

# WHO Drug Information

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## Contents

### Herbal Medicines

Herbal medicinal products  
in the European Union 115

### Current Topics

Miltefosine registered for visceral  
leishmaniasis in India 119

Tetanus vaccine pre-filled injection device 119

Nonoxinol 9 ineffective in preventing  
HIV infection 120

**New formula oral rehydration salts 121**

International AIDS Society recommendations  
for antiretroviral treatment: adult  
HIV infection 122

### Good Clinical Practices

Development of Chinese good clinical  
practices (GCP) 125

### Safety Information

Statins: rhabdomyolysis and myopathy 130

Tamoxifen and risks of thromboembolic events 132

Oral contraceptives and risk of cervical cancer 132

HIV-associated lipodystrophy syndrome  
overview 132

### Regulatory Action

Alosetron hydrochloride: restricted marketing 135

Baclofen: abrupt discontinuation dangerous 135

Irinotecan: prescribing changes 135

Sodium oxybate/GHB approved for cataplexy 136

Rofecoxib: new indication and label changes 136

### Essential Medicines

New procedures for updating the  
Model List of Essential Medicines 138

Core Model List 139

Complementary Model List 151

### Recent Publications and Sources of Information

Genomics and world health 155

Legal status of traditional and complementary  
medicine 155

Kinetoplastid research source launched 155

Endocrine disrupting chemicals 156

### Proposed International Nonproprietary Names: List 87 157

risk of sexually transmitted infections, including HIV infection, they have primarily been used as methods of contraception. Estimated numbers of women of reproductive age using spermicides vary from country to country, from less than 1 % in Asia to nearly 17% in some Latin American countries.

In the 1970s and 1980s, laboratory tests showed that nonoxinol 9 could inactivate the organisms that cause gonorrhoea, chlamydial infections, and other sexually transmitted infections, as well as HIV. These findings fuelled hopes that it could be used not only for contraceptive but also for microbicidal purposes. Clinical trials conducted to date do not support these hopes.

On the contrary, two studies mentioned in the report point to an increased risk of sexually transmitted infections, including HIV infection, in women using nonoxinol 9 products. A possible reason, suggested by the findings of other studies, is that nonoxinol 9 can disrupt the epithelium, or wall, of the vagina, thereby potentially facilitating invasion by an infective organism. The frequency of this epithelial disruption seems to depend on the intensity of use of the product — from 18% of women using the product every other day to 53% using it four times a day.

Regarding the use of spermicides for contraception, the report concluded that, when used alone, nonoxinol is only moderately effective for pregnancy prevention but better than no contraceptive method at all. Nonoxinol 9 is sometimes added to male condoms as a lubricant. The experts found no evidence that nonoxinol 9-lubricated condoms provided any more protection against pregnancy or sexually transmitted infections than condoms lubricated with silicone and nonoxinol 9 may cause adverse effects.

**Reference:** WHO/CONRAD Technical Consultation on Nonoxinol 9 Summary Report of the Meeting held on 9–10 October 2001. <http://www.who.int/reproductive-health/rtis/index.htm>

## New formula oral rehydration salts

A new formula for oral rehydration salts (ORS), has been released by the World Health Organization. The new formula ORS, a sodium and glucose solution, is widely used to treat children with acute diarrhoea. Since WHO adopted ORS in 1978 as its primary tool to fight diarrhoea, the mortality rate for children suffering from acute diarrhoea has fallen from 5 million to 1.3 million deaths annually.

The new improved formula is the result of extensive research sponsored by WHO's Department of Child and Adolescent Health and Development and supported by the United States Agency for International Development (USAID). The latest study was conducted in five developing countries among children from one month to two years old with acute diarrhoea and dehydration.

The study's findings suggest that using the low-sodium, low-glucose ORS formulation reduces the need for intravenous fluids by 33 percent. The effect of this reduction could result in fewer children requiring hospitalization, fewer secondary infections, a diminished need to handle blood with its potentially dangerous consequences, and lower health care costs.

### Reduced osmolarity

For more than 25 years, WHO and UNICEF have recommended a single formulation of glucose-based oral rehydration salts to prevent or treat dehydration from diarrhoea irrespective of the cause or age group affected. This product, which provides a solution containing 90 mEq/l of sodium with a total osmolarity of 311 mOsm/l, has proven effective and without apparent adverse effects in worldwide use. It has contributed substantially to the dramatic global reduction in mortality from diarrhoeal disease during the period.

For the past 20 years, numerous studies have been undertaken to develop an "improved" ORS. The goal was a product that would be at least as safe and effective as standard ORS for preventing or treating dehydration from all types of diarrhoea but which, in addition, would reduce stool output or have other important clinical benefits. One approach has consisted in reducing the osmolarity of ORS solution to avoid possible adverse effects of hypertonicity on net fluid absorption. This was done by reducing the solution's glucose and salt (NaCl) concentrations.

Studies to evaluate this approach were reviewed at a consultative technical meeting held in New York (USA) in July 2001, and technical recommendations were made to WHO and UNICEF on the efficacy and safety of reduced osmolarity ORS in children with acute non-cholera diarrhoea, and in adults and children with cholera.

These studies showed that the efficacy of ORS solution for treatment of children with acute non-cholera diarrhoea is improved by reducing its

Reduced osmolarity ORS	grams/litre	Reduced osmolarity ORS	mmol/litre
Sodium chloride	2.6	Sodium	75
Glucose, anhydrous	13.5	Chloride	65
Potassium chloride	1.5	Glucose, anhydrous	75
Trisodium citrate dihydrate	2.9	Potassium Citrate	20
		<b>Total Osmolarity</b>	<b>245</b>

sodium concentration to 75 mEq/l, its glucose concentration to 75 mmol/l, and its total osmolarity to 245 mOsm/l. The need for unscheduled supplemental IV therapy in children given this solution was reduced by 33%. In a combined analysis of this study and studies with other reduced osmolarity ORS solutions (osmolarity 210-268 mOsm/l, sodium 50-75 mEq/l) stool output was also reduced by about 20% and the incidence of vomiting by about 30%. The 245 mOsm/l solution also appeared to be as safe and at least as effective as standard ORS for use in children with cholera.

The reduced osmolarity ORS containing 75 mEq/l sodium, 75 mmol/l glucose (total osmolarity of 245 mOsm/l) is as effective as standard ORS in adults with cholera. However, it is associated with an increased incidence of transient, asymptomatic hyponatraemia. This reduced osmolarity ORS may be used in place of standard ORS for treating adults with cholera, but careful monitoring is advised to better assess the risk, if any, of symptomatic hyponatraemia.

Because of the improved effectiveness of reduced osmolarity ORS solution, especially for children with acute, non-cholera diarrhoea, WHO and UNICEF now recommend that countries use and manufacture the following formulation in place of the previously recommended ORS solution with a total osmolarity of 311 mOsm/l.

Although this single ORS formulation is recommended, WHO and UNICEF have previously published criteria, which remain unchanged, for acceptable ORS formulations. These criteria are listed below; they specify the desired characteristics of the solution after it has been prepared according to the instructions on the packet:

**The total substance concentration** (including that contributed by glucose) should be within the range of **200-310 mmol/l**.

#### The individual substance concentration:

**Glucose** should at least equal that of sodium but **should not exceed 111 mmol/l**

**Sodium** should be within the range of **60-90 mEq/l**

**Potassium** should be within the range of **15-25 mEq/l**

**Citrate** should be within the range of **8-12 mmol/l**

**Chloride** should be within the range of **50-80 mEq/l**

### International AIDS Society recommendations for antiretroviral treatment: adult HIV infection

Because of increased awareness of the activity and toxicity of current drugs, the threshold for initiation of therapy has shifted to a later time in the course of HIV disease. However, the optimal time to initiate therapy remains imprecisely defined. Availability of new drugs has broadened options for therapy initiation and management of treatment failure. The present updated recommendations written by the International AIDS Society, USA panel, are intended to guide practising physicians in the care of HIV infection and AIDS.

Progress in antiretroviral therapy has resulted in achievements as well as new challenges. The partial restoration of CD4 and CD8 T cell number and function during suppression of HIV replication with potent antiretroviral therapy has resulted in dramatic reductions in morbidity, mortality, and health care utilization. However, the toxicity of many current regimens, suboptimal activity and tolerability, and the emergence of drug resistance all point to the need for effective treatment strategies.