Report on the Implementation of the Universal Antenatal HIV Testing Programme in the Public Service

Scientific Committee on AIDS
of
Hong Kong Advisory Council on AIDS
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Preface

The birth of every HIV-infected child should be regarded as a health event that signals a missed prevention opportunity since effective intervention to stop mother-to-child transmission of HIV has been established. We are grateful that in Hong Kong, with the concerted effort of many stakeholders, including various professional bodies and community groups, the Advisory Council on AIDS has been successful in persuading the HKSAR Government to adopt the Universal Antenatal HIV Testing Programme as from September 2001, despite Hong Kong is a low-prevalence area. Through the process we have learnt the cost of implementing such a programme can be relatively low in a resource-rich area such as Hong Kong because of the ability to integrate the programme into existing infrastructure and also breastfeeding intervention is safe, though a lot of co-ordination and alignment of views and perceptions are necessary. The decision by the Government to go ahead with the implementation is a triumph for all of us, representing another wise investment in our future. The challenge now is to ensure sustainable monitoring and evaluation of this programme.

Lastly, I have to thank the colleagues from the Special Preventive Programme of the Department of Health in providing excellent technical support all these years and writing this report, documenting in fine details, this important milestone in the history of public health in Hong Kong.

YL Lau
Chairman
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Disclaimer

All materials in this report are for reference only. While the authoring team and the Special Preventive Programme of the Department of Health endeavour to make the materials accurate, they do not warrant the accuracy and completeness of the materials.

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HIV epidemiology and the progress in the prevention of mother-to-child transmission (MTCT) of HIV are reviewed. As of the end of 2001, about 3 million children were living with HIV/AIDS worldwide. More than 90% of these children were infected via vertical transmission from their infected mothers. In Hong Kong HIV spread is driven by heterosexual contacts, hence putting the young and reproductive women at risk. We have witnessed the transmission of HIV to children of these women in recent years. The effectiveness of the benchmark ACTG 076 trial has urged the public health authorities of many countries to translate scientific advances into regular programmes. Since 1994, many countries have already adopted universal antenatal HIV antibody testing as one key component of the strategy to prevent vertical transmission.

Chapter 2 - Development of Strategies

The basis of universal antenatal HIV testing and the process of strategy development in Hong Kong are outlined. Universal antenatal HIV testing is backed by public health rationale. This strategy is superior to selective testing because of the broader coverage and the opportunities for introducing effective preventive intervention with the use of antiretroviral prophylaxis. Universal testing can potentially minimise perinatal HIV infections, enable early diagnosis, early treatment, and hence reduce secondary infections. The Hong Kong Advisory Council on AIDS (ACA), its Scientific Committee on AIDS (SCA) played key roles in advocating the new strategy. It is crucial to enlist the support of collaborated partners, coordinate training and enhance communications among partners. The additional cost incurred in introducing universal antenatal HIV testing is small if an integrative approach is adopted, which involves the maximization of the utilization of existing public health mechanisms.

Chapter 3 - Programme Structure

The layout of the Universal Antenatal HIV Testing Programme, its components and the strategy for guiding programme development are described. The Programme involved the provision of voluntary HIV tests to all pregnant women attending the public antenatal services using an opt-out approach. HIV positive pregnant women were referred for medical and obstetric care in accordance with guidelines established by SCA. The Programme was composed of the following components: information and counselling to pregnant women, laboratory testing, preventive intervention provision, clinical management of the infected women (and babies), evaluation mechanism, and training of health care professionals. SCA partnered professional bodies, service providers, health care workers and the community in moving through the process from policy formulation to implementation. Collaboration among

various sectors was witnessed during the whole process. A liaison group between the Department of Health (DH) and the Hospital Authority (HA) was formed and functioned as a steering team for coordinating implementation in the public institutions. Activities were also initiated to mobilize the private sector in order to extend the Programme to the whole local community.

Chapter 4 - Programme Outputs & Outcomes

The outputs and outcomes of the Universal Antenatal HIV Testing Programme are discussed. An ongoing system has been established to collect statistical returns from service units involved in programme implementation from the HA and the DH. HIV positive pregnancy cases were tracked and a central database was put in place for collation of essential information. A total of 63 training sessions with a total of 3,278 participants were coordinated or organized by the Red Ribbon Centre (RRC). Five thousand posters, more than 11,000 leaflets in 12 different languages and 3,549 VCD/videos were produced. The number of eligible antenatal women for the Programme was 43,847 in the first year. A total of 41,714 HIV antibody tests were performed and 12 were tested with positive results. The Programme was effective with a low opt-out rate of 3.8% in the first year of operation. Antenatal mothers' acceptance of the test was high. The HIV prevalence in the pregnant women was 0.03%. So far no baby in the Programme was born with HIV infection.

Chapter 5 - Acceptance of the Programme

A survey was conducted on antenatal mothers to determine their acceptance of the new strategy and programme. The study involved a distribution of self-administered anonymous questionnaires to all new antenatal clinic attendees in all 50 Maternal & Child Health Centres (MCHC) of the DH. A total of 2,669 collected returns were valid for further analysis. The most popular form of education was health talk, which was attended by 2,096 (78.9%) mothers, followed by video (66.5%), pamphlets (41.7%) and posters (24.7%). Over 90% respondents participated in or used at least one form of educational material/activity. The participation in these activities and HIV knowledge both were significantly associated with the acceptance of HIV testing.
A majority (70.4%) of the respondents reported to have accepted HIV antibody testing. The most important reason for declining the offer was the perception of no or low risk of getting the infection.

Chapter 6 - Accomplishments & Constraints

How would we assess the Programme? The Programme objectives are reached. The original recommendations by SCA with respective to the prevention of perinatal transmission of HIV have been followed. However, new challenges are unveiled. These are: participation of the private sector, quality management in care provision, training for health care professionals, building

sustainable system for Programme monitoring and evaluation, management of antiretroviral-exposed children, and the cost-effectiveness of the Programme.

Chapter 7 - The Way Ahead

Recommendations are made for refining the Programme and adding new initiatives to the strategy. Nine recommendations are described. (1) Progress of the programme should continue to be reported to the DH/HA Working Group of Woman and Child Health Services. (2) The SCA should continue to deliberate issues arising from the strategy and programme on universal antenatal HIV testing. (3) Standards should be established for managing babies exposed to HIV and/or antiretroviral therapy. (4) Indicators should continue to be collected by a central coordinating mechanism. (5) An annual report on the indicators should be produced. (6) The workflow, education materials and activities should be refined. (7) The role of rapid test should be established. (8) Opportunity of offering a second test should be examined. (9) New ways should be explored to expand the coverage in the private sector.

CHAPTER 1: BACKGROUND

HIV epidemiology and the progress in the prevention of mother-to-child transmission (MTCT) of HIV are reviewed. As of the end of 2001, about 3 million children were living with HIV/AIDS worldwide. More than 90% of these children were infected via vertical transmission from their infected mothers. In Hong Kong HIV spread is driven by heterosexual contacts, hence putting the young and reproductive women at risk. We have witnessed the transmission of HIV to children of these women in recent years. The effectiveness of the benchmark ACTG 076 trial has urged the public health authorities of many countries to translate scientific advances into regular programmes. Since 1994, many countries have already adopted universal antenatal HIV antibody testing as one key component of the strategy to prevent vertical transmission.

1.1 Epidemiology of Perinatal HIV Infection – International and Local Situations

1.1.1 Global and regional situations

As of the end of 2001 when the Universal Antenatal HIV Testing Programme was launched, the Joint United Nations Programme on HIV/AIDS (UNAIDS) and the World Health Organization (WHO) estimated that 40 million adults and children were living with the virus. New infections have continued to be reported virtually from every country. This indicated that the epidemic was not under satisfactory control. In the year 2001, 5 million people were newly infected with HIV, of which 4.2 million were adults, 2 million women and 800,000 children. Around one-tenth of the newly infected were under the age of 15. This brought the number of children living with HIV to 3 million. Most of them acquired the virus from their mothers before or at birth, or through breastfeeding. A breakdown of the global statistics on HIV/AIDS is shown in Table 1.1.[1]

It was estimated that around 850 000 people were living with HIV/AIDS in 2001 on the Mainland China. The number of reported HIV infection increased by more than 67% in the first six months of the year.[1] Among the most seriously inflicted province was Yunnan, Xinjiang, Guangxi, Sichuan and Henan followed by Guangdong. Most of the affected individuals were intravenous drug users while MTCT contributed to only 0.1% of the total cases. The spread of HIV infection to the general population has been noticeable in some places.

1.1.2 Local situations

HIV/AIDS epidemiology in Hong Kong is monitored by the DH, which regularly collects data through three main sources: (1) voluntary reporting, (2) unlinked anonymous screening, and (3) seroprevalence studies in selected groups.

Table 1.1 Global estimates of the HIV/AIDS epidemic as of end of 2001

People newly infected with HIV in 2001	Total Adults Women Children <15 years	5.0 million 4.2 million 2.0 million 800 000
Number of people living with HIV/AIDS	Total Adults Women Children <15 years	40.0 million 37.1 million 18.5 million 3.0 million
AIDS deaths in 2001	Total Adults Women Children <15 years	3 million 2.4 million 1.1 million 580 000
Total number of AIDS deaths since the beginning of the epidemic	Total Adults Women Children <15 years	21.8 million 17.5 million 9 million 4.3 million
Total number of children orphaned* by AIDS, and living, as of the end of 2001		14.0 million

(*Defined as children aged 1-14, as of end of 2001, who had lost one or both parents to AIDS)

As of the end of 2001, a cumulative total of 1755 HIV infections have been reported to the SPP of the DH. Among them 560 were known to have progressed to AIDS. The reported local HIV/AIDS statistics are shown in Table 1.2.[2] There has been a steady increase in the number of HIV cases in Hong Kong over the years. Men were predominantly affected, contributing to 82% of the total reported infections, while female infections had also been increasing. Male-to-female ratio has fallen from 6:1 in 1994 to 3:1 in 2001. Sexual contact has continued to be the main mode of transmission, accounting for 81% of cumulative total. Since 1994, heterosexual transmission has accounted for

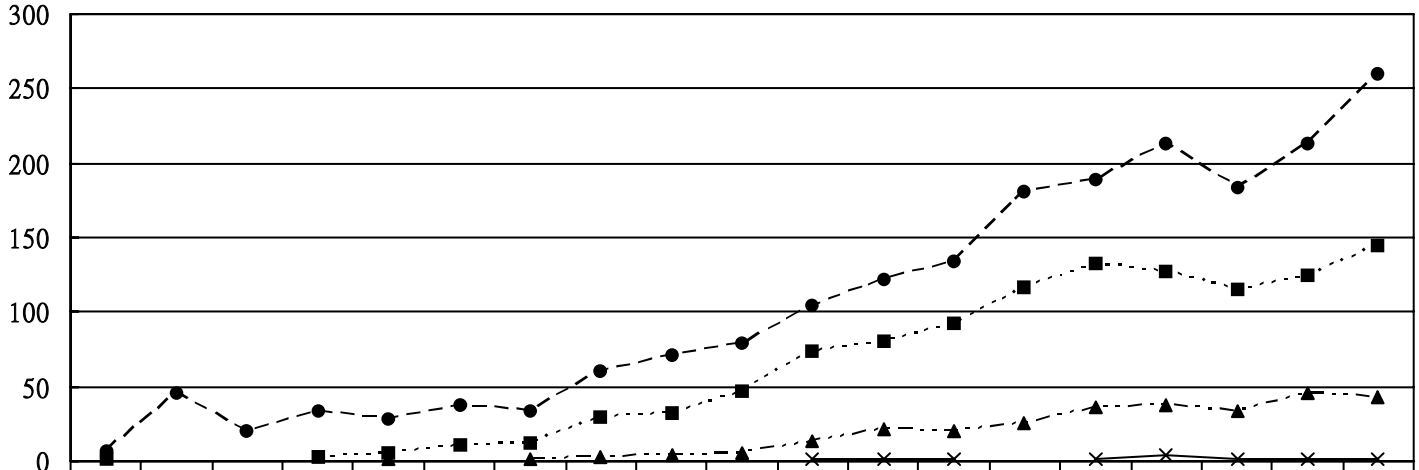
58% to 70% of the annual reported infections, whereas 12—25% of the cases were reported to be transmitted through homosexual or bisexual contacts. Injecting drug use accounted for only 44 reported HIV infections so far. One, six, ten and eleven perinatal infections were reported in 1998, 1999, 2000 and 2001 respectively.

Table 1.2 HIV / AIDS statistic in Hong Kong SAR from 1984 to December 2001 (the latest figure as of the end of 2002 is shown in bracket)

		Cumulative numbers reported	
		HIV	AIDS
Sex	Male	1347 (1637)	460 (532)
	Female	289 (378)	64 (81)
Ethnicity	Chinese	1131 (1399)	404 (478)
	Non-Chinese	505 (616)	120 (135)
Route of Transmission	Sexual Contacts	1325 (1625)	461 (541)
	Heterosexual	931 (1149)	340 (406)
	Homosexual	315 (382)	94 (105)
	Bisexual	79 (94)	27 (30)
	Injecting Drug Users	40 (54)	9 (10)
	Blood/Blood Products Recipients	68 (68)	19 (19)
	Perinatal	13 (15)	6 (6)
	Undetermined	190 (253)	29 (37)
	Total	1636 (2015)	524 (613)

The HIV prevalence in newborns from results of unlinked anonymous screening has remained stable at 0.03% [3] over the past few years, compared to 0.02% in 1996 and zero in 1997. The total number of neonatal samples tested in 1998, 1999 and 2000 were 3031, 3125 and 3478 respectively, and the number of HIV positive cases identified was one in each of these years. A retrospective analysis revealed that most of perinatally infected children were diagnosed after they or their mothers (or fathers) presented with clinical complications. They escaped detection despite the offering of antenatal HIV testing using a selective approach.[3] The numbers of new infections, infections acquired via heterosexual transmission, number of infected females of reproductive age and perinatal infections are summarized in Figure 1.

Figure 1 Trend of reported HIV infections through heterosexual transmission, mother-to-child transmission and in women in Hong Kong (1984 to 2002)



	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	2000	2001	2002
Reported HIV cases	7	46	20	33	28	38	34	60	71	79	104	122	134	181	189	213	183	213	260
Heterosexual	1			3	6	11	12	29	32	47	73	81	93	117	132	127	115	125	145
Female: Age 20-39					1		1	3	4	5	14	21	20	25	36	37	33	46	43
Perinatal											1	2	1		2	4	2	2	1

1.2 Prevention of Perinatal HIV Infection

1.2.1 The first decade

When AIDS was first reported in the early eighties, it was an invariably fatal condition. Treatment options were limited and emphasis was placed on supportive and/or palliative care. Apparently, knowing one's HIV status might not confer additional benefits in individuals, including pregnant women. The provision of voluntary counselling in conjunction with HIV testing became the gold standard in supporting those at risk of infection. Given the relatively high MTCT rate, termination of pregnancy was often the only option to the expectant mother. In addition, a positive HIV status could expose the mother to family violence and social discrimination.

In 1992, the United Kingdom Health Department recommended a selective approach in antenatal HIV testing. The Royal College of Obstetricians and Gynaecologists recommended targeted testing for pregnant women if they a) had sexual partners of men who had had sex with other men since 1977; b) were drug users or their sexual partners had been drug users since 1977; c) had sexual partners of haemophiliacs; d) were prostitutes; and (e) had had sex since 1977 with people living in African countries except those from the Mediterranean. This strategy was then proven to have detected a marginal increase of 8% of HIV positive expectant mothers.[4]

On the other hand, Nordic countries such as Sweden[5] had adopted larger scale testing in their population since the mid-80's. In 1986, a pilot study was conducted involving HIV antibody screening in pregnant women at their first visit when rubella and syphilis testing were performed. Pre-test counselling was provided and care plan for infected women was worked out. The pregnant women were allowed to opt-out when offered the HIV test. The acceptance of the programme led the National Commission on AIDS in Sweden to recommend offering HIV antibody test to pregnant women in 1987.

1.2.2 The impacts of the ACTG076 study

The ACTG 076 study was a landmark study which demonstrated the effectiveness of a three-part (pre-, intra- and post-partum) zidovudine (ZDV) regimen in the prevention of MTCT of HIV.[6] The Study demonstrated a reduction of MTCT of HIV by two third from 22.6% to 7.6%. It was not until 1994 after the release of the results that significant

strategy change in antenatal HIV testing took place. Thereafter, the diagnosis of HIV infection in expectant mothers became an imminent public health strategy in the prevention of HIV transmission to the future generation. The United States Public Health Service (USPHS) published guidelines recommending the use of ZDV in the prevention of MTCT of HIV in 1994.[7] In 1995 the USPHS issued guidelines recommending universal antenatal counselling and HIV antibody testing for all pregnant women.[8] This intervention was then quickly adopted as the standard of care in most developed countries, contributing thereafter to a significant reduction of children infected with HIV in these countries. In 1998, a study group on antenatal HIV testing in the European Union (EU) produced a consensus document and recommended access to HIV testing and the right to decline testing in all pregnant women.[9]

The selective approach for antenatal HIV testing was found not effective in the prevention of MTCT of HIV infection. In 1998, an Intercollegiate Working Party in the UK concluded that the nation was lagging behind other countries in the prevention of MTCT of HIV infection. Some 300 infants were born to HIV infected mothers annually and most escaped detection by the existing selective approach. Vertical transmission remained the most important mode of contracting the virus among children infected with HIV in the UK.[4, 10] In August 1999, the UK Health Department revised the recommendations and targets aimed at reducing MTCT of HIV. Universal antenatal HIV antibody testing was advocated as the standard of care, such that by the end of 2002, all health authorities should achieve an uptake rate of 90%. As a result, 80% of the HIV infected pregnant women were identified during antenatal care. [11]

In the US, the number of HIV infected infants has fallen since 1994, reaching a level of 4000 per year. In a survey conducted by the Institute of Medicine (IOM), it was noted that continued perinatal HIV transmission was a result of the failure to offer HIV testing by the attending Obstetricians if they perceived the pregnant women to be at low risk of HIV infection. The USPHS issued a set of revised draft guidelines in 2000 recommending universal antenatal HIV testing of pregnant women. This caused many countries in South-East Asia to modify, adopt and pioneer similar programme in their own countries. Malaysia adopted universal opt-out approach in 1999[12] while Macau was in practice providing universal opt-in testing. On the Mainland, against the background of a significant rise in HIV prevalence, universal screening of HIV infection and syphilis was adopted in Shenzhen[13] in July 2001.

1.2.3 Preventing mother-to-child HIV infection in Hong Kong

Hong Kong incorporated HIV prevention in her public antenatal services in the early 90's. Following the publication of the ACTG076 report, the issue was examined by the SCA of the ACA, which did not recommend universal testing. The early strategy therefore included awareness raising, capacity building as well as the promotion of selective testing. As the number of perinatal infections had remained small over the years, it was difficult to ascribe effectiveness to the approach.

Over the last couples of years, between two and four perinatally infected children were reported to the DH. The increasing proportion of heterosexual transmission and infections among women had stimulated the debates on HIV testing strategies. Following a review by a panel of local experts under the aegis of the SCA, the Council recommended that universal antenatal HIV antibody testing be introduced in Hong Kong. The new strategy was the cornerstone of the 'Recommended Clinical Guidelines on the Prevention of Perinatal HIV Transmission'[14], which received good support from both professional and community bodies. Universal antenatal HIV testing became one key component of the Chief Executive's policy on health services for the year 2001. The opt-out testing programme in the public sector was implemented through the efforts of the antenatal services of the HA and the DH, the latter was supported by the RRC and the Kowloon Bay Integrated Treatment Centre (KBITC).

The United Nations General Assembly Special Session on HIV/AIDS held in New York from 25 to 27 June 2001 highlighted the prevention of MTCT of HIV as one of the priority areas in the global response to HIV. [15] Detection of HIV infection and provision of care to those affected in the antenatal settings are very effective means to achieve the goal of substantially reducing perinatal HIV infections in all countries around the world, including the territory of Hong Kong.

Summary of the important local and international milestones in the prevention of MTCT of HIV is shown in Annex A.

CHAPTER 2: DEVELOPMENT OF STRATEGIES

The basis of universal antenatal HIV testing and the process of strategy development in Hong Kong are outlined. Universal antenatal HIV testing is backed by public health rationale. This strategy is superior to selective testing because of the broader coverage and the opportunities for introducing effective preventive intervention with the use of antiretroviral prophylaxis. Universal testing can potentially minimise perinatal HIV infections, enable early diagnosis, early treatment and hence reduce secondary infections. The Hong Kong Advisory Council on AIDS (ACA) and its Scientific Committee on AIDS (SCA) have played key roles in advocating the new strategy. It is crucial to enlist the support of collaborated partners, coordinate training and enhance communications among partners. The additional cost incurred in introducing universal antenatal HIV testing is small if an integrative approach is adopted, which involves the maximization of the utilization of existing public health mechanisms.

2.1 The Basis of Universal Antenatal HIV Testing

2.1.1 Public health rationales

Sexual transmission accounts for over 80% of the local reported HIV infections. Heterosexual transmission is the predominant mode with a narrowing of male-to-female ratio to 3.6:1 in 1999, the year that saw the initiation of planning of MTCT prevention programme by the SCA. Globally and currently, about one tenth of the newly infected persons are children and about 90% of them acquired their infection perinatally. The projected number of HIV infected children will likely be increased in the coming years in the absence of effective intervention. In view of the relatively low local prevalence of HIV infection among antenatal women, a prevention programme with the highest coverage would therefore be strategically sound. Given the availability of antiretroviral drug prophylaxis, elective Caesarean section and formula feeding, the benefit can only be maximized if most, if not all, HIV infected expectant mothers are detected and offered the opportunities for prevention. Evidence has shown that universal antenatal HIV antibody testing with an opt-out approach is the best way to achieve this public health objective.

ACTG 076 protocol demonstrated that a three-part ZDV regimen started from the second trimester of pregnancy could reduce MTCT of HIV from 23% to 8%. Subsequent studies also showed that other similar regimens and prevention strategies could reduce HIV infection by a variable degree. In many developed countries where the health infrastructure accommodate various medical interventions in pregnant

women with HIV infection and children born, it is not uncommon to observe a MTCT rate of less than 5%.

Universal antenatal HIV testing provides an opportunity for timely medical prophylaxis to be introduced. The benefits of early diagnosis with respect to better prognosis, further case finding and prevention of secondary transmission albeit not the major objectives of such a programme, are not to be underestimated. These all constitute the scientific basis of this programme.

2.1.2 Potential impacts of universal antenatal HIV testing

The possible public health impacts of universal antenatal HIV testing are fourfold – reduction of paediatric HIV infection, early diagnosis in HIV positive women, provision of quality care to those infected, and avoidance of secondary infections.

Reduction of paediatric HIV infection – In the absence of intervention, 3 to 6 cases of paediatric HIV infections would be expected to occur each year. Paediatric HIV infection is a complex medical problem demanding expertise in the health care system. It is likely that all these cases, when diagnosed, would eventually land in the public service. Schooling and of placement in residential homes are some of the difficult social issues that the Government needs to face. A universal antenatal HIV testing followed by medical intervention would reduce the number of perinatal HIV infection to just one to two per year or even less.

Early diagnosis in HIV positive women – HIV infection in women tends to be diagnosed late because many are not aware of their risk of exposure. Some of them never practised any risk behaviour but were exposed to HIV from their risk-taking partners. In 11 (47.8%) of the 23 HIV positive mothers, the HIV status was known only when they or their children presented with complications. Currently, highly active antiretroviral therapy (HAART, or cocktail treatment) is the standard treatment for HIV infection. HAART is effective only if the patients present early before immunological failure. An early diagnosis in the mothers could allow an effective management plan to be worked out.

Care of those infected – The diagnosis of HIV infection in pregnant women often leads to the detection of the infection not only in the mothers, but also their spouses and the children. In the follow up of the 38 HIV positive pregnancies, 26 partners were found to

be infected with the virus. Effective treatment could then be offered rather than waiting for complications to emerge. It is estimated that by implementing universal antenatal HIV testing, some 10 to 20 positive male partners would be identified per year.

Avoidance of secondary infections – Detection of HIV infections in the pregnant women and the partners would lessen the likelihood of secondary infections. The reasons are: (a) the provision of counselling and advice on behavioural modification could reduce the practice of high risk behaviours, thereby decreasing the chance of further spread of HIV infections, and (b) the treatment of HIV positive individuals with HAART could reduce the body's viral load and possibly minimize the infectivity of one's blood and genital fluids. These are the principles behind a new strategy recommended by the IOM in the United States[a], which advocates directing the preventive efforts to individuals who are HIV positive. This clinic-based prevention strategy is effective if a significant proportion of HIV infected individuals know their status and are in contact with the health care system. This approach is likely to be applicable in Hong Kong.

2.2 Strategy Development (Figure 2)

2.2.1 From a selective testing strategy to an opt-out approach

In the first decade of the HIV epidemic, the prevention of mother-to-child HIV transmission did not stand out as a separate HIV control programme. The results of ACTG076 and the access to ZDV proved to be the turning points in the development of new HIV prevention strategy focusing on perinatal infections. The ACTG076 results were published in the New England Journal of Medicine in February 1994. In August, the USPHS recommended the use of ZDV to reduce perinatal HIV transmission. The SCA adopted the same strategy in 1995. At the 15th meeting of the Hong Kong ACA in July 1995, it was recommended that counselling be offered to antenatal women and that HIV tests be performed after individual risk assessment. The strategy was in line with the US approach of offering "routine HIV counselling and voluntary testing of all pregnant women". The early strategy emphasised therefore on arousing awareness, building capacity building as well as promoting selective testing in the MCHC of the DH.

In 1998 and 1999, there were changes in the strategic directions in some countries.

[a] Institute of Medicine. *No time to lose – getting more from HIV prevention*. Washington: National Academy press, 2000.

The selective approach was apparently ineffective in ensuring adequate coverage. Advances in HIV management with HAART have improved the prognosis of HIV infected individuals. Pregnancy was no longer an uncommon issue in HIV/AIDS. The demonstration of effectiveness in low and high prevalence countries provided the impetus for introducing universal testing. It was not surprising that the United Kingdom gradually moved towards “normalisation” of antenatal HIV testing, while the US IOM advocated the implementation of “universal HIV testing as a routine component of prenatal care”.

In Hong Kong, the external consultants who reviewed the HIV programmes and situations recommended in 1998 the offering of “routine voluntary screening for HIV among pregnant women”. In Oct 1999, universal antenatal HIV testing was identified as one of the priority areas of HIV prevention by SCA.

2.2.2 Deliberations of the Hong Kong Advisory Council on AIDS and the Scientific Committee on AIDS

In 1999, at the beginning of the fourth term of office of the Hong Kong ACA, a Working Group composing of collaborating partners (Annex H) from various sectors was formed under the SCA. The Working Group was charged with the following tasks:

(a) to provide a forum for concerned health care professionals for soliciting their inputs and enhancing communication,

(b) to develop and refine the implementation strategy for the introduction of universal antenatal HIV testing,

(c) to set common goal(s) on the prevention of MTCT of,

(d) to advise on the development of support activities for addressing concerns of frontline health workers,

(e) to enlist the support of health care professionals, service providers and policy makers for the proposed programme.

The Working Group began with a local situation assessment which included an epidemiological analysis, case record analysis, stock taking of relevant local researches, review, relevant local practice and review of international initiatives and practice. The assessments were consolidated in several discussion and information papers, which were discussed by the Working Group and the SCA. The following common views were reached:

(a) HIV/AIDS was on the rising trend with heterosexual transmission as the most important mode of infection, which would have a significant impact on MTCT;

(b) HIV positive pregnancy was not a rarity and was increasing in our locality;

(c) A majority of HIV positive pregnancy cases had escaped identification under the system voluntary counselling and risk-based selective testing;

(d) Effective treatment was available for preventing MTCT of HIV;

(e) Universal screening was feasible and desirable while the selective approach was sub-optimal, in the Hong Kong setting.

In addition to the consensus, the Working Group recommended to intensify efforts on education and training, and to address cost-effectiveness in the implementation of the programme. The consensus formed the basis for the development of practical guidelines in the implementation of universal antenatal HIV testing. The final product was the release of the 'Recommended Clinical Guidelines on the Prevention of Perinatal HIV Transmission' by the SCA. (Annex C) The Guidelines were endorsed by the ACA, and the new strategy of introducing universal antenatal HIV testing was recommended to the Hong Kong Government.

Concurrently, various community organisations and professional bodies were consulted. This round of consultation carried the following objectives of:

(a) informing professionals and the community the latest development on the prevention of MTCT of HIV and the Council recommendations,

(b) collecting opinions from different perspectives and specifically from frontline workers and the women themselves,

(c) promoting awareness and hence stimulating discussion in the community.

Overall, the strategy of universal antenatal HIV antibody testing received wide professional and community support. The Committee had received 19 (out of 25) replies from professional bodies and 12 (out of 24) from the community organisations (Table 2.1 and 2.2, Annex E). Coordinated efforts between the DH and the HA were recognized as essential for an effective programme. The support of the Hong Kong College of Obstetricians and Gynaecologists and the Academy of Medicine was important to ensure the upholding of professional standard in the care of pregnant women.

Table 2.1

Professional bodies consulted:

1. Specialist Colleges (e.g. Hong Kong College of Paediatricians, Obstetricians and Gynaecologists, Academy of Medicine, etc.)
2. Governing bodies (e.g. The Medical Council, Nursing Council, Midwives Council of Hong Kong)
3. Service providers (e.g. Hospital Authority [HA], Family Health Service-Department of Health [DH])
4. Academic institutions (e.g. The Department of Obstetrics and Gynaecology, Paediatrics, Nursing of the Universities)
5. Professional organisations (e.g. Paediatric, Obstetrical and Gynaecological Societies, College of Nursing and Midwives Association)

Table 2.2

Community organisations consulted:

1. Community organisations with special interest in HIV/AIDS prevention and care (e.g. AIDS Prevention and Care Committee (APCC), Task Force on Women and AIDS of APCC, AIDS Concern, etc.)
2. Community organisations with broad interest in woman affairs (e.g. Federation of Women, HK Association of Professional and Business Women, etc.)

2.2.3 Involving collaborators and partners

The collaborators and partners in a public health programme refer to groups of individuals with different background who are involved, affected or otherwise implicated in the planning or introduction of the programmes. With regard to the current Universal Antenatal HIV Testing Programme, collaborators and partners include the policy makers in the public service, service providers (Family Health Service of DH, obstetric units, paediatric units and Special Medical Service (SMC) of Queen Elizabeth Hospital (QEH), SPP of DH, programme management personnel, health care workers, professional bodies, professional governing bodies (Colleges and Medical Council), service recipients and community organisations (women's groups and NGOs). Their involvement has been crucial to ensure effective programme planning, implementation, quality assurance, monitoring and evaluation. The role and credits of the collaborated partners of this Programme are summarised in Annex B.

2.2.4 Enhancing communication in preparation for the new strategy

Long before the adoption of universal antenatal HIV testing at policy level, training activities were developed to prepare health care workers for the new programme. Training was important to enable health professionals to take ownership of the initiative, to advocate for the new strategy, and to develop effective protocols to facilitate programme implementation. In this connection, the SPP had initiated series of lectures, seminars and training courses in conjunction with the Family Health Service, the Midwives Association, individual HA hospitals and the Paediatric Society. In the process of organizing these activities, communication between concerned parties was enhanced. Inputs of health workers were captured for substantiating the final programme logistics. Misunderstanding was rectified and anxiety relieved in the course of training.

To strengthen the collaboration between the DH and the HA, a liaison group was formed and first met in February 2001. The group functioned as a steering team for guiding implementation in the public service. The group was composed of public health officers responsible for the local child and maternity health service, HIV/AIDS specialists, obstetrics and gynaecology consultants, paediatrics consultants, pathologists and hospital service managers. The purposes of this group were to:

(a) provide a forum for the two major service providers for discussion on matters relating to the implementation of Universal Antenatal HIV Antibody Testing Programme,

(b) exchange views on different expertise areas to facilitate a coordinated service for the expectant mothers under care,

(c) promote mutual understanding in developing training and meeting service needs so as to enable the provision of complementary services,

(d) form linkage between the various involved institutions to help resolving unforeseen attrition after programme implementation, and

(e) establish a mechanism for monitoring and evaluation of the programme.

The liaison group has been functioning effectively after its formation. It reaffirmed the strategy of universal antenatal HIV testing by opt-out approach and worked towards the incorporation of HIV antibody testing into the existing antenatal routines. The exact date of implementation was agreed, so was the date for initiation of publicity strategy. Implementation teams were set up, and expertise was lined up in support of the

programme. The evaluation and monitoring systems were proposed.

Participation of health care workers from the private sector was considered crucial. An estimated 20-30% of pregnant women seek antenatal care in the private sector, and a similar proportion delivers their babies in private hospitals. Private obstetricians conduct routine antenatal medical check up and provide relevant counselling themselves. It is desirable to involve the private sector so as to ensure a broader coverage of antenatal testing. The following activities were undertaken: consultation to the professional bodies, organization of open seminars or forums in collaboration with the professional bodies, publication in local journals, distribution of letters to all registered medical practitioners by DH and press release. Details are summarized in Annex F.

2.3 Cost Implications and Cost-Effectiveness

2.3.1 Additional resources for the new programme

The implementation of the new programme has required additional resources in the areas of (a) laboratory support, (b) treatment to prevent perinatal HIV infection, (c) clinical management for the HIV infected people, and (d) capacity building in counselling and public education.

Laboratory support – The application of the rubella-hepatitis system was expected to incur a limited amount of additional resources. No capital expenditure was anticipated as far as equipment's concerned.

Treatment to prevent perinatal infection – If all HIV positive pregnancies come under care of the public service and treated with the full antiretroviral regimen, an additional HK$0.27M to HK$0.55M would be required on an annual basis. The actual additional expenditure is likely to be considerably lower because some might go for therapeutic abortion, others would not be receiving a full course of treatment, yet a proportion might not be under the care of the public service in Hong Kong.

Clinical management of HIV infected persons – The implementation of the new programme would lead to an additional diagnosis of HIV infected persons requiring long term medical treatment. It was also assumed, however, that the same manpower could take care of the additional caseload.

Counselling and public education – The implementation of the programme required the development of new education resource materials (video, leaflets, posters), training manual for staff, and the organisation of training. A majority of these activities were organised by the DH AIDS Unit, costing an additional HK0.5M in the first year, and thereafter absorbed in the regular budget.

2.3.2 Cost-effectiveness of the proposed programme

A detailed cost-effectiveness analysis of universal antenatal HIV testing had not been performed. From overseas studies conducted in United Kingdom[b] and the United States[c] where HIV prevention and care are similar to Hong Kong in terms of quality and access, universal antenatal HIV testing has been proven a cost-effective public health programme. The debate on the cost-effectiveness of universal antenatal testing has centered on the following two issues:

(a) There has been a concern of whether universal testing (opt-out approach) is superior to selective testing (opt-in approach) in communities with low HIV prevalence. Studies have confirmed that universal testing is cost-effective in such setting if it can achieve a high uptake rate, say, over 50%; and provided that the process includes short pre-test discussion rather than lengthy counseling[d].

(b) There has been a query that universal testing would lead to the detection of more HIV positive individuals and therefore additional expenditure on expensive antiretroviral treatment. It is possible that treatment cost could become higher in the first few years. Thereafter, the difference would, if any, be minimal because (i) the patients would present to the health system anyway even in the absence of universal screening, when they fall ill because of complications, or when they become alerted of their risk; and (ii) the

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[b] Postma MJ, Beck EJ, Mandalia S, Sherr L, Walters MDS, Houweling H *et al*. Universal HIV screening of pregnant women in England: cost-effectiveness analysis. *BMJ* 1999;318:1656-1660.

[c] Cheng Immergluck L, Cull WL, Schwartz A, Elstein AS. Cost-effectiveness of universal compared with voluntary screening for human immunodeficiency virus among pregnant women in Chicago. *Pediatrics* 2000;105(4) www.pediatrics.org/cgi/content/full/105/4/e54

[d] Ades AE, Sculpher MJ, Gibb DM, Gupta R, Ratcliffe J. Cost effectiveness analysis of antenatal HIV screening in United Kingdom. *BMJ* 1999;319:1230-1234.

introduction of treatment would reduce the rate of complications requiring hospitalization, and enable patients to remain in the workforce for a much longer time, offsetting or surpassing the initial costs of prevention.

2.3.3 Implications to the DH

The Virus Unit is responsible for building the laboratory's capacity to handle an additional 30000 screening and about 200 confirmatory tests. On a yearly basis, in the earlier part of the programme, an estimated HK$0.51 would be required.

The SPP serves a supporting role to the new programme. The resources required is HK$0.5M for the start-up education activities (which would be absorbed in the Unit's regular budget), HK$0.08M to HK0.16M yearly for the antenatal antiretroviral regimens (on the assumption that it takes care of 50% of the cases), and HK$0.85M to HK$2.7M yearly in the first three years for antiretroviral treatment of the infected adults diagnosed through the programme.

2.3.4 Implications to the HA

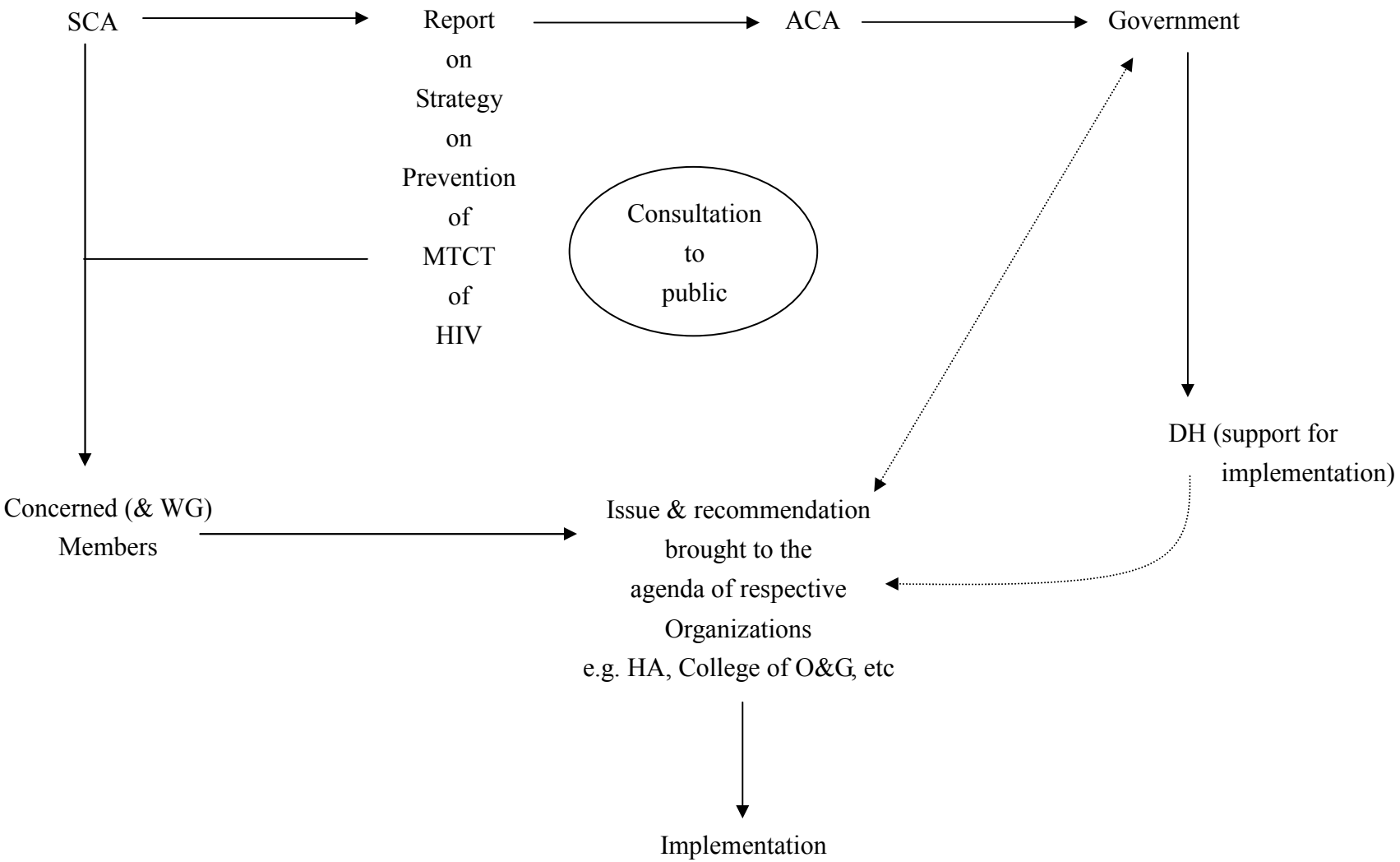
The pathology services, obstetric, medical and paediatric units of the hospitals are involved in the implementation of the new programme. The HA interfaces with MCHCs, private hospitals and medical practitioners in the cross-referral of clients and the provision of consultation. The services also collaborate with the DH in monitoring and evaluation.

Under the rubella-hepatitis system, the DH Virus Unit is responsible for the testing of antenatal mothers who attend the ex-government hospitals' obstetric units of the HA. The laboratories of other hospitals perform their own tests. It was noted that only additional reagents would be acquired, while existing equipment could be used for the programme. In sharing out about 16000 yearly tests, the additional manpower for each hospital should be minimal and could likely be absorbed in the current workload.

Obstetric units of the HA are involved in the provision of the following two services: firstly, HIV testing, as in the case of MCHCs, and secondly, clinical management for HIV infected mothers. The training and public education support are provided by the HA, or through the activities of the DH.

The number of paediatric HIV cases would be very small after the implementation of the universal antenatal HIV testing programme. On the other hand, adult HIV care is now largely provided through the AIDS Service of QEH. It has been estimated that an additional 9 to 27 outpatients would be managed at QEH. This would mean a rise of 10 to 25% compared to the current yearly number of new cases. Hospital admissions would not be affected as the diagnosis is limited to asymptomatic infections. In the long run, hospitalization would continue to fall.

Figure 2 Conceptual Flow of Strategy Development of Prevention of MTCT



CHAPTER 3: PROGRAMME STRUCTURE

The layout of the Universal Antenatal HIV Testing Programme, its components and the strategy for guiding programme development are described. The Programme involved the provision of voluntary HIV tests to all pregnant women attending the public antenatal services using an opt-out approach. HIV positive pregnant women were referred for medical and obstetric care in accordance with guidelines established by SCA. The Programme was composed of the following components: information and counselling to pregnant women, laboratory testing, preventive intervention provision, clinical management of the infected women (and babies), evaluation mechanism, and training of health care professionals. SCA partnered professional bodies, service providers, health care workers and the community in moving through the process from policy formulation to implementation. Collaboration among various sectors was witnessed during the whole process. A liaison group between the Department of Health (DH) and the Hospital Authority (HA) was formed and functioned as a steering team for coordinating implementation in the public institutions. Activities were also initiated to mobilize the private sector in order to extend the Programme to the whole local community.

3.1 Introduction

3.1.1 Aims and objectives of the Programme

The aims of the Programme are to promote healthy pregnancy and reduce MTCT of HIV. The programme includes:

(a) testing of all antenatal mothers attending the public service for HIV antibody,

(b) provision of information and counseling to antenatal mothers,

(c) provision of treatment and care to HIV positive mothers and their babies,

(d) setting a model for the private practising professionals with respect to universal antenatal HIV testing, and

(e) rendering technical and educational support to health care workers and providers in both the public and private sectors.

3.1.2 Programme layout

The Universal Antenatal HIV Testing Programme was officially launched on 1 September 2001. The Programme involves the provision of voluntary HIV tests to all pregnant women attending the public service using an opt-out approach. HIV positive

pregnant women are referred for medical and obstetrical care in accordance with the guidelines established by the SCA of the ACA. It was in line with the principles of strategies contained in the “Recommended Clinical Guidelines on the Prevention of Perinatal Transmission of HIV”, which was formulated by the Council and issued in April 2001. The Programme carries the following components: information and counselling for pregnant women, training of health care professionals, laboratory testing, preventive intervention provision, clinical management of those infected women (and babies).

3.2 Rationale of the Programme Model

In planning a mechanism for implementing universal antenatal HIV testing, the following factors were considered: (a) possible integration into an existing system, (b) efficiency of the system to reach the maximum number of pregnant women, (c) minimisation the additional cost of administration, and (d) the voluntary nature of the test.

It was proposed to introduce universal HIV testing by its integration in the health-screening package of antenatal mothers. In the public service, health screening is provided to all antenatal mothers during the first consultation. The screening involves the testing of HBsAg, VDRL, haemoglobin, rubella antibody and mean cell volume (MCV). The objective of such screening is to identify pregnancy-related medical problems that are amenable to treatment or prevention, so as to ensure that the health of the pregnant women and the babies delivered are maximised. Antenatal screening is offered at the DH’s MCHC and the HA’s obstetric units. About 73% of all deliveries are managed in the public service.

The proposed antenatal screening, which is integrated in the rubella-hepatitis screening system, is the most convenient means of implementing universal antenatal HIV testing. The rubella-hepatitis system covers about 46000 pregnancies per year, 30000 of which through the Virus Unit. The strengths of the system are:

(a) Health screening is an acceptable means of promoting health in antenatal mothers.

(b) The rubella-hepatitis system reaches more than 75% of all pregnant mothers.

(c) Administratively, the rubella-hepatitis system needs only minimal modification for incorporating HIV testing.

(d) No additional laboratory equipment is needed for implementing HIV testing through the rubella-hepatitis system.

3.3 Programme Components

3.3.1 Information provision and individual counselling

HIV testing is offered by the antenatal services through an opt-out approach. The programme is supported by the routine provision of information, education and counselling (IEC) in antenatal clinics operated by the DH and HA. Multiple means of information and education provision are applied – poster, leaflets (in 12 languages including simplified and traditional Chinese) and VCD/video screening. Group counselling is conducted and incorporated in the existing antenatal talk series for expectant mothers. HIV antibody testing is 'normalised' as part of the standard antenatal blood investigation package that includes VDRL, HBsAg, rubella antibody, haemoglobin level and MCV. Risk assessment by the health professionals is not essential. The women however reserve the right to refuse testing (opting out). This practice is modeled on a local feasibility study conducted at Kwong Wah Hospital (KWH) in 1999 which demonstrated an opt-out rate of less than 3%.[16]

The test results are disclosed to the mothers by antenatal clinic staff. More elaborate post test counselling is offered to those infected, with the support of nurse counsellors and medical staff of either the Integrated Treatment Centre (ITC) of SPP of DH or the SMS of the QEH of HA.

3.3.2 HIV antibody test

Normally no extra venepuncture is required for the HIV antibody testing as the step is incorporated in the antenatal rubella-hepatitis screening. The laboratory part is performed by the Government Virus Unit (GVU) for the ex-Schedule I hospitals – Tsang Yuk Hospital (TYH) / Queen Mary Hospital (QMH), QEH, Princess Margaret Hospital (PMH), Tuen Mun Hospital (TMH), excepting Prince of Wales Hospital (PWH). For ex-Schedule II hospitals – Pamela Youde Nethersole Eastern Hospital (PYNEH), United Christian Hospital (UCH), KWH – screening Enzyme immunoassay (EIA) is performed by the respective hospital microbiology laboratories. Western blot confirmation is provided by the GVU for EIA positive samples. The latter arrangement

also applies to the PWH. The turn over time was estimated to be less than 7 working days. Practice is developed to protect confidentiality of the testing results. In principle, only a minimum number of "need-to-know" health care workers (HCWs) involved directly in the care of the HIV infected women has access to these data. In addition, GVU routinely offers free Western blot confirmation to samples screened HIV positive in private laboratories as both a support and surveillance mechanism. The mechanism therefore promotes the performance of antenatal HIV tests in the private sector, which even though is not part of the Universal Antenatal HIV Testing Programme.

3.3.3 Referral of and care for HIV infected women and their new-borns

The workflow and system of referral is illustrated in Figure 3. To achieve continuity of care, pregnant women diagnosed with HIV are offered antenatal and perinatal care by the same obstetrical units that first made the diagnosis of the infection. Women diagnosed at MCHCs of DH are referred to the corresponding hospital obstetrical units under the existing share care system for continuation of antenatal/perinatal care. They receive medical care at either one of the two HIV services, ITC of DH or SMS of QEH. The respective services have appointed designated staff to be the coordinators to ensure effective communications among the different parties. Appointments for consultation and counselling are arranged efficiently. A hotline has been established by SPP to support the health care staff and the women.

Babies born to HIV positive mothers attend the paediatric unit of the same hospital where perinatal care is organised. Nevertheless, an agreed policy for the long term follow-up of babies “exposed” to HIV and/or antiretroviral drugs is yet to be worked out. A majority of these babies, however, are eventually managed at the paediatric unit of either QMH or PMH for long term follow-up.

3.3.4 Medical management and preventive intervention

The medical management of HIV infected pregnant women follows the principles of the latest recommended guidelines established by the Hong Kong ACA. HAART is prescribed according to the clinical, immunological and virologic status and in light of their pregnancy. Multi-disciplinary care with psychosocial support is an important feature of the care programme.

The focus of preventive interventions is to minimise the chance of mother-to-child HIV

transmission. The three-part antiretroviral treatment offered during antenatal, intrapartum and neonatal periods form the cornerstone of the preventive intervention. The choice of regimens and also the mode of delivery are determined by both the clinical status and the health need of the individual. Formula feeding is advised in nursing babies born to HIV infected mothers. The principles are laid down in the guidelines developed by SCA (*Recommended clinical guidelines on the prevention of perinatal HIV transmission,* April 2001) (Annex C):

(a) Universal testing of HIV antibody should be performed for antenatal women in Hong Kong.

(b) The prevention of MTCT of HIV involves the administration of antiretroviral prophylaxis.

(c) Clinical management should include that for the maternal HIV infection.

(d) The mode of delivery should be considered on the grounds of obstetric indications as well as HIV status.

(e) Paediatric management should be offered to reduce the risk of MTCT of HIV.

(f) Co-ordinated efforts should be made to strengthen our knowledge base regarding MTCT of HIV in Hong Kong.

3.3.5 Development of technical support

Provision of training is both a technical component and a strategy to ensure effective implementation of the Universal Antenatal HIV Testing Programme. Training is also a means to enlist the support of HCWs, and thus promote their acceptance of the programme. Long before the programme was affirmed at the policy level, SPP, the Family Health Service, the Midwives Association, individual HA hospitals and the Paediatric Society and Obstetrical and Gynaecological Society had initiated series of lectures, seminars and training courses to prepare for the implementation of the new initiatives.

During the course of programme implementation, SPP functioned as the major provider of medical and support services for people infected with HIV/AIDS. It was the *de facto* support arm of the DH in the implementation of universal antenatal HIV testing. SPP rendered the following support:

(a) Collating and analysing data relating to the new programme, thereby contributing to monitoring and evaluation;

(b) Producing education resource materials for pregnant women, health workers and the public on perinatal HIV infection and universal antenatal HIV testing;

(c) Providing input to service units (such as MCHCs and hospital obstetrical units) to develop a management protocol (the MCHC protocol) and patient educational materials including leaflets and videos;

(d) Organising training activities in association with other professional bodies and service providers;

(e) Operating a hotline to offer immediate advice to health workers;

(f) Dispatching a team of nurse counsellors to assist in the provision of post-test counselling to those infected women diagnosed under this programme. The purpose is not only to uphold the standard of care but also to promote professional development in the medical and nursing fields.

Figure 3A Workflow of the universal antenatal HIV antibody testing in the antenatal services in the public sector for newly registered patient

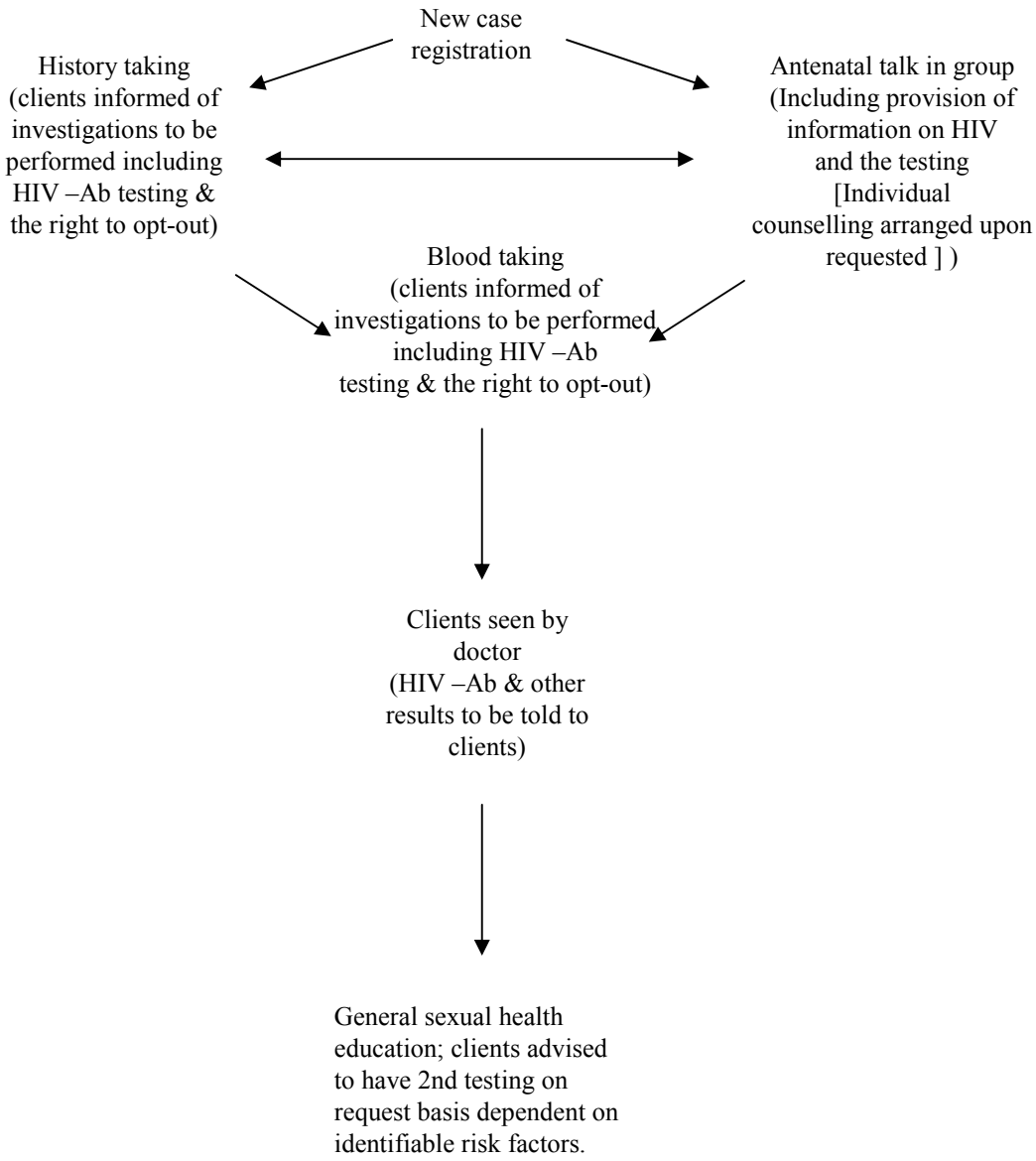
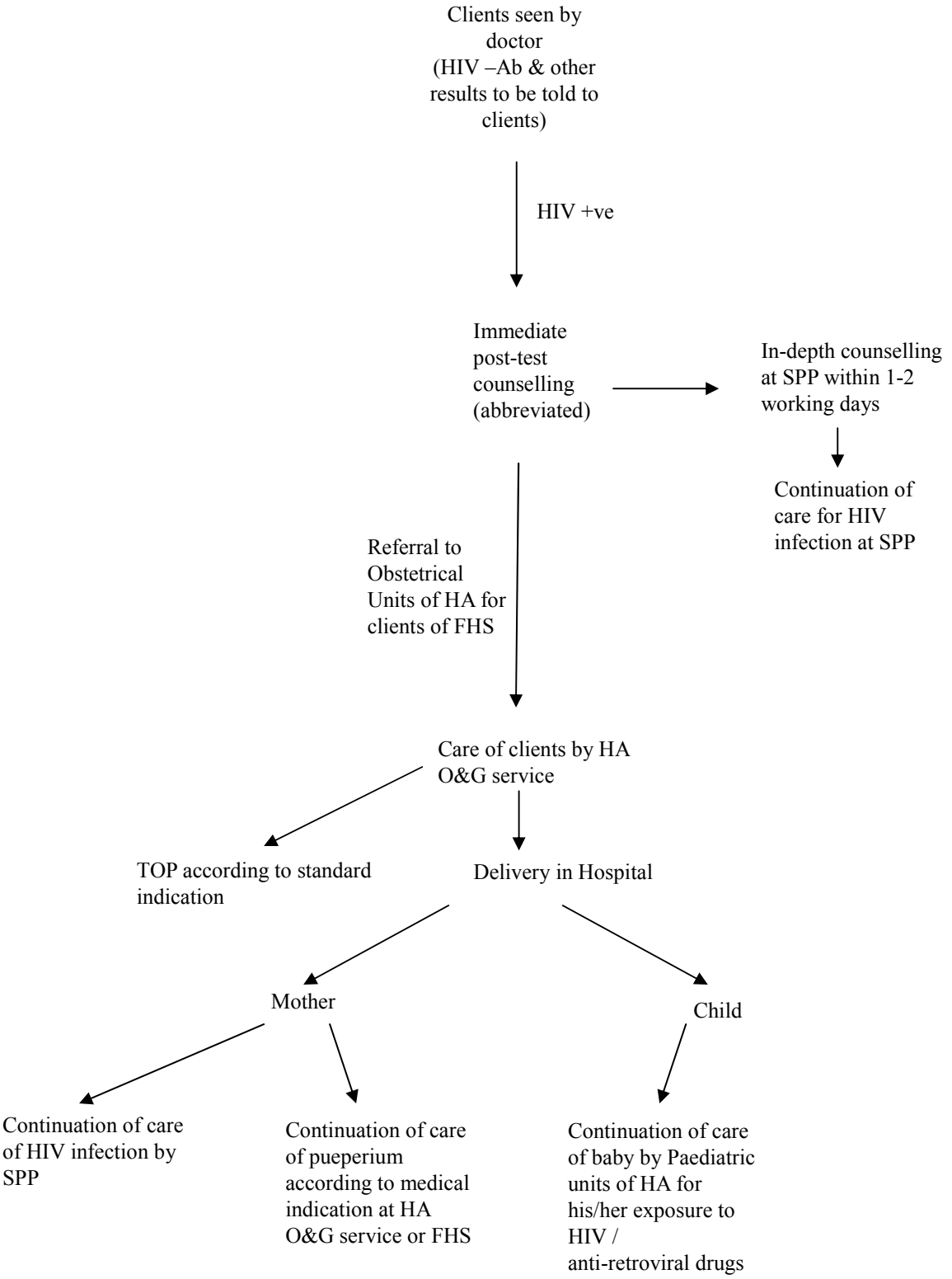


Figure 3B Workflow of universal antenatal HIV antibody testing in the antenatal services in the public sector for HIV +ve patients



3.4 Monitoring and Evaluation

A monitoring system has been established to collect data to track the progress and to support evaluation of the programme. Three groups of indicators have been identified for measuring:

(a) Process indicators: workload statistics (number of eligible women to be tested, number of HIV antibody tests performed, opt-out rate, number of HIV positive women managed), acceptance by the antenatal women, and the use of supporting materials developed

(b) Outcome indicators: programme coverage (percentage of women in labour with HIV tested results available, opt-out rate, percentage of HIV positive women who have received preventive interventions)

(c) Impact indicators: the number of HIV positive children (or the number of children prevented from HIV infection).

Overall, the Programme's output was evaluated by the collection of statistical returns from MCHCs, hospital obstetrical units, GVU and hospital laboratories. The acceptance by antenatal women and the perceived effectiveness of supporting materials were examined by a survey conducted in MCHCs of DH. Programme coverage data including the percentage of women in labour with results available and opt-out rate were compiled from statistics supplied by MCHCs, hospital obstetrical units. Data from labour rooms of the private hospitals were collected for comparison. The number of HIV positive women managed, types and numbers of preventive intervention initiated and number and outcome of babies born or infected are obtained from the completed report forms submitted by obstetricians, physicians and paediatricians. The current voluntary HIV report form DH 2293 is used as the trigger for tracking the flow of HIV positive women through pregnancy, delivery and subsequent medical management.

The data are centralized in a register maintained by SPP, which also assists in the collation of the information and the development of the indicators. The indicators used and method of collection of these indicators are summarized in Table 3.1.

Table 3.1 Indicators for programme monitoring

Categories		**Indicators**	**Method of collection**
Process Indicators	Preparatory initiatives	No. of training sessions and participants, materials developed	Statistical record
	IEC* provision	Client exposure & knowledge, (acceptance)	Clinic based survey
	Service output	No. of eligible women involved, no. of tests performed, no. of women managed	Statistical returns from service units
Outcomes Indicators	Programme coverage	Opt-out rate, % of women with HIV antibody results available at delivery	Statistical return from antenatal services & labour rooms
	Opportunity for preventive intervention	No. (%) of infected women given 3 part ART or other intervention	Report forms and register
Impact Indicators	Perinatal infections prevented	No. of babies infected	Report forms and register, programme evaluation

*****_Information, education and communication_

CHAPTER 4: PROGRAMME OUTPUTS & OUTCOMES

The outputs and outcomes of the Universal Antenatal HIV Testing Programme are discussed. An ongoing system has been established to collect statistical returns from service units involved in programme implementation from the HA and the DH. HIV positive pregnancy cases were tracked and a central database was put in place for collation of essential information. A total of 63 training sessions with a total of 3,278 participants were coordinated or organized by the Red Ribbon Centre (RRC). Five thousand posters, more than 11,000 leaflets in 12 different languages and 3,549 VCD/videos were produced. The number of eligible antenatal women for the Programme was 43,847 in the first year. A total of 41,714 HIV antibody tests were performed and 12 were tested with positive results. The Programme was effective with a low opt-out rate of 3.8% in the first year of operation. Antenatal mothers' acceptance of the test was high. The HIV prevalence in the pregnant women was 0.03%. So far no baby in the Programme was born with HIV infection.

4.1 Introduction

The outputs of the Universal Antenatal HIV Testing Programme refer to the performance of participating services with respect to the operation of the planned activities. Statistical returns of the service providers were collected on a regular basis to track the outputs of the programme. An information system is organised from the data collected to monitor the programme, and to contribute towards its evaluation. The output indicators could be classified into two groups:

(a) Support activities – these included capacity building initiatives, and the development of education resource materials.

(b) Service outputs – these refer to the workload statistics generated by service providers, including clinical units (MCHC and HA obstetrical units, and medical units managing HIV positive patients) and laboratories.

In determining the outcome of the programme, a series of indicators have been constructed from the collected data. The key indicators are related to the programme coverage, application of preventive intervention, and HIV infection in babies born to the mothers. A survey was conducted to assess the acceptance of the antenatal mothers. The results are analysed in the following chapter.

4.2 Support Activities

Support activities refer to a series of initiatives to prepare the health services for the new programme. These are quantified as (a) the number of training sessions on counselling and clinical management and (b) the number of educational and supporting material produced.

Overall, 63 training sessions on this programme had been co-ordinated by RRC with a total of 3,278 attendees. These training sessions were organised jointly with the FHS of DH, obstetrical, paediatric and medical services of HA, the professional societies and the AIDS services organizations. The activities ranged from short seminars to interactive workshops. The participants were practising nurses and midwives, doctors involved in maternal and child care as well as those involved in service management. The activities were nonetheless meant primarily for health care workers in the public sector. The degree of participation from the private sector was relatively low.

With respect to the support materials, some 5,000 posters, 11,172 leaflets in 12 different languages including traditional and simplified Chinese and 3,549 VCD/videos were distributed. Whereas a majority of these items were specific to the new programme, a leaflet and a video had been designed through the incorporation of antenatal HIV testing to the existing panel of antenatal blood test routines. The efficacy of these materials was addressed in a survey conducted by SPP (see chapter 5)

4.3 Service Output (Table 4.1)

The term “eligible women” refers to pregnant women attending the public antenatal services between September 2001 and August 2002. The number became a convenient starting point for evaluating the output of the new programme. The total number of eligible women was 43,847 of which 16,851 were first seen in MCHCs and 35,915 in HA obstetric units. An estimated 95% of the eligible women attended the education programmes or read the materials provided in the clinics. During the corresponding period, 45,986 deliveries were recorded, of which 35,915 (78%) were from HA hospitals and 10,071 (22%) from the 12 private hospitals providing delivery service in Hong Kong.

A total of 12 HIV infected women were detected through the new programme. All HIV positive pregnant women were under the care of the HA obstetrical units and the respective medical units of the hospitals or the SPP of the DH. Eight courses of antiretroviral therapy (ART) were prescribed and 3 women opted for termination of

pregnancy. Eight babies were eventually born in Hong Kong. One of the mothers and her baby had left Hong Kong back to their original country and were therefore not available for a second assessment.

The total number of HIV antibody tests performed was 41,714. Out of the total, 15,295 (36.7%) were performed by HA laboratories and 26,419 (63.3%) by GVU. The discrepancy between the number of laboratory tests performed (i.e. 41,714) and the number of eligible women (i.e. 43,847) was largely accounted by the proportion who had opted-out.

Table 4.1: Programme statistics on service outputs

Statistics were collected from (a) Department of Health, (b) Hospital Authority hospitals, and (c) private hospitals through Department of Health, covering workload on laboratory testing, clinical services and public education activities. Q1: September to November 2001; Q2: December 2001 to February 2002; Q3: March to May 2002; Q4: June to August 2002.

	Q1	Q2	Q3	Q4	Full year
P.1 Client caseload in the public service					
(A) No. of deliveries in HA hospitals	9561	8630	8409	9315	35915
(B) No. of antenatal clients in MCHC	3760	4009	4860	4222	16851
(C) Total no. of eligible women	10469	9916	11941	11521	43847
P.2 Number of HIV tests performed					
(A) Tests done by DH	3698	3856	4682	4024	16260
(B) Tests done by DH for HA	2533	2250	2611	2765	10159
(C) Tests done by HA lab	3809	3373	4036	4077	15295
(D) Total tests	10040	9479	11329	10866	41714
P.3 HIV positive pregnancies					
(A) No. managed in the public service	6	2	1	3	12
(B) No. of courses of ART prescribed	4	1	1	2	8*
P.4 Education and training support					
(A) No. of training sessions through RRC					63
(B) No. of HCW participating in training					3278
(C) No. of education materials distributed					
- Posters					5000
- Leaflets					111727
- VCD/videos					3549

* Seven cases of HIV positive pregnancies with ART prescribed for the intention of preventing MTCT of HIV infection. One case with ART prescribed for the intention of medical management according to the clinical status of the mother who opted for abortion.

4.4 Coverage of the Programme (Table 4.2)

The coverage of the programme was assessed by two indicators: the percentage of women who had their HIV antibody results available when they were in labour in the delivery rooms of hospitals (both private and public) and the opt-out percentage.

The coverage rate of the public hospitals increased from 13% in the first quarter to 94% in the last quarter of the programme implementation, with an average of 54% over the one-year period. Since the majority of the eligible women had already received antenatal care *before* the implementation of universal antenatal HIV testing, a significant proportion missed the test and thus gave a low rate in the initial months. As time elapsed, the coverage rate went up to over 90% in the 4th quarter, which was close to the maximum that could be achieved. The 6% discrepancy was a result of (a) opt-out, which was about 4% across the public services, and (b) late presentation in some women, leading to the omission of the antenatal routines at delivery.

While the private sector did not form part of the programme, their statistics provided useful data for comparison. It is noted that the initial coverage rate was similar between private and public services. A rising trend could be elicited over time, but reaching to a level of only 52% at the fourth quarter, as compared to 96% in the public sector. As the statistics were collected through an indirect channel, the discrepancy could be methodological. A “zero” return might indicate the failure to collect the relevant data, rather than a genuine lack of testing. An adjustment of these figures would however still lead to a lower coverage rate than that in the public service. Some possible reasons for the less optimal coverage could be: (a) a lower level of awareness of antenatal mothers in the private sector, (b) a lower level of acceptance of private health care providers, (c) less opportunities for conveying the necessary health educational messages in the private setting and (d) a lower acceptance of antenatal mothers for testing HIV.

The opt-out rate at the antenatal services provides another means of assessing coverage. The average opt-out rate was 3.8% in the public service (DH and HA), which has remained stable throughout the first year of programme implementation. The lowest was 3.1% in the second quarter and the highest was 4.2% in the fourth quarter. The figure was complementary to the coverage rate collected from the delivery rooms. A very low opt-out rate was achieved at the very beginning of the programme implementation, reflecting a very smooth and efficient introduction of the activities. Opt-out percentage was not collected from the private sector.

Table 4.2: Key Indicators
Five specific indicators are used to track the outcome of the new programme in its first year of implementation. Q1: September to November 2001; Q2: December 2001 to February 2002; Q3: March to May 2002; Q4: June to August 2002

	Q1	Q2	Q3	Q4	Full year
K1. % of deliveries with HIV tests available					
(A) HA hospitals (%)	13	33	82	94	54.9
(B) Private hospitals (%)	13	28	46	52	33.8
(C) All	13	31	73	84	49.9
K2. Opt out rate in public service (%)	4.0	3.1	3.8	4.2	3.8
K3. HIV prevalence in antenatal mothers - from data of MCHC (%)	0.06	0.02	0.01	0.02	0.03
K4. % HIV+ pregnancies treated with full 3- part ART (excluding abortion cases)	100 (3/3)	50 (1/2)	100 (1/1)	66.7 (2/3)	77.8 (7/9)*
K5. % HIV+ pregnancies leading to the birth of an HIV infected baby	(to be determined)**				

* Seven cases of HIV positive pregnancies with full 3-part ART prescribed for the intention of preventing MTCT of HIV infection. The 9 cases are total number of HIV positive women who opted for continuation of pregnancy.

** There was no HIV infected baby reported till 31/8/2002. However, the negative status of these babies have to be confirmed by HIV-Ab testing at 15-18 months of age.

4.5 Application of Preventive Interventions

The theoretical advantage of universal testing is to enable timely intervention to be introduced to the largest possible number of antenatal mothers. During the first year of implementation, the total number of HIV infected expectant mothers detected was 12, giving a prevalence of 0.03%. The figure was slightly smaller than that projected (15 to 30) from the pilot study of KWH. All 12 women received perinatal care at HA obstetrical units. SPP of DH and SMS of QEH managed 7 and 5 respectively for their HIV infection.

Eight courses of ART were prescribed, 7 of which with the intention of preventing MTCT of HIV infection and 1 with the intention of medical management according to

the clinical status of the woman. Three women opted for termination of pregnancy and 1 defaulted antenatal follow-up and returned to her mother country. One woman presented shortly before labour and the result of HIV antibody testing was only available 72 hours after birth of the baby and therefore missed the opportunity for prenatal intervention. Only two presented in the third trimester (including the woman presented shortly before labour). Most presented in the second trimester to allow for early institution of preventive intervention. In total, 77.8% (seven out of nine) were given a three-part ART regimen for prevention of MTCT, after excluding those who had had termination of pregnancy. To date, five had delivered their babies through Caesarean section.

Eight babies were eventually born in Hong Kong. Six of these eight babies had at least 1 PCR result postnatally at the time of writing and all were negative. One of the mothers and her baby left Hong Kong to their original country after the first assessment.

4.6 Other Impacts of Universal Antenatal HIV Testing

Apart from the prevention of perinatal infection, the universal antenatal HIV testing programme has brought about three other major impacts: (a) detection of otherwise unknown cases of infection in the family (secondary case finding), (b) promotion of public awareness, and (c) contribution to surveillance.

Secondary case finding as a public health control strategy is well-established for achieving containment of communicable diseases. In the setting of sexually transmitted infections, contact tracing has been conducted for many years to allow partners to be tested and treated. This process is also called partner notification. The diagnosis of HIV infection in an antenatal mother opens up the opportunity for partners to be counselled and tested. In the first year, 4 more HIV infected cases were diagnosed, 3 of these were spouses and 1 was a child born in the previous pregnancy. All HIV infected persons are receiving treatment and care in the public service.

The programme was also by itself a powerful health promotion tool for delivering HIV prevention messages to women of reproductive age. The protocol developed by MCHC and HA obstetrical units had led to the creation of an expanded forum for providing education through leaflet, VCD/video, group health talk/counselling as well as direct personal communication, the latter in selected cases. Results obtained from “Questionnaire Survey on Client Awareness and Acceptance of Universal Antenatal

HIV Antibody Testing Programme in Maternal and Child Health Centre in Hong Kong" demonstrated that 95% of the subjects had participated in at least one form of educational activity.

Awareness of the community was also enhanced during the process of programme planning. Implementation of the Universal Antenatal HIV testing Programme attracted the attention of the media. The repeated coverage in the media over the year played a key role in reinforcing the HIV prevention message to all members of the public.

As for surveillance, the collection of data on perinatal HIV infection was previously one component of the unlinked anonymous screening programme untaken by the DH. Since 1990, about 3000 cord blood samples were collected per year for the determination of HIV prevalence. Personal particulars of individual sample were removed before testing, in accordance with guidelines established by the WHO. With the implementation of voluntary universal antenatal HIV testing, surveillance has been enhanced through:

(a) the collection of a substantially higher number of yearly samples tested;

(b) the setting up of a register for collecting information on HIV positive pregnancies;

Concurrently, the voluntary HIV/AIDS reporting system was refined. The report form (DH2293) was revised to take in also the obstetric history of newly diagnosed HIV infection. Other record forms were introduced for standardising the collection of clinical and epidemiological information on maternal and paediatric HIV infection (Annex D).

CHAPTER 5: ACCEPTANCE OF THE PROGRAMME

A survey was conducted on antenatal mothers to determine their acceptance of the new strategy and programme. The study involved the administration of a self-administered anonymous questionnaire in all 50 Maternal & Child Health Centers (MCHCs) of the DH. A total of 2,669 collected returns were valid for further analysis. The most popular form of education was health talk, which was attended by 2,096 (78.9%) mothers, followed by video (66.5%), pamphlets (41.7%) and posters (24.7%). Over 90% respondents participated in at least one form of educational material/activity. The participation in these activities and HIV knowledge both were significantly associated with the acceptance of HIV testing.
A majority (70.4%) of the respondents reported to have accepted HIV antibody testing. The most important reason for declining the offer was the perception of no or low risk of getting the infection.

5.1 Planning the Survey

As part of the monitoring of the Universal Antenatal HIV Antibody Testing Programme, a study was conceptualised to better understand the acceptance of the programme from the perspectives of antenatal mothers. The objectives of the study were, therefore, to determine the:

(a) clients' access to various types of health educational materials,

(b) clients' participation in the educational activities,

(c) clients' knowledge on HIV,

(d) uptake rate of universal antenatal HIV antibody testing, and

(e) reasons for accepting/declining the HIV antibody test.

The study comprised a questionnaire survey of pregnant women who attended the first antenatal visits at MCHCs. Only Cantonese-speaking clients and/or those who understand written Chinese were recruited. Prior approval of the Director of Health was sought, and a pilot study was carried out on 50 subjects from 4 MCHCs. The contents of the questionnaires were slightly modified afterwards. The actual study period ran from 1st May 2002 to 30th June 2002. All expectant mothers who attended any one of the 50 MCHCs in Hong Kong and fulfilled the above inclusion criteria were invited to participate. Their participation was entirely voluntary. The questionnaires were completed at the end of the consultation before leaving the MCHC.

The questions were based on the main content of the *Manual on Universal Antenatal*

HIV screening in MCHC published by the FHS, DH[17], and were framed after taking reference from a previous local study[18]. The core of the questionnaires covered the main areas: the clients' access to information on HIV infection and the universal antenatal HIV testing programme, HIV knowledge, acceptance of the test and the reasons for acceptance or refusal. Both quantitative and qualitative data were obtained through multiple-choice questions and open-ended questions under areas of the 5 designated objectives. Demographic data were also gathered. The questionnaire was presented in Chinese only. All participants' information would be destroyed upon completion of the study report.

5.2 Responses to the Survey

All 50 MCHCs in Hong Kong participated in this study. A total of 3565 questionnaires were distributed and 3500 questionnaires from 47 MCHCs were received. The response rate was 98.2%.

Table 5.1. Demographics of the respondents

1. Age	N=2582	%
<20	91	3.5
20-29	1231	47.7
30-39	1215	47.1
40-49	45	1.7
>49	0	0

2. Parity	N=2597	%
0	1367	52.6
1	913	35.2
2	232	8.9
≧3	85	3.2

3. Education level	N=2605	%
Never	6	0.2
Primary	186	7.1
Secondary	2078	79.8
Tertiary or above	335	12.9

4. Hong Kong residence status	N=2581	%
Born in HK	1139	44.1
≧2 years	663	25.7
<2 years	301	11.7
Non HK resident	478	18.5

Among the 3500 questionnaires, 782 were excluded as they came from "transfer-in" cases that might have attended similar services at the HA. Of the remaining 2718 questionnaires received, 2669 were assessed to be valid. There was no significant difference among the invalid and the valid groups. Only the valid questionnaires (n=2669) were included in subsequent analysis. About 95% of the respondents were between 20-39 years of age, and 90% were either parity 0 or 1. Almost all (90%) had

attained at least secondary level of education. (Table 5.1)

5.3 Access to Information and General Awareness (Table 5.2)

The most popular form of educational material accessed by respondents was health talk, which was attended by 2096 (78.9%) persons. This was followed by video (n=1735, 66.25%), pamphlets (n=1093, 41.7%) and posters (n=647, 24.7%). To have an overview of the participation in various health educational activities, a summative score was calculated. Each educational activity was given equal weight and a score was awarded for participation in each educational activity. The maximum score would be 4 and the minimum 0. Almost all clients (2478, 94.9%) reported to have participated in at least one form of educational activity.

Table 5.2. Availability of educational materials and participation in educational activities.

1. Availability	N=2626	%
Posters	875	33.3
Pamphlets	1184	45.1
Video	2096	78.5
2. Participation	N=2622	%
Posters	647	24.7
Pamphlets	1093	41.7
Video	1735	66.2
Talk (n=2657)	2096	78.9

3. Score*	N=2610	%
0	132	5.1
1	496	19.0
2	1198	45.9
3	510	19.5
4	274	10.5

* Score is the total number of educational activities a subject participated

In general, the HIV knowledge of the subjects was good. Majority were able to indicate the three main routes of HIV transmission (n=1854, 70.1%) and to correctly answer that early diagnosis could prevent MTCT (n=2252, 85.7%). A summative score was again calculated to show the overall level of HIV knowledge by awarding one point for each correct answer. About two-thirds of the subjects (n=1673, 64.3%) were able to answer correctly to at least 6 of the 8 questions. (Table 5.3)

Table 5.3. HIV knowledge of respondents.

1. Route of transmission ^	N=2640	%
Sexual contact	2418	91.5
Blood/ blood product	2194	83.0
MTCT	1966	74.4
All 3	*1854*	*70.1*
2. Time when MTCT occurs^	N=2644	%
During pregnancy	2165	82.0
Delivery process	1186	44.9
Breastfeeding	1338	50.7
All 3	*729*	*27.6*
3. Prevention of MTCT^	**N=2627**	**%**
Early diagnosis	2252	85.7
Appropriate treatment	1845	70.2
Both	*1593*	*60.6*

4. Score*	N=2602	%
0	39	1.5
1	19	0.7
2	49	1.9
3	350	13.5
4	172	6.6
5	300	11.5
6	511	19.6
7	525	20.2
8	637	24.5

^ Subjects were asked to tick if she thinks a given answer is correct
* Score is the total number of correct answers a subject gave

5.4 Acceptance of Universal Antenatal HIV Testing

Only 1825 (70.4%) of the subjects reported that they “accepted” the HIV antibody test (the test) "*on the day of the survey",* and 434 (16.8 %) declined the test. Including those who indicated that they had taken the test before or would take it later, the calculated acceptance rate would be 75.2%. If those answered ‘did not know’ were also considered to have accepted the test, the final rate would be 83.2%.

The most common reason for accepting the test was "*knowing that the test is beneficial to the pregnant woman and her baby*" (1638, 90.8%). Many accepted the test because of recommendation by health care professionals (549, 30.4%). On the other hand, most (244, 83.3%) subjects declined the test because they "*considered themselves at no or low risk of getting the infection"*. One subject (0.2%) declined the test because she" *did not want to know the test result"* and another declined because of "*husband’s disagreement"*. 3 (0.7%) "*declined all antenatal blood test"*. (Table 5.4)

Finally, the factors associated with the acceptance of HIV antibody testing were studied. The variables analysed were age, parity, level of education, status of Hong Kong residency, participation in health educational material and HIV knowledge. The odd ratios and 95% confidence intervals for each independent variable were calculated. Chi-square tests were performed to detect linear trends. The odds ratios were then adjusted using forward stepwise logistic regression.

Table 5.4. Reasons for accepting or declining the universal antenatal HIV antibody test

Reasons for accepting the test	N=1804	%
1. Knowing that it is beneficial to herself and the baby	1638	90.8
2. Recommended by the health care professionals	549	30.4
3. The test is necessary	433	24.0
4. Recommended by husband	101	5.6
5. Recommended by sex partners	27	1.5
Reasons for declining the test	N=293	%
1. Consider no risk of getting the infection	205	70.0
2. Consider low risk of getting the infection	78	26.7
3. Declined all antenatal blood test.	3	1.0
4. Husband's disagreement.	1	0.3
5. Did not want to know the test result	1	0.3
6. Did not know	57	19.5

Respondents can choose more than 1 answer

Except for age, all variables were associated with the acceptance of the test. Interestingly, the parity 1 (i.e., mothers who have given a live birth prior to the current pregnancy) and parity over 3 were associated with a lower acceptance rate than the parity 0 (OR 0.75, 95% C.I. 0.59-0.95 and OR 0.45, 95% C.I. 0.26-0.78 respectively). Besides, non-Hong Kong residents had a lower acceptance of the test (OR 0.68, 95% CI 0.52-0.89). Although only level of education, participation in educational activities and HIV knowledge were included in the final model, they were all independently and significantly associated with the acceptance of the test. Having a tertiary level of education was associated with almost 4 times higher chance (OR 3.99, 95% C.I. 2.15-7.43) than those with or less than primary level of education. Respondents with better knowledge of HIV were more likely to accept the test. Those who scored over 5 were 3.61 times (95% C.I. 2.19-5.93) more likely than those scored below 3 to accept the test.

The single most significant independent variable associated with the acceptance of HIV antibody testing was the participation in health educational activities. Even though the impact of individual educational activity was not determined, it can be deduced that those who had participated in 1 to 2 activities were about 4 times (OR 3.8, 95% CI 2.49-5.80) more likely to have accepted the test than those failed to participate in any of them. Those who had participated in 3 to 4 activities were associated with an even higher odds ratio of 10.45 (95% CI 6.33-17.26).

5.5 Concluding from the Survey

The main conclusion is that the Universal Antenatal HIV Antibody Testing Programme has been well accepted by a majority of the pregnant women attending MCHC. Perceived benefits and recommendations from health care workers were the most commonly reported reasons for accepting the test, whereas low perceived susceptibility was the main reason for refusal.

There was, however, a considerable discrepancy in the acceptance rate calculated in this study compared to the statistic returns from MCHCs. In the survey, one sixth of the respondents indicated that they did not accept the HIV antibody test, whereas the opt-out rate was only 0.4% from the statistical returns during the same period in MCHCs. The reasons reflect the intrinsic limitations of the study. The question in Chinese *'Did you accept the HIV antibody test* today?' could have been interpreted by the respondents as *whether they welcome the offering of the HIV antibody test*, instead and irrespective of the whether the test has been done or not. This unintentional finding hinted that some one sixth of the antenatal mothers showed initial reluctance in accepting in undergoing antenatal HIV screening. From another perspective, this may in fact indirectly imply that the integration of the programme into the existing standard antenatal care with an opt-out system has been effective in maximizing the coverage of the screening programme.

The study has revealed a number of other noteworthy findings. Firstly, some 10% of all respondents did not "welcome" the test because of perceived no or low risk. Secondly, the *acceptance* of the test was significantly associated with the level of education, the number of educational activities participated in MCHC and the level of HIV knowledge. Thirdly, the level of HIV knowledge of antenatal women was similar to other local surveys conducted some years back. (Refer to Annex I, reference 9 & 10) In particular, specific knowledge on MTCT has remained suboptimal.

CHAPTER 6: ACCOMPLISHMENTS & CONSTRAINTS

How would we assess the Programme? The Programme objectives are reached. The original recommendations by SCA with respective to the prevention of perinatal transmission of HIV have been followed. However, new challenges are unveiled. These are: participation of the private sector, quality management in care provision, training for health care professionals, building sustainable system for Programme monitoring and evaluation, management of antiretroviral-exposed children, and the cost-effectiveness of the Programme.

6.1 Three Dimensions of Assessment

The introduction of the Universal Antenatal HIV Testing Programme has offered a unique opportunity for public health planning. In assessing the programme, accomplishments and constraints have been identified. These can be evaluated in three dimensions:

(a) Has the Programme achieved its defined objectives?

(b) Have the principles promulgated in the ACA recommendations been followed?

(c) Have new insights been gained which could improve future developments of the programme.

6.2 Achieving the Defined Objectives

The aim of the Programme is two-fold: to promote healthy pregnancy and to reduce MTCT of HIV. The first aim has largely been achieved, as reflected from the broad coverage of the testing programme, the identification of HIV positive pregnancies which would otherwise been missed if selective testing continued, and the application of preventive intervention (ART). The second aim is more difficult to assess. Evidently, the programme has enabled the institution of preventive intervention through the application of ART in women identified with the infection. So far none of the HIV positive women has delivered a baby with confirmed infection, Since a diagnosis cannot be confirmed until some months after delivery, the actual number of HIV infection prevented cannot be determined in the meantime.

The programme carries five objectives. All of which have been achieved to a large extent:

(a) *All antenatal mothers attending the public service are offered the HIV antibody tests* – HIV testing were performed in a majority of the deliveries occurred in public hospitals (78%) and a low opt-out rate of less of 4% has been recorded for HIV antibody testing in the public antenatal clinics.

(b) *Provision of information and counseling to antenatal mothers* – About 95% of the antenatal women at the MCHCs received or attended at least one form of education materials / activity,

(c) *Provision of treatment and care to HIV positive mothers and their babies* – All HIV positive women, their children and infected spouse have been receiving care at the designated health services in the public sector.

(d) *Setting a model for the private practising professionals with respect to universal antenatal HIV testing* – Coverage of HIV antibody tests derived from statistics from delivery rooms in the private hospitals have increased from 13% to 52%.

(e) *Rendering technical and educational support to health care workers and providers in both the public and private sectors* – The RRC has been playing a coordinating and supporting role in the production of education materials and training.

6.3 Observing the Principles Established by the ACA

Six principles were recommended in the development of the new programme. These cover (a) the universal nature of testing, (b) the administration of antiretroviral prophylaxis, (c) the inclusion of maternal infection in the care programme, (d) the consideration of both obstetric indications and HIV status in the determination of the mode of intervention, (e) the provision of paediatric care, and (f) the development of coordinated efforts for strengthening knowledgebase.

The “universal” principle can be evaluated by an examination of the programme statistics. In the first year, 94% of women in labour in the public service had available HIV antibody results. Ninety five percent of antenatal women in MCHC had access/participate to materials/activities concerned to HIV and antenatal HIV antibody testing. Nevertheless, the situation was less than ideal in the private sector. Only 52% (in the 4th quarter) of women had their HIV antibody results available when they were in labour. The degree of exposure to HIV information and antenatal HIV antibody testing is not available in the private sector for assessment. It can be concluded that the first principle has only largely but not fully complied in Hong Kong.

The second principle can be evaluated only from the practice in the public service. With the exception of one mother who presented late in her gestation when the HIV antibody result was only available postnatally, ART had been offered to all, after excluding abortion cases. Overall, the standard three-part ART regime was used in 7 out of 9 pregnancies (excluding abortion cases). Modifications in the protocols for managing women who presented late had subsequently been made to ensure that the second principle could be followed as far as possible.

The third and fourth principles are related to the standard of medical care. All the HIV positive women were referred to either one of the two specialist units for HIV care where standard protocols on HIV management are already in place. The women were prescribed antiretroviral regimens recommended by overseas authorities and are in line with the principles established by the SCA. As for obstetric care, it was noted that Caesarean Section was offered to three women whose informed decisions were supported by the professional staff teams of the hospitals. The fifth principle on paediatric care was adopted by hospital paediatric units in collaboration with HIV physicians and obstetricians. The small number of babies delivered by HIV positive women means that it's difficult to build a critical mass of expertise in paediatric HIV management. There is also the missing knowledge gap of how HIV exposed babies should be monitored in the long run. Currently, these babies are referred to two centres out of the goodwill of the involved paediatricians.

Finally, the last principle has called for a co-ordinated approach for strengthening local knowledgebase. In the course of the development of the programme, enthusiastic participation of stakeholders has led to the establishment of a built-in evaluation system that includes the tracking of HIV infected women and their babies, and the compilation of various statistical returns. While the understanding of perinatal HIV infection has inevitably been advanced, a formal system of following-up babies exposed to HIV and/or antiretroviral drugs is yet to be worked out.

6.4 Lessons for Future Reference

6.4.1 Identification of useful approaches

Implementation of the Universal Antenatal HIV Testing Programme has highlighted a number of important approaches which should be of useful reference in the development of other public health programmes in the futures.

First of all, the programme has set an example of using a participatory approach in programme planning and development. The participation of collaborated partners viz. policy makers, academicians, service providers, frontline health care professionals and the affected community began at the very early stage. Many of the concerns have been appropriately dealt with on a consultative basis. This multi-sectoral and multi-disciplinary approach could only be actualised with dedicated efforts for mobilisation. Both leadership and effective strategy have been proven to be of prime importance in guiding the process.

Secondly, the Programme has triggered a large series of training activities for the health care profession. The approach reinforces the old wisdom of training and support to frontline health workers. The training activities conducted have been considered important in cultivating competency, instilling a sense of ownership and laying the foundation for effective implementation of an otherwise unfamiliar public health initiative.

Thirdly, a built-in evaluation system was set up at the very beginning of the planning process. By integrating into the existing health services, the system has caused minimal disturbance to the antenatal workflow. After the first three months of implementation, a report was produced and distributed to the involved parties. This served to provide input for fine-tuning the operations and to cultivate a sense of ownership for each of the party involved.

Finally, the introduction of specifically designed HIV information and education was a crucial part of the Programme. These were modified from existing materials while observing the principles recommended by the SCA. The organisation of group counselling and simplified forms are some of the examples. The programme design demands innovation and flexibility, which are often important attributes for the development of public health initiatives.

6.4.2 Constraints

While the Programme aims to promote health in pregnancy and to prevent mother-to-child HIV infection, the activities have met with constraints, the most important are:

(a) The scope of the Programme is limited. While successful implementation is evident in the public service, penetration in the private sector is still sub-optimal. As some one-fifth of the deliveries occur in the private hospitals, the benefits of

the new strategy cannot be maximised.

(b) Pregnant women who do not come forward for routine antenatal care may miss the preventive services, thereby reducing the effectiveness of the intervention on a population level. This is particularly relevant for non-residents using the obstetric services in Hong Kong.

(c) The development of expertise in counselling HIV positive women has been shown to be a difficult task. While support has been rendered by the DH, the training of antenatal health staff is essential to ensure the provision of seamless obstetric care. The small number of clients diagnosed implies that the generation of a critical mass of expertise could be a long and difficult process.

(d) The protocol for the management of babies exposed to HIV and/or antiretroviral therapy remains to be established. Standards have been developed for perinatal and neonatal care, but practice beyond which have not been included so far.

Finally, for a comprehensive public health programme, cost analysis is crucial to determine the effectiveness of the strategy from an economic angle. Although such an analysis was planned to be carried out in the planning phase, it was eventually not conducted. The reasons are: urgency to implement the programme and the failure to identify the expertise to undertake the analysis.

CHAPTER 7: THE WAY AHEAD

Recommendations are made for refining the Programme and adding new initiatives to the strategy. Nine recommendations are described. (1) Progress of the programme should continue to be reported to the DH/HA Working Group of Woman and Child Health Services. (2) The SCA should continue to deliberate issues arising from the strategy and programme on universal antenatal HIV testing. (3) Standards should be established for managing babies exposed to HIV and/or antiretroviral therapy. (4) Indicators should continue to be collected by a central coordinating mechanism. (5) An annual report on the indicators should be produced. (6) The workflow, education materials and activities should be refined (7) The role of rapid test should be established. (8) Opportunity of offering a second test should be examined. (9) New ways should be explored to expand the coverage in the private sector.

7.1 Introduction

Three milestones have so far been reached since the introduction of universal antenatal HIV testing for achieving the prevention of MTCT of HIV. The first milestone was marked by the launching of the programme on 1 September 2001, signifying the conclusion of planning and the translation of strategy into operation. The second milestone was reached in December of the same year, the time when the first three months' activities were completed. It was important from an operational viewpoint because of the opportunity to quickly review the activities and to make timely and appropriate adjustments. The third milestone reflected the completion of the first year's work. It was naturally the time-point for evaluation and for planning ahead. The third milestone has culminated in the generation of this report.

As an ongoing programme, the Universal Antenatal HIV Testing Programme did not stop at the end of the first year. It was meant to be a sustained public health initiative. A thorough evaluation of the Programme has allowed service providers and planners to firstly, seek means to refine the activities to better achieve its preset objectives, and secondly, consider adding new components to enrich the efforts. The latter could also be seen as the development of a new strategy for preventing mother-to-child HIV transmission.

This final chapter presents the recommendations, which should be considered in the prevention of MTCT of HIV in Hong Kong. These have resulted from in depth analysis following the evaluation described in the earlier chapters, and

from ideas generated from various forums in the months leading to the publication of the report.

7.2 Sustaining the Programme

There is little doubt that the Universal Antenatal HIV Testing Programme introduced in the public service should be continued. To ensure its sustainability, it is proposed to enhance collaboration between participating agencies, systematise monitoring and evaluation, and refine activities to suit the needs of clients.

7.2.1 Enhancing collaboration

Currently the implementation of the programme involves the active participation of professional services of the DH (SPP, MCHCs and GVU,) and the HA (Obstetric departments, SMC of QEH, virus laboratories and paediatric departments). The DH headquarters and the HA head office are also involved in the coordination of the activities. Linkages between partners have been made possible through the efforts of a liaison group formed between DH and HA, a working group of the SCA, and professional exchange at an operational level. With the integration of the programme in the regular services, these ad hoc groups would need to be replaced by:

(a) the reporting to the DH-HA Working Group of Woman and Child Health Services on the future progress in programme development; [Recommendation One] and

(b) the deliberation of issues which may arise from time to time by the SCA. [Recommendation Two]

The management of HIV positive women and pregnancies has become standardised. There is, however, still knowledge gap in paediatric management. It is proposed that standards be established in the management of babies born to HIV positive mothers to monitor the consequences, if any, of their in-utero exposures to HIV and/or ART. [Recommendation Three]

7.2.2 Systematising programme monitoring

Monitoring involves the ongoing collection of programme data to facilitate effective assessment. The monitoring of the programme in its first year of implementation might not be perfect, but nevertheless has became a built-in component. It has also been an important strategy for informing service providers about the progress of the activities. The assessment based on the analysis of programme indicators (see Chapter 4) has in fact provided useful inputs for revising programme activities. To benefit from such a mechanism, it is proposed that the sets of output and outcome indicators shall continue to be collected by a central mechanism. [Recommendation Four]

While adjustments of the programme components should be considered whenever discrepancies are identified, the generation of report should also become a regular output itself. Based on the collation and analysis of these indicators, an annual report should be produced by the service responsible for coordinating the monitoring system. [Recommendation Five]

7.2.3 Refining the programme

The planning and implementation of the Universal Antenatal HIV Testing Programme has led to the generation of considerable amounts of education materials, protocols, management guidelines, as well as training activities. The contents of these materials and the work flow should be refined from time to time with the primary objective of meeting the specific needs of clients attending the antenatal service. [Recommendation Six]

7.3 Introducing New Elements

The aims of the Universal Antenatal HIV Testing Programme are to promote healthy pregnancy and to prevent mother-to-child HIV transmission. With these broad aims, the programme has been guided by a set of objectives which are narrower in scope. Currently the testing is provided only in the public service, and targets women during their first attendance at the antenatal services. While the programme represents one major step forward to increase the proportion of women tested for HIV antenatally, there are still shortfalls in coverage, and may miss out some of the antenatal women who present late, and others who may

have been exposed to HIV risk during or shortly before pregnancy.

In order to add value to the programme, it is proposed to consider the following new strategies in the future development of the Universal Antenatal HIV Testing Programme:

(a) The role of rapid test should be examined in connection with its application for the diagnosis of HIV infection in antenatal mothers who may present late and therefore miss the regular investigation. [Recommendation Seven]

(b) The coverage of antenatal HIV testing in the private sector should be determined to support the development of an additional strategy to promote HIV testing in all antenatal mothers in Hong Kong. [Recommendation Eight]

(c) A second test may be indicated in selected clients because of exposure risk. The practicability of the introduction of the additional step should be examined. [Recommendation Nine]

- END -

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Annex A

Table showing the chronological order of the milestones in local and international development in the prevention of MTCT of HIV

Month/ year	Milestone (overseas milestones shaded)
Feb 1994	Publication of preliminary results of ACTG 076 in new England Journal of Medicine
Aug 1994	Recommendation by the US PHS on the use of ZDV to reduce perinatal HIV transmission
1995	Recommendation from the Scientific Committee on AIDS (SCA)on the use of ZDV to prevent MTCT of HIV
Jul 1995	Conclusion from the Advisory Council on AIDS (ACA) that universal antenatal testing should not be introduced in that moment
1995	Recommendation by the US PHS on "routine HIV counselling and voluntary testing of all pregnant women"
Jan 1998	Revision of guidelines on the use of antiretrovirals for reducing MTCT of HIV published by the USPHS
1998	Recommendation by the ACA External Consultancy on the implementation of "routine voluntary screening for HIV among pregnant women"
Apr 1998	Recommendation by the UK Working party on normalization of antenatal HIV testing
1999	Recommendation by the US Institute of Medicine on "universal HIV testing as a routine component of prenatal care"
Aug 1999	UK Health Department revised her recommendations and targets at reducing MTCT of HIV adopting universal antenatal HIV testing and aimed at achieving an uptake rate of 90% and identify 80% HIV infected pregnant women by the end of 2002
Oct 1999	In the 17th meeting of SCA, prevention of MTCT of HIV was identified as one priority area to achieve, and the mechanism of forming a working group composed of various stakeholders was proposed and accepted
Mar 2000	Formation of a SCA working group on the prevention of MTCT of HIV. The universal antenatal HIV testing was affirmed to be the desirable approach
Jul 2000	Reaffirmation on the desirability of universal antenatal HIV testing using the opt-out approach, the importance of consultation to the women's group and professional bodies as well as training to the concerned HCW by the working group.
Oct 2000	Recommendation by the ACA on the strategies to prevent MTCT of HIV. Universal antenatal HIV testing was incorporated. Members of the WG were encouraged to take the message back to their representing organizations for

	wider consultation and worked out issues concerned for actual implementation. Letters were sent to both the professional and the community bodies for consultation.
Feb 2001	Meeting of the two major service providers DH and HA on various issues concerned with the programme implementation in the public sector
Mar 2001	Announcement by the Chief Executive Officer of HA to the public on the date of programme implementation (September 2001)
May 2001	Receipt of the formal reply from The Hong Kong College of Obstetricians and Gynaecologists (letter dated 21 May 2001) to the Secretariat of the SCA, ACA expressing their support to the programme.
Jun 2001	Identification of prevention of MTCT of HIV as one of the top priorities in HIV/AIDS prevention by the United Nation General Assembly Special Session on HIV/AIDS
Sep 2001	Launching of the programme in Hong Kong
Oct 2001	Inclusion of the initiative in the Chief Executive's Policy Address 2001
Nov 2001	Recommendations by the US CDC on "simple, routine and voluntary HIV testing for all pregnant women" as the screening strategy

* Overseas milestones in shaded boxes

Annex B

Role of collaborators and partners of MTCT programme

Partners		Role	Participation	Credit & gap
Governmental or related agencies	ACA	Advise on policy relating to HIV prevention and care	Advised and recommended the Government on adopting universal antenatal HIV testing	Prompt response from the plead by SCA, and the medical profession; demonstrated her commitment to prevention of MTCT of HIV
	SCA	Perform critical review of scientific evidence, develop local guidelines	Formulated the guidelines in prevention of perinatal HIV transmission leading to the final Programme implementation; formation of a WG and lined up the stakeholders; critical review programme review from implementation logistics to evaluation; advocated the programme to the medical profession; forward her recommendations to ACA	Active participation in actual programme development; successful in mobilization of the community; establish a model in HIV prevention programme development; leadership in the whole programme
	DH	Prevent disease and improve health of people in Hong Kong	Lined up MCHC with the other service providers in Programme implementation and monitoring	Prompt response to ACA recommendations; formally affirmed the programme as the Governmental health policy; collection of useful data from the private sectors

	SPP (DH)	Prevent HIV infection and provide care to HIV infected people; Provide technical support to ACA/SCA and other service providers	Technical support; coordinate the involved parties; support to training of HCW; input to development of guideline, ICE materials, protocol development; overlook Programme indicators for monitoring and data management; care to pregnant women	Executive function of SCA, ACA and DH; unfailing support to the Programme
	MCHC (DH)	Provide antenatal and postnatal services to pregnant women and neonates	Actual Programme implementation; WG member; monitoring data collection	Successful Programme implementation with high acceptance
	GVU (DH)	Provide laboratory services	HIV antibody testing; Western blot confirmation support to private and some HA hospitals; monitoring data collection	Efficient and proficient lab services
	Obs Units (HA)	Provide clinical services to pregnant women	Actual Programme implementation; WG member; monitoring data collection; care to pregnant women	Successful Programme implementation with low opt-out rate; good care of infected women
	Paed Units (HA)	Provide clinical services to neonates	WG member; monitoring data collection; care to neonates	Good care of babies born to infected women
	SMS (HA)	Provide clinical services to HIV infected people	Support to training of HCW; care to HIV infected pregnant women	Good care of HIV infected pregnant women

	Medical Council	Act as a professional governing body		Endorsement of Programme
	Frontline staff (public services)	Provide direct care to patients	Execute the Programme; care of infected women; data collection	Programme ownership; proactive attitude; proficient Programme implementation; good care of those infected women and their contacts
Professional bodies	Colleges and Academy of Medicine	Maintain professional standard	Professional input to Programme; WG member	Input and endorsement of Programme
Professional societies	O&G, Paed and Midwives Society or Association	Promote professional development	Professional input to Programme; WG member	Input and support
Private sector	Private obstetricians & hospital	Provide care to pregnant women	Participate screening of pregnant women; collection of data for monitoring	Variable participation
Community groups	AIDS specific NGOs	Act as advocacy, provide HIV education, support to PWHA	Training to HCW, organized awareness programme	Collaborative approach with the mainstream care providers
	Women's groups	Promote the welfare of women		Positive response
Media		Maintain vigilance to public policies		Unbiased and positive reporting

Annex C

Recommended clinical guidelines on the prevention of perinatal HIV transmission

Preamble

In 1994, interim findings from the landmark study Pediatric AIDS Clinical Trials Group (PACTG) 076 indicated that the use of zidovudine (ZDV) significantly reduced the mother-to-child transmission (MTCT) of human immunodeficiency virus (HIV). This was followed by other studies that either elucidated the risk factors associated with transmission or evaluated alternative interventions to prevent MTCT. It is imperative that these scientific findings be translated into standard clinical practice if their full potential in public health can be realised.

These guidelines are developed under the auspices of the Scientific Committee on AIDS (SCA). They are intended to suggest preferable approaches toward the prevention of HIV by mother-to-child-transmission (MTCT) based on synthesis of scientific evidence. Application of these guidelines, however, should be flexible, in order to accommodate the wide-ranging circumstances whereby the clinical problem may present itself.

The principles

I. Universal testing of HIV antibody should be performed for antenatal women in Hong Kong.

II. The prevention of mother-to-child transmission of HIV involves the administration of antiretroviral prophylaxis.

III. Clinical management should include that for the maternal HIV infection.

IV. The mode of delivery and its management should be considered on the grounds of obstetric indications as well as HIV status

V. Paediatric management should be offered to reduce the risk of MTCT of HIV.

VI. Coordinated efforts should be made to strengthen our knowledge base regarding MTCT of HIV in Hong Kong.

Recommendations and Rationales

I. Universal testing of HIV antibody should be performed for antenatal women in Hong Kong.

In Hong Kong, about half the mothers of perinatally exposed children were diagnosed of HIV infection only after delivery (surveillance data of the AIDS Unit, Department of Health). The fact that effective treatment is available to help prevent an incurable infection argues strongly for testing all antenatal mothers for HIV. Before its recommendation on universal HIV antibody testing, the SCA has evaluated the seroprevalence of HIV in antenatal clients and the potential impact on health care resources, in accordance with guidelines of UNAIDS[i]. A pilot study of universal testing in a local hospital also demonstrated a high level of acceptance (97.5%) in antenatal mothers[ii].

Since HIV testing is a clinical procedure with potentially serious social and medical implications, informed consent and pre- and post-test counselling should be provided. The SCA reckons that the standards of testing should not be compromised by universal testing, and the right of refusal to be tested should be respected.

II. The prevention of mother-to-child transmission of HIV involves the administration of antiretroviral prophylaxis.

Antiretroviral regimen for prophylaxis against MTCT of HIV is effective. It should be administered in the event of a diagnosis of HIV infection in an antenatal mother continuing her pregnancy. PACTG 076[iii] [iv], a randomised controlled trial of the standard regimen below, has demonstrated a 66% reduction of MTCT in women with CD4 count above 200/ul, from 23% to 8%. The efficacy of this regimen was corroborated by PACTG 185[v] with women of advanced disease and prior ZDV therapy. However, there is evidence that efficacy is reduced if both the antepartum and postpartum components are shortened[vi]. Alternative regimens have also been evaluated and found to be useful (see appendix II). Nevertheless, it is unlikely that they are superior to the standard ZDV regimen, pending a direct comparison trial.

II.A The standard regimen comprises the use of zidovudine (ZDV) beginning as early as 14 weeks of pregnancy, continuing through labour by intravenous administration, and followed by treatment of the newborn for 6 weeks.

II.B Alternative antiretroviral prophylaxis should be administered in special circumstances where the standard regimen is considered not practicable.

II.C When maternal HIV infection is not diagnosed until labour, the options of antiretroviral prophylaxis are:

(i) standard regimen of ZDV abbreviated to intrapartum and postpartum components only;

(ii) nevirapine (NVP) one dose to mother and one dose to newborn at 48-72h;

(iii) ZDV/3TC intrapartum, and to newborn for 7 days, and;

(iv) abbreviated ZDV + nevirapine

Details of these options are in appendix I and II. It is noted that the ZDV/3TC regimen, i.e. option (iii), is modified in non-breast feeding women by the deletion of the maternal postpartum component. The use of abbreviated ZDV combined with nevirapine, i.e. option (iv), is based on theoretical considerations. This regimen may yield better protection in those mothers who have viruses resistant to either ZDV or NVP, but may also result in more toxicity.

The choice depends on the considerations of compliance, potential toxicity, likelihood of resistant viruses, and the availability of drugs. Studies on the relative efficacy of these regimens are not available.

II.D In infants born to HIV-infected mothers who have not taken antiretroviral therapy, the recommended regimen is 6 weeks of ZDV as soon as possible.

The regimen is a 076 regimen abbreviated to the postpartum component only (see appendix I and II). The rationale of this abbreviated regimen is based on the results of an observational study[vii]. It is noted that therapy given at 3 days or later after birth is unlikely to be useful. The use of additional drugs in this situation has not been studied. Besides the balance between additional efficacy and toxicity is unknown.

III. Clinical management should include that for the maternal HIV infection

III.A A pregnant woman who is HIV positive shall receive the same standards of care established for HIV-infected nonpregnant patients. To best balance between benefits and risks to the foetus, mother and newborn, management should be assisted by a physician specialising in HIV medicine.

Evidence is accumulating that optimal control of maternal HIV disease is beneficial to reducing MTCT as both the magnitude of viral load and CD4 count are related to transmission[viii ix x]. The major standards of care[xi] in HIV disease are:

(i) prophylaxis against opportunistic infections based on history and CD4 count, and

(ii) antiretroviral treatment as determined by viral load, CD4 count and clinical history.

Regular CD4 cell enumeration and viral load testing are indicated as in non-pregnant patients. A viral load result near term is preferable to help determine the mode of delivery. Modern day management of HIV infection is complex and consultation with specialists should be sought.

III.B A woman who is diagnosed HIV positive in the course of pregnancy should be counselled on the long term care plan, informed of the efficacy of prophylaxis against MTCT, and evaluated for antiretroviral treatment.

It is important to distinguish drugs used for maternal HIV disease from those for prophylaxis against MTCT, as their indications are different. In cases where HAART is not indicated for maternal HIV infection, standard ZDV regimen is recommended for prophylaxis against MTCT, as explained above.

If medical therapy of maternal HIV disease is also indicated, the best regimen for both mother and foetus is one that has the greatest antiretroviral potency, minimal teratogenicity and toxicity, and maximal efficacy against MTCT. ZDV should be incorporated in the HAART regimen unless contraindicated. Apart from the usual parameters in non-pregnant patients, the choice of other components of a HAART regimen should also be based on potential toxicity to mother and foetus, altered pharmacokinetics in pregnancy, and compliance. However, if there is intolerance to ZDV, then the nevirapine regimen may be substituted (see appendix II).

While the use of ZDV in pregnancy is probably safe[xii], data on other antiretrovirals are sparse. At any rate, toxicity including teratogenicity to the foetus would be greatest in the first trimester. It is therefore acceptable that treatment be postponed until 10 -12 weeks of gestation. The potential adverse effect on disease progression and MTCT of HIV should be made known to the mother.

III.C In mothers who become pregnant while receiving antiretroviral therapy, evaluation should be made of the treatment regarding antiretroviral potency, potential toxicity to the mother and foetus, and prophylactic efficacy against MTCT. The rationales of alteration or continuation of therapy should be fully explained to the mother to facilitate decision.

For these clients, reevaluation of the antiretroviral regimen is required to maximise control of HIV disease, minimise teratogenicity and provide prophylaxis against MTCT. As one consideration might compromise another, the mother's wishes are important, and full explanation should be given of the rationales of continuing or altering the regimen.

If the current regimen does not contain ZDV, it should be added or substituted even if the mother has had prior experience with the drug. If there is intolerance to ZDV, the nevirapine regimen may be used for prophylaxis against MTCT (see appendix II).

At any rate, the toxicity including teratogenicity to the foetus would be greatest in the first trimester. Some mothers may choose to interrupt treatment in the first 10 – 12 weeks of gestation. The potential adverse effect on disease progression and MTCT of HIV should be made known to the mother.

IV. The mode of delivery and its management should be considered on the grounds of obstetric indications as well as HIV status

The finding that elective caesarean section before rupture of membranes confers additional protection against MTCT should be taken into consideration, along with other factors, in the decision on the mode of delivery. The wish of the mother should be respected.

Studies have validated the independent protection from MTCT conferred by elective cesarean section[xiii] [xiv]. However, it cannot be overemphasised that the operation carries obstetric risks of its own. The efficacy of elective caesarean section in reducing MTCT should only be one of many factors in the final decision on the mode of delivery. Examples of those factors relating to HIV disease include the use of antiretroviral prophylaxis, the viral load near term, and expected compliance with the postpartum component of ZDV prophylaxis[xv].

Prolonged rupture of membranes (especially if more than 4 hours), invasive foetal monitoring, and instrumental vaginal delivery should be avoided to reduce MTCT.

V. Paediatric management should be offered to reduce the risk of MTCT of HIV.

The paediatrician should be involved early and before delivery in each case of HIV exposed pregnancy. Apart from continuing the prophylactic regimen against transmission of HIV, the paediatrician shall look for possible congenital defects or other consequences as a result of exposure to antiretrovirals.

The most common adverse effect of ZDV in the newborn is anaemia. As data on teratogenicity are rare, the paediatrician should also be on the lookout for unexpected congenital abnormalities.

The mother shall be advised against breastfeeding. It has been estimated that the added risk of transmission by breastfeeding was 16.7% [xvi]. In Hong Kong, the benefits of breastfeeding are outweighed by the risk of HIV transmission it carries.

For management of paediatric HIV infection, please refer to guidelines on this subject by the SCA[xvii].

VI. Coordinated efforts should be made to strengthen our knowledge base regarding MTCT of HIV in Hong Kong.

The science of treating and preventing HIV infection is evolving. In Hong Kong, a coordinated effort is needed to track the local epidemiology of HIV infection in women, use of prophylactic measures against perinatal transmission, and outcome of such treatment. This knowledge base will be useful in formulating strategies toward preventing this disease in children.

Implementation strategies

In realising the objective of achieving prevention of MTCT, it is proposed to:

(a) promote the adoption of the principles in the health care settings in both the private and public service in Hong Kong,

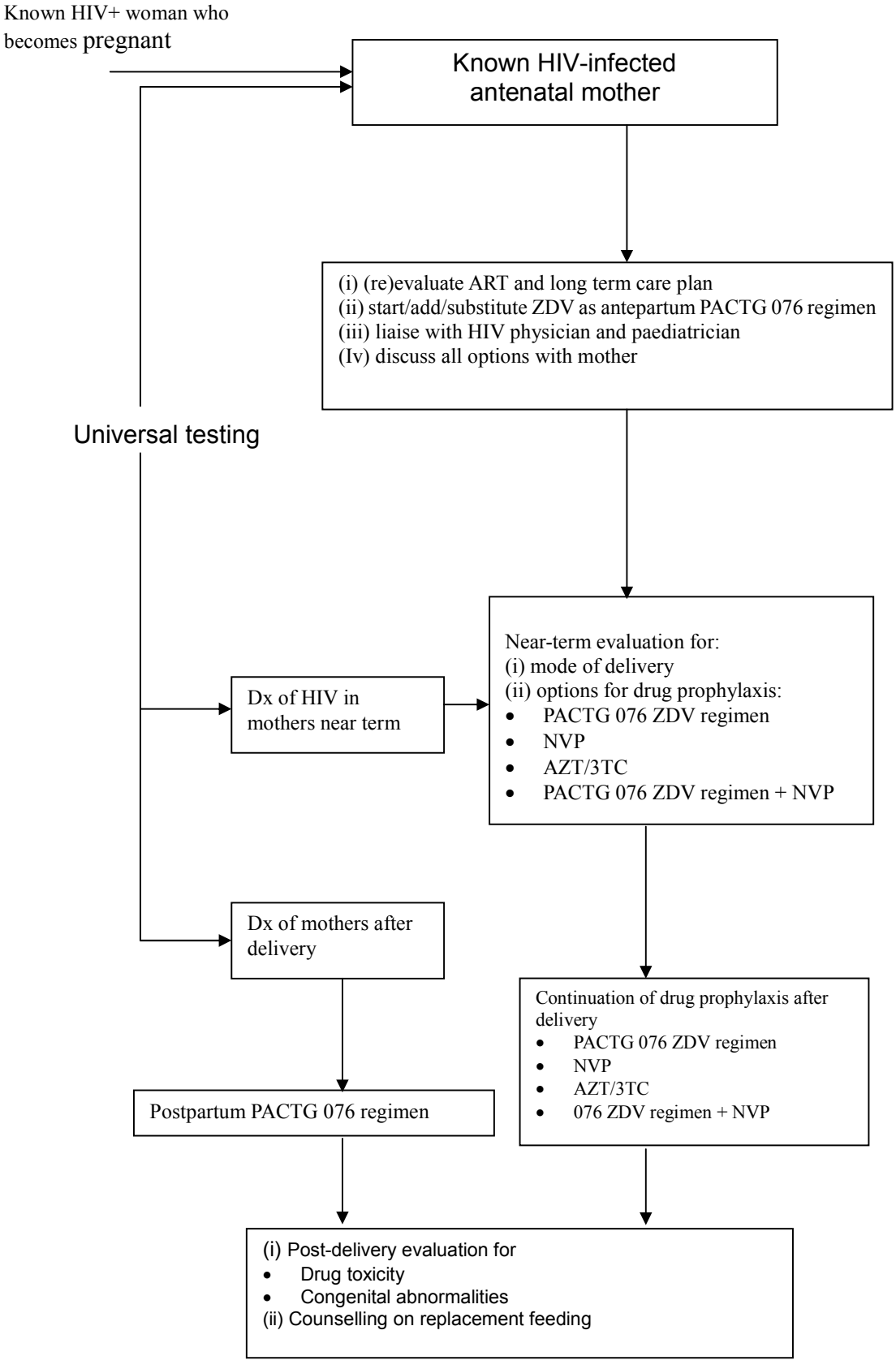
(b) encourage the development of protocols relevant to individual service, based on the recommended principles,

(c) enhance the understanding of the health care profession and the community about the importance of preventing MTCT,

(d) establish a sustainable system and build capacity in the health care services involved in the prevention of MTCT, and

(e) evaluate and monitor the progress of implementation of universal antenatal testing.

Appendix I. Management algorithm to prevent perinatal HIV transmission



Appendix II. Antiretroviral prophylaxis against MTCT of HIV

Regimen	Dosing	Evidence of efficacy (reference study)	Remarks
Standard 076 ZDV regimen	*Antepartum* - ZDV 300 mg bid (or 200 mg tds) initiated at or after 14 wk *Intrapartum* - IV ZDV at loading dose of 2 mg/kg in hr, followed by 1 mg/kg till delivery *Postpartum* - ZDV syrup at 2 mg/kg q6h to newborn begun at 8-12 h for 6 wk (IV ZDV at 2 mg/kg q6h in those who could not tolerate oral intake; ZDV at 1.5 mg/kg IV or po q12h in preterm infants of <34 wk for the first 2 wk may be considered[xviii])	Transmission rate was 7.6%; Placebo group was 22.6% (PACTG 076[iii iv])	No breastfeeding
AZT/3TC	3-part regimen: (ZDV 300 mg + 3TC 150 mg) bid from 36 wk to labour; (ZDV 300 mg + 3TC 150 mg) q3h during labour; (ZDV 4mg/kg + 3TC 2mg/kg) bid to newborn and (ZDV 300 mg + 3TC 150 mg) bid to mother for 7 d Modified 2-part regimen (in non breastfeeding women): *Intrapartum* - (ZDV 300mg-600 mg po + 3TC 150 mg) as loading dose, then ZDV 300 mg q3h + 3TC 150 mg q12h; *Postpartum* - (ZDV 4mg/kg + 3TC 2mg/kg) q12h to newborn for 7d	At 6 wk, transmission was 8.6% (3-part regimen), and 10.8% (without prenatal component); Placebo group was 17.2% (PETRA[xix])	Breastfeeding; Intrapartum ZDV alone was ineffective;
Nevirapine	NVP 200 mg at the onset of labour; NVP 2 mg/kg to newborn at 48-72h	Transmission rate was 13.1% at 14-16 wk Comparison arm (ZDV intrapartum and to newborn for 7 d) was 25.1% (HIVNET-012[xx])	Breastfeeding in 95% Rapid emergence of resistance in mother[xxi]
Abbreviated ZDV 076 regimens	ZDV 076 regimen begun prenatally, intrapartum or in newborns	Transmission rates were 6.1% (prenatal), 10% (intrapartum) and 9.3% if ZDV initiated within 48h in newborn; Transmission rate without ZDV was 26.6% (observational study in New York State[vii])	No breastfeeding
ZDV + nevirapine	*Intrapartum* - IV ZDV at loading dose of 2 mg/kg in hr, followed by 1 mg/kg till delivery + NVP 200 mg at the onset of labour; *Postpartum* - ZDV syrup at 2 mg/kg q6h to newborn begun at 8-12 h for 6 wk + NVP 2 mg/kg to newborn at 48-72h	Unknown; based on extrapolation from existing data	

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Annex D

DEPARTMENT OF HEALTH
HIV/AIDS Report Form

Please read the following instructions:

1. This is a voluntary report form for reporting:
   (i) newly diagnosed HIV infection;
   (ii) newly diagnosed AIDS;
   (iii) change(s) of status of previously diagnosed HIV/AIDS cases
2. Only sections, (A), (C) & (D) need to be completed for reporting HIV infection.
3. All sections, (A), (B), (C) & (D) have to be completed for reporting AIDS or updating information.
4. All individual's information will be treated as strictly confidential and used in global analysis only.
5. Please mark CONFIDENTIAL on the envelope and mail the completed form to:

Consultant Physician
Special Preventive Programmes
Department of Health
5/F Yaumatei Jockey Club Clinic
145 Battery Street, Yaumatei,
Kowloon.

Section (A) Reporting HIV Infection

Your reference code number: _____ (HK resident/non-resident*)
Sex: M/F* Date of birth: (dd/mm/yyyy) _____ or age (at last birthday) _____
For female: Is she pregnant: Yes/No* (complete Box 1 if "Yes")
Ethnicity: Chinese/non-Chinese* (Asian/Caucasian/Black/others, please specify _____)*
Marital status: married/widowed/separated/never married*
Date of laboratory diagnosis in HK (dd/mm/yyyy): _____ Western Blot Confirmation: Yes/No*
Name of Laboratory : _____
Previous HIV positive result outside Hong Kong: No/Yes*
(specify place: _____; date: (dd/mm/yyyy) _____)
Main route of transmission (please tick; if >1, put down 1 & 2 in descending order of the two most likely routes)
_____ sex: (____ heterosexual / ____ homosexual / ____ bisexual)*
_____ transfusion of blood – local/overseas* (specify date : _____)
_____ haemophilia
_____ injecting drug use
_____ perinatal
_____ others; specify _____
_____ not known
CD4 count per ul (if known): _____ date: (dd/mm/yyyy): _____
HIV status of spouse, if any: unknown/positive/negative*

Box 1

Gravida _____ Para _____

LMP (dd/mm/yyyy) _____

Obstetric follow-up at:
hospital/clinic _____

Expected hospital/place of delivery:
_____

Current plan: Continue pregnancy/
TOP*

Section (B) Reporting AIDS

Is this an update of a previously reported HIV + case: Yes/No*
Date of diagnosis: (dd/mm/yyyy) _____
AIDS defining illness(es):
1. _____ clinical Dx/pathological Dx*
2. _____ clinical Dx/pathological Dx*
3. _____ clinical Dx/pathological Dx*

CD4 count per ul (if known): _____ Date: (dd/mm/yyyy) _____

Section (C)

Current status (please tick the right choice):
____ An outpatient
____ An inpatient (Hospital : _____)
____ Died (date : (dd/mm/yyyy) _____ : cause of death: _____)
____ Left HK/defaulted follow-up (date last seen: (dd/mm/yyyy) _____)

Section (D)

Name of medical practitioner: _____ in private practice/public service*
Correspondence Address:
_____
_____
Date: _____ Tel. no.: _____ Fax no.: _____ E-mail :_____

**delete whichever inappropriate*

DH 2293, revised August 2001

ALL INFORMATION WILL BE TREATED IN STRICT CONFIDENCE

Case Registry Forms

Form A: Report from the doctor who makes the initial diagnosis
Form B: Obstetrician's report
Form C: Physician's report
Form D: Paediatrician's report 1
Form E: Paediatrician's report 2

FORM A: Report from the doctor who makes the initial diagnosis

Use DH2293

FORM B: Obstetrician's Report

To be completed by the obstetrician after delivery or termination of pregnancy

1. Information of Mother	HIV no.	(if known)	
	Age		
	G _____ P _____		
	Date of HIV diagnosis		
2.HIV history	HIV status known In relation to this pregnancy *	☐	Before
		☐	During At_____ week
		☐	After
	Date		
3. Obstetric outcome *	Date of delivery/abortion: _____		
	☐ (a) Therapeutic abortion at _____ week, or		
	☐ (b) Spontaneous abortion at _____ week, or		
	☐ (c) Delivery at _____ week *	☐	i. Vaginal delivery
		☐	ii. Caesarian section
		☐	Iii Low forcep

4. Prophylactic ART *	☐ No			
	☐ Yes	Prepartum	Medication (list)	
			Start date	
			End date	
		Intrapartum	Medication and dose	
			Date given	

5. Complications of pregnancy *	☐	No
	☐	Yes: (specify) _____

6. Current status	(a) Defaulted	Date: _____
	(b) Mother referred for HIV care	Unit: _____
	(c) Baby referred for specialist care	Unit: _____
	(d) Mother continued for gynaecology care	Unit: _____

*Please tick ones that apply

FORM C: Physician's Report				
To be completed by the physician caring for the mother not later than three months after delivery				
1. Information of Mother	HIV no.	(if known)		
	Age			
2. Latest HIV status	(a) CD4 at diagnosis	_____ cells/ml		
		Date		
	(b) VL at diagnosis	_____ copies/ml		
		Method	bDNA / PCR / Others (specify):_____	
	(c) Diagnosis of AIDS (For those who have AIDS only)	Pregnancy *	☐	Before
			☐	During
			☐	After
		Date		
		ADI		
	(d) Other clinical complication *	☐	No	
		☐	Yes (specify):_____	
3. ART	Initiation *	☐	HARRT before pregnancy	
		☐	HARRT during pregnancy	
		☐	Perinatal treatment to prevent MTCT only	
		☐	HARRT within 3 months after delivery/ abortion	
		☐	Plan to start HARRT later	
		☐	No plan of initiating HARRT	
	Treatment strategy *	☐	Prepartum treatment only	
		☐	Intrapartum treatment only	
		☐	Prepartum and intrapartum treatment	
		☐	HARRT for mother	
	Regimen (specify)			
4. Family history	HIV status	Spouse		
		Children		
		Others		
5. Current status * (3 month after delivery / abortion)	☐	Defaulted	Date: _____	
	☐	Referred for clinical care followup	Unit: _____	
	☐	Baby referred for clinicl followup	Unit: _____	

*Please tick ones that apply

FORM D: Paediatrician's report 1				
To be completed at the age of two months				
1. Information of baby and mother	HIV no.	Mother	(if known)	
		Baby	(if known)	
	Age of Mother			
2. Status at brith	Gender *	☐	Male	
		☐	Female	
	Birth weight	_____kg		
	Apgar score			
	Symptoms *	☐	No	
		☐	Yes :(specify)_____	
3. Neonatal health				
4. Perinatal ART treatment	Regimen			
	Start date			
	End date			
	Side effects*	☐	No	
		☐	Yes: (specify)_____	
5. HIV related complications*	☐	List		
	☐	Choice		
6. Status at 2 month	Followup *	☐	Outpatient (unit:_____)	
		☐	Inpatient (unit:_____)	
		☐	Defaulted (date:_____)	
		☐	Left Hong Kong (date: _____)	
		☐	Died (date:_____)	
			Cause of death: _____	
	HIV	*test*	*result*	*date*
		Antibody		
		Antigen		
		PCR		
	Surrogates	*test*	*result*	*date*
		VL		
		CD4		

* Please tick ones that apply

FORM E: Paediatrician's report 2				
To be completed at the age of 15 months				
1. Information of mother	HIV no.		(if known)	
	Age			
2. HIV status	*test*	*result*	*date*	
	HIV Antibody			
	HIV antigen			
	CD4			
	VL			
	PCR			
3. Clinical history todate	Progression to AIDS *	☐ No		
		☐ Yes :(date)_____		
		ADI:		
	AIDS related clinical cx			
	Non-AIDS related cx	ADI:		
	Hospitalization *	☐ No		
		☐ Yes		
4. HAART (excluding perinatal prophylaxis)	Already started *	☐ No		
		☐ Yes		
	First regimen			
	Change of regimen	Start date: _____		
	Current regimen			
5. OI prophylaxis *	☐ No			
	☐ Yes	Primary		
		Secondary	PCP:	
			Other conditions: _____	
6. Complications of ART	S/E of perinatal prophylaxis *	☐ No		
		☐ Yes	Persistent up to ____ months (specify: _____)	
7. Status at 15 month	Followup *	☐ Outpatient		
		☐ Inpatient		
		☐ Died		
		☐ Left Hong Kong		
		☐ Defaulted (date: _____)		

*Please tick ones that apply

Annex E(I)

Professional bodies/organizations consulted

Specialist Colleges

Hong Kong College Obstetricians & Gynaecologists
Hong Kong College of Paediatricians
Hong Kong Academy of Medicine

Governing bodies

The Medical Council of Hong Kong
The Nursing Council of Hong Kong
Midwives Council of Hong Kong

Service providers

Family Health Service, DH
Hospital Authority
Obstetrical and Gynaecological service of HA
Paediatric service of HA
Pathology service of HA

Academic institutions

Department of Obstetrics and Gynaecology of The University of Hong Kong
Department of Obstetrics and Gynaecology of The Chinese University of Hong Kong
Department of Paediatrics of The University of Hong Kong
Department of Paediatrics of The Chinese University of Hong Kong
Department of Nursing of The University of Hong Kong
Department of Nursing of The Chinese University of Hong Kong
Department of Nursing and Health Sciences of Hong Kong Polytechnic University

Professional organizations

The Obstetrical and Gynaecological Society of Hong Kong
The Hong Kong Paediatric Society
The Hong Kong Society for Infectious Diseases
Federation of Medical Societies of Hong Kong
Hong Kong Medical Association
Hong Kong Midwives Association
College of Nursing of Hong Kong

Annex E(II)

Community groups consulted

Community bodies with broad interest on woman affairs:

Hong Kong Federation of Women
Hong Kong Federation of Women's Centres
Association for the Advancement of Feminism
Mother's Choice Ltd.
Hong Kong Women's Welfare Club – Eastern District
Hong Kong Women's Welfare Club – Western District
Hong Kong Outlying Island Women's Association
Wai Yin Association
Professional Women in Health Society
Financial Women's Association of Hong Kong
Hong Kong Association of Business & Professional Women
Hong Kong Association of University Women
Hong Kong Women Professionals and Entrepreneurs Association
Women Business Owners Club
The Hong Kong Council of Social Service

Community bodies with special interest in HIV/AIDS prevention and care:

AIDS Prevention and Care Committee (and Task Force on Women of the AIDS Prevention and Care Committee)
The Community Planning Committee on AIDS
Hong Kong Coalition of AIDS Service Organization (HKCASO)
St. John Cathedral HIV Education & Information Centre
Hong Kong AIDS Foundation
Society for AIDS Care
AIDS Concern
Action for Reach Out
TeenAIDS

Annex F

Summary of the activities targeting the private sector

1. Consultation to the Professional bodies
   The Colleges, Societies and Associations, and Governing Councils

2. Seminar and open forum
   In collaboration with the professional bodies (HK Midwives Association [3], HK Medical Association [1], Paediatric, and Obstetrical and Gynaecological Society [1]), the academia (Centre of Infection of HKU [1]) as well as the private hospital [2], a total of 8 activities were organized in different format ([ ] signified the number activity organized or hosted by these organizations).

3. Publication to the local journals
   Two original articles were published in the Hong Kong Medical Journal, the six principles in the Guidelines were published in Hong Kong Medical Association (HKMA) Newsletter notice board, 1 review article was published in the Hong Kong Journal of Gynaecology Obstetrics and Midwifery and 1 article was published in the HKMA CME Bulletin.

4. Letters from DH to all registered practitioners
   letter stated the concept, practice and implementation logistics and date (in the public sector) of Universal Antenatal HIV Antibody Testing dated 10 July 2001 was sent to all registered medical practitioners in Hong Kong SAR by DH. Private practitioners were informed of the availability of education materials prepared by DH upon request.

5. Press release
   The Chief Executive Officer of HA informed the press that HA will implement universal antenatal HIV testing by the last quarter of 2001 on 23 March 2001. Hon Dr Lo Wing Lok informed the press that this programme will be implemented in September 2001 on 14 August 2001. On 17 August 2001, Drs KH Wong and A Lai of DH, and Dr HK Wong of HA informed the press that this programme would be implemented on 1 September 2001 at 17 August 2001. (The dates quoted referred to the date when the news was published in the local newspapers). Dr KM Ho and HY Tse told the press the evidence and practice of universal antenatal HIV testing in a press release organized by Hong Kong Medical Journal on 26 October 2001. A press release of the results of the first three month of implementation was also made by SPP.

Annex F(I) : Summary of Results of Consultation to Professional and Community Bodies

	Implementation Logistic	Counselling	Cost/ Resources	Discrimination	Training	Private Sector	Policy Social Marketing	Consent & Choice	Remarks
HK College of Paediatrics									Support the 6 principles
(HK College of O&G)									Support the principles (reservation on 1st principle)
Hong Kong Academy of Medicine			✓						Support the six principles (concern on funding, and high risk group as priority raised)
The Medical Council of Hong Kong									The Ethics Committee had examined the guidelines and supported the six principles
Nursing Council	✓	✓	✓						Support the 6 principles and universal testing
Midwives Council			✓		✓				Support the 6 principles
Hospital Authority	✓		✓						Support the 6 principles
COC (Pathology), HA									Support the 6 principles
COC (Paediatrics), HA	✓		✓						Support the 6 principles
Dept. of Nursing, CUHK									Support 6 principles – timely & comprehensive set of guidelines
Dept. of Nursing & Health Science, HKPU								✓	"mandatory opt-out" suggested
Dept. of Paediatrics, CUHK			✓	✓					
Dept. of O&G, HKU	✓	✓	✓		✓	✓			Support the 6 principles
Dept. of O&G, CUHK	✓		✓				✓		Support the 6 principles
Dept. of Paediatrics, HKU									Support the 6 principles
O&G Society of									Support the 6

HK									principles
Federation of Medical Societies of HK									Members' view direct feed to SCA
HK Medical Association									Support the 6 principles
College of Nursing Hong Kong									Suggestion on management content
HK AIDS Foundation									Support the 6 principles
St. John Cathedral HIV Education & Information Centre									Support the 6 principles
TF on Women & AIDS-APCC		✓		✓	✓			✓	(Principle of normalization; written consent; involve partner)
Society for AIDS Care								✓	Support the 6 principles
St. John's Cathedral HIV Education Centre									Support the 6 principles
AIDS Concern	✓	✓	✓		✓			✓	Continuity of treatment for the mothers. Language & communication problems associated with non-Chines Asian Women.
香港各界婦女聯合協進會		✓						✓	Support universal testing
HK Federation of Women/Fund Yiu King Hospital			✓						Confidentiality Mandatory
HK Association of Prof & Business Women		✓							
HK Federation of Women		✓							Support universal testing and the six principles
Federation of Women's Centres	✓	✓			✓			✓	Enhanced public education - Standard of care
HK Association of University Women									Support the 6 principles

NB. ✓ Signify concern or opinion in this area raised.
Two organisations (HK Federation of Women & St. John's Cathedral HIV Education Centre) gives two replies

Annex G(I)
IEC for Universal Antenatal HIV Testing

Poster 海報	Universal Antenatal HIV Testing – A health check-up For the benefit of you and your baby 產前愛滋病病毒抗體普及測試 – 健康檢查 對你和他/她都有好處	(bilingual) *produced by Red Ribbon Centre*
Mini-poster 小型海報	Love yourself Protect your baby 愛護自己 保護嬰兒	(bilingual) *produced by Red Ribbon Centre*
Pamphlet 單張	Universal Antenatal HIV Testing – the Concern of an Expectant Mother 準媽媽的關注 – 產前愛滋病病毒抗體普及測試 Universal Antenatal HIV Testing – the Concern of an Expectant Mother (other languages)	(English) *produced by Red Ribbon Centre* (繁體文字、簡體文字) *衛生署紅絲帶中心製作* (Urdu, Hindi, Bangali, Indonesian, Nepali, Tagalog, Thai, Korean, Japanese) *produced by Red Ribbon Centre*
Video & VCD 錄影帶及影音光碟	Universal Antenatal HIV Testing – Love Yourself Protect Your Baby 產前愛滋病病毒抗體普及測試 – 愛護自己 保護嬰兒	(Cantonese or Putonghua with English Subtitles) *produced by Red Ribbon Centre* (廣東話、普通話及英文字幕)*衛生署紅絲帶中心製作*
幻燈片及幻燈片補充	媽媽、啤啤、愛滋 幻燈片及幻燈片補充	*衛生署紅絲帶中心製作*
Guideline 指引	Recommended Clinical Guidelines on the Prevention of Perinatal HIV Transmission 預防圍產期愛滋病傳播的建議臨床指引	*produced by Scientific Committee on AIDS of Hong Kong Advisory Council on AIDS* *香港愛滋病顧問局愛滋病科學委員會製作*
Manual	Manual On Universal Antenatal HIV Screening In MCHC	*produced by Family Health Service of Department of Health*

Annex G(II)


媽媽、嗅嗅、愛滋
幻燈片補充
產前愛滋病病毒抗體普及測試
Universal Antenatal HIV Testing
健康檢查
A health check-up
對你和他/她都有好處！
For the benefit of you and your baby
愛護自己 保護嬰兒
Love yourself
Protect your baby
Manual On
Universal Antenatal HIV Screening
In MCHC
2780 2211
Universal Antenatal HIV Testing - the Concern of an Expectant

Annex H(I)

Terms of Reference (TOR)
Scientific Committee on AIDS (SCA) (1999-2002)

(a) to evaluate the HIV/STD surveillance system in Hong Kong;

(b) to develop and recommend technical and professional guidelines/protocols on HIV/AIDS prevention, management and control;

(c) to provide scientific and clinical input to the process of planning and development of services in HIV/AIDS prevention, management and control, and the training of health and community care workers; and

(d) to recommend and coordinate researches on the clinical, scientific, epidemiological and sociological aspects of HIV/AIDS with special reference to Hong Kong.

Annex H(II)

Membership List of Scientific Committee on AIDS (1999-2002)

Chairman

Prof Y L LAU

Secretaries

Dr K M HO

Mr John YIP

Advisor

Prof James CHIN

Members

Dr Thomas LAI Sik-to

Dr Ronald LAM

Dr Brian JONES

Dr W L LIM, *JP*

Dr K K LO

Dr C M TAM

Dr S S LEE

Prof M H NG

Prof Y C KONG

Prof S H LEE, ISO, *JP*

Prof M L NG

Dr H Y TSE

Dr Patrick LI, *BBS*

Ms Annie LEUNG

Dr C K LIN

Dr CHAN Kheng-bee

Dr Susan FAN

Dr C K LIEM

Dr John SIMON

Dr the Hon. W L LO

Dr Eddie Y W LOKE

Prof C N CHEN, *JP*

Mr LUI Ping-keung

Annex H(III)

Working Goals of Working Group

(a) Review the evidence on prevention of mother to child transmission of HIV
(b) Define the need and feasibility of education, screening and management of HIV infection in pregnancy in HKSAR
(c) Recommend on implementation of strategies for screening of HIV infection in pregnancy
(d) Recommend on management of HIV positive mother : antenatal, intrapartum, post-partum
(e) Recommend on management of child born by HIV positive mother

Annex H(IV)

Membership List of Prevention of Mother to Child Transmission of HIV WG

Chairperson: Dr Susan FAN Yun-sun
Secretary: Dr HO King-man
Advisor: Prof LAU Yu-lung
Members:

Dr. CHAN Wai-sum	The University of Hong Kong
Dr CHENG Man-yung	Hong Kong Paediatric Society
Dr CHOW Chun-bong	Paediatric service of HA
Prof CHUNG, Tony	Department of O&G of CUHK
Dr CHIU, Susan	Department of Paediatrics of HKU
Prof FOK T F	Department of Paediatrics of CUHK
Prof HO Pak-chung	Department of O&G of HKU
Dr LAM Siu-keung	Obstetrical and Gynaecological Society of Hong Kong
Dr LEUNG Chi-wai	Hong Kong College of Paediatricians
Dr LEUNG Sze-lung, Shirley	Family Health Service DH
Dr. LIM Wei-ling,JP	Government Virus Unit DH
Prof MACKENZIE, Ann	Department of Nursing of CUHK
Ms MAN, Manbo	Hong Kong Midwives Association
Prof SULLIVAN, Patricia	Department of Nursing of HKU
Ms TSANG, Alice	College of Nursing of Hong Kong
Dr TSANG, Dominic	Pathology service of HA
Dr TSE Kai-tai/LC Ho	Hong Kong College Obstetricians & Gynaecologists
Dr. TSE Hei-yee	SCA member
Dr WONG Hon-kwong	O&G service of HA
Ms WU, Candy / Ms CHOW, Philomena	Department of Nursing and Health Sciences of HK Polytechnic University
Dr. YEUNG Tze-kin, Samuel	Senior Statistician DH
Dr LEE Shui-shan	Special Preventive Programme of DH
Dr CHAN Chi-wai, Kenny	Special Preventive Programme of DH
Dr WONG Ka-hing	Special Preventive Programme of DH
Dr LOW Hon-kei, Kelvin	Special Preventive Programme of DH

Annex I

Report of a Questionnaire Survey on Client Awareness and Acceptance of The Universal Antenatal HIV Antibody Testing Programme in Maternal and Child Health Centre in Hong Kong

Special Preventive Programme
The Department of Health
Hong Kong Special Administrative Region

January 2003

Contents

Introduction

The Universal Antenatal HIV Antibody Testing Programme was implemented in Hong Kong on the first of September 2001. Since then, all pregnant women attending any of the public hospitals and Maternal and Child Health Centres (MCHC) for antenatal checkup will be offered the HIV antibody test (the test) routinely as part of the battery of antenatal blood tests. Apart from reducing the risk of perinatal transmission and improving the health of HIV infected women, this programme also aims to promote HIV prevention and to deliver health information to the women.

According to the *Manual on Universal Antenatal HIV screening in MCHC* developed by Family Health Service, Department of Health, [1] all new antenatal clients of MCHCs are given the information leaflets during registration and are invited to attend a health talk in which explanations of HIV testing and other antenatal routine blood tests and group counselling are offered. They are informed about their right to decline the test if they do not think it is in their best interest. Individual counselling by nurses or discussion with doctors will be given when necessary.

As in many countries like the UK and US, a voluntary and opt-out approach has been adopted. In addition to preserve a woman's right to make decisions regarding testing, using an opt-out approach has also been shown to associate with a higher testing rates than the opt–in approach. [2] It is vital to maximize the prenatal HIV testing rate, especially with a voluntary system to prevent mother to child transmission which otherwise would still continue to occur. Furthermore, coverage of counseling and voluntary testing among pregnant women in the population has been designated by the UNAIDS as one of the core indicators for strategies to reduce mother to child transmission of HIV. [3]

In light of this, substantial efforts have been paid on professional training and production and delivery of health educational material to archive a satisfactorily high testing rate. To equip front line staff and facilitate counselling and delivery of HIV information and testing, a total of 8 structured workshops and 220 sessions of health talks together with other resource materials were delivered for the health care workers of Hospital Authority and Department of Health.

As in an unpublished study done at Tsan Yuk Hospital (Li CFI, 2001), it was noted that more than 80% of women felt there was inadequate information available in Hong Kong on antenatal HIV infection. Parallel to the Universal Antenatal HIV

Antibody testing programme, a set of health educational materials including posters, leaflets and video have been produced and distributed. It is believed that, by means of the information provided by the health care workers supplemented with these health educational materials, the programme will be able to effectively channel HIV prevention and related health messages in an existing healthcare service and to maximize the uptake rate.

As part of the monitoring and evaluation of the Universal Antenatal HIV Antibody Testing Programme, an opt-out rate of 4 % was recorded with 6 HIV positive pregnancies diagnosed out of 10238 tests done during the first three months. The HIV positivity rate was as expected from the unlinked anonymous screening of the antenatal women which consistently showed a seroprevalence ranging from 0.00-0.03%. The opt out rate of 4% was also similar to a previous study conducted at Kwong Wah Hospital in 1999 which at the same time also documented the most common reasons for refusal. [4] These were considered herself not at risk or at low risk of infection (26.1%), considered the test unnecessary (20.3%) had been screened before (19.6%) and did not want to have extra blood taken (14.5%).

Based on this particular study and the aim of implementing the programme as a health promotion tool, we conducted a questionnaire survey among clients attending MCHC to evaluate the clients' participation in various health educational materials, to determine the barriers for the HIV testing as well as to identify some of the factors affecting women's decision as to accept or refuse the test.

Objectives of the study

The Objectives of this study are to determine

1. clients' access to various types of health educational materials,
2. clients' participation in the educational activities,
3. clients' knowledge on HIV,
4. the uptake rate of universal antenatal HIV antibody testing, and
5. the reasons for accepting/declining the HIV antibody test.

Methodology

The study was a questionnaire survey of pregnant women who attended the first antenatal visits at MCHCs and were able to speak Cantonese and/or understand written Chinese. Approval for conducting the survey had been obtained from the Director of Health and a pilot study was carried out between 25th February and 2nd March 2002 with 50 subjects from 4 MCHCs. The contents of the questionnaires were slightly modified afterwards. Its data were not included in this study.

The actual study period was 1st May 2002 to 30th June 2002. All expectant mothers who attended any one of the 50 MCHCs in Hong Kong and fulfilled the above inclusion criteria were invited to participate. They were informed that their participation was voluntary and the service they received would not be affected by their decision to participate.

A questionnaire was offered to every eligible subject by a nursing staff during the first interview. If a subject was under 'shared care' with a public hospital, the nursing staff would mark on the front page of her questionnaire 'TI' (i.e., transfer in). These subjects had received their first antenatal visits with blood taken for routine antenatal checkup prior in public hospital obstetric departments and were subsequently referred to MCHC at the time of survey. It was technically unfeasible to exclude them at the point of recruitment of subjects according to feedback from MCHC after the pilot study.

The nursing staff would also advise the subjects to complete the questionnaires at the end of the consultation before leaving. To ensure confidentiality, an envelope was provided together with the questionnaire so that the completed questionnaire could be sealed up. The subjects were asked to drop the sealed envelops into the designated collection box before they could get their follow up slip for the next appointment.

The set of anonymous self-administered questionnaire (Appendix) was developed according to the main content of the *Manual on Universal Antenatal HIV screening in MCHC* published by the Family Health Service, Department of Health, [1] a previous local study [3] and researchers' clinical experience. Purpose of the survey and a clear set of instructions for the clients, with emphasis on confidentiality and anonymity, were stated on the first page of the questionnaire. Both quantitative and qualitative

data were obtained through multiple-choice questions and open-ended questions under areas of the 5 designated objectives. Demographic data was also gathered. The questionnaire was presented in Chinese only. All participants' information would be destroyed upon completion of the study report.

Results

All 50 MCHCs in Hong Kong participated in this study. According to the replies from individual MCHC, a total of 3565 questionnaires were distributed and 3500 questionnaires from 47 MCHCs were received. The response rate was hence calculated to be 98.2%.

Among the 3500 questionnaires, 782 of them were labeled as TI (transfer-in) cases and the rest (n=2718) non Transfer-in (nTI) cases. Out of the 2718 nTI questionnaires received, 49 were considered invalid (more than 1 question unanswered for questions A2, B1 and D1) and 2669 valid. There was otherwise no significant difference among the invalid and the valid groups. Only the valid nTI questionnaires (n=2669) would be included in subsequent analysis.

Demographics (Table 1)

Table 1. Subjects' demographics.

1. Age	N=2582	%
<20	91	3.5
20-29	1231	47.7
30-39	1215	47.1
40-49	45	1.7
>49	0	0
2. Parity	N=2597	%
0	1367	52.6
1	913	35.2
2	232	8.9
≧3	85	3.2

3. Education level	N=2605	%
Never	6	0.2
Primary	186	7.1
Secondary	2078	79.8
Tertiary or above	335	12.9
4. Hong Kong residence status	N=2581	%
Born in HK	1139	44.1
≧2 years	663	25.7
<2 years	301	11.7
Non HK resident	478	18.5

For the 2669 participants of the nTI group, about 95% were between 20-39 years of age, about 90% were either para 0 or 1, and about 90% had attained at least secondary level of education.

Availability of and participation in educational activities (Table 2)

Table 2. Availability of and participation in educational activities.

1. Availability	N=2626	%
Posters	875	33.3
Pamphlets	1184	45.1
Video	2096	78.5
2. Participation	N=2622	%
Posters	647	24.7
Pamphlets	1093	41.7
Video	1735	66.2
Talk (n=2657)	2096	78.9

3. Score*	N=2610	%
0	132	5.1
1	496	19.0
2	1198	45.9
3	510	19.5
4	274	10.5

* Score is the total number of educational activities a subject participated

The most popular form of educational material was health talk which 2096 (78.9%) had attended. This was followed by video (n=1735, 66.25%), pamphlets (n=1093, 41.7%) and posters (n=647, 24.7%). To have an overview of the participation in various health educational activities, a summative score was calculated. Each educational activity was given equal weight and a score was awarded for participation in each educational activity e.g., read a pamphlet. The maximum score would therefore be 4 and the minimum 0. 2478 (94.9%) reported to have participated in at least one form of educational activity.

HIV knowledge (Table 3)

Table 3. Subject's HIV knowledge.

1. Route of transmission^	N=2640	%
Sexual contact	2418	91.5
Blood/ blood product	2194	83.0
MTCT	1966	74.4
All 3	*1854*	*70.1*
2. Time when MTCT occurs^	N=2644	%
During pregnancy	2165	82.0
Delivery process	1186	44.9
Breastfeeding	1338	50.7
All 3	*729*	*27.6*
3. Prevention of MTCT^	N=2627	%
Early diagnosis	2252	85.7
Appropriate treatment	1845	70.2
Both	*1593*	*60.6*

4. Score*	N=2602	%
0	39	1.5
1	19	0.7
2	49	1.9
3	350	13.5
4	172	6.6
5	300	11.5
6	511	19.6
7	525	20.2
8	637	24.5

^ Subjects were asked to tick if she thinks a given answer is correct
*Score is the total number of correct answers a subject gave

In general, the HIV knowledge of the subjects was good. Majority were able to include all 3 ways as the routes of HIV transmission (n=1854, 70.1%) and to correctly say that early diagnosis can prevent MTCT (n=2252, 85.7%). However, answers to specific questions on MTCT were less satisfactory (e.g. only 50% know that breastfeeding can transmit HIV). A summative score was again calculated to show the overall level of HIV knowledge and one score was awarded for each correct answer. About two-thirds of the subjects (n=1673, 64.3%) were able to answer correctly to at least 6 of the 8 questions.

Acceptance of HIV antibody testing (Table 4)

Table 4. Uptake of universal antenatal HIV antibody testing on the day of administering the questionnaires.

	N=2591	%
Accepted the test	1825	70.4
Had taken or planned to take blood other than today	125	4.8
Declined the test	434	16.8
Didn't know	207	8.0

Only 1825 (70.4%) of the subjects reported to have accepted the HIV antibody testing (the test) *on the day of administering the questionnaires,* and 434 (16.8 %) declined the test on *the day of administering the questionnaires*. Including those who indicated that they had taken the test before or would take it later, the calculated acceptance rate would be 75.2%. If those answered 'did not know' were also considered to have accepted the test, the final rate would be 83.2%.

Reasons for accepting/ declining the HIV antibody test (Table 5 & 6)

Table 5. Subjects' reasons for accepting the universal antenatal HIV antibody testing.

	N=1804	%
Knowing that it is beneficial to herself and the baby	1638	90.8
Recommended by the health care professionals	549	30.4
The test is necessary	433	24.0
Recommended by husband	101	5.6
Recommended by sex partners	27	1.5

Respondents can choose more than 1 answer

Table 6. Subjects' reasons for declining the universal antenatal HIV antibody testing.

	N=293	%
Consider no risk of getting the infection	205	70.0
Consider low risk of getting the infection	78	26.7
Declined all antenatal blood test.	3	1.0
Husband's disagreement.	1	0.3
Did not want to know the test result	1	0.3
Did not know	57	19.5

Respondents can choose more than 1 answer

The most common reason for accepting the test was *knowing that the test is beneficial to the pregnant woman and her baby* (1638, 90.8%) and a significant proportion of them accepted the test because of recommendation by health care professionals (549, 30.4%).

Surprisingly, most (244, 83.3%) subjects declined the test because they *considered themselves no risk or low risk of getting the infection*. One subject (0.2%) declined the test because she *did not want to know the test result* and another declined because of *husband's disagreement*. 3 (0.7%) *declined all antenatal blood test.*

Bivariate and multivariate analysis on acceptance of HIV antibody testing

(Tables 7 & 8)

Finally, we carried out bivariate and multivariate analysis to study the relationship between the acceptance of HIV antibody testing and the number of factors that were included in the questionnaires. These independent variables included age, parity, level of education, status of Hong Kong residency, participation in health educational material and HIV knowledge. Hong Kong residency was estimated from the total number of women who indicated they either 'were born in HK', 'lived in HK$\leqq$2 years' or 'lived in HK$\geqq$2 years'. Those indicated 'non HK resident' were considered not Hong Kong residents. The participation in health educational material and HIV knowledge were measured in ordinal scales using the summative scores as calculated previously.

The odd ratios and 95% confidence intervals for each independent variable were hence calculated and shown in Table 7. Chi-square tests for trend were also performed to detect linear trends. The odd ratios were then adjusted using forward stepwise logistic regression and the results were shown in Table 8.

Table 7. Factors affecting acceptance of universal antenatal HIV testing.

	Accepted	Rejected	OR	95% C.I.
1. Age	N=1899	N=410		
< 20	58	13	1	
20 – 29	914	193	1.06	0.54-2.04
30 – 39	898	192	1.05	0.54-2.02
40 – 49	29	12	0.54	0.20-1.46
2. Parity	N=1908	N=417		
0	1049	195	1 *	
1	640	159	0.75	0.59-0.95
2	166	41	0.75	0.51-1.11
≧3	53	22	0.45	0.26-0.78
3. HK residency	N=1905	N=408		
Yes	1571	311	1	
No	334	97	0.68	0.52-0.89
4. Level of education	N=1914	N=418		
Never	5	0		
Primary	107	48	1 *	
Secondary	1501	351	1.92	1.32- 2.79
Tertiary	301	19	7.11	3.86- 13.17
5. HIV Knowledge	N=1917	N= 416		
0	13	13	1*	
1	7	8	0.88	0.20- 3.75
2	21	16	1.31	0.43- 4.06
3	214	88	2.43	1.01- 5.85
4	111	40	2.77	1.10- 7.04
5	193	69	2.80	1.15- 6.80
6	388	72	5.39	2.24-12.98
7	423	56	7.55	3.11-18.40
8	547	54	10.13	4.16-24.69
6. Participation in educational activities	N=1909	N=417		
0	52	54	1 *	
1	293	119	2.56	1.62- 4.05
2	895	192	4.84	3.14- 7.45
3	438	38	11.97	7.01- 20.49
4	251	14	18.62	9.23- 38.12

*Chi square test for trend significant

Table 8. Final model on factors affecting acceptance of universal antenatal HIV testing – logistic regression.

	Accepted N= 1881	Rejected N= 400	Adjusted OR	95% C.I.
1. Level of education				
Primary or below	106	41	1	
Secondary	1476	340	1.28	0.85 -1.92
Tertiary	299	19	3.99	2.15- 7.43
2. HIV Knowledge				
0-2	42	38	1	
3-5	507	185	1.76	1.07- 2.89
6-8	1332	177	3.61	2.19- 5.93
3. Participation in educational activities				
0	57	55	1	
1-2	1150	297	3.80	2.49- 5.80
3-4	674	48	10.45	6.33– 17.26

Each independent variable is adjusted for the other independent variables listed in the table

Except for age, all variables were associated with the acceptance of the test. Interestingly, the para 1 (i.e., mothers who have given a live birth prior to the current pregnancy) and para $\geqq$3 were associated with a lower acceptance rate than the para 0 (OR 0.75, 95% C.I. 0.59-0.95 and OR 0.45, 95% C.I. 0.26-0.78 respectively). Besides, those implied that they were not Hong Kong residents were nevertheless associated with a lower acceptance of the test (OR 0.68, 95% CI 0.52-0.89), despite the fact that the definition of Hong Kong residency could be equivocal.

Although only level of education, participation in educational activities and HIV knowledge were included in the final model, they were all independently and significantly associated with the acceptance of the test. Having a tertiary level of education was associated with almost 4 times (OR 3.99, 95% C.I. 2.15-7.43) more likely to have accepted the test than those with or less than primary level of education. Moreover, those with better knowledge on HIV were more likely to accept the test. Those scored above 5 were 3.61 times (95% C.I. 2.19-5.93) more likely than those scored below 3 to accept the test.

The single most significant independent variable that associated with the acceptance of HIV antibody testing was the participation in health educational activities. Even

though we fell short to include the level of impact of individual educational activity (e.g., having attended a health talk could have had associated with a greater effect on accepting the test than having read a poster), it can be seen that those participated in 1 to 2 activities are about 4 times (OR 3.8, 95% CI 2.49-5.80) more likely to accept the test than those did not participated in any of them. Those participated in 3 to 4 activities were associated with an even higher odd ratio of 10.45 (95% CI 6.33-17.26).

Analysis and Conclusion

In summary, the present survey indicated that the Universal Antenatal HIV Antibody Testing Programme was accepted by majority of the pregnant women attending MCHC. Perceived benefits and recommendations from health care workers were the most commonly reported reasons for accepting the test, whereas low susceptibility was the main reason for refusal.

On the one hand, this reflects the fact that the appropriate health message, i.e., benefits of the test, has been successfully conveyed to most subjects. From the finding of a significant association between acceptance of the test and the participation in health educational materials, apart from the education level and HIV knowledge, we also believe that the ensemble of health educational materials produced and distributed was an effective vehicle for health education in this special setting.

On the other hand, a considerable discrepancy was noted in the acceptance rates compared to the statistic returns from MCHCs. In our survey, one sixth of the respondents indicated to have refused the HIV antibody test. In fact, according to the statistics return within the same period, the opt-out rate was only 0.4% (n=13). To account for the discrepancy in the acceptance rate of the test, there could be a number of reasons which unmistakably reveal some important limitations in our study.

Firstly, we reckon that the specific question set in the questionnaire on acceptance of the test was rather ambiguous. The question in Chinese *'Did you accept the HIV antibody test* today?' could have been interpreted by the respondents as *whether they accept or welcome the offering of the HIV antibody test*, instead and irrespective of the action of whether they have the test done or not. The initial objective of this particular question to obtain the cognitive aspect of acceptance of the test seems to have erroneously made to include its cognitive component leading to an overestimation of the actual refusal rate. Nonetheless, this unintentional finding brings us a hint which suggests that one sixth of our respondents in fact showed reluctance in accepting or were uncomfortable about the offering of the HIV antibody test as an antenatal screening. The recorded reason 'low susceptibility' for declining the test seemed only to have partial influence on the final outcome as to whether the test is done or not as it was evident that the vast majority of them have the test done

eventually. Looking from another perspective, this may in fact indirectly implies that the integration of the programme into the existing standard antenatal care with an opt-out system has been smooth and effective in maximizing the coverage of the screening programme.

Secondly, the specification of timing in the same question on acceptance as *on the day of administering the questionnaire* also had a bearing on the difference in acceptance rate. The original belief was to explicitly differentiate between the HIV antibody test in this antenatal checkup for this particular pregnancy and in other setting, based on the fact that all blood for antenatal investigation was recommended to be taken at the very end of the first antenatal visit. However, the woman may have administered the questionnaire before blood taking, or she may have chosen to have the test done later than that day e.g., due to time constraint. In fact, to partially overcome this, those indicated that they would like to have blood taken on other days have been included in the accept group.

Thirdly, the design of the questionnaire could be actually difficult for self administration as some skip questions were involved. Only two thirds of those who indicated to have declined the test answered the question on their reasons for refusal. The reasons for the remaining respondents who declined remained uncertain. The possibility of some of them had in fact tested, e.g., the other day, cannot be excluded and this may again lead to overestimation of the refusal rate.

Fourthly, given that a considerable proportion of women genuinely refused to the test *initially*, they may have the tests done *later* in the course of pregnancy. If this postulation is correct, it would be interesting to know what the average lapse time is. It is because a delayed diagnosis of a HIV positive pregnancy is associated with a poorer foetal outcome than those diagnosed earlier during the pregnancy. [5] Surely, a similar questionnaire survey could have actually been carried in the parturient period to fill in the above gaps, yet, it would likely be compromised with a recall bias. [6]

Lastly, the exclusion of non-Chinese in this study contributed to the lower acceptance rate was unlikely. The previous study done in Kwong Wah Hospital (92.5% of the subjects were Chinese) showed that there was no significant difference in the uptake rate of HIV antibody testing between the Chinese and non-Chinese. [4]

In addition, it should be reminded that this survey was limited to pregnant women attending MCHCs only. The generalizability of the findings to the settings in public

hospitals and private sectors has not been tested and should be handled with caution.

Taking the mentioned limitations into consideration, nevertheless, this study revealed a number of noteworthy findings.

Firstly, we identified a total of 244 subjects (at least 10% of all respondents or 83.3% of all those who indicated to have declined the test on the very first visit at MCHC) who reported to have declined the test because of perceived no or low risk. Alike other reports, reasons like fear of adverse consequence or inadequate psychological preparedness were of no avail. [6,7,8] While this seems to fit very well into the commonly cited Health Belief Model (Becker 1974) and are similar to findings published elsewhere, [4, 6] in our study, this seemed to have minimal effect as to the final uptake of the test due to the fact that majority of them indeed somehow had the test done. We can therefore only imply that about 10% of the respondents indicated reluctance in accepting the test because of low perceived susceptibility and most of them eventually would have been tested for HIV antibody antenatally.

Secondly, we found out that the *acceptance* of the test was significantly and independently associated with the level of education, the number of educational activities participated in MCHC and the level of HIV knowledge. In addition, the number of educational activities participated was correlated to the HIV knowledge score (Spearman's rho 0.248, $p<0.01$). Among the 4 health educational activities available (posters, pamphlets, video or health talk), 5% participated in none of them, 65% of the respondents participated in 1-2 of them and 30% participated in 3-4. The acceptance rates of these groups again increased from about 50% to 80% and 93%. The good provision and participation in health educational activities among pregnant women in MCHCs could be one crucial factor that the acceptance rate recorded was highest among different services in our locality (Table 9) and in the literature. [1]

Table 9. Uptake of universal antenatal HIV antibody testing in different services (Sept 2001-Aug 2002).

MCHCs	Acceptance rate	99.27%	(n=16851)
Public hospitals	Acceptance rate	94.39%	(n=26996)
	Deliveries with HIV antibody tests done	54.86%	(n=35915)
Private hospitals	Deliveries with HIV antibody tests done	33.78%	(n=11071)

Moreover, the HIV knowledge of our respondents seemed to be similar to other local surveys on women dated few years back. [9,10] In particular, specific knowledge on MTCT remained unsatisfactory. A study in 1994 showed that 72% of the women attending family planning or postnatal sessions of the Family Health Service indicated that vertical HIV transmission occurs during the delivery process while in our study, the proportion decreased to less than 50%. Correct answers on breastfeeding were given from 28% of respondents in 1994 and it was increased to 50% in our study.

To recap, the present study is one of the components of the evaluation of the Universal Antenatal HIV Antibody Testing Programme in Hong Kong. Apart from reducing the risk of MTCT and improve the health of HIV infected women, the objectives of the programme include to act as a channel for promoting HIV prevention and delivering health information to the public. A variety of educational materials have been prepared and distributed and training sessions for the frontline health care workers were organized so as to meet this objective.

Given a reasonably broad coverage (49% of pregnant women received services from MCHC in year 2000 [11]), and i) good participation in health educational material (95% of the subjects participated in at least one of the health education activities), ii) the unparalleled high acceptance rate obtained (99%), iii) 90% of the women accepted the HIV antibody test because of perceived benefits and 30% did so because of recommendation by health care workers, and iv) the significant association between acceptance and with the level of education, the level of HIV knowledge and the number of educational activities participated, the universal antenatal HIV testing programme in MCHC has been a successful screening programme as well as a health promotion tool.

Recommendations

The following recommendations are put forward based on the above study and analysis.

1. The current health education material provided in MCHCs is good and sufficient. The health care workers should continue to provide the relevant and accurate health information to the pregnant women to encourage them to participate in various forms of educational activities and stress on benefits of the testing.

2. In particular, health care workers should explore and address women's reasons for refusal of the testing. The benefits of testing should be emphasised whenever possible, but their decision to accept or refuse the testing must be remained voluntary and free of coercion.

3. The present universal antenatal HIV antibody testing programme implemented in MCHC has been a successful one. According to our statistic returns, almost one third of all pregnancies in Hong Kong were delivered in private hospitals and 51% of all pregnant women did not receive services in MCHC during the last year. [11] So far, only 2 seminars with a total attendance of 128 private obstetricians and pediatricians have been held for health care workers in the private sector. Again, although the generalizability of the findings of this survey has not been tested, the programme should be extended and underscored among the private sector using the MCHC's experience so as to improve the overall health of pregnant women and decrease the number of MTCT in Hong Kong.

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Appendix

健康院編號 MCHC code No	:	
排序編號 Serial No	:	
日期 Date	:	

衛生署

產前愛滋病病毒抗體普及測試

意見調查

請你於產前檢查完畢後回答本問卷

- *此項問卷調查的目的，是爲了瞭解孕婦對母嬰健康院所提供的產前愛滋病病毒抗體普及測試服務的意見。你的寶貴意見將有助於改善母嬰健康院所提供的服務。你可自由決定是否參與此項問卷調查，而無論參加與否，絕不會影響你在本母嬰健康院獲得服務的權利。*

- *本問卷連本頁共有四頁。請你於產前檢查完畢後回答本問卷，並將已填妥的問卷放於隨函附上的信封內，貼上封口，於離開前放回指定的收集箱內。*

- 調查所獲資料只作整體分析之用，內容絕對保密。

請你於產前檢查完畢後回答本問卷

請於下列句子選出最合適的答案，並在空格 □ 內劃上 ✓ 號

A.1 在目前你身處的母嬰健康院，**設有** 下列哪些有關愛滋病測試的健康教育資料？（可選擇一個或以上答案）

1. □ 海報
2. □ 單張
3. □ 錄映帶
4. □ 沒有任何一項
5. □ 不知道

(請轉往 B.1 題作答)

A.2 在目前你身處的母嬰健康院，你 **觀看** 或 **閱讀過** 下列哪些有關愛滋病測試的健康教育資料？（可選擇一個或以上答案）

1. □ 海報
2. □ 單張
3. □ 錄映帶
4. □ 沒有任何一項
5. □ 不知道

B.1 在目前你身處的母嬰健康院，你 **有沒有參加** 產前健康講座？

1. □ 有參加
2. □ 沒有參加
3. □ 不知道

(請轉往 C.1 題作答)

B.2 你所接受的產前健康講座 **內容** 已 **包括**：（可選擇一個或以上答案）

1. □ 愛滋病的傳染途徑
2. □ 母嬰傳染愛滋病病毒的可能性
3. □ 減低母嬰傳染愛滋病病毒機會的方法
4. □ 空窗期
5. □ 安全性行爲
6. □ 陽性愛滋病病毒抗體測試結果的含義
7. □ 陰性愛滋病病毒抗體測試結果的含義
8. □ 化驗報告的絕對保密安排

9. ☐ 沒有任何一項

10. ☐ 不知道

C.1 愛滋病的 **<u>傳染途徑</u>** 包括：（可選擇一個或以上答案）

1. ☐ 性接觸
2. ☐ 血液接觸
3. ☐ 母嬰傳染
4. ☐ 沒有任何一項
5. ☐ 不知道

C.2 受愛滋病病毒感染的孕婦在以下哪種情況下 **<u>有機會</u>** 將病毒傳染給胎兒？

（可選擇一個或以上答案）

1. ☐ 懷孕的過程中
2. ☐ 分娩的過程中
3. ☐ 餵哺母乳的過程中
4. ☐ 沒有任何一項
5. ☐ 不知道

C.3 以下哪種方法可 **<u>減低胎兒受傳染的機會</u>** ？（可選擇一個或以上答案）

1. ☐ 及早發現愛滋病病毒感染
2. ☐ 適當的治療（包括抗病毒藥物治療）
3. ☐ 沒有任何一項
4. ☐ 不知道

D.1 今天你 **<u>有沒有接受</u>** 愛滋病病毒抗體測試？

1. ☐ 接受了（請轉往 D.2 題作答）
2. ☐ 沒有接受（請轉往 D.3 題作答）
3. ☐ 不知道（請轉往 E.1 題作答）

D.2 你今天 **接受** 愛滋病病毒抗體測試的 **原因** 是：（可選擇一個或以上答案）

1. ☐ 知道產前愛滋病測試對孕婦及嬰兒的好處
2. ☐ 自己覺得有需要接受測試
3. ☐ 丈夫建議接受測試
4. ☐ 性伴侶建議接受測試
5. ☐ 醫護人員建議接受測試
6. ☐ 沒有任何一項
7. ☐ 不知道
8. ☐ 其他：

（請轉往 E.1 題作答）

D.3 你今天 **沒有接受** 愛滋病病毒抗體測試的 **原因** 是：（可選擇一個或以上答案）

1. ☐ 覺得自己並沒有受愛滋病病毒感染
2. ☐ 覺得自己受感染的機會很低
3. ☐ 以前已曾經接受過愛滋病病毒抗體測試
4. ☐ 不想知道測試結果
5. ☐ 丈夫反對接受測試
6. ☐ 性伴侶反對接受測試
7. ☐ 我拒絕了所有產前血液檢查
8. ☐ 沒有任何一項
9. ☐ 不知道
10. ☐ 其他：

E.1 年齡

1. ☐ <20　2. ☐ 20-29　3. ☐ 30-39
4. ☐ 40-49　5. ☐ >49

E.2 你這一胎是

1. ☐ 第一胎　　2. ☐ 第二胎

3. ☐ 第三胎　　4. ☐ 第四胎或以上

E.3 居港年期

1. ☐ 本港出生　　2. ☐ 兩年或以上

3. ☐ 少於兩年　　4. ☐ 非本港居民

E.4 教育程度

1. ☐ 從未接受過教育　　2. ☐ 小學

3. ☐ 中學　　4. ☐ 大專或以上

問卷完畢

請將已填妥的問卷放入隨函附上的信封內，貼上封口，並於離開前將密封的問卷投放入指定的收集箱內。

謝謝！

MCHC code No:
Serial No:
Date:

Department of Health

Survey on Client Acceptance of the Universal Antenatal HIV Antibody Testing Programme in Maternal and Child Health Centre (MCHC) in Hong Kong

(Questionnaire in English version for reference only)

- The aim of this questionnaire survey is to evaluate clients' acceptance of the Universal Antenatal HIV Antibody Testing Programme in MCHCs in Hong Kong. Your feedback will be much helpful in improving our services in the future. You are reminded that your participation in this survey is voluntary and the service you receive will not be affected by your decision to participate or not.

- This questionnaire consists of 4 pages. Please complete the questionnaire at the end of consultation, seal up the completed questionnaire into the envelope provided and then drop it into the designated collection box before you leave the MCHC.

- Data collected will be used for analysis only and are kept in strictest confidence.

A.1. Which of the following health educational material(s) on HIV testing is/are available in this MCHC ? (you may choose more than one)

1. ☐ poster
2. ☐ leaflet
3. ☐ video tape
4. ☐ none of the above
5. ☐ do not know

A.2. Did you see or read any of the following health educational material on HIV testing in this MCHC ? (you may choose more than one)

1. ☐ poster
2. ☐ leaflet
3. ☐ video tape
4. ☐ none of the above
5. ☐ do not know

B.1. Did you participate in the antenatal health talk in this MCHC?

1. ☐ yes
2. ☐ no
3. ☐ do not know

B.2. Which of the following topic was/ were included in the antenatal health talk? (you may choose more than one)

1. ☐ routes of HIV transmission
2. ☐ risk of a HIV +ve pregnant lady to transmit the virus to her baby
3. ☐ intervention to reduce the chance of mother-to-child HIV transmission
4. ☐ window period
5. ☐ safe sex
6. ☐ meaning of a positive HIV antibody testing result
7. ☐ meaning of a negative HIV antibody testing result.
8. ☐ confidentiality of the HIV antibody testing
9. ☐ none of the above
10. ☐ do not know

C.1. Routes of HIV transmission include: (you may choose more than one)

1. ☐ sexual contact
2. ☐ blood contact
3. ☐ mother-to-child transmission
4. ☐ none of the above
5. ☐ do not know

C.2. When do a HIV +ve pregnant lady transmit the virus to her baby? (you may choose more than one)

1. ☐ during pregnancy
2. ☐ during delivery
3. ☐ during breast-feeding.
4. ☐ none of the above
5. ☐ do not know

C.3. Which of the following intervention can reduce the chance of mother-to-child HIV transmission? (you may choose more than one)

1. ☐ early detection of HIV infection
2. ☐ prompt intervention comprises the use of drugs acting against the virus
3. ☐ none of the above
4. ☐ do not know

D.1. Did you accept the HIV antibody testing today?

1. ☐ yes (go to Question D.2.)
2. ☐ no (go to Question D.3.)
3. ☐ do not know (go to Question E.1.)

D.2. What was/were your reason(s) for accepting the HIV antibody testing today? (you may choose more than one)

1. ☐ the test is beneficial to a pregnant woman and her baby
2. ☐ consider the test necessary
3. ☐ recommend to accept the test by husband
4. ☐ recommend to accept the test by sexual partner
5. ☐ recommend to accept the test by health care worker
6. ☐ none of the above
7. ☐ do not know
8. ☐ others:_____

D.3. What was/were your reason(s) for declining the HIV antibody testing today? (you may choose more than one)

1. ☐ considered not at risk of HIV infection
2. ☐ considered at low risk of HIV infection
3. ☐ HIV antibody test has been done before
4. ☐ do not want to know the test result
5. ☐ husband disagreed
6. ☐ sexual partner disagreed
7. ☐ I refused all antenatal routine tests
8. ☐ none of the above
9. ☐ do not know
10. ☐ other:_____

E.1. My age is

1. ☐ <20
2. ☐ 20-29
3. ☐ 30-39
4. ☐ 40-49
5. ☐ >49

E.2. I am going to have my

1. ☐ first baby
2. ☐ second baby
3. ☐ third baby
4. ☐ fforth or above

E.3. Hong Kong Residence status

1. ☐ I was born in Hong Kong
2. ☐ I have lived in Hong Kong for less than 2 years
3. ☐ I have lived in Hong Kong for more than 2 years
4. ☐ I am not a Hong Kong Resident

E.4. Education level

1. ☐ none
2. ☐ primary level
3. ☐ secondary level
4. ☐ tertiary level

Annex J. ABBREVIATIONS

ACA	Advisory Council on AIDS
ART	Antiretroviral therapy
DH	Department of Health
EIA	Enzyme immunoassay
EU	European Union
GVU	Government Virus Unit
HA	Hospital Authority
HARRT	Highly active retroviral therapy
HBsAg	Hepatitis B surface antigen
HCWs	Health care workers
IEC	Information, education and communication
IOM	Institute of Medicine
KBITC	Kowloon Bay Integration Treatment Center
MCHC	Maternal and Child Health Clinic
MCV	Mean Cell Volume
MTCT	Maternal to Child Transmission
PMH	Princess Margaret Hospital
PWH	Prince of Wales Hospital
PYNEH	Pamela Youde Nethersole Eastern Hospital
QEH	Queen Elizabeth Hospital
QMH	Queen Mary Hospital
RRC	Red Ribbon Center
SCA	Scientific Committee on AIDS
SMS	Special Medical Service
SPP	Special Preventive Programme
TMH	Tuen Mun Hospital
TYH	Tsang Yuk Hospital
UCH	United Christian Hospital
USPHS	United States Public Health Service
VDRL	Venereal Disease Research Laboratory Test
WHO	World Health Organisation
ZDV	Zidovudine