

KARL L DEHNE, GABRIELE RIEDNER

SEXUALLY TRANSMITTED INFECTIONS AMONG ADOLESCENTS: THE NEED FOR ADEQUATE HEALTH SERVICES

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KARL L DEHNE, GABRIELE RIEDNER

# SEXUALLY TRANSMITTED INFECTIONS AMONG ADOLESCENTS

## THE NEED FOR ADEQUATE HEALTH SERVICES

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# **SEXUALLY TRANSMITTED INFECTIONS AMONG ADOLESCENTS**

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## Foreword

Today it is widely acknowledged among public health decision-makers and experts, that adolescents not only have sexual and reproductive needs but likewise rights, including the right to a satisfying and safe sexuality. Adolescents, often termed the "generation of hope", play a vital role for the future health status of any country. Their behaviours, attitudes and beliefs are also shaping the societies of the future.

Sexually transmitted infections (STIs) in general, and among adolescents in particular, are of paramount concern to all people who work on improving the health status of populations. Worldwide the highest reported rates of STIs are found among people between 15 and 24 years; up to 60% of the new infections and half of all people living with HIV globally are in this age group.

STIs are still widely connected with stigmatization, embarrassment and denial among health workers and patients alike. Sexuality, and associated health risks, are still a major taboo in many societies. This is especially true for young people. While their rights and needs may be acknowledged in theory, in practice they are still confronted with many barriers when it comes to obtaining the practical support they need to avoid problems. An expression of their "unmet needs" is the worldwide scarcity of services available for young people especially services related to the treatment of STIs.

Gender is a critical issue in STI prevention and care. Gender-based inequalities put girls and young women at increased risk of acquiring STIs. Gender-based inequalities also affect their access to prevention and care services. In addressing these inequalities, it is important to consider the different needs and constraints of young women and young men, and to design interventions accordingly.

The Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) assists partners from government and civil society to improve prevention activities for young people. However, it was found that this support had rarely included the promotion and establishment of adolescent-friendly services for the diagnosis and treatment of STIs. Therefore, WHO's Department of Child and Adolescent Health and Development and the Department of Reproductive Health and Research and GTZ's Division of Health, Education and Social Protection jointly reviewed experiences of STI services for adolescents worldwide with financial support from the German Federal Ministry of Economic Cooperation and Development. This review investigated a wide range of experiences with concepts of adolescent-friendly services, as well as barriers to effective STI care for adolescents and aspects related to the acceptance of those services by the adolescents themselves. The review confirms the enormous unmet need and underlines the public health urgency for adolescent-friendly STI services and STI prevention as an integral part of reproductive health and HIV programmes.

We trust that this publication will contribute to the international discussion on improving STI prevention and care strategies for young people. It, hopefully, will encourage decision-makers, health professionals and adolescents alike to design and establish user-friendly and easily accessible STI services for young men and women.

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## Executive summary

Since the International Conference on Population and Development in Cairo in 1994, recognition of young people's specific sexual and reproductive health needs has gradually increased. Attempts to date to promote the sexual health of young people have tended to focus on prevention, education and counselling for those who are not yet sexually active, while the provision of health services to those who have already engaged in unprotected sexual activity and faced the consequences, including pregnancy, STIs or sexual violence, has lagged behind.


This document presents a review of the literature documenting existing experience with the provision of services for sexually transmitted infections (STIs) to adolescents. It was commissioned by GTZ (Gesellschaft für Technische Zusammenarbeit, Germany), with the aim of clarifying the advantages and disadvantages of different service delivery options for the detection and treatment of STIs. Attention was given to both published and unpublished reports of empirical evidence, drawn from programme experience worldwide, including the following service delivery models: public and nongovernmental organization (NGO) health services which have been made adolescent-friendly, reproductive health clinics and multipurpose centres for young people, school-based or -linked services, and community-based and private sector services.

This review indicates that only a minority of adolescents have access to any acceptable and affordable STI services and that projects broadly aimed at improving adolescent reproductive health and those that emphasize sexual health counselling or family planning are far more common than projects that include STI care among their service delivery objectives. Greater effort has gone into making existing reproductive health services more generally adolescent-friendly, but without addressing the specific needs of adolescents with STIs or their STI clinical management needs.

STIs are not evenly distributed among the many young people who engage in sexual activity. Sex, frequency and type of intercourse engaged in, the number and characteristics of sexual partners, the extent of condom use, the risk of violence and the epidemiology of STIs locally are all factors that influence STI risk. The relative importance of each of these risk factors is determined by the specific sociocultural and economic context in which young people live. Adolescents at highest risk of STIs tend to be adolescent sex workers and their clients, adolescent boys who have sex with men or other boys, street children and children in correctional homes. Generally, STIs are probably more common among those who are not going to school than among school-going adolescents. However, in high STI prevalence regions, such as Africa, the Caribbean and, since the 1990s, parts of Eastern Europe, most adolescents – including rural school-going ones – are at risk of contracting STIs, even though differentials remain. Girls are more vulnerable to STIs than boys biologically and, in many settings, are at higher risk because they have older partners. In settings where boys become sexually active earlier than girls, however, and because they are more often symptomatic, users of adolescent STI services are often predominantly male. They also tend to come from among a smaller segment of more vulnerable young people and, hence, differ from those who typically use other reproductive health services, such as family planning.

Centres and clinics that will be able to manage significant numbers of STI cases for young people are those that can:

- attract a substantial proportion of boys and higher-risk girls, including young sex workers, and tailor services to them,
- define STI care delivery as a priority service element, and
- ensure adequate drug supplies to treat STIs.



Many reproductive health clinics and multipurpose centres for young people that are oriented towards family planning provide services largely to young (asymptomatic) women and therefore treat a small number of STI cases. Not many have STI laboratory facilities to perform routine screening, e.g. for chlamydial infections. There is little documentation of school-based clinics in developing countries treating STIs and little experience with STI case management in unconventional, non-clinical community settings anywhere. There are a small number of recently established private sector programmes – including some that include STI treatment – which target adolescents as well as adults. They have the potential to serve a large number of young people with STI symptoms, although probably not the most disadvantaged.

Both the principles and service delivery aspects of adolescent reproductive health policy need to be further thought through. Current policies almost exclusively emphasize STI prevention, but STI prevention on its own is not necessarily more effective than STI treatment. In fact, health services that include education and counselling can be an important entry point for reaching vulnerable young people. Similarly, whether reproductive health services should be integrated into a broader range of services or provided as a designated service needs to be decided on the basis of the needs and profile of those requiring them, rather than on the basis of ideological preconceptions. Given that simple and affordable STI screening tests are lacking, new STI services should perhaps be directed to adolescent boys and young men in the near future, even though the greatest burden of STIs falls on adolescent girls.

It is unlikely that only one model of STI services will be sufficient to serve all the adolescents in need of them. The upgrading of adult services, by training providers in adolescent-friendly approaches and establishing corners for young people, may be an appropriate option where STI prevalence among the general adolescent population is high, including in rural areas. School-based STI service delivery, on the other hand, may be recommended where both STI risk among the school-going population is high and chlamydia screening is an affordable option. Reproductive health clinics are likely to contribute significantly to STI service delivery only if they either attract substantial numbers of symptomatic adolescent patients or concentrate on STI screening among adolescent girls attending antenatal care and post-abortion services.

The degree to which younger, illiterate and marginalized young people, who are at highest risk, are reached with syndromic treatment packages and social marketing programmes, needs to be studied. New STI case management services may have to be designed that can target particularly vulnerable young people, including sex workers and street children, in urban areas. New service delivery formats need to be piloted, including the use of unconventional, non-clinical settings and escorts or referrals using coupons or vouchers. Further studies should be undertaken to determine under which local epidemiological and health service conditions various service delivery models like these would be cost-effective.

## Abbreviated and full names of contributing organizations

ABBEF	Association Burkinabé pour le Bien-être Familial, Burkina Faso
AFY	Advocates for Youth, USA
AIDSCAP	AIDS Control and Prevention, USA
AHI	Action Health Incorporated, Nigeria
AMREF	American Medical Research Foundation, USA
ARFH	Association for Reproductive and Family Health, Kenya
ASBEF	Association Sénégalaise pour le Bien-être Familial, Senegal
AVSC	Association for Voluntary and Safe Contraception (now called EngenderHealth), USA
BENFAM	Sociedade Civil Bem-Estar Familiar, Brazil
CRHCS	Commonwealth Regional Health Community Secretariat, Tanzania
CEMOPLAF	Centro Médico de Orientación y Planificación Familiar, Ecuador
CORA	Centro de Orientacion para Adolescentes, Mexico
DFID	Department for International Development, UK
DISH	Delivery of Improved Services of Health Project, Uganda
FHI	Family Health International, USA
FOCUS	Focus on Young Adults (programme of Pathfinder Fund), USA
FPA	Family Planning Association
FPAI	Family Planning Assistance International, USA
GTZ	Gesellschaft für Technische Zusammenarbeit, Germany
ICPD	International Conference on Population and Development, Cairo, 1994
ICRW	International Center for Research on Women, USA
ILO	International Labour Office, Switzerland
IPPF	International Planned Parenthood Federation, UK
JHPIEGO	Johns Hopkins Programme for International Education in Reproductive Health, USA
LDHMT	Lusaka District Management Team, Zambia
MSI	Marie Stopes International, UK
NACO	National AIDS Commission, India
PATH	Programme for Appropriate Technology in Health, USA
PEARL	Programme for Enhancing Adolescent Reproductive Life, Uganda
PPA	Planned Parenthood Association, USA
PPASA	Planned Parenthood Association of South Africa
PPAG	Planned Parenthood Association of Ghana
PSI	Population Services International, UK
REA	Research Evaluation Associates for Development, Bangladesh
SEATS	(Family Planning) Service Expansion and Technical Support (Project), USA
UN	United Nations
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development

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WHA	World Health Assembly
WHO	World Health Organization
YDF	Youth Development Foundation, Ghana
ZDHS	Zambian Demographic Health Survey
ZNFPC	Zimbabwe National Family Planning Council
ZPEA	Zambian Family Planning Association

## Introduction

### 1.1 Adolescents' need for STI services

Adolescents, defined by WHO as persons between 10 and 19 years of age (WHO 1998a), make up about 20% of the world's population, of whom 85% live in developing countries. Yet until now they have been neglected as a distinct group and have generally been subsumed under the heading of child, family or women's health and welfare. This has at least partially been because adolescents were considered to be a relatively healthy age group, one without a heavy "burden of disease", compared, for instance, to newborn infants or elderly adults. However, recognition has been growing in recent years among policy-makers that adolescents have special health-related vulnerabilities. The major causes of morbidity and mortality among young people include suicide, road accidents, drug use (including tobacco use) and sexual and reproductive ill health (WHO 1998a). Furthermore, adolescence is increasingly seen as a "gateway to health" because behavioural patterns acquired during this period tend to last throughout adult life – approximately 70% of premature deaths among adults are due to behaviours which began during adolescence (WHO 1998a).

This report focuses on the need for adequate and accessible STI services for adolescents. Many adolescents around the world are sexually active and because many sexual contacts among them are unprotected, they are potentially at risk of contracting sexually transmitted infections (STIs). Adolescents' use of contraception is generally low and they are less likely to use condoms than adults because of lack of access and, for girls in particular, the inability to insist on their use. STIs may be the consequence of unprotected sex with a number of short-term partners, but may also occur among those who have a long-term unfaithful, perhaps older, partner or husband. The risk is often greater for adolescents who are in socially and economically marginalized positions as sexual activity may take place within a context of coercion or violence or in the course of selling sex for a living. Furthermore, for biological reasons, sexually active girls may be at greater risk of contracting STIs than boys.

One of the reasons why young people are particularly vulnerable to STIs is the lack of sex education, including on STI prevention. There is still reluctance in some quarters to acknowledge and properly address adolescent sexual activity despite widespread evidence of how early sex begins and the extent of unwanted pregnancies and STIs in young age groups. Although much of the sex education in schools is probably insufficient or begun too late, adolescent sexual health needs have gradually gained recognition in the last two decades. Education on sexuality is now on the agenda of ministries of education and ministries of health in most countries, even if implementation has remained weak or limited to certain aspects of sexual health, e.g. information on HIV but not other STIs. However, in many cases young people are not provided with the skills to protect themselves against the risk of infection (V. Chandra-Mouli, 1999, personal communication).

STI service delivery is usually even weaker, partially because programmes may target only those who are not yet sexually active. In contrast, the provision of services for those who are occasionally or regularly sexually active or have already experienced an STI appears to have lagged behind (Brabin, 1996; WHO, 2000a), and the provision of other reproductive health services is hardly better. Even in industrialized countries such as the USA, services only reach a small minority of those who need them (CDC, 1993).

Furthermore, despite findings that young people who are sexually active have significantly different needs for information, skills and services from those who are not yet sexually active, the emphasis on prevention in many programmes and projects persists (WHO, 1998a; Hughes and McCauley, 1998). Exclusively preventive strategies may have limited success, however, especially in contexts and situations where adolescents are unable to make informed decisions and choices in sexual behaviour. Thus, health services could constitute an important entry point for prevention programmes (Brabin 1998).

The number of adolescents in need of sexual and reproductive health services is high. According to WHO, 333 million new cases of curable STIs occur worldwide each year, with the highest rates among 20-24 year-olds, followed by 15-19 year-olds (WHO, 1995a). One in 20 young people is believed to contract a curable STI each year, excluding HIV and other viral infections (WHO, 1986). In the USA alone, three million teenagers acquire an STI each year (Biro, 1999). Other unwanted consequences of sexual activity include early motherhood, complications of pregnancy and unsafe abortions for adolescent girls, and the psychological and health consequences of sexual violence for both sexes.

Since the International Conference on Population and Development (ICPD) in Cairo in 1994, recognition has gradually increased that young people not only have the right to sex education, but also to access to health services tailored for their needs (UN, 1995). WHO, for instance, has suggested a three-pronged approach (WHO, 1995b; WHO, 1997a):

- creating and sustaining supportive environments for young people,
- providing the necessary information and skills, and
- expanding access to health services.

Most adolescents who suffer from sexual or reproductive health problems, including STIs, are still expected to make use of the same services as those provided for adults, yet they are inadvertently discouraged from doing so. Often, services have inconvenient locations and opening times and high costs of treatment. Further, adolescents who do seek out services have experienced fear, embarrassment and judgemental attitudes on the part of health workers, who are poorly equipped to deal with their specific needs. Hence, many infections are treated late, ineffectively or not at all.

Demand is growing for an expansion of sexual and reproductive health programmes for young people in developing countries, but there is little documentation on the “success” of any such programmes, whether measured in terms of their ability to attract young people to use them, their quality of care or their impact on sexual health outcomes (Hughes and McCauley, 1998). As will be shown in this review, the lack of an evidence base applies equally to STI service provision. Hence, this report reviews and analyses the few available project reports and evaluations of STI services for adolescents and draws preliminary conclusions on what types of service provision appear to work in developing-country contexts.

## 1.2 Contents of this review

### Box 1

#### Questions addressed

This report addresses the following theoretical and practical questions, drawing on examples from all over the world:

- What characterizes adolescent sexuality and risk for STIs?
- What data exist on the risk and prevalence of STIs in adolescents?
- What kinds of adolescent sexual and reproductive health services are available generally and, in particular, for treatment of STIs?
- What evidence is there that current programmes and programme approaches for delivering STI services are successful in reaching adolescents who need those services?
- To what extent is an adolescent-specific approach to STI services warranted, and to what extent is an STI-specific approach to adolescent health services warranted?

Chapter 2 contains a brief description of the methodology and sources of information used in this review. Chapter 3 explores the historical, legal and socioeconomic context of adolescent sexuality, the associated risks of STI for young people and the epidemiological evidence of unsafe sexual behaviour and STIs among young people. Chapter 4 draws on published reports from various parts of the world and describes the barriers to the utilization of adult STI services by young people. Although some of these barriers apply to adults seeking STI care as well, this chapter argues that adolescent-specific approaches to STI service delivery are warranted. In Chapter 5, the advantages and disadvantages of various models of service delivery are analyzed, including school-based and school-linked models, health facility-based models, centre-based models and other community-based approaches. Chapter 6 looks at ways in which the success of various types of adolescent-friendly STI services has been measured. In the absence of better indicators, evidence of the extent to which young people are actually utilizing these services is presented, and of which segments of adolescent populations. Limited evidence on the quality and cost-effectiveness of these services is also provided. Chapter 7 draws together the main lessons learnt from the available evidence and how best to apply those lessons in different settings.

## Methods of data collection, data sources and responses

### 2.1 Methods and sources

The methodology used in this report includes:

- a review of the published literature;
- a review of unpublished documentation on projects providing adolescent-specific STI services; and
- a discussion of the experiences of these projects.

A search for published work was carried out in standard databases and through personal contact with key persons working internationally in adolescent and STI-prevention and service-delivery projects and programmes. Key informants were contacted at both international agency headquarters and selected regional and country offices. An international meeting of STI specialists was used to elicit information on STI services that are specifically designed to serve the needs of adolescents.

In cases where no documentation on country experiences or project or programme evaluations was available, project planning documents and/or anecdotal evidence on the existence and success (or failure) of STI projects and programmes directed at young people were included. Initially, emphasis was placed on projects and programmes specifically established to provide STI care for adolescents. However, given the almost complete absence of documentation on such projects, this approach was soon modified. Informants were requested to provide *any* information on STI services available to adolescents at all, whether as a prioritized component of broader sexual and reproductive health services or otherwise.

International and governmental agencies supporting ministries of health and NGOs in developing countries constituted the main source of information for this report (Box 2). The authors had privileged access to all the relevant materials in the GTZ head office and those available at the WHO Child and Adolescent Health and Development Department. Other contacts which proved particularly productive included

Box 2

#### AGENCIES and projects: where contacted (Head office, country or Regional Office)

- CARE International
- Department for International Development, UK (DFID)
- Family Health International, USA (FHI)
- Focus on Young Adults, USA (FOCUS, Pathfinder programme)
- GTZ, Germany (Head office in Eschborn, selected country projects)
- International Planned Parenthood Federation, UK (IPPF)
- Johns Hopkins Programme for International Education in Reproductive Health, USA (JHPIEGO)
- Pathfinder International, USA
- Program for Appropriate Technology in Health, USA (PATH)
- Rockefeller Foundation, USA
- Family Planning Service Expansion and Technical Support Project, USA (SEATS)
- Population Council (Head office in New York, Nairobi office)
- UN Children's Fund (UNICEF, head office in New York, selected country offices)
- World Health Organization (WHO head office in Geneva, regional offices for Europe and the Western Pacific)

Pathfinder International, especially their FOCUS project, SEATS, the Population Council, UNICEF and IPPF.

It was beyond the scope of this review to contact systematically all ministries of health and national STI control programmes. However, virtually all initiatives to establish STI services for adolescents in developing countries were recent and most seemed to rely on external support. It was therefore considered unlikely that many "home-grown" STI service projects and programmes would be missed if the review were confined to international agencies.

### 2.2 Published literature

Searches for published literature in standard databases such as Medline and Popline proved relatively unproductive, identifying very few journal articles that dealt specifically with STI service provision for

adolescents *per se*. With few exceptions, medical journals specializing in STIs, such as the *Journal of AIDS and Sexually Transmitted Diseases* and *Sexually Transmitted Infections* contained little specifically on young people. Those focusing on family planning and reproductive health, such as *Studies in Family Planning*, *Reproductive Health Matters* and *Contraception*, and on adolescent health, e.g. *Adolescence*, *Journal of Adolescent Health*, *Journal of Adolescent Medicine*, included little on STIs and still less on STI services in developing countries. However, these journals did provide valuable literature on related issues, such as STI epidemiology, adolescent reproductive health behaviours in developed countries and barriers to the utilization of reproductive health services by young people in more general terms. The lack of specific information on STIs and STI treatment-seeking was nevertheless surprising, including in publications such as the special issue on “Adolescent reproductive behaviour in the developing world” of *Studies in Family Planning* (Bongaarts and Cohen, 1998), which includes sections on adolescent contraceptive use and childbearing, among other topics.

Only very recently, review papers on STIs (Hughes and Berkley, 1999) and STI clinical management among adolescents (Brabin *et al.*, 1999; Gevelber and Biro, 1999) have emerged. For the epidemiology of STIs, we had access to two WHO global STI prevalence databases (A. Gerbase, personal communication, 1999), which we screened for studies that disaggregated STI rates by age. A UNICEF database containing valuable information on other reproductive health indicators could not be used, as STI rates had been calculated by total population and data specifically on adolescents were not available.

Reviews by Pathfinder International/ FOCUS, particularly those by Judith Senderowitz, proved particularly useful, although, as with the journal articles, most described reproductive health services for young people more generally, and mostly concentrating on family planning, while containing rather little specifically on STIs and STI services. A recently completed paper by Marie Stopes International also provided a useful overview of approaches to reproductive health-service delivery.

Among the various other publications reviewed, case studies and evaluation reports by the Population Council and IPPF affiliates, as well as case studies collected by WHO (1997b) provided an idea of how reproductive health services for young people work. Although STI services were hardly at the centre of

attention, several reports included information on STI diagnosis and treatment, and a few covered case-loads from STIs, the sex ratio of clinic attenders and other important service-related characteristics.

### 2.3 Individual informants

All key informants were asked for further sources of information, and care was taken to collect information from all regions of the world. Altogether 65 key informants working for international agencies were contacted, 28 of them at regional or head-office level. Most of those contacted were unable to identify any evaluation report or other documentation containing evidence that STI services specifically designed for adolescents existed in the country or region where they worked. However, several informants, especially from African countries, mentioned that following the 1994 ICPD in Cairo, national policies and programmes for young people were being elaborated and that STI service provision was expected to become an important element. Many of those responsible for family planning and programmes directed at young people knew of adolescent-friendly family planning/reproductive health centres, but not specifically of STI services, while many of the STI specialists knew of no specific efforts to provide STI services to adolescents or to make existing STI services adolescent-friendly. Some knew of programme components related to young people, however, e.g. a programme aiming to train STI service providers on issues relating to young people in east Africa.

From the number and content of responses, significant regional differences emerged. Most recent efforts to design and provide STI services for young people seem to have taken place in Africa. In some Latin American countries, specialist adolescent clinics had been in existence for more than two decades, but little recent documentation was available. Projects aiming to provide STI services for young people in Asia and Eastern Europe were few, although at least in the latter case the number of projects seems to be increasing rapidly. Although this report does not focus on developed countries, experience from the US and Europe has also been used occasionally as a reference.

## Adolescence, sexuality and STIs

Adolescence is a rather new concept historically, comprising a lengthy period of transition from childhood to adulthood, associated with an emerging awareness of sexuality and an age-specific drive to experiment with sex. In many societies, the gap between the age of sexual maturity and that at which sexual relations become legitimate has widened. During this period, young people are kept relatively uninformed regarding sexual matters, sexual activity is stigmatized and adolescents are confronted with hostility on the part of adults if non-sanctioned sexual relations take place. These conflicting factors not only make the need for sex education, contraception and STI services for adolescents urgent but also make their provision difficult to implement.

### 3.1 Adolescence – a dynamic concept

Anthropologist Margaret Mead may have been the first to question the universality of the experience of adolescence in the 1950s when she contrasted North American with South Pacific adolescent sexuality. Since that time, it has generally been agreed that universal definitions of adolescence should – at best – be restricted to describing adolescence as a “period of transition”, in which “although no longer considered a child, the young person is not yet considered an adult” (McCauley et al, 1995).

In the literature on adolescent health, the terms “adolescent”, “young people” and “youth” have been used for some time to describe individuals in the age groups 10-19, 10-24 and 15-24 respectively. The term “young adult” has been introduced more recently.

There are biological, legal, socio-historical, demographic and behavioural markers, which render adolescence (and young people) a dynamic concept, one that in some countries and settings is only just emerging, while in others it is already well established. Adolescence is commonly associated with physiological changes occurring with the progression from appearance of secondary sexual characteristics (puberty) to sexual

and reproductive maturity (WHO, 1995). It is important to note, however, that even biological markers are subject to change over time, such as the fall in the age at onset of menarche in recent decades, which is attributed to improved health and nutrition (WHO, 1995).

#### LEGAL MARKERS

The concept of adolescence as a life stage with legal boundaries did not exist in the developed world until the late 1800s/early 1900s (McCauley et al, 1995). Today, most Western European societies use legal markers for the passage to adulthood, commonly set at age 16, 18 or 21. Thus, there is a legal minimum age to vote in elections, drive a car, enter into a business contract and be held liable for one’s actions, just as there is one for marriage, consensual intercourse and access to sexual and reproductive health services without parental consent (IPPF 1994).

In many developing countries the condition of adolescence has only recently been recognized to exist. Children used to “become” adults through institutionalized rites of passage, e.g. circumcision, or (arranged) marriage. In India, for example, especially in rural areas, many girls traditionally have an arranged marriage before menarche which is consummated after puberty; they have their first child at about 16 years of age instead of going to school or interacting with their peers (Baru, 1995). For them, there is no such thing as adolescence, as they shift quickly from childhood to motherhood (Goswami, 1995). Similarly, in traditional Sri Lankan society, puberty and readiness for marriage of a newly “adult” girl is soon brought to the attention of relatives and neighbours. A young man, too, once he has “grown up”, is expected either to get married or to wear the yellow robe of a monk. To remain single is not held in high esteem because it is “neither here nor there” (Disanyake, 1998).

Caldwell et al (1998) have documented the emergence of the concept of adolescence in Africa, Asia and Latin America, which they describe as resulting from

“massive economic, institutional, and social changes, brought about by western colonial and economic expansion and by the move towards a global economy and society”. The emergence of the concept of adolescence is associated, above all, with young people’s efforts to find employment outside agriculture, attend school longer and, as a consequence, marry at older age.

In Indonesia, for instance, adolescent boys in urban areas, no longer tied down by constant farm work, have started to form peer groups, spend time trying to make dates with girls and go to mixed-sex gatherings (Kliem, 1993). In urban areas of India, although a large number of girls now go to (usually) single-sex schools and spend time in peer groups of girls, with limited contact with boys, the erosion of the custom of arranged marriages has nevertheless begun. In Nigeria, male and female adolescence is associated with going to school and trying to get a job in the modern economy. In many Latin American countries, adolescence emerged as a life-stage for girls when parents began to allow their daughters to attend education longer and prepare for non-agricultural work, and marriage then began to be postponed until well after puberty (Caldwell et al, 1998).

#### SOCIOECONOMIC AND RURAL-URBAN DIFFERENCES

Although there is a remarkably uniform concept of adolescence in many countries today in terms of biological markers, such as age cohort and maturation, the meaning of being an adolescent needs to take into account socioeconomic differences and rural–urban divides. Urbanization has played an important role in the emergence of adolescence. The circumstances in which young people in rural areas live may be characterized by their lack of access to adequate education, formal employment, cash income or free time. In contrast, the exodus of young people to urban areas, either because of poverty or increasingly due to civil war, has added still new elements, such as informal employment and living on the street. The large number of street children and informally employed adolescents, including those employed as sex workers in urban centres, are almost by definition not school-going. Children and young people working in cities are often obliged to accept conditions that are poorly paid or unpaid and dangerous to their health. Descriptions have been published by the International Labour Office and UNICEF of economic exploitation such as forced or bonded labour and commercial sex exploitation, particularly of girls (GTZ, 1997).

Thus, for example, in the Indian cities of New Delhi, Mumbai and Calcutta around 100,000 children either do “informal” jobs such as washing cars, pushing hand carts, cleaning gutters, or survive by begging or collecting edibles from garbage dumps (MOW, UNDP, UNICEF, WHO and NACO, 1996). In Thailand, an estimated 800,000 girls under the age of 20 are earning their living as sex workers (International Clearinghouse on Adolescent Fertility, 1991). In many of the countries of Eastern Europe, tens of thousands of young people are believed to be not attending school or not formally employed. Instead they are engaged in drug trafficking (and consumption), prostitution or a range of criminal activities which are associated with an increased risk of STIs and HIV (UNICEF, 1999). In Africa, many adolescents are affected by war, civil unrest and forced migration, with boys lured or forced into the army and girls subjected to violence and sexual abuse (UNICEF, 1996).

A seven-country study carried out by UNAIDS found marked effects as a result of rural transformation which, in addition to impacting on day-to-day living conditions, also provided the infrastructure for greater sexual mixing, e.g. bigger cities, bars, clubs and gymnasiums. In Costa Rica and Chile, notable differences were found between young people who were socioeconomically disfavoured compared to those who were more affluent, not only in terms of level of education and prospective professional expectations but also in the extent of their understanding of sexuality. In rural areas in Zimbabwe and Papua New Guinea, simple changes such as the building of a road or highway bringing in outsiders (truck drivers, military personnel) and the creation of new settlements along these routes had a profound effect on young people’s lifestyles (UNAIDS, 1999). The formation of a global teenage music and fashion culture, on the other hand, may be more a reflection than a cause of the quite fundamental changes that have led to the emergence of a “globalized” concept of adolescence (Caldwell et al, 1998).

#### THE DIMINISHING ROLE OF THE FAMILY

The emergence of a distinct adolescent lifestyle has consistently been associated with the gradual breakdown of traditional family life, the diminishing role of parents and the larger family unit, and an increasing role of peers. In Cameroon, for example, urbanization led to changes in village life, which included a trend away from exogamy to choosing friends and marital partners from within the extended family and village community (UNAIDS, 1999). As a

result of these changes, the family is becoming far less important in the individual development of young people while peers and the media have become more influential. Disaccord between adolescents and parents about adolescent roles and behaviour has also reportedly become common (WHO, 1997). This is captured in the following statement: *“Parents are finding it increasingly difficult to fulfil their role of providing advice and nurturing the young into society.”* (Mkandawire, 1994)

The streets and temporary shelters have become “home” to some 100 to 200 million children and adolescents worldwide, many of them cut off from their parents and their extended families (WHO, 2000). Left to rely on their own resources, these young people develop their own means of survival, values, networks and structures, often as a reaction to the threat of violence (GTZ, 1997).

Adolescence is characterized as an historically based, socially specific period of transition from childhood to adulthood, as well as a distinct physiological, sexual and psychological life-stage. While young people around the world may experience the same physical changes and sensations during these years, the manner in which they are interpreted and give rise to social and legal proscriptions varies tremendously. These realities have an important influence on the development of policies and programmes which meet the needs of a diversity of young people. The needs of a ten-year-old girl who attends primary school and is cared for by her parents, for example, differ significantly from those of a ten-year-old girl who, as a result of the death of her parents, already heads a family and has assumed adult responsibilities (GTZ, 1997). Thus, for a country such as Zambia, Mkandawire (1994) has suggested dividing young people into categories such as those who are out-of-school, those who are unemployed young people, those in urban areas, those who are refugees, those who live/work on the street and young mothers rather than simply by age group. *“There is no one population called ‘young people’ and therefore no one strategy to be developed to provide for them.”* (UNAIDS, 1999)

### 3.2 The sociocultural context of adolescent sexuality

Adolescent sexuality today is viewed with much ambiguity in a large part of the world. In the developed countries, sociology and psychology often situate adolescent sexuality within a framework of deviant behaviour, and public discussion about adolescent

sexuality and childbearing accordingly describes adolescence as problem-laden (McCauley et al, 1995). There has been unfortunately little focus on what constitutes normal healthy sexual development for young people. Instead, there have been many mistaken generalities about the extent to which young people are sexually active, accompanied by “moral” judgements as to whether they should be sexually active at all.

As the authors of the seven-country study carried out by UNAIDS point out, young women in many countries were once considered ready for sexual activity at or not long after menarche, and were then married off. In almost all the seven countries involved in the study, young men were considered to need sexual experience once they became pubescent. Hence, sex with sex workers, male peers or older women was sought, tacitly encouraged or directly facilitated by older males, families or peers. However, young people’s accession to full adult status and rights is being delayed, and longer schooling and unemployment have made them into dependents for longer. This has tended to be associated with efforts to prevent them from engaging in sexual activity until marriage takes place, even though, only one or two generations ago, extramarital sex at an early age was seen as perfectly natural (UNAIDS, 1999).

#### AGE AT FIRST SEX AND PREMARITAL SEXUAL ACTIVITY

Although the attainment of adulthood is getting later in most parts of the world, the age at first sex continues to be early. In some parts of the world, for instance in the Muslim countries of North Africa and in parts of Asia, most sexual activity reported even a decade ago among young people still took place within marriage (Singh and Wulf, 1990). Overall, however, age at marriage appears to have risen more rapidly than age at first sexual experience, thereby significantly increasing the numbers of young people who have sex before marriage. In only four of 27 countries studied in all regions, had the gap between the proportion of women who were sexually active and those married by age 18 declined (Blanc and Way, 1998).

Among girls in certain parts of Africa and South Asia, for example, first sexual experience usually takes place at 15–16 years of age. In South Africa, among a large sample of girls in KwaZulu Natal, almost half had already had first sexual intercourse at an age of 16 (Manzini, 2001). Similarly, in a smaller study in Maputo in Mozambique, the mean age at first sexual intercourse for girls of both poor and middle-class

socioeconomic level was 15 (Machel, 2001). In certain population subgroups, e.g. young people in periurban areas in Zambia (CARE International, 1997) or Zimbabwe (UNAIDS, 1999), first sex for both boys and girls may occur as early as the age of nine.

In contrast, in other parts of Africa (e.g. Rwanda and Burundi) and in Latin America, partially due to the influence of the Roman Catholic Church, the average age at first sex for girls is older, at 18–20 years of age. However, certain segments of the adolescent population may be sexually active at younger ages as well. For instance, in a small sample of young people in Chile 32% had already had sex by age 15 (UNAIDS, 1999). Similarly, in many Asian countries, for instance in Indonesia, the Philippines and Thailand, although the median age at first sex among young women was in their early 20s, a substantial minority were starting sexual relations much earlier, including a large number of adolescents working in prostitution (McCauley and Salter, 1995). In a study among unmarried young people age 15–22 in Shanghai, China, 31% of girls and 44% of boys were sexually active, with a mean age of sexual debut of just under 20 for boys and just under 19 for girls, with the earliest age being 12 (Cui N et al, 2001).

In certain African countries, such as Liberia and Botswana, more than 60% of unmarried adolescent girls report having had sex, while in most Latin American countries, this proportion was much smaller, below 10%, and in the Philippines, it was less than 1% (McCauley and Salter, 1995). Another set of surveys seemed to suggest these proportions were higher, with between 10 and 20% of unmarried adolescent girls in Central America, and even higher proportions in Brazil and the Caribbean (e.g. 59% in Jamaica) (Morris, 1995).

#### FREQUENCY OF SEX, NUMBER OF PARTNERS AND SEXUAL PRACTICES

Very little is known about the frequency of sexual intercourse among sexually-active adolescents, the number of sexual partners they have had or their sexual practices, including whether they have sex protected by condom use. Sexual activity patterns seem to vary greatly according to religion, social class, schooling, ethnic group, family situation and individual circumstances. Thus, adolescents must not be seen to form a discrete subpopulation with uniform risk factors (Brabin, 1999).

Never-married adolescents are considerably less likely to be currently sexually active than to have had sex at

some time in the past (Singh et al, 2000). Many have had intercourse only once or have not had sex for more than a year prior to being surveyed. Hence, their experience may not appear in standard surveys that use a year as an indicator (Gvelder and Biro, 1999). In Zambia, Kambou (1998) found a considerable time lag (1–2 years) between age at first and second sexual experience. In Ghana, 49% of never-married adolescent girls had had intercourse, but only 23% had done so within the previous month. Similarly large differences between those who had ever had sex and those who were currently having sex were reported from a number of other countries as well (Singh et al, 2000).

A detailed study of the sexual experience of adolescent girls in England found diverse patterns in terms of age at first intercourse, number of sexual partners and attitudes to the timing of sexual intercourse within a relationship (Ford, 1992). In diaries of sexual activity of adolescents in the USA, intercourse was most common on Fridays and Saturdays and least likely on Sundays (Fortenberry et al, 1997).

There is some evidence that young people in urban areas are more sexually active than those in rural areas, but this may partially be because of the high prevalence of commercial sex in some urban areas. In Bangladesh, a majority of urban adolescent boys had already experienced sexual intercourse before marriage, while rural boys seemed to start having sex later. Similarly, many more urban adolescent girls reported having had sex than those in rural areas (Haider et al, 1997). On the other hand, based on data from WHO surveys in 15 countries, the authors concluded: “*Assumptions that adolescents in urban areas are consistently more sexually active than in rural ones are unjustified.*” (Carael, 1995)

A few qualitative and quantitative studies seem to suggest that out-of-school girls may be sexually more active, have sex more frequently and with a higher number of partners than school-going girls. In studies in Zambia (Feldman, 1997) and Guinea (Görge *et al*, 1998), for instance, school-going girls were less sexually active than others. The same was not true for boys in Guinea, however. More affluent adolescent girls in Zimbabwe and in Papua New Guinea reported that they were consciously avoiding sexual intercourse so as not to affect their schooling, or that they would do so if more schooling were available (UNAIDS, 1999).

In Costa Rica and Chile, notions of sexual rights, monogamy and sexual initiative significantly differed more between social classes rather than along an urban-rural divide (UNAIDS, 1999). From Chile, qualitative

surveys report that young people in different settings are engaging in sex with a larger number of partners than previous generations did (UNAIDS, 1999). In Kenya, adolescents living at truck stops were found to have had a very high number of lifetime partners, 15 for boys and 12 for girls (Nzyuko et al, 1997), though these numbers are unlikely to be typical.

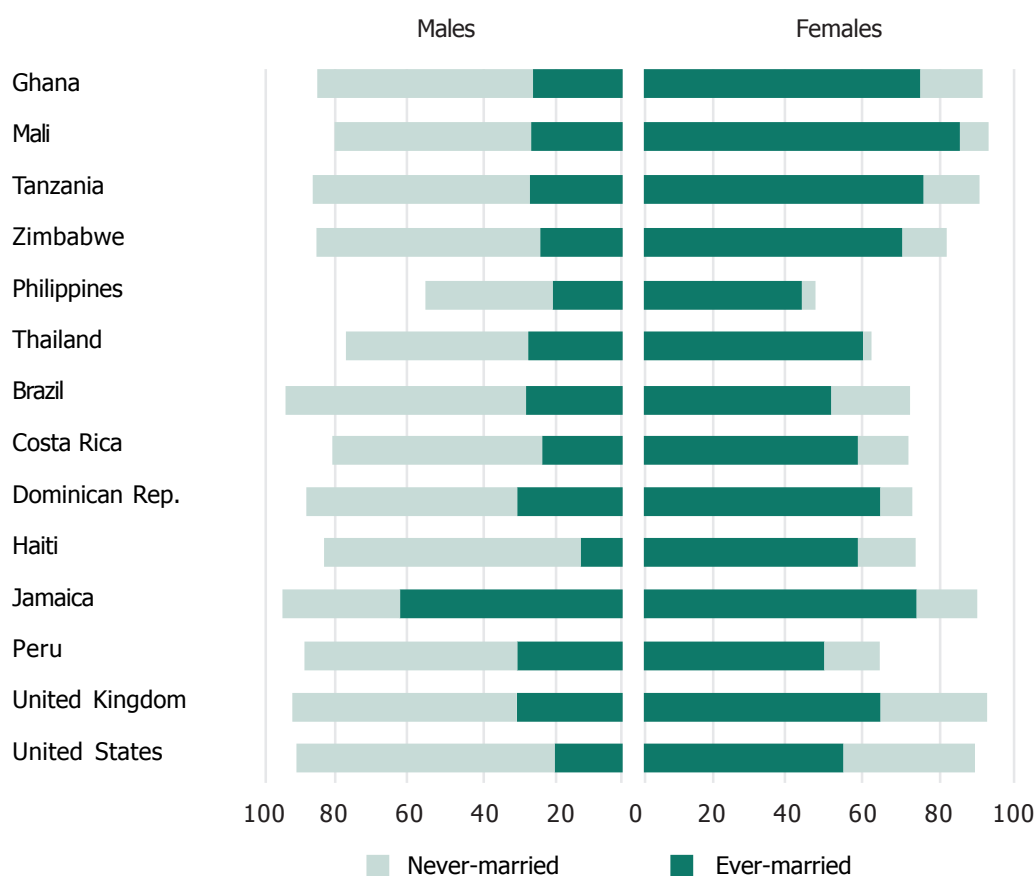
As regards adolescent sexual practice, there are reports from Cost Rica and Cambodia that adolescents have experienced a wider range of sexual practices, e.g. oral and anal sex, than those of previous generations (UNAIDS, 1999). Further, according to a study among young people in the community and university students in Sri Lanka, boys may also have experienced a wider repertoire of sexual practices than girls (Basnayake, 1996). On the other hand, because the term “sex” may be understood to mean only “vaginal intercourse” some adolescents may report that they have not had sex, even though they have had oral and anal sex (Schuster et al, 1996) or had other non-intercourse sexual activity including mutual masturbation.

### GENDER DIFFERENCES

Depending on the region, there may be large differences in the proportion of unmarried adolescent boys as compared to unmarried adolescent girls reporting that they had previously had sex, as well as other differences in indicators of sexual activity. In one recent review of sexual behaviour surveys, the proportion of all married and unmarried adolescent girls who had ever had sex was significantly lower than that of married and unmarried adolescent boys in Asia and Latin America (Singh et al, 2000). Other surveys not included in that review confirm these findings. In Bangladesh, for instance, a large majority of both urban and rural boys, but only 10–20% of urban girls and a very small proportion of rural girls, said they had previously had sex (Haider et al 1997). Similar findings have been reported from India (FPAI, 1993/4). In contrast, in Africa, more young women than men had been sexually active, while in the two industrialized countries studied, the proportion of young men and women who had ever had sexual intercourse was similar (Singh et al, 2000) (Figure 1).

Figure 1

#### Percentage of 20–24 year-olds who have ever had intercourse, by country, according to gender and marital status



Source: Singh et al, 2000

Note: Marriage includes legal and consensual unions and, in Jamaica, visiting relationships.

The same pattern is found if data on sexual intercourse during the previous year or month (rather than ever-experience) are compared and/or only young people who are unmarried are studied (Table 1). In Thailand and the Philippines, substantial minorities of between 15 and 29% of unmarried young men were found to have had sex during the previous 12 months, while only very few young women had done so. In Brazil, a majority of adolescent boys, but only 9% of adolescent girls had had sex during the previous 12 months (Carael, 1995). Again, in Africa, the situation was somewhat different in that relatively more unmarried adolescent girls reported having had intercourse than unmarried adolescent boys. Therefore not all countries show significant gender differences (Carael, 1995; Singh et al, 2000).

Table 1

**Proportion of never-married adolescents aged 15-19 who reported sexual intercourse during the last 12 months (Carael, 1995)**

Country/City	Adolescent girls %	Adolescent boys %
<b>AFRICA</b>		
Burundi	3	10
Central African Republic	56	69
Côte d'Ivoire	28	43
Guinea Bissau	30	51
Kenya	44	54
Lesotho	16	33
Togo	3	18
Lusaka, Zambia	10	16
<b>ASIA</b>		
Manila, Philippines	0	15
Singapore	0	3
Sri Lanka	0	1
Thailand	1	29
<b>LATIN AMERICA</b>		
Rio de Janeiro, Brazil	9	61

Even in African settings, where premarital sex among both adolescent boys and girls is rather common (and certainly more permissible than, for instance, in many Asian countries), the level of sexual activity seems related to the strictness associated with persons living in the household. Young people in Zambia, for instance, thought that girls who were living with both parents were somewhat protected against unwanted pregnancies (Shah et al, 1996; Fetters et al, 1997).

Most sexually active adolescent girls report that they had their first and subsequent sexual relationships with steady boyfriends or fiancés (Berganza et al, 1989; Gyepi-Garbah et al, 1985; Kiragu, 1991; Morris, 1992; Agha, 1998). On the other hand, more adolescent boys,

in Africa and elsewhere, have reported having multiple sexual partners and casual relationships than girls. Some of these reported differences may be exaggerated, as both premarital and extramarital sex, and experimentation with different sexual practices, all tend to be socially more acceptable for boys than girls.

However, in virtually all the countries surveyed by Carael (1995) and Singh et al (2000), including in Africa, adolescent girls who had ever had sex and those who were sexually active at the time of being surveyed were much more likely to be married or to have been married than boys in these same two categories. Thus, the context of early sexual experience is often very different for girls than for boys (Figure 1).

**SELLING AND EXCHANGING SEX FOR MONEY AND FAVOURS**

On account of fear, ignorance and lack of experience, adolescent girls involved in prostitution are more vulnerable to pressure and abuse and may be easily enticed into dangerous sexual practices (Markos et al, 1992; McMullen, 1987). While the need for money is usually the main factor that draws adolescents into prostitution, childhood experiences and domestic abuse are also predisposing factors (Schaffer and De Blassie, 1984). Parents may also play an important role in sending their own children into prostitution either due to economic pressure or child abuse. For instance, the Nepalese government estimates that 7,000 Nepalese children are trafficked into child prostitution in India each year (Kabir, 1997). There are also an increasing number of adolescent sex workers in the large commercial sex sectors in other Asian countries, including Thailand and the Philippines (IPPE, 1994). Due to the rapid socioeconomic changes in eastern Europe, the numbers of adolescent girls engaging in sex work in that region have also risen dramatically (UNICEF, 1999a).

In Africa, the difference between commercial sex and sex exchanged for favours, material goods or cash, without the women necessarily being considered as sex workers, is often fluid, and the latter is possibly more extensive, especially among adolescents. For instance, in a large national survey in Zambia, 38% of sexually-active unmarried girls aged 15 to 19 and an equal proportion of boys of that age had been involved in exchanging sex for money, gifts or favours during the previous year (ZDHS, 1996). In eastern Europe, and perhaps other regions too, many adolescent girls reported engaging in sex in exchange for favours, but did not consider themselves to be selling sex full-time (PSI, 2000).

Unequal but consensual sexual relationships between girls (more often from poor families) and older men (so-called *sugar daddies*) for gifts, spending money and access to resources such as school fees are rife in many sub-Saharan African countries. A study by Amazigo et al (1997) reported female students having relationships with older male partners who buy them make-up and other gifts. In one East African survey of adolescent girls who had had abortions, 80% reported that their partners were older men (Heise et al, 1995). Since HIV became a major threat, there have been many anecdotal stories of older men seeking young girls as “clean” partners. A study in the USA among black and Hispanic teenagers found that first sex with older male partners was associated with a particularly high risk of STIs in girls, including HIV (Miller et al, 1997).

Some reports also note the frequentation of adult sex workers by adolescent boys who are encouraged to gain sexual experience with them. In one Zimbabwean study, 16% of young men reported such contacts (Wilson et al, 1989). In Thailand, where more than half of boys reported having had sex by the age of 18, many had done so with a prostitute (Xenos et al, 1992). There is also anecdotal evidence of sexual initiation of young men by prostitutes in Latin America..

Other studies have stressed how street life is a specific culture and context for sexual risk-taking where sex is exchanged for safety and security, favours, goods and money, in countries as diverse as Colombia, Brazil, and the Philippines (Ruiz, 1994; Raffaelli, 1993; Domingo, 1995). In a shelter for homeless young people in the USA, 67% of the girls had had more than 4 partners, 19% had engaged in prostitution and 16% had had anal intercourse (Sugerman, 1991).

#### SAME-SEX PARTNERS AMONG YOUNG MEN

Sex between same-sex partners had hardly been documented in developing countries until the AIDS epidemic drew attention to the extent to which men have sex with men, including young men all over the world (UNAIDS, 1999). Anal intercourse has been documented between boys, among street children and adolescents in remand homes in Tanzania (Rajani and Kudrati, 1996; Lubanga, 1997). Among Thai men younger than 21 years of age, 6.5% admitted ever having had sex with another man (Beyrer et al, 1995). Male sex workers, many of them adolescents, are thought to comprise at least 5% of all sex workers in countries such as Colombia, Czech Republic, Egypt, Nigeria, Senegal and Thailand (Parker, 1996).

#### SEXUAL COERCION AND VIOLENCE

Some of the first studies of sexual coercion in countries as diverse as India, Kenya and Peru all showed that the prevalence of non-consensual sex, and sex associated with violence experienced by adolescent girls was high (Heise et al, 1995). Since then, further evidence has been collected. For instance, in Ghana, 21% of girls reported that being raped constituted their first sexual encounter (Population Council, 1999). Several South African studies have also drawn attention to physical and sexual abuse of girls (Konya et al 1998; Larsen et al, 1998). Most of the abuse was associated with a serious breakdown in family structure, rapid urbanization and the effects of the migratory labour system (Larsen, et al, 1998).

Sexual coercion may also be more common when adolescent girls are approached by men older than themselves. In a recent South African study, adolescent girls were asked if they had had sex willingly, or through persuasion, trickery, force or rape. Among a group of almost 800 adolescent girls, some 66% said sex had been undertaken willingly, 20% said they were persuaded, 4% tricked and 10% forced or raped. Those aged 10-12 at first sex were forced or raped by men some 9-11 years older than themselves, while those who had first sex at age 13 were forced by men 3-5 years older than themselves. Although forced first sex was also common for girls aged 15-19 only one girl who first had sex over the age of 16 reported being raped; she was aged 19 and was raped by a 35-year-old man (Manzini, 2001). Studies from Zambia (Shah et al, 1996) and Sri Lanka (De Silva, 1998) report that forced sex on the part of a male relative, including fathers when mothers are not at home, is also not uncommon for adolescent girls.

Young Nigerians, boys and girls, when asked in focus group discussions about their perceptions of sexual coercion, reported behaviours that included rape, incest, assault, verbal abuse, threats and use of drugs for sedation, among others, and described situations in which young men were typically the perpetrators – including acquaintances, boyfriends, neighbours, parents and relatives – and young women the victims (Ajuwon et al, 2001).

Girls are not the only victims of sexual violence, however. In one study comprising several hundred young men, 20% reported that they had been invited or forced to participate in sex, and 8% reported adult-child sexual activity that involved force, abuse or rape. Boys had been induced into sexual relations by much older cousins, aunts, neighbours and house servants

(Haworth, 1996). In Fiji, a number of cases of male-male rape among high school students were reported, leading to the establishment of specialized counselling services (Dehne, 1994). In the UK, 5-10% of victims of rape and up to 10% of victims reporting to centres are male (King, 1995; Beck-Sagué and Solomon, 1999).

Sexual abuse during childhood or adolescence is often associated with the adoption of high-risk sexual behaviours including sex with multiple partners and prostitution, later in life (Heise et al, 1995). In Barbados, for instance, sexual abuse during childhood was the single most important determinant of high-risk activity in young adults (Handwerker, 1993).

### CONDOM USE

The number of sexually-active adolescents who report having consistently used condoms is clearly too small to contain the spread of STIs significantly. Even in high-prevalence HIV countries, such as Zambia, and those in which HIV/STI prevention has been particularly successful, such as Switzerland, consistent condom use has been found to be rare among adolescents (Feldman, 1997; Mano Consultancy Services, 1998; Hausser and Michaud, 1994).

Nevertheless, it is encouraging to note that in some surveys younger age groups compared favourably with older ones, indicating some success of safer sex campaigns among adolescents in developing countries (Carael, 1995). In a recent study, some 62% of 796 adolescent girls said they had used a male condom at first intercourse in KwaZulu Natal, and the proportion rose with age (14-19) (Manzini 2001). Although this is not evidence of sustained use, it is indicative of higher rates of condom use than in previous years. In the USA, too, adolescents under the age of 15 and those involved in less committed relationships were more likely to report the intention to use condoms (Nguyen et al, 1997). In fifteen WHO surveys, ever-use of condoms among sexually experienced boys varied between 9% in Togo and 62% in Lusaka, Zambia, and that of sexually experienced girls between 5% in Tanzania and 33% in Singapore. In other words: between 67 and 95% of all sexually active adolescent girls in these studies had never used a condom (Carael, 1995). There was no association with marital status, but those who were better educated invariably used condoms more frequently. The latter was true in a Maputo, Mozambique study, for example, where 45% of all girls in two secondary schools said they always used condoms, but 56% who did so were from a middle-class background while 32% were from a working-class background (Machel, 2001).

The reasons that (male) condoms are not used more frequently vary considerably and include lack of access, e.g. in Papua New Guinea, or cultural barriers, e.g. in Chile (UNAIDS, 1999). On the other hand, the female condom is often too expensive or not available (WHO, 1997a), but greater efforts at social marketing in the past few years and the possibility of reuse of female condoms may help to change this (Beksinska et al, 2001). The image of condoms also remains strongly associated with their use for casual or extramarital sex; condom use continues to be difficult to suggest due to issues of trust with marital and other regular partners. Due to inexperience, young people are also more likely to use condoms incorrectly (Richters et al, 1995). In a survey among adolescent boys in the USA, 23% reported that at least one condom broke, and of all condoms 2.5% broke (Lindberg et al, 1997).

The most important reason for unprotected sex, however, is that men of all ages, including adolescents, who make the decisions that affect sexual risk almost universally do not like to use condoms. Adolescent girls often have little control over sexual decision-making, and are unable to negotiate condom use due to unequal power relations, especially with older partners. In a South African study, "girls said it would be easier to try to refuse sex than negotiate condom use. Given that refusing sex is almost never successful, this statement underscores the difficult realities confronting young women in this setting" (Harrison et al, 2001). Both non-consensual sex and sex with older partners is also likely to be unprotected. Male attitudes to condom use, including in regular partnerships, are only slowly changing, if at all (ICRW, 1996; PATH, 1997).

In summary, many young people have had sexual relations. Most have done so willingly, but in a significant minority of cases, they have been pressured or forced into non-consensual sexual activity by their peers or adults. There is considerable variation between countries and settings, however, more boys than girls, and more adolescents in sub-Saharan Africa than in other regions are sexually active. Furthermore there is wide variation in frequency of sexual activity and in the number of partners among those who are sexually active. Most of this sexual activity remains unprotected worldwide, putting many young people at risk of the unwanted consequences, including STIs.

### 3.3 STIs among adolescents: epidemiological evidence

WHO has estimated that 333 million curable STIs occur each year, more than two-thirds in the developing world (WHO, 1995a). The large proportion of infections is believed to occur in people younger than 25, with the highest rates usually observed in the 20-24 year age group followed by the 15-19 year age group (WHO, 1993; Cates and McPheeters, 1997). Although probably a true reflection of the importance of STIs among adolescents, these global estimates are based on a relatively small number of surveys. Valid data on STI incidence and prevalence, especially among sexually-active, unmarried adolescents in developing countries, is still rare. Most surveys are conducted among users of specific health services, such as family planning clinics, where adolescents are under-represented. Where specific populations such as sex workers are surveyed, data are rarely stratified by age. Furthermore, in the databases available for this review, studies from Africa were overrepresented. Much less is known about STI levels in Asia and Latin America, and virtually nothing, at least in terms of prevalence, in eastern Europe. There are more studies of adolescent girls than boys worldwide as well.

From the few prevalence studies available, it is evident that STIs are not distributed evenly. Some STIs are found more commonly among adolescents and young people than others, and in most studies, girls seem more frequently affected than boys. Adolescents in regular sexual partnerships and specific high-risk groups (such as sex workers and detainees) are more often infected than the general population of sexually active adolescents (Brabin, 1999; De Schampeleire, 1997). Those who are only sporadically sexually active may contribute little or nothing to the spread of STIs, and this includes quite a few adolescents. A Swedish study, for instance, found that 50-75% of the supposed adolescent "population at risk", who had had no or only one partner during the year, did not contribute to the spread of STIs (Giesecke et al, 1992). STIs may be more prevalent among adolescents in Africa and the Caribbean than in other regions, due to higher numbers being regularly sexually active, but direct evidence of regional differences is scarce.

STIs are common among sexually assaulted women and abused children; data for men have not been found. Most authors reported that infections were likely to have been present at the time of the assault, however, because most victims had been sexually active beforehand, and the studies were carried out too soon

after the assault to prove a direct link (Back-Sagué and Solomon 1999). In a hospital-based study of abused children and adolescents in KwaZulu Natal, two-thirds of the children and adolescents had one or more STIs (Larsen, 1998).

#### CHLAMYDIA INFECTIONS AND GONORRHOEA AMONG ADOLESCENT GIRLS

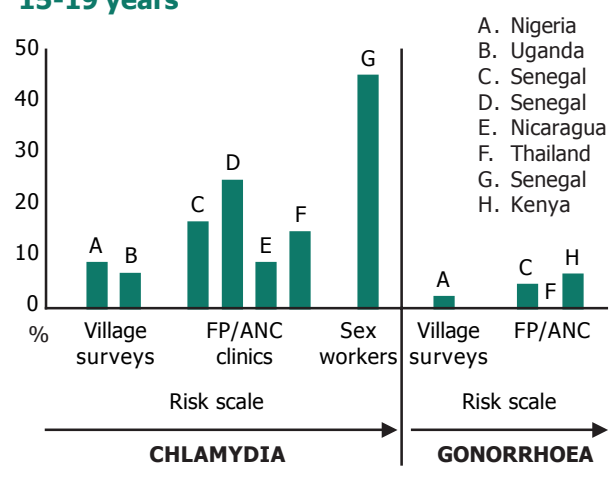
##### Chlamydia

Adolescents are believed to represent at least one third of cases of chlamydia trachomatis infection worldwide and perhaps an equal share of gonorrhoea infection (Cates and McPheeters, 1997; Senderowitz, 1997). In some settings, almost half of adolescents at high risk may have either gonorrhoea or chlamydia or both (Behets et al, 1993; Vuylsteke, et al, 1993).

In several studies, adolescent girls accounted for the highest level of chlamydial infection detected by culture among all age groups, and among younger adolescents prevalence was higher than among older ones (Brabin et al, 1995; Behets et al, 1995; Smith et al, 1988). Prevalence levels ranged from less than 10% among sexually-active girls in rural areas of Uganda and Nigeria, to 10-20% among those in regular sexual relationships (such as pregnant adolescents and family planning attendees), and more than 40% among sex workers in Senegal and a small sample of high-risk pregnant girls in Brazil (Figure 2).

Figure 2

#### Prevalence of chlamydia trachomatis among sexually-active female adolescents aged 15-19 years



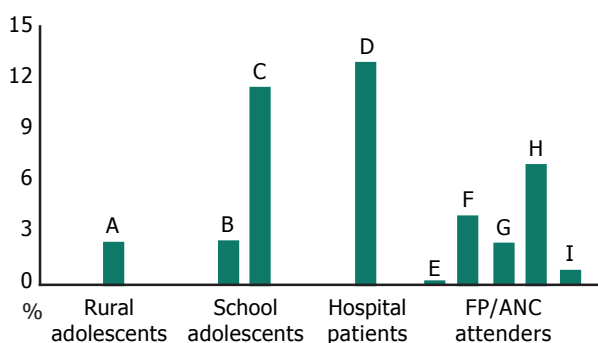
##### Gonorrhoea

Overall, data on gonorrhoea among adolescents is still very limited. Existing studies show that the prevalence of gonorrhoea among adolescent girls is usually lower

than that of chlamydia (Brabin et al, 1995; Kilmarz et al, 1998; Blankhart et al, 1999; Osotimehin et al, 1993; Bernal, 1989; Smith et al 1988; Millstein and Mosicky, 1995; Burstein et al, 1998). With exceptions, prevalence rates in these studies were well below 10%. The exceptions were in a study among adolescent girls who were hospital patients in Namibia (Harms et al, 1998), and high school students in the USA (Burstein et al, 1998), where 11% and 13% respectively were found to have gonorrhoea (Figure 3).

Figure 3

### Gonorrhoea prevalence among adolescent girls, selected studies



- A Nigeria (Brabin et al 1995)
- B Nigeria (Kimalo, 1999)
- C USA (Burstein, 1998)
- D Namibia (Harms et al 1998)
- E Thailand (Kilmarz et al 1998)
- F Kenya (Costello-Daly et al, 1994)
- G USA (Millstein & Mosicky, 1995)
- H USA (Smith et al, 1988)
- I Chile (Bernal et al, 1989)

Among adult sex workers in Abidjan, in contrast, 31% had gonorrhoea and only 11% had chlamydia infection. Furthermore, adolescent sex workers had a 2.5 times increased risk of cervicitis, though no breakdown by pathogen (gonorrhoea or chlamydia) was provided in this report (Diallo, 1993). These findings corroborate the characterization of gonorrhoea as a “core group” infection, that is, one of high prevalence confined to a very high-risk group (Brabin, 1999).

### Co-infections and sequelae

Chlamydia has been found to occur as a co-infection in patients treated for gonorrhoea in up to 50% of cases, which has led WHO to recommend that as a routine both infections should be treated simultaneously. Nevertheless, some studies suggest that co-infection is less common in adolescents than in adults (Brabin, 1995).

Most cases of chlamydia and gonorrhoea infection among both adolescents and adult women are either

asymptomatic or only cause mild symptoms. The failure to recognize and treat chlamydia can lead to serious long-term sequelae, including pelvic inflammatory disease (PID), ectopic pregnancy and infertility. PID has been diagnosed in approximately 15% of untreated, infected adolescents in some studies (Williams 1998; Black 1997). Chlamydia infection may lead to “silent PID”, i.e. when infertility occurs without any signs or symptoms. PID is most common in young women under 25 years of age, and the risk of scarring of the fallopian tubes and infertility appears to increase with the number of episodes (Sweet et al, 1981; Martin, 1990). In one study in the USA, adolescence was the single strongest independent predictor of recurrent PID. Among girls observed for three to six years, infection recurred in more than half of those who were younger than 15 at the time of initial infection and in one third of those 15 to 19 years old (Hillis et al, 1994).

STIs also pose a problem in pregnant adolescents (Brunham et al, 1990). A study in Bangui, Central African Republic, found at least one infection in 34% of antenatal women aged 14-22, including 3.1% gonorrhoea, 6.2% chlamydia, 9.9% trichomonas, 6.7% syphilis, 29.1% bacterial vaginosis and 46.6% candida; 12.2% were also HIV-positive (Blankhart et al, 1999).

With two thirds of all disability-adjusted life years (DALYs) lost due to STIs by adolescents, chlamydia infections in girls account for the largest proportion by far, followed by gonorrhoea with more than a quarter of all DALYs (Murray and Michaud, 1997).

### CHLAMYDIA AND GONORRHOEA AMONG ADOLESCENT BOYS

#### Chlamydia and gonorrhoea

Prevalence data for adolescent boys is scarce, partially because so many studies have been limited to family planning clients. Studies from Namibia, Tanzania and the USA show either no STIs at all in adolescent boys (Harms et al, 1998) or a prevalence of less than 2% (Todd et al, 1998; J. Todd, personal communication, 2000; Millstein and Misocki, 1995; Burstein et al, 1998). Higher rates have also occasionally been reported, however. In one study in rural Uganda, 26% of a small sample of boys had chlamydia (Wagner et al, 1994). Of adolescent boys in detention in the USA, 5-7% had gonorrhoea or chlamydia (Oh, 1993).

Interestingly, when a new diagnostic technique that became available in the mid-1990s was used in one study in the USA, it indicated that adolescent boys

may not actually be less affected by chlamydia than girls. Comparing the rate of infection using a chlamydia culture and polymerase chain reaction (PCR) gene amplification on swabs from about 500 adolescent couples, it found that infection rates were similar in the girls and the boys (around 15%), and that the higher rates of chlamydia-positive cultures in the girls were largely a result of the lower sensitivity of the culture method compared with PCR (Quinn et al, 1996). Transmission rates between adolescent boys and girls were also found to be the same.

Furthermore, it has been thought that STIs are rarely asymptomatic in young men and that men get clinical symptoms that include purulent discharge and burning urination. This may help to explain why more boys than girls may go for treatment, thereby reducing the prevalence of infection though not necessarily the incidence of new infections and STI episodes. In one retrospective study in Uganda, for instance, more than 21% of adolescent boys (and almost 8% of girls) admitted having ever contracted an STI (Agyei et al, 1992). At truck stops in Kenya, a large proportion of both adolescent girls (50%) and boys (30%) reported having experienced an STI (Nzyoko et al, 1997). In Zambia, 3.3% of 15-19 year-old adolescent boys and 8% aged 20-24 reported having had an STI during the previous 12 months. Penile discharge, which is the main symptom of both chlamydia and gonorrhoea, was the most frequent symptom mentioned (ZDHS, 1996). A cohort study among 21 year-old conscripts in northern Thailand found STI (mainly gonorrhoea) incidence falling, from 21.1 to 10.4 per 100 person years between 1991 and 1993. This was as a result of the 100% condom policy for brothels instituted in 1991. Even the lower figures, however, still mean that one out of every ten conscripts was experiencing one STI episode per year on average (Celentano et al, 1996). However, in a recent study on 800 men in Tanzania the rate of asymptomatic chlamydia and gonorrhoea was higher than expected, raising questions about the generally-assumed gender differences in the importance of asymptomatic infections and resulting care-seeking behaviours (Klouman E et al 2000).

The acute and chronic consequences of chlamydia and gonorrhoea in boys, including urethral stricture and prostatitis, are less severe than the sequelae in girls. These STIs therefore contribute less to the burden of disease in this age group, even though episodes may be frequent (Murray and Michaud, 1997).

## OTHER SEXUALLY TRANSMITTED INFECTIONS

Syphilis seems to increase rather than to decrease with age and is therefore less a disease of adolescence than chlamydia and gonorrhoea (Hughes and Berkley, 1999). Furthermore, the worst effects of syphilis are not seen in adolescence, but in infants with congenital syphilis and in older adults from tertiary syphilis. Nevertheless, a prevalence of syphilis of 5-8% has been found in several surveys among adolescents and young adults (Harms et al, 1998; Blankhart et al, 1999; Niger Medium-Term Plan on AIDS, 1994, unpublished). In Russia, where a tradition of mass testing for syphilis exists, more than 400,000 new cases were reported in 1997, including more than one new case per 100 women aged 18-19 (Borisenko et al, 1999). Other STIs may also be widespread, but comprehensive data are not collected on other STIs (Riedner et al, 2000). Among male military recruits in Argentina and Thailand, 5.3% and 2.4% tested positive for syphilis (Eiumtrakul et al, 1992; WHO, 1999).

Although very few adolescent-specific studies have been conducted, it would appear that other STIs – including trichomonas vaginalis, human papillomavirus (HPV) and herpes genitalis – are also prevalent in adolescents. Trichomonas is the most common curable STI worldwide, and adolescents account for a disproportionately high number of cases (Cates and McPheeters, 1997). In a Nigerian study (Brabin et al, 1995) approximately 11% of adolescents under age 17 and up to 25% of those aged 15-19 had trichomonas and, in Dar es Salaam, 34% of 15-19 year-old pregnant women had trichomonas (Mwakagile et al, 1996). As with other STIs, trichomonas places young women at increased susceptibility for HIV infection.

The prevalence of human papillomavirus (HPV), which initially manifests itself as genital warts, also seems to be higher among adolescents than adults, at least in developed countries; but genital warts were rare in Nigerian adolescents (Brabin, 1995). While the majority of HPV infections regress spontaneously, certain strains increase the risk of cervical cancer. Few adolescents have high-grade lesions, however, as these take longer to develop (Shafer, 1998; Temmerman, 1998). (Knebel et al, 1997; Nelson and Neinstein, 1996; Cates, 1995; Koutsky et al, 1992).

Specific studies on herpes simplex virus-2 (HSV-2), the most common cause of recurrent genital herpes among adolescents in developing countries, remain to be done (Brabin, 1999), but two studies are available that provide seroprevalence data disaggregated by age. In rural Uganda and Tanzania, 27% and 43%

respectively of girls 15-19 years old, but only 7.5% and 20% respectively of boys 15-19 years old were reactive to HSV-2 antibody tests (Wagner et al, 1994; Obasi et al, 1999). In a recent study of (male and female) adolescents in the USA, 12% were HSV-2 seropositive (Rosenthal et al, 1997). The African studies suggest that HSV-2 prevalence may be used as a marker of adolescent sexual risk behaviour. HSV-2 seropositivity was strongly associated with the number of lifetime sex partners (Obasi et al, 1999).

Little is known about the frequency of STIs such as chancroid and lymphogranuloma venerum (LGV) among adolescents, but there is little reason to believe that in regions where these infections are prevalent, sexually active adolescents should be at a lesser risk than older age groups.

## Barriers to effective STI care for adolescents

Although STIs are frequent among certain groups of adolescents, most adolescents at risk of STIs worldwide do not have easy access to STI treatment services. This chapter reviews the evidence of three types of barriers to effective STI treatment for adolescents in developing countries which, to a large degree, determine care-seeking behaviours:

- barriers related to the asymptomatic nature of the most important infections, and the lack of suitable methods to detect them,
- barriers related to adolescents' lack of knowledge about and awareness of the seriousness of STIs, and
- most importantly, barriers in access to STI services, including lack of availability of services and their cost.

### 4.1 Asymptomatic infections and the lack of simple diagnostic methods

One of the main problems associated with the control of STIs in general, and among young people in particular, is the fact that most infections in girls and many in boys remain asymptomatic until serious sequelae occur. More than two thirds of non-ulcerative STIs (such as gonorrhoea, chlamydia and trichomonas) are either asymptomatic or occur only with nonspecific symptoms like minor vaginal discharge, vulval itching and urethritis (Figure 4). In some settings, the proportion of infections considered asymptomatic may be even higher as women may perceive certain, commonly experienced STI symptoms as “normal”. Thus, the proportion of asymptomatic chlamydia infection in women may reach 80%, though for gonorrhoea the proportion is usually lower (Paxton et al, 1998). Asymptomatic infections in men, discussed above, are thought to be less frequent (Sherrard and Barlow, 1996; Paxton et al, 1998).

The only possibility of detecting asymptomatic infections is the use of laboratory tests. In resource-poor settings, doing this is hampered by the fact that most currently available tests are both difficult to

perform and expensive. Furthermore, the most common laboratory tests for diagnosing gonorrhoea, chlamydia, trichomonas and syphilis all depend on taking tissue samples, either cervical/urethral swabs or blood samples, which is even less likely to be accepted by adolescents than adults. New tests such as PCR and ligase chain reaction (LCR) have brought with them the possibility of self-collection of swabs and urine sampling, which should be more acceptable to adolescents (Biro, 1999). However, these tests are also the most expensive and unlikely to be affordable in developing countries.

The only currently viable alternative strategy, promoted by WHO, for STI diagnosis and care in resource-poor settings, is to make STI care more widely accessible without depending on specialist clinics or laboratory facilities. From as early as 1991, WHO has recommended the use of the “syndromic approach”, which aims to enable health-care workers to identify syndromes caused by one or more STIs on the basis of patients' complaints of symptoms, clinical signs and risk assessments (WHO, 1995c). However, this approach has limitations, especially when used as a screening tool – a purpose for which it was neither designed nor intended – and when applied to the syndrome of vaginal discharge in low STI-prevalence settings or populations. Studies that have attempted to use clinical examination, risk assessment scores or a combination of the two for syndromic case-finding of chlamydia and gonorrhoea, the most commonly asymptomatic STIs in women, have consistently shown unsatisfactory results (Dallabetta, Gerbase, Holmes, 1998; Hudson, 1999; Shelton, 1999; Mindel et al, 1998).

Standard syndromic diagnosis using risk assessment is particularly problematic among adolescent girls, as the answers to several of the standard questions are likely to be positive, regardless of whether they have contracted an STI or not (Brabin et al, 1996). On the other hand, an often-overlooked asset of the syndromic approach with adolescents is its emphasis on provider

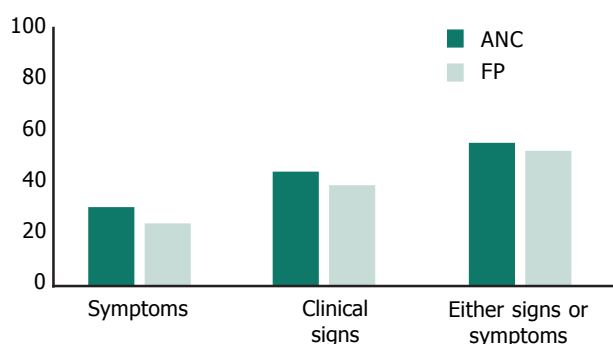
communication skills and on preventive counselling as an integral part of case management (WHO, 1995d).

The following are the standard questions to be asked for making a syndromic diagnosis:

- Does your partner have urethral discharge or penile sores?
- Are you less than 20 years of age?
- Are you single?
- Have you had more than one partner during the last 1, 3 or 12 months?
- Have you had a new partner within the last three months?

Figure 4

#### Proportion of female ANC and FP clients with laboratory-confirmed STI who have signs or symptoms in Nakuru, Kenya



Source: Population Council, 1999

According to the recommended means of scoring, the diagnosis is considered positive for cervicitis (either gonorrhoea or chlamydia) if the answer to the first question or the answer to any two other questions is “yes”. This process is not particularly helpful for distinguishing high-risk from low-risk adolescent girls because all of them are by definition younger than 20 years old, many are single, and depending on the setting, most may have had only one steady partner. On the other hand, where serial monogamy is common, many adolescents may have had a new partner in the previous 12 months, which also does not help to distinguish between high and low risk.

Nevertheless, until more suitable tests become available, improving syndromic management, improving the clinical diagnosis of gonorrhoea and chlamydia and adapting risk assessments to the specific situations of adolescents would appear to be the only way forward.

## 4.2 Adolescents' knowledge, attitudes and communication skills related to STIs

### INADEQUATE SOURCES OF INFORMATION

Adolescents learn about sex, reproduction, contraception and STIs from a range of sources: parents, siblings, peers, radio, television, print media, gossip and observation of others. In many cultures and settings, parents and other adult relatives, e.g. aunts or uncles, do not talk about such issues to their children, and many do not feel informed or comfortable about giving advice (Görge 1994). Hughes and McCauley (1998) point to surveys which show that both parents and young people alike often prefer parents to be the main source of information for adolescents about sexuality and reproductive health (Castillo, 1993; Hawkins and Ojaka, 1992; Kumah et al. 1992). Yet these studies have also shown that parents feel too embarrassed, confused or ill-informed about these topics to be an effective source of information and support (Kumah et al, 1992, UNFPA, 1993).

Thus, peers (and in some cases, mass media) seem to have become the main sources of information about STIs for most adolescents, e.g. in Burkina Faso (Population Council, 1998). Similarly, in Zimbabwe and Tanzania, young people had received most of their information on STIs from peers and/or the media (CRHCS, undated a,b). In Tanzania, young people would nevertheless have preferred to receive more information from their parents than the media (CRHCS, undated b).

Teachers, other school staff and health-care providers have the potential to become a major source of information on STIs. In Nairobi, Kenya, the media were the main source of information on STIs such as gonorrhoea and syphilis, followed by teachers, friends and relatives (Lema and Hassan, 1994). In Colombia, school teachers were the most common source of information on STIs, and girls also frequently mention their mothers; health services were only described as an important source of information by 5% of young people (Profamilia, 1996). In South Africa, friends were considered a valuable source of information, but nearly three quarters of young people indicated that they preferred to speak to an adult about sexuality. Clinics would have been their preferred source of reproductive health information, services and products, but unfortunately most clinics did not have an environment in which young people felt comfortable to seek the advice and services they needed and wanted (Transgrud, 1998).

### LACK OF KNOWLEDGE OF STIs

The information that adolescents have about STIs has been shown to be inadequate and inaccurate in many studies, especially from Africa. In Bangladesh, many female students had a low knowledge of symptoms and mode of transmission of STIs (Haider et al, 1997). In Burkina Faso, a large proportion of adolescent boys and girls did not know the symptoms of STIs or did not recognize them as STI symptoms. There were also inaccurate beliefs, such as that one could contract gonorrhoea from urinating on the same spot where someone who was infected had urinated (Population Council, 1998). In Uganda, while 98% of teenagers reported some knowledge of different STIs, very few could recognize their symptoms (CRHCS, undated c). In Zambia, knowledge of STI symptoms and treatment was also lacking (Zambezi, 1996; Fetters et al, 1997). Some young people not only identified gonorrhoea, syphilis and several illnesses bearing local names, but also diarrhoea and malaria as affecting the “private parts”. Biomedically defined and traditionally named STIs seemed to refer to different entities (Kumwenda-Phiri, 1999). In many settings, girls were especially poorly informed and had difficulty recognizing STI symptoms, especially in distinguishing between normal and abnormal vaginal discharge (Brabin 1998).

Lack of education and young age might well play a role in STI knowledge levels. In Colombia, for instance, 77% of young people without formal education were unaware of the main STIs and how they were transmitted. Among better-educated young people, however, knowledge was much better (Profamilia, 1996). In Zimbabwe, only 50% of school-going adolescents had basic knowledge of STI symptoms, but knowledge increased with age (CRHCS, undated a).

Adolescents’ lack of knowledge of STI symptoms and mode of transmission must be seen as part of a wider problem, which comprises widespread lack of knowledge of all issues related to sexuality and reproduction, including normal bodily functions, how pregnancy occurs, and use of contraception, as well as STIs (Nzioka, 2001). In Kenya and Mexico City, for instance, young people could not correctly identify the fertile period in the menstrual cycle, and in Sri Lanka, a quarter of adolescents thought that one could get pregnant by wearing clothes previously worn by a man (Koontz and Conly, 1994). In a more recent Kenyan study, adolescent boys did not seem to understand the link between the risk of contracting STIs and contracting HIV (Nzioka, 2001). In fact, young people may acquire knowledge of STI risk of

infection and symptoms or of reproductive health issues but not both. An evaluation of schooling experiences in Kenya showed that while many students were ignorant when and under what circumstances pregnancy could occur, they were moderately well informed about AIDS and STIs, with girls slightly less knowledgeable than boys. The introduction of school life-skills education did not seem to have made a great difference, however (Mensch and Lloyd, 1998).

### ADOLESCENTS’ LACK OF AWARENESS OF THE SERIOUSNESS OF STIs

It is common among generally healthy adolescents not to see health as an important issue (Senderowitz 1999). Among the various reproductive health issues, STIs (other than HIV) may not be seen as particularly important and STI treatment may be a low priority (Brabin, 1999, Glanz, 1993). Adolescent girls are often far more concerned about preventing unwanted pregnancy and menstrual problems than about STI symptoms (Brabin, 1999), while for boys sexual health concerns often outweigh reproductive health ones. This has recently been shown in Kenya, Sweden and Argentina, for example (Ahlberg et al, 2001; Mercer et al, 2001).

A study in Zimbabwe revealed that neither young men nor women in urban and rural areas were worried about STIs. While the young women had little knowledge of the signs and symptoms of sexually transmitted diseases, including of AIDS, contracting an STI was something to be proud of and seen as a symbol of manhood for boys (ZNFPC, 1996). In Zambia, boys believed that girls were the main carriers of STIs, and that it was normal for a boy to get STIs as part of growing up (Zambezi et al, 1996). In Senegal, both adolescent and adult respondents believed that contracting a syphilis-like disease protected against other illnesses. In Romania, focus-group discussions with young people revealed that during communist times, having an STI had been seen as a sign of virility and an expression of protest against the regime (Hoelscher, PSI, 1998, personal communication). Indeed, the tendency to associate the experience of STIs with masculinity is a serious obstacle to the adoption of prevention strategies (Nzioka, 2001).

### SHAME, EMBARRASSMENT AND FAILURE TO COMMUNICATE ABOUT SEXUAL HEALTH MATTERS

Adolescents often experience feelings of guilt and shame when they realize that they have contracted an STI, and many may not have acquired the skills needed for telling someone that they have a sexual health problem (Brabin, 1998). For adolescent girls,

contracting an STI is sometimes associated with prostitution (CRHCS, undated b). As a result, even if they have an unusual discharge or a sore, they may not confide to anyone that there is a problem. When adolescents do present at a clinic, their reports are often vague, especially if unwanted sex or sexual abuse is involved.

Closely related to feelings of shame and embarrassment are fears that services may be unable to guarantee confidentiality (Zabin et al 1991). In Nicaragua, Kenya, Senegal and Zambia confidentiality was the main concern of young people who were asked about barriers to attending STI services (MSI, 1995; A. Sy, personal communication, 2000; Webb, 1998). Even when there are assurances that clinic information will stay confidential, anxiety often remains that parents or other adults will find out about their STIs. In both Nicaragua and Kenya, neighbours, friends and even staff seeing adolescents in public clinics were believed to report back to parents (MSI, 1995). Adolescent girls seem to have greater concerns about confidentiality than boys (Lane, 1999), and younger girls more than older ones (James et al, 1999). An additional factor among girls may be the fear that an internal examination may be required (Donovan, 1994; James et al, 1999).

Adolescents may also be too embarrassed to share information on STIs with their partners. In Kenya, a group of boys thought of condoms only as a means of protecting themselves, not their partners. Even though they estimated that up to 80% of their age group had experienced an STI, very few had shared information about their own experience of having an STI (or STIs in general) with their girlfriends (MSI, 1995). In another Kenyan study, though adolescent boys wanted to boast about their sexual experiences to their peers, they felt embarrassed and reticent to discuss sexuality with or communicate their sexual health needs to parents or teachers, not least because they did not want the fact of their sexual activity to be revealed and chastised (Nzioka, 2001).

Young women may also experience psychological and other consequences from sequelae of STIs such as infertility, including rejection and divorce by husbands (Senderowitz, 1997), especially in countries where the ability to conceive within the first year of marriage is important, such as India (Barua et al, 2001).

### 4.3 Adolescents' lack of access to STI services

Lack of knowledge of STIs and their symptoms, the tendency not to take STIs and their consequences seriously or to be silent about STIs because of fears and embarrassment are all compounded by difficulties experienced by adolescents in accessing STI services. Many barriers exist, even in developed countries, including inconvenient location and clinic opening times, legal barriers, negative attitudes on the part of service providers and prohibitive costs (Gevelber and Biro, 1999).

#### LOW POPULATION COVERAGE OF ADULT STI SERVICES

While in most parts of the world family-planning services are available to the majority of the adult population, access to STI services is far more limited. Specialized STI clinics located in large towns in Asia, Latin America and eastern Europe provide treatment to high-risk groups such as sex workers and their clients, but often reach only a small proportion of those in need. In Africa, specialized STI clinics are even fewer. Bello (1983) reported that the special treatment clinic at the University Teaching Hospital in Zaria was the only clinic in the whole of northern Nigeria to which STI patients could be referred. Anecdotal reports suggest that the situation has improved only marginally since then.

Since the mid-1990s, syndromic STI management to expand STI care coverage should have enabled primary health-care workers, even in rural and remote areas, to identify and treat symptomatic STIs. Nevertheless, in many places public STI services remain weak. Either staff have not been trained or staff such as nurses are not licensed to treat STIs. More importantly, however, effective drugs are probably not consistently available. In Zambia, for instance, a country where adolescent reproductive health programme development is relatively advanced, the shortage of drugs has been identified as an important reason why young (as well as older) people rarely attend public STI services (Webb, 1997; Fetters et al, 1997).

#### RESTRICTIVE POLICIES

In many countries, laws and policies restrict adolescent access to certain health services and commodities according to age, marital status or both (FHI, 1997). Although the policies that guide STI service provision for adolescents were not researched for all countries, most data support the impression that African and Asian sexual health programmes mainly serve older and married young people, while those in Latin

America may also serve unmarried adolescents. Parental consent may also serve as a barrier to access. In Nepal, for instance, it is policy to demand the formal consent of either a parent or husband for a prescription for oral contraceptives or STI treatment (Kyelem, 1999). In India, there is no law or policy regulating adolescents' access to reproductive health services, but "services continue to be limited and available largely to married adolescents". Children, e.g. street children, may even be refused emergency treatment (Pratomo, 1999). In Sri Lanka, "adolescents may go with their parents to the hospital to get services" (Pratomo, 1999). In Kenya, parental consent is required for all reproductive health services and for incomplete abortion treatment for the 15-18 year age group (MSI, 1995). Laws that define the minimum age at which adolescents may consent to sex, like those in Uganda or Zimbabwe (Ndyanabangi, 1999), may also have an impact on health care-seeking, and especially on partner notification practices.

#### UNSYMPATHETIC SERVICE PROVIDERS

Probably more important for adolescents' access to STI services than outright legal barriers are situations where laws and policies are not particularly restrictive or are vague, but health staff and other providers (such as pharmacists) establish their own policies which prevent access for adolescents (MSI, 1995; Senderowitz, 1999). In Kenya, for instance, although the Ministry of Health policy does not specifically prohibit reproductive health services for adolescents, in general "the younger you look, the less likely you are to be attended to". In both Kenya and Nicaragua, young people were usually left to the end of the queue. Boys who attended public STI clinics were given disciplinary talks and the few pregnant girls who attended for antenatal care were often punished and told off for getting pregnant at an early age (MSI, 1995). In Zambia, health-care providers also tended to scold young people when they attended clinics (Mupela and Fetters, 1997). Adolescent boys participating in focus-group discussions suggested that "nurses should not insult boys getting STI treatment" (Shah et al, 1996). And in Zimbabwe, boys at a rural growth point who had experienced STIs reported that they were harassed by local clinic staff when they sought care (ZNFPC, 1996).

The fact is that many health workers are themselves parents and may bring a parental perspective to their work. They may treat the STIs, but fail to promote or supply condoms, encouraging future abstinence instead (Brabin et al, 1999). In addition, it may be

stigmatizing for adolescent boys and girls to be seen to be attending an STI clinic.

STI services for adults tend to serve either a male or female clientele, but rarely both. In fact, an estimated 90% of patients at specialized STI clinics in developing countries were male (Bennett, 1987), while others tend to serve mainly sex workers. Such services are unlikely to be adolescent-friendly or to be acceptable to many adolescents, especially girls. Recently, efforts have been made to address this issue by combining STI care with MCH/FP service delivery (Dehne and Snow, 1999). However, men continue to perceive these services as not really for them (Senderowitz, 1997). For instance, in Kenya and Nigeria men were attending MCH/FP/STI facilities very reluctantly and only because they could not get STI drugs from services elsewhere (Dehne and Snow, 1999).

#### OPERATIONAL BARRIERS

Many published reports indicate that reproductive health services located in both health posts and hospitals were located in peripheral areas or were open at inconvenient hours, making it difficult for young people to attend (Corradini 1991; McHarney-Brown and Kaufman 1991; Nare, Katz and Tolley 1996; Brindis and Davies 1998). Most of these reports were primarily about family-planning services, however, and STI services were not always mentioned. Experience in a number of countries has shown that late afternoons, evenings and weekends tended to be the opening hours that were most convenient to young people (IPPE, 1994; Koontz and Conly, 1994; McCauley and Salter, 1995). In Senegal, clinic nurses stopped working early in the afternoons, thereby unknowingly preventing young people from seeking STI care after school (A. Sy, personal communication, 2000).

#### FINANCIAL BARRIERS

Effective STI treatment is costly, and rarely affordable to adolescents. One of the reasons that few girls in Nigeria use public STI services was that they were expensive (Brabin *et al*, 1995). In Uganda, even at clinics where STI treatment was supposed to be free of charge, unauthorized charges were substantial. At a private clinic, a young person would have to pay US\$50 or the equivalent of a half-term's school fees for basic treatment for an STI (Katabesi 1996). Similarly, in Zambia, a study found that although official Ministry of Health policy was to treat communicable diseases free of charge, this was not done in practice (Kumwenda-Phiri, 1999). Unaffordably high fees were also reported from semi-private clinics serving both

adult and adolescent STI clients in Russia (A. Gromyko, personal communication, 1999).

On the other hand, services that were free of charge were not attractive to young people in a cross-cultural study in Kenya and Nicaragua. Although most of the adolescents did not have an independent income, and private sector service costs clearly constituted a barrier, most said they were not interested in free services, because they assumed the quality of care would be poor (MSI, 1995).

#### 4.4 STI treatment-seeking behaviours of adolescents in developing countries

Health care-seeking behaviour is a highly complex and poorly understood subject, particularly in developing countries, where competing systems of traditional, informal and western medicine coexist (Kleinman, 1980). Several studies have nevertheless suggested that adolescents everywhere tend to delay seeking treatment for sexual and reproductive health problems (WHO, 1995b, Hughes and Berkley, 1999). No studies of factors determining STI care-seeking behaviours among adolescents in developing countries have been carried out. However, in one study in the USA, factors that most affected the length of time young people waited to seek care included the perceived seriousness of infection, the extent of confidence to seek help for STIs and perceptions of barriers to accessing care, including stigma (Fortenberry, 1997). In another study in the USA, the availability of services and their perceived confidentiality were identified as the most important determinants of care-seeking (Lane et al, 1999). Adolescents who do decide to seek care often do so outside the formal public health sector.

##### DELAYS IN CARE-SEEKING

Many studies have found that adolescents waited longer or spent more time than adults appraising their symptoms before seeking help for an STI, probably because of embarrassment and guilt (Brabin, 1995; Lema, 1990; Lema and Hassan, 1994; Mafany et al, 1990; Odujinrin and Akinkuada, 1991; Profamilia, 1996; Okonofua, 1997; Population Council, 1998). Young women who are less frequently (and less clearly) symptomatic than young men are even less likely to seek STI care (Fortenberry, 1997).

In an assessment of reproductive health needs in Bulawayo, Zimbabwe, for instance, young people literally stated that they did not know what to do when they realized they had an STI (or when they got pregnant). Much of this hesitation was due to fear of

disapproval of their sexual behaviour and unsympathetic attitudes on the part of service providers, rather than to the inaccessibility of services, since adult reproductive health services, including STI diagnosis and treatment, were available in Bulawayo (ZNFPC, 1996). In Kenya and Nicaragua, too, adolescents knew where they could get STI treatment, family-planning methods and pregnancy terminations, how much these services cost and how good the quality of care was, yet they considered their access to all three services limited (MSI 1995).

Many adolescents, especially girls, may not seek STI treatment until severe complications occur. In a rural survey in Nigeria, only 2.8% of girls with symptoms had sought treatment of any kind (Brabin et al, 1995). Among urban girls with STI symptoms, the proportion was higher but only 1.9% of the younger girls had sought treatment compared to 9.5% of the older girls (Brabin, 1995). Even the treatment of very painful conditions may be delayed. In one US study (Fortenberry 1997), adolescent girls with PID sought care later than adult women, and a high proportion of them ended up in a hospital emergency room as a result (Aral, 1996).

##### CARE-SEEKING IN THE PRIVATE AND INFORMAL SECTORS

Most adolescents (and adults) who do ultimately seek STI care either self-medicate with drugs bought over the counter at pharmacies or seek treatment from private doctors or traditional healers (Brugha and Zwi, 1999; Msiska et al, 1997; Nichter, 1996). In Ghana, self-medication with drugs purchased over the counter accounted for 80-90% of all STI treatment episodes (Health Research Unit, 1996), while in South Africa, traditional practitioners were an early source of care for up to 80% of patients who ultimately went to the formal sector (Dartnall et al, 1997). Public services are usually only consulted as a last resort (Mupela and Fetters, 1997). In Zambia, too, boys and girls would only go to a clinic after failing to get traditional medicine from traditional or spiritual healers or other private practitioners, or if their treatments did not work (Chambeshi, 1997; Webb, 1997). In Zimbabwe adolescent boys preferred consulting traditional healers (ZNFPC, 1996), and similar preferences have been reported from Nigeria (Okonofua, 1999). Similarly, in Uganda, young people either self-medicated or consulted traditional healers, drug sellers, friends or family members (Katabesi, 1996). In Nicaragua, adolescents used only NGO services and, in crisis situations, private clinics (MSI, 1995).

In China, for unmarried adolescents to attend a public clinic for either contraception or STI treatment is still very difficult and self-medication for STIs with drugs obtained from drug vendors is often the only option (B. Stewart, 1999 personal communication). In India, most adolescent boys prefer to go to quacks, who abound in the cities. Peer groups play an important role in guiding boys to “effective quacks” (MOW, UNDCP, UNICEF, WHO and NACO, 1996). In Thailand, 65% of men self-medicated with antibiotics bought over the counter and 8.5% used antibiotics prophylactically before frequenting prostitutes (Khamboonruang et al, 1996). From eastern Europe, too, there is evidence that adolescents (and adults) prefer informal and private STI care providers over public service providers (Riedner et al, 2000, unpublished data).

Marchand (2000) in a recent review has summarized the perceived advantages of private and informal sector treatment over public services. Geographic access to informal sector providers is often much better than to public clinics. In three African countries the healer-to-population ratios varied from 1:100 to 1:300, while in Mozambique, for instance, the physician-to-population ratio is 1:50,000 and the nurse-to-population ratio is 1:5300 (Green, 1994; Hogel et al, 1991; Green and Monger, 1989; Green and Makhubu, 1984).

Private sector services are also often more convenient due to longer opening times, with vendors open day and night (van der Geest, 1987). In both the informal and private sectors, patients may also receive more personalized treatment, with fewer questions asked and privacy better assured (Crabbe et al, 1996; Lule et al, 1994; Helitzer-Allen and Allen, 1992). There may also be less social distance between patients and providers (Benjarattanaporn et al, 1997; van der Geest, 1987; MOW, UNDCP, UNICEF, WHO and NACO, 1996). Furthermore, especially in Africa, there is a widespread belief that traditional medicine is more effective for STIs than western medicine (Green, 1994). Finally, studies in Cameroon, Nigeria and Zambia, the latter two among adolescent STI clinic attenders, showed that informal STI services were not only more friendly but also considerably cheaper than public services, even if they didn't cure the problem (Crabbe et al, 1996; Brabin, 1995; Kumwenda-Phiri, 1999). Traditional healers' services were not free of charge in Zambia, but healers would often claim payment only after the STI had healed (Kumwenda-Phiri, 1999).

Provider options may be more limited for adolescents even in the private and informal sectors, not only because the fees may be prohibitive, but also because unfriendly attitudes to young people may well extend to informal providers as well.

#### INEFFECTIVE CASE MANAGEMENT

The disadvantages of self-medication and treatment with drugs bought from vendors and unlicensed practitioners include sale of drugs after their expiry dates, use of ineffective drugs (which may temporarily mask symptoms), lack of referral, lack of partner notification and absence of prevention education and counselling. Unless pharmacists, drug sellers and healers are well informed, the consequences can be persistent infection, serious complications and an increase in antibiotic resistance (Mendoza and Chinvarasopak, 1996).

In Ghana, STI patients who had bought STI drugs over the counter had mostly received inappropriate doses and no appropriate advice and later had to attend a public STI clinic (Adu-Sarkodie, 1997). STI treatment provided by pharmacists in Lima, Peru did not conform to internationally-recognized guidelines either. The pharmacists failed to recognize STI syndromes in women and the treatments usually provided to both men and women was often ineffective (Garcia et al, 1998). The flexibility of informal providers who allowed patients to buy the amount of drugs they could afford or were willing to pay for often resulted in suboptimal treatment doses (Crabbé et al, 1996).

The efficacy of treatment for patients with STI who visit traditional healers is particularly difficult to assess. Some of the indigenous plants used may indeed contain substances that inhibit the growth of microbes (Recio and Rios, 1989), but most healers will not disclose the contents of their medicines and testing every concoction would in any case be impossible. Many healers combine traditional methods with antibiotics for suspected STIs. Whether these antibiotics are the most effective ones or are given in sufficient doses is often doubtful (Olukoya and Elias 1996).

A recent study of the quality of STI services provided to adolescents in Nigeria found that informal sector providers had inadequate knowledge of appropriate STI treatment methods. Formal sector providers showed better knowledge but had inappropriate management guidelines and were poorly oriented to care for adolescents. Among all providers, there was evidence of inadequate counselling of adolescents, a

poor attitude towards condom use and inadequate use of referral opportunities (Okonofua et al, 1999).

Case management by trained private sector physicians may also be inadequate. In a recent study of 11 private practitioners in a rural district of South Africa, 90% of treatment episodes were incorrect either because of the type or dosage of the drugs or the duration of treatment (Connolly et al, 1999).

### COMPLIANCE WITH TREATMENT

Finally, those adolescents who do have access to adequate services and are prescribed the correct treatment may have difficulties with compliance (O'Reilly and Aral, 1985). The treatment may be lengthy (e.g. in case of chlamydia), or painful (e.g. in the case of genital warts) or adolescents may have to conceal medication so that their having an STI is not revealed (Grosskurth, 1999). In one study in the USA, although the vast majority of adolescents returned for follow-up treatment, only slightly more than half returned for test-of-cure (Smith et al, 1991). In another study, only 28% of adolescent boys returned for scheduled follow-up appointments (Weinman et al, 1996). Brabin et al (1999) have pointed to the need for long-term follow-up of adolescents, not just for test-of-cure, but for ongoing support for their sexual health needs. Few services to date seem to achieve this goal, even in developed countries.

### Factors preventing adolescents with STIs from getting effective treatment

#### Nature of STIs and of diagnostic methods

- Infection often asymptomatic
- Lack of affordable screening tests
- Inaccurate risk assessments

#### Adolescents' knowledge, attitudes and skills related to STIs and care-seeking

- Lack of knowledge of symptoms
- STI treatment a low priority
- Do not know where to go for treatment
- Do not have the skills needed to express a sexual health problem
- Fear of examinations
- Fear of parents and other adults finding out

#### Access to services

- Long distances to clinics or lack of (money for) transport
- Inconvenient opening times for adolescents (e.g. clinic closed after school)
- Legal/policy restrictions (e.g. parental consent; need to bring partner)
- Unfriendly/judgemental providers
- High cost of treatment

#### Poor case management

- Drug shortages
- Ineffective drugs or suboptimal doses used
- Failure of informal providers to educate, promote and offer condoms, and to notify partners

Adapted from Brabin (1998)

## STI services designed for adolescents

### 5.1 Adolescent reproductive health policies

The International Conference on Population and Development (ICPD) in Cairo in 1994 made a series of recommendations for improving adolescents' access to reproductive health services and education. These were: *Countries should safeguard adolescents' access to reproductive health education, information and care and strive to reduce sexually transmitted diseases and unwanted pregnancies among adolescents. Where appropriate, legal, regulatory and social barriers to such information and services should be lifted and programmes should be established to meet the special needs of adolescents. Ideally, young people are to be actively involved in the planning, implementation and evaluation of such programmes. Services for young people should safeguard the rights of adolescents to privacy, confidentiality, respect and informed consent* (UN, 1995).

Five years later, when the implementation of the ICPD Programme of Action was reviewed and appraised, some progress had been made. Some 55 of the 114 countries surveyed had reportedly taken some measures to address the health needs of adolescents, mainly by developing policies and including adolescents and adolescent reproductive health in existing national health plans, and also by establishing ministries of youth and sports (UNFPA, 1998). In countries such as Costa Rica, Ghana and South Africa, legal or policy barriers to information dissemination and service delivery were reportedly removed. In 1998, an initiative to update the WHO publication *Laws and Policies Affecting Adolescents' Health with Respect to Reproductive Health* (Paxman, 1987) was underway (UNFPA, 1999).

In Botswana, Mexico and Uganda, new adolescent health policies were developed, while in Zimbabwe the Ministry of National Affairs was developing a framework for a national policy on young people (Secretaría de Salud, 1999; Ndyabangi, 1999). In Brazil, which had a comprehensive women's health policy and a network of specialized adolescent health services even before the ICPD, "progress accelerated

after Cairo with an increased focus on certain aspects, including adolescents". In Nepal, a substantial review of adolescents' reproductive health needs was conducted (UNFPA, 1999). Several countries have established either a National Council on Young People (Malawi), a Committee of Experts (India) or a new Department on Adolescent Health in the Ministry of Health (Senegal, Sri Lanka) (Pratomo, 1999; A. Sy, 2000 personal communication; Government of Malawi, 1996).

#### IMPLEMENTATION HAS LAGGED BEHIND

As with other aspects of the ICPD Platform of Action, translation of policies into the delivery of services has lagged behind or remained slow. "Some countries are beginning to address the sexual and reproductive health needs of adolescents", a report by the UN Secretary-General stated (UN, 1999a). In Uganda, the implementation of the strategy directed at young people has depended on political will and donor support to individual districts, and was progressing at a rather slow pace (F. Kikongo, personal communication, 2000; Ndyabangi, 1999). In Botswana, too, there were wide gaps between policy intent and action (Ndyabangi, 1999). In Sri Lanka the new Department on Adolescent Health consisted of only one staff person (Pratomo, 1999). In Nepal, despite substantial policy-making efforts, national reproductive health strategies continue to focus on married couples (Amatya, 1998), and sex education is still a taboo subject (Bhadra, 1999). Little has actually been documented about the quality and reach of adolescent services in Brazil.

In most countries, adolescent health is still seen as a new concept and availability of expertise and experience is limited. There has been only a slow change of attitude among health workers, hampering policies put in place by governments to enhance access of adolescents to health services (Ndyabangi, 1999). Pathfinder International, a US-based NGO that has worked on adolescent reproductive health issues since the 1970s, reported that at the end of the 1990s, the

majority of adolescent projects they supported were being carried out by private sector NGOs. Others had been implemented within large public sector institutions, however, representing a step towards the institutionalization of services for young people and their acceptance by governments (Webb, 1998).

#### STI SERVICES OFTEN ABSENT FROM ADOLESCENT PROGRAMMES

The actual provision of clinical services for adolescents by government institutions, especially for STI treatment, has remained rare. With a few exceptions, mostly in Latin America, there are no nationwide programmes offering adolescent reproductive health services, and where there are such programmes, as in Mexico, the emphasis is on sex education, the provision of contraceptives and the prevention of STIs rather than STI care.

Even the proportion of NGO and other donor-supported projects providing STI treatment services appears to be small. In a FOCUS survey, among more than 50 projects and programmes for adolescents by NGOs and other agencies, funded by USAID, less than half provided any health services. Yet almost three quarters were training a range of health professionals and volunteers, mainly in adolescent health issues and communication skills, while two thirds were doing training in advocacy and the implementation of communication and education activities. Prevention of STIs and HIV as well as basic maternity care and treatment for anaemia were specifically mentioned, but STI services were not (Kloforn, 1998). A recent review of 81 GTZ-supported health projects worldwide found that 25 had a component addressing young people, of which 20 included STI prevention activities, but only three provided STI treatment services (C. Schümer, personal communication, 2000). Similar results were obtained in reviews of projects in specific countries. In Zambia, only 10 of 48 adolescent projects were providing STI diagnosis and treatment (FOCUS, 1999), while in India, NGOs, with few exceptions, were providing only information, education and communication (IEC) activities and counselling (Pratomo, 1999). A 1997 WHO report explicitly mentions STI case management in two out of 18 adolescent health service projects reviewed. At least three more did in fact provide STI treatment services, yet this was not mentioned in the evaluation (WHO, 1997b).

#### MODELS OF ADOLESCENT STI CARE DELIVERY

Most efforts to provide adolescents with STI services are based in a health facility, adolescent 'clinic' or

'centre'; community-based and private sector services have remained rare. Three types of adolescent STI services can be distinguished:

- STI services based mostly in public health centres or public hospitals, which have been made adolescent-friendly;
- STI services in stand-alone clinics, multipurpose centres and outreach projects directed at young people; and
- school-based and school-linked STI services.

These distinctions are somewhat artificial, as the three categories often overlap. For instance, public sector clinics which have been made adolescent-friendly may perform outreach functions and may gradually develop into separately managed, stand-alone clinics for young people. Or, reproductive health/family planning clinics may add on non-clinical functions for young people, e.g. recreational facilities, but also establish links with schools or universities. In some instances, community-based approaches, e.g. peer education and counselling activities, have been combined with the upgrading of public sector clinics, to which adolescents can then be referred.

#### 5.2 Public sector clinic and hospital-based, adolescent-friendly STI services

In the vast majority of clinic- and hospital-based adolescent reproductive health programmes and projects, STI diagnosis and treatment is provided as part of a wider package of reproductive health services. Alternatively, STI diagnosis and treatment has been integrated into pre-existing antenatal, family planning, post-abortion or less frequently, general outpatient services. Perhaps reflecting the underlying weakness of specialist STI services for adults in developing countries, only one example of a designated STI clinic that had been made adolescent-friendly was found among the various projects and programmes reviewed for this report (Mnari et al, 1999).

#### GEOGRAPHICAL OVERVIEW

Health-facility-based services for adolescents have existed in the USA and northern Europe since the 1960s and in Latin America since the 1970s. Only in the 1990s, have they also started to appear in Africa and, much less frequently in Asia (McCauley and Salter, 1995). In the Newly Independent States of the former Soviet Union, "youth gynaecology" services exist, which provide reproductive health services, including STI services. In recent years, efforts have been made to make these services user-friendly.

### Latin America

Hospital and clinic-based services for adolescents have existed in several Latin American countries, including for instance Brazil and Mexico, since the 1970s; yet the extent to which they handle adolescent STIs is not always clear in the materials reviewed. In Brazil, there are 11 adolescent referral centres, staffed by adolescent-health specialists and dealing with a wide range of issues, including psychological matters and sexual and reproductive health (L Hagel, personal communication, 1999). In some states, such as São Paulo, a range of adolescent health-care services exist, often providing comprehensive health promotion services and assistance to adolescents, clinical urology, gynaecology services and STI care (J R Ayres, personal communication). In Porto Alegre, an STI clinic for adolescents is combined with an antenatal clinic (F. Moherdaui, personal communication, 1999).

In Mexico, 259 specialized services exist altogether, including 179 health centres and 80 hospitals which serve only adolescents. Their main functions are pregnancy care, STI management and prevention of drug addiction. Lower echelon services are expected to refer adolescents to these specialist services (Secretaría de Salud, 1999). A number of adolescent health services also exist in Chile (Maddaleno, 1994) and in the main cities of Colombia (V. Chandra-Mouli, personal communication). In Lima, Peru, there are 10 hospital-based adolescent clinics, which were presumed to provide STI care (Webb, 1998), although according to other sources (Perez, 1999), specific reproductive health care services for adolescents were lacking. According to a report from La Paz, Bolivia, a hospital-based integrated reproductive health clinic for adolescents, with eight affiliated health centres in the periphery exist, which provide STI care (Ferrando et al, 1995). When the hospital expanded, there was no longer space specifically for adolescent services, however, and the need for a separate centre for young people was recognized.

Most adolescent-friendly adolescent reproductive health clinics in Central America are run by NGOs. In Tegucigalpa, Honduras, a clinic for pregnant adolescent girls was recently established, with the intention of providing a broader integrated service; in fact, this has not happened and STI services are apparently not available. A new GTZ project expects to strengthen health services for adolescents in the area, including for STI diagnosis and treatment (C. Perez Sarmaniego, personal communication, 1999). In Nicaragua, STI services were reportedly only available for adolescents

at clinics belonging to an NGO women's health programme in Managua (MSI, 1995).

### Africa

In Africa, efforts to establish adolescent-friendly reproductive health services are more recent, but, perhaps reflecting the greater importance of STIs in that region, STI services figure more prominently in project descriptions. In Uganda, a number of agencies, including UNICEF, UNFPA, USAID/DISH, DFID/CARE International, the Uganda Medical Association, the Association of Uganda Medical Doctors as well as other NGOs are all involved in supporting the provision of adolescent-friendly services in more than 20 districts (Ndyabangi, 1999). The largest project, PEARL, supported by UNFPA, has plans to expand to cover most districts in the next few years.

In Zambia, several agencies, including UNICEF, CARE, SEATS and IPPF have supported projects that aim to make existing public reproductive health services more adolescent-friendly, e.g. by establishing corners for young people in the clinics and hospitals, involving more than 20 health facilities in several urban and periurban districts. The UNICEF-supported adolescent-friendly services are linked to a maternal syphilis screening programme, whereas the other two projects have been built on existing family planning projects or are managed as general services for young people under the auspices of the District Health Management (Kumwenda-Phiri, 1999; I. Banda, 2000).

Zimbabwe is planning to follow the Zambian model by establishing corners for young people in district and provincial hospitals, but it was also pursuing other options. In Gweru, adolescent-friendly services were established at seven city clinics (Newton, 2000). Two ZNFPC (Zimbabwe National Family Planning Council) pilot clinics exist, which are, in fact, NGO-run multipurpose centres for young people. They will be reported upon in a later section. At the same time, the Ministry of Health is working on a national reproductive health strategy, which will consider the specific needs of adolescents and, perhaps, ultimately lead to the establishment of adolescent-friendly services on a larger scale (L. Gumbie, personal communication, 1999).

Efforts to make public sector reproductive health/STI services for adults more adolescent-friendly were also reported from other east and southern African countries, including Tanzania (AMREF, 1999a,b; AMREF, 2000; Mnari *et al*, 1998), Malawi (M. Mwale,

personal communication, 2000), Swaziland (M. Islam, 1998, personal communication) and Lesotho (S. Bowsky, personal communication, 1999). In South Africa, the Planned Parenthood Association (PPASA) and others are participating in the development of a “National Adolescent-Friendly Clinic Initiative” (PPASA, 1999). Among the essential services to be provided are information on STIs, dual protection strategies as well as syndromic management of STIs (Dickson-Tetteh et al, 2001). In Botswana, referral of adolescents by NGOs to trained public providers is considered as one of several service delivery options (Ndyanabangi, 1999).

As for west and central Africa, no public STI services designed for adolescents seem to exist in Nigeria (E. Okonofua, 1999, personal communication). A project in Port Harcourt in Oyo State has advocated the establishment of adolescent-friendly policies in existing public health services, and has also provided minimal services itself (L. Brabin, personal communication, 1999). Similarly, a GTZ-supported project in Bangui, Central African Republic, adopted a mixed government/NGO approach in which a new STI clinic was established in a multipurpose centre for young people, with the intention of working with selected public health centres in the city to upgrade their services (R. Külker, personal communication, 1998).

STI treatment services specifically designed for adolescents within integrated reproductive health services also exist in Ghana, Nigeria, Burkina Faso and Mali. Most are not upgraded public sector clinics but newly-established, stand-alone centres and clinics for young people run by NGOs. (These will be described in detail below.)

### Eastern Europe

Although “youth gynaecologists” have existed for a long time in eastern Europe and most services, including those for adolescents, were free of charge, they were not really user-friendly. Adolescent-friendly approaches, based on principles of confidentiality and non-judgemental attitudes towards adolescents, are now being adopted by a number of countries. The one with the longest experience and largest number of adolescent-friendly clinics is Estonia, with 15 clinics for young people, the first having been established in 1993 (Silma, 2000). These clinics were first initiated by local professionals, including midwives, gynaecologists and psychologists (K. Haldre, personal communication, 2000), and have been funded by a variety of external donors and local government. They aim to handle the problems of young people in a

holistic way, and include diagnosis and treatment of STIs among the services they provide. Whether they are located in hospital premises, women’s consultation clinics, polyclinics or free-standing clinics, they are usually managed independently (Silma, 2000).

More recently a small number of adolescent-friendly pilot clinics (one or two per country) have been established in Belarus, Ukraine, Russia and two Caucasus countries. In Ukraine in 1997, following recognition that the existing health-care system was designed to meet the needs of small children and adults, but ill-equipped to meet the needs of adolescents (UNICEF, 1999b), adolescent-friendly clinics were established in two cities, one of which became operational in early 1999 (O. Mykhyev, personal communication, 1999). The clinic is a multipurpose centre for young people, administratively linked to a municipal STI clinic and partially funded from the state budget and insurance funds, and with support from UNICEF (UNICEF, 1999b; Daniel, 1999).

In Russia, UNICEF and AVSC are supporting services for adolescents in four cities, one of them, Yuventa in St Petersburg, since the early 1990s. A UNDP project in Minsk, Belarus, “Improving the sexual culture of the population (safe sex) in the Republic of Belarus”, includes components addressing young people and STI management (UNDP, 1998). No reports of adolescent-friendly STI services were found from Latvia, Lithuania, or the south-east European countries.

### Asia

There seem to be few public STI services (or reproductive health services that provide STI care) specifically designed for adolescents in the Asia region, at least partly because premarital adolescent sexual activity, as well as STI treatment itself, remains stigmatized in most of the countries. In Indonesia and the Philippines, STI services are available at public hospitals, but are not designed specifically for adolescents (WHO, 1995e). A report from Nepal states: “There are no adolescent-specific services in Nepal” (Bhadra, 1998). There are, however, several public and NGO-run STI clinics for sex workers (many of whom are adolescents) and sometimes for clients, principally in Thailand, Cambodia and the Philippines. These countries have 100% condom policies and/or policies to ensure that sex workers in brothels are checked regularly for HIV and STIs. See for example Busza and Schunter (2001) who describe a clinic opened by Médecins sans Frontières in one of the main commercial sex districts in Phnom Penh in the early 1990s, where such testing is regular.

UNICEF has been supporting several user-friendly STI clinics in Myanmar, but they do not seem exclusively designated to serve young people (UNICEF, 1999). WHO has supported an adolescent STI clinic in Mongolia (B. Oyun, personal information, 2000), but no detailed information on the type of service was obtained for this review. Most other adolescent-friendly STI services in Asia seem to consist of a clinical service component of wider outreach programmes rather than public health facilities as such. Most are exclusively targeted at marginalized young people, such as sex workers, not for young people in general.

#### MAKING PUBLIC STI SERVICES ADOLESCENT-FRIENDLY

Adult services, whether for STIs alone or broader reproductive health services, are usually made accessible to adolescents by introducing adolescent-friendly approaches, surroundings and opening hours. Peer educators and counsellors are trained to mobilize and attract young people into these services. Providers are trained in adolescent-friendly approaches, sensitized to adolescents' sexual and reproductive health needs and in some cases trained in the delivery of STI diagnosis and treatment. Improved privacy and confidentiality are usually important topics (AMREF, 1999c; Kumwenda-Phiri, 1999; UNICEF, 1999b; Silma, 2000).

#### Training of providers in adolescent-friendly approaches

Adolescent health may be part of basic nursing and medical education, as in some Latin American countries, or part of post-basic training, as more recently in Africa and eastern Europe. In Brazil, clinical adolescent health is taught as part of the nursing and medical curricula, and includes adolescent cardiology, psychiatry, urology and gynaecology, as well as practical work in the community and in schools (e.g. Universidade do Estado do Rio de Janeiro). In Chile, too, there has been a degree of institutionalization of adolescent health programmes (Maddaleno and Gattini, 1995).

In other regions, NGO and donor-supported projects in Tanzania, Zambia, Zimbabwe and Ukraine have trained health professionals already working at public health centres, including doctors, nurses and health assistants in adolescent reproductive health (AMREF, 1999a; SEATS, 2000). Such training courses have often been initiated by agencies such as UNICEF. In Estonia, on the other hand, adolescent services were said to have emerged "spontaneously, because the need arose" (K. Haldre, personal communication, 2000). Some self-

motivated Estonian providers travelled to neighbouring Sweden or Finland to learn from their long-established adolescent health service provision; others, mostly those outside the major cities, learned about adolescent health issues through their own personal efforts (Silma, 2000).

In Tanzania, a comprehensive training manual, *Training of Health Workers in the Provision of Youth Friendly Reproductive Health Services*, was developed for the Mema kwa Vijana Project (Good Things for Young People Project) jointly conducted by AMREF, the National Institute for Medical Research of Tanzania and the London School of Hygiene and Tropical Medicine. Among the topics it covers are adolescent physiology (e.g. changes during puberty), adolescent sexuality, STIs, communication skills, gender sensitivity and the need for confidentiality (AMREF, 1999c). In Uganda, the Commonwealth Medical Association was originally instrumental in the development of materials and training.

#### Training of providers in STI diagnosis and care

While training in adolescent health in general is common, specific training in STI diagnosis and treatment for adolescents is hardly mentioned in training project reports and evaluations. Some programmes, including those primarily serving pregnant girls, seem to consist mainly of screening and laboratory diagnosis for syphilis, chlamydia and gonorrhoea. These include the adolescent clinic in La Paz, Bolivia (Ferrando et al, 1995), the special adolescent service of the STI outpatient clinic at the Mother-Child Hospital in Porto Alegre in Brazil (L. Hagel, 1999, personal communication), and the clinics for young people in Estonia (Silma, 2000). The majority of the more recently established adolescent-friendly clinic projects, however, have adopted the syndromic approach to STI case management and trained their providers in its use. This includes virtually all public service programmes in rural Africa (e.g. AMREF, 1999a,b), but also the UNICEF-supported projects in Ukraine and Myanmar. Some screen for syphilis, but diagnose chlamydia and gonorrhoea syndromically (e.g. Kumwenda-Phiri, 1999).

Among the large number of training curricula for reproductive health programmes for young adults, collected by FOCUS (2000), only one developed by FHI targets service providers and covers STI treatment. Some projects, e.g. the one in Mwanza, Tanzania, invite regional or national STI programme staff to provide STI-specific training. Training in STI syndromic case management is sometimes mentioned in adolescent

project reports, but the adaptation of standard STI case management practices to adolescents' needs is not. A paper by Brabin et al (2000) on "Tailoring clinical management practices to meet the special needs of adolescents: sexually transmitted infections" is one of the very few of its kind. It discusses such issues as including a chaperone during examination to make young people feel more comfortable, whether longer consultation times are required for adolescents than for adults and the need to adapt risk assessment scores. The evidence provided is limited, however; recommendations are either derived from the practice and experience of developed countries, some of which may be difficult to transfer to developing-country settings, or based on single studies. One study provides an adolescent-specific treatment flowchart tested in Nigeria, in which the usual order of syndromic management is reversed; it starts with the risk assessment followed by complaint/symptom evaluation (Obunge et al, 2000).

No information seems to be available about the STI-specific training of peer educators, except that they should refer anyone with STI symptoms to service providers. Neither is the role of monitoring and supervision of clinical aspects of STI services mentioned in the project reports reviewed.

### Involvement of adolescents in service planning and implementation

Various efforts have been made to involve young people in the planning and implementation of STI services. Ideally, studies of young people's knowledge and perceptions of STIs and treatment-seeking preferences would be carried out preceding project design and provider training, as happened in Zambia. When there was only "token involvement of young people in planning and design" (Newton, 2000), and ownership by young people was lacking, projects were unlikely to be sustainable.

A related but rarely discussed issue is whether the wider community, as well as adolescents themselves, have been sufficiently sensitized when projects are started. In Zambia, the sensitization not only of young people in the area but also of adult stakeholders, including local authorities and community elders, was an integral part of the first phase of a UNICEF-supported project (Kumwenda-Phiri, 1999). In at least one instance in Uganda, a religious group had initiated the service (Ndyabangi, 1999). Several project reports also mention outreach to schools or visits to the clinics for school children and their teachers (AMREF, 1999b; Monroy, 1997).

### Operational changes

While hospitals and clinics which have been made adolescent-friendly are disadvantaged compared to newly designed clinics for young people because they cannot change their location, they can, at least, ensure they have convenient opening times and an adolescent-friendly atmosphere. There are many examples of such efforts. A reproductive health clinic for young people in Dar es Salaam, Tanzania, for instance, has opening hours from 3–6pm on weekdays and 9–12am on Saturdays, whereas the general STI clinic runs from 8am–3pm on weekdays only (Mnari et al, 1998). The adolescent-friendly clinics in Zimbabwe also open at weekends (SEATS, 2000). In Senegal, longer opening hours in the afternoons have allowed young people to attend after school (A. Sy, 2000 personal communication). Convenient opening hours were also reported from Myanmar (UNICEF, 1999c) and Ukrainian clinics (UNICEF, 1999b). In Tanzania, regular young-people-only hours were not found to be workable in rural health units; hence, special hours were established only at district and regional hospitals (A. Obasi, personal communication, 1999).

Several reports also describe efforts to make services adolescent-friendly through various renovations, including separate reception and counselling rooms and improvements in clinic decor, e.g. the display of posters and the provision of media (Daniel, 1999; UNICEF, 1999b; Kumwenda-Phiri, 1999). Improvements in examination rooms have not been documented.

A recent review of mostly integrated (STI and FP) adolescent-friendly services in 15 countries stressed the importance of both central location and opening hours that are convenient to young people (MSI, 1999). To attract adolescents, STI services need to be located close to adolescents' place of work, study or recreation and open when young people are free to attend them (Brabin, 1998).

### Free services

Virtually all public sector clinic-based adolescent health projects and programmes that provide STI care reported that these services were free of charge. In Ukraine, not all young people were eligible for free treatment, but fees were always less than the cost of drugs at pharmacies (Daniel, 1999). Some clinics received drug supplies through donations, e.g. from UNICEF (Daniel, 1999; UNICEF, 1999c) or the European Union (EU) (AMREF, 1999b). In Mwanza, Tanzania, all 39 clinics involved in a pilot scheme

received drugs from the national regional/national STI programme, supported by the EU, as do many clinics in Uganda.

### 5.3 School-based health services and other school health service links

Over the past decade, many countries have recognized the value of the school setting for educating adolescents about matters related to sexual and reproductive health, and have initiated school-based education programmes of varying quality and coverage (WHO, 1998b; WHO, 2000c). However, relatively little published information is available about school-based health services in developing countries; far more is available on Europe and North America (WHO 1996; Birdthistle and Vince-Whitman, 1997).

Ideally, school health services should encompass the prevention of STIs and HIV, counselling and STI treatment or referral for treatment (WHO, 1996). According to Pathfinder International, however, school-based projects and programmes usually provide information and education but not services (Webb, 1998). A recent six-country study (WHO, 2000c) also confirmed that STI services are largely unavailable for school-going young people. In some countries, even university students have difficulties accessing STI services (WHO, 1996). It would appear that the lack of qualified professionals, resources, supplies and time all continue to limit provision of these services in developing countries (Kolbe, 1994; WHO, 2000c).

Furthermore, developing country ministries of education and other school stakeholders are rarely in a position to establish school-based health services on their own, and school-going adolescents therefore need to be referred to health sector facilities. Typically, health service staff visit schools and students are referred to specialist adolescent or other clinics. The initiative to provide young people in school with health services apparently comes more often from clinic staff or multisectoral NGO projects addressing young people rather than from schools.

#### GEOGRAPHICAL OVERVIEW

##### Latin America

A few school health clinics have been operating in Latin America and the Caribbean since the 1980s (McCauley and Salter, 1995). There is hardly any information on what they actually provide but it is unlikely that on-site STI services are included. In Chile, for instance, the school health programme is said to

address the needs “of a population who customarily do not seek medical consultation on their own”; this mainly includes screening for dental and eye problems but also genitourinary problems. Any STI cases detected are referred to a neighbourhood clinic for adults or an adolescent health clinic. (Maddaleneo, 1994). In Costa Rica, interviews with parents, teachers and adolescents themselves indicated an almost complete lack of access to reproductive health services, public or private, including STI services for school-going adolescents (Arjona, 1998).

##### Africa

School health services were said to have been established during colonial times in several countries in West Africa, but a recent evaluation showed these services to be rudimentary (Brew-Graves, 1995; Nebout, 1995; Ministère de la Santé, Togo, 1995). In Togo, for example, very few schools had medical kits at all, and even where kits were found they were often empty. School teaching staff were not trained in first aid, and there was no school nurse. Only 16% of primary schools had received a visit from a health assistant in 1994, and that was exclusively for vaccinations and minor ailments (Ministère de la Santé, Togo, 1995). In Ghana, the situation was somewhat better, but there was a lack of coordination between the school health services and other service providers, which was also true in other countries (Bey-Grewes, 1995).

In Côte d’Ivoire, school and university health services were irregularly distributed in the mid-1990s, and almost non-existent in the interior of the country. There was a lack of qualified staff, and pupils and families were not able to pay for drugs (Nebout, 1995). Reforms in 1994 did away with or transformed most of the existing clinics into general primary health-care (PHC) facilities. More recently, however, there has been new emphasis by the Government on adolescent health care, and international donor support has allowed some of the remaining PHC facilities to re-establish reproductive health services (including STI care) for pupils (E. Hoekstra, 2000, personal communication). One older published report mentions that STI cases were treated at a school-based clinic in Cote d’Ivoire (Dogoré et al, 1989). The strengthening of the school health service system is currently also being considered in Senegal (A. Sy, personal communication, 2000).

In east Africa, the provision of STI services in schools seems to be rare and not supported by official policy. Parents and school authorities are resisting the setting

up of services for adolescents because of the notion that such interventions make adolescents more interested in sex (Ndyanabangi, 1999). None of the training curricula for teachers developed in the region seems to have included a reference to syndromic STI case management (FOCUS, 1998). In Botswana, the school health programme does regular screening and provides health education, but no treatment services are included. A few individual school administrators and teachers have shown interest in establishing adolescent health services, in studies in Malawi (WHO, 2000c) and Zimbabwe (ZNFPC, 1996) but to date no such services exist in these countries.

Some university clinics do provide reproductive health services, however, including for STIs. University health programmes in Dar es Salaam and Nairobi provide STI diagnosis, treatment and education, along with family planning services (Webb, 1998). In Tanzania, the clinic was initially for faculty, students and the public, but it was soon realized that students would only attend a separate facility (Webb, 1998). In Tunisia, university students did not have access to health services, but usually went to private practitioners or to clinics some distance from their homes, for fear of being recognized (WHO, 2000c).

### Asia

Reproductive health services, including those for STIs, do not seem to be available for school-going young people in Asia. In Sri Lanka, a school health programme was starting to be implemented, but services and health products were not available in schools in the district assessed, though the inclusion of service delivery was being discussed (WHO, 2000c). In Bangladesh, too, a pilot school health project is to be implemented in 8000 schools, initially with limited curative services, first aid, immunization, nutrition and basic education about STIs and HIV (Pratomo, 1999).

School health services are not available in Malaysia, and adolescents are referred to the nearest health centre (WHO, 2000c). Furthermore, school administrators and teachers interviewed did not particularly welcome the idea of establishing reproductive health services at schools (Ministry of Health, Malaysia, 1998). In China, the only adolescent-specific health services available are school-based and university clinics, but young people who present with the signs of symptoms of STI, would probably be considered as having had illegitimate sex and risk expulsion (B. Stewart, 1999, personal communication).

### Eastern Europe

Bulgaria was the only country in the region where school health services seemed to exist in principle, and STI service provision in school clinics was not categorically ruled out, but in reality, no sexual and reproductive health services were provided (Ministry of Health, Bulgaria, 1998). School doctors suggested that future improvements in service delivery could include a continuation of services during vacations and an increase of financial resources and the distribution of contraceptives, but school administrations objected to the provision of reproductive health services and suggested the establishing of adolescent-friendly clinics outside the school system.

In the Newly Independent States of the former Soviet Union, many public universities have student clinics which provide STI services, including screening and case management, but excluding syphilis treatment, which remains in the domain of specialist venerologists.

### North America

Much of the experience with school-based health services has been in the USA. The number of school-based reproductive health clinics in the USA has increased from 327 in 1991 to 947 in 1996 (McCauley and Salter, 1995; Birdthistle and Vince-Whitman 1997; Senderowitz 1999). In a study of 607 clinics in 1994, 64% of which were located in schools and the remainder near schools, 85% were found to offer contraceptive counselling, more than 70% performed gynaecological exams and offered STI diagnosis and treatment, and 39% offered HIV testing (AFY, 1995). These services have mainly “evolved to provide young people with services in an environment that is easily accessible and overcomes many of the barriers that young people face in accessing traditional medical services” (Birdthistle and Vince-Whitman, 1997).

### REFERRALS FROM SCHOOLS TO HEALTH SERVICES

The initiative to create a link between schools and health-care services more often seems to be taken by public and NGO-run clinics than by schools, and the links may be formal or informal. In Malaysia, a formal arrangement between schools and health clinics appears to exist (WHO, 2000c), whereas in Bulgaria, Malawi and one setting in Madagascar, links appeared to be more informal. In several of these cases, however, although young people were being referred by the schools, few efforts had been made – by those referring young people – to ensure that the health services they were referred to were adolescent-friendly (WHO,

2000c). In Malaysia, for instance, adolescents found procedures at one clinic too bureaucratic and suggested that there should be a special room for them, and perhaps a health club, library or other resources that would make the clinic more attractive to young people. Many young people preferred to get STI treatment from pharmacists because no appointment was required. In the district of Mchinji, Malawi, service providers had had no special training in adolescent health, and adolescents referred from the schools said they felt ill at ease, shy and tense (WHO, 2000c).

In Chile, in contrast, where there was a formal referral system between school health programmes and health services, school-going young people did have access to specialist care (Maddaleno, 1994). In one project in Peru, a school-linked health centre had trained their staff in dealing with students, including training for STI care (Perez, 1999).

In Mexico, during the initial stages of the development of the Centro de Orientación para Adolescentes (CORA) programme, young people said they did not want sexual health services to be provided in the school setting because they already spent a lot of time at school and thought that their teachers would not be open enough to talk about these topics. Additionally, they feared that teachers might find out that they were sexually active. CORA, therefore, decided to combine visits of health-care staff to schools with training of these staff in adolescent-friendly approaches (Monroy, 1997).

#### **5.4 Stand-alone adolescent reproductive health clinics, multipurpose centres for young people, community-based and private STI services**

Adolescent reproductive health/family planning clinics, multipurpose centres for young people with strong educational and recreational components, and community based programmes have been established outside both the public health sector and schools, and are mostly NGO run. The degree to which STI service delivery is given importance in these projects varies, depending mainly on the extent to which the integration of STI services into adult family planning services has taken place alongside them (Dehne and Snow, 1999).

Many of these clinics/centres are run by national family planning associations and are almost exclusively located in national or provincial capitals. Some are adult

services which have added an adolescent component, while others are newly-established adolescent clinics. As with other reproductive health and STI programmes for adolescents, independent adolescent clinics and centres seem to be more common in Latin America and Africa than in Asia and eastern Europe, where only a small number have emerged. Some community-based programmes also provide STI services or refer clients for treatment elsewhere. Only a few private sector services for adolescents were identified.

### **ADOLESCENT REPRODUCTIVE HEALTH CLINICS**

#### **Latin America**

In Colombia, adolescent-friendly corners have been established in clinics run by Profamilia, an IPPF affiliate and the largest reproductive health service provider in Colombia, while in a handful of cities, specific stand-alone adolescent clinics exist (Profamilia, undated). In 1999, the Centro Médico de Orientación y Planificación Familiar (CEMOPLAF) in Ecuador was in the process of establishing adolescent-only services at their existing clinics. An adolescent-friendly clinic providing STI care, called El Camino, has existed in Guatemala since the early 1990s (Paxman, 1993; Mugrditchian, 1999, personal communication). In Jamaica, the existence of a comprehensive adolescent clinic with services for family planning, reproductive health and STIs has also been documented (Vadies and Clark, 1990).

In other Latin American countries, little is known about the range of services provided in NGO-run clinics for adolescents, including whether STIs are treated on site or referred. A recent worldwide review suggests that most STI cases are referred to specialist STI services, even though these may not be adolescent-friendly (Dehne and Snow, 1999).

#### **Africa**

The number of NGO-run adolescent reproductive health clinics in Africa is increasing. Almost all IPPF affiliates in the African region have started STI prevention services, at least in their central model clinics, and the availability of STI treatment is also expanding (G. Oodit, 2000, personal communication). Many IPPF affiliates have also either created corners for young people or instituted adolescent-friendly approaches in existing clinics or, more frequently, have established independent clinics for young people. The Zambia Family Planning Association, for instance, has trained providers at two of their clinics in adolescent-friendly approaches, with an emphasis on the

importance of privacy and confidentiality. Countries where family planning associations have established stand-alone clinics for young people include South Africa, Burkina Faso, Ethiopia, Swaziland and Uganda (G. Oodit, 2000, personal communication). Some provide STI care, others do not.

NGOs other than IPPF affiliates that have established adolescent reproductive health centres and do provide STI care include Marie Stopes International, for instance, in Ethiopia and Malawi (MSI, 1999), the Youth Development Foundation in Ghana (YDF, 1998) and the Association for Reproductive and Family Health in Nigeria (AFRH, 1998).

### Asia

NGO-run adolescent reproductive health clinics in Asia are rare, and most adult clinics do not provide STI care (Dehne and Snow, 1999). A project in Indonesia run by the Indonesian IPPF affiliate, did provide STI treatment, including services for young gay men one evening a week, and was the first adolescent clinic in Jakarta (Webb, 1998; Pathfinder International, 2000a). Unfortunately, no detailed project description or evaluation was available. An MSI clinic specifically designed for adolescents in Mongolia may also provide STI services (MSI, 1999). Most other services in Asia seem to follow a targeted community-based service rather than an integrated FP/STI clinic model (see below).

### Eastern Europe

In most eastern European countries, an independent health sector does not yet exist, and NGOs have remained weak. Clinics and centres for young people are mostly linked with the public health sector, though they have gradually been developing many of the features of the newly established clinics/centres for young people described here.

### Operational characteristics

NGO-run adolescent reproductive health clinics have located in places convenient for adolescents to reach, trained their staff in adolescent-friendly approaches, trained peer educators, established opening hours convenient for young people and decorated their premises to make them attractive to adolescents. Clinics for adults have established corners for young people or young-people-only consultation times. These include the satellite clinics of a project in Nigeria (AFRH, 1998), services in South Africa and the MSI clinic in Mongolia (MSI, 1999). The strategic location of a clinic/centre for young people is also mentioned in a report from Jamaica (Vadies and Clark, 1990).

Newly established clinics have made efforts to recruit staff who already had adolescent-friendly attitudes and were young themselves. The recruitment of staff who were close in age to that of clients has, for instance, been reported from Ghana, Mali and Swaziland (V. Joret, 1999, personal communication; K. Nkonde, 2000, personal communication; Boakye-Yiadom, 2000, personal communication).

Some clinics for young people, e.g. those affiliated with family planning associations in Burkina Faso, Kenya and Zambia, had basic laboratory facilities to conduct wet smears and syphilis screening tests. Others, for instance the Ghana Family Planning Association clinics, El Camino in Guatemala and a project in the Dominican Republic, had trained staff to rely fully on the syndromic approach (Boakye-Yiadom, 2000, personal communication; D. Mugrditchian, unpublished data, 1999; FHI, 1998). The Association Burkinabé pour le Bien-être Familial (ABBEF) in Burkina Faso was training its providers in the syndromic approach to STI case management in 1999, but also had access to some simple laboratory tests off-site (Zoungrana, 2000).

### MULTIPURPOSE CENTRES FOR YOUNG PEOPLE

Multipurpose centres for young people might be described as extended adolescent reproductive health clinics with strong non-health-related components. They, too, have often been established by family planning associations. The degree to which clinical services are provided varies, including services for STIs. Centres for young people are either stand-alone centres or located near clinics, usually in urban areas.

Some centres were set up because public sector services for adults were considered unsuitable for upgrading or, sometimes, because public sector service providers objected to including adolescent services in their clinics. In the Central African Republic, for instance, public services were considered unsuitable as the sole providers to care for adolescents, although efforts to upgrade them was one of the project's objectives (R. Külker, 1999, personal communication).

The centre in Mopti, Mali, was also established after existing public services were found to be unsuitable to serve young people, and was carried out in spite of the opposition of health and education authorities. In the words of the person responsible for it: *“Our major challenge was to have the centre accepted by the local authorities and the (public) health centres of the city, who feared a loss of earnings. They saw in the centre a patent sign of the*

*lack of adhesion of the population to their services*" (V. Joret, 1999, personal communication).

In Addis Ababa, Ethiopia, too, a local NGO-run centre for young people was seen as a thorn in the side of the governmental health services.

### Recreational, vocational and educational facilities as well as health services

Most centres for young people have tried to combine health services, mainly contraceptive services, with social, educational and recreational facilities, whether to serve the needs of young people in a comprehensive manner or as a means of promotion of family planning/reproductive health.

As the leader of a GTZ project in Honduras, for instance, stated: *"The vision is to create a space outside health and education sectors where the youth can come and have access to information, counselling services and entertainment* (C. Perez Samaniego, personal communication, 1999).

On the other hand, non-health-related services may be added due to political opposition to reproductive health services to young people (Webb, 1998). El Camino in Guatemala, for example, proposed to *"immerse contraceptive education and services in a pool of social and recreational services"* (Paxman, 1993) in order to counter criticisms of the family planning component of the project at the time. El Camino's multifaceted approach included: counselling, outreach, education, medical services, including STI services, contraceptive provision, recreational activities, vocational courses, dental services, tutoring programmes, a library and a small shop (Paxman, 1993).

The comprehensive adolescent reproductive health project in Jamaica organized sports events, including soccer, basketball and track competition for its mostly female attenders, but otherwise seemed largely to retain the characteristics of a health service (Vadies and Clark, 1990). Profamilia's centres for young people also seemed to focus on sexual health promotion rather than on issues that concern young people more generally (Profamilia, 1996). The model multipurpose adolescent development centre of AFRH in Nigeria, too, implemented a wide range of non-health related activities, including educational activities, career counselling, vocational training, sports and other recreational activities as well as income generation projects. Nevertheless, its purpose was *"an avenue of reaching youth with sexual and reproductive health services created by complementary activities"*. Similarly, the ABBEF clinics in Ougadougou and Bobo-Dioulasso (Blankhart, 1997;

Zoungrana, 2000) have kept a family planning focus. Many of the African centres for young people are in fact clinics, but downplay the medical or clinical aspects of their services. This was the case, for instance, in the township network of centres for young people offering FP and STI services in Johannesburg, South Africa, where clinics are called "youth information centre", and are not furnished like clinics (Transgrud, 1998). Although most offered some form of entertainment, such as recreational and educational videos and health literature, other requests, for example, for a sports field and a multipurpose community hall, could not be fulfilled by these projects (Transgrud, 1998). Similarly, the 'centre for young people' in Mopti, Mali, which was established after a survey found that young people distrusted the official structures for STI treatment or FP, was in fact a clinic (V. Joret, personal communication).

Several NGO service projects, mostly in Africa, explicitly mention links to schools. One project in Nigeria, for instance, decided to establish satellite clinics, one of them next to a school, when they realized that the location of the main clinic was not accessible because there was no means of transport for adolescents to reach it (ARFH, 1998). In South Africa, the Planned Parenthood Association conducted an assessment of adolescent health service needs in a suburban area and produced a detailed mapping of the places where young people tended to go, including schools, before designing new services for them. In another NGO project, in Nigeria, mobile clinics visited schools and provided, on a drop-in basis, counselling and treatment for minor illnesses, and referred students with STIs and other reproductive health problems to a comprehensive clinic for young people (AHI, 1998).

Clinical facilities may be included within multipurpose centres for young people or side by side with them. In Bangui, Central African Republic, for instance, a centre was built into an integrated health post (R. Külker, 2000, personal communication). In Gaborone, on the other hand, a pre-existing centre for young people opened a clinic for young people, offering a range of services, including those for STIs (Ndyanabangi, 1999). Similarly, in Eritrea, a combined recreation/health centre was set up as part of a larger project of the National Union of Eritrean Youth and Students, which focuses on IEC activities (Newton, 2000).

In Swaziland, the centre for young people, run by a committee of volunteers, consists of a recreational area, an information room and a clinic (K. Nkonde, 2000, personal communication). The Ghana FPA has

established two different types of services for young people: centres for young people, which organize recreational activities, and teen clinics, to which young people can be referred without transport difficulties. Some of these centres have not only libraries and games rooms, but also examination rooms and rooms for counselling on site (Boakye-Yiadom, 2000, personal communication). Similarly, the pilot guidance and counselling centre for young people of the Cameroon National Association for Family Welfare, which offers recreational facilities and library services, is located next to a model family planning clinic, which provides STI testing (Ndyabangi, 1999).

In some cases, the provision of educational and recreational opportunities seems to have been or become more important than health service delivery. For instance, the CORA multipurpose adolescent centres in Mexico provided a range of educational, recreational and counselling services, but adolescents with an STI apparently had to be referred elsewhere (Monroy, 1999). Similarly, some of the YDF centres for young people in Ghana were focal points for peer education and provided entertainment as well as counselling and non-clinical contraceptive services, while STI patients were referred elsewhere (YDF, 1998). Equally, at the (well-documented) multipurpose centres for young people run by IPPF affiliates in Ghana, Kenya and Zimbabwe, the recreational and educational activities were more important than health services (Glover, Erulkar and Nerquaye-Tetteh, 1998; Erulkar and Mensch, 1997; Phiri and Erulkar, 1997).

#### COMMUNITY-BASED STI SERVICES AND REFERRALS

Most community-based and outreach programmes have aimed to improve STI referrals, through arrangements with a range of public and NGO service providers, rather than provide STI services themselves. A few have started providing mobile or street-based services or established clinics at non-conventional sites. Most serve particularly vulnerable young people, and, compared with other service delivery models, a larger number of such services are located in Asia.

An MSI programme in Ethiopia has a strong referral system for young people out-of-school to get free STI services. An NGO in Tamil Nadu, India, the Rural Integrated Development Organization, is working mainly with young truckers and sex workers, and refers clients suffering from STI symptoms to public services (L. Babu, personal communication, 1999). The Thai Red Cross AIDS Research Centre offers free STI and HIV testing (and referrals) to male adolescent sex workers (J. Howard, personal communication, 1998).

Few projects and programmes manage STIs in the community, however, and where they do, STI service delivery often continues to take place at facilities that are recognizable as “clinics”. For instance, in Nigeria, satellite clinics were established in an area frequented by young people on the street, hawkers, sex workers and truck drivers, in addition to the main clinic located in the NGO’s premises (AFRH, 1998). The Youth Development Foundation Street Youth Programme in Kumasi, Ghana, created its own weekly STI clinic serving street kids with free diagnosis and treatment of STIs, after referrals to public services proved unsuccessful. A similar STI clinic also exists at Agboghloshie market in Accra (YDF, 1998). In Mopti, media and grassroots workers such as community-based distributors of contraceptives (CBDs) had created a demand, but the public services referred to were not used; so the clinic/centre for young people was established (V. Joret, personal communication, 1999).

Other reports mention mobile services or unconventional service delivery points. An NGO in Mumbai provides STI care to young people through a mobile clinic which goes to a red light area at fixed days/times to cater mainly for sex workers and their clients (IS Gilada, personal communication, 1999). The Don Bosco shelter in the same city organizes street fairs once a month, where street children are encouraged to consult doctors. This provides a strong linkage between hospitals and street children, “emphasizing street-based rather than centre-based health interventions” (DFW, MOH and FW, 1998). In Swaziland, the FPA performs outreach by means of a mobile clinic to an industrial site (K. Nkonde, 2000, personal communication). In a project proposal for Zimbabwe, a combination of STI service outlets was suggested. One existing private and two public service points as well as a mobile nurse seeing clients on the premises of certain schools was deemed the most appropriate mix (ZNFPC, 1996).

Perhaps a unique example of an innovative community-based STI care project implemented by a public service rather than by an NGO was in a border area in Vietnam supported by UNICEF, which provided home-based STI services to young, high-risk women. A mobile STI team trained village health workers in STI diagnosis and treatment, communication and counselling skills. As high-risk young women were not going to the district clinic, the mobile STI team began visiting villages and, together with village health workers, carried out STI

diagnosis and treatment. The village health workers then followed up with support and treatment at home (Phan Ti Le Mai, 1999, personal communication, 1999). In the USA, a street-based screening programme, testing urine for chlamydia and gonorrhoea and giving single-dose treatment to high-risk children, has been piloted (DeLisle and Wasserheit, 1999). No further published details of the STI care or other health services provided by these projects were available.

### Peer promotion and outreach

Most projects for which detailed information was available had trained peer educators or counsellors to stimulate awareness among young people about the risks and symptoms of STIs and encourage them to use STI and other reproductive health services (CARE, 1999, UNICEF 1999b,c, AMREF, 1999b; SEATS, 2000). In Botswana, peer educators working for NGOs would refer adolescents to the public clinics (Ndyanabangi, 1999). In addition, in Ukraine, Zambia, Zimbabwe, among other countries, corners for young people were established on public health facility premises and staffed by trained peer counsellors, who then, if necessary, referred attending young people to trained care providers within the same clinic compound (CARE, 1999; UNICEF 1999b; SEATS, 2000).

CORA in Mexico employed young “satellite” peer promoters who went into communities to visit strategic places where adolescents met and introduced them to the health services because they were not attending health centres on their own (A Monroy, personal communication, 1997). In Botswana, a large number of NGO peer educators have been trained, and referrals of adolescents by NGOs to trained public providers are considered the main strategy for ensuring adolescents get reproductive health services (Ndyanabangi, 1999).

Some NGOs go to considerable lengths to ensure that adolescents are able to access health services. In India, for instance, NGOs working with street children provide the children with adult escorts to hospitals and assist them in fulfilling the formalities; it is only through good and continuous contacts with personnel at particular hospitals that street children get a decent quality of health care (Pratomo, 1999). In many other projects for street children in Africa, Asia and Latin America, similar efforts are being made (WHO, 2000b).

One adolescent-friendly project in Mwanza mobilizes adolescents in schools to stimulate early care-seeking. In Ougadougou, Burkina Faso, staff of one project

addressing young people conducted a variety of IEC activities in schools and centres for young people in several suburbs, and encouraged the use of their clinic during these activities (Blankhart, 1997). A project in the Dominican Republic involved parent-teacher associations and young people themselves as health messengers (FHI, 1997).

### PRIVATE SECTOR STI SERVICES

Another approach to STI service delivery is exemplified in attempts to make private services more available and affordable for adolescents. Only a very small number of private sector projects were identified in our review, however, and most were targeted at the general (male) public rather than specifically at adolescents.

Several recent projects have aimed to improve the quality of syndromic STI case management on the part of pharmacists and traditional or private practitioners. In Thailand, AIDSCAP and PATH piloted a project which aimed to upgrade STI prescribing skills of drugstore personnel. A parallel information campaign was launched to encourage military personnel and young people, including pharmacy students, to seek appropriate care (Mendoza and Chinvarasopak, 1996). In Ghana, training was provided for 210 community pharmacists (Addo Atuah and Nzambi, 1998). In addition, mass media campaigns sought to increase awareness of STI signs and symptoms and to motivate patients to seek care from trained providers (Cabal et al, 1998). More than 600 private practitioners were trained in one project in Jamaica (Green et al, 1998).

As quality of STI care in private sector was often poor and either incorrect doses or ineffective drugs were prescribed, some projects have combined the training of providers with the marketing of pre-packaged drugs in standard doses, at subsidized prices. The first such project, initiated in Cameroon in 1993, aimed to distribute pre-packaged STI drugs together with condoms and partner referral cards, mainly to military personnel and students via both public providers and a few private pharmacies (Crabbé et al, 1996). In the Philippines, STI providers from public, commercial and charitable agencies in eight large cities were trained and STI pre-packaged drugs distributed through 80 pharmacies in those cities (Castro, 2000). A project in KwaZulu Natal in South Africa has been distributing STI pre-packaged drugs through both public and private clinics (Wilkinson et al, 1999). Finally, an STI kit in Uganda is being socially marketed in clinics, pharmacies and retail drug stores (Ochwo et al, 2000; Kambugu et al, 2000).

However, in the Cameroon project, the authorities restricted distribution of these drug kits largely to public sector clinics (probably not adolescent-friendly) and a few private pharmacies, at a retail price of \$US 17 (Crabbé et al, 1998). In the Philippines, the adult men and women interviewed reported that they would be willing to pay about half of the real costs of treatment (Castro, 2000). This raises questions of access and affordability, especially for young people.

Other projects, in Kenya, Zimbabwe and Nigeria aimed to strengthen private doctors' willingness to treat adolescents with STIs, and have introduced innovative referral and subsidized payment schemes (ZNFPC, 1996; AFRH, 1998; Erulkar, 1997). In Botswana, for instance, teachers, pharmacists and shop owners were trained to talk to adolescents about reproductive health, including STIs, and to refer them to public sector services (Ndyanabangi, 1999). Other projects combined referrals with subsidized service delivery via the use of coupons. In Nyeri, Kenya, it was planned that young people who required reproductive health services would be referred to service providers who were specially trained by the project. Young people would be sent to the providers with a coupon, and the services would be subsidized jointly by the provider and the Family Planning Association running the project (Erulkar, 1997). In Zimbabwe, too, there were plans to establish a coupon system. An identification card with an adolescent project logo on it would be given to any adolescent referred to collaborating health facilities and private doctors. The coupons would enable them to get free treatment (ZNFPC, 1996). In Nicaragua, vouchers for free STI treatment at a variety of private, public and charity providers were distributed to young sex workers and their clients at prostitution meeting sites (Gorter et al, 2000).

## FINANCING

Public health or education sector services by definition should be sustained by national health budgets, yet several projects and programmes reviewed, including in Myanmar, Tanzania, Ukraine and Zambia, were nevertheless being financed by outside donors (AMREF, 1999b; AMREF, 2000; Kumwenda-Phiri, 1999; UNICEF, 1999; UNICEF, 1999). NGO-run STI subsidized and private sector based services for adolescents, in contrast, have had to identify new and innovative ways of covering STI treatment costs, as adolescents are unlikely to be able to afford the treatment.

In a number of sites, including some West African projects and the Profamilia clinics in Colombia, adolescent reproductive health services in general and adolescent STI treatment services in particular were subsidized. This was done either through donor support or cross-subsidy by other services. The Kenyan Family Planning Association, for instance, reports that STI drug kits are provided to some clinics through the Ministry of Health's STI unit which apparently ensures that stock-outs are rare (Erulkar, 1997). Similarly, NGO projects in Uganda (Lubanga, 1997) and Botswana (Ndyanabangi, 1999) received drug supplies from national or municipal programmes.

In Ibadan, Nigeria, indigent young people requiring services were given credit facilities to pay, especially if they came for follow-up treatment. This arrangement reportedly removed treatment delays and discouraged ineffective self-medication using drugs purchased from medicine stores (AHI, 1998). Another innovative project in Port Harcourt, Nigeria, used the profits from a private laboratory diagnostic facility to subsidize STI services (ARFH, 1998). Profamilia subsidized its centres for young people from its services for adults. In Mopti, Mali, the consulting fee was minimal, and treatment was with generic drugs purchased through a revolving fund.

## Measuring success

Monitoring and evaluation are critical to the long-term success of any health programme, and particularly critical for assessing the potential value of new approaches, including models of STI services for adolescents. Unfortunately, because adolescent reproductive health services have been neglected generally, the development of suitable indicators and targets has lagged behind.

### 6.1 Indicators and targets for evaluating STI services for adolescents

At the International Conference on Population and Development + 5, a meeting to evaluate the extent to which the conference's Programme of Action had been implemented, the consensus document stated: "... governments should ensure that by 2015 all primary health care and family planning facilities are able to provide, directly or through referral, the widest achievable range of safe effective family planning and contraceptive methods, essential obstetric care, prevention and management of reproductive tract infections, including sexually transmitted diseases, and barrier methods to prevent infection" (UN, 1999b).

However, although the report of the UN Secretary General called for intensified action as part of this same process, it defined reproductive health indicators only in five priority areas, which did not include STI care, and it also did not specifically mention adolescents (UN, 1999a). Similarly, neither WHO's (1997d) minimal list of 15 reproductive health indicators, nor more recent WHO lists have included any adolescent-specific indicators, let alone global targets, for adolescent STI care delivery (WHO, 2000d). Global STI service targets therefore do not exist.

#### INDICATORS PROPOSED FOR STI SERVICES AND FOR ADOLESCENT-SPECIFIC HEALTH SERVICES

A set of STI indicators, from which integrated reproductive health programmes and projects might choose has been proposed by the STI/HIV Subcommittee of the Evaluation Project in the USA (Dallabetta and Hassig, 1995). These include:

- service output indicators (e.g. the proportion of providers technically competent in performing STI screening and diagnosis or the proportion of clients correctly managed for STIs)
- service utilization indicators (e.g. the proportion of patient visits to a reproductive health clinic during which STI services are provided)
- intermediate outcomes (the proportion of adults practising care-seeking behaviours that reduce STI infection; the proportion of the population who accurately perceive the risk of acquiring STIs)
- long-term outcomes (e.g. STI prevalence in a defined target population).

The Adolescent Subcommittee of the same Evaluation Project proposed specific service output indicators for adolescent health services (Stewart and Eckert, 1995), including:

- the proportion (or number) of staff and volunteers trained in adolescent-specific approaches
- the number (or proportion) of health posts specifically serving adolescents
- the volume of adolescent-specific services provided
- the number of contact hours with adolescents, and
- the socio-demographic characteristics of the adolescents receiving the services.

No specific intermediate or long-term outcome indicators immediately relevant to STI care (such as the prevalence of STIs in a given adolescent population or the frequency of serious sequelae such as PID) were proposed. Instead, it was recommended that adult indicators should be used or adapted.

The most comprehensive and potentially useful list of indicators for evaluating adolescent reproductive health programme design, quality, implementation and outcomes has been compiled by Adamchak et al (2000). The various indicators are based on service delivery approach and include whether STI care is provided at centres for young people, the utilization of health facilities by type of service (including STI care), and a series of possible outcome indicators. However, there are important omissions in that the adequacy and consistency of STI drug supply,

adolescent-specific training of providers in syndromic STI management, on-site STI care in community-based projects and social marketing of STI drugs are not covered.

#### EFFORTS MADE TO MONITOR AND EVALUATE STI SERVICES FOR ADOLESCENTS

The first step for public sector, NGO or private sector projects and programmes, whether at national or local level, would usually be to add any appropriate STI indicators to traditional lists, which for adult services are often dominated by family planning indicators (Dehne and Snow, 1999). Projects and programmes that have made efforts to make existing STI services adolescent-friendly would also have to disaggregate routinely collected service data and other user characteristics such as gender, sexual activity and schooling status by age. As the Report of the Ad Hoc Committee of the 21<sup>st</sup> Special Session of the World Health Assembly states: *“ensure the availability of age and sex disaggregated data, which are crucial for translating policy into strategies”* (UN, 1999a).

Furthermore, indicators of the quality of patient-provider interaction, for instance, and of the impact of services would have to be measured in specific surveys.

In reality, except for a few individual project evaluations and surveys, this has rarely happened. Few national governments have adapted routine monitoring tools to assess combined STI and family planning (FP) services, or systematically collected separate data on STIs among young people. Virtually none seems to have done both to date. A large-scale FP/STI integration programme in Kenya has merged logistic systems and a similar integration of logistics systems was being planned in Guinea and Zambia, so data from the joint monitoring system should become available (Dehne and Snow, 1999). Nevertheless, the same Ministries of Health still disaggregate prevalence of disease and service utilization into two age categories only – children below the age of five and all others. Even in Zambia, which has one of the strongest adolescent health programmes in Africa, a recent revision of the national health management information system did not lead to further disaggregation of data by age (Kumwenda-Phiri, 1999). Several key reports (e.g. Pratomio, 1999) and key informants for this review have said that it is not easy to obtain age-disaggregated data, as reproductive health services tend to be integrated into mainstream services, and also that adult data measurements are themselves not disaggregated.

In the meantime, individual adolescent projects and services have started developing their own evaluation frameworks, even if STI care is not always given due attention. Most initiatives to date attempt to measure “adolescent-friendliness” rather than the quality and range of services (WHO, 2000a). Those public and NGO programme descriptions that do explicitly mention STI care very rarely attempt to measure how improvements in overall service quality have or have not led to improvements in STI clinical skills and the performance of STI care providers. Private sector projects, whose main objective is to improve STI case management, use indicators accordingly, but rarely include adolescent-specific data in their results. A few projects have monitored the number of adolescents diagnosed and treated, but data quality has generally been poor, e.g. age categories and time periods are not specified. In terms of service quality, few projects have documented how they have, or intend to, put into operation the measurement of the criteria they have selected (WHO, 2000a). Others have carried out evaluations using client exit interviews and mystery patient investigations. Impact surveys and cost-effectiveness analyses have been rare.

The WHO schools health services project, for instance, now moving from the initial assessment phase into the response phase, is using both output indicators (e.g. the number of sensitization meetings) as well as coverage indicators (e.g. the proportion of school doctors who have undergone training) to assess its success. STI care is not considered a standard service element, however, and an increase in STI coverage is therefore unlikely to be documented (WHO, 2000c).

One of the few initiatives identified that includes a strong STI service relevant evaluation component is the South African Adolescent-Friendly Initiative. It offers STI care as one of its essential services and will carry out external clinical assessments of implementation of standards related to management systems, appropriate services, physical environment, availability of drugs and other supplies, Information Education and Communication, staff training, adherence to guidelines and protocols, and also on interviews with managers, staff and patients and observation of patient-provider interactions (Dickson-Tetteh et al, 2001).

## 6.2 Calculating population coverage of adolescent-friendly STI services

There are different ways of calculating indicators of coverage, depending on which geographic or

administrative units are used as denominators, whether the whole or a segment of the adolescent population in a given target area is considered, and which specific services are included. Given the pilot nature of most existing adolescent programmes and projects, few thought they had as yet reached a sufficient scale to make any considerations of coverage meaningful. Therefore, no progress reports or evaluations were found that estimated the number of adolescents at risk or already infected with STIs, the expected incidence of new STI infections or the proportion of those likely to be treated. Some project reports have, however, estimated the proportion of administrative units with adolescent-friendly services more generally, or the proportion of young people in a given target area in contact with them.

### NATIONAL COVERAGE

In various countries, including in Botswana, Mexico and Zambia, steps have been taken to achieve at least a measure of national coverage with adolescent-friendly public sector and/or NGO-based services. In Zambia, where the national nurses association has incorporated adolescent-friendly reproductive health care into their basic curriculum and trained more than 500 members through continuing education, 85% of facilities visited by SEATS had taken measures to make their services more adolescent-friendly (SEATS, 2000). In Mexico, a degree of institutionalization was also achieved in that CORA's motivation and training model was implemented on a large scale, and honorary diplomas recognizing providers' training and new qualifications were issued. Recently, the public referral system has also been strengthened. In Botswana, several thousand peer educators have been trained and the public services and the NGO projects where they can refer STI patients have been supplied with STI drugs (Ndyabangi, 1999).

In Burkina Faso, the Ministry of Health adopted the ABBEF model and has started to train more peer educators and open more centres for young people. However, even coverage with adult reproductive health services was unsatisfactory (and contraceptive prevalence below 10%), and the coverage of the population by a few NGO adolescent clinics are likely to have remained limited.

In practice, the existence of national policies, large-scale training of providers and/or peer educators, or an increase in the number of adolescent clinics are all poor predictors of coverage of the adolescent population with effective adolescent-friendly STI services. In Zambia, in one study, few young people

knew about adolescent clinics or had frequented them, and the quality of services, in particular of STI services, was found to be unsatisfactory (Kumwenda-Phiri, 1999). To what degree the many peer educators trained in Botswana are in fact successful in referring patients to public STI services is also unclear.

In Uganda, coverage by good quality adolescent reproductive health services was still "way below 10%" (Ndyabangi, 1999), and of adolescent STI services probably even less. Needs assessments in selected districts found that adolescent-friendly services were virtually non-existent (Arube-Wani and Mpabulungi, 1999). Perhaps the expansion of the sale of STI treatment packages nationally, following a recent pilot study in 700 pharmacies, private clinics and drugstores may significantly increase adolescent access to STI treatment (Kambugu *et al*, 2000).

It is probably only in countries such as Sweden and, perhaps, Estonia where national coverage calculations are meaningful at this stage. In Sweden more than 200 clinics exist, mostly in urban areas (Levin, 1996). The number of young people attending, overwhelmingly girls, corresponded to about 10% of the total population of young people to which the large proportion reached through outreach in schools would have to be added (Persson, 1989). Similarly, in Estonia, there were about 20,000 clinic visits per year, again overwhelmingly by girls, while the targeted population of young people in urban areas was about 50,000 boys and 50,000 girls (Silma, 2000).

### STI SERVICE COVERAGE IN INDIVIDUAL CITIES

At sub-national level, Lusaka in Zambia, Gweru in Zimbabwe, and Bangui in Central Africa were among the few developing country cities where some degree of coverage with adolescent-friendly STI services may have been achieved. The centre for young people in Bangui, together with its four collaborating city clinics, reportedly had half of the city's population of young people as its target. Of approximately 62,000 young people, about 4,000 had attended the clinics in 1997, a crude user rate of 6.4% (R. Külker, 1999 personal communication). In Gweru, Zimbabwe, more than 25% of all attendances were for STI treatment. One in five young people in a community sample had ever made use of any of the services offered by the adolescent centre and the seven adolescent-friendly city clinics; 12% of the young people had been in contact with a peer educator and 9% had been to a corner for young people (Moyo, 1999). Further increases were limited by lack of transport, among other constraints (Newton, 2000).

### 6.3 Assessing the quality of STI care for adolescents

Only a few years ago, “the measurement of the quality of adolescent health care was just starting” in many places (Maddaleno and Gattini, 1995). In the meantime, several projects, including some that include STI care to adolescents, have defined their own lists of criteria of adolescent-friendliness. The National Adolescent-Friendly Clinic Initiative in South Africa, for instance, has defined ten standards of quality of care which are further elaborated by a series of criteria to achieve those standards. The management standard has criteria on staff support and supervision, maintaining attendee record systems, having a well-defined service plan, collecting data on adolescent health needs and ensuring systems for adolescent and community participation in the planning and provision of care (Dickson-Tetteh et al, 2001, see also RHRU 1999 for an earlier elaboration of these criteria). Criteria selected for the assessment of adolescent-friendly services in Zambia included accessibility, provision of quality of care, security, privacy, and the presence of equipment, while criteria for adolescent-friendly health workers are being friendly, understanding, knowledgeable and presentable, having communication skills, maintaining confidentiality and being non-judgmental (UNICEF, 2000).

Few projects have been able to evaluate their services using such measures, however, and most of those that have done so, have measured various aspects of their adolescent-friendliness, but without reference to STI care. The core service delivery areas covered by the Proquali project in Caerea and Bahia, Brazil, for instance, which has made a systematic effort to measure service quality (including clinical skills and patient-provider communication, but also management systems, facilities and logistics), did not include STI care (Blake et al, 1999). Methods usually employed in the various projects included interviews with providers, post-training evaluations, individual client exit interviews and focus group discussions. Direct observation of patient-provider interactions and mystery-client investigations seem to have been rare.

#### IMPROVEMENTS IN PROVIDER ATTITUDES AND COMMUNICATION SKILLS

Provider attitudes appear to have improved following their training in adolescent-friendly approaches in several projects. In UNICEF-supported projects in Zambia, young people who had attended the same services before the introduction of adolescent-friendly approaches confirmed that services had significantly

improved, though several informants still felt that providers were not adolescent-friendly enough (Kumwenda-Phiri, 1999). In another project in Zambia, three out of four young people interviewed considered the nurses who had treated them to be friendly or very friendly, and even more said they had been polite (Newton, 2000). However, although the nurses were quite friendly, when the young people went to the laboratory for tests or the pharmacy for drugs, some health workers there were very hostile, shouted or were judgmental of adolescents who had an STI. It was therefore suggested that training of nurses alone was inadequate and that personnel from other departments should receive training too.

In South Africa, when young people were asked why they used the Carlton Shopping Centre clinic in Johannesburg, the main reason was the positive attitude of staff (Transgrud, 1998), while those attending another adolescent reproductive health clinic reported that they would use the service again (PPASA, undated). In a survey in Estonia, users indicated that they were very satisfied with the service (Silma, 2000), though satisfaction with services is no guarantee of quality. Adolescents who had visited adolescent clinics in Sweden also spoke positively of them; they considered the environment secure and providers understanding, respectful and professionally competent (Levin, 1996).

Part of the difference noted in provider attitudes was that the providers felt more secure talking about sex-related matters with adolescents (Kumwenda-Phiri, 1999; Newton, 2000; Levin, 1996). Interviews with providers found a generally positive attitude towards the sexual and reproductive health needs of adolescents and services for them, compared with the discomfort and reluctance to provide such services expressed at baseline. Providers no longer felt there should be restrictions on contraceptive distribution; there was no mention of STI services. Contrary to prevailing norms, which did not support communication on sexuality between parents and children, the nurses believed after training that parents should feel free to share information with their children (SEATS, 1999).

Not all experiences have been positive, however. In Zambia, in one project, only 20% of clinicians trained reported increased knowledge as a result of the training (M. Temin, personal communication, 1999). At a multipurpose centre for young people in Kenya researchers found that “an unrealistically negative attitude towards adolescent sexual activity is pervasive among (trained) adolescent centre staff and adolescent

promoters” (Erulkar and Mensch, 1997). Limitations in the training in adolescent-friendly approaches of mostly public sector providers of services for adults was also shown when almost all patients rated peer educators more positively than the nurses providing treatment (Newton, 2000). Evaluations in Zambia and Zimbabwe have noted a lack of privacy in services, and a reluctance of providers to agree to establish corners for young people because lunch hours would have to be shifted, or kitchens given up where these corners were to be set up (Newton, 2000).

In Senegal, efforts were apparently successful to ensure that at smaller centres, more than one health worker was trained in the provision of STI care to adolescents, to diminish the stigma attached to providing that service (A. Sy, personal communication, 2000).

These evaluations have all been carried out in public health services made adolescent-friendly in Africa. Except for the finding that more providers may be young themselves, no documentation of provider attitudes from stand-alone, NGO-run clinics or private sectors providers was found. Further, no evaluations of provider attitudes or communication skills were found at all from Latin America and Asia.

#### AVAILABILITY AND TURNOVER OF STAFF

The main constraint encountered by public sector services may not be the limited quality or impact of adolescent-friendly training so much as the need to train more providers than is feasible with the resources available. In Zambia, for example, many trained providers in the public sector had been transferred to other sites by the time of the first evaluation of the programme, and the as-yet untrained providers were not as supportive of adolescent-friendly services (SEATS, 1999). High staff turnover has also been reported from other projects, e.g. from Ukraine and an MSI clinic in Ethiopia (Daniel, 1999; T. Bongassie, 1999, personal communication).

Difficulties in retaining their trained peer volunteers also presents a serious problem for public sector projects. High attrition, limited time spent by individual peer educators in the projects, resistance to volunteerism and lack of transport to and from distant catchment areas have all threatened the sustainability of some projects (SEATS, 2000; Newton, 2000; Kumwenda-Phiri, 1999). In Zambia, peer educators were recruited from outlying areas because it was felt that adolescents would feel less embarrassed to discuss sensitive matters with someone they did not know. Whether or not they knew about the peer

educators, their irregular presence or their poor performance, only 23% of young men and 9% of young women who sought care in adolescent-friendly clinics in Zimbabwe used the corners for young people staffed with volunteer peer counsellors. The others went directly to consult with the nurses (Moyo, 1999).

#### OPERATIONAL IMPROVEMENTS

The efforts of new projects and stand-alone reproductive health clinics to establish locations and opening times convenient for adolescents, and of existing services to establish convenient opening times for adolescents to attend have largely been successful, according to several evaluations. However, there are also exceptions; in Zimbabwe, for instance, the ZNFPC adolescent centres were located far from the *high-density*, residential areas where the majority of people, including young people, lived (Phiri and Erulkar, 1997). In Estonia, although the location of one of the clinics was acceptable, the young people had to wait behind a door in the cold (Silma, 2000).

Many adolescent-friendly services have faced the constraint that they could not operate on a daily basis. Adolescents could, therefore, not be sure of receiving treatment on their first visit, as recommended by WHO and one of the main rationales for using the syndromic approach. For instance, the UNICEF-supported corners for young people in Zambia and the Naguru clinic in Kampala only operated three days a week (Kumwenda-Phiri, 1999). In Malawi, special hours for young people were established one day per week only (T. Mwale, 2000 personal communication), and in Belarus, there was only one working day per week for adolescent volunteers (UNDP, 1999). The New Crossroads clinic in South Africa was also open only one day per week (PPASA, undated). In several countries, especially in eastern Europe, adolescent clinics operated every day but visits that required an STI specialist were by appointment only (Daniel, 1999; Silma, 2000). Restrictions like these have been criticized even though the authors did not link them to standard recommendations to provide one-stop syndromic STI case management (Silma, 2000; Kumwenda-Phiri, 1999; PPASA, undated; Lubanga, 1997).

A further finding emerging from some reports is that “adolescent-friendly” does not necessarily mean friendly to adolescent boys. Either clinics did not have male staff (Lubanga, 1997; Levin, 1996) or services were offered in a clinic used only by women and girls, i.e. a maternal and child health or family planning clinic (Kumwenda-Phiri, 1999; Hall, 1999). One centre for

young people in Nicaragua was said to have “neither the name nor the image to appeal to male youth” (MSI, 1995). Hence, recent checklists for “adolescent-friendly services” include criteria of whether boys and young men are welcome (Pathfinder International, 2000b).

On the other hand, there is also anecdotal evidence, especially as regards multipurpose centres for young people, that parents did not want their daughters to visit places where boys were “hanging out” (e.g. Lubanga, 1997). In Kenya, some adolescent girls reported having been harassed by boys or older men in such a centre (Erulkar and Mensch, 1997). To avoid these problems, clinics in Sweden and Estonia have established separate opening hours for boys and girls (Silma, 2000; Levin, 1996).

### QUALITY OF STI CASE MANAGEMENT

Hardly any assessments of the clinical aspects of STI care for adolescents have been carried out. Nor, with the exception of a few private sector clinics, have case management guidelines been reviewed or adherence to guidelines been assessed. A few evaluations have commented on STI knowledge and skills of providers, STI treatment drug supply, the availability of equipment for or attitudes towards examination for STIs, or specific aspects of STI case management, such as partner notification or condom promotion.

One comprehensive assessment of an adolescent-friendly public sector STI service was that by Lubanga (1997), the first on an adolescent-friendly clinic in Uganda. It not only comments on providers’ clinical skills but also gives an account of the quality of laboratory services, including the assessment that the laboratory assistant was unable to perform the VDRL tests reliably.

The clinical knowledge and skills of providers in Naguru were considered “good” (Lubanga, 1997), while in the SEATS project in Zambia, patients reportedly had “their problems solved” (Newton, 2000). In the Ukraine, confusion as to whether the syndromic approach should be used or laboratory tests relied upon, may have impacted on the quality of services (Daniel, 1999). In Sweden one of the criteria against which services were assessed was: “to examine the physiology of the genitals for possible symptoms of infections and inform the person, using a sensitive approach”. However, it is not clear from the report what exactly the standard examination procedure was, nor whether the assessment of the examination procedures used found them well done and sensitive or not (WHO, 2000a).

Similarly, the guidelines upon which STI case management was based were not documented by any of the projects. In Zimbabwe, one frequently expressed complaint was dissatisfaction with the medication dispensed and the cost of drugs (Moyo, 1999). Kumwenda-Phiri (1999) mentions that injections or capsules were given in Zambia but does not state what the antibiotic regimens were. In Mandalay, Myanmar, STI equipment such as spotlights, specula and swabs were lacking, while in two other sites in Myanmar, no such problems were found (UNICEF, 1999c). In at least two public sector programmes, in Ukraine and Zambia, drugs were temporarily out of stock as donated supplies were interrupted (Kumwenda-Phiri, 1999; O. Mykhyev, personal communication, 1999). At the Naguru Centre in Kampala, the City Council supplied drugs only “irregularly”, so adolescents had to line up for STI drugs at the main Health Centre dispensary, which they did not like to do as it undermined confidentiality (Lubanga, 1997). In Bunda District in Tanzania, efforts to facilitate positive health-seeking behaviours among young people were compromised by the unreliable supply of STI drugs in public health facilities. The young people were redirected to local pharmacies instead, where there was no confidentiality and drugs were unaffordable (AMREF, 2000). Botswana is one of the few African countries that has succeeded in ensuring regular STI drug supplies to public clinics, adolescent-friendly or not, through the national budget, while public STI services in Uganda and Tanzania have been supported by the EU or the World Bank (Van der Veen and Franssen, 1998).

Very little was found in the literature about the quality of STI case management in adolescent-friendly NGO clinics, centres for young people or outreach projects. In the private sector, several projects selling STI treatment packages reported significant improvements in compliance with treatment, increased cure rates and improved partner referrals (Kambugu et al, 2000, Crabbé et al, 1998; Wilkinson, 1999).

### 6.4 STI service utilization

Special effort was made to collect STI service utilization data for this review, and approximately two dozen adolescent health projects and programmes, mostly in Africa, provided data on monthly, three-monthly and yearly STI case attendance. In some cases, data on “STI cases ever treated” were provided. In others, the proportion of STI consultations relative to all attendances or clinical consultations, rather than absolute figures, were provided. A few reports included data disaggregated by sex, socioeconomic

characteristics of patients or by type of STI treated. Some responses to this request revealed the fact that services were not adolescent-specific at all.

As the following sections show, services that reported having dealt with substantial STI case-loads tended (a) to include STI care as one of their main aims, not only reproductive health in general, and (b) to attract a significant proportion of adolescent boys or high-risk young people as patients.

## STI CASE-LOADS

### STI case-loads at adolescent-friendly public sector clinics

With about 300 young STI patients per month, a newly established adolescent-specific STI clinic in Dar es Salaam, Tanzania, reported the highest utilization rate of all projects reviewed (Mnari et al, 1998). Relatively large (between 100 and 200 per month) and rising numbers of STIs treated were also reported from one of the user-friendly clinics in Myanmar (UNICEF, 1999) and from adolescent clinics/centres in Asmara in Eritrea, and Bangui in Central Africa (Newton, 2000; R. Külker, 1999 personal communication). The WHO supported clinic in Mongolia also seemed to have relatively high case-loads, but detailed information on this project was not available for this review. Case-loads of the adolescent-friendly clinic projects in Lusaka, Zambia (SEATS, 2000) and the seven municipality clinics Gweru, Zimbabwe (Newton, 2000) were between 100 to 200 per month each. Case-loads per individual clinic, if they had been reported, would, however, have been significantly smaller. The number of STIs treated at the hospital in La Paz, Bolivia, was substantial (several hundred cases), but no age-specific data were available and most clients may have been adults (Ferrando 1995).

Other adolescent-friendly public sector clinics, including those in Livingstone, supported by CARE, and the UNICEF-supported clinics in Lusaka, both in Zambia, the Kampala City Council clinic in Uganda and two UNICEF-supported clinics in Myanmar, reported medium size case-loads of 50–80 cases per month (Livingstone, Kampala) or rather low case-loads of below 15 cases per month (I. Banda, 2000, personal communication; Kumwenda-Phiri, 1999; Lubanga, 1997; UNICEF, 1999c). At least two of the low case-load projects seemed to have the potential to significantly increase the number of clients, if issues of drug supplies, nursing staff and peer educator retention could be solved (Kumwenda-Phiri, 1999; Lubanga, 1997). No adolescent-specific STI case-load

data from clinics in Mwanza (Tanzania), the Ukraine, Belarus and Estonia were available for this review. In Chile, 8% of adolescents presenting at an adolescent specialist clinic had a genitourinary disease; no absolute figures were available (Maddaleno, 1994.)

### STI case-loads at reproductive health/family planning clinics

Reproductive health/family planning clinics, most of them run by NGOs, reported treating fewer adolescent STI patients on average than public sector services. Less than 30 adolescent patients were treated per month by IPPF affiliates in Ghana, Madagascar, South Africa and Zambia and at the comprehensive adolescent reproductive health clinic at Duhaney Park in Kingston, Jamaica (Boakye-Yiadom, 2000, personal communication; S. Andriamasinoro, 2000, personal communication; Transgrud, 1998; Hall, 1999; K. Sikwibele, 2000, personal communication; Vadies and Clark, 1990). Only the reproductive health clinic run by IPPF affiliates in Swaziland and ABBEF in Burkina Faso attracted about 70 young STI patients per month (K. Nkondo, personal communication; Newton, 2000). For the clinics for young people run by Profamilia in Colombia no STI figures were available (Profamilia, 1998).] In Guatemala, only 7% of all attenders at the centres came for STI or reproductive health services other than contraceptive supplies. In most of these programmes, family planning far outweighed other issues in importance.

### STI case-loads at multipurpose centres for young people

As mentioned, the centres for young people in Asmara, Eritrea, and Bangui, Central African Republic, had been able to treat relatively high numbers of STI clients. They also extended far beyond their clinical services. For instance, the Eritrea project was in contact with 86,000 young people through peer outreach and recreational activities and the Bangui project had 60,000 young people in the target area of the four public clinics with which it was collaborating. Nevertheless, similarly to some of the above-mentioned public services that were made adolescent-friendly, they also gave due attention to the provision of clinical services.

By contrast, multipurpose centres for young people that did not focus on clinical service delivery had low STI case-loads. In Ibadan, Nigeria, in the walk-in-clinic and at the satellite clinic of the AFRH project an average of between 10-20 adolescent STI cases per month were treated in 1997 and 1998 (AFRH, 1998). Small numbers of STI cases (less than 5 per month)

were also treated at each of the three ZNFPC centres for young people in Zimbabwe. The vast majority of all young health service attenders presented for contraceptive resupplies, while STIs accounted for between 0 and 5% of consultations (Phiri and Erulkar, 1997). In Kenya, too, only very few young people made use of health services offered at the centres (Erulkar, 1997). Between 10 and 30 young people per month were treated or referred for either STIs, abortions or infertility, and up to 100 received FP methods compared to between 10,000 and 160,000 young people annually reached with educational and recreational sessions and activities. In both countries, the centres for young people were much better known for their recreational opportunities than for their health services (Erulkar and Mensch, 1997; Phiri and Erulkar, 1997). No STI case-loads were available for the multipurpose centres for young people of the CORA project in Mexico, or any other centre in Latin America. The provision of clinical services seems to have been modest in these projects when compared to education, vocational and recreational opportunities offered at these centres, and young people presenting with STI symptoms were probably referred elsewhere and/or not recorded.

#### STI case-loads of community-based projects

In Accra, Ghana, an average of five children/adolescents 'on the street' with STI had been recorded and referred per day, a relatively high number as compared to other services, before funding stopped and the number dropped to zero. The special STI clinic established by the project to address this problem can be assumed to have served a substantial number of STI clients as well (YDF, 1998). The Vietnam project, which focuses on STI home care of sex workers, may also have served a larger number of clients but, again, no figures were available (Phan Thi Le Mai, personal communication, 1999). An NGO in Tamil Nadu, India, serving young truckers and sex workers was reportedly referring between 10 and 20 STI patients a month, but it is not clear where and, indeed, whether they were treated (L. Babu, 1999).

#### STI case-loads in school-based services

Only one example of a school health service providing STI case-load figures in a developing country was found. Dogoré et al (1989) reported from a middle-sized town in Côte d'Ivoire that an average of more than 20 STI cases per month were treated at a school clinic serving 2,100 students.

#### STI case-loads in private sector programmes

Some of the private sector projects have facilitated the treatment of a relatively large number of patients with STI syndromic packages, even during their pilot or feasibility study stage. In KwaZulu Natal, more than 350 patients per month, in the Dominican Republic 250, in the Philippines about 200 and in Cameroon about 140 patients per month received the syndromic packages during the pilot year or half-year of the projects (Wilkinson et al, 1999; Garcia, 2000; Castro et al, 2000, Crabbé et al, 1998). Nevertheless, these utilization rates are hardly comparable with those of public sector clinics, not least because these projects do not differentiate between adult and adolescent clients.

#### RELATIVE IMPORTANCE OF STI VERSUS OTHER RH SERVICE CLIENTS

At services with a significant STI case-load, STI diagnosis and treatment constituted between 30% (Bangui, Kampala, Mandalay, Lusaka) and "a majority" (Asmara, Gweru, Dar Es Salaam) of all clinical consultations (UNICEF, 1999; Lubanga, 1997; R. Külker, personal communications, 1999; Newton, 2000). The range of other clinical services provided varied, but usually included antenatal care, post-abortion care, gynaecological exams for reasons other than STIs, and other illnesses.

Contraception either played a relatively minor role (Lubanga, 1997; UNICEF, 1999c), or was delivered at different sites in the same clinic and/or services such as condom and oral contraceptive distribution were considered non-clinical and reported separately (SEATS, 2000; R. Külker, personal communication, 1999; K. Nkondo, personal communication). In Zambia, reproductive health case-loads other than STI services expanded in parallel with STI service case-loads following the establishing of the project.

#### DISTRIBUTION OF STI CLIENTS BY SEX

##### Sex distribution of STI clients in public clinics made youth-friendly

Although most projects aimed to serve both adolescent boys and girls, STI service utilization data which include sex-specific data show that most young STI patients treated were in fact boys, and that services with medium or high STI case-loads almost always served adolescent boys and young men rather than girls and young women. For instance, the adolescent-specific STI clinic in Dar es Salaam, Tanzania with the highest case-load, which developed out of a dedicated adult STI clinic, initially served more than

80% young men (Mnari et al, 1998), although this proportion subsequently dropped (Mwakagile et al, 1998). In the public sector clinics in Livingstone, Zambia, the number of STI clients increased when more boys were attracted, and they now form a majority of the patients (I. Banda, 2000, personal communication). Compared to the 100–150 young male STI patients seen each month in city clinics in Gweru, Zimbabwe, young women seen were a substantial minority (Newton, 2000).

In the adolescent-friendly clinics in Lusaka and the Kampala City Council clinic, on the other hand, approximately equal numbers of adolescent boys and girls were treated for STIs (Newton, 2000; Lubanga, 1997).

### Sex distribution of STI clients at reproductive health clinics

In contrast, hospitals and clinics predominantly frequented by adolescent girls and young women (family planning, antenatal, postpartum, post-abortion and general reproductive health clinics) tended to have low STI case-loads from among the attending young women who were or had been pregnant (Webb, 1998). For example, Kenyatta National Hospital in Nairobi had a high-risk clinic which served women who were pregnant or who had had an abortion, and also treated STIs in cases detected (Mati, 1997). In Nigeria, the University of Benin Teaching Hospital and the Association of Women both had community-based projects, serving mainly young women, providing STI/HIV screening and pre- and post-test counselling (Webb, 1998). Similarly, in the La Paz project, the majority of the clients were pregnant women (Ferrando, 1995). STIs at these services were detected mainly through syphilis screening in pregnant girls, not syndromic case management.

In Sweden and Estonia, more than 90% of all clients at clinics for young people were girls (Levin, 1996; Silma, 2000). STI case-loads were relatively small and also overwhelmingly resulted from screening during pregnancy, not from the presentation of symptomatic cases. At the Planned Parenthood Association of South Africa, as with most other IPPF affiliates, more than 90% of those seeking services were girls and women, as the centres were seen primarily as family planning clinics (PPASA, undated; Hall, 1999) and the few STI patients were most likely female. Profamilia (1998) in Colombia reported that young people (including boys) were expected to either attend specific adolescent or women's clinics. IPPF affiliates in Zambia and Madagascar, the reproductive health clinic in

Kingston, Jamaica and the adolescent-friendly clinics in Lusaka (which had also developed out of FP or MCH clinics) had all treated about twice as many girls as boys (K Sikwibele, 2000, personal communication; S. Andriamasinoro, 2000 personal communication; Kumwenda-Phiri, 1999; Vadies and Clark (1990).

### Sex distribution of STI clients at multipurpose adolescent centres

At the newly established centre/clinic for young people in Asmara, Eritrea, the number of clients rapidly increased, "the majority young men seeking STI prevention and treatment", in other words condoms and STI drugs (Newton, 2000). The very low STI case-loads of the multipurpose centres for young people in Ghana, Kenya and Zimbabwe evaluated by the Population Council also need to be interpreted in the light of gender-specific STI service utilization. The recreational activities offered by these centres tended to be dominated by boys, while girls report coming for vocational training and skills building (Glover, Erulkar and Nerquaye-Tetteh, 1998; Phiri and Erulkar, 1997). However, the health services offered were for the most part family planning services attended mostly by girls (Glover, Erulkar and Nerquaye-Tetteh, 1998; Phiri and Erulkar, 1997).

### Sex distribution of STI clients in community-based and private sector projects

Community-based projects for young truckers in India (L. Babu, 1999), young male homosexuals in Bangkok (J. Howard, personal communication, 1998) and children/adolescents on the street in Accra (YDF, 1998) were likely to have a predominantly male clientele. The majority of children/adolescents living in the street in contact with NGO projects worldwide are boys (WHO, 2000b). Finally, private sector projects such as the ones in the Philippines and Uganda also had overwhelmingly male clients, partly because the promotion strategies focused on treatment of urethritis. However, the Philippines project also drew a significant number of female sex workers and the Uganda project was expanding its focus to target adolescent girls and women with vaginal discharge (Castro et al, 2000; Kambugu et al, 2000).

There were some exceptions to these patterns. More young women were treated for STIs, for instance, in the Mandalay clinic (UNICEF, 1999c), because it mainly served young female sex workers. The Swaziland Family Planning Association was treating a significant number of both girls (>50 per month) and boys (>20 per month) for STIs, but the reasons behind this achievement were unclear from the report.

## AGE DISTRIBUTION

In some projects, and especially those established in the late 1980s or early 1990s, the majority of those attending for care were not adolescents or young people. The centres for young people in Kenya and Zimbabwe, for example, served a substantial majority of women over the age of 20, even up to age 45, but hardly any adolescents. At the ZNFPC centres the average age of clients was 21, while virtually no one below the age of 20 was served (Phiri and Erulkar, 1997). In Kenya 86% were over the age 20, with 26% over 24 (Erulkar and Mensch, 1997). In Ghana 43% were over 24 and in Zimbabwe 45% (Glover, Erulkar and Nerquaye-Tetteh, 1998; Phiri and Erulkar, 1997). Similarly, the adolescent clinics in Jamaica and Burkina Faso, the San Gabriel Hospital clinic in La Paz, Bolivia, and the ABBEF clinic in Ougadougou, Burkina Faso (Blankhart, 1997), all seemed to have served mainly, or at least a large proportion, of adults. By contrast, the Swaziland FPA centre for young people offered services exclusively to young people below the age of 24, and 80% of those attending were adolescents under 20 years of age (K. Nkonde, 2000, personal communication). Age-specific data was not otherwise found.

## MARITAL, IN-SCHOOL AND OUT-OF-SCHOOL AND HIGH- AND LOW-RISK STATUS OF ADOLESCENT STI CLIENTS

Not many of the projects and programmes had service statistics available specifying the marital, schooling status or any other socio-demographic characteristics of their STI clients. Nevertheless, some described the type of young people reached by the project overall, including by its recreational and educational activities, which gives some insight. Based on STI case-loads, it would appear from the reports available that most adolescents presenting at STI services were unmarried and not in school, and that many belonged to specific high-risk groups, even if the projects reached a wider audience as a whole.

While available documents concerning the Estonian and Swedish clinics did not include any demographic data, it is likely that a substantial proportion of clients were school-going young people. Similarly, it is likely that many clients of projects that have a strong outreach component, such as the project in Mwanza, Tanzania, also attracted school-going young people to their services. Except for the last example, these services had relatively low STI case-loads, however, reflecting perhaps the relatively low STI prevalence in those countries and populations or other reasons.

Public sector adolescent-friendly services have tended to reach both school-going and out-of-school young

people, though the relative proportion depends on the location (urban or rural) of the services and the strength and nature of their outreach. Both the adolescent-friendly clinics in Zambia and Zimbabwe supported by SEATS attracted both school-going and out-of-school young people, but in Gweru, Zimbabwe, for instance, 86% of clinic attenders were out-of-school young people (SEATS, 2000). The clinic for young people in Kampala reached both school-going and out-of-school young people, including boys in a remand home and girls who were being rehabilitated in a vocational centre, but children/adolescents on the street were not reached (Lubanga, 1997).

Many centres for young people and outreach projects, including some with significant STI case-loads, clearly focused on unmarried, out-of-school and marginalized young people, although not all of them managed to reach these groups adequately. For instance, the centre for young people in Bangui, Central African Republic, mainly served out-of-school, non-literate young people (R. Külker, 1999, personal communication). Similarly, the projects in Accra for street children, the Tamil Nadu project for young truck drivers and the UNICEF clinics in Myanmar for sex workers as well as other clients, all focused on high-risk, out-of-school young people (YDF, 1998; L. Babu, 1999, personal communication). A project in Belarus also seemed to target unemployed and non-school-going young people (UNDP, 1998), while in the Ukraine both intended target groups and characteristics of STI clients remained obscure after the first evaluation (Daniel, 1999).

One evaluation report of the ABBEF project in Ougadougou mentioned that many young women attending the medical services were in their early or late 20s and married (Blankhart, 1997). Similarly, ASBEF in Senegal reported that they had difficulty attracting unmarried young women. For other centres and clinics for young people, service data on marital status were unavailable. However, for the more recently established FPA clinics, at least initial difficulties attracting higher-risk, unmarried adolescents can be expected, as their adult clinics have traditionally served mostly low-risk, married women (Dehne and Snow, 1999).

Several other projects also reported problems trying to reach higher-risk adolescents. The Tsa Banana project in Botswana, which trained peer educators, for instance, had a lower response from high-risk young people than low-risk young people (Ndyanabangi, 1999). The private sector STI pre-packaged drug

marketing projects also seemed to have difficulties in reaching the most vulnerable young people. In addition to the problem of the cost of the kits, mentioned earlier, Wilkinson et al (1999), for instance, noted that non-literate patients did not understand the value of these kits, which supported the views expressed by nurses interviewed during the course of the project that the kits could not replace effective face-to-face communication.

#### TYPE OF STIS TREATED

Hardly any projects provided data on the type of STI syndromes identified or the specific infections treated, and the few data provided were heavily influenced by whether laboratory services were available or case management was based on the syndromic approach. Services with laboratory facilities like the ones in Tallin, Estonia, or in the USA, which screened family planning clients for STIs, reported that chlamydia infections were relatively frequent (Silma, 2000). In other Estonian cities and in Zambia, where chlamydia testing was apparently not available, but all pregnant adolescent girls were screened for syphilis, this diagnosis played a relatively more important role (Silma, 2000; Kumwenda-Phiri, 1999).

Three project clinics reported the relative case-loads of specific STI syndromes. At the Kampala City Council clinic and the UNICEF clinics in Myanmar, mainly discharges were seen, but some patients also presented with PID and genital ulcers due to herpes and syphilis (Lubanga, 1997; UNICEF, 1999c). The young truck drivers project in Tamil Nadu referred a relatively high proportion of patients with genital ulcers, including syphilis, and inguinal swellings, to public sector services (L. Babu, 1999, personal communication). The usually more common discharges were perhaps treated elsewhere, with drugs bought over the counter. The STI pre-packaged drug kit social marketing projects have so far focused only on discharges.

### 6.5 Impact evaluation

Impact evaluations of any type of health programmes are rare, and those focusing on adolescent reproductive health service delivery are almost non-existent. The 1995 Population Report on adolescent reproductive health tabulated evaluations of 26 projects and programmes directed at young people, including six overviews. Virtually all were either a) school or university-based life-skills education programmes, b) school, factory or street-based HIV prevention projects, or c) media programmes aiming at preventing

adolescent pregnancy and/or STIs and HIV/AIDS (McCauley and Salter, 1995). STI care programmes did not figure in the review.

Outcome measures were usually changes in knowledge, attitudes and behaviour, such as delay in the age at first sex, fewer sexual partners and better knowledge of and use of contraception to prevent unwanted pregnancy. School-based programmes in the USA, for example, have been shown to improve students' knowledge about when and why to consult health services, and to lower rates of substance abuse and hospitalization (Birdthistle and Vince-Whitman, 1997). A multipurpose centre for young people in Jamaica found that girls who had been pregnant who were reached by the programme had fewer second pregnancies than others before they finished school or started work (UNFPA, 1993). Among the projects reviewed in this paper, the ARFH project in Nigeria reported behavioural changes and a reduction in unwanted pregnancies and school drop-outs (ARFH, 1998). In an end-of project evaluation of the SEATS project in Gweru, Zimbabwe, the ranking of the project's peer educators as a source of information on reproductive health had risen from no mention at baseline to major source, along with the media (Moyo, 1999). However, in a community-based survey in the same city, no more than one in five respondents had ever made use of any of the services offered. Reductions in STI prevalence were not measured in any of these evaluations.

Brabin (1996) called for assessments of STI interventions for adolescents in controlled studies, with a sufficient number of participants to indicate changes in STI markers. The Mwanza project in Tanzania aimed to measure the impact of a sexual health intervention package comprising both school-based sexual education and adolescent-friendly STI service provision (AMREE, 1999a). The prevalence of STIs (and the incidence of HIV) in a cohort of pupils from intervention communities will be compared with control communities where interventions will be implemented later. However, the educational component of the intervention package is more important than the adolescent-friendly STI services; thus, the trial cannot adequately evaluate them (H. Grosskurth, 2000, personal communication). The outcome measures of this trial should become available during the course of 2003.

Other evaluation studies have used "before-after" designs without control groups, to measure the impact of school-based STI screening and private sector

treatment of sex workers. In the USA, for instance, repeated school-based screening was shown to have the potential to reduce STI prevalence, especially among boys. The service was less effective among girls, probably because they were re-infected by older partners who were not at school (Cohen et al, 1999). In an evaluation of a programme that distributes free service vouchers to adolescent and adult sex workers in Nicaragua, the prevalence of gonorrhoea dropped from 10% to 7.9% (Gorter, 2000).

## 6.6 Cost effectiveness

Hardly any cost-effectiveness studies of adolescent-friendly STI services have been carried out, partly because the objectives and targets against which cost-effectiveness could be measured were not clear enough in many projects. A review by the Planned Parenthood Association of Ghana, noted that although there is, typically, documentation of the number of clients served, presentations given and contraceptives distributed (because these data are required by donor agencies), there is often virtually no data regarding the relative effectiveness of one component of the intervention package compared to another. "Given high costs and multiple interventions, some analysis is needed regarding which specific activities are meeting what needs at what costs" (PPAG, 1996).

### COST-EFFECTIVENESS OF STI PROGRAMMES

STI prevention and control programmes typically differ in costs depending on a) the type of intervention involved (condom distribution, information, education and communication (IEC)), syndromic diagnosis and treatment, laboratory screening and treatment of specific infections), b) the extent of efforts to target hard-to-reach and easier-to-reach populations, c) the characteristics of the country and the intervention area (population distribution, infrastructure, salary levels, etc.) and d) STI drug costs (Adler et al, 1996). Apart from IEC-only strategies, treatment usually accounts for a large proportion of costs. The average cost per case treated effectively also depends on the proportion of non-infected persons tested and examined, including the numbers treated unnecessarily – in short, the prevalence of specific STIs in the population reached.

For the same reasons, interventions that target high-risk populations, including sex workers and their clients and the more easily reachable groups of young men with multiple partners (military personnel, truck drivers, industrial employees) are likely to be more cost-effective than interventions for a general

population (World Bank, 1997; Adler et al., 1996; Howson et al., 1996; Over and Piot, 1993). At a high prevalence (5% or more) of syphilis, gonorrhoea, chlamydia and chancroid, presumptive treatment of all women presenting at a clinic, without diagnosis, would be cheaper than diagnosis and treatment of those found to have an STI (Piot and Rowley, 1992).

### COSTING AND COST-EFFECTIVENESS OF STI SERVICES FOR ADOLESCENTS

Few adolescent STI programmes have been costed and their cost-effectiveness assessed. In one study in the USA, the cost per urine specimen in high-risk destitute boys tested was US\$103, and the cost per chlamydia infection identified by PCR and treated was US\$167, amounts which would clearly be too high for developing countries. The annual cost of adding a peer outreach service for adolescents to an existing STI programme, using existing staff and adding 1.2 full-time staff equivalent for outreach, was approximately US\$25,000. In contrast in Myanmar, the cost per STI case treated syndromically varied between 800 kyats (US\$2.50) in Mandalay and 8000 kyats (US\$25) in Taunggyi. The large difference between the two sites was due to provider and treatment costs incurred for the "scores of general patients attending the user-friendly clinic" at the latter site. One report suggested that "cost-effectiveness should be based on the number of STI cases treated, since the aims and objectives are to provide quality STI services" (UNICEF, 1999c).

If the average cost per STI case effectively treated is indeed taken as the basis for cost-effectiveness calculations, services with a high case-load in absolute numbers, and even more so those with a high relative case-load, are likely to be more cost-effective than those providing many different services. Hence, multipurpose centres for young people and other extra-effort health services for adolescents would raise questions of cost-effectiveness and financial sustainability even more than school-based or reproductive health/family planning clinics do. Paxman (1993), writing about El Camino in Guatemala, noted that "*the number of clinic visits for contraception are not outstanding or overwhelming compared to the overall number of adolescents who visit the centre for recreational activities*". If STI case-load had been the indicator for assessing the clinic's effectiveness, this judgement would have been even harsher.

For the same reasons, multipurpose centres for young people in Kenya, Zimbabwe and Ghana have been described as under-utilized and not cost-effective (Erulkar and Mensch, 1997; Phiri and Erulkar, 1997,

Glover et al, 1998). In Kenya, for each young person who participated in the educational sessions it cost US\$0.31, but because very few FP or reproductive health services were provided by the centres themselves, each service or referral cost US\$102. Even the cost per young person reached with educational sessions may have been a substantial underestimate of the real costs, if, as is often the case, it is mostly the same group of young people coming to the centre for socializing and recreation (Ajayi, 1996). The cost of operating multipurpose centres for young people may therefore be quite high and more expensive relative to the number of adolescents served than other models (Webb, 1998; Population Action International, 1994).

#### REFERRALS, COUPONS AND COST-RECOVERY

Cost and cost-effectiveness analyses of STI services are further complicated if interventions require more elaborate efforts, e.g. if patients are referred or have to attend more than one site for services, or if cost recovery measures are taken or if adult escorts are used to accompany patients, as has been done with street children. For instance, one project for adolescents in the UK involved a family planning and an STI clinic; the family planning clinic carried out selective chlamydia screening, while the STI clinic did most of the counselling on site and part of the treatment and contact tracing (James et al, 1999). Although there is little experience with analysing such costs in developing countries, based on experiences in developed countries, it is plausible that such referrals would be more expensive and possibly not as cost-effective as models that provide all services on-site.

A coupon system would reduce the costs of re-training a young-people-centre's own staff and the related costs, as these latter functions would be assumed by voucher distributors and the service providers designated to accept the vouchers. In an evaluation of a coupon system in the USA, referring the adolescents to other

services did not work. In this instance, out of 600 coupons for a free examination and treatment distributed to homeless young people living in a residential programme, only one was returned by the service provider, implying a very high cost per case treated effectively. Even without cost-effectiveness studies, it was clear that alternative strategies were needed (DeLisle and Wasserheit, 1999). In contrast, a voucher distribution programme targeting mostly young sex workers and their clients in Nicaragua seemed much more successful (Gorter et al, 2000). Generally speaking, young people tend not to refer well because of their reluctance to seek help (UNFPA, 1998)

Cost recovery may be done through the introduction of fees paid by the adolescent, e.g. for STI tests or treatment, or for the use of other young people's project facilities, e.g. recreational or vocational facilities or clinical services other than STI treatment. Or, as in private sector projects, it may be done through the social marketing of products such as STI pre-packaged drug kits or condoms. Again, there is little experience with cost-effectiveness analyses of STI services using cost-recovery mechanisms or cross-subsidy of STI services through income from other young people's project facilities. One report from South Africa mentions that individual centres were exploring income-generating ideas such as membership fees, a charge for certain recreation activities (e.g. entertainment videos), training workshops, vending machines, social marketing of condoms and fees for pregnancy testing (Transgrud, 1998). A project in Mopti, Mali, introduced patient fees for STI treatment but no evaluation had taken place (V. Joret, 1999, personal communication). The sustainability and cost-effectiveness of the ARFH (1998) project in Nigeria, which used profits from private laboratory diagnostic facilities to subsidize STI services, had also not been evaluated.

## Summary and conclusions

There is little doubt that many adolescents and young people in their early 20s are at risk of contracting STIs. The World Health Organization estimates that two-thirds of all STIs worldwide occur in this age group (WHO, 1993; WHO, 1995a). The provision and use of STI services to this age group should, therefore, be high on the agenda of STI programme planners and adolescent/young people's health programmers alike. This review of policies and existing services for STI prevention and treatment specifically designed for young people seems to show that this is not the case, however.

Following a discussion of the limitations of the epidemiological, socioeconomic and behavioural data found in this review and a description of further research required, this section attempts to draw some conclusions about the profile of adolescents in need of STI care, explore possible reasons why existing services do not match their needs, and make some recommendations on the way forward in the design of STI services for adolescents.

### 7.1 Further research and documentation needs

Since the whole area of young people and STIs is severely under-researched, there are bound to be gaps in knowledge in terms of behavioural, socioeconomic and geographic correlates of STI infections in young people and of the various service delivery models.

#### EPIDEMIOLOGICAL RESEARCH

Although the number of adolescents with STIs is believed to be high in developing countries, until and unless standard definitions of adolescence as regards age and of STIs by pathogen or syndrome are agreed and used internationally, it will remain difficult to interpret and compare results across studies and between countries. The majority of STI prevalence studies containing data disaggregated by age have been carried out among young women attending antenatal and family planning clinics in a few African countries

and the USA, and mainly include data on chlamydia and gonorrhoea levels. Evidence from most other African countries, from Asia and the Pacific, from Latin America and the Caribbean and from Eastern Europe, as well as evidence regarding other STIs, such as herpes and chancroid, remains very limited. Further, the evidence as regards higher-risk adolescent populations, such as young sex workers and their clients, boys who have sex with other men or boys, street children and children in correctional homes is also very limited indeed. All these gaps will have to be addressed.

Furthermore, although the association of certain behavioural and socioeconomic factors with the risk of STIs may seem obvious, few have been substantiated through epidemiological studies. Whether and to what degree multiple partners, regular sexual activity, urban residence, marital status, schooling and family situation are associated with an increased or reduced risk of STIs among adolescents will have to be further investigated.

#### EVALUATIONS OF EXISTING ADOLESCENT STI SERVICES

The various projects and service delivery models reviewed in this report were built on assumptions concerning the spread of STIs, which will have to be substantiated. For instance, virtually all centres/clinics for young people that provide STI care are located in urban areas. The few projects that concentrate on outreach to schools, e.g. in rural Tanzania (AMREF, 1999), or establish special STI services for young sex workers, e.g. in a border area of Vietnam (Phan Ti Le Mai, personal communication 1999) also build on unpublished local findings or expectations that their target groups are in need of such services.

There is little doubt that many adolescent-friendly STI services have been successful, in that they have attracted a large and/or increasing number of young people to use them. Nevertheless, there is a need to conduct well-designed, controlled studies intended to assess the relative value of introducing STI services specifically

designated for adolescents compared to those making existing, general STI services adolescent-friendly. Such studies would allow 'before and after' comparisons of the impact of different strategies, with existing general adult services as a "control".

One controlled trial comparing provision of services by public sector clinic providers trained in STI case management and adolescent-friendly approaches with the provision of services by untrained providers has just been completed in Tanzania (AMREF, 1999). However, the project also contains a large STI prevention education component, which makes it difficult to assess the impact of the STI service component independently. Other studies, e.g. in schools in the USA, have typically used participating adolescents as their own controls, leaving room for speculation that other factors may have changed during the course of the study.

With regard to service utilization data, before-and-after evaluations are barely available; existing case-loads reported, therefore, need to be interpreted with great caution. The more than 300 young STI patients who were treated per month at a newly established adolescent-specific STI clinic in Dar es Salaam (Mnari et al, 1998), constituted the highest case-load from all the projects and services reviewed. However, it is not clear what proportion of these clinic users would have attended the already existing adult STI clinic had the new clinic for young people not been established. At a district clinic in Malawi, no efforts whatsoever had been made to make services adolescent-friendly, yet 30% of STI clients seen were adolescents (WHO, 1998b), even though many more were probably consulting traditional healers or self-medicating.

Adolescents' care-seeking behaviours and the relative importance of the various barriers to effective service delivery in developing countries are other areas in need of further research. It remains largely unknown to date what the thresholds are for service utilization in different settings in terms of provider-friendliness, fear of lack of confidentiality and affordability.

Furthermore, much of the evidence concerning service quality and utilization is based on only a handful of well-documented evaluations and may, therefore, not be representative of experience with adolescent STI services worldwide. As with epidemiological data, by far the majority of reports on adolescent STI services provided by public sector adolescent-friendly clinics, NGO reproductive health clinics and multipurpose

centres for young people is from sub-Saharan Africa, while reports from Latin America and other regions are very few.

#### EVALUATIONS THAT ARE STI SERVICE-SPECIFIC

Most initiatives to monitor adolescent health services to date are about their "friendliness" to adolescents, whilst avoiding issues dealing with the quality and range of services. Many comprehensive adolescent reproductive health service projects reviewed, for instance in Latin America, do not document the range of services they provide, including whether or not they provide STI care on-site, or refer or do not see STI patients at all. Evidence from adult services would suggest that STI patients are in fact referred to adult specialist clinics (Dehne and Snow, 1999).

Similarly, although a number of authors have expressed concerns regarding the relative lack of cost-effectiveness of multipurpose centres for young people, their views seem to be based entirely on evidence collected by the Population Council regarding the cost-effectiveness of centres for young people in Ghana, Kenya and Zimbabwe. More recent experiences, e.g. in the projects in Bangui and Asmara, both of which had relatively high STI case-loads, have not been sufficiently documented (Newton 2000; R. Külker, personal communication, 1999).

Even the otherwise quite comprehensive book by Adamchak et al (2000) on adolescent reproductive health indicators seems to have neglected these crucial issues, probably reflecting the lack of experience with STI care in the better-documented FOCUS projects. There is very little documented experience with adolescent-specific training in syndromic STI management, on-site syndromic treatment in community-based projects, social marketing of STI drugs or success of different referral systems.

Hence, despite some progress in recent years, more epidemiological research and more data on the various approaches to adolescent-specific STI service delivery are needed, with better and more representative documentation of operational and impact implications. Checklists of preconditions favourable to individual service delivery models may also be warranted. This would allow countries with different epidemiological situations, client profiles, diagnostic and drug resources, and provider characteristics to anticipate the likely returns from different types of STI services for adolescents.

## 7.2 Summary of findings concerning the profile of adolescents needing STI care

### ADOLESCENT SEXUALITY AND STIs

Major socioeconomic changes, including a trend towards longer schooling, a shift away from subsistence farming towards employment in industry and informal economies, increasing urbanization, a decline in the importance of the family and a parallel increase in that of peers in shaping young people's lifestyles have all been associated with the emergence of adolescence as a distinct stage in life. While some of these trends may well be described as global, their significance in changing sexual norms and behaviours are by no means uniform. Traditional agricultural economies, family structures and religious beliefs that restrict adolescents from meeting their opposite-sex peers and engage in premarital sexual activity, persist in many places, especially for adolescent girls. There are, therefore, many exceptions to the general rule that due to the increasing gap between age at sexual maturity and age at marriage, premarital sexual activity among adolescents has become more frequent.

The risk of STI is not evenly distributed among all young people who do engage in sexual activity. The sex, number and characteristics of partners, frequency and type of intercourse, rates of condom use and local STI epidemiology are all factors that influence the risk that adolescents engaging in sexual activity will contract an STI. Although the limited evidence from available adolescent-specific epidemiological studies broadly suggests that the various STIs are indeed prevalent among adolescents, not all adolescents who have sexual intercourse are at risk of STIs. Rather, it is those in higher prevalence areas who engage in "regular" sexual activity who seems to be more frequently affected; at the same time, certain infections are more frequent than others in adolescents and are more prevalent in younger rather than in older young people, i.e. chlamydia compared to gonorrhoea and syphilis.

### REGIONAL DIFFERENCES

If evidence from behavioural studies, STI prevalence studies among adults, and studies of HIV rather than classic STIs are also taken into account, STIs appear to be more widespread in both adolescents and adults in sub-Saharan Africa, the Caribbean and, perhaps since the beginning of the 1990s, in the transitional economies of eastern Europe, than in other regions (UNAIDS/WHO, 2000; Rowley and Berkley, 1998; Borisenko et al, 1999; Riedner et al, 2000). In India and other parts of Asia (except China) and in Latin

America, STI prevalence is believed to be lower but still significant (Rowley and Berkley, 1998). Sexual behaviour data suggest that STIs in those regions would mainly occur after adolescence. In the Middle East and most industrialized countries, adolescent and adult STI prevalence is thought to be relatively low. Furthermore, the evidence of regional differences is stronger with regards to syphilis and gonorrhoea than with chlamydia (Van Dam et al, 1997; Rowley and Berkley, 1998), while for herpes and other STIs, hardly any comparative data are available.

### CORE GROUPS AND BEYOND

If more studies were available, it would probably also become clear that closely linked to the overall prevalence of STIs in a given region and country are the socio-demographic characteristics of those infected. Where STIs are not widespread, those at "highest risk" are likely to be infected, while those at lower risk are not. Those at highest risk are usually adolescents with a particularly high number of partners, sex workers and their clients, boys who have sex with men or other boys, street children and children in institutions in urban areas, who are all subject to economic pressures and sexual violence. Almost by definition, these groups tend to be unmarried and not in school. Unfortunately, hardly any studies among these particularly vulnerable adolescents in developing countries could be found.

However, data on adults from lower prevalence countries and regions, while not providing proof that STIs are widespread among high-risk groups, indirectly confirm that STIs do *not* spread widely among lower- and medium-risk groups, including rural, married and regularly sexually active young women. In countries as diverse as Bangladesh, Brazil, Chile, China, Egypt, India, Indonesia and Mexico, both gonorrhoea and syphilis were very rare among young women attending family planning and antenatal clinics. Levels of chlamydia and trichomonas were also lower than in high-prevalence populations and regions, though not negligible either (RamaRao et al, 1996; Zurayk, 1995; Kaufman, 1995; Grant and Measham, 1995; Daili, 1994; Faúndes and Tanaka, 1992; Alvarez, 1992).

In contrast, in the high STI prevalence countries of sub-Saharan Africa and the Caribbean, all known STIs seem to be spreading beyond the so-called core groups, although differentials remain. For instance, in Nigeria, significant proportions of young, rural and school-going girls were found to have chlamydia and gonorrhoea (Brabin, 1995; Ikimalo et al, 1999). In Kenya, young, unmarried women had significantly more infections

than married ones, but infection levels among married women were also substantial (Costello-Daly et al, 1994). In certain settings in the USA, STI prevalence was found to be high even among adolescents with only one lifetime partner (Bunnell et al, 1999). In Russia, another high STI prevalence country, most adolescents with syphilis, the best documented STI, were unemployed or involved in the informal economy, but school-going and formally employed young people were also affected (Borisenko et al, 1999).

Even where both higher- and lower-risk population groups were to varying degrees affected, some project evaluators and reviewers deplored the fact that services did not reach those with the most clearly defined high-risk behaviour and presumably highest STI rates (Lubanga, 1997; Ndyanabangi, 1999).

### GENDER DIFFERENTIALS

The relative importance of behavioural versus biological factors that determine the risk of STI among adolescent girls compared to boys remains largely unknown. In some contexts, for instance sub-Saharan Africa, adolescent girls are at higher risk than boys due to a combination of behavioural factors, sexual mixing patterns and biological susceptibility, especially girls who have first sex early and with male partners who are older, sexually active with different partners and at high risk of infection themselves. On the other hand, situations are imaginable, e.g. in Asia, where the average boys are at higher risk due to frequent exposure to infection through regular unprotected sex with sex workers with a high prevalence of infection. First sex may occur late for most girls, and intercourse may be infrequent, with only one or few sexual partners.

Individual girls and young women are often more vulnerable, especially if they have little control over sexual and reproductive decision-making, including condom use, and are subject to non-consensual sex and violence. However, it cannot be assumed from this that at a population level, sexually active girls are *per se* and universally at higher risk and have a higher incidence of STIs than sexually active boys. However, because many STIs are asymptomatic and because girls may be less likely to seek treatment even for certain symptomatic infections, girls have a higher risk of carrying persistent infection once contracted. Comparing STI rates among 15-44 year-olds in the different world regions, Rowley and Berkley (1998) estimated that female rates were consistently higher, but not dramatically so. Location- and population-specific studies would be needed to determine which

segments of a given population of adolescents and young people are infected.

Epidemiological research, which should precede the design of any new programme or service, is further complicated by the fact that the most common STIs are asymptomatic in so many young women. STI prevalence among boys may well be lower, but symptomatic episodes more frequent than among girls. Depending on whether laboratory screening or syndromic management is being considered as the main STI control strategy, there may be potentially more boys than girls seeking STI treatment from adolescent-friendly clinics.

### DIFFERENCES BETWEEN STI AND REPRODUCTIVE HEALTH SERVICE CLIENT PROFILES

Finally, it is noteworthy that theoretical, epidemiological and practical information about STI service delivery in a number of countries suggests that the profile of potential, typical STI patients differs from that of other adolescents using reproductive health services, whether family life education, family planning, antenatal care or abortion services. Young people in need of family life education comprise younger adolescents of both sexes, including those not yet sexually active, those starting to experiment with their sexuality and those already engaging in unprotected sex. While all young people might engage in risky behaviour in the future and can be considered potential users of STI services, it is only young people who have contracted an STI – a much more narrowly defined group – who need STI services at any given time.

Although both family planning and STI clinic users are both sexually active, the profile of those in need of contraception may differ in a great many cases from the profile of those with STIs. Thus, young people in stable relationships will primarily need contraception if they are mutually faithful, or if the risk of STI transmission is limited because of low prevalence within their sexual network. Young sex workers and other higher risk young people, on the other hand, will need dual protection.

### 7.3 Summary findings concerning existing services for adolescents with STIs

This review may be far from complete, but it is clear from the number and range of experts who have said that few or no specific STI services for adolescents exist in many countries (Hughes and Berkley, 1998;

Okonofua, 1999; Brabin, 1995), that the overwhelming majority of young people with STI symptoms worldwide have no adequate access to effective STI services. With the exception of clinics for young people in a few urban areas in Africa and NGO projects for small groups of young people at high risk in Asia and Eastern Europe, coverage is very low in developing countries. Thus, many young men and women (as, in fact, many adults) self-medicate with products obtained from pharmacies, drug-sellers or traditional healers. Furthermore, many asymptomatic STIs in young women in developing countries are not identified and treated through screening programmes.

### OBJECTIVES OF EXISTING SERVICES

In the majority of services reviewed, STI service provision was not the primary objective. Rather, reproductive health service provision in a more general sense was usually cited as the main objective. For historical reasons, many public sector and NGO-run services providing STI care to adolescents are integrated within family planning or maternal and child health/family planning services (Webb, 1998). Multipurpose centres for young people especially offer a variety of services and activities, including recreation and education, counselling, contraception, antenatal services and post-abortion services, as well as STI treatment and counselling. However, sometimes it did not seem clear even to the programme implementers themselves what the main objectives and target groups of their services should be (Phiri and Erulkar, 1997; Daniel, 1999). There were many more projects and programmes directed at young people which carried out communication and education activities (Kloforn, 1998), but did not provide any STI services at all; these were not reviewed.

Many STI services are also based on the same delivery models as reproductive health services, despite the differences in the profile of those needing them. Thus, many services rely upon staff trained to serve family planning users and upon family planning-oriented management systems. Many hospital-based projects directed at young people were originally set up to and still provide postpartum or post-abortion care to women. Even though multipurpose centres for young people have diversified their services and now attract a more varied clientele, their emphasis on family planning often remains apparent.

School-based health programmes usually follow family life education or primary health care delivery models, rather than specialist services such as for STIs.

### TARGETING HIGH-RISK GROUPS

Few programmes targeting young people worldwide specifically target young men and women at high risk (Kloforn, 1998). Even those that do provide STI services mostly seek to work with a range of young people at the same time, i.e. both school-going and out-of school young people, and focus even less frequently on young sex workers, children in homes or street children. In a review of all programmes directed at young people in Zambia, for example, only three explicitly mentioned targeting sexually active young people with multiple partners, an emphasis that would by definition want to give due attention to STI care (FOCUS, 1999).

Many reports are not specific enough about STI counselling and the function of peer educators, whose presence often appears to be the main element said to distinguish adolescent-friendly services from others. Although some programmes in Africa have found that peer educators are more effective in reaching young men than young women and in-school young people than those not in school (Herdman, 1999), only one report commented on this issue, noting that the programme in question had managed to reach all these groups (SEATS, 2000).

### ADOLESCENT-FRIENDLINESS

Closely linked to a lack of specificity is the tendency of stressing commonalities rather than differences between the various service elements, in relation to the adolescent-friendliness of comprehensive adolescent reproductive health services. It has almost become a paradigm that adolescent reproductive health services should be confidential, strategically located, with special opening hours, and that providers should have been specifically trained in issues relating to young people. From the projects and programmes reviewed in this report, there is indeed little evidence to suggest that STI care provision should not follow these criteria. Nevertheless, it is often from a rather vague family planning perspective that recommendations concerning the adolescent-friendliness of integrated reproductive health services are made. Much less clear in the various project descriptions and evaluations is whether such services meet specific adolescent needs in terms of STI case management and geared for those at high risk of STIs. Several reports in fact mentioned that services were unfriendly to young men, and it remained unclear how user-friendly or unfriendly these services were to those at highest risk of STI, i.e. the youngest, homosexuals, girls (and boys) who have been sexually abused or raped, street children or sex workers. Operational characteristics often did not facilitate

diagnosis and treatment on the first visit, a key rationale for the development of syndromic STI case management.

### HEALTH COMMODITIES

STIs, especially those associated with painful symptoms, often trigger a demand for treatment which public sector services cannot satisfy. Several reports confirmed that the ability to ensure regular drug supplies is the *sine qua non* for STI service delivery. Even if embarrassment and lack of confidentiality are more important barriers for young people than for adults, the need for treatment may outweigh the relative unfriendliness of the services as long as treatment is available, affordable and effective. There was clear evidence in the studies dealing with STI treatment that the utilization of the services, especially by adolescent boys, mainly depended on the availability of cheap STI drugs.

*“The availability of STI prevention and treatment was the magnet that drew young men into the programme, not an interest in family planning or other reproductive health issues”* (Newton, 2000).

Indeed, the credibility of peer educators in Tanzania was compromised when they encouraged early STI care-seeking but could not guarantee that drugs necessary for treatment would be in stock (AMREF, 2000). Evidence from integrated adult STI/family planning services suggests that some men go to considerable lengths to obtain otherwise unobtainable STI drugs (Dehne and Snow, 1999). Private sector programmes especially will have to pay more attention to the affordability of socially marketed, pre-packaged STI drugs for adolescents.

### SERVICE DELIVERY MODELS

A variety of approaches have been used to deliver reproductive health and family planning services to adolescents (Webb, 1998), but STI services have not yet adopted the same diversity. Family planning studies have shown that different service delivery strategies reach different groups of people. For instance in Mexico, community based family planning distributors reached mainly married women, and community-based programmes for young people on street corners reached only young men, while centres for young people had a relatively balanced clientele but distributed few contraceptives (Townsend et al, 1987).

Social marketing and community-based approaches have gained in importance in recent years, and it has been widely accepted that “community-based

programmes may be the only way to reach the most vulnerable adolescents, those with the least resources, such as children/adolescents on the street, secluded young wives, abused adolescents, servants and those caught in war or civil unrest” (Hughes and McCauley, 1998). Furthermore, classic family planning approaches have been shown to reach best those adolescents who are the least likely to have an STI (Brabin et al, 1999). Although syndromic STI management can in principle be made available in sports and young people’s clubs, drop-in services, through mobile clinics, in the street and other venues (Kishen and Hopwood, 1998), the great majority of STI services continue to be provided in formal clinical settings. Approaches such as a home-based STI treatment project for young sex workers in Vietnam have remained the exception.

Syndromic STI case management following standard flowcharts is relatively simple. However, for many project and programme designers, the scope of tasks grassroots workers can do in STI management seems limited to STI prevention, creation of demand for services and referral. Whether referral is successful is a matter of doubt. Despite a lack of documentation, it is a widely accepted view that adolescents generally do not refer well (UNFPA, 1998). In many cases, STI referral of adolescents may therefore well be a project objective that is not achieved in practice. Whether or not the private sector has developed successful approaches to STI service delivery to adolescents is, based on the little available documentation, largely unclear.

### SERVICE UTILIZATION

One of the most important elements for successful STI service utilization (high case-loads), whether of clinics, centres for young people or community-based projects, is that there is an explicit objective to provide adolescents with STI care that is tailored to STI clients. Projects reviewed in Ghana, Tanzania, Uganda, Myanmar and Vietnam all had an explicit and strong STI service focus. Where other objectives predominate, STI case-loads, and sometimes even service utilization more generally, are low. While perhaps attracting some young clients of mixed profile to attend where no such services had existed before, these services were often unable to reach significant numbers of those most in need of STI care.

In some cases, e.g. in public sector clinics in Zambia and Zimbabwe, and centres for young people in Central African Republic and Eritrea, and to lesser extent in reproductive health clinics in Burkina Faso and Swaziland, STI services were successfully combined

with other services and activities. The same held true of certain established corners for young people, from where clients were referred to on-site specialists, including for STI services.

Other elements associated with high service utilization included outreach to adolescents at higher risk (especially out-of-school adolescents), a critical proportion of STI patients presenting at the service delivery point with symptoms (including adolescent boys), the availability of drugs and the keeping of STI and adolescent-specific statistics. Efforts by Swedish and Estonian services to establish special opening hours for young men, and those by the Zambian FPA to establish separate consultation days for school-going and out-of-school young people are also noteworthy in this context, although STI utilization figures were not available for these projects.

Among the various initiatives to establish STI services for young people, most of which are still in an early stage of development, those in Uganda and in Mwanza, Tanzania, stood out, because they aimed to improve STI care for rural, school-going young people.

#### **COST-EFFECTIVENESS**

Our findings also provide some insight into the relative cost-effectiveness of the various STI service delivery models, although the evidence is far from conclusive. The assumption underlying the perceived advantage of providing integrated reproductive health services to young people at adult public sector facilities, which have been made adolescent-friendly, is that operating costs can be saved by using existing facilities (Webb, 1998). New services, it is thought, would incur all the costs of establishing new, separate clinic space, training providers, and of additional staff and running costs.

However, several characteristics of STI services shed doubt on these assumptions. These include the large proportion of costs for STI drugs, the greater risk of over-treatment in a low-risk clientele and the advantage of providing syndromic case management in newly designed, non-clinical settings. Findings suggest that existing services would need to train virtually all or the majority of their providers in adolescent-friendly approaches, while new services could recruit staff and peer educators who already have adolescent-friendly attitudes and practices. Thus, making existing services adolescent-friendly may be less advantageous than expected. [Whether public and NGO clinics made adolescent-friendly seem to face more or less difficulties in specifically retaining trained peer educators than, for instance, community-based approaches is unclear.]

Ultimately, the number of adolescents reached and the number with STIs treated effectively are the most important factors determining cost-effectiveness. The running costs and number and type of personnel involved may be less important except insofar as they affect access to services. The extent to which various referral systems (e.g. referral by peer educators or adult escorts; to private or public providers; with or without a voucher) and cost-recovery schemes (e.g. through a revolving fund, cross-subsidy or social marketing) are successful also needs to be assessed in the light of the number of adolescents treated effectively.

#### **7.4 Policy and strategy issues to be addressed**

Strategies to deliver STI services for adolescents have been almost completely neglected by policy-makers and programme planners, and no real body of literature exists on this issue. Whether the lack of adolescent STI services is due to the international policy environment or is the result of difficulties with the design or implementation of such services is not clear. This review has therefore identified an important gap.

The key elements of an integrated reproductive health service, as recommended by ten international agencies, fall into 16 broad categories (including family planning, antenatal care, safe delivery and postpartum care, counselling and STI/HIV/AIDS services and infertility services) and comprise a total of 76 specific services (Hardee and Yount, 1995). Although STI care for adolescents is only one element among many within the broad area of sexual and reproductive health, the question is to what extent it should be included and prioritized in standard reproductive health packages. The first issue to address when answering this question has to do with the importance attributed to reproductive health care for adolescents versus adults.

#### **BETTER BALANCE BETWEEN PREVENTION AND CARE**

A great many projects and programmes have started providing STI education and counselling yet few provide STI treatment services. [In the context of STIs, this amounts to an overwhelming emphasis on prevention to the detriment of care.] An emphasis on prevention may have become a common feature of many reproductive health/STI programmes, at least partially because of the close links with HIV programmes, which for a long time have had little or nothing to offer in terms of treatment. Given that the STIs considered in this report are virtually all curable, however, this reason on its own would seem to be a deplorable misconception. STI prevention is

not *per se* better or more effective than care; indeed, targeted early diagnosis and treatment strategies in certain circumstances may well be easier to implement and more effective than prevention programmes, a fact that even specialist adolescent programmes seem to overlook. The International Conference on Population and Development +5 documents and resolutions, too, still almost exclusively stress prevention, sexual education and counselling, and a review of 14 innovative STI projects in the USA, of which only half offered clinical services, harshly criticized these because ‘they addressed not STI prevention, but detection, diagnoses and treatment’ (Shriver, 1999).

The STI/HIV link does not fully explain the lack of focus on STI care provision, however, because the neglect of adolescent STI treatment services also extends to the provision of condoms and abortions, among other services. Rather, an underlying reluctance to accept adolescent sexual activity must be suspected, with the consequence that policy-makers and programme planners have not given diagnosis and treatment due priority. Not only health workers, as Brabin (1999) points out, but policy-makers and programme planners too are themselves parents who may bring a parental perspective to their work, consciously or otherwise, and fail to promote service delivery while encouraging abstinence-oriented prevention models instead. This imbalance needs to be redressed.

#### **INTEGRATED REPRODUCTIVE HEALTH SERVICES NOT ALWAYS THE ANSWER**

The second issue that has loomed large throughout this review is the continuing confusion about the benefits of integration of STI and maternal and child health/family planning services (MCH/FP). As has been shown in previous publications (Dehne and Snow, 1999; Dehne et al, 2000; Lush et al, 1999), calls for integration were about more than just adding STI services to family planning programmes, but rather intended to promote services for women’s sexual and reproductive health as a whole (Dehne and Snow, 1999). However, the expectations associated with this, for instance, that women’s access to STI services would increase, and that integrated programmes would be more attractive to those seeking services have only partially been supported by experience. There is particularly little evidence showing that access to and utilization of STI services has increased. Even where there has been training of MCH/FP providers in syndromic STI case management, there have not always

been concrete efforts to stock STI drugs and manage a significant number of STI cases (Dehne and Snow, 1999).

Most “experts” on young people’s health in the various agencies contacted for this review turned out to have a family planning background, and working experience mainly in reproductive health with an emphasis on family planning. Whether they were unfamiliar with the disease-control concepts which underlie successful STI programmes or chose to ignore the complexities of STI syndromic case management among their mostly female clientele is unclear. Many seem to have promoted an “integrated” or “comprehensive” adolescent-friendly approach to adolescent reproductive health, which may well conflict with some of the disease control concepts that underlie successful STI programming (e.g. the concept of “core transmitters”). In contrast, many of the STI specialists contacted knew of no specific efforts to provide STI services to adolescents or to make existing STI services adolescent-friendly at all.

#### **EMPHASIS ON STI SERVICES FOR ADOLESCENT BOYS AND YOUNG MEN?**

In fact, it may be the profile of adolescents who need STI services – many of whom are male – that has contributed most to the neglect of this important service. Given the current lack of affordable STI screening tests, new STI services may have to be directed to young men, at least in the short term, even though the greatest burden of STIs lies with young women. Finally, while the need to provide sexual health services to adolescents, men, sex workers and other marginalized groups is part of the typical post-Cairo rhetoric, there are still those who argue that it is unacceptable to make many of these groups the beneficiaries of resource allocation.

### **7.5 The way forward in adolescent STI service development**

In order to give STI care for young people the attention it deserves, the principles of adolescent health policy and service delivery aspects need to be thought out more thoroughly. The almost exclusive emphasis on STI prevention and integrated approaches to adolescent reproductive health, are often based on ideology, not on evidence from project and programme experience. Prevention is not always more effective than cure, nor are education and counselling always the best starting points for building services. For those suffering from STIs, access to treatment is likely to be a precondition

for behaviour change, and a valuable entry point for behavioural interventions supporting future prevention.

STI risks are not evenly distributed in a given population, and young women at risk of STIs may not be the same as those at risk of unwanted pregnancy. Gender-related attitudes to STI and FP services are likely to differ, and so are client profiles. In the meantime, it is likely that the majority of adolescents with symptomatic STIs who may be attracted into services are often young men. Therefore, for STI and FP service delivery, the most appropriate models may also differ.

#### EPIDEMIOLOGICAL DIAGNOSIS FIRST

An assessment of the distribution of STI risk and occurrence (epidemiological and behavioural) in a given population, and an analysis of young people's access to services, should precede the design of programmes and services. Where there is a lack of data on STIs among adolescents (and indeed adults), new studies may be required. In other instances, it will be helpful simply to stratify existing survey results by age and selected socio-demographic characteristics. Even where new research is not affordable, already existing behavioural and/or adult data may be utilized to obtain an idea of the likely magnitude and patterns of STI spread, and the expected profile of young STI clients in the local community. Furthermore, it is crucial to take into account the proportion of STIs that are asymptomatic. The range of feasible intervention options depends largely on whether laboratory services (in particular for chlamydia screening) and STI drugs are available.

Only after that can the appropriateness of different service delivery options be usefully considered, including whether or not STI services should be integrated with other services. Since these assessments are likely to show different results in different settings, and among different population segments of young people, different strategies and service delivery options will have to be selected to match local needs. In this respect, we concur with US authors (e.g. Lane et al, 1999) who have noted that "no single model will properly serve the STI care needs of all adolescents".

#### SCHOOL-BASED SERVICE DELIVERY WHERE CHLAMYDIA SCREENING IS AFFORDABLE

Only very few countries and cities will be able to afford STI services for all young people, whether they are in need of them or not. In the USA, where secondary school attendance is nearly universal, school-based

screening programmes, if affordable, would be an almost ideal strategy – adolescents, including younger ones, are easy to test, treat and follow-up in this setting. Burtstein et al (1998) consider screening at schools the only successful approach to the control of adolescent STIs, such as chlamydia. There are, however, also disadvantages in school-based services in that repeated screening would be required to detect new infections and sexual partners outside the school setting would not be reached (Cohen 1999).

The coverage and cost-effectiveness of screening programmes that are not school-based will largely depend on the type of service user for whom they are intended. Screening a greater number of adolescent family planning clients for STIs, for instance, may be less effective than screening a smaller number of abortion clinic clients, as the latter are likely to be at higher risk. According our review, such screening may only be feasible for wealthier countries such as Sweden and perhaps for a few transitional ones such as Estonia (Silma, 2000; Levin, 1996).

Furthermore, there is little evidence to suggest that the systematic introduction of STI syndromic management into school health services would constitute an appropriate STI control strategy in developing countries. Except for high prevalence regions, such as sub-Saharan Africa, school-going young people are unlikely to be a primary risk group, and such services are therefore not likely to be cost-effective. In any case, most existing school health services would be too weak and the opposition from school administrators against reproductive health service delivery on school premises too strong for school-based STI care to be a viable option. Not surprisingly, hardly any existing school-based STI services were identified by this review.

#### ADOLESCENT-FRIENDLY PUBLIC SECTOR STI SERVICES IN HIGH PREVALENCE AREAS

The experience in Tanzania, Zambia and Zimbabwe with making an existing, public health facility-based STI service adolescent-friendly, by establishing corners for young people and/or adolescent-specific opening hours and training providers, has shown both the potential and the limitations of this particular approach, even where they do succeed in attracting a substantial number of STI clients. Many public services are already overstretched, and the need to train large numbers of providers in adolescent-friendly approaches, difficulties in retaining peer educators and most crucially the need to ensure regular drug supplies all raise important questions of sustainability. The need

to make services more friendly to young men, by linking the corners for young people to general outpatient departments rather than to MCH/FP or ANC services and by employing male staff, are more actionable recommendations. Lubanga's (1997) suggestion that in order to reach at-risk young people, public services would need to employ non-medical staff, e.g. professional social workers, appears more difficult to achieve.

The few evaluations of public services made adolescent-friendly have virtually all been pilot projects in urban or periurban areas so far, which at least have the potential to draw a large high-risk clientele. Whether public adolescent-friendly STI services would be effective and cost-effective in rural areas in Africa, or in even lower STI prevalence areas in other regions, is not yet clear. In this respect, the Mwanza project which gives provider training in both STI case management and adolescent-friendly approaches, but does not allow for adolescent-specific spaces or services, will hopefully provide more insight. Until more evidence from such pilot projects is gained, however, large-scale or nationwide introduction of adolescent-friendly public STI services following a single model would seem premature.

#### STI DIAGNOSIS AND TREATMENT IN REPRODUCTIVE HEALTH CLINICS: SELECTIVE STRATEGIES

The integration of STI care into existing reproductive health/family planning clinics, most of them run by NGOs, should essentially follow the same criteria as public services, but many such clinics may have even greater difficulties in fulfilling these. The relatively large amount of information available on antenatal care and family planning services clearly shows that STI service coverage might improve simply as an add-on to MCH/FP services is erroneous. Even most of those reproductive health care services for adolescents that were deliberately "comprehensive" in that they had combined family planning with STI care, only served a small number of (mainly female) STI clients, even in higher-risk African settings.

The upgrading, in terms of both adolescent-friendliness and STI integration, of services that were originally aimed mainly at married, adult women may be feasible in some settings, although the obstacles seem considerable (Dehne and Snow, 1999). In the absence of laboratory screening and outside very high-prevalence areas, however, such services will often yield a low case-load, mainly of female clients, and will not be cost-effective. Perhaps even more importantly, expectations that many family planning services,

adolescent-friendly or not, could also easily be modified to serve a substantial number of young men (as well as sex workers and street children) who make up a large proportion of symptomatic STI cases seem unrealistic. The gap between the currently largely female and family planning image of such services and the self-image of young men is too wide. The same problem holds true for many married, adult men as well, unless they get access to STI drugs that are otherwise unobtainable, or services are specifically designed for them. The usefulness of this approach for adolescent STI services would therefore be limited to: (i) those clinics that are able to attract a large number of new, male and high-risk STI clients and (ii) those which could offer selective interventions such as syphilis screening and treatment to their adolescent women clients.

#### ESTABLISHING NEW STI SERVICES FOR PARTICULARLY VULNERABLE YOUNG PEOPLE

The option of establishing new, designated services should not be ruled out. UNICEF, on its web site (UNICEF, 2000) states that "*while dedicated adolescent health centres may be established in major urban centres for training, research and referral, in many situations such a model would not be possible to take to scale in a sustainable way*". This may well be the case for adolescent services in general; the sustainability question must be recognized. Given that STIs tend to be distributed unevenly in populations, however, STI services may not always need to be taken to scale in the same way as, for instance, family planning or sexual education programmes. Even adolescent family planning services may not have to be taken to scale everywhere all the time, as data from some Asian, Middle Eastern and Latin American settings show, where either only small minorities of adolescents are sexually active or most sexually active adolescents are married and attend services for adults. The establishment of dedicated adolescent clinics or dedicated non-clinic-based services in sites with a high concentration of young people at highest risk, especially in urban centres, may therefore be well justified and feasible.

The good experience of some projects, like the centres for young people in Bangui and Asmara, the user-friendly clinic in Mandalay, the street children's clinic at a market in Accra or the home-base scheme in Vietnam, support this view. Rather than suggesting that pre-existing public sector services made adolescent-friendly could have done better, the main lesson learned from these projects is that they were well-designed, collaborated with public sector services and targeted specific groups of young people and

defined their STI care needs. The experience of these projects has not yet been fully exploited.

#### NEW FORMATS AND COMBINATIONS OF SERVICES

To establish dedicated services for particularly vulnerable young people does not imply that services should be non-integrated or provide STI services only (or that they should be nongovernmental). However, the range and format of services offered should rather be decided on the basis of client needs – while moving away from non-evidence-based conceptions of comprehensive reproductive health services or pre-existing service profiles. For instance, in addition to STI services, street children may require general health services, drug treatment and shelter; young sex workers may require child-care, legal support and alternative income options; and young men perhaps condoms and recreational facilities.

New services also need to consider that the provision of male and female condoms, emergency contraception and abortion services to young men or women as appropriate is more likely to coincide with their needs as STI clients than the provision of IUDs or hormonal contraceptives, unless the young women are seeking dual protection using two methods. The integration with services providing the former methods is therefore more plausible. Unfortunately, however, these are usually the weakest reproductive health service elements, and in many settings there would seem to be little to integrate with.

Furthermore, the format of such service delivery may well have to be unconventional, comprising, for instance, syndromic case management in street markets and car parks, in brothels, through mobile services and in whatever other settings that high-risk young people can be reached and have access. That “mobile services are probably required to reach high-risk adolescents who are reluctant to come to health clinics” (Wasserheit and Aral, 1996), is of course not a new idea. In many cases, it nevertheless remains an idea waiting to be implemented. Unconventional “adolescent clinics” may also be linked to certain schools. Experience in the USA has shown that school-linked reproductive health centres can serve more than one school and also reach out-of-school young people, who tended to be at greater risk of STIs (Fothergill and Ballard, 1996).

#### PRIVATE SECTOR APPROACHES TO STI SERVICES

Finally, the least explored model – private-sector STI service delivery – may well emerge as the most promising, at least from a geographical coverage

perspective. Two approaches could be distinguished in this review. The first involves reaching young people through NGO or public service outreach and referring them, perhaps with the help of a voucher system, to private doctors. Hardly any referral projects have been evaluated, but if private providers can be persuaded to treat syndromically and use generic drugs, there is no reason why referrals using coupons should not be as affordable to young people and cost-effective as other approaches.

A different approach is the promotion and improvement of STI treatment by non-medical health workers, such as pharmacists, traditional healers, traditional birth attendants and village health workers, or in social marketing schemes, kiosks and other outlets. The training of grassroots workers and other non-medical personnel in STI management appears to have been more controversial, including in lead agencies such as WHO. Given the lack of any effective STI services that are accessible to young people in many places, however, there clearly is a need to pilot new approaches.

One major advantage of the private sector is that, given the weakness of public services, most young people, especially adolescent boys, already use these services, and as evaluations have shown, may continue to use them even when other adolescent-friendly services exist (Kumwenda-Phiri, 1999). Especially in smaller towns and rural areas, private providers may always remain more acceptable, precisely because they tend to be more confidential and less “public”. To render them effective, for instance, through the marketing of pre-packaged STI drug kits would therefore seem to constitute an important alternative to the upgrading of public services. This may be a solution, but for some boys only. Unless screening programmes are also established (or simpler tests developed), many girls will still be affected by the sequelae of “silent” STIs like infertility and ectopic pregnancy. Screening is usually a public sector activity, and is difficult to implement in the private and informal sectors. Furthermore, neither public clinics made adolescent-friendly nor socially-marketed kits are likely to be used by the most marginalized adolescents, who will almost always need social support as well as treatment.

## Box 4

**Expanding Adolescent STI Services:  
Priority Actions****Health Policies**

- Review reproductive health policies to strengthen and prioritize service delivery elements, including STI screening and treatment
- Management/cost-effectiveness perspective concerning integration of reproductive health services
- Increase emphasis on adolescent boys, young men, sex workers, children/adolescents on the street and other high risk young people

**Research**

- Epidemiology of STIs among adolescent boys and girls
- Behavioural and sociocultural determinants of STIs among adolescents
- Clarification of service objectives
- Adolescent-specific and STI-specific monitoring/evaluation of existing projects
- Controlled trials of different interventions (e.g. improved STI case management and training of providers in adolescent-friendly approaches, with/without corners for young people/peer referral; STI pre-packaged drug kit marketing; new community-based STI service approaches targeting high-risk young people)
- Development of inexpensive and simple STI diagnostic tests

**Integration of STI service delivery with other projects and services**

- Adolescent-specific case management in public sector clinics in higher STI prevalence areas
- Special opening hours for adolescent boys and for at-risk girls at adolescent reproductive health clinics
- Syphilis screening of high-risk adolescent girls and young women, e.g. in antenatal and post-abortion clinics
- Chlamydia screening in school health clinics in higher risk areas, where affordable
- Integration of STI case management into existing community-based projects directed at young people

**New services and approaches**

- Dedicated (community-based or centre for young people) services for adolescents at high risk (e.g. boys who have sex with men or other boys, young sex workers, street children, etc.)
- Community-based (on-site) STI case management
- Expansion/multiplication of social marketing projects (with due attention to the needs of the youngest and those with minimal or no income)
- Piloting of pharmacist/traditional healer/drug seller STI pre-packaged drug kit distribution

## References

- Adamchak S, Bond K, MacLaren R, *et al.* (2000). *A guide to monitoring and evaluating adolescent reproductive health programs*. Washington, D.C.: The FOCUS on Young Adults Program.
- Addo Atuah J, Nzambi K (1998). West Africa Project To Combat AIDS, Achimota ACCRA, Ghana. *Int Conf AIDS*, Geneva: 12, 303 (abstract no. 22204).
- Adler M, Foster S, Richens J, Slavin H (1996). *Sexual health and care: sexually transmitted infections – guidelines for prevention and treatment*. London: Overseas Development Administration.
- Adu Sarkodie YA (1997). Antimicrobial self-medication in patients attending a sexually transmitted disease clinic. *Int J STD and AIDS*. 8(7):456-458
- Agha S (1998). Sexual Activity and condom use in Lusaka, Zambia. *International Family Planning Perspectives*. 24(1): 32-37.
- Agyei WKKA, Epema EJ, Lubega M (1992). Contraception and prevalence of sexually transmitted diseases among adolescents and young adults in Uganda. *International Journal of Epidemiology*. 21(5): 981-988.
- AHI [Action Health Incorporated] (1998). Mobile Clinic Goes to School. *Growing Up*. March 1998, 6(1).
- AHI [Action Health Incorporated] (1998). The Youth Clinic. *Growing Up*. June 1998, 6(2).
- Ahlberg BM, Jylkäs E, Krantz I. (2001). Gendered construction of sexual risks: implications for safer sex among young people in Kenya and Sweden. *Reproductive Health Matters* 9(17):26-36.
- Ajayi, A. (1996). Cited in: FOCUS (1997). *Reproductive Health Outreach Programs for Young Adults*. Watertown: FOCUS and Pathfinder International.
- Ajuwon AJ, Akin-Jimoh I, Olley BO, Akintola O. (2001). Perceptions of sexual coercion: learning from young people in Ibadan, Nigeria. *Reproductive Health Matters* 9(17):128-36.
- Alvarez ME (1992). *The prevalence of sexually transmitted diseases in the Outpatient Department of the Comitan Hospital, Comitan, Chiapas*. Final report to the Population Council, Comitan Centre for Health Research. New York: Population Council.
- Amatya, Chatra (1998). *Adolescent Reproductive Health: Government Policy and Programs*. Paper presented in a Seminar on Sexual and Reproductive Health of Adolescents and Youths. Kathmandu: World Population Day, July 11, 1998.
- Amazigo U, Silva N, Kaufman J, Obikeze DS (1997). Sexual activity and contraceptive knowledge and use among in-school adolescents in Nigeria. *International Family Planning Perspectives*. 23:28-33.
- AMREF [African Medical and Research Foundation] (1999a). Report for youth friendly services training for health workers from Geita, Sengerema, Kwimba and Missungi Districts, Feb-March 1999. Mwanza, Tanzania: AMREF (unpublished draft).
- AMREF [African Medical and Research Foundation] (2000). *Community based youth sexual and reproductive health project in Bunda district, Mara region*. Project proposal. Dar es Salaam: AMREF.
- Aral S (1996). Social and behavioral correlates of pelvic inflammatory disease. In: A. Templeton [ed.] *The prevention of pelvic infection*. London: RCOG Press: 49-61.
- ARFH [Association for Reproductive and Family Health] (1998). *ARFH and youth friendly services: the satellite experience*. Ibadan, Nigeria: ARFH.
- Arjona N (1998). Improving the accessibility of health services that meet the sexual and reproductive health need of adolescents in school. Multicentric report for the Panamerican Health Organization. San José: Caja Costarricense de Seguro Social.
- Arube-Wani J, Mpabulungi L (1999). *A needs assessment for adolescent friendly health services (AFHS) in Nebbi district*. Kampala: UNICEF, Child Health and Development Centre, Makere University.

- Bagley C (1985). Child sexual abuse and juvenile prostitution. *Canadian Journal of Public Health*. 76:65-66.
- Baru R (1995). The social milieu of the adolescent girl. In: S. Mehra [ed]. *Adolescent Girl in India: An Indian Perspective*. Saket, New Delhi: MAMTA, Health Institute for Mother and Child.
- Barua A, Kurz K. (2001). Reproductive health seeking by married adolescent girls in Maharashtra, India. *Reproductive Health Matters* 9(17):53-62.
- Basnayake S (1996). Sri Lankan youth: survey on reproductive health knowledge, attitude and practices. Colombo: United Nations Population Fund.
- Beck-Sagué CM, Solomon F (1999). Sexually transmitted diseases in abused children and adolescent and adult victims of rape: review of selected literature. *Clinical Infectious Diseases*. 28 (Suppl 1): S74-S83.
- Behets FMT, Williams Y, Brathwaite A, *et al.* (1995). Management of vaginal discharge in women treated at a Jamaican sexually transmitted disease clinic: use of diagnostic algorithms versus laboratory testing. *Clinical Infectious Diseases*. 21:1450-1455.
- Beksinska M *et al.* (2001). Structural integrity of the female condom after multiple uses, washing, drying, and relubrication. *Contraception* 63(1):33-36.
- Bell TA, Farrow JA, Stamm WE, *et al.* (1985). Sexually transmitted diseases in females in a juvenile detention center. *Sexually Transmitted Diseases*. 12(3): 140-144.
- Bello CS, Elegba OY, Dada JD (1983). Sexually transmitted diseases in northern Nigeria. Five years' experience in a university hospital clinic. *British Journal of Venereal Diseases*. 59(3): 202-205.
- Benjarattanaporn P, Lindan CP, Mills S, *et al.* (1997). Men with sexually transmitted disease in Bangkok: where do they go for treatment and why? *AIDS*. 11 (Suppl 1): 87-95.
- Bennett EC (1987). Sexually transmitted diseases. *NAACOG News*, Aug 14, 8(1): 5-6.
- Bhadra RP (1998). Reproductive and sexual health need of Nepalese adolescents and young adults. Kathmandu: BP-MHF.
- Bhadra RP (1999). A summary of the most important programs directed to issues of youth reproductive health in Nepal. Kathmandu: BP-MHF.
- Birdthisle I, Vince-Whitman C (1997). Reproductive Health Programs for Young Adults: School-Based Programs. *Focus on Young Adults Research Series*. June 2. Washington, D.C.: FOCUS.
- Biro F M (1999). New developments in diagnosis and management of adolescents with sexually transmitted disease. *Current Opinion in Obstetrics and Gynecology*. 11:451-455.
- Biro F, Rosenthal S, Kinyalocots M (1994). Gonococcal and chlamydial genitourinary infections in symptomatic and asymptomatic adolescent women. *Clin Pediatr*. 34:245-261.
- Black C (1997). Current methods of laboratory diagnosis of Chlamydia trachomatis infections. *Clin Microbiol Rev*. 10:160-184.
- Blake SM, Necochea E, Bossemeyer D, *et al.* (1999). PROQUALI: Development and dissemination of a primary care center accreditation model for performance and quality improvement in reproductive health services in northern Brazil. Washington, D.C.: United States Agency for International Development.
- Blanc AK, Way AA (1998). Sexual behavior, contraceptive knowledge and use. *Studies in Family Planning*. 29(2): 106-116.
- Blankhart D, Muller O, Gresenguet G, Weis P (1999). Sexually transmitted infections in young pregnant women in Bangui, Central African Republic. *International Journal of STD and AIDS*. 10(9): 609-614.
- Blankhart DM (1997). Evaluation du projet jeunes pour jeunes de l'ABBEF Ouagadougou, Burkina Faso. Ouagadougou: ABBEF.
- Bongaarts J, Cohen B [eds] (1998). Adolescent reproductive behavior in the developing world. *Studies in Family Planning*. 29(2), 99-105.
- Borisenko KK, Tichonova LI, Renton AM (1999). Syphilis and other sexually transmitted infections in the Russian Federation. *Int J AIDS & STD*. 10:665-668.
- Brabin L (1996). Providing accessible care for adolescents with sexually transmitted disease. *Acta Tropica*. 62: 209-216.
- Brabin L (1998). *Tailoring clinical management practices to meet the special needs of adolescents: Sexually transmitted infections*. Discussion paper prepared for the Adolescent Health and Development Programme, Family and Reproductive Health. Geneva: WHO.
- Brabin L, Chandra-Mouli V, Ferguson J, Ndowa F. Tailoring clinical management practices to meet the special needs of adolescents: sexually transmitted infections. *Int J Gynaecol Obstet*. 2001 Nov;75(2):123-36. (2000).

- Brabin L, Kemp J, Obunge OK, *et al* (1995). Reproductive tract infections and abortion among adolescent girls in rural Nigeria. *Lancet*. 345:300-304.
- Brew-Graves SH (1995). Adolescent Health in Ghana: a selected study of school health services. Accra: Ministry of Health, Ghana.
- Brindis C, Davies L (1998). Improving Contraceptive Access for Teens. In: *Communities Responding to the Challenge of Adolescent Pregnancy Prevention*. Vol.4. Washington, D.C.: AFY.
- Brookman RR (1990). Adolescent sexual behavior. In Holmes KK *et al.* [eds]. *Sexually transmitted diseases*, 2<sup>nd</sup> edition, New York: Mc Graw Hill: 77-84.
- Brugha R, Zwi AB (1999). Sexually transmitted disease control in developing countries: the challenge of involving the private sector. *Sex Trans Inf*. 75:283-288.
- Brunham RC, Holmes KK, Embrie JE (1990). Sexually transmitted diseases in pregnancy. In: KK Holmes, PE Mardh, *et al.* [eds]. *Sexually Transmitted Diseases*. USA: McGraw Hill.
- Bunnell RE, Dahlberg L, Rolfs R, *et al.* (1999). High prevalence and incidence of sexually transmitted diseases in urban adolescent females despite moderate risk behaviors. *J Infect Dis*. 180(5): 1624-1631.
- Burstein GR., Waterfield G, Joffe A, *et al.* (1998). Screening for Gonorrhoeae and Chlamydia by DNA amplification in adolescent attending middle school health centers. *Sexually transmitted diseases*. 25(8): 395-402.
- Busza J, Schunter BT. (2001). From competition to community: participatory learning and action among young, debt-binded Vietnamese sex workers in Cambodia. *Reproductive Health Matters* 9(17):72-81.
- Cabal F, Fleras J, Aquino C, Villar N (1998). Developing a nationwide public service advertising on STD syndromes. *Int Conf AIDS*, Geneva: 12, 679 (abstract no. 588/33450).
- Caldwell JC, Caldwell P (1987). The cultural context of high fertility in sub-Saharan Africa. *Population and Development Review*. 13(3): 409-437.
- Caldwell JC, Caldwell P, Caldwell BK, Pieris I (1998). The construction of adolescence in a changing world: Implication for sexuality, reproduction and marriage. *Studies in Family Planning*. 29(2): 137-153.
- Caraël M (1995). Sexual behaviour. Ch.4 In: J Cleland, B Ferry [eds]. *Sexual Behaviour and AIDS in the Developing World*. Geneva: WHO: 75-123.
- CARE International (1997). Adolescent sexual reproductive health in Maramba Compound, Livingstone, Zambia: participatory baseline assessment. Lusaka: UNICEF.
- CARE International (1999). The Community family planning project: turning family planning into reproductive health. Lusaka: CARE International.
- Castillo S (1993). Costa Rica: Tools for Teens. *Populi*. 20(2):8-9.
- Castro JR, Agnes LD, Aquino C, Borromeo ME (2000). Breaking the HIV transmission cycle through social marketing of STI management kits in the Philippines. *Int Conf AIDS*, Durban:13, 136 (abstract no. WePeC4393).
- Castro JR, Aquino CA, Dagnes La, Borromeo E (1998). Bridging the gap in STD case management utilizing STD syndromic management training in the Philippines. *Int Conf AIDS*, Geneva:12, 182 (abstract no. 13483.).
- Cates W (1991). Teenagers and sexual risk-taking: the best of times and the worst of times. *Journal of Adolescent Health*. 12:84-94.
- Cates W, Mc Pheeters (1997). *Adolescents and sexually transmitted diseases: current risks and future consequences*. Paper prepared for the workshop on Adolescent sexuality and reproductive health in Developing Countries: Trend and interventions. Washington, D.C.: National Research Council.
- Cavaliere M J, Maeda M Y, Shirate N K, *et al.* (1993). Cervico-vaginal chlamydia trachomatis infection in pregnant adolescent and adult women. A morphologic and immunofluorescent study. *Arch Gynecol Obstet*. 253(4): 175-182.
- Celentano D, Nelson K, Suprasert S, *et al.* (1996). Epidemiologic risk factors for incidence of sexually transmitted diseases in young Thai men. *Sexually Transmitted Diseases*. 23:198-205.
- Centers for Disease Control and Prevention (1993). Availability of comprehensive adolescent health services. *MMWR*. 42:510-515.
- Chambeshi M (1997). Understanding their perspective: an analysis of adolescent sexual and reproductive health in Ng'ombe Compound. Lusaka, Zambia: PPAZ.
- Cohen DA, Nsuami M, Martin DH, Farley TA (1999). Repeated school-based screening for sexually transmitted diseases: a feasible strategy for reaching adolescents. *Pediatrics*. 104(6): 1281-1285.

- Cohen MS, Weber RD, Mardh-P-A (1990). Genitourinary mucosal defences. In Holmes KK *et al.* [eds]. *Sexually transmitted diseases* 2<sup>nd</sup> edition, New York: Mac Graw Hill: 117-127.
- Connolly AM, Wilkinson D, Harrison A, Lurie M, Karim SS (1999). Inadequate treatment for sexually transmitted diseases in the South African private health sector. *Int J STD & AIDS*. 10(5): 324-327.
- Corradini A (1991). How to work successfully with adolescents: Lessons from an Italian pioneer project. *Planned Parenthood in Europe*. 20(1): 20-21.
- Costello Daly C, Maggwa N, Mati JK, *et al.* (1994). Risk factors for gonorrhoea, syphilis, and trichomonas infections among women attending FP clinics in Nairobi, Kenya. *Genitourinary Medicine*. 70(3): 155-161.
- Crabbé F, Tchupo JP, Manchester T, *et al.* (1998). Prepackaged therapy for urethritis: The "MSTOP" experience in Cameroon. *Sex Trans Inf*. 74:249-252.
- CRHCS [Commonwealth Regional Health Community Secretariat] (undated, a). Improving teenage reproductive health in Tanzania: Summary of an intervention study on selected aspects of teenage reproductive health with policy and programme implications. Arusha, Tanzania: CRHCS.
- CRHCS [Commonwealth Regional Health Community Secretariat] (undated, b). Improving teenage reproductive health in Uganda: summary of an intervention study on selected aspects of teenage reproductive health with policy and programme implications. Arusha, Tanzania: CRHCS.
- CRHCS [Commonwealth Regional Health Community Secretariat] (undated, c). Improving teenage reproductive health in Zimbabwe: summary of an intervention study on selected aspects of teenage reproductive health with policy and programme implications. Arusha, Tanzania: CRHCS.
- Daili SF (1994). Literature Review on Reproductive Tract Infections in Women associated with STDs in Indonesia. Jakarta: University of Indonesia, Faculty of Medicine.
- Dallabetta G, Hassig S (1995). *Indicators for reproductive health program evaluation: final report of the subcommittee on STD/HIV*. Chapel Hill: University of North Carolina, Carolina Population Center.
- Dallabetta GA, Gerbase AC, Holmes KK (1998). Problems, solutions, and challenges in syndromic management of sexually transmitted diseases. *Sexually Transmitted Infections*. 74 (Suppl 1).
- Daniel S (1999). Youth friendly clinics evaluation: November-December 1999. Kyev, Ukraine: UNICEF.
- Dartnall E, Schneider H, Hjlatsgwayo Z (1997). *STD management in the private sector: a national evaluation*. Johannesburg: Centre for Health Policy, University of Witwatersrand, August
- De Silva D (1998). Sri Lanka. Country Report. In: *Intercountry Consultation on Development of Strategies for Adolescent Health*, New Delhi, May 25-29: Ministry of Welfare, General Health Services.
- Dehne KL, Snow R (1999). Integrating STD management into family planning services: What are the benefits? *WHO Occasional Paper Series I*. Geneva: WHO.
- DeLisle S, Wasserheit JN (1999). Accelerated campaign to enhance STD services (access) for youth: successes, challenges, and lessons learned. *Sexual Transmitted Diseases*. 26(4, Suppl):S28-S41.
- De Schamphelleire I (1997). Review of the literature and other research to determine the validation of the syndromic approach in the management of sexually transmitted diseases in women and adolescents. First Draft, Part II: Adolescents. Geneva: WHO, ADH and UNAIDS (unpublished draft).
- DFW, MoH & FW [Ministry of Health and Family Welfare, Department of Family Welfare] (1998). *India Country Paper*. Theme Paper prepared for United Nations Population Fund sponsored South Asia Conference on the Adolescent, July 21-23, New Delhi, India.
- Diallo M O, Ghys P D, Vuylsteke B, *et al.* (1998). Evaluation of simple diagnostic algorithms for neisseria gonorrhoea and chlamydia trachomatis cervical infections in female sex workers in Abidjan, Côte d'Ivoire. *Sex Transm Inf*. 74(Suppl):S106-S111.
- Dickson-Tetteh K, Pettifor A, Moleko W. (2001). Working with public sector clinics to provide adolescent-friendly services in South Africa. *Reproductive Health Matters* 9(17):160-169.
- Disanyake JB (1998). *Understanding the Sinhalese*. Colombo, Sri Lanka: Chatura Printers.
- Dogoré E, Trolet C, Dogoré R, Rey JL (1989). Les MST au service de santé scolaire de Man en Côte d'Ivoire. *Publications Médicales Africaines*. 111:31-34.
- Domingo LJ (1995). *Youth under threat of HIV/AIDS. Young adult fertility and sexuality study II*. Queszon City: University of the Philippines, Population Institute.

- Donovan P (1994). Delaying pelvic exams to encourage contraceptive use. *Fam Plan Perspect.* 24:136 - 144.
- Eiumtrakul S, Matanasarawoot A, Tulvatana S, *et al* (1992). Sexually transmitted diseases and HIV among young Thai men. *Int Conf AIDS.* 8(1), Mo10 (abstract no. MoC 0028). ORT
- Erulkar AS (1997). *Making health services user friendly to adolescents.* Letter to Jane Ferguson. Geneva: WHO.
- Erulkar AS, Mensch BS (1997). *Youth Centres in Kenya: Evaluation of the Family Planning Association of Kenya Programme.* Nairobi & New York: Population Council.
- Faundes A, Tanaka AC (1992). Reproductive tract infections in Brazil: solutions in a difficult economic climate. In: A Germain A *et al.*[eds]. *Reproductive tract infections: global impact and priorities for women's reproductive health.* New York: Plenum Press.
- Feldman DA (1997). HIV prevention among Zambian adolescents: developing a valorization/norm change model. *Social Science and Medicine.* 44:455-468.
- Ferrando D, Meikle C, Benavente J (1995). *Adolescents health services project evaluation at Fundación San Gabriel (NCA/BOL 017-3) in La PAZ, Bolivia.* Draft May 5 1995. Watertown: Pathfinder International.
- Fetters T, Mupela E, Rutenberg N (1997). "Don't trust your girlfriend or you're gonna die like a chicken": a participatory assessment of adolescent sexual and reproductive health in a high risk environment. Lusaka, Zambia: CARE International.
- FHI [Family Health International] (1997). *Reproductive Health of Young Adults: Contraception, Pregnancy and Sexually Transmitted Diseases. Contraceptive Technology Update Series.* Research Triangle Park, N.C.: FHI in collaboration with FOCUS on Young Adults Program.
- FOCUS on Young Adults (1999). *Young adult reproductive health in Zambia: a review of studies and programmes.* Washington, D.C.: FOCUS.
- FOCUS on Young Adults (1998). *Annotated Bibliography of Training Curricula for Young Adult Reproductive Health Programs.* <http://www.pathfind.org/RPPS-Papers/AnnotatedBibliography.html>
- Ford N (1992). The sexual and contraceptive lifestyle of young people. *B J Fam Plan.* 18:52-55.
- Fortenberry JD (1997). Health care seeking behaviours related to sexually transmitted diseases among adolescents. *American Journal of Public Health.* 87(3):417-420.
- Fortenberry JD, Orr DP, Zimet GD, Blythe MJ (1997). Weekly and seasonal variation in sexual behaviors among adolescent women with sexually transmitted diseases. *J Adolescent Health.* 20(6):420-425.
- Fothergill K, Ballard E (1996). *School-Linked Health Centers. Update 1995.* Support Center for School-Based and School-Linked Health Care. Washington DC, Los Angeles: Advocates For Youth
- FPAI [Family Planning Association of India] (1994). *Youth sexuality: a study of knowledge, attitude, beliefs and practices among urban educated youth, 1993-1994.* Bombay: FPAI.
- Garcia M (2000). Public sector model for the use of pre-packaged sexually transmitted infection (STI) therapy (PPT) to reduce the incidence of HIV. *Int Conf AIDS,* Durban:13:197 (abstract No. WePeD4572).
- Garcia PJ, Gotuzzo E, Hughes JP, Holmes KK (1998). Syndromic management of STDs in pharmacies: evaluation and randomizes intervention trial. *Sex Transm Infect.* 74(Suppl1):S153-S158.
- Gevelber MA, Biro FM (1999). Adolescents and sexually transmitted diseases. *Pediatric Clinics of North America.* 46(4):747-766.
- Giesecke J, Scalia-Tomba G, Gothberg M, Tull P (1992). Sexual behavior related to the spread of sexually transmitted diseases – a population-based survey. *Int J STD & AIDS.* 3:255-260.
- Glanz A, McVey D, Glass R (1993). *Talking about it. Young people, sexual behavior and HIV.* London, UK: Health Education Authority.
- Glover EK, Erulkar AS, Nerquaye-Tetteh J (1998). *Youth centers in Ghana: assessment of the Planned Parenthood Association of Ghana Programme.* Nairobi: Population Council.
- Görge R, Yansané L, Marx M, *et al.* (1998). Sexual behaviour and attitudes among unmarried urban youths in Guinea. *Int Fam Plann Persp.* 24(2):65-71
- Görge R (1994). *Adolescents, sexuality and family planning.* Paper for submission to World Population Conference, Cairo, Egypt.
- Goswami PK (1995). Adolescent Girl and MCH Programme in India. In: S Mehra [ed]. *Adolescent Girl in India: An Indian Perspective.* Saket, New Delhi: MAMTA; Health Institute for Mother and Child.
- Government of Malawi (1997). *The National Youth Council of Malawi: a position paper clarifying the status of the council in relation to the department of youth.* Lilongwe, Malawi: Department of Youth.

- Grant J and Measham DM, [eds] (1995). *Reproductive Tract Infection. Lessons learned from the field: where do we go from here?* New York: Population Council.
- Green EC (1994). *AIDS and STD in Africa, bridging the gap between traditional healing and modern medicine.* Bolder: Westview Press.
- Green EC, Makhubu L (1984). Traditional healers in Swaziland: toward improved cooperation between the traditional and modern health sectors. *Social Science and Medicine*. 18(12):1071-1079.
- Green EC, Monger H (1989). *AIDS and other sexually transmitted diseases in Liberia: results of a qualitative study.* Washington D.C.: The Futures Group.
- Green M, Hoffman IF, Brathwaite A, *et al.* (1998). Improving sexually transmitted disease management in the private sector: the Jamaica experience. *AIDS*. 12(Suppl2): S67-S72.
- Grosskurth (1999). *Sexually Transmitted diseases in adolescents: handout.* Orientation program on adolescent health-STD in adolescents. London: International Family Health.
- GTZ [Deutsche Gesellschaft für Technische Zusammenarbeit] (1997). *Youth in development cooperation: approaches and prospects in the multisectoral planning group "Youth".* Eschborn: GTZ.
- GTZ [Deutsche Gesellschaft für Technische Zusammenarbeit] (1998). *Deskstudy on the realization of AIDS/STD aspects in GTZ-supported Basic Health Projects. Considering the degree of integration and the realization of the Reproductive Health Concept.* Eschborn: GTZ, Division Health, education, nutrition, emergency aid. Sector project AIDS prevention & control in development countries.
- Gyepi-Garbah B, Nichols DJ, Kpedekpo GMK (1985). *Adolescent fertility in sub-Saharan Africa: An overview.* Boston: Pathfinder International.
- Haider SJ, Saleh SN, Kamal N, *et al.* (1997). *Study of adolescence: dynamics of perception, attitude, knowledge and use of reproductive health care.* Dhaka: Population Council and Research Evaluation Associates for Development (REA).
- Hall L (1999). *Evaluation of the adolescent reproductive health project.* Capetown: Planned Parenthood Association.
- Handwerker WP (1993). Gender power differences between parents and high-risk sexual behavior by their children: AIDS/STD risk factors extend to a prior generation. *Journal of Women's Health*. 2(3):301-315.
- Hardee K, Yount KM (1995). *From rhetoric to reality: delivering reproductive health promises through integrated services.* Arlington, VA: Family Health International, Women's Studies Project.
- Harms G, *et al.* (1998). Perceptions and patterns of reproductive tract infections in a young rural population in North-West Namibia. *International Journal of STD & AIDS*. 9:744-750.
- Harrison A, Xaba N, Kunene P. (2001). Understanding safe sex: gender narratives of HIV and pregnancy prevention by rural South African school-going youth. *Reproductive Health Matters* 9(17):63-71.
- Hausser D, Michaud PA (1994). Does a condom-promoting strategy (the Swiss STOP-AIDS Campaign) modify sexual behaviour among adolescents? *Pediatrics*. 4:580-585.
- Hawkins K, Ojaka D, Moshesha B (1992). *Review of the Youth programme of the family Guidance Association of Ethiopia.* London: IPPF.
- Haworth A, Mataka EN, Muzizi L, Poulter C (1996). Adult/child sexual experiences reported by tertiary level students in Zambia. *Int Conf AIDS, Vancouver:11,1, 382* (abstract no. Tu.C.2683).
- Health Research Unit (1996). *Pharmacy outlet survey: STD management.* Report, Accra: Ghana: Ministry of Health
- Heise L, Moore K, Toubia N (1995). *Sexual coercion and reproductive health: a focus on research.* New York: The Population Council.
- Helitzer-Allen D, Allen H (1992). *The manual for targeted intervention research on sexually transmitted illnesses with community members.* Baltimore: FHI/AIDSCAP.
- Herdman C (1999). Serving the future means confronting the realities facing youth. *Transitions*. 10(3):11-14.
- Hillis SD, Nakashima A, Marchbanks PA, *et al.* (1993). Risk factors for recurrent chlamydia trachomatis infections in women. *Am J Obstet Gynecol*. 170(3):801-806.
- Howson CP, Harrison PF, Hotra D, Law M (1996). *In her lifetime: female morbidity and mortality in sub-Saharan Africa.* Washington, D.C.: National Academy Press.
- Hudson CP (1999). Syndromic management for sexually transmitted diseases: back to the drawing board. *International Journal of STD & AIDS*. 10:423-434.

- Hughes J, Berkley S (1999). Convergence in contexts and opportunities for research: STDs among adolescents in developing and developed countries. New York: The Rockefeller Foundation and International AIDS Vaccine Initiative.
- Hughes J, McCauley AP (1998). Improving the fit: Adolescent's needs and future programs for sexual and reproductive health in developing countries. *Studies in Family Planning*. 29(2):233-245.
- ICRW [International Center for Research on Women] (1996). *Vulnerability and Opportunity: Adolescents and HIV/AIDS in the developing world*. Washington, D.C.: ICRW.
- Ikimalo J, Kemp J, Obunge OK, *et al.* (1999). STI among Nigerian adolescent school girls. *Sex Trans Inf*. 75:121.
- International Clearinghouse on Adolescent Fertility (1991). Reaching sexually exploited youth. *Passages*. 10(1):1-2 + 7.
- IPPF [International Planned Parenthood Federation] (1994b). *Youth and Sexuality*. IPPF South Asia Regional Bureau: IPPF (Workshop report).
- IPPF [International Planned Parenthood Federation] (1994a). Understanding Adolescents: An IPPF Report on young peoples sexual and reproductive health needs. London: IPPF.
- James NJ, Hughes S, Ahmed-Jusuf I, Slack RCB (1999). A collaborative approach to management of chlamydial infection among teenagers seeking contraceptive care in a community setting. *Sex Trans Inf*. 75: 156-161.
- Kabeya B, Orfila J (1997). [Means of diagnosis of Chlamydia pneumoniae infection] Review, French. *Rev Pneumol Clin*. 53(suppl1):S4-7.
- Kabir, R (1999). *Adolescent Girls in Bangladesh*. Dhaka: UNICEF.
- Kambou SD (1998). The evolution and application of participatory learning and action (PLA) in the Partnership for Adolescent Health Project (PALS). Zambia: CARE International and FOCUS on Young Adults.
- Kambugu FSK, Jacobs B, Lwanga A, *et al.* (2000). Evaluation of a socially marketed pre-packaged treatment kit for men with urethral discharge in Uganda. *Int Conf AIDS*, Durban:13, 386 (abstract no. ThOrC765).
- Katabesi D (1996). Young people and STDs: A prescription for change. *AIDScriptions, Family Health International* 3(1):21-23.
- Kaufman J (1995). In: J. Grant and D.M. Measham [eds]. *Reproductive Tract Infection. Lessons learned from the field: where do we go from here?* New York: Population Council.
- Khamboonruang C, Beyrer C, Natpratan C, *et al.* (1996). Human immunodeficiency virus infection and self-treatment for sexually transmitted diseases among northern Thai men. *Sex Trans Dis*. 23(4):264-269.
- Kilmarz PH, Black CM, Limpakarnjanarat K, *et al.* (1998). Rapid assessment of sexually transmitted diseases in a sentinel population in Thailand: prevalence of chlamydial infection, gonorrhoea, and syphilis among pregnant women – 1996. *Sex Trans Inf*. 74:189-193.
- King M (1995). Sexual assaults on men: assessment and management. *Br J Hosp Med*. 53:245-246.
- Kiragu K (1991). Factors associated with sexual and contraceptive behavior among school adolescents in Kenya: The 1989 Nakuru District Adolescent Fertility Survey, final report. Baltimore: John Hopkins School of Hygiene and Public Health.
- Kiragu K (1995). Do adults and youth have differing views? A case study in Kenya. In: A.P.McCauley, C. Salter, *et al.*[eds]. Meeting the needs of young adults. *Population Report*, series J, 41:10-11.
- Kishen M, Hopwood J (1998). Sex and Contraception: Contraception. In A Garden [ed]: *Paediatric and Adolescent Gynaecology*. London: Arnold:334-338.
- Kleinman A (1980). *Patients and Healers in the Context of Culture*. Berkley, California: University of California Press.
- Kliem CG (1993). Growing up in Indonesia: Youth and social change in a Moluccan town. Saarbrücken: Breitenbach.
- Kloforn A (1998). *FOCUS on Young Adults: Survey of young adult reproductive health programs*. <http://www.pathfind.org/progsurveyreport.html:FOCUS>.
- Klouman E, Masenga EJ, Sam NE *et al.* (2000). Asymptomatic gonorrhoea and chlamydial infection in a population-based and work-site based sample of men in Kilimanjaro, Tanzania. *International Journal of STDs and AIDS*. 11(10):666-674.
- Knebel D, Spitkovsky D, Ridder R (1997). Interactions between steroid hormones and viral oncogenes in the pathogenesis of cervical cancer. *Verh Dtsch Ges Path*. 81:233-239.

- Kolbe LJ, et al. (1994). National and International Strategies to Improve School Health Programmes. (Unpublished data).
- Konya H E, Madu S N, Maphoto R C (1998). A quantitative and qualitative investigation into child sexual abuse (CSA) in a village in the western region of Northern Province, South Afrika. 2<sup>nd</sup> European Congress on Tropical Medicine, Liverpool, UK. 14-18 Sept. (abstract no. 091).
- Koontz SL, Conly SR (1994). *Youth at Risk: Meeting the Sexual Health Needs of Adolescents*. Population Policy Information Kit No 9. Washington, D.C.: Population Action International.
- Koutsky LA, Holmes KK, Critchlow CW, et al. (1992). A Cohort Study of the Risk of Cervical Intraepithelial Neoplasia Grade 2 or 3 in Relation to Papillomavirus Infection. *The New England Journal of Medicine*. 327:1272-1278.
- Kumah, OM, Dan Odallo, Shefner C, et al. (1992). *Kenya youth IEC needs assessment: Nov. 15-28 Trip Report*. Baltimore: Centre for Communications Programs.
- Kumwenda-Phiri R (1999). Reaching young people with sexually transmitted illnesses: an experience with three public health clinics in Lusaka, Zambia. MA-thesis, London: London School of Hygiene and Tropical Medicine.
- Kyelem D (1999). *Young people's access to sexual and reproductive health services in Kathmandu, Nepal*. MA-thesis, Heidelberg: University of Heidelberg, Dept. of Tropical Hygiene and Public Health.
- Lane MA, McCright J, Garret K, et al. (1999). Features of sexually transmitted disease services important to African American adolescents. *Arch Pediatr Adolesc Med*. 153:829-833.
- Larsen JV, Chapman JA, Armstrong A (1998). Child sexual abuse in Kwa Zulu-Natal, South Africa. *Trans Roy Soc Trop Med Hyg*. 92:262-264.
- LDHMT [Lusaka District Health Management Team] (1999). Evaluation report of the youth friendly sexual and reproductive health services project in urban Lusaka (March 1998-April 1999). Lusaka, Zambia: LDHMT.
- Lema VM (1990). Sexual behavior, contraceptive practice and knowledge of reproductive biology among adolescent secondary school girls in Nairobi, Kenya. *E A Med J*. 67:86-94.
- Lema VM, Hassan MA (1994). Knowledge of sexually transmitted diseases, HIV infections and AIDS among sexually active adolescents in Nairobi, Kenya and its relationship to their sexual behavior and contraception. *E A Med J*. 71:122-28.
- Levin K (1996). Youth Clinics in Sweden: Sociocultural contextualization and evaluation from a sex-equitable perspective on sexuality education and services. Stockholm: Stockholm University.
- Lindberg LD, Sonnenstein FL, Ku L, et al. (1997). Young men's experience with condom breakage. *Family Planning Perspectives*. 29:128-131.
- Lubanga RCN (1997). Naguru Teenage information and health centre, Kampala Uganda. Evaluation Report. Kampala: UNFPA.
- Lush L, Cleland J, Walt G, et al. (1999). Integrating reproductive health: myth and ideology. *Bulletin of the World Health Organization*. 77:771-777.
- Machel JZ. (2001). Unsafe sexual behaviour among schoolgirls in Mozambique: a matter of gender and class. *Reproductive Health Matters* 9(17):82-90.
- Maddaleno M (1994). *Promoting Comprehensive Health Services for Adolescents in East Metropolitan Santiago de Chile*. (Final report, Department of Pediatrics and Psychiatry, Santiago de Chile: University of Chile).
- Maddaleno M, Gattini C (1995). Programming for Adolescent Health: national adolescent health program in Chile, case study. Santiago: University of Chile.
- Mafany NM, Mati JKG, Nasah BT (1990). Knowledge of and attitudes towards sexually transmitted diseases among secondary school students in Fako District, Cameroon. *E A Med J*. 67:707-711.
- Maggwa ABN, Askew I (1997). Integrating STI/HIV management strategies into existing MCH/FP programs: Lessons from case studies in east and south Africa. (Operation Research: Africa Project II), Nairobi, Kenya: The Population Council.
- Maggwa N, Wabaru JK, Kariuki BK, Maitha G (1999). Improving the management of STIs among MCH/FP clients at the Nakuru Municipal Council health clinics. Nairobi, Kenya: USAID/Population Council.
- Mano Consultancy Services (1998). Adolescent reproductive health evaluation baseline research: report for Margaret Sanger Centre International Programme on Premature Parenting and STDs. Lusaka: Mano Consultancy Services, LTD.
- Manzini N. (2001). Sexual initiation and childbearing among adolescent girls in KwaZulu Natal, South Africa. *Reproductive Health Matters* 9(17):44-52.

- Marchand C (2000). Can the STI epidemic be addressed through the private sector: a review of the evidence. Draft, Geneva: WHO, Reproductive Health Research.
- Markos AR, Wade AH, Walzman M (1992). The adolescent female prostitute and sexually transmitted diseases. *International Journal of STD and AIDS*. 3:92-95.
- Martin DH (1990). Chlamydial infections. *Med Clin North Am*. 74:1367-87.
- Mati JKG (1997). Evaluation of Reproductive Health services: High Risk Young Adults Clinic, Kenyatta National Hospital, Nairobi, Kenya. Africa Regional Office, Nairobi, Kenya: Pathfinder International.
- McCauley AP, Salter C, *et al.*[eds] (1995). Meeting the needs of young adults. *Population Report*, series J, 41:1-39.
- McHarney-Brown C, Kaufman A (1991). Comparison of adolescent health care provided at a school-based clinic and at a hospital-based pediatric clinic. *Southern Medical Journal*. 84(11):1340-1342.
- McMullen R J (1987). Youth prostitution, a balance of power. *J Adolesc*. 10:35-43.
- Mendoza AM, Chinvarasopak W (1996). Mobilizing pharmacists for STD control. *AIDS Captions*. 111(1).
- Mensch BS, Lloyd CB (1998). Gender differences in the schooling experiences of Kenyan Adolescents. *Studies in Family Planning*. 29(2):167-184.
- Mercer R, Ramos S, Szulik D, Zamberlin N.(2001). The need for youth-oriented policies and programmes on responsible sexuality in Argentina. *Reproductive Health Matters* 9(17):184-191.
- Miller KS, Clark LF, Moore J (1997). Sexual initiation with older male partners and subsequent HIV risk behavior among female adolescents. *Family Planning Perspectives*. 29:212-214.
- Millstein SG, Moscicki A-B (1995). Sexually-transmitted Disease in Female Adolescents: Effects of Psychosocial Factors and High Risk Behaviors. *Journal of Adolescent Health*. 17:83-90.
- Mindel, *et al.*[eds] (1998). Syndromic approach to STD management. *Sexually Transmitted Infections*. 74(Suppl.1).
- Ministère de la Santé, Togo (1995). Enquête sur la situation sanitaire en milieu scolaire et universités au Togo. Lomé: Ministère de la Santé, Togo.
- Ministry of Health, Bulgaria/ WHO (1998). Assessment of Access to the Sexual and reproductive Health care services for school-going adolescents in Varna Region of Republic of Bulgaria, June 1998. Sofia: Ministry of Health, Bulgaria.
- Ministry of Health, Malaysia (1998). Improving the access of school going adolescents to the health services they need (rapid assessment tool). Kota Tinggi, Johor, Malaysia. Kuala Lumpur: Ministry of Health, Malaysia.
- Ministry of Welfare, UNDCP, UNICEF, WHO, NACO (1996). Reducing risk behavior related to HIV/AIDS, STDs and drug abuse among street children. National Report. New Delhi: WHO
- Mkandawire RM (1994). Commonwealth Africa Experiences in youth policy and programme development (unpublished). Lusaka, Zambia.
- Mnari E, Mhalu F, Chalamilla G, *et al.* (1998). *Setting up STD clinics specific for youths and adolescents in developing countries*. International Multisectoral AIDS Conference in Arusha, Tanzania, 6-10 December.
- Morris L (1992). Sexual behavior and use of contraception among young adults: What have we learned from the young adult reproductive health surveys in Latin America? Presented at the first Inter-African Conference on Adolescent Health, Nairobi, March 24-27.
- Morris L (1995). *Sexual behavior and contraceptive use among young adults in Central America*. Presented at the Symposium on Population in Central America. San José, Costa Rica, October 16-18.
- Moyo I (1999). Results of the Gweru youth client exit interviews. Draft. Harare, Zimbabwe: SEATS.
- MSI [Marie Stopes International] (1995). A cross-cultural study of Adolescents' access to Family Planning and Reproductive Health education and services. Report. London: MSI.
- MSI [Marie Stopes International] (1999). *Working with Adolescents. ICPD In Action*. London: MSI.
- Msiska R, Nangawe E, Mulenga *et al* (1997) Understanding lay perspectives: care options for STD treatment in Lusaka, Zambia. *Health Policy and Planning* 12:248-52
- Mupela E, Fetters TA (1997). A participatory assessment of adolescent sexual and reproductive health in New Kanyama Compound, Lusaka. Lusaka, Zambia. Lusaka: CARE International, Zambia.

- Murray CJ, Michaud C (1997) Estimates of the burden of disease among adolescents, youth and young people: a re-analysis of the global burden of disease version 5.50 results. Working Paper, Burden of Disease Unit, Boston: Harvard Center for Population and Development Studies.
- Mwakagile D, Mnari E, Makwaya C, et al. (1998). Observations from running a special reproductive health clinic for adolescents and youths in Dar es Salaam, Tanzania. Dar es Salaam: GTZ, Paper No. 027.
- Mwakagile D, Swai ABM, Sandström E, et al. (1996). High frequency of sexually transmitted diseases among pregnant women in Dar es Salaam, Tanzania: need for intervention. *East African Medical Journal*. 73(10):675-678.
- Naré C, Katz K and Tolley E (1996). Measuring Access to Family Planning Education and Services for Young Adults in Dakar, Senegal. Dakar, Senegal: CEFFEVA.
- Ndyanabangi BA (1999). Review of health sector intervention for improving adolescent health and development in four African countries (Botswana, Cameroon, Uganda and Zimbabwe). Draft, Harare: WHO.
- Nebout AC (1995). *Analyse de la situation des Services de santé Scolaire en Côte d'Ivoire*. Abidjan: Ministère de la Santé Publique, Côte d'Ivoire.
- Nelson A, Neinstein L S (1996). Human papilloma virus and molluscum contagiosum. In L.S. Neinstein [ed]. *Adolescent health care: a practical guide*, 3<sup>rd</sup> edition. Baltimore: Williams & Wilkins: 954-968.
- Newton, N (2000). Applying Best Practices to Youth Reproductive Health. *Lessons learned from SEATS' Experience*. Arlington: SEATS/JSI
- Nguyen M, Saucier J, Pica L (1997). Factors influencing the intention to use condoms in Quebec sexually inactive male adolescents. *J Adolesc Health*. 15:269-274.
- Nichter M (1996): Self-medication and STD prevention (editorial). *Sexually Transmitted Infections* 23:353-6
- Nzioka C.(2001). Perspectives of adolescent boys on the risks of unwanted pregnancy and sexually transmitted infections: Kenya. *Reproductive Health Matters* 9(17):108-117.
- Nzyuko S, et al. (1997). Adolescent high risk behavior along the Trans-Africa highway in Kenya. *AIDS*. 11(Suppl): S21-S26.
- O'Reilly KR, Aral SO (1985). Adolescence and sexual behavior: trends and implications for STD. *Journal of Adolescent Health Care*. 6:262-270.
- Obasi A, Mosha F, Qugley M, et al. (1999). Antibody to herpes simplex virus type 2 as a marker of sexual risk behavior in rural Tanzania. *Journal of Infectious Diseases*. 179(1): 16-24.
- Obunge OK, Brabin L, Dollimore N, et al. (2000). Syndromic management of vaginal discharge in Nigerian adolescents, quoted in Brabin et al (2000) (unpublished)
- Ochwo M, Kambugu FSK, Tiffit S, Cutler JR (2000). The introduction of a socially marketed pre-packaged treatment kit for men with urethral discharge in Uganda. *Int Conf AIDS*, Durban:13, 135 (abstract no. WePeC4489).
- OMJ, Akinkuade FO (1991). Adolescent AIDS knowledge, attitudes and beliefs about preventive practices in Nigeria. *Eur J Epid* 7:127-33.
- Ofkar MK, Berman S, Cloud G, et al. (1994). Population specific targeted STD program for high-risk adolescents: Why did it work? *Sexually Transmitted Diseases*. 21(Suppl 2): 139 (Abstract).
- Oh MK, Berman S, Cloud G, et al. (1993). *Population specific targeted STD program for high-risk adolescents: why did it work?* Helsinki: Tenth International Meeting of the International Society for STD Research (abstract no. 129).
- Oh MK, Cloud GA, Wallace LS, et al. (1994). Sexual behavior and sexually transmitted diseases among male adolescents in detention. *Sexually Transmitted Diseases*. 21(3):127-132.
- Okonofua FE (1997). Improving the treatment and prevention of sexually transmissible infections among Nigerian adolescents: report of an intervention development workshop. Report presented to Mac Arthur and Rockefeller Foundations. Unpublished.
- Okonofua FE, Ogonor JI, Omorodion FI, et al. (1999). Assessment of health services for treatment of sexually transmitted infections among Nigerian adolescents. *Sexually Transmitted Diseases*. 26(3):184-190.
- Olukoya A, Elias C (1996). Perceptions of reproductive tract morbidity among Nigerian women and men. *Reproductive Health Matters*. 7:56-65.
- Osoimehin B, Dare L, Ojengbede O (1994). Sexual behavior and prevalence of STD and HIV infection in Nigerian adolescents. *Int Conf AIDS*, 10:2, 69 (abstract no. 552D).
- Over M, Piot P (1993). HIV infection and sexually transmitted diseases. Disease control priorities in developing countries. New York: Oxford University Press.

- PAI [Population Action International] (1994). *Programmes in profile: linking family planning and STD services*. Washington, D.C.: PAI.
- Parker, Altman (1996). In: J.Mann *et al.* *AIDS in the World II*. New York: Oxford University Press.
- PATH [Programme for Appropriate Technology in Health] (1997). *Adolescent Girls and their rights. Adolescent girl's health and nutrition with special emphasis on reproductive health*. Background paper for UNFPA expert group meeting for adolescent girls and their rights. Washington; D.C.: PATH.
- PATH [Programme for Appropriate Technology in Health] (1997). STD control and primary health care for women: experience and challenges. *Outlook*. 15:2.
- Paxman JM (1993). *Clothing the emperor-seeing and meeting. The reproductive health needs of youth*. Lessons from Pathfinder's Adolescent Fertility Programs. New York: Rockefeller Foundation.
- Paxman JM, Zuckerman RJ (1987). *Laws and Policies Affecting Adolescent Health*. Geneva: WHO.
- Paxton LA, Sewankambo N, Gray R, *et al.* (1998). Asymptomatic non-ulcerative genital tract infections in a rural Ugandan population. *Sex Transm Inf.* 74:421-425.
- Perez F (1999). Brief summary of the programme concerning adolescents and reproductive health in three countries of Latin America. Bordeaux: Université Victor Segalen.
- Persson E, Sandström B, Svensson C (1989). Bristande resurser för klamydiabekämpning vid vara ungdomsmottagningar. *Läkartidningen*. 86(6):436-439.
- Phiri A, Erulkar AS (1997). A situation analysis of the Zimbabwe National Family Planning Council's youth centers. Nairobi: Population Council.
- Pathfinder International (2000). Adolescent Reproductive Health: Program Examples. [http://www.rho.org/html/adol\\_progexamples.htm](http://www.rho.org/html/adol_progexamples.htm).
- Pathfinder International (2000). *Workbook I: Planning for an assessment of youth-friendly services*. <http://www.pathfind.org/guides-tools.htm>.
- Piot P, Rowley J (1992). Economic impact of reproductive tract infections and resources for their control. In: A Germain *et al.* [eds]. *Reproductive tract infections: global impact and priorities for women's reproductive health*. New York: Plenum Press:227-249.
- Population Council (1998) Perception et Comportement des Hommes, des femmes et des prestataires de services en matière de morbidités relative à la santé de la reproduction. Bazega, Burkina Faso: Laboratoire de Sante Communautaire.
- Population Council (1999). *Strengthening Reproductive Health in Africa through Operational Research*. Final Report of the Africa Operations Research and Technical Assistance Project II. Nairobi: Population Council
- PPAG [Planned Parenthood Association of Ghana] (1996). Untitled document. Accra: PPAG
- PPASA [Planned Parenthood Association of SA] (1996). Breaking silence: Interim report on the adolescent reproductive health service need assessment at Nhlanguwini. Kwazulu-Natal: PPSA.
- PPASA [Planned Parenthood Association of SA] (1999). Annual Report 1999. Johannesburg: PPASA
- PPASA [Planned Parenthood Association of SA] (undated). Township Youth and sexuality: The PPASA's Youth Information service in new Crossroads: a summary of monitoring and evaluation findings. Western Cape: PPASA.
- Pratomo H (1999). Report of the assessment of the situation of adolescents in selected sear countries (Bangladesh, Bhutan, India, Maldives, Nepal and Sri Lanka). New Delhi: WHO/South-East Asia Regional Office.
- Profamilia (1996). Talleres para Adolescentes Sobre Sexualidad: Evaluación. Gerencia de Evaluación e Investigación. Santafé de Bogotá: Profamilia.
- Profamilia (1998). Centro para Jóvenes: Otra realidad de Profamilia. Santafé de Bogotá: UNICEF.
- PSI [Population Services International] (2000). The study of sexual knowledge, attitudes, practice and behavior of young people in Saratov and Saratov Oblast. St Petersburg: PSI.
- Quinn T, Gaydos C, Shephers M, *et al.* (1996). Epidemiologic and microbiologic correlates of chlamydia trachomatis infection in sexual partnerships. *JAMA*. 276:1737-1742.
- Raffaelli M, Campos R, Meritt AP, *et al* (1993). Sexual practices and attitudes of street youth in Belo Horizonte, Brazil. *Social Science and Medicine*. 37(5): 661-670.
- Rajani R, Kudrati M (1996). The varieties of sexual experience of the street children of Mwanza, Tanzania. Learning about sexuality: A practical beginning. New York: The Population Council and Women's Health Coalition.

- Rama Rao S, Townsend J, Khan Me (1996). *A model of costs for providing RTI case management services in Uttar Pradesh*. New Delhi: Population Council Asia and Near East (Technical Paper No.6).
- Recio MC, Rios JL (1989). A review of some antimicrobial compounds isolated from medicinal plants reported in literature, 1978-1988. *Phytotherapy Research*. 3:117-125.
- Reproductive Health Research Unit (1999). *Adolescent friendly clinic initiative*. Johannesburg: University of Witwatersrand.
- Richters J, Gerofi J, Donovan B (1995). Why do condoms break or slip off in use? An exploratory study. *International Journal of STD and AIDS*. 6(1): 11-18.
- Rosenthal SL, Biro FM, Cohen SS, Succop PA, Stanberry LR (1995). Strategies for coping with sexually transmitted diseases by adolescent females. *Adolescence*. 30: 655-666.
- Rowley J, Berkley S (1998). Sexually transmitted diseases. In: C.J.L. Murray and A.D. Lopez [eds]. *Health dimensions of sex and reproduction: the global burden of sexually transmitted diseases, HIV, Maternal conditions, perinatal disorders, and congenital anomalies*. Harvard: Harvard University Press.
- Ruiz J (1994). Street youth in Colombia: lifestyle, attitudes and knowledge. *AIDS health promotion exchange*. 1:12-14.
- Schaffer R, De Blassie RR (1984). Adolescent prostitution. *Adolescence*. 75:689-696.
- Schuster MA, Bell RM, Petersen LP, Kanouse DE (1996). Communication between adolescents and physicians about sexual behavior and risk prevention. *Arch Pediatr Adolesc Med*. 150:906-913.
- SEATS (1999). *Lusaka youth services client exit interviews*. Draft. Lusaka, Zambia: SEATS.
- SEATS (2000). *Mainstreaming Quality Improvement in Family Planning and Reproductive Health service delivery*. Context & Case Studies. SEATS II/JSI, Arlington: USAID
- Secretaría de Salud (1999). *La salud sexual y reproductiva de los y las adolescentes: Una estrategia preventiva*. Mexico D.F.: Secretaría de Salud.
- Senderowitz J (1999). *Making Reproductive Health Services Youth Friendly*. Washington, D.C.: FOCUS on Young Adults, Pathfinder International.
- Senderowitz J (1997). *Health Facility Programs on Reproductive Health for Young Adults*. Washington, D.C.: FOCUS on Young Adults Research Series.
- Shafer M-A, Pantell R, Schachter J (1999). Is the routine pelvic examination needed with the advent of urine-based screening for sexually transmitted diseases? *Arch Pediatr Adolesc Med*. 153:119-125.
- Shah M, et al. (1996). *Participatory assessment of adolescent sexual and reproductive health in Mt'endere Compound, Lusaka*. Lusaka, Zambia: CARE International.
- Shelton JD (1999). Prevention first: a three-pronged strategy to integrate family planning efforts against HIV and sexually transmitted infections. *International Family Planning Perspectives*. 25(3): 147-152.
- Sherrard J, Barlow D (1996). Gonorrhoea in men: clinical and diagnostic aspects. *Genitourin Med*. 72:422-426.
- Shriver M (1999). Enhanced adolescent STD prevention projects: commentary on "Accelerated Campaign to Enhance STD Services (ACCESS) For Youth: Successes, Challenges, and Lessons Learned". *Sex Trans Dis*. 4(Suppl): S42-S43.
- Silma J (2000). *Youth clinics in Estonia – work and results*. BA-thesis, Tallin, Estonia: International University Estonia.
- Singh S, Wulf D (1990). *Today's adolescents, tomorrow's parents: a portrait of the Americas*. New York: The Allan Guttmacher Institute.
- Singh S, Wulf D, Samara R, Cuca YP (2000). Gender differences in the timing of first intercourse: data from 14 countries. *International Family Planning Perspectives*. 26(1):21-28 & 43.
- Smith PB, Chacko MR, McGill L, Phillips LE (1991). Sexually transmitted disease treatment and return for test of cure of adolescents in a family planning clinic. *Journal of Adolesc Health*. 12(1): 49-52.
- Smith PB, Phillips LE, Faro S, et al. (1988). Predominant sexually transmitted diseases among different age and ethnic groups of indigent sexually active adolescents attending a family planning clinic. *Journal of Adolescent Health Care*. 9:291-195.
- Stamm EW, Holmes KK (1990). Chlamydia trachomatis infections of the adult. In: KK. Holmes et al. [eds]. *Sexually transmitted diseases*. New York: Mc Craw Hill: 181-194.
- Stewart L, Eckert E [eds](1995). *Indicators for reproductive health program evaluation: final report of the subcommittee on adolescent reproductive health services*. Chapel Hill: Carolina Population Center.

- Sugerman ST, Hergenroeder AC, Chacko MR, Parcel GS (1991). Acquired immunodeficiency syndrome and adolescents: knowledge, attitudes and behaviours of runaways and homeless youth. *Am J Dis Child*. 145:431-436.
- Sweet RL, Draper DL, Hadley WK (1981). Etiology of acute alpingitis: influence of episode number and duration of symptoms. *Obstet Gynecol*. 58:62-68.
- Temmerman M, Kidula N, Tyndall M, *et al.* (1998). The supermarket for women's reproductive health: the burden of genital infections in a family planning clinic in Nairobi, Kenya. *Sex Trans Inf*. 74:202-204.
- Todd J, Hayes R, Chagalucha J, *et al.* (1998). Maximizing the power of a community randomized trial in rural Mwanza: the randomization procedure in the Mema Kwa Vijana Project. Presented at *the National Multisectoral AIDS Conference in Tanzania, Arusha, 6-10 December*. (abstract no. P118: A45).
- Townsend JN, Diaz de May E, Sepulveda Y, Santos de Garza Y, Rosenhouse S (1987). Sex education and family planning for young adults: alternative urban strategies in Mexico. *Stud Fam Plan*. 18(2): 103-108.
- Transgrud R (1998). *Adolescent Reproductive Health in East and Southern Africa: Building Experience, Four case studies*. Family Care International. (Prepared for the Regional Adolescents Reproductive Health Network, ASAIID, RESDO/ESA).
- UN [United Nations] (1995). *Population and Development, I: Programme of Action* adopted at the International Conference on Population and Development, Cairo 5-13 September 1994. New York: Department for Economic and Social Information and Policy Analysis.
- UN [United Nations] (1999a). Twenty-first special session of the General Assembly for an overall review and appraisal of the implementation of the programme of action of the international conference on population and development. Report of the Secretary-General. 5 October 1999: UN.
- UN [United Nations] (1999b). Proposals for key actions for the further implementation of the programme of action of the international conference on population and development. Revised working paper submitted by the chairman. 11 May 1999: UN.
- UNAIDS (1999). Sex and youth: contextual factors affecting risk for HIV/AIDS. Geneva: UNAIDS.
- UNAIDS/WHO [United Nations AIDS Programme/World Health Organization] (2000). *Consultation on STD interventions for preventing HIV: what is the evidence?* Geneva: WHO and UNAIDS.
- UNDP [United Nations Development Programme] (1998). *Progress Report 2: Increase of Sexual Culture of Population (Safe Sex) in the Republic of Belarus*. Belarusian Association of UNESCO Clubs, Minsk, Belarus: UNDP.
- UNFPA [United Nations Population Fund] (1993). *Reconceptualization of Population Education*. Technical paper, No 2. Authored by O.J. Sikes, New York: UNFPA.
- UNFPA [United Nations Population Fund] (1998). Report of the round table on adolescent and reproductive health and rights: key future actions. New York, 14-17 April 1998: UNFPA.
- UNFPA [United Nations Population Fund] (1999). A Five-year Review of Progress towards the Implementation of the Programme of Action of the International Conference on Population and Development. Background paper presented by UNFPA for The Hague Forum, The Hague 8-12 February 1999
- UNICEF [United Nations Children's Fund] (1996). *The state of the world's children 1996*. New York: Oxford University Press.
- UNICEF [United Nations Children's Fund] (1999a). Women in transition. The Monee project. *Regional Monitoring Reports*. No. 6. Florence: UNICEF International Child Development Centre.
- UNICEF [United Nations Children's Fund] (1999b). Youth friendly clinics project, Ukraine (YPHD): Lessons learned.. Geneva: UNICEF.
- UNICEF [United Nations Children's Fund] (1999c). User-friendly clinics (UFC) profile in Mandalay, Monywa and Taunggyi. Rangoon: UNICEF.
- UNICEF [United Nations Children's Fund] (2000). *Adolescent Health and Development*. <http://www.unicef.org/programme/health/youth/yfh.htm>: UNICEF.
- Vadies and Clark (1990). Comprehensive adolescent fertility project in urban Jamaica. *Hygie*. 9(2):21-25.
- Van Dam CJ, Becker KM, Ndowa F, Islam MQ (1998). Syndromic approach to STD case management. Where do we go from here? *Sex Trans Inf*. 74(Suppl1):S175-178.
- Van der Geest S (1987). Self-care and the informal sale of drugs in south Cameroon. *Soc Sci Med*. 25(3): 293-305.
- Van der Veen F, Fransen L (1998). Drugs for STD management in developing countries: choice, procurement, cost, and financing. *Sex Transm Inf*. 74(Suppl 1):166-174.

- Van Dyck E, Samb N, Dieng Sarr A, *et al.* (1992). Accuracy of two enzyme immunoassays and cell culture in the detection of chlamydia trachomatis in low and high-risk populations in Senegal. *Eur J Clin Microbiol Infect Dis.* 11:527-534.
- Vuytsteke B, Laga M, Alary M, *et al.* (1993). Clinical algorithms for the screening of women for gonococcal and chlamydial infection: evaluation of pregnant women and prostitutes in Zaire. *Clinical Infectious Diseases.* 17:82-88.
- Wagner HU, Van Dyck E, Roggen E, *et al.* (1994). Seroprevalence and incidence of sexually transmitted diseases in a rural Ugandan population. *International Journal of STD & AIDS.* 5(5): 332-337.
- Wasserheit JN, Aral SO (1996). The dynamic topology of sexually transmitted disease epidemics: implications for prevention strategies. *JID.* 174(suppl2):S201-S213.
- Webb D (1997). Adolescence, sex and fear: reproductive health services and young people in urban Zambia. Lusaka, Zambia: Central Board of Health/ UNICEF.
- Webb S [ed] (1998). *Insights from adolescent project experience 1992-1997.* Watertown: Pathfinder International.
- Weinmann ML, Smith PB, Buzi RS (1996). Compliance with follow-up care among adolescent males with sexually transmitted diseases. *Psychol Rep.* 78(3): 840-842.
- WHO [World Health Organization] (1986). *WHO expert committee, venereal diseases and treponematoses.* Technical report series. Geneva: WHO. 736:7-40.
- WHO [World Health Organization] (1993). *Sexually transmitted diseases amongst adolescents in the developing world: a review of published data.* Geneva: WHO.
- WHO [World Health Organization] (1995a). Press release, WHO/64. Geneva: WHO.
- WHO [World Health Organization] (1995b). *Adolescent health and development: the key to the future.* Geneva: WHO, Global Commission on Women's Health.
- WHO [World Health Organization] (1995c). *Report of the WHO commissioned studies on the provision of reproductive health services to adolescents in Indonesia, Nigeria, and the Philippines.* Unpublished document.
- WHO [World Health Organization] (1995d). *STD case management workbook 4: diagnosis and treatment.* WHO/GPA/TCO/PMT/95.18 D. Geneva: WHO.
- WHO [World Health Organization] (1995e). *STD case management workbook 5: educating the patient.* WHO/GPA/TCO/PMT/95.18 E. Geneva: WHO.
- WHO [World Health Organization] (1996). *The Status of School Health.* Geneva: WHO.
- WHO [World Health Organization] (1997a). *Action for adolescent health: towards a common agenda.* Geneva: WHO.
- WHO [World Health Organization] (1997b). *Youth friendly services: a review of programmes and lessons learned.* Unpublished draft, WHO, Department of Child and Adolescent Health and Development.
- WHO [World Health Organization] (1997c). *Young people and their families: a cross-cultural study of parent/adolescent discord in Cote d'Ivoire, India and Nigeria.* Geneva: WHO.
- WHO [World Health Organization] (1997d). *Reproductive health for global monitoring: report of an interagency technical meeting, 9-11 April 1997.* WHO/RHT/HRP/97.27. Geneva, WHO.
- WHO [World Health Organization] (1998a). *The second decade: improving adolescent health and development.* Programme brochure. Geneva: WHO, Department of Child and Adolescent Health and Development.
- WHO [World Health Organization] (1998b). *Improving the access of school-going adolescents to the health services they need.* Geneva Oct. 28-30. Draft report: WHO
- WHO [World Health Organization] (1999). *STI prevalence database, Source: IV Congress of Argentinian Microbiology, Buenos Aires, 1985.*
- WHO [World Health Organization] (2000a). *Youth friendly health services.* Background paper for Technical Steering Committee Second Meeting. 29 May - 2 June, Geneva: WHO, Department of Child and Adolescent Health and Development.
- WHO [World Health Organization] (2000b). *Improving the access of health services and making the environment safer and more supportive for young people living/working on the street.* Geneva: WHO, Department of Child and Adolescent Health and Development.
- WHO [World Health Organization] (2000c). *Improving the access of school-going adolescents to the health services they need. A distillation of the findings from action research projects (phase I, Assessment phase) in six countries.* Draft 1. Geneva: WHO, Department of Child and Adolescent Health and Development.

- WHO [World Health Organization] (2000d). *Reproductive health indicators for global monitoring: consultation results*. Geneva: WHO, Department of Reproductive Health and Research, July.
- Wilkinson D *et al.* (1999). STD syndrome packets: improving syndromic management of sexually transmitted diseases in developing countries. *Sexually Transmitted Diseases*. 26(3):152-156.
- Williams OE (1998). Sexually transmitted diseases . In A.S. Garden [ed]: *Paediatric and Adolescent Gynaecology*. London: Arnold:167-183.
- Wilson D, Greenspan R, Wilson C (1989). Knowledge about AIDS and self reported behavior among Zimbabwean secondary school pupils. *Social Science and Medicine*. 28(9):957-961.
- World Bank (1997). *World development report 1991*. New York: Oxford University Press.
- Xenos P, Gultiano SA (1992). *Trends in female and male age at marriage and celibacy in Asia*. Honolulu, Hawaii: Papers of the Program on Population, No. 120, East-West Center.
- YDF [Youth Development Foundation] (1998). *Biennial Report 1996-97*. Kumasi: YDF.
- Zabin LS, Stark HA, Emerson MR (1991). Reasons for delay in contraceptive clinic utilization: Adolescent clinic and nonclinic populations compared. *Journal of Adolescent Health* 12(3):225-232.
- Zambezi R, Kambou SD, Nkhama G, Shah M (1996). *Adolescent sexual reproductive health in Peri-Urban Lusaka*. Lusaka, Zambia: CARE International.
- ZDHS (1996). Zambia Demographic Health Survey.
- ZNFPC [Zimbabwe National Family Planning Council] (1996). Project Proposal – Reproductive health information and services for the Youth in Zimbabwe. Zimbabwe: ZNFPC.
- Zoungrana R (2000). Rapport d'activités trimestriel des centres jeunes de Ouagadougou et de Bobo-Dioulasso, octobre-décembre 1999. Ougadougou: ABBEF.
- Zurayk H (1995). In: J. Grant and D.M. Measham [eds]. *Reproductive Tract Infection. Lessons learned from the field: where do we go from here?* New York: Population Council.