

PRE-ART GUIDELINES

Amended November 2004

South African HIV Clinicians Society Expert Committee

Introduction

As southern Africa has finite medical resources and the public sector roll-out of antiretrovirals (ARVs) is in its infancy, it is incumbent on medical practitioners to attempt to preserve the immune status of the patient for as long as possible so as to delay the initiation of antiretroviral therapy (ART).

These guidelines attempt to address the factors which are important in the holistic approach to patient management and which could also influence the progression and outcome of disease, including:

- natural history of HIV infection
- primary prophylaxis and immunisations
- nutrition
- support and counselling.

PRIMARY PROPHYLAXIS AND IMMUNISATION

Most morbidity and mortality in HIV-infected patients is the result of opportunistic infections (OIs). **Primary prophylaxis** and immunisation can reduce the risk of these occurring. **Secondary prophylaxis** is given to prevent *recurrences* of OIs. Progressive immunosuppression is associated with a wide variety of OIs, but some OIs can occur when the CD4+ cell count is relatively high, e.g. 500 cells/ μ l.

As these guidelines address pre-ART issues, only conditions that occur at CD4+ above 200 cells/ μ l will be discussed, as patients with CD4+ counts of 200 cells/ μ l or with a slightly higher CD4+ count and the presence of an OI(s) are likely to be on antiretroviral therapy.

PRIMARY PROPHYLAXIS

Co-trimoxazole

Co-trimoxazole markedly reduces hospitalisation and mortality and provides protection against:

- *Pneumocystis jiroveci* (formerly known as *P. carinii*) pneumonia (PCP)
- toxoplasmosis
- many bacterial infections, and
- diarrhoea caused by *Isospora belli* or *Cyclospora* species.

Indications

- All HIV-infected adults who are immunosuppressed, i.e. World Health Organization (WHO) stages 3 & 4 and/or CD4+ count < 200 cells/ μ l or total lymphocyte count of < 1.25×10^9 /l.
- Co-trimoxazole can be discontinued in patients on ART when the CD4+ count has risen above 200 cells/ μ l and has remained above that level for 3 months or more.

Dosage

Co-trimoxazole 960 mg/d. This dosage is the best-studied and the *only* regimen used in randomised controlled trials conducted in Africa. Lower dose regimens (480 mg/d or 960 mg 3 times per week) have been shown to have equivalent efficacy to the 960 mg/d with less toxicity, but all these studies were conducted in developed countries.

Side-effects

The commonest side-effect of co-trimoxazole is maculopapular rash. Treatment may be continued in the presence of mild rash or interrupted and then re-challenged with antihistamine cover. Treatment should not be continued in the presence of fever, hepatitis or mucous membrane lesions, e.g. Stevens-Johnson syndrome. Neutropenia is a rare side-effect of prophylactic co-trimoxazole – routine blood count monitoring is not necessary.

Alternative drug

Dapsone 100 mg/d.

Note: Dapsone does not provide protection against bacterial infections and provides only limited protection against toxoplasmosis.

Drugs to prevent tuberculosis (TB)

Isoniazid (INH) given at a dose of 300 mg/d for 6 months is the most studied of the prophylactic regimens and recommended in South African Department of Health (DoH) guidelines.

Notes:

- Before commencement of preventive TB treatment, active TB should be excluded by using current DoH guidelines.

Further investigations to exclude TB must be done if any of the following symptoms are present:

- cough > 2 weeks
- drenching night sweats or fever for > 2 weeks
- observed weight loss > 1.5 kg/month.

If any of the above symptoms are present, two sputum smears and one sputum for TB culture should be sent to the laboratory.

It is not necessary to do a screening chest X-ray before initiating preventive therapy.

- Preventive therapy reduces the risk of active TB by about 60% in HIV-infected patients with a tuberculin skin test (Mantoux test) reaction of ≥ 5 mm.
- There is no significant benefit in giving prophylaxis to patients with a negative skin test unless they fall into a high-risk category, i.e.:
 - people who have been in contact with TB including health care workers
 - underground miners and prisoners.
- In communities with a high TB prevalence the benefit of prophylaxis does not extend beyond about 2 years. It is therefore recommended that HIV-infected health care workers should not work in areas with a high risk for TB.
- TB preventive therapy should not be administered at TB clinics, as HIV-infected patients may be exposed to multidrug-resistant TB. In addition, the capacity of TB clinics is limited.
- It is essential to monitor for symptoms of hepatotoxicity on a monthly basis. Patients *must* immediately report any symptoms of nausea, vomiting, abdominal pain and jaundice.
- Pyridoxine 10 - 50 mg daily must be given concomitantly with isoniazid (INH) to prevent neuropathy (25 mg tablets are available in the public sector). As other supplements and multivitamin

preparations may also contain pyridoxine, patients should be warned not to take over 100 mg per day.

ADULT IMMUNISATIONS

HIV infection is associated with a multifaceted suppression of both humoral and cell-mediated immune response, which may impair the response to vaccinations, reducing their efficacy. The safety of vaccination is also modified by HIV infection and the live vaccines of varicella, rotavirus and oral polio are contraindicated. HIV infection increases susceptibility to the diseases immunisation can protect against. Therefore HIV infection alters both the risks and benefits of vaccination. While the aim of vaccination is to prevent clinical disease, trials of vaccine efficacy frequently rely on the surrogate marker of antibody titre. The antibody titres required to prevent disease are not always well established for immune-competent individuals and may differ in HIV-infected people. Particularly if severe, immune suppression is associated with impaired responses to sub-unit, toxoid and killed vaccines. The efficacy of vaccination is therefore lowest in those most susceptible to the disease against which protection is sought. The decision to use a vaccine must be based on best assessment of risks and benefits.

Response to vaccination when the CD4+ count is < 200 cells/ μ l is very poor.

It is mandatory to report all suspected vaccine-related adverse events and vaccine failures.

PNEUMOCOCCAL VACCINATION

Although pneumococcal vaccination is recommended routinely and as early as possible by the Centers for Disease Control and Prevention (CDC) for patients who are HIV-seropositive, this is not currently recommended in South Africa. The recommendation by the CDC was not based on studies but on the premise that while efficacy is not proven, the potential benefit and safety of the vaccine justify its use in this situation. There is currently insufficient evidence to support this recommendation. Plasma HIV levels have been found to be transiently elevated in some studies in HIV-seropositive individuals following pneumococcal vaccination. The significance of these elevated levels is uncertain. The polyvalent Pneumovax[®] has been shown to be ineffective and in fact increased the risk of pneumonia in a large Ugandan study of patients not on ART, and is therefore not advised.¹

INFLUENZA VACCINATION

The Southern African influenza vaccine recommendations for 2004² recommend that people with mild to moderate immunosuppression should be vaccinated because of the greater liability to complications associated with secondary

infection. However, because of the poor efficiency of the vaccine in severely immunosuppressed persons, i.e. those with CD4+ counts < 200 cells/μl, there is little point in immunising them. Instead one would need to rely on chemoprophylaxis with either amantidine or (preferably) the newer neuraminidase inhibitor drugs, Zanamavir or Oseltamavir, for protection against influenza.

Limited data are available with regard to the effects of influenza on the HIV-infected individual but there is some evidence that symptoms may be prolonged and complications more common, and severe, at least in some cases. Transient (2 - 4-week) increases in replication of HIV-1 in the plasma or peripheral blood mononuclear cells of HIV-infected persons after influenza vaccination have been noted in some studies. These increases are of uncertain significance. Responses are sub-optimal if CD4+ counts are very low.²

TRAVEL AND OTHER SPECIAL SITUATIONS

- **Hepatitis A and B vaccination** can be given to all HIV-positive patients if necessary.
- **Yellow- fever vaccination** can be given to patients with early HIV infection (WHO stage 1 or 2) and patients who have a CD4+ cell count of > 200 cells/μl, *but* is contraindicated in patients with symptomatic HIV infection (WHO stage 3 or 4 disease) and if the CD4+ count is less than 200 cells/μl.
- **Rabies vaccination** should be given to HIV-infected people working with animals and at game parks. Immunoglobulins should be used in the event of a significant exposure.
- **Cholera.** No role other than for health care workers involved in an epidemic.
- **Typhoid and oral polio vaccination** is endorsed (inactivated polio vaccine (Salk) should be given if this is available).

MALARIA

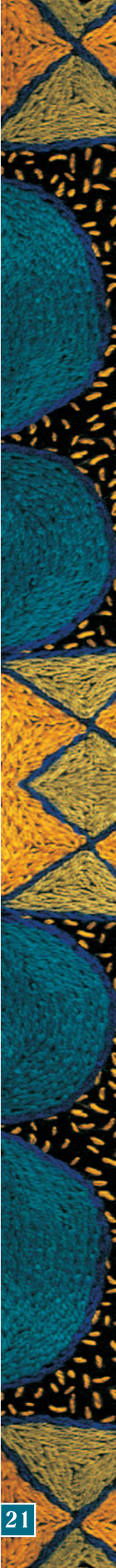
Most cases of malaria in sub-Saharan Africa are due to *Plasmodium falciparum*, the most severe and only life-threatening form of malaria. All the remarks that follow apply to this species. South Africans are generally at increased risk of developing severe malaria as they do not develop protective immunity because transmission is of low intensity, and is seasonal. Falciparum malaria has higher mortality rates and is more common in HIV-infected persons, especially those people with low CD4+ lymphocyte counts. Pregnant women in areas of high transmission of malaria are at risk of severe forms of the disease, generally when they are primigravidas, but all gravidities of HIV-infected women are at risk. There is evidence that placental infection by malaria increases the risk of mother-to-child transmission of HIV.

Preventing malaria

- **Avoiding mosquito bites.** All HIV-infected individuals living in malaria transmission areas should be protected by adequate vector control. Malaria control programmes in these areas are responsible for vector control, particularly spraying the interior of dwellings with residual insecticides, the use of larvicides, and reducing standing water. At an individual level, the simplest and most cost-effective way to minimise mosquito bites is by using insecticide-impregnated bed nets, and ensuring that these are regularly re-impregnated. The use of topical insect repellents is also effective, provided that 10 - 20% diethyltoluamide (DEET) preparations are used (other preparations have minimal or no effect). Repellents should be applied to all exposed skin (sparing the face) especially between dusk and dawn. Travellers should also use mosquito coils or plugs.
- **Chemoprophylaxis.** All HIV-infected travellers to malaria transmission areas should be given chemoprophylaxis, according to National Department of Health Guidelines for the prevention of malaria in South Africa. Either mefloquine or doxycycline is recommended. The combination of atovaquone and proguanil (Malaril) is also effective, but is expensive and there are potential drug interactions with ARVs that do not apply to either mefloquine or doxycycline (see below). Malaria chemoprophylaxis should be offered to HIV-infected pregnant women living in malaria endemic areas, irrespective of their gravidity. Chemoprophylaxis must be accompanied by the non-drug measures to avoid mosquito bites. Mefloquine is the agent of choice in pregnancy (as doxycycline is contraindicated), but its safety in the first trimester is still unclear.
- The role of mefloquine or doxycycline chemoprophylaxis outside of pregnancy in adults living in endemic areas is unclear. HIV-infected patients with CD4+ lymphocyte counts < 200 cells/μl are at highest risk of malaria. These patients should all receive co-trimoxazole, which has been shown to reduce the risk of malaria in several studies of HIV-infected groups in sub-Saharan Africa. However, resistance to sulfadoxine-pyrimethamine (Fansidar) has become widespread among *P. falciparum* in southern and eastern Africa. Co-trimoxazole has the same mechanism of action as Fansidar and it is therefore likely that it will have limited chemoprophylactic efficacy in most areas.

Treating malaria

Since HIV-infected individuals are at increased risk of severe or fatal malaria it is essential that the diagnosis is



made early. HIV-infected patients living in or travelling to malaria transmission areas should be encouraged to present to a health care facility where they can be tested immediately should they develop fever or flu-like symptoms. Falciparum malaria in the HIV-infected patient should be treated with the most effective antimalarial available, i.e. either quinine (combined with doxycycline or clindamycin) or artemisinin-based combination therapy (in South Africa artemether-lumefantrine (Coartem) is the only available product). Fansidar resistance is now so widespread in sub-Saharan Africa that this agent should no longer be used alone to treat malaria in patients at high risk of severe malaria – this includes all those with HIV infection. There are potentially significant interactions between ARVs and quinine and Coartem (see ARV guidelines).

NUTRITION

In all stages of HIV infection emphasis on nutrition is very important and should focus on recommending a normal, healthy eating pattern and a balanced diet. The objective is to maintain a healthy body weight by eating a wide variety of healthy foods and exercising regularly. Moderate exercise is recommended but intensive/vigorous exercise should be avoided as it may increase the metabolic rate and thus accelerate wasting.

Owing to the large number of people living in poor socio-economic conditions in southern Africa, health care practitioners treat many underweight individuals. Malnutrition itself compromises immunity, which in turn affects HIV-related immune deficiency.

The pathogenesis of malnutrition in HIV is multifactorial. Reduced food intake because of socio-economic factors, anxiety, depression and oral or oesophageal thrush, and diarrhoea (in the later stages of HIV infection), are associated with acute periods of weight loss because of malabsorption of nutrients and an increased metabolic rate due to opportunistic infections.

MEASURING NUTRITIONAL STATUS/BODY CELL MASS

Nutritional status, specifically the maintenance of protein stores (body cell mass) does impact on the ability to survive the ravages of HIV. Body weight fluctuates within 3% over time in stable healthy adults. Physical performance has been shown to decline after a weight loss of >10% of initial body mass, and weight loss of > 20% is associated with increased hospitalisation. At a level of 54% of normal body cell mass, death is likely to occur regardless of the presence or absence of OIs.

A depletion of the intracellular component of mass – the body cell mass – has been linked to shortened survival,

increased risk of OIs and poorer quality of life, independent of the level of immune depletion (CD4+ cell count).

At each visit the nutrition status should be assessed and the following recorded:

- Body weight.
- Weight loss indicators (WHO):
 - < 10% unintentional weight loss (WHO clinical stage 2)
 - > 10% unintentional weight loss (WHO stage 3).
- In the absence of reliable previous weight, the body mass index (BMI) can be calculated by dividing the patient's weight (kg) by height squared (m²). A BMI of ≤ 18.5 is associated with a high mortality risk. In the absence of a stadiometer, height can be measured by measuring the distance between the tip of one middle finger to mid-sternum and multiplying this by two.
- Additional screening criteria:
 - changes in dietary intake
 - assessment of clinical status (wasting)
 - medication regimen (drug-nutrient interactions) and
 - exercise habits.

HIV-RELATED WASTING SYNDROME

There are two types of HIV-related wasting syndrome:

- Starvation-related wasting resulting from food deprivation (voluntary/involuntary) in clinically stable patients who have not yet presented with OIs. The macronutrient status reflects the total body mass and the micronutrient status the body's cellular functioning. Micronutrient deficiency may exist without macronutrient deficiency, but macronutrient deficiency is almost always associated with micronutrient deficiency. These people respond well to nutritional support and feeding which usually reverses the starvation.
- Cachexia-related wasting is a disproportionate depletion of lean body mass (LBM) as a result of alterations in metabolism. In fighting disease, metabolic output is redirected to energy requirements and substrate needed to fuel the body's response instead of normal maintenance of the body mass. In the long term this leads to protein (especially skeletal muscle) loss. Feeding is not a sufficient intervention to reverse the effects of cachexia.

FOOD SECURITY

In the African setting, household food security and the ability to implement food safety measures should be considered as important determinants of the development of AIDS wasting syndrome.

Large and small food donations require appropriate storage facilities and an efficient distribution network.

Further studies on the impact of malnutrition and food supplementation are urgently needed.

DIETARY SUPPLEMENTS

There are no data to support the routine use of supplements in HIV-infected individuals with *no evidence of nutritional deficiencies*. Evidence does, however, suggest that micronutrient deficiencies are common in patients with HIV and are associated with disease progression.

Regarding vitamin supplementation in *poor, developing countries*:

- Use of the following vitamins and minerals has been demonstrated to help slow disease progression:
 - Vitamin B complex, C and E. A recent study by Fawzi *et al.*³ conducted on 1 078 pregnant women in Dar es Salaam, Tanzania, compared the following regimens: vitamin A alone; a multivitamin (vitamin B complex, C and E) alone, vitamin A plus the multivitamin; and placebo. The results showed that multivitamins (vitamin B complex, C and E) helped to slow down disease progression, but that the addition of vitamin A actually reduced the benefit at the end point.³

Vitamin B complex had been shown to be useful in earlier studies.⁴⁻⁶

- Selenium. Little work has been conducted on selenium apart from Willumsen's work in 2003⁷ and more work is required to confirm that selenium may reduce the incidence of OIs, improve immune function and slow disease progression.
- Benefit demonstrated in identified deficiency:
 - Vitamin A⁸ (**Note:** not more than 20 000 IU/4 000 µg RE – increased disease progression).
 - Zinc⁹ (**Note:** > 20 mg/d = increased disease progression; ≥ 14 mg/d = decreased survival.)
- Vitamins and minerals not recommended in HIV-infection – associated with possible worsening of the condition:
 - Vitamin A¹⁰
 - Iron: no published reports of iron supplementation studies.

Where possible all patients should be on multivitamins that include the nutrients in dosages indicated in Table I. A supplement which provides 100% to 150% of the recommended dietary allowances (RDAs) of current dietary reference intakes (DRIs) is advisable since it is most unlikely

TABLE I. DIETARY SUPPLEMENTS

Nutrient	RDA (range for female and male)	Maximum dose for supplementation in HIV/AIDS	Toxic on higher dose (upper limit (UL) — do not exceed)
Vitamin E (mg TE)	15	25 α-TE*	1 000 TE
Selenium (µg)	55	100	400
Folate (µg)	400	400 - 800	1 000
Niacin B ₃ (mg)	14 -16	25	35
Thiamin B ₁ (mg)	1.1 - 1.2	5.5 - 6.0	None
Riboflavin B ₂ (mg)	1.1 - 1.3	5.5 - 6.8	None
Vitamin B ₆ (mg)	1.3	6.8	100
Vitamin B ₁₂ (mg)	2.4	5 - 10	None
Vitamin C (mg)	75 - 90	250	2 000
β-carotene (mg)	No RDA	15 mg	
Magnesium (mg)	280	200	350
Chromium (mg)	25 - 35 µg	25 µg	
A-lipoic acid	No RDA	10 - 15 mg	100 mg
Glutathion	10 mg	50 mg	None

α-TE = α-tocopherol equivalents or mg of RRR-α-tocopherol; DRI = Dietary Reference Intakes, which has four categories: EAR (estimated average requirements – needed to set RDA), RDA (recommended dietary allowances), AI (adequate intakes), UL (tolerable upper limits).

Notes:

- Patients receiving rifampicin treatment may require additional vitamin D supplementation.
 - Patients receiving isoniazid therapy should receive 10 - 15 mg pyridoxine (vitamin B₆) to prevent peripheral neuropathy. Pyridoxine has monoamine oxidase inhibitor (MAOI)-like activity. Avoid high tyramine or histamine foods:²
 - **Foods that must be avoided (high content of tyramine, dopamine, histamine, phenylethylamine):** aged cheese (e.g. cheddar, blue); aged meat (e.g. dry sausage, salami, biltong); soy sauce; fermented soy beans, soybean paste; tofu; sauerkraut; tap beer; concentrated yeast extract (Marmite); banana peel; all casseroles made with aged cheese.
 - **Foods that may be used with caution:** red or white wine 60 - 120 ml per day; coffee, cola; pizza (homemade or gourmet pizza may have higher content); bottled beer, 2 X 350 ml bottles maximum; alcohol-free beer, 2 X 350 ml bottles maximum.
 - **Foods not limited (based on current analyses):** unfermented cheese (cream, cottage, processed); smoked white fish, salmon, anchovies, pickled herring; fresh meat, poultry or fish; canned figs, raisins; fresh pineapple; beetroot, cucumber; sweetcorn, mushrooms; salad dressings, tomato sauce; Worcestershire sauce; baked raised products, plain cookies; boiled egg, yoghurt, ice cream; avocado, figs, banana, raspberries; Brewer's yeast (vitamin supplements); curry powder; peanuts, chocolate.
- All packaged processed meats, e.g. hot dogs, bologna, liverwurst, should be stored in refrigerator immediately and eaten as soon as possible. Histamine content is highest in improperly stored or spoiled fish, e.g. tuna.*

that a person with HIV/AIDS will be able to meet the requirements for vitamins and minerals with diet alone owing to poor appetite and/or possible financial constraints.

FOOD CHOICE ADVICE

In HIV-infected people, the emphasis is on ensuring adequate energy and protein intake to maintain body weight and, more specifically, lean body tissue. This advice should commence early in the infection and include (where the patient can afford it):

- Food variety.
- Plenty of fruit and vegetables.
- Starch as the basis of all meals.
- Daily portions of meat and dairy products.
- Sugars, fats and oils should be included in the diet, especially following periods of weight loss.
- Regular intake of dried beans, peas, lentils, peanuts or soya.
- Salt should be used sparingly (as in South Africa there is a high prevalence of hypertension and stroke).
- Alcohol should be avoided.
- During times of loss of appetite and/or nausea, small frequent meals should be advised. The patient should avoid lying down after a meal, and should eat foods at room temperature.
- When symptoms of sore mouth or throat appear, soft foods moistened with margarine or gravy can be advised and sticky, spicy and acidic foods should be avoided, e.g. peanut butter, dry rough foods, citrus fruits.
- When diarrhoea or vomiting is present advise isotonic fluids (see box), diluted fruit drinks, and avoidance of caffeine products (coffee, cola drinks), dairy products (although fermented dairy, e.g. maas, may be tolerated) and high-fat foods. Encourage high soluble fibre foods, e.g. bananas, oats porridge.
- Intake of lots of clean, safe water.
- As much physical activity as possible.

Oral rehydration solution (ORS)

- 1 litre clean, safe water
- add 8 level teaspoons sugar
- add half teaspoon salt
- mix well
- store in clean and covered container
- keep in cool place
- make fresh solution every day

This suffices if nothing else is available, but contains no potassium. ORS with potassium is on the primary care EDL.



Fig. 1. The food pyramid.

THE FOOD PYRAMID

The food pyramid (Fig. 1) illustrates the above dietary guidelines.¹¹

- Choose at least 1 portion (or more) from the last 3 levels of the pyramid for each meal as indicated in example meal plans (see below).
- Eat at least 6 meals (where possible) – 3 main meals and 3 snacks in between meals.
- Use fats, sweets and alcohol sparingly (top level).

EXAMPLE MEAL PLANS

Choose foods from the different levels of the pyramid within the financial constraints of the given individual, including culturally accepted foods.

Morning meal

- Porridge (1 cup)/2 slices wholewheat bread with sugar/jam (2 t)
- Milk (1 cup)/cheese (30 g)/1 egg/cooked beans (1/2 c)/meat or fish (30 g cooked)
- Fruit/vegetable – raw/cooked/juice (1 portion)

Mid-morning snack

- Cottage cheese (2 tbsp) + 1 slice wholewheat bread or
- Cheddar cheese (30 g) + 3 crackers or
- Yoghurt, low fat, fruited (175 ml)

Lunch/light meal

- Porridge/rice/samp (1 - 2 cups)/2 - 3 slices wholewheat bread with sugar/jam (2 - 3 t)
- Milk (1 cup)/cheese (60 g)/eggs (1 - 2)/1/2 c cooked beans/30 - 60 g cooked meat or fish
- Fruit/vegetable – raw/cooked/juice (1 portion)

Mid-afternoon snack

- Cottage/gouda cheese (125 ml) + 1/2 banana or
- Pudding (175 ml) or
- Bean/egg filling + 1 slice wholewheat bread

Dinner/main meal

- Meat/fish/poultry/cooked dry beans or lentil dish (one 60 - 90 g portion cooked)
- Samp/rice/porridge/potato/sweet potato (1 - 2 cups)
- Vegetables (cooked and/or raw) (1 - 2 cups) *and/or*
- Fruit 1 - 2 portions

Late evening meal

- 1 slice wholewheat bread + filling *or*
- Fruit yoghurt (175 ml) *or*
- Fruit raw/cooked/juice + milk/maas

NUTRITIONAL BENEFITS OF HERBS AND OTHER UNCONVENTIONAL TREATMENT STRATEGIES

More information on unconventional treatment strategies is available on www.sun.ac.za/nicus.

- **Garlic.** No human studies to date have consistently and conclusively documented that garlic can improve immunity or the immune response. Various deleterious side-effects are associated with the use of garlic supplements.
- **Virgin olive oil.** Although the substitution of saturated fat or polyunsaturated fat with extra-virgin olive oil may have health benefits for people living with HIV/AIDS, there is no convincing or consistent scientific evidence that virgin olive oil boosts immunity or alters the course of HIV/AIDS, adversely or beneficially. For financially insecure patients the purchase of a relatively expensive product such as virgin olive oil may limit the purchase of other affordable wholesome foods.
- **African potato (*Hypoxis hemerocallidea* corm).** HIV/AIDS patients should avoid any supplements containing African potato or the hypoxis plant. It is a rich source of phytosterols, but *it has been found to be a toxic agent causing bone marrow toxicity and worsening immune suppression in HIV-infection* as well as in feline immunodeficiency virus infection. This agent should therefore be avoided.
- **Onion.** Onions are a food source of phytochemicals such as flavonoids and organosulphur compounds. In terms of safety the ingestion of large quantities of onions is known to cause gastrointestinal discomfort and distension and they should be used with caution by individuals with chronic diarrhoea and gastrointestinal discomfort.
- **Spirulina.** This extract of blue-green algae has some immunomodulatory activity:
 - inhibits mast cell-mediated allergic reactions
 - increases the activity of macrophages
 - increases phagocytosis
 - increases the concentration of interleukin-1 (IL1).

Blue green algae extracts can be contaminated with toxic species (*Microcystis aeruginosa*) that are

hepatotoxic. Heavy metal contamination has also been reported. A protein (cyanovirin-N) with anti-HIV properties has been isolated from another species (*Nostoc ellipsosporum*) by the National Cancer Institute, USA. Research is needed to confirm efficacy in humans.

- **Sutherlandia frutescens.** This traditional herbal remedy is widely used in South Africa. Animal studies conducted by the Medical Research Council failed to show any significant toxicity. No published studies exist on human toxicity *or* use for any indication.

■ Immune modulators (e.g. phytosterols)

A mixture of the plant sterols (phytosterols) beta-sitosterol and its glycoside, Moducare, is widely promoted as an 'immune booster' in HIV infection. Studies conducted by researchers at the University of Stellenbosch have shown several effects on immunity *in vitro*:

- lymphocyte proliferation in response to mitogenic stimulation is enhanced
- increased lytic ability of natural killer cells
- increased Th1 immune response and unchanged or inhibited Th2 response
- inhibition of the pro-inflammatory cytokines, Interleukin 6 and TNF- α .

Effects are therefore both stimulatory and inhibitory. It is more accurate to call it an immune modulator rather than an immune booster. The net effects in HIV-infected individuals are difficult to predict. The stimulatory effects (e.g. on lymphocyte proliferation) could be harmful, leading to increased HIV replication.

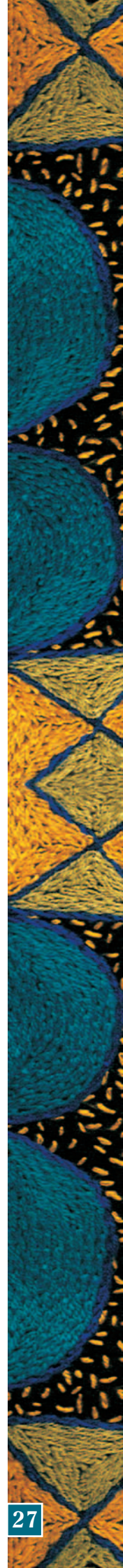
A small unpublished feline study has shown that CD4+ cell counts remain higher during treatment. An uncontrolled unpublished human study claimed reduced viral load but provides no specific figures. Researchers stated that Moducare has no antiviral effects and ascribed the reduction in viral load to reduced immune activation.

A small controlled human trial carried out in adults with tuberculosis showed no improvement in sputum conversion rates, but subjects gained weight. Elevated eosinophil counts were noted in the treatment arm, which could indicate hypersensitivity.

There are therefore grounds for believing that the product might be beneficial *but* equally a concern that it could be harmful. Further randomised controlled trials need to be conducted.

■ Other alternative diet therapies and supplements.

These diets have not been subjected to formal clinical research and many of these diets may imply, or result in, some ill-advised food elimination *and/or* restriction. It is best to eat a varied diet, within the financial constraints of the given individual, and include culturally accepted energy- and protein-rich foods.



The importance of the role comprehensive counselling plays in the management of patients living with HIV/AIDS cannot be overemphasised. Such counselling has a demonstrably beneficial effect upon the subsequent quality of life of people living with the virus.¹² The aim of counselling is to provide each individual with sufficient information to manage his/her condition well and to access the support required to deal with all aspects relating to their infection: medical, social, psychological and emotional. In this context counselling may be termed a 'structured conversation aimed at facilitating a client's (patient's) quality of life in the face of adversity'.¹³

Counselling is performed by a suitably trained health care professional or counsellor. The latter may be someone from the client's own community.^{14,15} Additional care may be given in a 'support group' where overall supervision remains in the hands of a trained and accountable member of the group. Counsellors too require access to support for the purpose of processing and debriefing sensitive information and feelings. Burnout and emotional fatigue are common problems among workers in the health field.¹⁶⁻¹⁸

SPECIFIC FORMS OF COUNSELLING

Voluntary counselling and testing (VCT) and pre-test counselling

VCT is a *voluntary* programme that provides *confidentiality* and *ease of access* to the HIV test and result. Pre-test counselling focuses on the value of knowing one's HIV status and the consequent lifestyle and social change that such knowledge will bring. The possibility of a positive test result is discussed together with the consequent need to inform (sexual) partner(s) and to disclose one's HIV status to significant others such as family members. How would I respond to such news? How will I inform my partner? How do I deal with stigma and rejection? The counsellor anticipates the patient's responses and aims to provide sufficient support to enable the patient to cope. A downside to testing positive is coping with societal restrictions and personal shame: exclusion from or 'loading' of insurance policies and home loans, retrenchment or harassment in the workplace, the curtailing of emigration and restrictions on international travel, the banning of blood and organ donation, rejection from family and friends. However 'forewarned is also forearmed'. Knowing one's HIV status is a 'first' step in preventing viral transmission and in ensuring good health in the future. Wise counsel will assist the patient to manage his/her personal affairs and make provision for the long-term care of dependants.

A return date for obtaining the result is set at the initial visit. The actual blood or saliva test may be done at or after the counselling has been completed. The test measures the presence of antibodies in the patient and is usually an HIV ELISA and/or Western blot test. Some centres are able to perform 'rapid' HIV-antibody tests: the patient can be given his/her result almost immediately. Pre-test counselling is regarded as a prerequisite to performing an HIV test. Persons doing the test without the patient's consent are liable to prosecution in South Africa. The patient must give his/her consent to the test.¹⁹⁻²¹

Post-test counselling

In this context the patient has had an HIV test but has not yet received the result. It presupposes that pre-test counselling has been performed. The counsellor assists the patient in understanding his/her test result. The patient must be *shown* his/her result. The test result will be either negative or positive. An 'indeterminate' result means that the test needs to be repeated. If it is persistent over subsequent follow-up, an alternative means of verifying infection is indicated. Where the result is negative, both truly negative and falsely negative results are possible. Test results that are falsely negative occur either soon after exposure, mostly within 6 weeks – the so-called 'window period' – or late in the course of HIV infection. In both situations the patient's level of anti-HIV antibodies is below the limit of detection by the laboratory. Repeat antibody testing where the suspicion of infection is very high or the use of an alternative means of detecting the virus – by measurement of the p24 antigen, or directly measuring the virus with a viral polymerase chain reaction (PCR) test (a 'qualitative' viral load) – and the practice of 'safe sex' until clarification of status are indicated. False-negative tests are rare and seldom a cause of anxiety to either the patient or the counsellor.

In 2000, an average of 24.5% of South African antenatal clinic attenders tested HIV-positive. Prevalence rates in the community as a whole are in excess of 11 – 17%.^{22,23} This is sufficiently high to make false-positive HIV-antibody tests unusual. The patient who tests HIV-positive but who is uninfected is not difficult to differentiate from those who are truly infected and whose tests are truly positive. False-positive tests occasionally result from technical or laboratory errors. Where uncertainty exists the test must be repeated. Alternative tests, if required, will clarify the patient's status.

Where the patient tests positive, instill hope. Deal with immediate feelings, particularly where he/she has been poorly prepared. It is always good to have a close friend or family member with the patient or in the waiting room outside. In Africa, the involvement of the family and

sometimes community members is a cultural norm and may be requested by the patient. Review the 'hows' with the patient: how to notify partners and/or family, how to practise safe sex, and how to introduce the use of condoms into a relationship when these were previously taboo. Recall the ways in which the virus can be spread and indicate what to do when blood spills occur in the home. There is no need for social isolation. Young patients wishing to have a family will need advice regarding pregnancy.

Encourage the patient to plan for the future. Detail the support that is available to him/her. Access to ART has altered the previously bleak picture. Patients can expect to live for many years after starting ARV drugs. Even in resource-poor settings, patients show a response to ARV drugs that is similar to that in highly developed communities.^{24,25}

Post-test counselling is always done in private and never 'over the telephone'. Do not leave test results on an answering machine or cell phone. Never give results to a 'friend' or a third party. Post-test counselling is generally not repeated unless the patient requests further assistance. The latter is most frequently given in the form of 'life-skills' counselling.

Life-skills, crisis intervention and family planning counselling

Growing the skills to meet the challenges of life is a long-term necessity we all face. Those who are HIV infected encounter these challenges when least prepared. They are young. Sexual relationships and the nuclear family are incomplete. Permanent employment and financial security are many years away. Peer pressure and a culture that is itself in transition, drive youth – like lemmings – into the web of an epidemic that offers little chance of escape.

Patients express shame, guilt, anger, betrayal, blaming, denial, depression, bargaining, loss. What do I do with myself? How do I deal with my feelings? How do I mend the relationships that have been broken? How do I change? Can I accept my situation and move on? Who am I? Time and listening skills are needed but seldom available in busy clinics and practices. Suicidal thoughts must be taken seriously, although suicide remains rare. Nevertheless suicide is more frequent in the HIV infected and particularly around the time of diagnosis.^{26,27} The counsellor assists the patient in setting goals and encourages him/her to implement these. The virus must not be allowed to define who the patient is.²⁸

Have sexual partners been notified? Do these partners need assistance and are they supportive of the patient? Is the patient employed and are there work-related problems: unlawful dismissal, HIV testing without consent or with

coercion, undue absenteeism, inability to work and the need to procure pension benefits and/or disability grants? From time to time patients or their families will ask for legal assistance: with physical and other forms of abuse in the home, advice regarding separation or divorce, work-related issues, problems with the payout of funeral benefits or insurance cover. Obtaining bank loans and insurance remains difficult for many patients. Support groups are often very helpful in this long-term form of counselling. Patients learn from one another.

Family planning may need to be addressed. Infected parents want an HIV-negative baby. Ideally both partners should be counselled together and each encouraged to take personal responsibility for his/her own sexual health. Discussion on contraception must include barrier methods, particularly condom use, and the role of injectable and oral hormonal contraceptives. Condom use is recommended at all times, even where both partners are already HIV infected. Super-infection with 'new' HIV strains has been recorded in such circumstances.^{29,30} Nonetheless those who plan to become pregnant need to be listened to sympathetically and assisted where possible.

Discordant couples (where one is HIV-negative and the other positive) may question why one remains uninfected. Such couples need clear scientific advice and must be encouraged to persist in condom use.

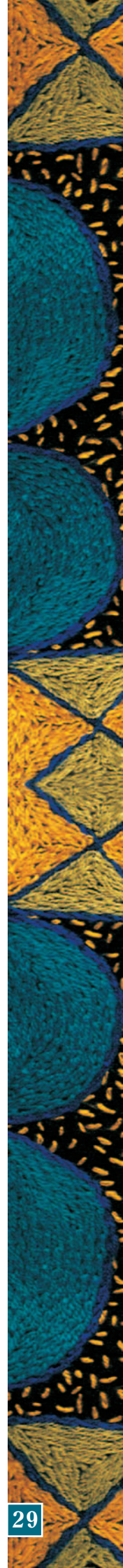
Life-skills and crisis counselling usually takes place in a situation where privacy and time are available to the counsellor and the patient. Where time and opportunity do not permit, the physician must refer to an appropriately skilled caregiver. Severe depression, suicidal talk, domestic violence, and psychotic and irrational behaviour, must be regarded seriously. Patients and their families must be assisted with obtaining the help they need.³¹

Management-related counselling

Patients often ask the difference between being HIV-positive and having the acquired immunodeficiency syndrome (AIDS). The various staging systems – WHO or Centers for Disease Control (CDC) – can be explained briefly in a non-technical manner.

THE ART OF COUNSELLING

- **Empathy.** Indicate concern, be non-judgemental and accepting. Where possible sit alongside the patient and not on the other side of the desk, and at the same height as the client. Avoid emotional and physical distance.
- **Trust.** Maintain confidentiality at all times, keep (brief) notes/records of the interview. Keep the interview private and attempt to prevent interruptions, e.g. cell-phone calls. Where feasible, ensure that the same



counsellor and patient/client meet during follow-up visits.

- **Listen.** Be an informed and an attentive listener. When information is needed, provide scientific knowledge in a manner that can be understood by the client. Provide information on the costs involved and the accessing of affordable medicines. Encourage long-term budgeting. Listen to the patient – attempt to hear what is being said behind the words.
- **Sensitivity.** Be client-centred. Attempt to understand the culture and belief system. Encourage family or partner involvement. Enquire about feelings: What need is being expressed? What emotion is being experienced? Provide a sense of hope and indicate the next step – what can be done. Deal with specific medical problems without delay. 'How are you coping?'
- **Right questions.** 'Why do you want to know your HIV status?' Encourage the patient to voice his/her concerns and questions. Avoid 'closed-ended' questions: e.g. 'Do you ...', 'Did you ...', 'Have you ...!' Use instead 'open-ended' questions that allow for interaction between the client and yourself. Begin the discussion with 'Why ...', 'What ...', 'When ...', 'How ...', 'Describe ...'.

EDUCATION: PROVIDING PATIENTS WITH KNOWLEDGE

The counsellor needs to be able to address the following topics comprehensively and clearly:

- Scientific data about HIV and the effects of infection on the human system.
 - What is a virus? The natural history of the virus (HIV) and where it has come from.
 - How is HIV infection contracted? Through contact with blood, sexual contact and mother-to-child transmission. How can viral transmission be prevented?
 - How does the virus damage the human body/immune system? The viral life cycle within the human lymphocyte, i.e. within the immune system of the host.
 - Survival data as they relate to the patient. The control of the virus by the host immune system, medication, and lifestyle modification.
- Laboratory monitoring of the infection and the effects of medication.
 - The CD4 cell count: measuring the immune system. *Aim:* to build up the CD4 cell count and to maintain it within the normal range indefinitely. The normal CD4 cell count is between 500 and 2 000 cells/ μ l.
 - The viral load: measuring the virus itself. *Aim:* to ensure tight control of the virus to minimise the damage to the human body/immune system.

- Other laboratory tests, e.g. full blood count (FBC).
- Cost and frequency of tests. *Aim:* where possible, to ensure an affordable and reliable source of scientific information on the patient's progress.

- The medical management of the patient.
 - The diagnosis of HIV and AIDS. The taking of a medical history and the examination of the patient. Confirmatory blood (saliva) tests.
 - Follow-up visits and blood tests. Emphasise adherence with the follow-up schedule. Follow-up visits offer the opportunity to ensure that the viral infection is under control.
- The role of lifestyle and diet (nutrition) in maintaining health.
 - A healthy diet and lifestyle makes good sense and should be encouraged.
 - There is, however, little supportive evidence-based data for the use of special diets and nutritional supplements. These can prove very expensive to the consumer.
 - Where documented or anticipated deficiencies of vitamins or trace elements exist, these can be replaced.
 - It is possible that a mixture of vitamins B, C and E may be of benefit. (See section on nutrition.)

CONCLUSION

Adequate counselling requires time and commitment. This is often difficult in a busy or understaffed clinic or medical practice. Many successful HIV practices have delegated much of the counselling to trained nursing staff or willing and skilled community members. To view the HIV epidemic purely as a plague that requires the adoption of health precautions and drugs is to miss the point. The epidemic continues to grow each year despite scientifically appropriate messages. Lifestyles are not changing. For the latter to occur significant changes in relationships between people must occur. In an article on concurrent relationships as a reason for the high rate of HIV infections in Africa, the authors comment: 'as soon as one person in a network of concurrent relationships contracts HIV, everyone else in the network is placed at risk. By contrast, serial monogamy traps the virus within a single relationship for months or years.'³⁰

We need a more caring society. The HIV epidemic offers that opportunity. Good counselling helps to open that door.

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These guidelines pertain to the Republic of South Africa.

