, 231, 253, 277–278
      Medicaid, 2, 253–255, 268
      State Children's Health Insurance Program, 13, 233–234, 255, 277
    malocclusion in, risk and protective factors for, 258t
    oral health of, 2, 249–253
    barriers to, 13, 286
  preventive environment for, 255–257, 256t, 257t, 258t
  periodontal diseases in, risk and protective factors for, 256t
  poverty and, 2, 252
  violence and abuse, 51
  Chinese Americans, nasopharyngeal cancer incidence and mortality, 76
  Chlorhexidine
    to limit gingival inflammation, 205, 206t
    to prevent mutans streptococci transmission, 200
    and remineralization, 199
    teeth stains from, 107
  Chronic and disabling oral conditions, 51–53, 73
  Cigarettes, and oral and pharyngeal cancer, 259b. See also Tobacco
  Cigars. See also Tobacco
    and oral and pharyngeal cancer, 259b
    and oral cancer, 208t, 209
    trends in smoking, 260b
  Cleft lip/palate, 47–48
    cost of, 228
    prevalence of, 72, 72f
    quality of life with, 141–142
    in Waardenburg syndrome, 50
  Cleft palate, 47–48
  Clefing abnormalities from altered branchial arch morphogenesis, 47–48
  incisive foramen and, 30
  Cleidocranial dysplasia, 50
  Cochrane Collaboration, 213, 214t, 246
  Collagenase, in adult periodontitis, 205
  COMMIT. See Community Intervention Trial for Smoking Cessation
  Community Health Centers, 221, 231
  Community health programs. See also Public health programs
    for craniofacial birth defects, 172–173
    for dental caries, 158–168
    evidence of effectiveness of, 155–158
    glossary of terms, 157b
    for injury, 173–176
    for oral and pharyngeal cancers, 169–172
    for periodontal diseases, 168–169
    strategies used, 156t
  Community Intervention Trial for Smoking Cessation (COMMIT), 171
  Corticosteroids, and disruption in oral homeostasis, oral candidiasis and, 42
  Cosmetic dentistry, increased demand for, 137–138
  Coxsackievirus, oral lesions with, 98t
  Cranial bones, birth defects involving, 48–49
Craniofacial complex
- aging of, 31-32
- contact and communication in, 23-25
- diagram of, 22
- functions of, 1, 17
- oral cavity in, 25-28
- origins and development of, 28-31
- early development of, 29-30
  - genetic controls in, 30-31
- nutrition in, 250b
- research on, 4, 19
- sensory functions of, 23

Craniofacial defects. See Birth defects, craniofacial

Craniosynostosis, 49, 278
- and gene mutations, 31

Crohn's disease, and RAU, 44

Crouzon's disease, 49, 278

Cryotherapy, for mucositis, 106

Cuban Americans, oral health of, 75

Cyelosporin, and gingivitis, 39, 107

Cytokines, 28
- and adult periodontitis, 40-41
- and periodontal diseases, 203
- and pregnancy, 120-121

Cytomegalovirus, and chemotherapy, 106

D

Deminerilized bone, freeze-dried, in bone grafts, 208-209

Dental appliances, 201
- and chewing function, 135-136
- and oral candidiasis, 43, 71

Dental care. See also Oral health care system
- active personnel in, 223-224, 224t, 235-236, 235f
- composition of, by sex and race/ethnicity, 236-237, 237t
- annual expenditures on, 223, 228, 228t, 231f, 231t
- per capita, 228, 229f
- vs. total health care expenditures, 227, 227f, 228f
- costs of
  - indirect, 142-144, 143t
  - per capita, 228, 229f
  - as reason for nonutilization, 83, 84t-86t
  - vs. other medical services, 228, 230t, 231f
disciplines in, 224
- evidence-based, 213, 246, 277
- expenditures on, 227-228
  - by source
    - 1960-1996, 231f
    - 1998, 228t

Dental caries, 37-39
- changing clinical approach to, 196-201
- diagnosis of, 198, 200t
- multifactorial model in, 196, 197f
- prevention of, 198-200, 200t
- risk assessment in, 197, 198f, 198t, 199t, 200t
- treatment of, 201
  - in children, 2, 38, 252
    - by economic status and race/ethnicity, 63-64
    - risk and protective factors for, 257t
classification of, 201
- nutrition and, 250b
- prevalence of
  - by age, economic status, and race/ethnicity, 63-65
- prevention of
  - community approaches to, 158-168
  - dental sealants, 166-168
  - dietary fluoride supplements, 162-165
  - fluoridated drinking water, 160-162
  - fluoride mouthrinses, 159t, 163
  - fluoride varnishes, 163-166
  - school water fluoridation, 162
  - fluoride in, 2-3, 10, 18, 27, 38, 155, 158-160
- health care professionals' knowledge about, 177-178
- provider-based, 198-201
- public's knowledge about, 177
- saliva and, 27, 38
- strategies for, 156t
- target population for, 159t
daily hygiene, 39, 189-190

progression of, 198
- rate of, 38-39
- smokeless (spit) tobacco and, 39, 259b

vs. total health care expenditures, 227f, 228t
- financing and reimbursement for, 228t, 229-234, 231f, 231t, 232f
- managed, 231-233, 233t, 254
- among military personnel, vs. civilian population, 83, 87, 88f
- nonutilization of, reasons for, 83, 84t-86t
- population-to-dentist ratio, 224, 224f
- for underserved populations, 239
- unmet needs in, 83, 87t
  - for children, 252-253
  - utilization of, 80-81, 190-191
    - by sex, race/ethnicity, income, and insurance, 80t, 81-82, 81t
    - variation by oral health status, 82, 82t

oral health care system
- active personnel in, 223-224, 224t, 235-236, 235t
- composition of, by sex and race/ethnicity, 236-237, 237t
- annual expenditures on, 223, 228, 228t, 231f, 231t
- per capita, 228, 229f
- vs. total health care expenditures, 227, 227f, 228t
- costs of
  - indirect, 142-144, 143t
  - per capita, 228, 229f
  - as reason for nonutilization, 83, 84t-86t
- vs. other medical services, 228, 230t, 231f
disciplines in, 224
evidence-based, 213, 246, 277
expenditures on, 227-228
  - by source
    - 1960-1996, 231f
    - 1998, 228t
Dental caries (continued)
susceptibility to, 39
tobacco and, 259b
vaccine for, 200
Dental hygienists, 235
knowledge of dental caries prevention, 177-178
knowledge of periodontal disease prevention, 178
Dental implants, 201
Dental plans. See Insurance
Dental plaque. See Plaque; Biofilm
Dental practice, 223-224
Dental schools
curriculum needs of, 237-238
enrollment, 235
of minorities, 236
faculty vacancies, 237
graduate indebtedness, 237-238
Dental sealants, 38, 166-168
for children, 167-168, 168t
combined with fluoride use, 167
cost-effectiveness of, 168
in dental caries treatment, 201
effectiveness of, 159t, 166-167
prevalence of use, by race/ethnicity, 82
Dentrifice, 159t, 176, 177, 179, 189-190
Dentinogenesis imperfecta, 49
Dentists
availability of, 224
charitable care by, 239
compensation of
from elderly in long-term care, 265
from Medicaid, 254
increased importance of, 191-192
knowledge of dental caries prevention, 177-178
knowledge of periodontal disease prevention, 178
numbers of, 223-224, 224t, 235-236, 235f
visits to. See also Dental care, utilization of
and susceptibility to adult periodontitis, 41
Denture sore mouth, 43
Denture stomatitis, 43, 71
Depression
atypical facial pain with, 52
with cancer, 142
with TMD, 140
Dermatologic diseases, lesions caused by, 100t
Developmental disorders, 47-50
clinical management of, 210-211
cultural reactions to, 141
prevalence of, 71-72
prevention and control of, 172-173
strategies for, 156t
dfs, definition of, 62b
DFT, definition of, 62b
Diabetes mellitus
and adult periodontitis, 41
and periodontal disease, 2, 17, 109-115
research used in, 110t, 111t-113t
treatment of, 206
type 1, and periodontal disease, 41, 110-113, 114, 203t
type 2, and periodontal disease, 113-114, 203t
Diagnostic codes, dentistry, 216
Diagnostics, saliva and oral fluids in, 103-104, 103t, 279, 280t
Diet. See also Nutrition
effect on oral health, 191t
and oral and pharyngeal cancer, 209t
poor, as general health risk factor, 4, 10, 18
DiGeorge syndrome, 48
Digital radiography, 196
Dilantin, and gingivitis, 39
Disability days, due to dental conditions, vs. other conditions, 143, 143t
Disabled population, oral health of, 78-79
DMFS, definition of, 62b
DMFT, definition of, 62b
DNA
in identification of periodontopathic bacteria, 205
saliva as source for, 103, 104, 103t
Down syndrome, and periodontal disease, 41
Drug abuse, oral fluids for diagnosis of, 103
Dry mouth. See Xerostomia
and dental caries, 38
and chewing function, 136
and Sjogren's syndrome, 51, 136
Dysplasia, 46
E
Early and Periodic Screening, Diagnostic and Treatment Service (EPSDT), 254
Early childhood dental caries (ECC), 38, 228
Early-onset periodontitis, 42
bacteria linked to, 205
by sex and race/ethnicity, 66
systemic antibiotics for, 207
Eating problems, and quality of life, 135-136, 136t
ECC. See Early childhood dental caries
Ectodermal dysplasias (EDs), 49-50, 211
Edentulism
by age, economic status, sex and race/ethnicity, 66-67
by economic status, 82
and heart disease, 119
by state, 67t

and stroke, 120
EDS. See Ectodermal dysplasias
Education level
and dental care wants, 87t
and dental visits, 80t, 81, 81t
and insurance coverage, 231, 232f
and knowledge of periodontal disease, 178
and susceptibility to adult periodontitis, 41
Educational debt, 237–238
Efficacy, of health programs, vs. effectiveness, 155–156
EGF. See Epidermal growth factor
Egg polarity genes, 30
Eikenella corrodens
and adult periodontitis, 41
and prepubertal periodontitis, 42
Elastase, in adult periodontitis, 205
Elderly adults. See also Age
chronic health problems of, 266, 266t
eating problems of, 135–136, 136t
oral health of, 3, 262–266, 263t, 264t.
trends in, 265–266
research on, 262, 263t, 264t
sleep problems of, 137
social functioning of, 138–139, 139t
women, 266–267
Electrical resistance measurement, 196
Enamel
age and, 31
demineralization of, 38, 199
remineralization of, 199
fluoride and, 159
saliva and, 27, 31, 38
Enamel fluorosis, 160
Enamel hypoplasia, 101
from tetracycline, 107
Endocarditis, infective, oral infection and, 107–108
Endocrine system
and disruption in oral homeostasis, oral candidiasis and, 42
and immune system, 28
nicotine and, and oral and pharyngeal cancers, 46–47
Environment
importance of, 248–249, 248f
improvement of, 268
for children, 255–257, 268
Epidemiologic data, need for. See Data
Epidemiology; definition of, 62b
Epidermal growth factor (EGF), 27
and oral and pharyngeal cancers, 46
Epidermolysis bullosa–recessive dystrophic type, 49
Epithelial cells, cancers of. See Squamous cell carcinomas, oral
Epithelium, 25–26
aging and, 32
nutrition and, 250b
EPSDT. See Early and Periodic Screening, Diagnostic and Treatment Service
Epstein-Barr virus
and chemotherapy, 106
and oral cancer, 45
and oral lesions, 98t
Erythema multiforme, lesions caused by, 100t
Erythroplakia lesions, 209
and squamous cell carcinoma, 44
Estrogen replacement therapy, and adult periodontitis, 41
Ethnicity. See Race/ethnicity
Evidence-based practice, 213, 246, 277
Explorer, visual examination with, for dental caries diagnosis, 198, 200t

F

Face. See also Craniofacial complex
appearance of, social responses to, 140–141
embryonic formation of, 29
as reflection of general health, 97–104
Falls, 50, 72–73. See also Injury
FDA. See Food and Drug Administration
Federal oral health infrastructure, 226–227, 226t
Federal support
for dental school programs, 235–236
for educational debt, 237
Fibromyalgia, jaw manifestations of, 52
Fillings. See also Restorations
materials used in, 201
Flossing, 39, 176, 190
and bacteremia, 104
and dental caries prevention, 178
dental professionals' knowledge of, for dental caries prevention, 178
public knowledge of
for dental caries prevention, 177
and gum disease, 178
by tobacco users vs. nonusers, 178
Fluoride, 155, 158–160
dental professionals' knowledge about, 177
in dentifrices, 159, 176, 177, 179, 189–190
in dietary supplements, 162–165
dosage of, 163, 164t
effectiveness of, 159t, 163–164
public knowledge of, 177
in drinking water, 2, 3, 18, 159t, 160–162
access to, 161, 162f, 162t, 163t
costs of, 161
effectiveness of, 159t, 160–161
Fluoride (continued)
  history of, 159
  public knowledge of, 177
  recommended concentration levels, 160
  in schools, 159t, 162
  enamel hypoplasia from high levels of, 101
  in mouthrinses, 159, 165
  professionally applied, 159-160, 198-199
  public knowledge about, 177
  and rate of dental caries progression, 38-39
  safety of, 160
  in saliva, dental caries protection from, 27, 38, 159
  in varnishes, 159t, 165-166
Folate, and gingivitis, 250b
Folic acid
  birth defects and, 17-48, 172
  cancer and, 251b
Food and Drug Administration (FDA), 225, 226t
Fungal diseases, lesions caused by, 99t
Fusobacterium nucleatum
  and gingivitis, 39
  and smoking, 41
Gastroenteritis, oral manifestations of, 101
Gene therapy, 276
Genes
  and periodontal disease, 203, 203t
  and resistance to dental caries, 39
Genetic derangements. See also Developmental disorders
  and clefting abnormalities, 48
  and oral cancer, 46
  and periodontal disease, 41
Genetics
  and control of embryonic development, 30-31
  and future of oral health, 276, 278-279, 278f
  and understanding craniofacial development, 28
Genomic databases, 279
Geographical region. See also Residence, place of
  and dental care wants, 87t
Germ cell layers, in craniofacial development, 29
Gingiva
  bleeding and inflammation of, as diagnostic test, 204, 204t
  lesions of, diseases and conditions causing, 98t-99t
  recession of, age and, 31
  surface of, 25
  gingival crevicular fluid, periodontal infection and, 204t, 205
  Gingival erythema, linear, and HIV, 101
Gingivitis, 39-40
  with adult periodontitis, 40
  and heart disease, 119
  from medication, 107
  and pregnancy, 122
  prevention of, 10, 168-169, 190, 191t, 205-206
  by race/ethnicity, 66
Global ratings, of oral health, 144
Glossary, 62b
β-glucuronidase, in adult periodontitis, 205
Glutathione, 47
Glycemic control, affected by periodontal disease, 114-115, 116t-117t
Gonorrhoea
  lesions caused by, 99t
  pharyngeal, 109
Growth factors, 27
  and oral cancer, 46-47
  in reducing mucositis, 106
Guided tissue regeneration, 209
Guidelines, for clinical practice, 213-214, 215t
Guidelines for School Health Programs to Prevent Tobacco Use and Addiction (CDC), 170
Gum disease, prevention of, public knowledge of, 178. See also Gingivitis; Periodontal disease
Gums. See Gingiva
Hand, foot, and mouth disease, oral lesions with, 98t
HCFA. See Health Care Financing Administration
Head Start, 226
Health
  biopsychosocial model of, 134
  broadened meaning of, 2, 17-18
  cultural perspectives on, 134-135
  determinants of, theories and models of, 246-248, 246f
  historical trends in
    life expectancy, 275-276
    science and technology, 275
World Health Organization (WHO) definition of, 133
Health care
  evidence-based, 213, 246, 277
  expenditures on, 227-228
    Consumer Price Index for, 230t, 231f
    per capita, 229f
    by source of funds, 228t
    by type of service, 227f, 228t, 230t
  federal and state programs for, 233-234
oral care in. See Dental care; Oral health care system
personnel in, collaboration with dental care providers, 225, 227
trends in, 277
unmet needs in, 83, 87t
utilization of, 190–191
Health Care Financing Administration (HCFA), 225
Health Field Concept, Lalonde's, 247
Health maintenance organizations (HMOs), 229, 232, 233t
Health Plan Employer Data and Information Set (HEDIS), 233
Health professional schools, future of, 276–277. See also Dental schools
Health Professional Shortage Area (HPSA), 227, 237
Health Resources and Services Administration (HRSA), 225, 226t
Healthy People 2000, progress in meeting objectives of, 180t
Healthy People 2010, 4, 19, 247–248, 248f
objectives of, by age, 268t
Heart disease. See Cardiovascular disease
HEDIS, See Health Plan Employer Data and Information Set
Herpangina, oral lesions with, 98t
Herpes labialis lesions
location, features, and course of, 98t
prevalence of, by race/ethnicity, 71
Herpes simplex virus, 43
and chemotherapy, 106
lesions from, by population group, 70
and oral cancer, 42–46, 209, 210
oral lesions with, 98t
as pharyngeal infection, 109
type 1 (HSV-1), 43
lesions from, 70, 71f
and oral cancer, 45
type 2 (HSV-2), 43
Herpes zoster, oral lesions with, 98t
Herpetiform recurrent aphthous ulcers, 44
HHANES, See Hispanic Health and Nutrition Examination Survey
Hispanic Health and Nutrition Examination Survey (HHANES), 75
Hispanics. See also Cuban Americans; Mexican Americans; Puerto Ricans
children of
insurance coverage of, 278
oral health of, 75
dental care among
nonutilization by, 84t–85t
utilization by, 80t, 81–82, 81t
as dental personnel, 236–237, 237t
oral and pharyngeal cancers and, by sex, 68, 68f
oral health status of, 75–76
and ratings of oral health, 144
toothaches among, 73
Histoplasmosis, lesions caused by, 99t
HIV/AIDS Dental Reimbursement program, 238–239
HIV infection
human papillomavirus (HPV) and, 43, 71
and oral candidiasis, 42, 43, 71, 101
oral lesions with, 98t, 101–102
oral manifestations of, 97, 101–102
oral transmission of, 108–109
and periodontal disease, 41
and RAU, 44
and trench mouth, 40
HMOs. See Health maintenance organizations
Hodgkin's lymphoma, 46
Home genes, 30
Homeotic genes, 30
Hormones, oral fluids in diagnostic tests for, 103, 103t
Hospice patients, 263, 266, 266t
Hospitalized patients, and systemic complications due to oral bacteria, 105
Hospitals, oral health care at, 225
Hox genes, 30
HPSA. See Health Professional Shortage Area
HPV. See Human papillomavirus
HRSA. See Health Resources and Services Administration
HSV-1. See Herpes simplex virus, type 1
HSV-2. See Herpes simplex virus, type 2
Human genome, in understanding craniofacial development, 28
Human Genome Project, 53, 278
Human immunodeficiency virus. See HIV infection
Human papillomavirus (HPV), 43
and oral cancer, 43, 45–46, 208t, 209, 210
prevalence of, 71
Hypodontia
in ectodermal dysplasias, 50
hereditary, 49
Hypoparathyroidism, oral manifestations of, 101

IFN-γ. See Interferon γ
IgA antibody, 32
Index

IHS. See Indian Health Service
IL-1. See Interleukin 1
IL-1β. See Interleukin 1β
Imaging technologies, 196
for dental caries diagnosis and treatment, 201
for oral cancer diagnosis, 210
for TMD, 212t
Immune cells
in adult periodontitis, 40–41
and oral cancer, growth factors and, 46–47
types of, 28. See also B cells; T cells
Immune system, 27–28
disorders of, Sjögren’s syndrome, 51
and disruption in oral homeostasis, oral
candidiasis and, 42
microbial genome research and, 279
mucosal, 27–28
nutrition and, 250b
and RAU, 44
Immunoglobulins. 28. See also IgA antibody
smoking and, 41
Immunosuppression
and bacteremia, 104–105
oral signs of, 97–100
Immunosurveillance and control, loss of, and oral
cancer, 46
Implants. See Dental implants
Incidence, definition of, 62b
Incidence rate, definition of, 62b
Incisive foramen, embryonic formation of, 29–30
Income
and adult periodontitis, 41
and children
dental caries and, 63–64, 63f, 64f
and insurance coverage, 253
oral health and, 2, 259
and dental care and
nonutilization of, 85t–86t
utilization of, 80t, 81–82, 81t
wants, 87t
and dental caries, 63–64, 63f, 64f
and edentulism, 82
and insurance coverage, 231, 232f
for children, 253
low-income communities
dentists in, educational debt and, 237
expansion of care to, 239
and oral health, 249
among Hispanics, 75
and periodontal disease, 65–66, 66f
and toothaches, 73
Indemnity plans, 232, 233t
Indian Health Service (IHS), 76–77, 225, 226t
loan repayment program, 237
Infection, oral. See also Mucosal infections,
Periodontal disease
bacteremia and, 104–105
from cancer therapy, 105–107
infective endocarditis and, 107–109
protection against. See also Immune system
by mucosal immune system, 27–28
by saliva, 26–27
respiratory disease and, 108
Inflammation, gingival. See Gingivitis
Injury, oral-facial, 50–51. See also Falls; Trauma
in adolescents, 258
in children, 2, 72, 258t
prevalence of, 72–73
prevention and control of, 191t
community-based, 173–176, 174t–175t
future of, 276
helmet use, 173, 174t–175t, 176b, 258
Injury, oral-facial, 50–51. See also Falls; Trauma
in adolescents, 258
prevalence of, 72–73
prevention and control of, 191t
community-based, 173–176, 174t–175t, 176b
future of, 276
helmet use, 173, 174t–175t, 176b, 258
Injury, oral-facial, 50–51. See also Falls; Trauma
in adolescents, 258
prevalence of, 72–73
prevention and control of, 191t
community-based, 173–176, 174t–175t, 176b
future of, 276
helmet use, 173, 174t–175t, 176b, 258
Insurance
changing market in, 231–233
coverage, 12–13, 229–231
by age, 231
for children, 2, 253–255, 277–278
and dental care nonutilization, 86t
and dental care utilization, 80t, 81–82, 81t, 229
among children, 253
by education level, 231, 232f
for elderly, 265
employer-provided, 229–231, 261–262
children and, 253
future goals in, 286
by income, 731, 733f
by sex and race/ethnicity, 230–231, 232f
Medicaid, 87t, 229, 233
for children, 2, 253–255, 268
for elderly, 265
Medicare, 234, 234t, 265
performance measures in, 232–233
as source of expenditures on dental services,
228t, 231f, 231t
State Children’s Health Insurance Program, (SCHIP), 2, 13, 233–234, 255, 277
and utilization, 81t, 82
Interferon γ (IFN-γ), and adult periodontitis, 41
Interleukin 1 (IL-1)
and adult periodontitis, 41, 205
and periodontal disease, 203

298 ORAL HEALTH IN AMERICA: A REPORT OF THE SURGEON GENERAL
Interleukin 1β (IL-1β)
and adult periodontitis, 41
and periodontal disease, 203
Interleukin 6, and adult periodontitis, 205
Interleukins, and heart disease, 115
Irrigation, to control gingival inflammation, 206t, 207

J
Jaw (mandible and maxilla). See also Alveolar bone; Oral bone
aging and, 31–32
bone loss in, osteoporosis and, 102–103

K
Kaposi's sarcoma, 16, 101
Keratin, 25
Keratin genes, mutations in, and epidermolysis bullosa, 49
Keratinocytes, and oral cancer, 46
Killer cells, and oral cancer, 46

L
Lacrimal glands, Sjogren's syndrome and, 51
Lalonde Report, 246–247
Langerhans cells, and immunosurveillance, 46
Language
mechanisms of, 25
skills of oral and pharyngeal cancer patients, 136
Laser technologies, in dental caries diagnosis and treatment, 201
Leukoplakias, 44, 209
Lichen planus, lesions caused by, 100t
Life expectancy, 775–276
Lifestyle
of adolescents/young adults, 257–258
as determinant of health, 190, 191t, 246f, 247–248
Lip cancer
incidence of, 69, 70
risk factors, 208t, 209t, 210
sun exposure, 169
Lips, lesions on, diseases and conditions causing, 98t, 100t
LJP. See Localized juvenile periodontitis
Local public health departments, 226, 286
Localized juvenile periodontitis (LJP), 42
Lymphocytes, and immunosurveillance, 46.
See also B cells; T cells

M
Macrophages, cytotoxic, and immunosurveillance, 46
Magnetic resonance imaging (MRI), 196
Malocclusions
prevalence of, 12
quality of life with, 141–142
risk and protective factors for, 258t
Mandibulofacial dysostosis, 48
Marijuana, oral cancer and, 45, 208t, 209t
Masseter muscle, 26
Mastication, muscles of, 26
Mechanoreceptors, muscles of, 26
Medications
and dental caries, 30
and disruption in oral homeostasis, oral candidiasis and, 42
and elderly oral health, 265–266
and gingivitis, 39
oral complications of, 107
Men
and adult periodontitis, susceptibility to, 41, 65, 65f
cancer in
oral and pharyngeal, by race/ethnicity and sex, 68, 68f
types of, by race/ethnicity, 68, 68f
and dental care nonutilization, 84t
and injuries, 73
and pain, 25
prevalence of, 73, 73f
and periodontal disease, 203t
Metabolites, in detection of periodontal disease, 205
Mexican Americans
children
insurance coverage of, 253
oral health of, 75
dental care utilization by, 80t, 81–82, 81f
and dental caries, susceptibility to, 63–64, 63f, 64f
tooth loss by, by economic status, 67, 67f
Microbes
genome research on, 279
oral transmission on, 108–109
Microbes (continued)
protection against. See also Immune system
by saliva, 26-27
Micronutrients. See also Nutrition
and cancer prevention, 47
fluoride as, 160
Military personnel, dental care among, vs. civilian
population, 83, 87, 88f
Mononucleosis, infectious, oral lesions with, 98t
Mortality rate, definition of, 62b
Motor vehicle collisions, 50, 73, 173
Mouth. See also Craniofacial complex; Oral cavity
embryonic formation of, 1, 17, 25
as gateway, 37
for infection, 104-109
lesions in, diseases and conditions causing,
98t-100t
as reflection of general health, 1-2, 10-11, 17,
97-104, 284
Mouthguard use, 173-175, 174t-175t, 176b
Mouthrinses, fluoride, 159t, 165
MRI. See Magnetic resonance imaging
Mucins, 27
aging and, 32
Mucosal immune system, 27-28
Mucosal infections, 42-44, 70-71, 212
by race/ethnicity, socioeconomic status, and sex,
70-71
Mucous membrane pemphigoid, lesions caused by,
100t
Multiple sclerosis, and tic douloureux, 52
Mumps, swollen parotid glands with, 97
Mutans streptococci, 37, 38
median age of acquisition of, 39
mother as source of, 199-200
as primary predictor of dental caries incidence,
196-197, 198t
Mutations
and craniofacial syndromes, 31, 278-279
in keratin genes, and epidermolysis bullosa, 49
and oral cancer, 46
and periodontal disease, 41
N
Nasopharyngeal carcinoma, 45, 76
National Facial Protection Month, 173
National Health and Nutrition Examination Survey
(NHANES), 61, 62
National Health Interview Survey (NHIS), 61
National Health Service Corps (NHSC), 237
National Institute for Dental and Craniofacial
Research (NIDCR), 713
National Institutes of Health (NIH), 225, 226t
National Oral Cancer Strategic Planning
Conference, 169-170
National Oral Health Plan, 21, 284-286
components of, 11-13, 284-286
National Preventive Dentistry Demonstration
Program, 167
Necrotizing ulcerative gingivitis, acute, lesions
caused by, 99t
Necrotizing ulcerative periodontitis, and HIV, 101
Nervous system, and immune system, 28
Neural crest, 29
defective development of, Treacher Collins
syndrome and, 48
Neural tube, 29
Neutrophils
in adult periodontitis, 40-41
smoking and, 41
in early-onset periodontitis, 42
NHANES. See National Health and Nutrition
Examination Survey
NHIS. See National Health Interview Survey
NHSC. See National Health Service Corps
Nicotine, endocrine effects of, and oral and
pharyngeal cancers, 46-47. See Tobacco
NIH. See National institutes of Health
NIDCR. See National Institute of Dental and
Craniofacial Research
4-nitroquinoline-N-oxide, 45
Nitrosamines, 46
N-nitrosonornicotine, 45
Nociceptors, 24
Non-Hodgkin's lymphoma, 46
misdiagnosis of, 101
Sjögren's syndrome and, 51
Nonneuronal tissues, 29
Nose. See also Olfactory system
embryonic formation of, 29
Notochord, 29
Nursing homes, in oral health care system, 225
Nutrition, 191t, 250b. See also Diet
and birth defects, 17-18, 172, 211
and cancer prevention, 47, 169, 251b
and dental caries, 250b
micronutrients in
cancer prevention properties, 47
fluoride as, 160
and oral cancer prevention, 209t, 210, 251b
oral tissue as reflection of, 100-101
and periodontal disease, 250b 251b
prenatal and perinatal, 198
and quality of life, 135-136, 136t
and RAU, 44

300 ORAL HEALTH IN AMERICA: A REPORT OF THE SURGEON GENERAL
Olfactory system, 24
aging and, 32
Oncogenes
discovery of, 45
and oral and pharyngeal cancer, 46
Oral, definition of, 1, 17
Oral bone, loss of, osteoporosis, 102–103
Oral cavity. See also Mouth
elements of, 25–28
manifestations of systemic disease in, 37, 97–101, 98t–100t
Oral flora, 37
and brain abscesses, 105
Oral fluids, diagnostic value of, 103–104, 103t, 279, 280t
Oral health
barriers to, removal of, 4, 12–13, 19, 286
broad definition of, 2, 17–18, 133–134
costs of, 4, 19, 227–228, 227f, 228t, 229f, 230t
indirect, 142–144, 143t
determinants of, 248–249
income inequality, 249
lifestyle, 190, 191t, 246f, 247–248, 283
workplace effects, 249
disparities in, 1, 4, 10, 17, 19, 88, 239, 284
enhancement of, 267–268
for adolescents and young adults, 257–258
for adults, 258–262
for children, 249–257
insurance and, 253–255
social and professional environment and, 255–257
for elderly adults, 262–267, 263t–264t
for elderly women, 266–267
expenditures for, 227–228, 227f, 228t
financing for, 228t, 229–234, 231f, 231t, 232f
vs. total health care expenditures, 227, 227f, 228t
future of, 280
diversity of diseases and patients in, 276
National Oral Health Plan, 284–286
new treatments in, 276
and general health, 2, 4–5, 10–11, 17–18, 19, 53, 285–286
in elderly, 265
implications of linkages between, 122
risk factors in, 4, 10, 18
historical trends and, 275–276
meaning of, 5, 17–21, 20
of military personnel, vs. civilian population, 83, 87, 88f
objectives for, 267–268, 267t
personal approaches to, 109–191
care seeking, 190–191
daily hygiene, 189–190
among elderly, 262–263
healthy lifestyle, 190, 191t
prevention measures, 3–4, 7–9, 10, 18. See also Oral health care system
in public health programs, 12
ratings of, 144
status of, 35–93
and dental care wants, 87t
trends in, 87–89
oral health care system. See also Dental care
active personnel in, 223–224, 224t, 235–236, 235f, 286
by sex and race/ethnicity, 11, 236–237, 237t, 286
community approaches in
for craniofacial birth defects, 172–173
for dental caries, 158–168
effectiveness of interventions by, 155–158, 156t
glossary of terms for, 157b
for injury, 173–176
for oral and pharyngeal cancers, 169–172
for periodontal diseases, 168–169
expanding base of, 216
future of, 239–240
capacity to meet needs in, 734–239
molecular, and genomics, 278, 278f, 279
individual approaches in
care seeking in, 190–191
daily hygiene in, 189–190
among elderly, 262–263
healthy lifestyles in, 190, 191t, 246f, 247–249, 248f
knowledge of and practice in, 176–179
professional components of
dental care, 223–224
medical care, 225
overlap among, 227
public health programs, 225–227
progress in, 179–180, 180t
provider-based care in, 191–212. See also Provider-based care
diagnostic tests in, 193, 193t
future of, 212–216
oral health assessment in, 193–196, 194t–195f, 197t
risk assessment in, 192–193
public-private partnerships in, 13, 286
strategies for, 156t
underserved in, 239

ORAL HEALTH IN AMERICA: A REPORT OF THE SURGEON GENERAL

301
Oral hygiene, 189–190, 191t
  and bacteremia, 104
  and dental caries, 39, 189–190
  among elderly, 262–263
  and gingivitis, 39
  and periodontal disease, 168–169, 190, 191t, 203t
  public practices survey, 178
  workplace effects on, 249
Oral mucosa, 25–26
  aging and, 32
  lesions of, diseases and conditions causing, 98t–100t
  nutrition and, 250b
  staining of, 107
ORN. See Osteoradionecrosis
Osteogenesis imperfecta, 49
Osteoporosis
  and adult periodontitis, susceptibility to, 41
  and oral bone loss, 102–103
  and periodontal disease, 203t
Osteoradionecrosis (ORN), 106
Ottawa Charter for Health Promotion, 247

P
Pain
  facial, atypical, 52
  oral, chronic, 24
  oral-facial, 24–25, 52
    clinical management of, 211
    control of, 24
    impact of, 139–140
    prevalence of, 73, 73f
    sex differences, 25, 77
    sleep problems with, 137
Palate, 25
  embryonic formation of, 29
  lesions of, diseases and conditions causing, 98t–100t
Papillae, as oral mucosa, 25
Papillomavirus, oral lesions with, 71, 98t
Papillon-Lefevre syndrome, and periodontal disease, 41
Parotid glands, 26
  aging and, 32
  swollen, 97
Pathogens, protection against. See also Immune system
  by saliva, 27
Pathology, systemic, craniofacial disease as model of, 53
Pemphigus vulgaris, lesions caused by, 100t
Periodontal attachment loss of
  by age, sex, race/ethnicity, and income, 65–66
  definition of, 62b
  osteoporosis and, 102
Periodontal disease, 39–42
  adult periodontitis. See Adult periodontitis
    by age, sex, race/ethnicity, and income, 65–66
    from bone marrow radiation, 105
    and cardiovascular disease, 115–120
    clinical management of, 201–209
      diagnosis of, 203–205, 204r, 278
      prevention of, 205–206, 206t
      risk assessment in, 202–203, 203t
      treatment of, 206–209, 206t
    diabetes and, 2, 17, 109–114
      glycemic control affected by, 114–115, 116t–117t
      research used in, 110t, 111t–113t
    early-onset. See Early-onset periodontitis
    heart disease and stroke with, 115–120
    animal studies, 117–118
    mechanisms of action in, 115–117
    population-based studies, 118–120, 119t
    nutrition and, 250b–251b
    pathogenesis of, 202
    preexisting, as risk factor, 202, 203t
    and pregnancy, adverse outcomes in, 120–122
    prevention of, 10, 168–169, 256t
      daily oral hygiene and, 168–169, 190, 191t, 203t
      dental professionals’ knowledge about, 178
      history of, 3, 18
      provider-based, 205–206, 206t
      public’s knowledge about, 178
      strategies for, 156t
    risk and protective factors for, 256t
      tobacco and, 259b, 260b
Penodental ligament
  regeneration procedures for, 208
  sensitivity of, 24
  teeth in, 26
  tissue turnover in, 31
Periodontitis
  adult. See Adult periodontitis
  and heart disease, 118–120
  as mixed infection, 205
  necrotizing ulcerative, and HIV, 101
  pathobiology of, 202, 202f
  and stroke, 119–120
Perioral skin, lesions of, diseases and conditions causing, 98t
Pfeiffer’s disease, 49
PGE₂. See Prostaglandin E₂
PH
  in dental caries risk assessment, 197
  saliva and, 27
Phagocytes, in adult periodontitis, smoking and, 41
Pharmaceuticals. See Medications
Pharyngeal cancer. See Cancer, oral and pharyngeal
Pharynx. 25
  herpes simplex virus and, 109
  lesions of, diseases and conditions causing, 98f, 100f
Phenytoin, and gingivitis, 39, 107
Phosphate metabolism, disturbances in, oral
  manifestations of, 101
Pierre Robin syndrome, 48
Pigmentation, of soft or hard oral tissue, as sign of
disease, 100
Pipe smoking, and cancer, 208t, 259b
Plaque, 37, 104. See also Biofilm
  control of, 39, 205–206, 206f
  chemical, 205
  with daily hygiene, 190
  professional, 206
  fluoride in, 159
  public knowledge about, 178
  subgingival, 40
Pocket depths, and periodontal disease diagnosis,
  204, 204f
Point mutations, birth defects and, 31
Polymeric resin composites, in dental caries
treatment, 201
Population, trends in, 2/5–2/6, 280
Population groups
  characteristics of, as determinant of health, 248, 248f
  data on, 10, 61–62, 88
  disabled, oral health of, 78–79
  diversity of, future of oral care and, 277
  oral health disparities among, 1, 4, 10, 17, 19,
    88, 239, 283–284
  oral health services targeted to, 225, 239
  racial/ethnic minorities. See Race/ethnicity;
    specific minority group
  women. See Women
Porphyromonas gingivalis
  in adult periodontitis, 40, 41, 205
  in adverse pregnancy outcomes, 121
  and bacteremia, 104
  in heart disease, 117
  in periodontal disease, 203f
Poverty: 249. See also Income
  children in, oral health of, 2, 252
  and dental care utilization, 80, 80f, 81
  and dental caries, susceptibility to, 63–64
  and tooth loss and edentulism, 66, 67f
  and toothaches, 73
PPOs. See Preferred provider organizations
Precancerous lesions
  HPV and, 45
  and oral cancer, 44–45
  and smokeless (spit) tobacco, 70, 70f
Precavitated carious lesions, in restored teeth, diag-
nosis of, 198
Preferred provider organizations (PPOs), 229, 232,
  233f
Pregnancy
  adverse outcomes of, periodontal disease and,
    120–122
  and dietary fluoride supplements, 163–164
  gingivitis in, 30
Prenatal care, 172, 198, 210–211
Prenatal syphilis, lesions caused by, 99f
Prepubertal periodontitis, 42
Prevalence, definition of, 62b
Prevalence rate, definition of, 62b
Prevotella intermedia
  in adult periodontitis, 40, 41
  in periodontal disease, 203f
  in prepubertal periodontitis, 42
  smoking and, 41
Private practice, 223–224, 227
Probes/instrumentation, sensitivity of, 40
Probing depths, and periodontal disease diagnosis,
  204, 204f
Prostaglandin(s)
  and adult periodontitis, 40–41
  and heart disease, 115
  and pregnancy, 121
Prostaglandin E2
  and adult periodontitis, 40–41, 205
  and mucositis, 106
  and periodontal disease, and low birth weight.
    121
Proto-oncogenes
  discovery of, 45
  and oral cancer, 46
Provider-based care, 191–212
  changing approach by
    to birth defects, 210–211
    to dental caries, 196–201
    to oral and pharyngeal cancers, 209–210
    to periodontal diseases, 201–209
  for chronic craniofacial pain and sensorimotor
    conditions, 211
  diagnostic tests in, 193, 193t
    dental caries, 198, 200t
    oral and pharyngeal cancer, 210
    periodontal diseases, 203–205, 204t
  future of
Provider-based care (continued)
  broadening base in, 216
  clinical practice guidelines, 213–214, 215t
  evidence-based practice, 213
  science and technology contributions, 216
  for mucosal and autoimmune diseases, 212
  oral health assessment by, 193–196, 194f–195f, 197t
  prevention by
    of birth defects, 210–211
    of dental caries, 198–200
    of oral and pharyngeal cancer, 210
    of periodontal diseases, 205–206, 206t
  risk assessment by, 192–193
    of dental caries, 197, 198t, 200t
    of oral and pharyngeal cancer, 208t, 209–210, 209t
    of periodontal diseases, 202–203, 203t
  for temporomandibular disorders, 211–212
Pseudomembranous candidiasis, 43
Pterygoid muscle, 26
Puberty gingivitis, 39
Public
  knowledge, attitudes, and practices of, 177–179, 239, 280
  perceptions of, 11, 285
Public health programs. See also Community health programs; Medicaid; Medicare
  for elderly, 265
  essential services for, 181b
  in oral health care system, 12, 225–227, 286
Public-private partnerships, 13, 286
Puerto Ricans, oral health of, 75
Pulmonary disease, obstructive, and oral health, 108
Pulp tissue
  infections in, 24, 38
  tissue turnover in, 31
Q
Quality of life
  cultural perspectives on, 134–135
  heightened expectations of, 146
  oral health in, 133–134
    functional dimensions of
      eating problems and, 135–136, 136t
      sleep problems and, 137
    indirect costs of, 142–144, 143t
    need for measurement of, 133–134
    psychosocial dimensions of, 137–142
      cleft lip/palate and malocclusion, 141–142
      facial appearance, 140–141
      oral and pharyngeal cancers, 142
  oral-facial pain and, 139–140
  social function and, 138–139, 139t
  research on, 144–146, 146t
R
Race/ethnicity. See also specific minority group
  and adult periodontitis, 41
  and congenital malformations, 72, 72f
  and dental care
    nonutilization, 84t–85t
    utilization, 80t, 81–87, 81t
    needs, 87t
  and dental caries, susceptibility to, 63–64, 63f, 64f
  future of oral care and, 277
  and insurance coverage, 230–231, 232f
  and malocclusions, 72
  in oral health workforce, 12, 236–237, 237t, 286
  and periodontal disease, 41, 65–66, 66f
Radiation treatment
  oral candidiasis and, 42
  oral infections from, 106
  oral ulcers and oral mucositis from, 26
  periodontal disease from, 105
Radiographs, 196
  bite-wing, 198, 200t
  in periodontal disease diagnosis, 204, 204t
Rapidly progressive periodontitis, 40, 41
  systemic antibiotics for, 207
Ratings, of oral health, 144
RAU. See Recurrent aphthous ulcers
Recurrent aphthous ulcers (RAU), 43–44
  prevalence of, 71, 71f
Refractory adult periodontitis, 42
  systemic antibiotics for, 207
Reimbursement, direct, 230. See also Dental care, financing and reimbursement
  Relative survival rate, definition of, 62b
Remineralization, 27, 38, 139, 199
Research. See also Science base
  current, 4, 5, 11, 19, 20
  in evidence-based practice, 213, 246
  federal studies of oral health, 286
  need for expansion of, 285–286
  on quality of life, 144–146, 146t
  surveys used for health data, 61–62
  trends in, 214–216
Respiratory disease, oral infections and, 108
Restorations
  precavitated carious lesions in, diagnosis of, 198
  procedures for, 201
Retinoids, 47
Rous sarcoma virus (RSV), and oral cancer, 45
RSV: See Rous sarcoma virus
Rural/urban status, and dental care wants, 87t
Ryan White Comprehensive AIDS Resources
Emergency Act, 225

S
S-IgA, 28
Saethre-Chotzen syndrome, 49
Saliva, 26
  aging and, 32
  and cariogenic bacteria, 38
  decreased flow of
    in dental caries risk assessment, 197
    and chewing function, 136
  diagnostic value of, 103–104, 103t, 279, 280t
  fluoride and, 27, 38, 159
  functions of
    barrier and buffering properties, 27
    dental caries prevention, 27
    tissue protection, 26–27
    wound healing, 27
  and general health, 1, 17
  immunoglobulins in, smoking and, 41
  Salivary glands, 26
    and aging, 32
    and general health, 1, 17
    involvement in infections, 97
    Sjogren’s syndrome and, 31
  Satisfaction ratings, of oral health, 144
  Scaling and root planing, for plaque removal, 206, 206t
  SCHIP. See State Children’s Health Insurance
  Program
  School-based programs. See also Dental schools;
  Health professional schools
dental sealant programs in, 167
dietary fluoride supplements in, 164–165
fluoridated drinking water in, 159t, 162
fluoride mouthrinses in, 165
oral and pharyngeal cancer prevention
  programs in, 170
strategies employed by, 156t
tobacco prevention programs in, 170
Science base. See also Research
  and evidence-based practice, 213, 246
  need for expansion of, 11–12, 285–286
  in oral health, 5, 19–20
Scientific worldviews, 134–135
Scurvy, oral signs of, 101
Sealants. See Dental sealants
Secretary leukocyte protease inhibitor (SLPI), 27
Self-care. See Oral health care system, individual
  approaches in
Senses, 73–75, 77
Sex
  and adult periodontitis, susceptibility to, 41, 65, 66f
  and dental care
    nonutilization, 84t
    utilization, 80t, 81–82, 81t
    wants, 87t
  of dental personnel, 236–237
  and injuries, 73
  and insurance coverage, 231, 232f
  and oral and pharyngeal cancers, by race/ethnicity, 68, 68f
  and oral clefts, 72
  and oral health, 77–78
    ratings of, 144
  and pain, 25, 77
    prevalence of, 73, 73f
  and periodontal disease, 203t
  and Sjögren’s syndrome, prevalence of, 73
  and taste, 78
  and TMDs, prevalence of, 73
  and tooth loss, 66
Sex hormones
  and adult periodontitis, susceptibility to, 41
  pain and, 25
Sexually transmitted diseases (STDs), oral transmission of, 109
Single-gene defects, 49–50
Sjögren’s syndrome, 51
  prevalence of, 73
  swollen parotid glands with, 97
Skin, lesions of, diseases and conditions causing, 98t, 100t
Sleep problems, and quality of life, 137
SLPI. See Secretory leukocyte protease inhibitor
Smell
  aging and, 32
  development and function of, 23, 24
Smokeless (spit) tobacco. See Tobacco
Smoking. See also Tobacco
  and birth defects, 48
  cessation of, 210
  community intervention models, 171
  and oral cancer, 46
  and periodontal disease, 203t, 206
  school-based intervention models, 170
  and trench mouth, 40
Social function, and dental problems, 138–139, 139t
Socioeconomic status. See Income
Sonic instruments, for plaque removal, 206, 206t
Spinal chord, early development of, 29
Spirochetes, and trench mouth, 40
Sports injuries, 50, 73, 173–176, 174–175, 176b, 178
Squamous cell carcinomas, oral, 44
    HPV and, 43, 45
Stannous fluoride to limit gingival inflammation, 205, 206t
State Children's Health Insurance Program (SCHIP), 2, 13, 233–234, 255, 277
States
    data from, need for, 10, 88, 284, 285
    income of, and population-per-dentist ratio, 224, 224f
    on mortality rates for oral and pharyngeal cancer, 70, 70t
    public health systems in, 226–227, 286
STDs. See Sexually transmitted diseases
Steroid hormones, and gingivitis, 39
Stevens-Johnson syndrome, lesions caused by, 100t
Streptococci, 39. See also Mutans streptococci
    Streptococcus sanguis, in heart disease, 107, 117
Streptococcus viridans, oral infections from, 105
Stress
    and immune system, 28
    and periodontal disease, 203t, 206
Stroke, oral infection and, 115–120
    animal studies, 117–118
    mechanisms of action in, 115–117
    population-based studies, 118–120, 119t
Student indebtedness, 237–238
Sublingual glands, 26
Submandibular glands, 26
    aging and, 32
Submucous fibrosis, and oral cancer, 45
Sugars
    and dental caries, 38, 250b
    intake reduction of, 199
    in smokeless (spit) tobacco, 39
Surveillance data, 61–62
    need for, 12, 88–89
    on quality of life, 144–146, 146t
    surveys used for, 61–62
Survival rate, definition of, 62b
Syphilis, lesions caused by, 99t, 109

T
    cells, 28
        smoking and, 41
Tar, tobacco
    carcinogens in, 45
    dysplasia and, 46
    Tartar, and gingivitis, 39. See also Calculus
Task Force on Community Preventive Services, 158, 180
Taste
    development and function of, 23–24
    sex differences in, 78
Tear glands, Sjogren's syndrome and, 51
Technology, future of, 278–279
Temperature, sensitivity to, 24–25
Temporalis muscle, 26
Temporomandibular disorders (TMDs), 52–53
    and chewing function, 136
    clinical management of, 211–212
    diagnosis of, 211–212, 212t
    pain from, impact of, 139–140
    prevalence of, 73
    and quality of life, 145–146
    treatment for, 212
Temporomandibular joint, 26
Teratogens, 47–48
Tetracycline, enamel hypoplasia from, 107
TGF-α. See Transforming growth factor α
Therapeutics, oral fluids in diagnostic tests for, 103, 103t
Thermoreceptors, 24
Thrombosis, from oral cavity bacteria, 117
Thromboxane B2, and heart disease, 115
Thrush, 43. See Candidiasis
    prevalence of, 71
Tic douloureux, 52
TMDs. See Temporomandibular disorders
INF-α. See Tumor necrosis factor α
Tobacco, 191t
    among adolescents, 259b
    and adult periodontitis, susceptibility to, 41
    and alcohol, combination of
        and oral cancer, 45, 208t, 209
        and dental caries, 259b
        as general health risk factor, 4, 10, 18
        and oral and pharyngeal cancer, 259b, 260b
        and oral cancer, 44–45, 169, 170, 208t, 209, 209t
        and oral candidiasis, 42
        oral effects of, 101
        and oral mucosal lesions, 70
        and periodontal diseases, 169, 259b, 260b
        and saliva, 27
    smokeless (spit) tobacco
        among adolescents, 257
        and dental caries, 259b
        and oral and pharyngeal cancer, 44–45, 208t, 259b
        and oral mucosal lesions, 70, 70f
        and periodontal diseases, 259b
prevention programs for, 170
and tooth decay, 39
trends in use of, 259b–260b
Tongue
cancer in, 70
lesions of, diseases and conditions causing, 98t–100t
Tooth/teeth, 26
aging of, 31
birth defects involving, 48–49, 50
clenching of, 190, 191t, 212
conically shaped, in ectodermal dysplasias, 50
cultural significance of, 137–138
decay in. See Dental caries
embryonic development of, 30
grinding of, 52, 212
loss of
by age, socioeconomic status, sex, and race/ethnicity, 66–67
and chewing function, 135–136
malocclusions. See Malocclusions
nutrition in development of, 250b
pain in, 24
primary, 26
restored. See Restorations
staining of, 107
thermal sensitivity in, 24
trauma to
from falls, 50
prevalence of, 72
Toothbrushing, 39, 176, 179, 190
and bacteremia, 104
public knowledge of
for dental caries prevention, 177
for gum disease prevention, 178
public practices, 178
Toothaches, prevalence of, 73, 73f
Toothpaste. See Dentifrice
Touch, sense of, in mouth, 24
Toxic-shock-like syndrome (TSLs), 105
Toxins, saliva and, 27, 103, 103t
Transforming growth factor α (TGF-α), and oral and pharyngeal cancers, 46, 47
Trauma. See also Injury, and oral-facial
prevention of, strategies for, 156t
and RAU, 14
Traumatic ulcers, lesions caused by, 100t
Treacher Collins syndrome, 40
Treatment(s). See also specific disease
future of, 276
outcomes
as determinant of health, 218, 218f
measurement of, 133
Trench mouth, 40
lesions with, 99t
Treponema, and gingivitis, 39
Treponema denticola, in adult periodontitis, 40, 205
Triclosan copolymer, to limit gingival inflammation, 205, 206t
Trigeminal ganglion, oral herpes and, 43
Trigeminal neuralgia, 52
TSLS. See Toxic-shock-like syndrome
Tuberculosis, lesions caused by, 99t
Tumor necrosis factor α (TNF-α)
and adult periodontitis, 41, 205
and glycemic control, 114
and heart disease, 115
and pregnancy, 121
Tumor suppressor genes, mutations of, in oral and pharyngeal cancer, 46
U
Ulcerative colitis, and RAU, 44
Ultrasonic instruments, for plaque removal, 206, 206t
U.S. Department of Agriculture, 223
U.S. Department of Defense, 225
U.S. Department of Health and Human Services (USDHHS), 225, 226, 226t
U.S. Department of Justice, 225
U.S. Department of Transportation, 225
U.S. Department of Veterans Affairs, 225
U.S. Preventive Services Task Force, 156–158
USDHHS. See U.S. Department of Health and Human Services
V
Van der Woude syndrome, 48
Varicella-zoster virus
and chemotherapy, 106
oral lesions with, 98t
Vascular endothelial growth factor (VEGF), 27
VEGF. See Vascular endothelial growth factor
Veillonella parvula, and gingivitis, 39
Velocardiofacial syndrome, 48
Veneral warts, 71
VGS. See Viridans group streptococci
Vietnamese Americans, nasopharyngeal cancer incidence and mortality, 76
Vincent's infection, 40
lesions caused by, 99t
Violence, 51, 72–73
Viridans group streptococci (VGS), 105
Viridans streptococcal shock syndrome (VSSS), 105
Viruses. See also specific virus
  chemotherapy and, 106
  lesions caused by, 98t
  oral cancer and, 45–46
Vitamin B deficiency, oral signs of, 101
Vitamin C deficiency
  and cancer, 251b
  oral signs of, 101
Vitamin D deficiency, oral signs of, 101
Vitamin E, 47
  cancer and, 251b
  and mucositis, 106
VSSS. See Viridans streptococcal shock syndrome

W
  Waardenburg syndrome, 50
  Warts, viral, 43
    oral lesions with, 98t
Water fluoridation. See Fluoride, in drinking water
Well-being
  and oral diseases, 10, 11
  and oral health, 2, 4–5, 18, 19
  in World Health Organization (WHO)
    definition of health, 133
Western scientific worldviews, 134–135
WHO. See World Health Organization
WIC. See Women, Infants, and Children program
Wolinella recta, in adult periodontitis, 41
Women
  and adult periodontitis, susceptibility to, 41, 65, 65f
  and dental care nonutilization, 84t
  as dental personnel, 236
  in dentistry, 223–224, 224t
  elderly, risk factors for, 266–267
  and injuries, 73
  and oral and pharyngeal cancers, 68, 68f
  and oral bone loss, 102–103
  oral health of, 77–78, 266–267
    areas of study in, 78, 78f
  and pain, 25, 77–78
    prevalence of, 73, 73f
    TMDs, 52, 73
  and Sjogren's syndrome, prevalence of, 73
Women, Infants, and Children (WIC) program, 225, 256
Workplace effects, on oral health, 249
World Health Organization (WHO) 18, 133

X
  Xenografts, 208
  Xerostomia. See Dry mouth
    and dental caries, 38
    and oral candidiasis, 42
  Xerostomic side effects, of medication, 107

Y
  Yeast. See Candida albicans