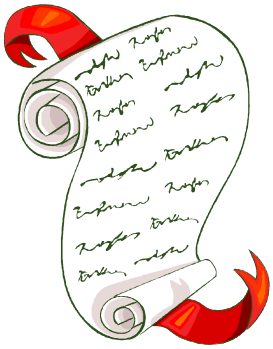

GLOSSARY of research terms

SETTING PRIORITIES FOR VITILIGO RESEARCH - WORKSHOP

Thursday 25th March 2010

Types of studies

Case Series: A study reporting on a consecutive collection of patients, treated in a similar manner, without a **control group** (comparison group).

Case control studies: studies used to investigate causes of diseases, or to identify adverse or side-effects of treatments. They include people with an outcome of interest and a suitable control group of people unaffected by the outcome. The occurrence of the possible cause is compared between **cases** (people with the disease/condition) and **controls** (people not know to have the disease/condition).

Cohort Studies (or follow-up studies): Studies which begin with a group of people (the cohort) free from disease but who have been exposed to a potential cause of disease or outcome. The cohort is followed up to see the subsequent development of new cases of the outcome of interest. Cohort studies provide the best information about the causation of disease and the most direct measurement of the risk of developing disease. They can also be used to measure the outcome of treatments or exposure when, for ethical reasons, it is not possible to perform an **RCT** or to investigate the effects of a rare exposure.

Controls/control group: is the comparison group, in a **Random Controlled Trial**. They receive the usual treatment (or a **placebo**) while the experimental group receives the treatment being tested.

Multi-centre trial: Refers to a study that is being done at several hospitals at once. If you see a study listed as *multicenter* you may want to choose a centre based on how close to you it is, how experienced they are with this type of treatment, or financial aid they offer.

Observational study: A type of study in which individuals are observed or certain outcomes are measured. No attempt is made to affect the outcome (for example, no treatment is given).

Parallel study: is a type of clinical study where two groups of treatments, A and B, are given so that one group receives only A while another group receives only B.

Pilot study: A pilot study is a small-scale methodological test intended to ensure that proposed methods and procedures will work in practice before being applied in a large, expensive investigation. Pilot studies provide an opportunity to make adjustments and revisions before investing in, and incurring, the heavy costs associated with a large study.

Randomised Controlled Trial (RCT): a research trial in which participants are randomly assigned to two groups: one (the experimental group) receiving the intervention that is being tested, and the other (the comparison group or controls) receiving no treatment or a conventional treatment. The two groups are then followed up to see if any differences between them result. This helps people assess the effectiveness of the intervention.

Survey: Observational or descriptive non-experimental study in which individuals are systematically examined for the absence or presence (or degree of presence) of characteristics of interest.

Within - participant study: This is most often used in dermatology trials where a particular disease is apparent in a symmetrical distribution as in common vitiligo. Instead of comparing the effect of treatment or placebo in groups of individual participants (parallel study), one side of the body is compared with the opposite side I n the same individual.

Trial Design Terminology

Adverse effects: an adverse effect is a harmful and undesired effect resulting from a medication or other intervention such as surgery. An adverse effect may be termed a "side effect", when judged to be secondary to a main or therapeutic effect, and may result from an unsuitable or incorrect dosage or procedure, which could be due to medical error.

Arms: Any of the treatment groups in a randomized trial. Most **Randomised Controlled Trials** have two *arms*, but some have three *arms* or even more.

Bias: A systematic tendency to produce an outcome that differs from the underlying truth There are many different types of bias.

Blinding: Blinding means that whoever is assessing the effects of treatment will not know which treatment the person has received. This helps to prevent bias. Randomised trial is *Double Blind* if neither the patient nor his doctor are told which arm of the trial he is on. This information is kept at a central office, and is typically revealed only at the end of the trial. The purpose is to prevent any bias in treatment or reporting of results from creeping in.

Conventional Therapy: a currently accepted and widely used treatment for a certain type of disease, based on the results of past research. Also called conventional treatment.

Focus Groups: Investigators use focus groups, typically gatherings of 4 to 8 people with similar background or experience, to understand their attitudes or their response to a particular situation or experience.

Incidence: Number of new cases of disease occurring during a specified period of time; expressed as a percentage of the number of people at risk.

Outcome: This is what a clinical trial is trying to measure or find out. In essence, the goal of the trial. It is scientifically very important that the goals for clinical trials be selected and clearly defined in advance. For example an outcome might be that your blood pressure is reduced as a result of taking tablets prescribed by the doctor. Outcome measures are measurements of the effects of a treatment. They might include physical measurements - for example measuring blood pressure, or psychological measurements - for example measuring people's sense of well-being. So if someone takes part in research, they may be asked questions, or may be asked to have extra tests to assess how well the treatment or service has worked.

Placebo therapy: is an inactive treatment often given to controls in trials. The **placebo** is delivered in a form, which is apparently identical to the active treatment being tested in the trial, so that the research participant is unaware of which they are taking, this helps to eliminate psychological effects on the outcome.

Prevalence: Proportion of persons affected with a particular disease at a specified time.

Randomisation or Random Allocation: Allocation of individuals to groups by chance, usually done with the aid of table of random numbers. Not to be confused with systematic allocation (e.g. on even and odd days of the month) or allocation at the convenience or discretion of the investigator

Risk: Measure of the association between exposure and outcome (including incidence, side effects, toxicity).

Other useful research terms

Evidence-Based Medicine (EBM): Using current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine requires integration of individual clinical expertise and patient preferences, with the best available evidence from good quality research.

Meta-analysis: a statistical technique, which summarises the results of several studies into a single estimate. More importance is given to studies, which have been done with larger groups of people.

Quality of life: As well as measuring the physical effects of a treatment (for example changes to your blood pressure), many trials now try to assess the impact of treatments on people's quality of life. For example, a 'quality of life' study might ask you about:

- Your mood and general sense of well-being
- Whether you feel more tired than usual
- Whether you are managing to do more things than before
- Whether your sleep patterns have changed

Systematic review is a ***review*** in which evidence on a topic has been systematically identified, appraised and summarised according to predetermined criteria.

Toxicity: An adverse effect produced by a drug that is detrimental to the participant's health. The level of toxicity associated with a drug will vary depending on the condition which the drug is used to treat.

Uncertainty: Uncertainties about treatment or the effects of treatments, that cannot currently be answered reliably by referring to up-to-date systematic reviews of existing research evidence.

Vitiligo-specific terms

Afamelanotide: This drug is being developed in Australia as a skin implant and as an injection. Afamelanotide is a man made (synthetic) form of a naturally occurring hormone called *alpha melanocyte stimulating hormone (a-MSH).* Although it can produce a tan in anyone white skinned, the aim of the development of afamelanotide is to produce a drug that can help to protect people particularly prone to skin damage and burning from exposure to the sun. The drug is not licensed yet in the UK or USA.

Autoimmune disease: An autoimmune disorder is one in which a person's immune system which normally protects the body from harmful foreign organisms, mistakenly reacts against the body's own organs or tissues, thus destroying them.

Autologous melanocyte transplantation: In this procedure, the doctor takes a sample of the patient's normally pigmented skin and places it in a laboratory dish containing a special cell culture solution to grow melanocytes. When the melanocytes in the culture solution have multiplied, the doctor transplants them to the patient's depigmented skin patches. A fairly new technology, this procedure is still in the experimental stages.

Calcineurin inhibitors: tacrolimus (Protopic ointment) or **pimecrolimus** (Elidel cream) have a moderating effect on the immume system

Corticosteroids: creams; usually potent or very potent types are prescribed for vitiligo (eg Betnovate, Dermovate, Cutivate, Synalar)

Depigmentation: involves gradually fading the normal skin on the body to match the already white areas. For people with more than 50 percent vitiligo, depigmentation may be the best treatment option. Patients apply the drug monobenzylether of hydroquinone (monobenzone or Benoquin) twice a day to pigmented areas. This process destroys the pigment cells, leaves the skin unprotected from sunlight and is considered irreversible.

Gene therapy: is the insertion of genes into an individual's cells and tissues to treat a disease, such as a hereditary disease. If one can isolate a gene for the non-diseased state, multiply it up, one can try introducing it into the patient. It is often very difficult to get the healthy gene into the affected tissue and to get it expressed there. It would be very difficult to treat a melanocyte disorder in this way. The genetics of vitiligo are very complicated and do not fit that pattern.

Genetic engineering: This is manipulation of genetic DNA after its isolation from a living organism. It may involve removing or adding sequences to improve gene expression. For gene therapy, the DNA is usually inserted into a virus which can invade the patient's tissues and get the therapeutic DNA into cells where it can be expressed. Genetic engineering is now very advanced but using it for gene therapy has usually had disappointing results even for theoretically suitable diseases.

Immunotherapy: a variety of strategies of treatment based upon the concept of modulating the immune system to achieve a desired outcome in therapy or preventative therapy.

Intralesional – injections into the affected areas (eg intralesional steroids)

Khellin: A drug which was originally developed to treat angina, asthma and bronchial conditions. When used topically it has a similar effect to psoralen and can be used with UVA to treat vitiligo.

Laser therapy: usually excimer laser, a form of light therapy which directs a beam of light from the same part of the spectrum as Narrow band UVB (308-311 nm). This targets small areas of vitiligo thus avoiding damage to normal skin.

Lesion: can be any abnormality involving any tissue or organ due to any disease or any injury – specifically an area of skin affected by vitiligo

Light therapy: The use of any source of light including sunlight to treat vitiligo, often in combination with drugs taken orally or applied to the skin. This includes for example, UVA, broad and narrow band UVB, excimer laser and monochromatic excimer light.

MSH analogues: is a man made (synthetic) form of the *melanocyte-stimulating hormones.* They stimulate the production and release of melanin (melanogenesis) by melanocytes in skin and hair.

NB-UVB: Narrow Band Ultra Violet B Light is a relatively new treatment for vitiligo. It uses a narrow spectrum of light (308-311nm) without psoralen, which allows exposure to light with less risk of severe burning or other harmful effects.

Piperine – extract of black pepper, a recent discovery, still being tested and not yet available for use in humans. Can be used topically or orally (by mouth)

Pseudocatalase: also called Pcat for short, is a cream, which is applied twice a day, and purported to reduce epidermal hydrogen peroxide in vitiliginous skin, found to be in higher levels in those with vitiligo. Pseudocatalase is normally used in combination with brief exposure to narrow band UVB light and unlike psoralen does not make the skin more sun sensitive.

PUVA: For *oral PUVA* therapy, the patient takes a prescribed dose of psoralen, drug which makes the skin sensitive to light, by mouth about 2 hours before exposure to artificial UVA light or sunlight. For *topical PUVA*, the doctor or nurse applies a thin coat of psoralen to the patient's depigmented patches about 30 minutes before UVA light exposure.

Vitamin D analogues: Topical vitamin D analogues are man made copies of vitamin D, such as calcipotriol and tacalcitol, commonly used to treat skin diseases such as psoriasis. They are reported to be beneficial in combination with light for the treatment of vitiligo.

Stem cell therapy: Stem cells are mainly found in umbilical cord blood, embryos and in bone marrow at all ages. Stem cells have the ability to develop into other types of cells if given suitable treatment, e.g. white blood cells. Those developed cells, from a healthy cell line, could be used to replace diseased cells in a patient, but it is difficult. Often one has to destroy the sufferer's own bone marrow by radiation or chemical means, before introducing the therapeutic stem cells. This can be very dangerous.

Systemic treatment : tablets, pills or liquid taken by mouth.

Topical Treatments: treatments applied to the skin such as creams and ointments.

Types of Vitiligo

Acrofacial vitiligo: loss of pigment in areas such as face, head, hands and feet

Focal vitiligo: one or more white patch confined to a particular area of the body.

Segmental vitiligo: vitiligo affecting only one side of the body. This form of vitiligo occurs most commonly in children and usually has a limited progression, which may be rapid and is generally less responsive to conventional treatment though small areas respond well to surgical interventions such as grafting.

Vitiligo vulgaris/common vitiligo: scattered areas of pigment loss all over the body. This form is usually in a symmetrical pattern although corresponding sites may appear at different stages of the condition

Vitiligo totalis or vitiligo universalis: complete or almost complete loss of normal pigment in the skin

Vitix: plant extract from cucumis melo (melon) said to have antioxidant properties. Supplied as gel, cream or oral (by mouth) preparations and available on the internet

Adapted from materials developed by CASP (Critical Appraisal Skills Programme) 2000; Institute of Health Sciences (Oxford)and other sources; Vitiligo terminology provided by Vitiligo Priority Setting Partnership. March, 2010