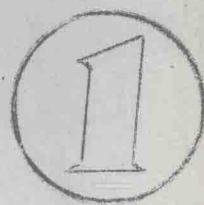


TURNER'S
PERSONAL AND COMMUNITY
Health



CHAPTER 1

The meaning of health and disease

This chapter sets the stage for those that follow. Certainly we want to understand the full meaning of health and disease at the outset. *The American Heritage Dictionary of the English Language* defines health as "the state of an organism with respect to functioning, disease, and abnormality at any given time." Essentially, then, we view health in the context of disease. There are thousands of diseases, but, as we shall see, they have certain fundamental features in common. Above all, the causative factors fall into specific categories. Two of these categories—hypersensitivity and infection—will be discussed in some detail because of their vast implications. We shall also talk about immunity, or the resistance to disease, and take a general look at the very special subject of cancer.

Health and knowledge

Health values

Health progress and problems

Health potential

Student health

Health appraisal

Disease

Allergic reactions

Infection

Immunity

Cancer

Contents

1 The meaning of health and disease, xx

- Health and knowledge, 1
- Health values, 1
- Health progress and problems, 2
- Health potential, 3
- Student health, 4
- Health appraisal, 5
- Disease, 6
 - The disease process, 6
- Allergic reactions, 6
 - Treatment, 8
- Infection, 9
 - Infectious agents, 9
 - Pathogenesis, 9
- Immunity, 10
 - Phagocytosis and antibodies, 10
 - Acquired immunity, 11
 - Natural immunity, 11
- Cancer, 12
- Self-test, 14
- Study questions, 15

2 The human body as a whole, 16

- The cell, 17
 - Basic design, 18
 - Cell division, 18
- Tissues and systems, 18
- Body build, 20
- Body chemistry, 21
- Metabolism, 21
- Genetic code, 22
 - Genetic disease, 22
- Self-test, 23
- Study questions, 23

3 The skeletal system, 24

- The names of the bones, 25
- Classification of bones, 25
- Formation and growth of bones, 25
- The skeleton, 27
 - Male vs female skeleton, 27
- Body posture, 27
- Skeletal disorders and diseases, 30
 - Curvature of the spine, 31
 - Low back pain, 32
 - Foot problems, 33
- Sprains and fractures, 33
- Self-test, 34
- Study questions, 34

4 The muscular system, 36

- Structure and action of muscles, 37
- Individual muscles, 37
- Disorders and diseases of the muscular system, 40
 - Muscular atrophies and dystrophies, 40
 - Myasthenia gravis, 45
 - Tennis elbow, 45
 - Tendinitis, 45
 - Bursitis, 45
 - Gas gangrene, 46
 - Trichinosis, 46
- Self-test, 47
- Study questions, 47

The circulatory system, 48

- The heart, 49
- Blood vessels, 51
- Blood pressure, 52
- Blood flow, 52

- The blood, 54
 - Plasma and cells, 54
 - Clotting, 54
 - Blood types, 55
- Lymphatic system, 57
 - Tonsils, 58
 - Spleen, 58
 - Thymus, 59
- Disorders and diseases of the circulatory system, 59
 - Atherosclerosis, 59
 - Coronary artery disease, 61
 - Cardiac arrhythmias, 62
 - Heart blocks, 62
 - Rheumatic heart disease, 62
 - Congenital heart disease, 63
 - Congestive heart failure, 64
 - Endocarditis, 64
 - Hypertension, 64
 - Varicose veins, 64
 - Embolism, 64
 - Shock, 65
 - Anemias, 65
 - Polycythemia, 66
 - Thrombosis, 66
 - Lymphadenitis, 66
 - Lymphangitis, 66
 - Tonsillitis, 66
 - Infectious mononucleosis, 67
 - Hodgkin's disease, 67
 - Leukemia, 67
- Self-test, 68
- Study questions, 68

6 The respiratory system, 70

- Respiratory tract, 71
- Breathing, 71
- Exchange and transport of oxygen and carbon dioxide, 73
- Respiratory regulation, 73
- The larynx and phonation, 74
- Disorders and diseases of the respiratory system, 74
 - Pneumonia, 74
 - Legionnaires' disease, 74
 - The common cold, 74
 - Influenza, 76
 - Tuberculosis, 77

- Emphysema, 77
- Bronchial asthma, 77
- Atelectasis, 79
- Pleurisy, 79
- Pneumoconioses, 79
- Lung cancer, 79
- Cystic fibrosis, 80
- Self-test, 80
- Study questions, 81

7 The urinary system, 82

- Structural features, 83
- Formation and composition of urine, 83
- Water balance, 86
 - Intake, 86
 - Output, 86
- Acid-base balance, 86
- Disorders and diseases of the urinary system, 88
 - Urinary tract infections, 88
 - Renal failure, 88
- Self-test, 90
- Study questions, 90

8 The digestive system, 92

- Basic structure, 93
- Digestion and absorption, 94
- Feces and defecation, 95
- Regulation, 96
- Disorders and diseases, 96
 - Constipation, 96
 - Diarrhea, 96
 - Food poisoning, 98
 - Infection, 98
 - Malabsorption syndrome, 100
 - Peptic ulcer, 100
 - Diverticulosis, 100
 - Ulcerative colitis, 100
 - Hemorrhoids, 100
 - Cirrhosis, 101
 - Hernia, 101
 - Gallstones, 101
 - Jaundice, 102
 - Appendicitis, 102
 - Cancer, 102
- Self-test, 104
- Study questions, 104

9 The nervous system, 106

- Neurons and nerves, 107
- Stimulus, response, and the nerve impulse, 108
- Spinal cord and spinal nerves, 108
- Brain and cranial nerves, 109
- Autonomic nervous system, 112
- Neurotransmitters, 112
- Sleep, 112
- Pain, 115
- Disorders and noninfectious diseases, 116
 - Unconsciousness, 116
 - Epilepsy, 116
 - Cerebral palsy, 118
 - Multiple sclerosis, 118
 - Parkinsonism, 118
 - Stroke, 118
 - Tumors, 119
 - Mental retardation, 121
 - Dyslexia, 121
 - Mental illness, 123
- Infections, 123
- Self-test, 124
- Study questions, 124

10 The sense organs, 126

- Cutaneous sensations, 127
- Taste and smell, 127
- The eye, 127
 - Eyelids and lacrimal apparatus, 128
 - Visual acuity and optical defects, 130
 - Eye care, 133
- The ear, 134
 - Deafness, 135
 - Tinnitus, 136
 - Ménière's disease, 137
 - Infection, 138
 - Noise, 138
- Self-test, 138
- Study questions, 139

11 The skin, 140

- Epidermis and dermis, 141
- Subcutaneous tissue, 141
- Hair and nails, 141
- Glands, 142

- Skin receptors, 143
- Disorders and diseases, 143
 - Infections involving the skin, 143
 - Acne, 145
 - Dry skin, 145
 - Corns and calluses, 145
 - Psoriasis, 146
 - Lupus erythematosus, 146
 - Contact dermatitis, 146
 - Sunburn, 147
 - Burns, 147
 - Cancer, 147
- Maintaining healthy skin, 149
- Cosmetics, 149
- Self-test, 151
- Study questions, 151

12 The endocrine system, 152

- Thyroid gland, 153
- Parathyroid glands, 156
- Adrenal glands, 156
- Pituitary gland, 158
- Pancreas, 160
- Pineal gland, 160
- Gonads, 161
 - Ovaries, 161
 - Testes, 161
- Thymus, 161
- Prostaglandins, 161
- Enkephalins and endorphins, 162
- Self-test, 162
- Study questions, 162

13 The reproductive system, 164

- Male reproductive system, 165
 - Testes, 165
 - Seminal vesicles, 167
 - Glands, 167
 - Urethra, 167
 - Penis, 169
 - Semen, 169
 - Intercourse, 169
- Female reproductive system, 169
 - Ovaries, 169
 - Uterine tubes, 169
 - Uterus, 170
 - Vagina, 170

- Vulva, 171
 - Mammary glands, 172
 - Menstrual cycle, 173
 - Intercourse, 175
 - Sexual response, 175
 - Masturbation, 176
 - Contraception, 176
 - Oral contraceptives, 176
 - Intrauterine device, 177
 - Diaphragm, 177
 - Condom, 177
 - Cervical cap, 177
 - Spermicides, 177
 - Natural methods, 177
 - Sterilization, 178
 - Disorders and diseases, 178
 - Infertility, 178
 - Impotence and frigidity, 179
 - Cancer, 179
 - Toxic shock syndrome, 180
 - Self-test, 180
 - Study questions, 181
- 14 Pregnancy and childbirth, 182**
- Embryonic development, 183
 - Embryonic disk, 184
 - Sex determination, 186
 - Twinning, 186
 - The placenta, 186
 - Fetal membranes, 188
 - Fetal and maternal growth, 188
 - Pregnancy tests, 189
 - The expectant mother, 189
 - Childbirth, 190
 - Fathering, 192
 - Complications of pregnancy, 192
 - Birth defects and inherited disorders, 192
 - Drugs in pregnancy, 195
 - Alcohol, 195
 - Drugs in nursing mothers, 196
 - Infant mortality, 196
 - Self-test, 197
 - Study questions, 197
- 15 Sexually transmitted diseases, 198**
- Prevention, 199
 - Specific STDs, 199
 - Syphilis, 200
 - Gonorrhea, 203
 - Trichomoniasis, 205
 - Nongonococcal urethritis (NGU), 205
 - Genital herpes, 206
 - Cytomegalovirus infection, 206
 - Hepatitis B, 207
 - Group B streptococcus infection, 207
 - Candidiasis, 207
 - Condylomata acuminata, 207
 - Pediculosis pubis, 208
 - Scabies, 208
 - Rare STDs, 210
 - Self-test, 210
 - Study questions, 210
- 16 The family, 212**
- The modern family, 213
 - Social relations before marriage, 214
 - Dating, 215
 - Going steady, 216
 - Premarital sexual relations, 216
 - Continence and virginity, 216
 - Petting, 217
 - Premarital intercourse, 217
 - Choosing a mate, 217
 - The engagement, 218
 - Marriage, 218
 - Adjustments in marriage, 219
 - Family planning, 220
 - Abortion, 220
 - Infertility, 221
 - Parenting and child growth and development, 222
 - Parenting, 222
 - The infant, 224
 - The preschool child, 225
 - The school-age child, 228
 - Pubescence, 228
 - Adolescence, 229
 - Sexuality, 230
 - Day care, 230
 - Television, 231
 - Alternative life-styles, 231
 - Living together, 231
 - Cohabitation, 232
 - Single-parent families, 232
 - Communal living, 233
 - The single person, 233

- Divorce, 233
 - Counseling, 234
 - Adjustments, 234
 - Children of divorced parents, 235
- Family violence, 235
- Self-test, 236
- Study questions, 237

17 Mental and emotional health, 238

- Characteristics of mental health, 239
- Emotional needs, 240
- Problems of college students, 242
- Steps in achieving mental health, 244
- Adjustment and defense mechanisms, 244
- Personality development, 246
- Factors that help to shape personality, 248
 - Nutritional impact, 249
- Stress, 249
- Mental illness, 250
 - Neuroses, 250
 - Psychoses, 251
 - Personality disorders and sexual deviations, 252
 - Psychosomatic disorders, 254
 - Therapeutic measures, 254
 - Preventive measures, 255
- Death and dying, 256
 - Hospice, 256
 - Euthanasia, 256
 - Bereavement, 257
 - Anatomic gifts, 258
- Suicidal behavior, 258
- Rape, 260
- Child abuse, 261
- Wife abuse, 261
- Self-test, 262
- Study questions, 262

18 Physical fitness, 264

- Exercise characteristics, 265
 - Aerobic vs anaerobic exercises, 265
 - Isotonic vs isometric exercises, 266
- Conditioning exercises, 266
 - Endurance exercises, 267
 - Strength exercises and warm-down, 270
 - Clothing, 270
 - Food and water, 270
- Jogging, 272

- Swimming, 272
- Recreational activities, 274
- Daily activities, 274
- Self-test, 275
- Study questions, 275

19 Nutrition and the diet, 276

- Energy and calories, 277
- Energy and metabolism, 277
- Energy balance, 278
- Nutrients, 278
 - Carbohydrates, 278
 - Fats, 280
 - Proteins, 280
 - Vitamins, 282
 - Minerals, 288
 - Vitamin-mineral supplements, 291
- Food groups, 291
 - Milk group, 291
 - Meat group, 291
 - Fruit-vegetable group, 292
 - Grain group, 293
 - "Others" group, 293
- Combination foods and fast foods, 293
- Fortified foods, 294
- Fatty foods, 294
- Salty foods, 294
- Health foods, 295
- Nutrition labeling, 296
- Food additives, 297
- Malnutrition, 298
- Obesity, 298
 - Cause and treatment, 299
- Anorexia nervosa, 303
- Bulimia, 303
- Self-test, 304
- Study questions, 304

20 Dental health, 306

- Dentition and tooth structure, 307
- Tooth decay and gum disease, 307
 - Preventive measures, 310
- Trench mouth, 311
- Malocclusion, 311
- Erosion and abrasion, 311
- Loss of teeth, 312
- Tooth injuries, 312
- Impaction, 312

- Halitosis, 312
- Pregnancy and dental health, 312
- Oral cancer, 312
- Self-test, 313
- Study questions, 313
- 21 Alcohol and tobacco, 314**
 - Alcohol, 315
 - Chemistry, 315
 - Physiologic action, 316
 - Drunkenness and hangover, 317
 - Alcoholism, 318
 - Tobacco, 320
 - Chemistry, 320
 - Risks of smoking, 321
 - Stopping the habit, 321
 - Self-test, 322
 - Study questions, 323
- 22 Drug abuse, 324**
 - Characteristics of drug abuse, 325
 - Narcotics, 326
 - Sedatives and hypnotics, 327
 - Tranquilizers, 327
 - Hallucinogens, 328
 - LSD, 328
 - Marijuana, 329
 - Phencyclidine, 330
 - Inhalants, 331
 - Stimulants, 331
 - Amphetamines, 331
 - Cocaine, 332
 - Caffeine, 333
 - Drug abuse prevention, 333
 - Nonprescription drugs, 335
 - DMSO, 335
 - Self-test, 336
 - Study questions, 336
- 23 Medical care, 338**
 - Health care professionals, 339
 - The medical checkup, 340
 - Hospitals, 343
 - Drugs and medical devices, 344
 - Drugs, 344
 - Medical devices, 345
 - Medical costs, 345
 - Private health care, 346
 - Tax-supported health care, 347
 - Medicare, 348
 - Medicaid, 349
 - Other programs, 349
 - National health insurance, 350
 - The older generation, 351
 - Nursing homes, 353
 - Cults and quackery, 354
 - Acupuncture, 354
 - Holistic health care, 354
 - Self-test, 355
 - Study questions, 355
- 24 Accidents and safety, 356**
 - Motor vehicle accidents, 357
 - Fatalities, 357
 - The automobile driver, 360
 - Speeding, 360
 - Alcohol and other hazards, 361
 - Seat belts, 362
 - Pedestrians, 362
 - Insurance, 362
 - Home accidents, 363
 - Public accidents, 364
 - Sports and recreational accidents, 365
 - Bicycling, 366
 - Work accidents, 366
 - Occupational Safety and Health Administration, 366
 - Radiation, 368
 - Microwaves, 369
 - Laser light, 369
 - Accident prevention, 370
 - Physical attack, 371
 - First aid, 372
 - Artificial respiration, 372
 - Respiratory-cardiac arrest, 373
 - Bites and stings, 374
 - Severe bleeding, 375
 - Burns and scalds, 375
 - Choking, 376
 - Convulsions, 377
 - Cuts, 377
 - Foreign bodies in eye, 378
 - Fainting, 378
 - Frostbite, 378
 - Head injuries, 378
 - Heatstroke and heat exhaustion, 378
 - Nosebleed, 379

- Poisoning, 379
- Puncture wounds, 379
- Shock, 379
- Sprains and fractures, 380
- Self-test, 380
- Study questions, 380
- 25 Evolution of public health, 382**
 - Infection and communicable disease, 383
 - Immunology, 384
 - Epidemiology, 385
 - Communicable disease control, 386
 - Achievements in disease prevention and control, 389
 - The broadening and changing public health program, 390
 - Legal basis for public health work, 391
 - Legal procedures, 392
 - Self-test, 393
 - Study questions, 393
- 26 Health programs, 394**
 - State public health programs, 395
 - City health departments, 396
 - County health units, 397
 - Federal health programs, 399
 - Department of Health and Human Services (HHS), 401
 - The Department of Agriculture, 405
 - Drug Enforcement Administration, 405
 - International health programs, 407
 - World Health Organization, 407
 - Occupational health programs, 409
 - Voluntary health agencies, 410
 - Professional organizations, 411
 - Self-test, 413
 - Study questions, 413
- 27 School health, 414**
 - Healthful school living, 415
 - School health services, 415
 - Health education, 420
 - Sex education, 421
 - Physical education, 422
 - School and community relations, 423
 - Self-test, 424
 - Study questions, 425
- 28 Environmental protection, 426**
 - Drinking water, 427
 - Sources of water, 427
 - Protecting and checking a water supply, 430
 - Purification, 431
 - Chemical pollution, 432
 - Individual safety measures, 433
 - Waste disposal, 433
 - Refuse disposal, 433
 - Sewage disposal, 435
 - Hazardous waste, 439
 - Disposal sites, 440
 - Radioactive waste, 441
 - Air quality, 441
 - Pollution control, 445
 - Pollutant standards index, 445
 - Indoor air pollution, 447
 - Wood burning, 448
 - Acid rain, 448
 - Noise pollution, 448
 - Self-test, 450
 - Study questions, 450
- Bibliography, 452**
- Answers to self-tests, 482**
- Appendix: Metric system, 486**

As defined by the World Health Organization (WHO), health is "a state of complete physical, mental, and social well-being, not merely the absence of disease or infirmity." Certainly, health is much more than merely not being sick in bed. There are degrees of wellness, just as there are degrees of illness. Physical, mental, and social well-being are interrelated. There is, for example, a great difference between optimal nutrition and nutrition that is merely adequate to prevent obvious disease or between an athlete and a man who has only sufficient vigor to carry on a sedentary occupation.

Normal functioning of all parts of the body contributes not only to efficiency and the ability to do a full day's work without more than healthful fatigue but also to cheerfulness, attractiveness, courage, and enthusiasm for life. Conversely, mental, emotional, and social well-being contribute to physical health. In its various phases and to the degree that it is present, health makes possible a higher quality of living (Fig. 1-1). The desire for a feeling of personal worth is clearly an important driving force in our lives. Health helps us to attain this end by making possible a higher quality of service.

HEALTH AND KNOWLEDGE

Basic to the maintenance of health is an understanding of physical and mental fitness and the means by which they are secured. Sound decisions in matters of personal and community health come from logical reasoning based on a knowledge of the scientific facts involved. Better health comes, of course, not from the mere acquisition of health knowledge but from its application. In other words, health depends not only on what we know but also on what we do. Even though we know cigarette smoking causes lung cancer, many people continue to smoke. Knowledge, in itself, is not enough to make all people stop. It

is a **behavioral problem** as well as an educational one. Repeated warnings—those on cigarette packages, for instance—changing social norms, the work of such groups as Smokers Anonymous, and informed decisions, such as the one to ban all cigarette advertising on television, have helped people to quit or, even more important, not to start the habit at all.

In maintaining health we are caring for a mechanism—the human body—that has no equal. One of its most remarkable qualities is the constant tendency to keep itself in physiologic balance or equilibrium. This steady state of the internal environment of the body is called **homeostasis**. Any physical or chemical drift away from normal sets in motion compensatory mechanisms that tend to correct the imbalance. In this way the body is like the automobile automatic gear shift, which makes needed adjustments by itself. When the engine approaches an uneconomic rate of operation, there is an automatic shift to a higher gear. The body likewise has innumerable automatic physiologic mechanisms. It maintains, for example, the same temperature in the desert and in the Arctic Circle. It maintains a balance of the volume and distribution of body fluids and an acid-base balance. Such compensatory mechanisms will not maintain health in spite of all possible injuries, such as from poisons, pathogenic organisms, and the abuses of unhygienic living, but it is encouraging to know that we have such mechanisms. Health is influenced by heredity, environment, and behavior, but the ability of the body to adjust automatically to changing conditions and to maintain normal functions is a powerful force in health maintenance.

HEALTH VALUES

The attention a person gives to the study and maintenance of health depends on the place of health in his system of values. Should we sacrifice health for other aims, or should



FIG. 1-1 ■ A contrast in health.

other things in life be sacrificed for health? The problem is one of relative values. The person who is struggling against sickness or disability invariably places an exceedingly high value on health. This person says, "Health is the most important thing in life." Those who have the least health value it the most. The variation in evaluation comes from the difficulty humans have appreciating what they have always possessed. Contrast sharpens vision. Things lost take on new values.

Health is certainly not the ultimate aim of life. There are more important things. Honor, integrity, justice, and freedom have been maintained at the cost of human life. Everyone has a normal ambition to perform some useful service in life. This ambition may be worthy of a sacrifice of health, but sacrificing

health does not in itself accomplish the ambition. In fact, it usually defeats it.

The health of a nation has significance beyond the relationship between the health of the individual citizen and his happiness and contentment. Disease is an economic burden that lowers both production and the standard of living. Furthermore, war has periodically thrown nations into a struggle for existence in which the physical vigor of the people has been one of the important factors determining national survival.

HEALTH PROGRESS AND PROBLEMS

The gradual conquest of disease is dramatically reflected in military experience. The

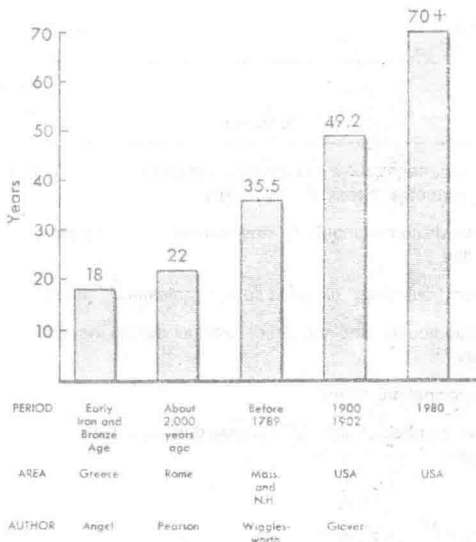


FIG. 1-2 ■ Life expectancy from ancient to modern times.

Redrawn from Statistical Bulletin, Metropolitan Life Insurance Co.

United States Army disease death rate per 1000 in successive wars has been as follows: Mexican War, 110 (seven times the battle deaths); the Civil War (North), 65 (twice the battle deaths); World War I, 16 (one third of the battle deaths); World War II, 0.6. World War I was the first great war in which disease deaths were fewer than battle deaths. Deaths among the wounded also dropped—from 8.3% in World War I to 4.5% in World War II to 1% in the Vietnam War. These changes reflect advances in sanitation, preventive medicine, surgery, and chemotherapy.

Public health progress in the most highly developed countries, including the United States, has been spectacular during the last century (Fig. 1-2). One communicable disease after another has been brought under control. At the same time new health problems have appeared, and the maintenance of personal and community health still presents many challenges. In these days of changing cultural patterns, continuing urbanization and

industrialization, increasing speed of world transportation, and growing effects of the population explosion, society faces acute problems in mental and emotional health, poverty, healthful family living, housing, water and air pollution, disposal of urban wastes, spread of viral disease, increases in venereal disease, drug addiction, costs of medical care, and provision for expanding government health services.

These are only a few of the problems demanding study and attention. Some require community action; others depend on the individual's ability and willingness to assume responsibility for his or her own health (Table 1-1). Developments and programs in some of these fields, such as medical care, drug abuse, pollution, waste disposal, and family planning, are so active that the daily news frequently supplements basic facts in the study of personal and community health.

HEALTH POTENTIAL

Health potential of the individual depends on the kind of body mechanism inherited and on the care of that mechanism—somewhat as the efficiency and service of an automobile depend on the mechanism and its care. What a race horse can do depends on its inheritance, its handling, and its training. Inheritance is never the whole factor. The history of athletics tells of scores of individuals who have achieved distinction in spite of either specific handicaps or a rather frail body in early childhood.

Of course, we do not regard health and athletic achievement as synonymous. Not all healthy persons are athletes. However, speed, stamina, alertness, quick mental decisions, and neuromuscular skill reflect an efficient body mechanism. Achievement in athletics by young men and women who are willing to pay the price in effort and training shows what can be done with the body. Conversely, the wreckage of bodies or minds by abuse or lack of care

TABLE 1-1
Major causes of death in 1980 and associated risk factors

Cause	Percent of all deaths	Risk factor
Heart disease	37.8	Smoking,* hypertension,* elevated serum cholesterol* (diet), lack of exercise, diabetes, stress, family history
Malignant neoplasms	20.4	Smoking,* worksite carcinogens,* environmental carcinogens, alcohol, diet
Stroke	9.6	Hypertension,* smoking,* elevated serum cholesterol,* stress
Accidents other than motor vehicle	2.8	Alcohol,* drug abuse, smoking (fires), product design, handgun availability
Influenza and pneumonia	2.7	Smoking, vaccination status*
Motor vehicle accidents	2.6	Alcohol,* no seat belts,* speed,* roadway design, vehicle engineering
Diabetes	1.7	Obesity*
Cirrhosis of the liver	1.6	Alcohol abuse*
Arteriosclerosis	1.5	Elevated serum cholesterol*
Suicide	1.5	Stress,* alcohol and drug abuse, gun availability

From Office of Disease Prevention and Health Promotion, U.S. Department of Health and Human Services.
*Major risk factors.

shows that health is largely within our own control. We can move in either direction in health status and physical or mental output.

STUDENT HEALTH

In college the student has many aids and opportunities for health maintenance and improvement. One aid is the student health service. It provides emergency care in case of accident or sudden illness. It assesses health status through medical examination or from information supplied by the family physician. It follows through in the correction of remediable defects. Another aid to health is the physical education program. The modern college thus provides a healthful environment and assistance in varying degrees in solving food,

housing, recreation, and personality problems. Physicians, nurses, dietitians, physical educators, health educators, and coaches, as well as teachers, deans, and advisers, are resources in developing physical, mental, and social well-being.

A program of building health starts with an appraisal of health. Acquainting oneself with the nature of health examinations and with the significance of the medical findings is fundamental. If these findings have implications for the college program, the necessary adjustments should be made with the advice of the physician and faculty adviser. Table 1-2 reflects the health status of typical groups of college students. The specific figures in the table are not significant, but it is interesting to see the common departures from health among

TABLE 1-2

Percentage of college students who have various physical conditions

Condition reported	Males (%)	Females (%)
Acne	17	16
Color blindness	28	—
Corrected vision	23	26
Defective vision*	52	56
Dental defects	30	28
Dysmenorrhea	—	23
Enlarged thyroid	1	1
Flatfeet	4	14
Heart abnormalities	5	6
Hernia	13	—
High blood pressure	23	4
Impaired hearing	15	12
Tonsillar defects	11	11

Data from several studies on health of college students based on the examination of a large number of students in several colleges.
*Not 20/20 in both eyes.

young people and the conditions that occur most frequently.

If a first step in the student's health program is correcting remediable conditions or adjusting to a condition that is not remediable, it is certainly not the last. Although the student's health resources are remarkable, each individual is probably more on his or her own than ever before. It is the student, with help, who is responsible for developing desirable qualities of mind, body, and personality.

A good health program is a factor in personality development. Qualities commonly listed in determining a person's strength of personality are (1) ambition, (2) industriousness, (3) persistence and patience, (4) dependability, (5) forcefulness, (6) effectiveness of speech, (7) self-confidence, (8) friendliness, (9) adaptability, (10) tact, (11) cheerfulness, (12) good judgment, (13) sensitivity to criticism, (14) ability to size up people, (15) memory, (16) neatness, and (17) health habits. The student should evaluate habits to see if they are the kind that build for

or against good health and to see how they affect his or her working ability and mental attitude day by day.

Each student has to make personal adjustments to academic life. This involves budgeting time for study, recreation, rest, eating, sleeping, and grooming. It involves following a sound schedule obtaining adequate nutrition and physical activity. It involves improving skills in listening, reading, writing, studying, and taking examinations. For example, new topics or assignments may be approached by making a brief survey of the headings and major topics in the text. The topics may suggest questions for which the student wants answers. The student should read the assigned copy and such supplementary material as will be helpful, giving attention to charts, graphs, tables, and illustrations. Difficult sections may be reread. Problems often will receive clarification in class discussions.

Alert students arrange a study place with proper lighting, chair, table, ventilation, and quiet. They secure needed source materials and plan study periods. They develop habits of serious, regular, day-by-day study with appropriate reviews instead of irregular work and all-night cramming sessions before examinations. Alert students consider with equal care the opportunities for recreational and social activity—sports, clubs, music, debate, dramatics, social functions, and religious activities. Activities suited to one's tastes and aptitudes constitute the desired balance.

HEALTH AT RAISAL

We have spoken of the appraisal of health status through an examination by a physician. A more complete picture of individual health will be obtained if we add facts about normal bodily function, indications of mental and emotional health, the appearance of the individual, and an examination of living habits.

Health appraisal, if we include not merely the absence of disease but also the broader considerations of mental health, emotional health, social health, and personality, would involve the following:

Appearance: grooming, clothing, posture, carriage, and weight

Health status: freedom from disease, correctable defects, normal bodily functions, and the health of mind and emotions

Health practices: immunization, diet, activity, sleep and rest, cleanliness, medical and dental care, recreation, control of the immediate environment, freedom from drug abuse, work schedule, interpersonal relations, and ideals of faith and service

Each of us is different. No one has perfect mental, physical, emotional, and social health. Having a permanent, uncorrectable physical defect does not mean that a person is without health if he or she has made a positive and effective adaptation to it. In large measure the individual determines whether health will be lost, maintained, or improved. The study of personal and community health should lead to wise decisions.

DISEASE

The word *disease* literally means "not at ease"; more formally, it is any deviation from the normal situation in mind or body. Like everything else, there is always an underlying reason or cause for a disease, and typically there is a **predisposing cause** as well. What is more, both the predisposing cause and the inciting cause may be multiple. This, together with the obscurities and subtleties among the processes of the living cell, easily accounts for the almost endless list of diseases of unknown cause (or **idiopathic diseases**, as physicians say). In general terms the predisposing cause either inhibits a defense mechanism or else lays the

groundwork for future pathologic embellishment. The child contracts chickenpox because he or she lacks an antibody against the etiologic virus, and the adult gets a heart attack because an aging, disheveled coronary artery triggers a blood clot. Age, then, is a predisposing factor. Other obvious and well-established predisposing factors include sex, heredity, race, climate, occupation, nutrition, exposure, fatigue, stress, customs, and personal habits.

The disease process

The disease process amounts to cellular injury or functional alteration. The fundamental causes include (1) loss of blood supply; (2) physical agents such as heat, cold, and electricity; (3) chemical agents such as poisons and drugs; (4) hypersensitivity; and (5) infection. Hypersensitivity reactions (or allergies) and infections are alike in that both are caused by agents chemically foreign to the body. Such agents are called **antigens**, or, in the instance of allergies, **allergens**. For example, weed pollens are the causative allergens of the fall hay fever allergy, and certain viruses are the causative antigens of the common cold.

ALLERGIC REACTIONS

Allergies are hypersensitivity reactions caused by a great number and variety of allergens, including the following:

1. Certain foods (notably eggs, milk, fish, meat, and wheat)
2. Certain inhalants (notably pollens and animal dander)
3. Certain contactants that act on the skin (notably poison ivy and chemical irritants)
4. Drugs, vaccines, and antisera
5. Insect stings

We are familiar with food allergies that produce urticarial rashes (hives) and intestinal

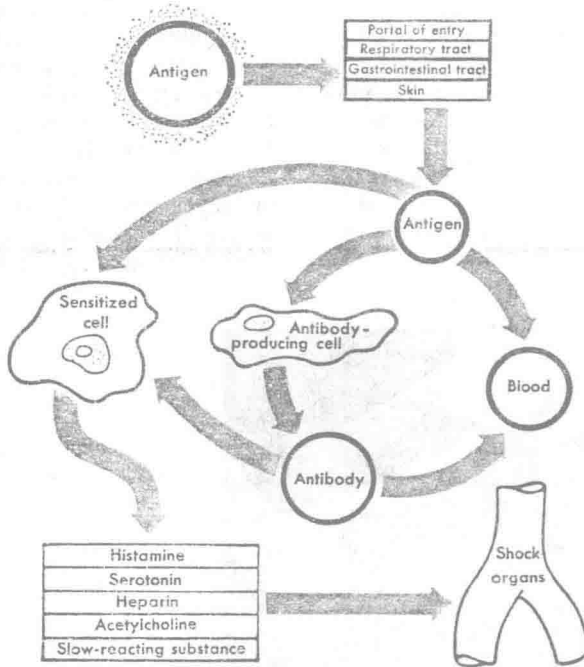


FIG. 1-3 ■ Mechanism of the allergic reaction. The reaction between antigen (allergen) and antibody at the surface of "sensitized cells" causes these cells to release histamine and other harmful agents.

With permission from Therapeutic Notes of Parke, Davis & Co. 67:102, 1960; modified from Logan, G.B.: *Am. J. Dis. Child.* 97:163, 1959.

discomfort. Hay fever and asthma are not uncommon, and we have seen both the symptoms of hay fever (inflamed membranes of eyes, nose, and throat with a watery discharge from the eyes and nose) and the sneezing and wheezing of the person with bronchial asthma. Also, we have seen the blisters produced in the allergic reaction to the toxin of poison ivy. The nature and severity of symptoms vary with different allergens and different individuals.

The mechanism of allergic reactions is not completely understood. In allergies of the **immediate type** the reaction appears within a few minutes after contact with the allergen. The release of histamine or histamine-like sub-

stances from certain sensitized cells seems to be involved in producing the symptoms (Fig. 1-3). This is proved in part by the fact that **antihistamines**, such as diphenhydramine (Benadryl), cause symptoms to subside in many cases. The most pronounced reactions result from insect stings. About 8 people in 1000 are allergic to insects. Symptoms range from mild to severe. But even a mild reaction is ominous, because the next time the person is stung, a moderate to severe reaction may occur. A severe reaction (**anaphylaxis**) is characterized by labored breathing, weakness, shock, and collapse. Death can result in 10 to 15 minutes.

■ Treatment

The first step in the management of an allergy is to discover the causative agent. Sometimes the individual knows very well from successive experiences what causes the allergy. This is likely to be true in the food allergies. If the allergen is not known, a restricted diet may be followed by the addition of one suspected food at a time until the culprit is found.

The cause of an inhalant or contact allergy is less likely to be obvious. If the case history does not reveal the cause, the physician can make a series of patch tests or scratch tests on the skin, applying in sequence extracts from the respective suspected allergens (Fig. 1-4). In a positive reaction a reddened area, wheal, or blister appears at the spot where the suspected allergen was applied (Fig. 1-5).

Allergies may appear in persons who have

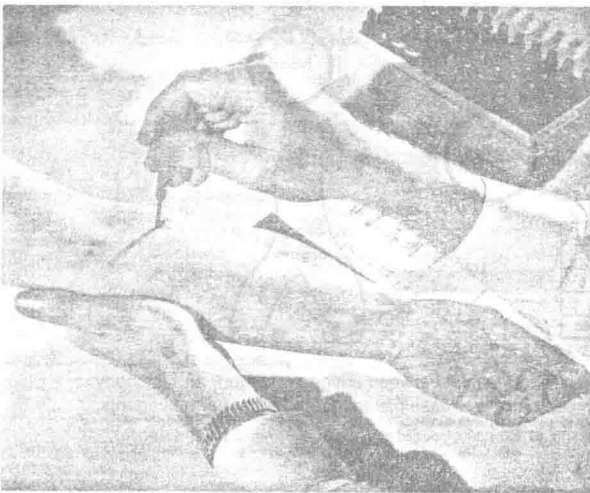


FIG. 1-4 ■ Testing for allergy by scarifying.

From Smith, A.L.: *Microbiology and pathology*, ed. 9, St. Louis, 1976, The C.V. Mosby Co.; courtesy Cutter Laboratories, Berkeley, California.

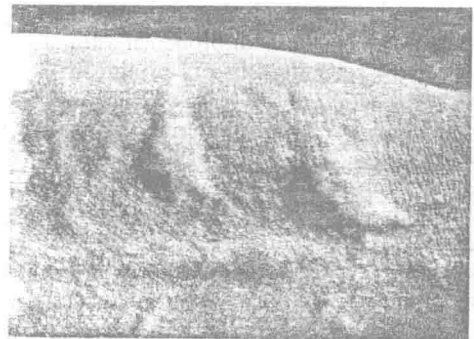


FIG. 1-5 ■ Arm showing three strong reactions for allergy.

From Vaughn and Black: *Practice of allergy*, ed. 3, St. Louis, 1954, The C.V. Mosby Co.