Rabies

► Acute Life-Threatening Infections

Rabies Immune Globulin

► Rabies Vaccination, Active
► Rabies Vaccination, Passive

Rabies Immune Prophylaxis

► Rabies Vaccination, Active
► Rabies Vaccination, Passive

Rabies Vaccination

Synonyms

Rabies immunization

Definition

The first rabies ► vaccine was introduced as early as 1885 by Louis Pasteur. Since 1967, a vaccine produced from human diploids has been available. The rabies vaccination containing a vaccine made from dead viruses is suitable for persons who are at high risk for infection due to their profession or due to traveling. The vaccine is well tolerated, and is given on days 0, 7 and 28, producing almost 100% protection. The first booster is given one year later, followed by further boosters every 2–5 years.

Rabies Vaccination, Active

Synonyms

Rabies immunization, active

Cross-References

► Immunization, Active

Rabies Vaccination, Passive

Synonyms

Application of rabies immune globulin; Rabies immune prophylaxis

Definition

The application of rabies-immune globulin is performed as a prophylactic passive vaccination after a contact with an animal which is suspected of being infected with rabies or which suffers from rabies. In this regard, contact is not only defined as a bite, but also as a touching of the animal or a licking by the animal.

Cross-References

► Immunization, Passive

Race

Synonyms

Subspecies

Definition

Race is socially defined population based on visible, genetically transmitted physical characteristics. People who belong to a race are distinguished in some way from other humans. The most widely observed races are those based on skin color, facial features, ancestry, and genetics. Conceptions of race, as well as specific racial groupings, are often controversial due to their impact on social identity hence identity politics.

Radiation

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Definition

Radiation is the transmission of energy through space, both in the form of waves (electromagnetic radiation, EMR) and in the form of streams of atomic particles (particulate radiation). Each of the several kinds of EMR spectrum is characterized by its own wavelength or frequency. Gamma rays have the shortest wavelength followed by, in increasing order, X-rays, ultraviolet radiation, visible light, infrared radiation, ► microwaves, and radio waves. Some of the forms of particulate radiation are alpha particles, protons, neutrons, and electrons (e^-, β^-, β^+). A narrow meaning of the term radiation is the transmission of energy by waves.

Basic Characteristics

The whole electromagnetic spectrum (EMR and particulate radiation altogether) is divided into two major regions—ionizing and nonionizing, according to wavelength and energy potential. Ionization means disruption of a molecule or atom's structure by removing one or more electrons. Ionizing radiation is more potent, with greater energetic potential, and higher frequencies, but shorter wavelengths than nonionizing radiation. Nonionizing radiation is more benign—of lower and insufficient ionizing potential.

Ionizing Radiation

Ionizing radiation has wavelengths shorter than 100 nanometers (nm; $1\,\text{nm} = 10^{-9}\,\text{m}$), with energies sufficient to produce ionization in matter (both nonliving and living).

Natural radioactivity on Earth may be of cosmic origin (protons and alpha particles from outer space or the Sun), originate in the atmosphere under the influence of cosmic radiation, or, finally, from Earth's crust; these are decay products of uranium and thorium, a trace constituents of some types of rocks and soils. During its natural decay, beside solid radioactive pollutants, ► radon gas is released. Artificial sources of ionizing radiation included detonations of nuclear devices until they were banned. Recent sources include accidents in nuclear power generating plants, uncontrolled release of energy by spent-fuel reprocessing plants, radioactive material from waste sites, some industrial and mining operations, and diagnostic and therapeutic procedures in nuclear medicine and radiology.

Ionizing radiation can produce extremely harmful effects in humans. Acute somatic effects occur within a few weeks of irradiation as *acute radiation syndrome*. The form of syndrome manifestation depends both on the route of contamination (external or internal) and on the contaminated body area. During the intrauterine embryonic period, developmental (teratogenetic) effects are possible. In *chronic radiation syndrome* in adults, genetic mutations and chromosomal aberrations are described after several years of exposure. Late somatic effects also occur in the form of various forms of cancer. According to the International Agency for Research on Cancer, all forms of ionizing radiation (neutrons, alpha and beta particles-emitting radionuclides, gamma radiation, and X-rays), are ranked as group 1 human carcinogens.

Nonionizing Radiation

Nonionizing radiation has wavelengths longer than 100 nm. It is further subdivided into ultraviolet radiation (A), visible light (B), infrared radiation (C), microwaves, and radiofrequencies. The final outcome of this radiation may be quite negligible, beneficial, healthful, or even harmful in different degrees.

A) Ultraviolet Radiation (UVR) Ultraviolet radiation is nonionizing and invisible EMR with wavelengths from 10 to 400 nm. It has longer wavelengths than the ionizing radiation spectrum, but shorter wavelengths than visible light. The borderline between the

two main EMR regions is not clear, therefore the shortest wavelengths of nonionizing UVR (< 100 nm) may produce ionization of matter.

According to main biological effects, the whole UV spectrum is further subdivided into three regions:

- UVA—between 400 and 320 nm (longwave or near ultraviolet radiation),
- UVB—between 320 and 280 nm (middle or sunburn ultraviolet radiation), this is the most biologically damaging UVR to the skin and eye,
- UVC—between 280 and 100 nm (shortwave, far, or germicidal UVR), this is only present from artificial sources on Earth.

UVR may be produced when a body is heated over 2500 K (incandescence) or when electrons are excited (gas discharge). As a large incandescent body, the Sun is the main natural source of UVR. Of the total solar energy on Earth's surface, only 5% falls into the ultraviolet region. There is no solar UVR below 290 nm on Earth because of its high absorption by the ozone layer in the ► stratosphere. Artificial sources of UVR have been used in industry (arc welding), science, medicine (therapy of some skin diseases, or germicidal lamps effective in killing microbes in air), cosmetic enterprises (special sun-tanning lamps), and even in everyday surroundings, like unshielded tungsten-halogen lamps used for lighting.

The Sun is the main source of human exposure to UVR. All outdoor workers are greatly exposed, but other population groups (mostly tourists) are also affected during prolonged unprotected exposure to sunlight. The amount of UVR depends on solar angle, altitude, air pollution, stratospheric ozone, cloudiness, and reflection from surfaces. The amount of UVR is expressed by the ► UV Index. One of the main beneficial health effects of UVR is vitamin D_3 synthesis in skin. However, in general population groups, prolonged exposure to UVR sources results in increased incidence of various cutaneous damages (e. g. erythema, sunburns, solar keratosis, premature skin aging, and malignancies), ocular impairments (photokeratitis, photoconjunctivitis, and possibly cataract formation), and changes in human immune system defense.

B) Light (Visible Light) Light is a form of nonionizing radiation with wavelengths in the range between 400 and 780 nm, and is the only visible part of the whole EMR spectrum. Light can be detected by highly differentiated retinal cells, rods and cones. Through the process of vision, the human eye receives about 80% of all sensations from outside space, e. g. concerning the size and shape of objects, movement, color, illumination and luminance. A certain quantity of light is always necessary because without light, we cannot see, but quality of light is also essential. To prevent deficiencies, both in daylight and artificial ► lighting, collaboration between architects, engineers, lighting designers, and occupational hygienists is needed from the beginning of interior space projects.

Sources of light are both natural and artificial. The greatest natural source of light on Earth is the Sun. The two main ways for producing light by artificial sources are incandescence (heating of solids above 1000 K), and electrical discharge in some gases or vapors. Both of these are based on conversion of electric energy into light. Visible light is the only desired component of artificial lighting sources output, though it is not possible that for this to be the only output obtained. Much of the energy input is dissipated as thermal radiation, by conduction or convection, and a small amount as UVR. A ► laser is a device that produces coherent EMR in any part of the UVR or infrared region, or visible light spectra.

C) Infrared Radiation Infrared radiation (IR) is nonionizing and invisible EMR with wavelengths in the range between 780 nm and 1 mm. The IR radiation spectrum is located between visible light and microwaves. Synonyms for IR are thermal radiation and radiant heat. Due to different biological effects, the IR spectral band is further subdivided into three regions:

- IRA—between 780 and 1400 nm (near or shortwave IR),
- IRB—between 1400 nm and 3 μm (middle IR),
- IRC—between 3 μm and 1 mm (far or longwave IR).

Infrared radiation is emitted from any warm object. There are natural and artificial sources of IR, and the Sun is the main natural source. Occupationally exposed individuals are outdoor workers, e. g. farmers, construction workers, seafarers, fishermen, and fire-fighters. Non-occupationally exposed people are general population groups that stay unprotected under sunlight for prolonged periods.

In industry, artificial sources include objects or technical processes of thermal curing of various materials, e. g. in smelteries, foundries, steel mills and oth-

er heavy industrial plants, and in glass factories. The general population is slightly exposed to IR from radiant heating devices in homes, or from incandescent lighting sources (tungsten filament or halogen lamps). In hospitals, IR lamps are used for heat treatment in physical medicine and pediatric departments (incubators).

Two main properties of IR are important for health considerations. First, the low penetration ability of IR means that surface tissues such as skin and eyes are endangered. Second, the thermal mechanism of its interaction means that heating of the affected tissues is the main consequence. Adverse health effects may be ocular lens opacities and cataract formation during chronic exposure and burns of the skin during acute irradiation. If the unprotected head is exposed, even sunstroke is possible. IR is also a contributing factor of other general adverse health effects like misbalance of thermoregulation and heat stroke.

Cross-References

- ► Lasers
- ► Lighting
- ► Microwaves
- ► Radon
- ► Stratosphere
- ► UV Index

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Radiation Oncology

Synonyms

Radiation therapy; Radiotherapy

Definition

Radiation oncology is concerned with the use of high-energy rays to damage cancer cells and stop them from growing and dividing. It is usually a local treatment targeted at the cancer cells in the affected area. The ► side effects of radiation therapy depend on the dose of treatment and part of the body treated, and might include tiredness, skin reactions, loss of appetite, decrease in white blood cells, and inflammation of tissues and organs in and around the body site irradiated.

Radiation Therapy

► Radiation Oncology

Radioactive Wastes

Definition

Radioactive wastes contain radioactive chemical elements that have no practical purpose. They are normally classified as low-level, medium-level or high-level wastes, according to the amount and types of radioactivity in them. Low-level waste (LLW) includes radioactively contaminated protective clothing, tools, filters, rags, medical tubes, and many other items. High-level waste (HLW) is "irradiated" or used nuclear reactor fuel. Uranium mill tailings are the residues remaining after the processing of natural ore to extract uranium and thorium. The approvals required for disposal of radioactive wastes are granted by regulatory authorities and/or other government agencies in individual countries. There are currently a number of organizations around the world which operate licensed disposal facilities for radioactive wastes. Waste characterization (WC) is the determination of the physical, chemical and radiological properties of the waste to establish the need for further adjustment, treatment, conditioning, or its suitability for further handling, processing, storage or disposal. "Health physics" is

the science of radiation protection – protecting people from exposure to radiation, monitoring the effects of any exposures, and recording any radiation dose received by the person.

Radiology

Definition

Radiology is the field of medicine that is concerned with the use of ionizing and non-ionizing radiation for the diagnosis and treatment of disease. The historic methods, which are still frequently used, are X-rays for diagnosis of disease and X-rays and gamma rays for the treatment of disease, both based on the use of ionizing radiation. Radiology furthermore comprises the use of isotopes and non-ionizing radiation like ultrasound waves and nuclear resonance imaging (MRI).

Radiotherapy

► Radiation Oncology

Radon

Definition

Radon (chemical symbol Rn, ^{222}Rn) is a chemically nonreactive noble gas, and a radioactive chemical element with an atomic number of 86 (in the periodic table) and an atomic weight of 222. It is one of the products of spontaneous uranium decomposition (^{238}U), and directly issues from radium alpha decay (the name radon is from radium, ^{226}Ra). Uranium is a natural trace constituent of some types of rocks and soils in the Earth's crust. Like radium, radon is also an alpha particle emitter, and has a half-life of 3.85 days. Humans are exposed to radon and its decay products, called radon daughters, either professionally in underground mines, or unprofessionally from the ground under and around buildings, from ground water, or from some building construction materials. From the ground, radon gas diffuses through cracks or holes and beside pipes, easily penetrating basements, ground floors, and other spaces of buildings; with penetration facilitated by low pressure. Good isolation and poor ventilation of indoor spaces prevent radon gas from leaving those interiors, and it can easily be inhaled. In such cases, irradiation of surrounding tissues can occur, with possible harmful consequences like lung cancer. Smokers are more susceptible than are non-smokers. Although radon is carcinogenic to humans (group 1, according to IARC—International Agency for Research on Cancer), a higher incidence of lung cancer has only been observed in uranium miners.

Raincoat

► Condom

Raising Children

► Parenting

Random

Definition

Something that is random is unpredictable and governed by chance. The opposite of random is determined. The chief importance of randomness in research is that by using it to select or assign subjects, researchers increase the probability that their conclusions will be valid. Random numbers are used to select random samples or assign subjects randomly. Random assignment increases internal validity. Random sampling increases external validity.

Randomization

Synonyms

On chance distribution

Definition

Randomization is a technique of assigning patients to treatment and control groups in ► experimental studies that is based only on chance distribution. It is used to diminish confounding in clinical trials. Proper randomization of patients is an indifferent yet objective technique that tends to neutralize patient prognostic factors

by spreading them evenly among treatment and control groups. Randomized assignment is often based on computer-generated tables of random numbers.
Randomization is the process of making something random. In biostatistical theory of design of experiments, it is a core principle that involves random allocation of the experimental units across the treatment groups. Thus, if the experiment compares a new drug against a standard drug used as a control, the patients should be allocated to new drug or control by a random process. This ensures that the different treatment groups are statistically equivalent, i. e. such that there should be no foreseeable possibility of any systematic relationship between the data and any measurable characteristic of the procedure by which the data was sampled. In generating the randomization sequences the questions of balance, selection bias and accidental bias should be considered. The randomization can be complete or restricted, algorithmic or non-algorithmic.

Cross-References

► Experimental Studies

Randomized Clinical Trials

Synonyms

Clinical studies

Definition

In a Randomized Clinical Trial (RCT), a group of patients is randomized into an experimental group and a control group. These groups are followed up for the variables or outcomes of interest. A RCT is, after ► meta-analysis, the highest form of evidence. Advantages are the unbiased distribution of confounders and the randomization, which facilitates statistical analysis. Disadvantages are the time, expense, and ethical problems in indications with an established therapy standard different from placebo.

Randomized Controlled Trials

Synonyms

Controlled studies

Definition

Study design comparing outcomes in intervention and control group. Participants are randomized to either intervention or control group in order to minimize selection effects.

Randomized Experimental Trial

► Experimental Studies

Random Variation

Definition

Variability of a process caused by many irregular (and individually unimportant) fluctuations or chnace factors that (in practical terms) cannot be anticipated, detected, identified, or eliminated. As such, random variation represents the sum of many small variations, arising from real but small sauses that are inherent in — and part of — a process, which cannot be tracked back to a root cause. Random variation follows the laws of propability — behaves statistically as a random propability function. Also, the tendency for the estimated magnitude of a parameter (e. g. based upon the average of a sample of observations of a treatment effect) to deviate randomly from the true magnitude of that parameter.

Range of Activity

► Spectrum of Efficiency

Range of Efficiency

► Spectrum of Efficiency

Rapid Disaster-Response

Definition

Activities in rapid disaster-response are designed to minimize loss of life, to organize the temporary removal of people and property from a threatened location and

facilitate timely and effective rescue, ► relief and rehabilitation. Disaster-response is the sum of decisions and actions taken during and after ► disaster, including immediate relief, rehabilitation and ► reconstruction after the issuance of a state of emergency upon the occurrence of a large-scale calamity in order to activate measures aimed at the reduction of the disaster's impact.

Rate

Definition

A measure of a part with respect to a whole. Epidemiological rates can be broken into three general categories: crude rates, specific rates, and adjusted rates. A rate measures the probability of occurrence of some particular event. A rate is expressed as: $x \times k/y$

x = Number of times an event has occurred during a specific interval of time.

y = Number of persons exposed to the risk of the event during the same interval.

k = 100; 1000; 10.000; 100.000; etc.

Rating

► Measurement

► Measurement: Accuracy and Precision, Reliability and Validity

Ratio

Definition

A ratio shows the relative magnitude of one quantity to another, obtained by dividing one quantity by the other. This can be expressed by formula a/b, where a is the numerator and b is the denominator. A ratio is dimensionless if these two quantities have the same unit, otherwise the ratio has dimension. In the mathematical meaning of the word, ratio is equivalent to quotient a/b, i. e. to division of numbers a (dividend) and b (divisor). If this expression is left unevaluated, it is called a fraction.

Examples of ratios include ► odds-ratio and ► risk ratio. A specific type of ratio is ► proportion, in which the numerator is part of the denominator, and with restricted values between 0.0 and 1.0. Proportion is equivalent to a proper fraction. ► Rate is a type of ratio, in which the numerator is represented by the number of events, and the denominator by the population at risk.

Rationing

Definition

Rationing is the controlled distribution of scarce goods and services. In health care, the term rationing describes the process by which choices are made when the demand for health care exceeds the resources available. Rationing involves strategies to allocate scarce health care resources under budget constraints such as rationing by denial, selection or deterrence. The reason for rationing in health care is the continuous upward spiral of medical expenses in all health care systems (► cost containment).

Rationing by Exclusion

► Utilitarianism

Reaction to Severe Stress

► Stress

Reactivation Tuberculosis

► Post Primary Tuberculosis

Reactive Depression; Psychogenic Depression

► Depressive Episode

Readiness

► Motivation

Reading and/or Spelling Disorder

Synonyms

Specific developmental disorder of scholastic skills

Definition

The main feature is a specific and significant impairment in the development of reading and/or spelling that is not solely accounted for by mental age, visual acuity problems, or inadequate schooling. Reading comprehension skill, reading word recognition, oral reading skill, and performance of tasks requiring reading may all be affected. Spelling difficulties are frequently associated with specific reading disorder. During school age, emotional and behavioral problems are often associated with these disorders. The disorders often continue into adolescence.

Reasoned Action Theory

Definition

The theory of reasoned action was first proposed by Ajzen and Fishbein (1980) to predict an individual's intention to engage in a behavior at a specific time and place. The theory was intended to explain virtually all behaviors over which people can exert self-control. Factors that influence behavioral choices are mediated through the variation of behavioral intent. In order to maximize the predictive ability of an intention to perform a specific behavior, it is critical that measures of the intent closely reflect the measures of the behavior, corresponding in terms of action, target, context and time. The predictive power of the model depends significantly on the identification of most or all of the salient outcomes associated with a given behavior for any particular target population.

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Recall Bias

► Bias
► Confounding and Interaction

Recombination

Synonyms

Crossing-over

Definition

Recombination is the biological process of the exchange of genetic information between homologous chromosomes, leading to genetic variability on the chromosomes transmitted from parents to offspring. Recombination or crossing-over results in the production of chromosomes some of whose alleles at multiple polymorphic sites differ from alleles at those same sites on the chromosome of the parent organism. Recombination occurs during prophase of the first round of meiotic cell division (prophase I), and occurs between duplicated homologous chromosomes. Recombination is one of two sources of genetic variation in offspring, the other being independent assortment. Independent assortment denotes the principle of transmission that, after recombination, either homologous chromosomes has an approximately equal probability of being transmitted or not transmitted (50–50%). Recombination and independent assortment are the reasons for why any two offspring of the same two parents share 50% of their genetic code on average. However, there are several constraints on the probability of transmitting a particular variant at random. One constraint is that, on any given chromosome, recombination is most likely to occur near the ends of the chromosomal arms, and least likely to occur near or at the centromere. Another constraint is that the probability of recombination between any two ► polymorphisms that are very close to one another on a chromosome is relatively low, and if as a result, these adjacent polymorphisms are frequently co-transmitted, it is said that they are 'linked' or in 'linkage disequilibrium' meaning that the probability of recombination between them is less than 50%.

Reconciliation

► Mediation

Reconstruction

Definition

Reconstruction is action taken to re-establish a community after a period of rehabilitation subsequent to a ► disaster.

Reconstruction Aide

► Occupational Therapy in Palliative Care

Record

Definition

A record is a group of techniques necessary for the harmonized presentation, organization and communication of the specific knowledge stored within.

Recovery Strategies

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Synonyms

Back-to-normal

Definition

Strategies of re-establishing order, life support systems, and human livelihoods in the area affected by a disaster. The aim of the recovery phase is to restore such an area to its previous (or better) state, if feasible.

Basic Characteristics

Recovery strategies should make it possible to re-establish order and continuity gradually after a natural or technological disaster (► hazards, natural; ► hazards, technological), to build life support systems, and human livelihoods. Recovery efforts mean much more than just rebuilding houses – they are concerned with actions that involve rebuilding destroyed property, but also re-employment and the repair of other essential infrastructure.

After the 1755 Lisbon disaster, Marquis de Pombal led the recovery action based on three principal tasks, formulated as follows: to take care of survivors, to bury the dead, and to rebuild the city. In general, none of these tasks is easy in a post-disaster landscape.

► Disaster responses are focused on immediate needs – providing emergency medical help, food and drinking water, warmth, shelter, and further medical assistance (*cum* psychological help) to survivors. Normal health care systems would not be functioning, yet the needs can be very serious. In the case of the 2004 tsunami, it was necessary to rescue survivors and try to care for millions of homeless, increasingly threatened by disease amidst the rotting corpses. It was also necessary to treat specific syndromes such as ► acute stress disorder, depression, and other anxiety disorders. After the 2004 tsunami, it was not easy to bury the dead. There were not enough body bags to accommodate the many bodies. There were not enough coffins and those available were too small for the bloated bodies of foreigners.

The recovery phase starts when the immediate threat to human life has subsided, after the phase called ► disaster response. The recovery efforts are concerned with issues and decisions that must be made after immediate needs are addressed. In the disaster aftermath, a decision has to be made whether the strategy of retreat is feasible and acceptable. If endangered locations have been developed (people built in the floodplain), a remedy is that humans, and infrastructure, move out of harm's way. Citizens from the disaster-struck area are more likely to accept mitigative measures that might otherwise be unpopular (e. g. permanent relocation) when a recent disaster is in fresh memory. After the Great Midwest Flood of 1993, the US Interagency Floodplain Management Review Committee (IFMRC 1994; Galloway 1999) recommended that the administration fund acquisition of land and structures at risk from willing sellers in the floodplain. The number of families relocated from the vulnerable floodplain locations in the USA was of the order of 20,000 (Galloway 1999).

In some disaster sites, wrecked, roofless, derelict buildings and piles of unidentifiable wreckage are not leveled

to the ground level – they keep the memory of disaster alive. If destruction is beyond repair (or if repair is not recommended, as above), then evacuees permanently move away from the area and the area is abandoned. In history, cases of disappearing settlements after a disaster are well known, e. g. after the eruption of the Vesuvius Volcano, which destroyed Stabies, Herculanum, and Pompeii on 23 August 79.

When the decision of rebuilding settlements is made, masses of refuse, composed of remains of human property, have to be removed to landfills. The homeless family problem has to be addressed, e. g. by establishing a tent city (climate permitting), temporary container-based accommodation, or trailer housing. Services, such as electricity, gas, water, telephone; legal and medical services; sanitation; transportation; postal services; and day care have to be re-established. It is necessary to help the population recover their livelihood, e. g. via temporary employment (possibly related to disaster recovery work, hence the important role of job counseling), to secure money flow and financial support.

In the reconstruction, it is recommended that the location and construction material of the property be reconsidered. An important aspect of effective post-disaster recovery efforts is taking advantage of a unique opportunity to build better. After a disaster, the building codes are carefully examined and strengthened, new housing is monitored and inspected far more stringently, and developers are more accountable. This is unlike before the disaster, when many areas may have experienced rapid, unplanned growth. Disasters unveil that existing structures may not have met building codes (e. g., use of plastic straps attaching roofs to walls), with poor workmanship, use of cheap materials, and temporary fixes.

In some long-term disasters, confinement may last for several months (or years). In this situation, the recovery takes place inside the home. The issue is to have a supply of water and bulk foods and appropriate storage and preparation equipment, and then to construct a simple balanced diet, including vitamin pills, cereals, beans, milk powder, and fat (oil) plus vegetables, fruits, spices, and meats, both prepared and fresh-gardened, when possible.

In the disaster aftermath, when the shelters close, the tent cities fold, the media spotlights turn off, and high-ranking decision makers leave the disaster area to go back to their time-consuming routine duties, continuation of assistance to disaster survivors is less spectacular, but nevertheless badly needed. There may be little available housing for the displaced populations. Rents increase and landlords take advantage of a scarce market. For a long time, a large number of inhabitants may live in substandard, or even unsafe, housing. The economic recovery can last a long time, since many jobs will have been lost and many small businesses destroyed or relocated. Unemployment may remain a critical concern for years. There is also a need for long-term medical assistance, including mental health and health monitoring.

The solidarity and altruism of individuals and groups is crucial for recovery efforts. Ad-hoc aid organizations are formed that do home repair for the uninsured and provide legal or medical advice. Joint initiatives arise to deal with the overwhelming task of moving toward recovery and becoming better prepared for the possibility of another disaster.

Cross-References

- ► Disaster Response
- ► Hazards, Natural
- ► Hazards, Technological

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Recruitment and Retention Schemes

Definition

Recruitment and retention schemes are systematic approaches of organizations to fill vacancies and to

keep personnel from leaving the organization. Such approaches may also apply to professional training schemes leading to graduation. Recruitment means to identify potential candidates and to convince selected persons to take up the job or training. Incentives offered to (future) personnel may be financial/material or non-material in nature. Examples include the improvement of physical working conditions, salary increases, facilitation of return after 'family breaks', policies for promotion, training opportunities, special conditions for insurance schemes, or support for housing and transport.

Recurrence Risk

Synonyms

Fix heritability recurrence risk

Definition

The term recurrence risk refers to the estimate of the probability that a relative (especially a child) will be affected by the same disorder as an affected individual. It describes the probability that a disease present in one family member will occur again in other family members in the same or following generations is known as recurrence risk. In general, for fixed heritability, the recurrence risk is approximately a linear function of prevalence when plotted on a logarithmic scale. In practice, it is necessary to offer some estimation of recurrence risk for counseling purposes even in the absence of any defined mechanism of inheritance.

Recurrent Depressive Disorder

Definition

A recurrent depressive disorder is characterized by repeated episodes of depression. The first ► depressive episode may occur at any age from childhood to old age, the onset may be either acute or insidious, and the duration varies from a few weeks to many months.

Recycling

Synonyms

Reusing

Definition

Recycling is a series of activities that include collecting recyclable materials that would otherwise be considered waste, sorting and processing recyclables into raw materials such as fibers, and manufacturing raw materials into new products. It is the act of processing used or abandoned materials for use in creating new products. For many years direct recycling by producers of surplus and defective materials constituted the main form of recycling. However, indirect recycling, the recycling of materials after their use by consumers, became the focus of activity in the 1990s. For some time, most waste has been deposited in ► landfills or dumps. Landfills are filling up, however, and disposal of wastes in them has led to environmental problems. A growing alternative to such disposal is recycling. The individual consumer plays a large part in recycling. Products that are recycled in large quantities include paper and paperboard, ferrous metals, aluminum and other nonferrous metals, glass, plastics, and yard wastes. Recycling is a key concept of modern ► waste management.

Cross-References

► Communal and Industrial Waste

Red Bug

► Chiggers (Burrowing Fleas)

Red Cross

► International Red Cross and Red Crescent Movement

Reduction of Health Expenditure

Synonyms

Cost containment

Definition

Reduction of health expenditure implies a wide variety of strategies and measures to reduce overall health care expenditure, the growth rate of expenditure or certain costs of health care services. These measures include

for example enhanced government regulation of the prices of health care services through changes in the payment method of providers, co-payments, managed care programs, patient education, etc. The reason for the trend of cost containment in health care is the upward spiral of medical expenses in all health care systems due to medical progress and an improvement of technology, the expansion of coverage by public health systems and aging populations in the industrial world with higher levels of ► chronic diseases and ► disability.

Cross-References

► Resource Allocation

Refugee

Synonyms

Displaced person; Fugitive

Definition

A refugee is a person who has left or has been forced to leave his country or native place in order to escape persecution, war, terrorism, extreme poverty, famines or natural disaster.

Refugees and Internally Displaced People

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Definition

A refugee is any person fleeing to a place of safety and being outside the country of his or her nationality (UNHCR 1996). In contrast, internally displaced people (IDP) are those who have fled to a place of safety within the national borders of their country of origin. Both refugees and IDP are at-risk populations in terms of health. Recent international activities try to integrate both subgroups using the unifying concept of forced migration.

Basic Characteristics

Refugees and Relief Organizations

The United Nations High Commissioner for Refugees (UNHCR) is the UN organization caring for refugees. In the year 2005, the total population of concern to UNHCR increased to 20.8 million persons worldwide (UNHCR 2005). Of this endangered population, about 40 percent are regarded as being refugees, 32 percent as being internally displaced persons (IDP) and 11 percent as being stateless (► stateless person). These figures are estimates and the true numbers might be even higher (UNHCR 2006, 2). The International Organization for Migration is reporting 30 to 40 million unauthorized migrants for 2005, 6.6 million internally displaced persons and 8.4 million refugees worldwide (IOM 2006). In 2001, the World Health Organization released a fact sheet concerning emergency and humanitarian action (WHO 2001). Within the WHO, the Department of Emergency and Humanitarian Action is co-ordinating efforts of WHO with other humanitarian organizations worldwide. Assessment of health risks, health co-ordination, surveillance and prevention in the light of the human rights to health constitute the core elements of WHO's activities in emergency and humanitarian action.

Legal Situation in Forced Migration

On 28 July 1951 the United Nations adopted the Convention relating to the Status of Refugees that has been the comprehensive international codification of the rights of refugees down to the present day (UNHCR 1996). Article 1 (Definition of the term "refugee") of Chapter 1 (General Provisions) of the Convention constitutes a refugee being any person fleeing to a place of safety and being outside the country of his or her nationality. Hence, the crossing of an international border has been the legal precondition for full protection by the UN Refugee Convention, thus depriving the major population of internally displaced people (IDP) of the complete shelter of international law worldwide. There are attempts at international level to integrate both subgroups under the unifying concept of forced migration (University of Oxford 2006).

Health Hazards in Forced Migration

Refugees as well as internally displaced persons always constitute a population at elevated risk of severe dam-

age to health and life, morbidity and mortality being seriously elevated especially in refugee camps. Their forced migration might have been stirred up by natural, man-made or complex ► disasters (Gardemann 2002). At the place of refuge major health hazards are constituted by structural or individual violence, by trauma and psychosocial distress, by overcrowding of accommodation facilities or unfamiliar climatic conditions, by lack of shelter, food, of safe drinking water, by unfamiliar infective agents or by lack of basic medical prevention and treatment. To alleviate these major health hazards, the principles of Primary Health Care as stated in the Alma Ata Declaration of the World Health Organization in 1978 have to be followed.

Humanitarian and Technical Standards

As a consequence of the disastrous situation in camps after the Rwanda Genocide in 1994, the major humanitarian agencies founded an open source of humanitarian and technical standards for emergency situations (The Sphere Project 2004). UNHCR is also providing standard references for all aspects of humanitarian assistance (UNHCR 2000). The International Committee of the Red Cross, in its function as a body of international law impartially officiating humanitarian assistance within armed conflicts, has been making major contributions to all aspects of public health in wartime (Perrin 2001). In addition to the UN Convention relating to the Status of Refugees in all cases of international or non-international armed conflicts, the international humanitarian law is also applicable (Haug 1993). The United Nations Office for the Coordination of Humanitarian Affairs is operating "► reliefweb" as a global hub for time-critical humanitarian information on complex emergencies and natural disasters (UN-OCHA 2006).

Disaster Relief and Public Health

Recent media focus on forced migration movements after natural or man-made disasters worldwide has shifted public awareness and concern somewhat away from long-term international development cooperation to humanitarian disaster response. An earmarking of donations after circumstantial media coverage in particular is restricting the options of humanitarian agencies in their ► relief operations for refugees. Funds may be re-routed away from structural development projects into acute humanitarian relief operations. Moreover, isolated actions of disaster response may counteract long-term development projects by generating a price rise in local markets, by poaching local health staff or by privileged medical treatment in comparison with the resident population of the host country (Razum, Gardemann and Will 2006). From the very first day of action, any reasonable project of short-term disaster response and relief for refugees has to blend well, and co-operate extensively, with the local system of health and administration in the affected countries and societies. Examples of ► rapid disaster-response with the option of full and sustainable integration into local health structures are demonstrated by the Emergency Response Units of the International Federation of Red Cross and Red Crescent Societies (IFRC 2006).

Cross-References

► Disaster
► Rapid Disaster-Response
► Reconstruction
► Relief
► ReliefWeb
► Stateless Person

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Refuse Management

► Waste Management

Registration of Infectious Diseases

► Outbreak Management and Surveillance of Infectious Diseases

Registration of Occupational Injuries

Definition

Registration of occupational injuries is the process of collecting and recording data on ► occupational injuries. Registration could be organized on the enterprise, local community, regional, state, or national level. National laws specify the procedures for registration of ► occupational accidents as well as identifying persons responsible for submitting the information on occupational accidents. In most countries, the employer is responsible for submitting data on occupational accidents. Each country decides on the amount and the structure of data in the occupational accident reporting form. This huge variability among countries means that only basic comparison is possible on an international level.

Registry

Definition

A registry is a ► database and associated applications that collect a minimum dataset on a specified group of patients (often those with a certain disease or who have undergone a specific procedure), health professionals, organizations, or clinical trials. Registries can be used to explore and improve the quality of care or to support research; for example, to monitor long-term outcomes or rare complications of procedures.

Regression Analysis

Regression analysis is an inferential statistical method that develops equations (regression models) from empirical random samples to make predictions about the values of a dependent variable (outcome, response) based on the values of one or more independent variables (covariates, explanatory variables, predictors) with known probabilities of accuracy. If there is more than one independent variable the method is referred to as multiple regression. There are two major classes of regression – parametric and non-parametric. Parametric regression requires choice of the regression equation with one or a greater number of unknown parameters. Linear regression, in which a linear relationship between the dependent variable and independent variables is posited, is an example. The aim of parametric regression is to find the values of these parameters which provide the best fit to the data. The number of parameters is usually much smaller than the number of data points. In contrast, the nonparametric regression requires no such a choice of the regression equation. In regression analysis, there are several methods for variable-selection procedures aimed at selecting a reduced set of the independent variables: step-wise regression, forward selection and backward selection.

Regulated Competition

Synonyms

Managed competition

Definition

Regulated competition models are supposed to increase the efficiency of health care markets by increasing competitive pressure for health insurers and health care providers. A comprehensive set of regulatory instruments is supposed to counteract unwanted consequences of competition in health care markets.

Cross-References

► Competition for Health Care

Regulating Oneself

► Self Regulation

Regulation

► Cross-Sector Efforts
► Regulatory Mechanisms

Regulation of Pharmaceuticals (Drug Regulation)

Definition

Effective drug regulation has many aims. It promotes and protects public health by ensuring that medicines are of the required quality, safety and efficacy; and it ensures that health professionals and patients have the necessary information to enable them to use medicines rationally. It also ensures that medicines are appropriately manufactured, stored, distributed, and dispensed; that illegal manufacturing and trade are detected and adequately sanctioned; that promotion and advertising is fair, balanced, and aimed at rational drug use, and that access to medicines is not hindered by unjustified regulatory work.

National governments are responsible for establishing strong national drug regulatory authorities (DRAs) with a clear mission, solid legal basis, realistic objectives, appropriate organizational structure, adequate number of qualified staff, sustainable financing, capacity to exert effective market control, and access to technical literature, equipment, and information.

Regulatory Law

► Administrative Law and Public Health

Regulatory Mechanisms

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Synonyms

Regulation

Definition

Market failures would be imminent in most unregulated health care markets. Thus, regulatory mechanisms influence the way health care systems are financed and the way demand and supply in health care systems are determined. On the supply side, regulatory mechanisms strive to solve agency problems in the relationship between patients and health care professionals by introducing payment systems. However, little progress has made in designing payment schemes that encourage physicians to act as perfect agents for their patients as well as for third-party payers.

Basic Characteristics

Designers of health care systems around the world use a variety of regulatory mechanisms in order to overcome market failures that would be imminent in unregulated health care markets. Competitive health insurance systems need to overcome ► adverse selection. Comprehensive coverage leads to ► moral hazard and a relationship between patient and physician that has severe agency problems (► agency theory), which may lead to ► supplier-induced demand. The basic domains of regulatory action by designers of health care systems are health care financing, regulation of demand, and regulation of supply. For regulation of health care financing and regulation of demand, see ► health financing, ► health insurance markets,

► consumer choice, and ► competition, health care. This essay is therefore only concerned with the regulation of supply. More specifically, we explore regulatory mechanisms that are intended to reduce agency problems in the relationship between health care professionals and patients.

Patients rely on health care professionals to reduce information asymmetries and to support them so that they can make informed choices. This assumes that health care professionals act as perfect agents for their patients and refrain from pursuing self-interests that might be divergent from the interest of the patient. However, in practice physicians are quadruple agents. They pursue the interest of the patient, their own self-interest, the interest of the ► third-party payer, and the interest of society as a whole (Rice 2006). The key for aligning the interests of patients, physicians, third-party payers, and society as a whole is the development of physician payment systems. Before the introduction of third-party payers, health care professionals faced no external obstructions in treating their patients. They negotiated the price for their services individually with the patient and had a rather strong bargaining position in the physician-patient relationship. However, third-party payers intervene in this relationship and change the balance of power – most physician payments nowadays are determined by payment schemes, which are administered by a third-party payer in most cases. Traditionally, payment systems for physicians have been based on ► fee-for-service, ► capitation, ► salary, or some combination of these.

Fee-for-Service

Fee-for-service payment systems are intended to allow physicians to react in a flexible manner to patients' needs and also grant the physicians a high degree of autonomy. Financial rewards are directly connected with work performed; therefore, they are popular with the medical profession. Under fee-for-service payment systems, physicians tend to delegate fewer tasks to other health care professionals than under capitation or salary payment systems (Greß et al. 2006). This is not surprising since fee-for-service payment systems contain incentives to maximize income by maximizing self-produced services, which also entails longer working hours. Third-party payers try to counteract the trend for the expansion of services under fee-for-service systems by setting budgets for the volume of services. They also try to steer provider behavior by changing relative prices for services, e. g. by reducing relative prices for technical procedures and by raising relative prices for time-consuming individual counseling. While fee-for-service payment systems increase the activity of physicians, they also allow for a high degree of flexibility (Engström et al. 2001).

In fee-for-service systems, patients tend to consume more health care services than in capitation- or salary payment systems. However, without evidence on patient health status and clinical outcomes it is unclear if the increased consumption of services itself is hazardous or beneficial for patients (Gosden et al. 2001).

Capitation

Capitation is intended to reduce incentives for supplier-induced demand and to increase incentives for continuity of care. While there may be "under-delegation" in fee-for-service systems, there may be "over-delegation" in salary and capitation systems. In capitation, there are incentives to encourage physicians to withhold care, which may result in under-treatment of patients. Physicians can reduce their workload without reducing their income by referring their patients to other providers and can increase income by increasing the number of patients on their lists (Lynch 1998). For physicians in capitation systems, it may be profitable to dump patients (► dumping) in order to attract favorable risks (health care costs of the individual are lower than capitation payments for the individual), and to actively discourage non-favorable risks (health care costs of the individual are higher than capitation payments for the individual). However, this kind of behavior is severely restricted by ethical restraints. While risk-adjusted capitation payments are technically and administratively complex, they greatly reduce incentives for risk selection in situations where ethical restraints against risk selection may be less effective (Hutchinson et al. 2000).

Salary

A salaried payment system is intended to combine basic income security for physicians with high accessibility for patients. However, in salaried systems, patients sometimes complain about discourteous physicians. This behavior probably reflects low motiva-

tion of providers who have limited opportunities to increase income. Moreover, private practice may be more rewarding, not only financially but also professionally. However, a study from the UK shows that job satisfaction does not necessarily have to be lower in salaried systems than in capitation/fee-for-service systems (Gosden et al. 2002).

Mixed Payment Systems/Pay-for-Performance

"There are many mechanisms for paying physicians; some are good and some are bad. The three worst are fee-for-service, capitation, and salary. Fee-for-service rewards the provision of inappropriate services, the fraudulent upcoding of visits and procedures, and the churning of "ping-pong" referrals among specialists. Capitation rewards the denial of appropriate services, the dumping of the chronically ill, and a narrow scope of practice that refers out every time-consuming patient. Salary undermines productivity, condones on-the-job leisure, and fosters a bureaucratic mentality in which every procedure is someone else's problem (Robinson 2001: 149)."

This statement reflects the fact that little progress has so far been made in designing payment schemes which encourage physicians to act as perfect agents for their patients as well as for third-party payers (Rice 2006). However, a number of new payment schemes in the US may provide promising solutions. ► Pay-for-performance schemes associate part of the physician's payment to performance indicators such as clinical outcomes and patient satisfaction (Rosenthal et al. 2004; Rosenthal et al. 2005).

Cross-References

- ► Adverse Selection
- ► Agency Theory
- ► Capitation
- ► Competition, Health Care
- ► Consumer Choice
- ► Dumping
- ► Fee-for-Service
- ► Health Financing
- ► Health Insurance Markets
- ► Moral Hazard
- ► Pay-for-Performance
- ► Risk Adjustment
- ► Salary
- ► Supplier-Induced Demand
- ► Third-Party Payer

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Rehabilitation

Definition

The health strategy that, based on the WHO's integrative model of human functioning and disability, aims to enable people with health conditions experiencing or likely to experience disability to achieve and maintain optimal functioning in interaction with the environment.

Cross-References

- ► Prevention, Tertiary

Rehabilitation Delivery

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Definition

The World Health Organization defines rehabilitation as an active process by which those disabled by injury or disease achieve full recovery, or, if full recovery is not possible, realize their optimal physical, mental, and social potential and are integrated into their most appropriate environment. This refers to people with chronic illnesses, after trauma, and with congenital disabilities.

Basic Characteristics

Background

There are around 600 million people with disabilities worldwide. The disabilities may be physical, sensory, and/or mental conditions and limit the way the disabled persons carry out their daily activities. Many disabled people live in developing nations and do not have access to rehabilitation services of any kind. Internationally, there have been efforts to improve the quality of life for disabled people and their families in recent year, which are reflected in a stronger emphasis on social elements instead of predominantly the medical perspective. ► community based rehabilitation services emerged, especially in developing countries with only limited rehabilitation infrastructures. As rehabilitation aims to restore full independence by eliminating or at least reducing a handicap and by improving ability to participate in social life, it covers medical, psychological, occupational, and social aspects.

Approaches of Rehabilitation Delivery

Rehabilitation delivery aims at helping a disabled person to regain or acquire knowledge and skills, thus generating maximized ► functional ability and minimizing disability and handicap. This will allow for activity and participation by improved physical, psychological, and social function. There are three approaches towards rehabilitation. The first approach aims at reducing or eliminating disability by providing appropriate treatment and using medication control, for example. The second approach has the objective of acquiring new skills and strategies that will reduce the impact of disability such as enabling a disabled person to use a wheelchair for longer distances. The third approach helps to alter the physical and social environment to facilitate living with a given disability. An example could be the alteration of the work environment. In many cases, two or all of the approaches are pursued.

Types of Rehabilitation

Rehabilitation delivery covers a wide field of different services offered. The major categories of rehabilitation services are medical rehabilitation services, vocational rehabilitation services, and residential/community rehabilitation services. Medical rehabilitation is still a key element of rehabilitation delivery. It aims at minimizing physical, intellectual, and social consequences of disease, illness, injury, aging, and congenital factors. Amongst the most common health conditions targeted by medical rehabilitation are stroke, ► spinal cord injury, ► traumatic brain injury, ► arthritis, amputation, spinal pain, respiratory dysfunction, cardiac/pulmonary dysfunction, ► multiple sclerosis, ► Parkinson's disease, ► motor neuron diseases, and ► cancer. The objectives of medical rehabilitation are to maximize ► functional ability, restore or enhance vocational ability, improve ► quality of life, and avoid or reduce the need for ► long-term care. Vocational rehabilitation aims to enable temporarily or permanently disabled persons to enter, return, or remain in employment. Vocational rehabilitation offers a wide range of employment and pre-employment services to disabled persons. These services include, for example, ► sheltered work and supported employment. Vocational rehabilitation programs offer, amongst other services, career exploration, skill and potential assessment, advice and counseling on job selection, training in prevocational skills, training for particular jobs, and assistance in finding a job. Residential/community rehabilitation services offer informal services for disabled persons in residential settings like group homes, supported living, or assisted living settings. The objective is to enable persons with physical, cognitive, mental, or sensory disabilities to live and function as independent-

ly as possible at home, at work, and in the community.

Delivery Settings

Rehabilitation services are offered in a wide range of rehabilitation facilities and multidisciplinary and interdisciplinary ► rehabilitation teams are usually involved in providing the different services. With regard to medical rehabilitation, the first phase of rehabilitative care is usually provided to patients at acute care hospitals, general medical or surgical wards, trauma centers, or intensive care units. This sub-acute rehabilitative care – also called ► short-term rehabilitation – is either delivered in the rehabilitation unit of the hospital, in a dedicated rehabilitation hospital, or by outpatient rehabilitation services. The rehabilitation hospitals provide close medical supervision and have physicians, nurses, and therapists available. The therapies offered include ► physical therapy, ► occupational therapy, and ► speech therapy. At the end of the stay in the rehabilitation hospital, the patient is either moved home with – if required – outpatient rehabilitation services or transferred to another, longer-term, facility, which could be a skilled nursing facility or a long-term care hospital. Skilled nursing facilities and long-term care hospitals offer services for people with more severe disabilities who need to stay longer term but sometimes have less intense rehabilitation needs (especially relevant for skilled nursing facilities). Those facilities usually offer the whole range of rehabilitative therapies. Patients that are sent home can continue their rehabilitation in outpatient rehabilitation settings. The facilities focus on providing diagnostic, therapeutic, and restorative services for persons who periodically require rehabilitation services. They might offer the whole range of those services or specialize on specific areas e. g. physical therapy or speech therapy. The patients come either from home or from residential settings. There are also residential/community rehabilitation services that are offered for disabled persons in residential settings like group homes, supported living, or assisted living settings.

Benefits of Rehabilitation Delivery

There are several proven benefits of rehabilitation delivery on an individual level. Rehabilitation improves and optimizes both the physical and social functioning of the affected individual. It furthermore reduces the risk of unnecessary complications. Rehabilitation improves the chances and accelerates the speed of living independently at home and returning or starting to work. Rehabilitation also enforces the concentration of therapy and thus decreases the length of hospital stay and results in improved outcomes. On a micro- and macroeconomic level, rehabilitation can lead to cost reductions by reduced length of hospital stay, fewer complications, fewer unnecessary hospital admissions and readmissions, less sickness absence, lower early retirement, increased productivity, continued tax payment, and reduced payment of state benefits.

Conclusion

Rehabilitation efforts have grown significantly over the last 25 years and several delivery models have emerged and developed. Formal training programs have been established worldwide for the education of specialists in the different fields and areas of rehabilitation. Rehabilitation is commonly accepted as an important field in health care and public health. Rehabilitation is now shifting from its traditionally reactive focus towards a more proactive one yet there are still too few studies of rehabilitation that specifically address the future challenges and implications. The scientific, technological, and communications revolutions underway have to be utilized worldwide to better serve the needs of people that require rehabilitation services in the most integrated way possible.

Cross-References

► Motor Neuron Diseases
► Multiple Sclerosis
► Occupational Therapy
► Parkinson's Disease (PD)
► Physical Therapy
► Sheltered Work
► Speech Therapy
► Spinal Cord Injury
► Traumatic Brain Injury

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Rehabilitation Teams

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Definition

The rehabilitation team consists of professionals from different disciplines that are involved in the rehabilitation process. The multidisciplinary and interdisciplinary team agrees on explicit objectives that have an impact on team setup and function. It is a key success factor that the skills and roles are clearly defined and understood by each team member. The rehabilitation team works with the disabled person and their family and defines an appropriate, realistic, and timely treatment plan embedded in an integrated rehabilitation program.

Basic Characteristics

Team Structures

Successful rehabilitation teams have to be more than a mere collection of different health professionals from multiple disciplines. What actually differentiates an interdisciplinary team from only a multidisciplinary team is that the interdisciplinary team pursues a client centric approach. This means that the goals are set in cooperation with the disabled person and their family and for each single discipline. Such an integrative approach requires the team to define common actions and work cross-boundaries, with each individual bringing in their specific experiences, skills, and expertise. The rehabilitation teams are often led by a physician, which is primarily driven by historical or political reasons, but still makes sense as the physician often has the broadest view of the patient as a whole as well as of the contribution of the different team members. The core members of a rehabilitation team are usually the rehabilitation physician, a rehabilitation nurse, a clinical ► neuropsychologist, an occupational therapist, a physiotherapist, and a speech and language therapist. Depending on the specific case, there might be other specialists involved like, for example, social workers, ► dieticians, or ► podiatrists. In some cases, a key worker or case manager is assigned to act as liaison between the rehabilitation team, the disabled person, and the family, by providing information about the rehabilitation process and feeding back the thoughts and aspirations of the disabled person and their family to the team. The rehabilitation teams are usually established in all rehabilitation settings, which can be hospital-based and other inpatient settings as well as outpatient rehabilitation services.

Key Benefits of Rehabilitation Teamwork

There are several benefits that arise from establishing interdisciplinary and multidisciplinary rehabilitation teams. A rehabilitation team allows for improved communication and knowledge sharing between the representatives from the different disciplines. Tackling a case as a team enables a consistent, client centric, and goal-oriented approach and improves continuity of care. The stimulating environment has positive effects within the team by enhancing the contribution of each member, improving their motivation and passion, and allowing for a more effective working style. If the team is set up correctly, with clear rehabilitation objectives for the patient, the output of the team is usually higher than the sum of the individual professional inputs as experiences and workload are shared.

Outcome Measures

Outcome measurement has gained increasing importance in recent years in the health care industry. There is a wide range of different outcome measures in rehabilitation. The outcome measures have to be defined accurately to ensure that they do not only reflect the goal that has been set for the rehabilitation effort but also the process by which the goal is achieved. Outcome measures are a tool to evaluate the service but it is always

crucial to examine the underlying process as well, and get a detailed understanding of the whole context of the situation. When it comes to evaluating the work of rehabilitation teams, at least the following three standards concerning multi-professional working should be fulfilled. 1) The rehabilitation team should work according to written criteria for seeing and treating their patients. 2) The teams should define appropriate outcome measures, document at least one at admission of the patient, and review its fulfillment at discharge. 3) There should be a detailed rehabilitation plan for each patient with clearly defined goals that have been aligned with the patient and the family.

Conclusion

Rehabilitation will face constant changes in upcoming decades. There will be changes in the structure and function of the rehabilitation systems worldwide. To deliver rehabilitation services in the most efficient and effective way, there will be further efforts to enhance networking and integration both within the rehabilitation industry but also with other stakeholders involved in or close to the process. Furthermore, continuous learning and education is required to meet the changing needs of patients and society. The establishment and enhancement of rehabilitation teams, especially for more specialized rehabilitation services, will contribute to facing the future challenges by providing a coordinated source of information, advice, and treatment, thus facilitating minimization and prevention of disability and handicap.

Cross-References

- ► Dietician
- ► Neuropsychologist
- ► Podiatrists

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Rehydration

Synonyms

Replacement of fluids; Substitution of fluids; Fluid therapy

Cross-References

- ► Therapy of Infectious Diseases

Rehydration Solution

Synonyms

Replacement of fluids; Substitution of fluids; Fluid therapy

Definition

In oral rehydration the loss of fluids and electrolytes is replaced without intravenous infusions. The amount of an oral rehydration solution (ORS) depends on the assumed loss of fluids (or weight) and the requirements of the organism. To compensate the loss properly, the solution has to provide an optimal composition of salts (electrolytes) and sugar (glucose). This is achieved by an uptake of 60 mmol sodium, 20 mmol potassium and 90 mmol glucose (16.2 g) per liter and an osmolality of 240 mosmol/l. Osmolality means the amount of dissolved particles per liter of the solution. A number of products, which follow these recommendations, are available. A simple and easily self-made oral rehydration solution should contain eight teaspoons of sugar (40 g) and one teaspoon of salt (5 g) in one liter of boiled water. Cola or fruit juices are not suitable for rehydration because their content of sugar is too high and that of electrolytes too low. Furthermore, the osmolality of these beverages is too high.

Cross-References

- ► Therapy of Infectious Diseases

Reimbursement

Definition

Reimbursement in health care refers to the reimbursement of all types of health care services provided. Med-

ical services and drugs in the ambulatory sector or in hospitals are reimbursed by the health insurance of a patient. The reimbursement may be 100% or lower according to the service received and the health insurance contract. If a patient is not fully reimbursed for a treatment or drug he has to make a direct payment or co-payment in order to fill the gap between the price of a service and the reimbursement.

Reinfection in Sexually Transmitted Diseases

► Ping Pong Infection

Reinfection in Social Diseases; Reinfection in Veneral Diseases

► Ping Pong Infection

Relationship

Definition

A relationship is a connection between two or more variables usually assessed by a measure of association. Informally a term that describes a case where one variable is depending on the other, or a case where values of one variable vary together with values of the other variable(s). The relationships may be causal, meaning that the changes in one variable depend on the changes in another; or they may be correlational, meaning that the variables tend to change at the same time, but there is not necessarily a causal relationship between the two variables. A relationship between two variables that can be described by a straight line when variable values are plotted on a graph is a linear relationship.

Cross-References

► Association

Relative Odds

Synonyms

Odds ratio (OR); Cross-product ratio

Definition

The odds ratio is a measure of association, in which a value of "1.0" means that there is no relationship between variables. The value of an odds ratio can be less than or greater than 1.0. The magnitude of any relationship is measured by the difference (in either direction) from 1.0. An odds ratio less than 1.0 indicates an inverse or negative association. An odds ratio greater than 1.0 indicates a positive correlation.

Cross-References

► Odds Ratio (OR)

Relative Outcome Risk

Synonyms

Cumulative incidence ratio; Relative risk

Definition

The risk ratio (RR) of an event is the risk of the outcome in the treatment group (or exposed group) divided by the risk in the control group (or unexposed group). RR is an example of exposure effects used in connection with dichotomous outcomes. When the exposure factor under study is a risk factor RR $>$ 1. RR $=$ 1 when there is no association between exposure and disease. RR $<$ 1 corresponds to a protective exposure. In relative risk regression models, where regression coefficients for main effects exposure variables have an interpretation of log relative risk, a significant interaction between exposure and a second variable means that the second variable is an effect modifier. Logistic regression and multiplicative Cox regression are all examples of multiplicative models for which the relative risk is the implicit measure of effect. Relative risk is the same as the cumulative incidence ratio which represent the ratio of the risk of disease in an exposed cohort over a defined time interval to the risk of disease in an unexposed cohort over this same time interval.

Cross-References

► Risk Ratio

Relative Ratio (RR)

► Relative Risk

Relative Risk

Synonyms

Cumulative incidence ratio; Relative ratio (RR)

Definition

The relative risk quantifies how many times more or less likely the disease is in "exposed" people compared to "unexposed" people. Traditionally, exposure has been considered in terms of environmental agents, but in genetic studies exposure can refer to the underlying genotype or allele. A null value of 1.0 indicates that the disease is equally likely in exposed and unexposed people; a value greater than 1.0 indicates that the disease is more likely in exposed people; and a value less than 1.0 suggests that the disease is more likely in unexposed people. Usually, a relative risk is given in percent.

Cross-References

► Risk Ratio (RR)

Reliability

Definition

Reliability indicates the degree to which the measurement instrument is consistent, free from random error, and the measurements of the characteristics of individuals under different conditions yield similar results. There are three ways to analyze reliability: internal consistency reliability, test-retest reliability and inter-rater reliability. Internal consistency reliability is the degree of congruence of items on the questionnaire or scale. Congruence between them suggests that all items measure the same thing as the instrument as a whole. Inter-rater reliability measures the agreement of two or more raters that use the same information on the same analyzing unit. Test-retest reliability is an estimation of the scale of stability over time that is measure of result congruency obtained by repeated measurement on the same objects, under the condition that there was no change in the condition of those objects.

Relief

Definition

Relief is assistance or intervention from outside during or after ► disaster to meet the life preservation and basic subsistence needs.

Relief Organization

► Humanitarian Agency

ReliefWeb

Definition

ReliefWeb is an independent, internet-based source of information on humanitarian emergencies and ► disasters. It is administered by the UN Office for the Coordination of Humanitarian Affairs (OCHA). ReliefWeb has been started in 1996 and has been designed to assist the international humanitarian community in evidence-based delivery of emergency assistance. ReliefWeb maintains three offices in three different time zones (New York, Geneva, and Kobe) to update the web site around the clock, posting some 150 maps and documents daily from over 2,000 sources from the UN system, governments, NGOs, the scientific community and the media.

Religion

Synonyms

Faith; Devotion; Spirituality

Definition

Religion is commonly defined as belief concerning the supernatural, sacred, or divine, and the moral codes, practices and institutions associated with such belief. It may also be understood as the sum total of answers given to explain humankind's relationship with the universe.

The relation of human beings to God or the gods or to whatever they consider sacred or, in some cases, merely supernatural.
A belief in God with the knowledge and observation of religious Cults in their abundance, sacred songs, and artistic representation of pictures of churches or temples.

Religion and Health

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Definition

There are many different definitions of ► religion. One of the most commonly used defines religion as a set of beliefs, values, and practices based on the teaching of a ► spiritual leader. Religion is a system of thought, feeling, and action shared by a group. Also, religion is an acknowledgment of the extraordinary, the mysterious, the supernatural. The religious consciousness generally recognizes a sacred order and elaborate a technique to deal with the inexplicable or unpredictable elements of human experience.
Most languages have no word for religion but this does not mean their speakers are not religious.

Basic Characteristics

Types of Religious Systems

Religion is an essential part of the human experience.
Main concerns of every religion are health, wealth, and the pursuit of happiness. Through religion people express their desire for a better life. How "better", "healthy", "wealthy" or "happy" are understood varies from one community to another as well as from one individual to the next. The ways in which it is appropriate to express one's desire for the above attributes also vary. Sometimes wealth or the good life are not defined by human desire but by divine dictate. People adjust their views, beliefs, and actions to what is acceptable to their source of authority.
Indigenous religions are the majority of the world's religions. They are as diverse as are languages, cultures, traditions, and the ways of life of people living in a variety of settings all over the world. *Indigenous religions are co-operative activities in which individuals often have considerable freedom.* There is considerable diversity of indigenous religions. Each indigenous religion is unique to a specific ethnic group or part of a group. However, several groups may share elements of belief and ritual because of common ancestry or mutual influence. Believing and acting in a religious mode is incorporated in every day life and is part of the social, cultural as well as economic and political actions and relationships of the group.
Due to growth and spread of transcultural or global religions (Buddhism, Christianity and Islam) some indigenous religions have been rejected, abandoned or destroyed. Others have accepted the arriving religion on their own terms slotting it into an indigenous understanding. Many have adapted to the presence of more powerful dominant religions, but many people have returned to their 'traditional' religion or are engaged in both indigenous and newer religion.
Many beliefs and practices of indigenous religions are not systematized. The distinction between the natural and the supernatural or divine usually is not relevant to the traditional religions. In many indigenous religions spirits may have much greater power than humans. Their powers are perceived not as altering the way the world commonly works but as explaining occurrences in nature or in the social world.

Religion and Health

Understanding and explanation of causes and consequences of illness and health very often are different from the evidence based medical viewpoint. In some indigenous religions it is believed that illness is a result of spirit possession. Spirit possession is found in virtually all religions of humankind from earliest times until now. Its forms and belief content, show an amazing diversity, for example shamanism (Arctic, Siberian and other) and zar and bori cults in Africa.
Approaches to healing are different as well. Very often in indigenous religions we encounter men and women who are believed to have extraordinary powers. Understanding regarding the way these powers have been acquired and exercised varies from group to group. In general, however, some people are thought to have inherited the capacity to harm others and to have a dis-

position to do so. Typically they are accused of inflicting illnesses on specific individuals. On the other hand, very often it is believed that some men and/or women have powers of healing which is an important issue in terms of acceptance of medical care and provision of health service.

Religious practices may be beneficial for human health as proved in some investigations. For example, many indigenous religions forbid the use of certain food types during specific times of the year.

Is religion related to better health? Research in this area is obscure but not entirely absent. Australian studies for example have found greater marital stability, less alcohol and illicit drug use, lower rates of and more negative attitudes toward suicide, less anxiety and depression, and greater altruism among the religious. Religiosity has also been associated with less cigarette smoking, more conservative sexual practices (reducing risk of sexually transmitted diseases), lower cortisol and catecholamine levels (for meditators), lower blood pressure, lower cholesterol, and even lower risk for colon cancer. Health practitioners should consider a patient's religion or spirituality in clinical practice.

Religious practices have to be considered in terms of either health benefits or a possible disturbing factor in utilization of health care, depending on the features of specific indigenous group.

Health professionals working in indigenous communities have to be aware of the religious practices and beliefs of indigenous groups. What is more they should be trained to react accordingly if they estimate religious issues might interfere with the treatment. Further research of the relationship between spirituality and health of indigenous groups is needed for better understanding of causes as well as more successful implementation of treatment.

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Religious

► Spiritual

Religious Wars

Definition

A religious war is a war fought due to religious reasons. For the purpose of such definitions, this includes wars between Protestants and Catholics because of different religious denomination during the sixteenth and seventeenth centuries.

Remedy

► Drug Law

Removable Partial Denture

► Partial Removable Dental Prosthesis

Removable Prosthesis

► Complete Removable Dental Prosthesis
► Partial Removable Dental Prosthesis

Removal

► Disposing

Removal of Viable Microorganisms

► Sterilization

Repeated Measurements

Definition

Research situation in which the groups of cases are measured more than once, i. e. before and after an intervention. The feature of experimental design in which several observations of the same variable belong to the same test subject.

Repeated Measures Design

► Paired Groups Design

Replacement of Fluids

► Rehydration
► Rehydration Solution

Replication

Synonyms

Repeating

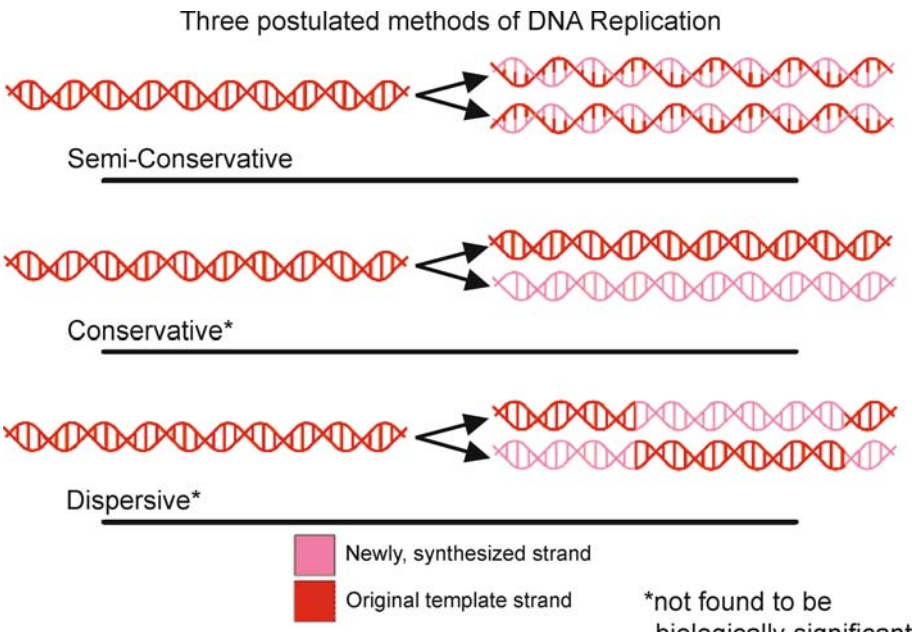
Definition

Replication is performing the same treatment combination more than once to increase confidence in those findings; repetition of the same research procedures (usually by a second researcher) for the purpose of determining if earlier results can be duplicated; the collection of two or more observations under a set of identical experimental conditions. Repeating the creation of a phenomenon, so that the variability associated with the phenomenon can be estimated. If affordable, replication should be part of every design. Replication allows us to compute a model-independent estimate of the process standard deviation. Such an estimate may then be used as a criterion in an objective goodness of fit test to assess whether a given model is adequate. Such an objective test can be employed only if the design has built-in replication. Some replication is essential; replication at every point is ideal.

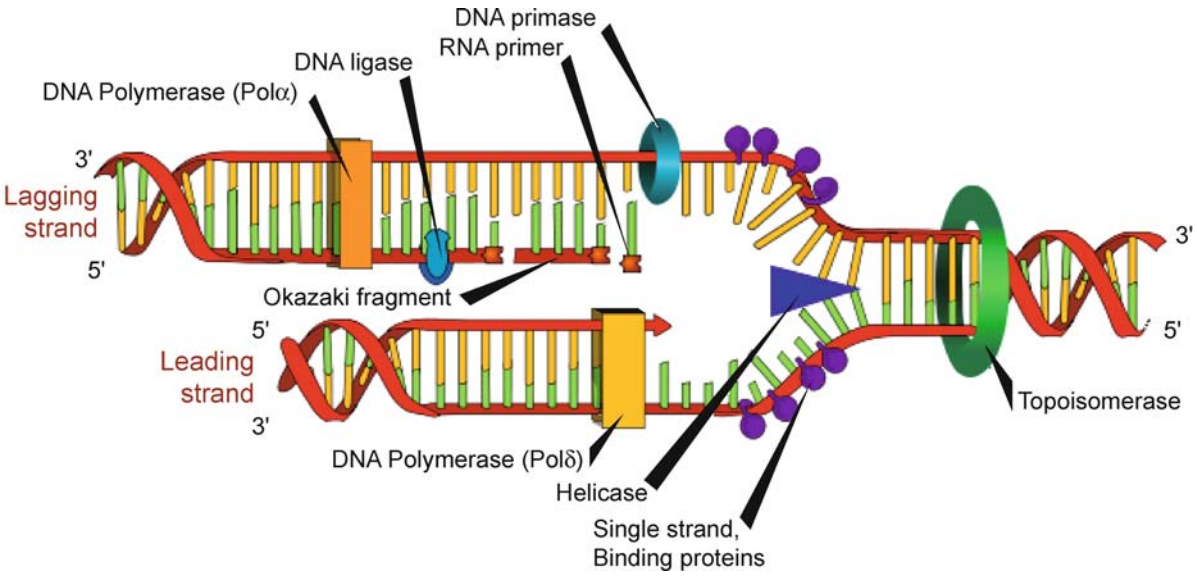
Replication (DNA)

Definition

Replication is the process by which DNA is copied, producing two new double-stranded DNA sequences from one original. Each new double-stranded sequence is made of one strand which initially served as a template, and one strand which was constructed on that template; hence, it is therefore said that DNA replication is 'semi-conservative' (Fig. 1). Several complicated steps transpire in order for DNA to replicate. The first step is the separation of the DNA double-strand. In this first step, several enzymes perform key functions: topoisomerase 'nicks' one strand at a specific site, the origin of replication, breaking a bond between two adjacent nucleotides to lower torsional stress and permit uncoiling; helicase unwinds and separates the two strands, dissociating the base pairs; and single-strand binding proteins attach to the separate strands, holding them open. With this newly opened 'replication bubble', the enzyme primase reads the exposed single strand and attaches short segments of ribonucleotides ('primers' of RNA) at various specific sequences in order to create sites from which to begin replicating the DNA. It is then that the enzyme DNA polymerase begins the process of attaching their 5′ ends to the 3′ ends of the RNA primers by removing phosphate ($-PO_4$) groups from deoxynucleotide triphosphates (dNTPs) to extend a new duplicate strand along the template. At a replication origin, replication will proceed bidirectionally on each strand, towards both the 5′ and 3′ ends. DNA polymerization, however, always goes from the 5′ to 3′ direction. On one of the two strands, a single primer will be used to start the addition of nucleotides from 5′ to 3′; on this strand, replication proceeds continuously as the DNA double-strand is unwound and separated into individual strands. The strand which is continuously duplicated is called the leading strand. However, on the complementary strand, and on the 5′ side of the replication origin, the template is being opened in a 5′ direction. As



Replication (DNA), Figure 1 Illustration of semi-conservative vs. conservative replication



Replication (DNA), Figure 2 Illustration of replication at the site of uncoiling and opening of the template

a result, primase attaches RNA primers at multiple sites along the single strand as the distance from the origin of replication increases (Fig. 2). At each primer, DNA polymerase attaches nucleotides until it encounters the end of that segment of DNA at another primer. Thus, the strand opposite the leading strand, the lagging strand, is made by continuously duplicating short stretches in the 5′ to 3′ direction as the bubble expands. These short stretches of replication on the lagging strand are collectively called Okazaki fragments. After a section of strand has been duplicated, the sequence is proofread to ensure both correct duplication of the strand and the removal and replacement of the RNA primers with the appropriate deoxyribonucleotides. Finally, any remaining nicks or separations in the strand are sealed using the enzyme DNA ligase.

Reportable Disease

► Notifiable Disease

Representativeness of a Surveillance System

Definition

In order to generalize findings from surveillance to the target population at large, the data from a surveillance system should reflect the population characteristics related to time, place, and person. Representativeness is assessed by comparing the characteristics of health events detected through a surveillance system with those of all such health events in the target population. A lack of representativeness may lead to misallocation of health resources.

Reproductive Health

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Definitions

Reproductive health refers to the complete physical, mental and social well-being in all matters concerning the reproductive system, its functions and processes. Reproductive morbidity may be divided into three categories: obstetric/maternal morbidity (related to pregnancy and childbirth), contraceptive morbidity (complications with methods of birth control) and gynecologic morbidity (endocrine disorders, infertility, cancer, sexual dysfunction, symptoms related to the ► menstrual cycle and ► menopause, sexually transmitted infections).

Healthy sexuality and reproduction involves safe, satisfying behavior and experience. Reproductively healthy people are able to reproduce, and enjoy the freedom to decide if, when, and how to reproduce. Both sexual and reproductive health is influenced by the availability of necessary resources, individual decision-making, and environmental contexts. Sexuality and reproductive concerns change over a person's lifetime; thus, gender and lifestages affect sexual and reproductive health.

Basic Characteristics

Sexual and reproductive health are vital elements of physical and emotional well-being. But while sexual and reproductive health are sometimes synonymous, healthy sexual expression need not always lead to reproduction. Healthy reproduction includes a problem-free conception, normal pregnancy and birth, and easy postpartum recovery. Gender-specific reproductive health information is essential for informed consent, and should include information about sexual and reproductive behavior that is preventative in nature. Loving relationships in early childhood and later life also support sexual and reproductive health. Access to adequate and affordable health-care is essential for safe pregnancy, childbirth, and postpartum recovery. Sexual coercion and violence, genital cutting, inadequate child-spacing and child trafficking all threaten individual health, especially of women and children. Sexual and reproductive health are closely related to the realization of human and reproductive rights.

Adolescence, Sexuality and Reproductive Health

Adolescence is typically a time of sexual experimentation. Ideally, good sex education cultivates understanding and awareness of a broad range of human sexual expression, as well as the long-term risks of some behaviors. Adolescents may be sexually vulnerable because of family history and relationships, cultural norms and societal pressures. Statistically, adolescents are at comparatively high risk for unintended pregnancies and ► sexually transmitted diseases, including ► HIV/AIDS. Half of all new HIV-infections take place among people under the age 25, and girls and women are disproportionately affected.

About 10 percent of all newborns worldwide have teenage mothers. Impaired access to family planning services and basic sex education has led to a worldwide increase in the number of young single mothers. Pregnant teenagers often experience poor nutrition, inad-

equate weight gain, and high rates of smoking, thus experiencing higher risk pregnancies.

Reproductive Responsibilities, Family Planning and Abortion

Sexual pleasure as well as sexual risk goes hand-in-hand with reproductive responsibility, and men and women alike are responsible for healthy sexual and reproductive praxis. Sexual and reproductive coercion, on the other hand, can take different forms: Most extreme forms would include being forced to have sex, or to carry an unwanted child. Lesser forms include overmedicalization of normal reproductive practices like pregnancy. Further, the prevention of unintended pregnancies requires access to a wide range of family planning methods including abortion. Unsafe abortion can lead to maternal morbidity and mortality and can potentially cause later infertility.

Childlessness and Infertility

Many couples choose to remain childless. Other couples have trouble conceiving. There are about 80 million infertile men and women worldwide, and many causes of ► infertility are preventable. For example, the most common cause of infertility are sexually transmitted diseases, which the use of condoms could prevent. Likewise excessive use of toxic substances (e. g. caffeine, tobacco, alcohol, drugs), ► environmental pollutants, excessive exercise, and weight loss or weight gain can result in abnormal ovulation and sperm production. Additionally, an increasing number of women working in formal economies are postponing childbearing until the age of 35–45, when the chance of becoming pregnant is reduced.

Pregnancy

Pregnancy is a normal condition for a reproductively healthy woman. At the same time, pregnancy may induce conditions the woman might not otherwise experience, like hypertension, ► gestational diabetes, ► anemia, and ► depression. Effective pregnancy management can minimize these conditions. Access to information about the physiological changes of pregnancy, good nutrition, proper exercise, stress reduction, and working during pregnancy, as well as access to the assistance of a trained birth attendant should be available and affordable for all women. Having many children and lacking control over child-spacing can also threaten women's long-term health. Additionally, other factors over which women do not have control – exposure to ► environmental toxins, economic and cultural stressors, and violence (4–20 percent of women worldwide experience violence during pregnancy) – affect the health and wellness of mother and fetus.

Childbirth

Experiencing an uncomplicated delivery can contribute to a women's overall good physical and mental health, and can simultaneously be an empowering experience. Women choose to give birth at home, in birthing centers, and in hospitals. Despite worldwide improvements in childbirth outcomes – fetal and maternal mortality and morbidity rates – contemporary public health initiatives focus on the disparities of childbirth outcomes throughout the world. Adverse socio-economic conditions, inadequate care during pregnancy, lack of good childbirth support, smoking, drinking, and drug use contribute to childbirth-related death and disability. Many women in developing countries lack medical and midwifery care, while in most European and North American countries there is an overmedicalization of birth (high tech – low touch). Despite the rising prevalence of induced labour, epidural anesthesia, and c-section deliveries (in some countries, as high as 30 percent cesereans or more), research does not support the overall efficacy of these high intervention rates for women's and children's long-term health.

Postpartum Period

After birth, women require rest and quiet. At this time, the well-being of the mother and child is closely linked. Opportunities for parents and children to bond will increase the likelihood of long-term physical and mental health. Some women are vulnerable to postpartum depression, not only in the days immediately following birth, but also for as long as a year afterward. Social support can help alleviate the stress and challenges of adding a new family member. Long-term successful ► breastfeeding can be faciliated by consultations from experts as well as family support and cultural acceptance. There are some long-term physiological advantages for women who bear children, especially for those who are young at first birth and breastfeed for pro-

longed periods of time. These include lower incidence of breast and ovarian cancer, reduced risk of fibroids, and less incidence of mental illness, particularly in old age.

Reproductive and Sexual Health of the Elderly

Like ► menarche (the onset of menstruation), ► menopause (the cessation of menstruation) does not require medical intervention. In recent years, however, many women in industrialized countries have been encouraged by their doctors to take hormone treatments as anti-aging antidotes. These hormone treatments have been shown to increase cardiovascular risk and estrogen-induced cancers. Menopause is the cessation of reproductive but not sexual capability. Improving male sexual performance by taking drugs is efficient but also adds (e. g. cardicovascular) health risk. Maintaining healthy sexuality can positively affect all aspects of physical health and emotional well-being. The need for intimacy does not disappear with aging, although physiological changes in hormone secretion may alter sexual functioning of men and women.

Reproductive Health Care and Health Promotion

Important reproductive health indicators are: contraceptive prevalence rate, maternal and perinatal mortality ratio, antenatal care coverage, births attended by skilled health personnel, low birth weight prevalence, prevalence of anemia in women, maternal morbidity and mortality owing to abortion, reported prevalence of women with ► female genital mutilation (FGM), prevalence of infertility in men and women, STD and HIV prevalence among pregnant women and knowledge of STD and HIV related prevention practices.

Improving antenatal, perinatal, postpartum and newborn care; providing high-quality services for family planning, including infertility services; eliminating unsafe abortion; combating sexually transmitted infections including HIV, reproductive tract infections, cervical cancer and other gynecological morbidities; and improving sexual health are fundamental aspects of reproductive and sexual health care. Well-designed, comprehensive, community-based sexual and reproductive health services can empower women and men to make safe and satisfying sexual and reproductive health choices (WHO 2004).

Cross-References

► Anemia
► Breastfeeding
► Depression
► Environmental Pollutants
► Environmental Toxins
► Female Genital Mutilation
► Gestational Diabetes
► HIV/AIDS
► Infertility
► Menarche
► Menopause
► Sexually Transmitted Diseases

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Reproductive Tract Infection (RTI)

Definition

Reproductive tract infections are infections of the genital tract. They affect both men and women. Some RTIs (such as syphilis and gonorrhea) are sexually transmitted, but many are not. RTIs include endogenous infections, such as bacterial vaginosis, or iatrogenic infections that appear as a result of unsanitary medical procedures.

Cross-References

► Infertility

Research

Definition

A continuous process with a precisely defined aim (or aims) and duration as well as a conveniently chosen research strategy. It implies existence of a plan and a certain number of accurately chosen test subjects whose characteristics are properly explained and are observed and measured using instruments of acknowledged quality. It contains an adequate description, analysis, generalization, interpretation, and presentation.

Cross-References

► Ethics, Aspects of Public Health Research

Research Hypothesis

► Alternative Hypothesis

Research Question

Definition

A research question acts as the guiding force behind each experiment. It is the broad question that the experiment is supposed to answer. The research question poses the problem of the relationship between the objective(s) and the purpose(s), and between the specific experimental procedure and why a researcher is doing a distinct procedure in the first place.

Research Review

► Systematic Reviews

Research Synthesis

► Systematic Reviews

Reservoir of Infection

Definition

The reservoir is the natural habitat of the infectious agent. It may be any person, animal, plant, soil, or substance in which an infectious agent normally lives and multiplies. The reservoir typically harbors the infectious agent without injury to itself and serves as a source from which other individuals can be infected. The infectious agent depends primarily on the reservoir for survival.

Residential Care Facility

► Assisted Living Facilities

Residential Health Care Facility

► Nursing Homes

Residual

Definition

The difference between the predicted value (often from a regression equation) and the actual or observed value is termed the residual value. Residuals reflect the overall badness of fit of the model. Examination of residuals in regression analysis will identify atypical cases. Ideally, the residuals should have constant variance along the line. A normal probability plot of the residuals can check this. In the plot of residuals against the explanatory variable (or the fitted values), there should not be any pattern if the assumption of constant variation is met, i. e. residuals do not tend to get larger as the variable values get larger or smaller.

Residual and Late-Onset Psychotic Disorder

Definition

A disorder in which alcohol- or psychoactive substance-induced changes of cognition, affect, personality, or behavior persist beyond the period during which

a direct psychoactive substance-related effect might reasonably be assumed to be operating. Onset of the disorder should be directly related to the use of the psychoactive substance. Cases in which initial onset of the state occurs later than episode(s) of such substance use should be coded here only where clear and strong evidence is available to attribute the state to the residual effect of the psychoactive substance. Flashbacks may be distinguished from psychotic state partly by their episodic nature, frequently of very short duration, and by their duplication of previous alcohol- or other psychoactive substance-related experiences.

Cross-References

► Substance Induced Disorders

Resiliency

Definition

Resiliency is a property of a system that describes its smooth and fast recovery from a state of failure.

Resistance

Synonyms

Resistibility; Insensitivity

Definition

Resistance means insensitivity. In connection with microorganisms resistance is understood as the insensitivity for antibiotics or chemotherapeutics. One has to differentiate between natural and acquired resistance. In cases of natural resistance the characteristics of bacterium make the drug ineffective. These characteristics can either lie in the structure of the bacterium or their enzymes, which are able to neutralize the drug. As for acquired resistance, a bacterium, which has once been sensitive for an antibiotic becomes insensitive due to changes in its structure or its metabolic capabilities. The increased, and sometimes uncritical, use of antibiotics supports the development of resistant bacteria and diminishes the number of antibiotics that are effective against particular pathogens. The mismanagement of antibiotic treatment leads to the development of multiresistant bacteria.

Resistibility

► Resistance

Resource Allocation

Synonyms

Cost containment

Definition

Resource allocation describes the process of decision to use available resources selectively between competing projects. In health care, resources are allocated in order to achieve the defined ► health policy goals in the future. Generally resources should be allocated to achieve the highest ► health outcomes in terms of disease prevention and therapy. The basic allocation is made once a choice has been made on which health care areas and projects are to be funded and what level of funding each of these areas should receive. As health care systems are always subject to cost containment, resource allocation also involves a decision on which areas or projects must be sacrificed to lower the overall funding.

Cross-References

► Scarity of Resources

Respect for Persons

Definition

As a basic ► ethical principle in research, respect for individuals was clearly defined in the ► *Belmont report* in 1979 in the USA by the National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. Respects for persons incorporates two ethical considerations:

a) respect for ► autonomy, which requires that those who are capable of deliberation about their personal choices should have their capacity for self-determination respected; and

b) protection of persons with impaired or diminished autonomy, which requires that those who are depen-

dent or vulnerable be afforded security against harm or abuse.

Respiratory-Syncytial-Virus (RSV) Infection

Definition

For RS-viruses, humans are the only reservoir. These viruses, which are spread by droplets, are the most common cause of respiratory tract infections during the first two years of life. RSV-infections are mainly seen in the winter months. After an incubation period of 3–6 days the infection leads to bronchiolitis, obstructive bronchitis, pneumonia and otitis media. The virus can be detected in nasopharnyngeal secretions. For special groups at risk (like premature babies and children with chronic pulmonal diseases) passive immunoprophylaxis is recommended during the first two years of life.

Respite Care

Definition

Respite care services are usually provided for functionally disabled or frail individuals in their homes, at a ► day care center or by temporary placement in a nursing home or residential home. Respite care allows for occasional or systematic relief for the informal caregivers, often members of the family. Most respite care programs offer their services on a fee scale with hourly or daily rates. Depending on the type of respite care that is available in the community, services can range from several hours of care to several months. Some respite care programs aim at a specific disability or illness.

Response

► Event

Restriction

Definition

Restriction is straightforward, convenient and inexpensive means to control confounding. It is a process of limiting the entrance into the study to individuals who fall within a specified category of a confounder. For example if sex is potential confounder, the study could include only men or only women. Similarly, control of age could be achieved by restricting admissibility to those within o narrow range that corresponds to a relatively homogeneous rate of disease incidence.

Result

► Outcome Research Variable

Resulting Variable

► Outcome Research Variable

Retrospective (Historical) Cohort Study

► Observational Studies

Reusing

► Recycling

Revealed Preferences

Definition

The revealed preferences approach is an indirect determination of the ► willingness to pay by observing the behavior of individuals and estimating the willingness to pay for a specific health care service by observed choices in other but comparable contexts. Revealed preferences have a strong foundation in the utility theory. The results of revealed preference measurements can be used as outcome measure in a cost-benefit analysis.

Revision

► Evaluation, Models

Right-to-Know

Synonyms

Risk communications

Definition

Many workplace chemicals and other substances are referred to only by brand names or code numbers. The right-to-know movement, initiated in the late 1970s in many countries, resulted in the development of right-to-know laws in the early 1980s, which are the legal rights and obligations that govern the transfer of workplace information on toxic substances. According to those laws, employers have a duty to inform workers of the identity of substances with which they work through labeling the product container, and the workers should be counseled on the importance of personal hygiene and the use of protective equipment to reduce exposure.

Rights of Indigenous Peoples

► Indigenous Rights

r Index

Definition

The *r* index is the most appropriate metric for expressing an ► effect size when the researcher is interested in describing the relationship between two continuous variables. It is simply the Pearson product-moment correlation coefficient. Very often we do not have presented variances and covariances in primary research. If only the value of the $t-$test associated with *r* index is given, formula for its calculation is:

$$r = \sqrt{\frac{t^2}{t^2 + df_{\text{error}}}}$$

Risk

Synonyms

Absolute risk

Definition

There are two commonly used terms associated with ► risk assessment. They are ► hazard and risk. A risk is the likelihood that exposure to a hazard will result in injury or disease. In risk assessment, risk combines the probability of an event occurring with the impact that event would have under different circumstances. The level of risk can be viewed as a function of probability and severity of impact.

Risk is the probability that a risk event, such as disease, injury, disability, or death, will occur during (over) a specified time period. For calculation of risk, the numerator contains the number of persons experiencing the risk event during the time period. The denominator contains the population at risk, i. e. the number of persons who are free of the risk event at the beginning of the time period, but capable of having disease.

Variables associated with an increased or decreased risk are the risk factor or protective factor, respectively. The risk factor and protective factor are any characteristics, such as personal behavior, inheritance, or environmental conditions, that are considered to be associated with occurrence of the risk event.

Risk Adjustment

Synonyms

Risk equalization

Definition

Risk adjustment refers to the use of information to calculate expected health care expenditures of consumers and to determine subsidies to health insurers to neutralize incentives for ► preferred risk-selection.

Risk Analysis

Synonyms

Risk assessment

Definition

Risk analysis consists of risk assessment, risk management and risk communication. ► Food safety risk

assessment is a process of identifying food borne hazards, assessing risks, gauging severity and potential health effects. Through risk assessment the likelihood of an undesirable event occurring and the consequences of this event are estimated. The mathematical model for calculating the probability of an undesirable effect occurring and the magnitude of the impact of the hazard are calculated. Risk management is a process of regulating the risks to acceptable levels. Risks should be transparently communicated to the public and they should be educated on how to avoid food borne diseases.

Cross-References

► Risk Assessment

Risk Assessment

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Definition

A risk assessment is a systematic procedure to identify potential health hazards, evaluate the extent of exposure and to establish the need for, and effectiveness of existing control measures. It is an organized look at what, in work activities and the workplace, can cause harm to employees. In the context of occupational health, risk assessment is the process of quantifying the probability of a harmful effect to individuals or populations from certain activities at the workplace.

Basic Characteristics

Determination of Risk

The risk assessment is a part of four interrelated activities including risk research, risk management and risk communication. The concept of the risk assessment is not new – we make decisions about risks in our daily lives. What is new is the shift from concern for immediate hazards with readily discernable linkages between a specific hazardous situation and an adverse outcome to situations where there are only probabilistic linkages between exposure to an agent and the occurrence of an adverse effect over a long period of time.

Risk assessment estimates the risk to humans of a specified hazard, based on the availability of exposure data. There are two commonly used terms associated with risk assessment. They are hazard and risk. A ► hazard is a source of potential harm. A ► risk is the likelihood that exposure to a hazard will result in injury or disease. The outcome is the result of when the hazard causes harm. Mathematically, the level of risk can be viewed as a function of: probability x severity of impact. Hence, risk assessment is measuring two quantities of the risk, the magnitude of the potential harm, and the probability that the harm will occur. The difficulty of risk assessment is that measurement of both of the quantities in which risk assessment is concerned can be very difficult itself. Uncertainty in the measurement is often large in both cases. Also, risk assessment would be simpler if a single metric could embody all of the information in the measurement. However, since two quantities are being measured, this is not possible. A risk with a large potential loss and a low probability of occurring must be treated differently than one with a low potential loss but a high likelihood of occurring. In theory both are of near equal importance but in practice it can be very difficult to choose which one to prioritize.

Risk Assessment Phases

There are no fixed rules about how a risk assessment should be carried out. It will depend on the nature of the undertaking and the type and extent of the hazards and risks. Various models for conducting occupational health risk assessment provide step-by-step guidance and assist in producing risk assessment reports. In particular, a risk assessment should:

- ensure that all relevant hazards and risks are addressed, with the aim of identifying significant risks in the workplace;
- address what actually happens in the workplace, including non-routine operations;
- ensure that all groups of employees and others who might be affected are considered;
- identify groups of workers who might be particularly at risk (women and young workers are of special concern);
- take account of existing preventive measures

Risk assessment should be performed by competent occupational safety and health professionals with appropriate theoretical and practical knowledge and

experience of relevant systems. To be able to identify all hazards and events, it may be necessary to split them into manageable parts. A risk assessment is performed by considering types of hazards, extent of exposure to the hazard and the relationship between exposures and responses, including variation in susceptibility. In general, risk assessment consists of the following four components:

1. Hazard identification;
2. Dose-Response Assessment;
3. Exposure Assessment;
4. Risk Characterization.

► Hazard identification evaluates the weight of evidence for adverse effects in humans based on assessment of all available data on health impact and mode of action. This step aims to determine the probability that an individual receiving a specific dose of the contaminant (chemical, radiation, noise, etc.) will develop an adverse effect. This is done, for chemical hazards, by drawing from the results of the toxicology and combining them with the data from epidemiological studies. The appropriate pathways and route of exposure are established for each chemical, its effect on body tissues and the type of effect. For different kinds of hazard other disciplines are involved. The complexity and uncertainty of this step derives mainly from the need to extrapolate results from experimental animals to humans, and from high to lower doses. The hazard may be higher for particular groups, called the susceptible populations, due to their special vulnerability to a given contaminant, greater exposure, age, sex or genetics.

The ► dose-response assessment identifies the relationship between the exposure level and the magnitude of risk. It determines whether the adverse effect increases with increasing exposure to the hazard. The result of the dose-response assessment provides either a reference dose or a threshold limit value (TLV), below which the threshold contaminant is expected to pose little or no hazard, or a risk-specific dose below which a non-threshold contaminant poses a tolerably low probability of an adverse effect. These respected values are referred to as exposure limits.

The exposure quantification determines the amount of a contaminant (dose) that individuals and populations will receive. This is done by examining the results of the ► exposure assessment. The exposure assessment determines how much exposure causes how much of a given effect in how many of the exposed persons. As different location, workload, lifestyles and other factors likely influence the amount of contaminant that is received, a range of possible exposures for different exposure scenarios and different subpopulations is generated in this step. Typical exposure is also determined. Particular care is taken to identify the magnitude of exposure for those groups that are either particularly vulnerable to a contaminant (e. g. children to lead and methyl mercury) or that are expected to be exposed to higher levels than the rest of the population.

The results of the previous three steps are then summarized and integrated into quantitative and qualitative characterizations of risk.

Risk Characterization

A ► risk characterization is the final step in risk assessment. It is the estimation of the incidence and severity of the adverse effects due to actual or predicted exposure including risk estimation or calculation, i. e. the quantification of that likelihood. The calculation of the risk is made by combining the severity of consequence with the likelihood of occurrence in a risk rating matrix. This can be expressed mathematically as a quantitative assessment (by assigning low, medium and high likelihood and severity with integers and multiplying them to give a risk factor), or as a description of the circumstances by which the harm could arise i. e. qualitative (Table 1). Risks that fall into the 'unacceptable' category (e. g., high severity and high probability) must be mitigated by some means to reduce the level of safety risk.

Risk acceptance criteria are an important part of safety management and reflect the targeted safety level. They should be established prior to performing risk assessment analysis. The results of risk assessment are then compared with established risk acceptance criteria to determine whether the risk level is acceptable or not. Occupational health professionals may be tempted to

Risk Assessment, Table 1 Risk rating matrix

	Probability		
Severity	**1**	**2**	**3**
3	MEDIUM	HIGH	HIGH
2	MEDIUM	MEDIUM	HIGH
1	LOW	MEDIUM	MEDIUM

6,9: High Risk; 2–4: Medium Risk; 1: Low Risk

advocate the adoption of a zero-risk policy. Although in some cases risk can be eliminated, in most cases a certain degree of risk must be accepted. Some accepted degrees of risk are specified by laws, regulations and standards and may change as knowledge of the risks grow and safety techniques improve. Some risks we accept as part of normal living. Most would consider such conditions to be 'safe'. Other risks we tolerate because we consider the benefits outweigh the risks (e. g. driving a car). Some risks are considered intolerable and most would consider conditions 'unsafe'. The region in between the unacceptable and the broadly acceptable level of risk is where the risks need to be reduced as low as reasonably practicable (ALARP). In the interest of occupational and environmental health, the risks vs. costs and benefits of the possible alternatives must be carefully considered. In practice however, a true zero-risk is possible only with the suppression of the risk-causing activity. Until technological developments offer superior methods, the choice based on risk assessment must be that of the lesser evil.

The risk assessment is a dynamic process and should be reviewed periodically and whenever there is a significant change to work practices. This is an ethical and legal responsibility of both industry and government.

Cross-References

- ► Dose-Response Assessment
- ► Exposure Assessment
- ► Hazard Identification
- ► Risk
- ► Risk Characterization
- ► Source of Potential Harm

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Risk-Benefit Analysis

Definition

Risk-benefit analysis is the comparison of the risk of a situation to its related benefits. For research that involves more than minimal risk of harm to the subjects, the investigator must assure that the amount of benefit clearly outweighs the amount of risk. Only if there is a favorable risk-benefit ratio may a study be considered ethical. The Declaration of Helsinki, adopted by the World Medical Association, states that biomedical research cannot be done legitimately unless the importance of the objective is in proportion to the risk to the subject. The Helsinki Declaration and the ► CONSORT-statement stress the importance of a favorable risk-benefit ratio.

Risk-Benefit Evaluation

Definition

Prior to medical experiments or clinical trials, the potential risks and benefits for the participants have to be analyzed and evaluated. Depending on the medical condition to be treated, different risks may be taken depending on the potential benefit. For instance, it is obvious that a substance or procedure intended to treat a headache after a social event and a substance or procedure intended to cure leukemia have to be evaluated differently because the risks of both conditions differ so widely.

A risk–benefit evaluation has to be updated as new data become available (e. g. after each adverse reaction occurring during a trial, because as this may increase the potential risk it has to be ensured that the potential benefit of the procedure still outweighs the new risk status).

Risk Characterization

Definition

A risk characterization combines information on exposure and toxicity to estimate the risk of a particular substance in a particular situation. The risk characterization step combines the information on toxicity and exposure

to describe what is likely to happen to people. It is the estimation of the incidence and severity of the adverse effects due to actual or predicted exposure including risk estimation or calculation, i. e. the quantification of that likelihood.

Risk Determinant

Synonyms

Risk factor

Definition

Any aspect that may increase the chance of developing a disease.

Risk-Equivalent Premiums

► Risk-Related Premiums

Risk Factor

Synonyms

Determinant of disease

Definition

A risk factor is an aspect of behavior or life-style, such as an habitual pattern of diet, exercise, cigarette and alcohol use, etc., or a biological characteristic, an inborn or inherited characteristic, or a health-related condition or environmental exposure with predictable effects on the risk of disease due to a specific cause, including in particular an increased likelihood of an unfavorable outcome. Another meaning of this term is that a risk factor is a determinant of disease that can be modified by specific actions, behaviors, or treatment regiments. Risk factors can be categorized as genetic, physiological, behavioral and socioeconomic characteristics of individuals that place them in a cohort of the population that is more likely to develop a particular health problem or disease than the rest of the population. Usually applied to multifactorial diseases for which there is no single precise cause, they have been particularly useful in identifying candidates for primary preventive measures and in assessing the effectiveness of the prevention program in controlling the risk factors being targeted. A risk factor may be directly related to disease outcomes (proximal risk factor) or may have indirect effect on outcomes (distal risk factor).
Risk factor is clearly defined occurrence or characteristic that has been associated with the increased rate of a subsequently occurring disease. Risk factors are defined as factors influencing health in a way that causes health impairment. Risk factors may be genetic (e. g. inherited susceptibility to certain ailments) (► disease, ailment), psychologic (e. g. psychosomatic illness), behavioral (e. g. smoking, etc.), socioeconomic status (e. g. hygiene, proper nutrition, clothing, availability and accessibility of ► health care), environmental (e. g. different types of pollution), etc.

Cross-References

► Risk Determinant
► Risk Marker

Risk Factor Information System

Definition

The risk factor information system is a new branch of ► health information system designed to produce estimates of risk factors leading to serious diseases, injuries, and death. Risk factor information systems support public health practice by assessment of population health, and comparisons across states and geographic regions over time. Risk factor systems focus on factors such as smoking, environmental risk factors, nutrition, behavioral risk factors, some health conditions, etc. They provide information for implementation of prevention programs and monitoring of the impact of public health prevention programs on a national level.

Risk Factors and High Risk Groups

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Synonyms

Causal factors; Etiological factor; Risk indicator

Definition

In dentistry a risk factor is a variable associated with an increased risk of an ► oral disease. However, risk factors are not necessarily causal. Risk factors include aspects of a person's condition (genetics), lifestyle or environment. Various combinations of risk factors lead to the disease. The more risk factors are involved in the disease process the more complex is the etiology of the disease. Risk factors with dental public health importance should contribute a considerably attributable risk for the disease process and should be modifiable by public health measures. Subjects of high risk groups show more often such patterns of risk factor combinations which lead to an earlier disease onset and – in consequence – to a higher disease prevalence.

Basic Characteristics

Specific or Common Risk Factors for Oral Diseases

For a long time research in dentistry was aimed at specific biological risk factors (bacterial or micro-structural causes) for oral diseases. The reason was to clear up the etiology of these diseases. For the most prevalent chronic oral disease – ► dental caries – the following specific risk factors are known: plaque accumulation on the teeth and frequent intake of simple sugar (instead of complex carboanhydrates). The production of organic acids in ► plaque leads to the demineralization of dental hard tissue (enamel). In an early stage, this process can be reversed (re-mineralization) by continuous plaque removal (tooth brushing, flossing). The bacterial plaque also damages the ► periodontium – initially by an inflammation of the gum (► gingivitis) followed by the chronic destruction of the attachment apparatus (► periodontitis). The etiopathogenetic mechanisms of this process in relationship to the genetic and immunological background are not fully clear in detail. However, it is well known that the destruction of the attachment apparatus can be reduced by continuous plaque and ► calculus removal.

Current research in dentistry is more directed towards a wider risk concept including biological and psychosocial determinants. It became obvious, that a core group of modifiable risk factors is common to many chronic diseases and injuries. The four most prominent noncommunicable chronic diseases (NCDs) – cardiovascular diseases, diabetes, cancer and chronic obstructive pulmonary diseases – share common risk factors with oral diseases, preventable risk factors that are related to lifestyle. For example, dietary habits are significant to the development of NCDs and influence the development of dental caries. Tobacco use has been estimated to account for over 90% of cancers in the oral cavity, and is associated with aggravated periodontal breakdown, poorer standards of oral hygiene and thus premature tooth loss (Petersen 2003).

Available data from population based studies show, that lifestyle problems as well as chronic (oral) diseases are more prevalent in disadvantaged and socially marginalized populations. Members of these social strata are characterized by:

- an unhealthy and risky lifestyle (smoking, obesity, frequent alcohol consumption, more violence),
- inability to change unhealthy behavior (because it often results in only a brief need satisfaction),
- bad oral hygiene (no daily tooth brushing, no flossing, no use of fluorides),
- bad self-assessment of health (oral and general),
- non-participation in prevention programs even if they are free of charge,
- low social support (unemployment, difficulties in family, migrants),
- no resources for rehabilitation.

The consequence is a higher prevalence of oral diseases in these subjects. That is the case for all oral diseases with public health importance: dental caries, periodontal diseases, oral cancer, and dental trauma (Daly et al. 2002). The poorer oral health of disadvantaged and socially marginalized subjects becomes manifest in early childhood and youth and is present for the whole life (Micheelis and Reich, 1999).

Problems with Prediction of Risk and Risk Groups

There has been an intense search for risk indicators for oral diseases in the past. However, because of the complex etiology of chronic oral diseases it is difficult to predict the disease in an individual subject using an isolated risk factor. Sensitivity, specificity, and predictive values are not sufficient. Only a certain probability for the onset of a disease can be given if a risk factor is present. Ultimately, the use of a dentist's clinical judg-

ment to identify people at risk of oral diseases has been shown to be as good as other selected methods because it includes not only aspects of the oral situation, but also aspects of lifestyle and environment (Kay 1999).
Moreover, the care of risk groups requires a clear risk definition. However, the definition of risk factors and risk groups is context-sensitive. An example might be the changes of "risk definition" for dental caries against the backdrop of caries decline: In the past 10 years of the last century a mean caries index (► DMFT-Index: number of decayed, missed, and filled teeth) of 4 was considered as "normal" for 12-year-olds in Europe. Today – the mean caries index is between 1 and 2 – such a child belongs to the high risk group with "need" of special care. The question is whether all subjects or only the risk groups should be included in prevention programs? In the end, the care of risk groups is limited by the available resources in the health care system.

Risk Groups for Oral Diseases

There are specific risk groups for oral diseases:

- In industrialized countries up to 10% of infants and preschool children suffer from the so-called ► nursing-bottle-tooth-decay (a special type of early childhood caries) caused by long-lasting use of baby bottles with sweet content and sugar-rich diet.
- Dental caries occurs mainly in disadvantaged and socially marginalized populations (Micheelis and Reich 1999; Pieper 2004). Caries risk subjects have less ► fissure sealants compared to others. They also have more orthodontic problems and dental trauma due to less frequent orthodontic treatment and a more risky lifestyle.
- Periodontal diseases occur more often in smokers and in subjects with poor general health.
- People with frequent tobacco and alcohol use show an increased risk for oral cancer.
- Physically disabled and mentally handicapped subjects as well as immobile subjects show a higher risk for oral diseases.

Special Care for Risk Groups

To improve oral health of risk groups the following specific measures are useful in addition to common preventive measures for the whole population:

- giving specific information to risk groups (for example information about nursing caries and fluoridation to pregnant women and young parents with low socioeconomic status),
- taking care of risk groups in special settings (family welfare service, fluoridation programs in schools of poorer communities, organized dentist visits to old-age-homes, special care for periodontal conditions in immunosupressed patients etc.),
- reducing the barriers for participation of risk subjects in prevention programs,
- making risk subjects "regular attenders" in dental practices and establish a monitoring for risk groups (for example for handicapped subjects or those with precancerous changes of oral mucosa).

Conclusion

The care of risk groups in dentistry should be directed to the change of their unhealthy and risky behavior. This can be successful on the individual level which is often observed in daily practice. Lower plaque indices and less bleeding gum show that tooth brushing exercises are useful to improve oral health in youth. However, the non-participation of risk subjects in individual and community prevention programs limits the wide success of that approach. Therefore, it seems more useful to influence common risk factors for oral diseases related to lifestyle and environment. A major benefit of the common risk factor approach is the focus on improving health conditions for the whole population as well as for high risk groups, thereby reducing inequalities.

Cross-References

► Calculus
► Dental Caries
► Dental Plaque
► Dental Sealant
► DMFT-Index
► Gingivitis
► Nursing Bottle Tooth Decay
► Oral Diseases
► Periodontitis
► Periodontium

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Risk Identifying

Synonyms

Risk analysis

Definition

Risk identifying is a scientific tool for identifying and evaluating the potential health hazard posed by exposure of humans to physical, chemical and/or biological entities present in the environment; such as that of a school building contaminated with PCBs (polychlorinated biphenyls). In order to gain this information, risk analysis includes such varied research methods as toxicological animal trials, epidemiological surveys, exposure modeling, etc. In addition to assessing acute exposure, risk analysis also is used to predict and compare risks (e. g., prospective testing for potential hazards posed to human health and the environment). Amongst others, the results are used to set threshold values, standards and reference points for environmental toxins. Furthermore, risk assessment also provides a scientific basis for political decisions relating to the environment and public health, and hence risk management.

The usual problem with risk assessment is that it is restricted by the data available and methodological limitations. A further problem is that for the most part, only the adverse effects of single substances (such as anthropogenic chemicals) in the various parts of the environment are known, while the effects of combinations – which comprise most types of exposure – remain largely unknown. Scientific risk assessment can therefore never eliminate a residual risk, especially regarding particularly susceptible groups (e. g., children, pregnant women), thus allowing only a partial assessment of the actual health risk.

Cross-References

► Risk Analysis

Risk Indicator

► Risk Factors and High Risk Groups

Risk Management

Synonyms

Human activity integrating risk identification; Assessment and mitigation

Definition

Risk management strategies include: avoiding the risk, reducing adverse consequences, accepting some or all of the consequences (e. g. "living with floods"), and risk transfer.

Risk Management and Communication

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Synonyms

Safety management; Hazard management; Hazard reduction; Hazard information; Guidance sheets

Definitions

Risk Management is the process of minimizing risk to an organization by developing systems to identify and analyze potential hazards in order to prevent accidents, injuries, and other adverse occurrences; and by attempting to handle events and incidents which do occur in such a manner that their effect and cost are minimized. Effective risk management has its greatest benefits in application to insurance in order to avert or minimize financial liability.

Communication is the transfer of information regarding workplace exposure to toxic substances from employer to workers.

Basic Characteristics

History

In the early 1970s, basic principles about occupational risks had been regulated and managed. In the late 1970s, the trend for managing risk at work was to merge and centralize the authorities responsible for occupational health and safety, and to clarify responsibilities in criminal law for managing risks in particular circumstances through the establishment of regulatory regimes, whereby broad general duties are explicitly put on those who are best placed to do something about preventing or controlling the risks. The broad duties are supplemented by specific regulations. Many of these regulations place absolute duties on the duty holders: on employers, the self-employed, employees, designers, manufacturers, importers, suppliers, and people in charge of premises. Associated legislation places additional duties on owners, occupiers, licensees, and managers. However, in order to avoid the imposition of duties that no one can fulfill – because absolute safety cannot be guaranteed – and in order to ensure that preventive and protective actions are commensurate with the risks, others, like broad general duties are qualified by expressions such as 'as low as reasonably achievable' (ALARA), 'as low as reasonably practicable' (ALARP), and 'so far as is reasonably practicable' (SFAIRP).

Many workplace chemicals and other substances are referred to only by brand names or code numbers. The ► right-to-know movement, initiated in the late 1970s in many countries, resulted in development of right-to-know laws in the early 1980s, which are the legal rights and obligations that govern the transfer of workplace information on toxic substances (communication). According to those laws, employers have a duty to inform workers of the identity of substances with which they work through labeling the product container, and the workers should be counseled on the importance of personal hygiene and the use of protective equipment to reduce exposure.

In 2004, a Global Implementation Strategy was established under the auspices of the ► International Programme on Chemical Safety (IPCS). This Global Implementation Strategy aims to build and implement an Occupational Risk Management Toolbox, containing toolkits to manage different workplace hazards. The first such toolkit is the ► International Chemical Control Toolkit.

Risk Management and Communication Scope

The terms hazard and risk are used interchangeably in everyday vocabulary. Risk Management involves the employer looking at the risks that arise in the workplace and then putting sensible ► health and safety measures in place to control them. By doing this they can protect their most valuable asset, their employees, from harm, as well as members of the public. The law requires an employer to assess and manage health and safety risks. There are three basic steps in managing the risk from workplace hazards: eliminate hazards, control the hazard, and protect workers from the hazard.

There are a number of tools used in risk management: ► environmental engineering, ► economic analysis in toxic substances control, and ► pollution prevention hierarchy.

Communication is the transfer of information regarding workplace exposure to toxic substances from employer to workers. It is mandatory sharing between management and labor, and mandates that workers receive training and information on all potentially hazardous chemicals with which they work. They provide information through ► material safety data sheets as the foundation of a successful safety and health program, which can be on paper and/or in electronic form.

The Chemical Toolkit of the Global Implementation Strategy is available on the Internet through the ILO SafeWork Website. The hazard information employed by the Toolkit is either European Union (EU) label Risk (R) phrases or the hazard statements of the Globally Harmonized System for Classification and Labeling (GHS). The target for global implementation of the GHS is 2008.

Cross-References

► Economic Analysis in Toxic Substances Control
► Environmental Engineering
► Health and Safety Measures
► International Chemical Control Toolkit
► International Programme on Chemical Safety
► Material Safety Data Sheets
► Pollution Prevention Hierarchy
► Right-to-Know

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Risk Marker

Synonyms

Risk factor

Definition

An aspect of personal behavior or lifestyle, an environmental exposure, or an inborn or inherited characteristic, which on the basis of epidemiological evidence is known to be associated with health-related condition(s) considered important to prevent. Not necessarily a causal factor but an indicator of an increased probability of occurrence of a disease or other specific outcome–a risk marker.

Risk of Natural Disasters

► Hazards, Natural

Risk Perception

Definition

Subjective judgment that people make about risk, including its severity and characteristics.

Risk and Protective Factors of Psychological Health and Well Being

► Health Determinants, Psychological

Risk Ratio (RR)

Synonyms

Relative risk

Definition

The *Relative Risk (RR)* of an event, such as the occurrence of a specified disease or a death from a specified cause, is the ratio of the risk of a disease or death among those exposed to a specified factor to the risk among those not exposed to this factor. It is calculated from the incidence of the specified disease or the death rate due to the disease.

If the level of risk in both the exposed and unexposed group is the same, the RR will equal 1. If an exposure is harmful (e. g., cigarette smoking), the RR is expected to be greater than 1. If an exposure is protective (e. g., vaccine), the RR will be less than 1. The RR is used in randomized controlled trials and cohort studies.

The RR is less relevant to making decisions in risk management than attributable risk. Nevertheless, relative risk is the measure of association most often used by epidemiologists.

Cross-References

► Relative Risk

Risk Reduction Strategies

► Mitigation Strategies

Risk-Related Premiums

Synonyms

Actuarially fair premiums; Risk-equivalent premiums

Definition

Health insurers calculate risk-related premiums if expected health care expenditures of individuals are equivalent to premiums paid by individuals. As a consequence, high-risk individuals pay higher premiums than low-risk individuals.

Risk Sharing Plans

Definition

The distribution of financial risk among two or more parties furnishing a particular service. By establishing a formal arrangement between health care providers, managed care organizations and another entity such as a governmental health care program, these plans protect the parties from excess risk.

Risk Solidarity

Definition

The term risk solidarity refers to redistribution from individuals with low health risks toward individuals with high health risks.

Risk Solidarity, ex-ante

Definition

Ex-ante risk solidarity implies redistribution from those individuals who are expected to be healthy to those who are expected to be sick.

Risk-Solidarity, ex-post

Definition

Ex-post risk solidarity implies that there is limited redistribution from the unexpectedly healthy towards the unexpectedly sick.

River Blindness

► Onchocerciasis

Role Taking

Synonyms

Perspective taking

Definition

A mental process that enables an individual to understand the point of view of another person or group of people. Specifically, role taking allows the individual to understand why others have certain attitudes and beliefs, and why others behave as they do. To accomplish role taking, the individual imagines himself or herself as that person (or group of people). A key period for the development of role taking abilities is between the ages of 4 to 12 years, and role taking is vital to the development of social skills.

Root

Definition

The root is the invisible part of the tooth that anchors the tooth in the jaw. Inside every root, there is a root canal with nerves, blood vessels, and connective tissue.

Root Canal

► Root

Root Canal Treatment

Synonyms

Endodontic treatment

Definition

Inside each tooth is the pulp consisting of blood vessels, nerves, and connective tissue. When the pulp is infected or injured, the pulp tissue dies. During a root canal treatment, the pulp is removed, the pulp cavity is cleaned and sealed using a root filling.

Roseola infantum

► Erythema subitum

Rotavirus Infection

► Food-Safety and Fecal-Orally Transmitted Infectious Diseases

Rotavirus Vaccination

Synonyms

Rotavirus immunization

Definition

Active rotavirus immunization is carried through as an oral vaccination from the age of 6 weeks. At intervals of at least 4 weeks, there can either be used a monovalent ► vaccine which has to be given twice or a vaccine containing 5 different serotypes which has to be applicated thrice. At the age of 24 weeks, immunization has to be finished as the risk of intestinal intussusception (invagination) increases with a later onset of vaccination. Rotavirus vaccine is tolerated well, the protection rate is about 85 %. Possible side effects are a lack of appetite, diarrhea, fever and irritability. Contraindications for the rotavirus vaccine are immunodeficiency, acute illness with fever and a known severe allergic reaction to components of the vaccine.

Cross-References

► Immunization, Active

Rotavirus Vaccination, Active

Synonyms

Active immunization against rotavirus infection

Cross-References

► Food-Safety and Fecal-Orally Transmitted Infectious Diseases

Roundworm Infection

► Ascariasis

Routine Health Care Research

► Health Services Research

Rubber

► Condom

Rubber Johnny

► Condom

Rubbish

► Communal and Industrial Waste

Rubella

Synonyms

German measles; Three-day measles

Definition

Rubella is a common communicable disease of childhood, which is spread by oral droplets; humans are the only natural hosts. The incubation period lasts 14–21 days, and it has to be assumed that it remains contagious for seven days before and seven days after the appearance of the rash. Rubella's exanthem is maculopapulous. It starts in the face and spreads quickly. Furthermore, there is a lymphadenopathy, which is typically located behind the ears (retrooauricular), in the neck (posterior cervical) and at the back of the head (postoccipital). In most cases there is only a mild elevation of body temperature. In up to 50% the course of the infection is asymptomatic. An arthritis can appear, further complications (encephalitis, thrombocytopenic purpura) are rare. An infection during pregnancy has to be feared as the transmission of the virus to the unborn child can cause severe congenital anomalies, the ► congenital rubella syndrome. Rubella infection can be prevented by an active rubella-vaccination (► immunization, active).

Cross-References

► Rubeola

Rubella Immune Globulin

► Rubella-Vaccination, Passive

Rubella Immune Prophylaxis

► Rubella-Vaccination, Passive

Rubella, Morbilli

► Measles

Rubella Vaccination

Synonyms

Rubella immunization; German measles immunization; German measles vaccination; Three-days measles vaccination; Three-days measles immunization

Definition

The course of rubella is harmless for the patient, both in childhood and in adulthood. However, if the first infection occurs during pregnancy, it represents a great threat to the embryo. For this reason, the number of rubella antibodies (antibody titer) in women in the early stage of pregnancy is checked in order to determine their immunity to rubella. The rubella vaccination was introduced in 1969/1970. Nowadays, it is generally applied in combination with the vaccination against measles and mumps (MMR). The patient receives the first inoculation at a minimum of 11 months of age and a second vaccination at an interval of at least 4 weeks later. The protection rate is 95%. Contraindications for rubella or MMR vaccination are immunodeficiency, acute illness with fever, pregnancy and a known severe allergic reaction to components of the ► vaccines or the carrier protein.

Rubella Vaccination, Passive

Synonyms

Application of rubella immune globulin; Rubella immune prophylaxis; Application of German measles immune globulin; German measles immune prophylaxis; Three-day measles immune globulin; Three-day measles immune prophylaxis

Definition

In general, German measles is an infectious disease with a harmless course, but for unborn babies in the womb it is very dangerous. Prenatal infection can lead to the congenital rubella syndrome (CRS or Gregg's syndrome), which is associated with low birth weight, deafness, cataract and heart defects. At the beginning of a pregnancy the woman's immune status against rubella is checked by determination of the amount of ► antibodies (titer). In the case of a low or a missing immune status a passive rubella vaccination should be given when the pregnant woman has come into contact with German measles.

Rubeola

Synonyms

Rubella; Measles

Definition

Measles or rubeola is a highly contagious disease of young children, caused by a virus and spread by droplet spray from the nose, mouth, and throat of individuals in the infective stage. This period begins 2 to 4 days before the appearance of the rash and lasts from 2 to 5 days thereafter. The first symptoms of measles, after an incubation period of 7 to 14 days, are fever, nasal discharge, and redness of the eyes. Characteristic white spots appear in the mouth, followed by a rash on the face that spreads to the rest of the body. The symptoms disappear in 4 to 7 days. One attack of measles confers lifelong immunity. Complications are possible such as bronchial pneumonia and encephalitis. Common measles in pregnant women can be a threat to the unborn child, and ► vaccination of women well before pregnancy is recommended. Immunization by injection of live measles-virus vaccine.