婦幼衛生白皮書

中華民國周產期醫學會
1994 年度報告

臺灣之產前檢查—展望21世紀

Taiwan Society of Perinatology
1994 Annual Report

Prenatal Care for the 21st Century in Taiwan

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Foreword

Prenatal care is the most fundamental work in maternal and child health. It is a very important indicator of the sophistication of medical care in a nation. For example, the United States has set its goal of prenatal care for the year 2000, that is, 90% of pregnant women begin prenatal care in the first trimester.

Systematic prenatal care was started from the beginning of this century. In Boston, nurses and volunteers teamed up to visit pregnant women who would have home delivery. Since the effect of this home visit was so impressive, the first prenatal care clinic was set up in Boston Lying-in Hospital in 1911. This clinic helped to reduce the maternal and fetal mortality substantially.

In 1914, Johns Hopkins Medical School also had its own prenatal care clinic commenced. It was reported that systematic care of the pregnant women only could decrease 40% of fetal mortality.

After decades' hard work of the health care providers in Taiwan, more than 98% of pregnant women received prenatal care. However, there is still much to be done in accomplishing "Quality" prenatal care. There is still no consensus in the schedule and content of prenatal care, the quality of prenatal care is heterogenous, the fund for prenatal care is not widely available. Moreover, some current problems in perinatal care have to be taken care of, for example, congenital malformation, prematurity and multiple pregnancies.

Other than caring for the pregnancy itself, prenatal care is an invaluable chance to focus on the health and well-being of the woman and her family. Incoporating cancer prevention and other preventive measures in prenatal care should be seriously considered and solidly reinforced.

Starting from 1995, this country will have its National Health Insurance Program commenced. This program will cover prenatal care and deliveries of every pregnancy. With the coverage of National Health Insurance Program, the finacial support for prenatal care is now universally available. Also the consensus on the schedule and content of prenatal care is now achieved. It is an once-in-history chance to promote "Quality" prenatal care for every pregnant woman to ensure the health and welfare of mothers and children.

Taiwan Society of Perinatology has devoted its full effort in the care of pregnant women, fetuses and newborns. This society fully appreciated the importance of prenatal care. Thus we selected "Prenatal Care in Taiwan -- Prospect for the 21st Century" as the topic of our

1994 annual report.

Current situation and the problems of prenatal care in Taiwan were carefully examined. Also planning for the 21st century was contemplated. We hope through raising public awareness of the importance of "Quality" prenatal care and the "all out" effort of the perinatal health care providers to implement "Quality" prenatal care, healthy mothers and children in happy families will be the common scene in this Island country.

Fon-Jou Hsieh, M.D.
President,
Taiwan Society of Perinatology
December 1994

引　言

產前檢查是婦產科工作中最基本、最普通的一項，但產前檢查的好壞卻是一個國家衛生保健工作的重要指標。以美國為例，百分之九十的孕婦在第一孕期開始產前檢查是他們為公元2000年設定的目標。

有系統的產前檢查，始於本世紀初。當時在波士頓，為了照顧眾多在家生產的孕婦，護士與社會工作者定期前往訪視或照顧。由於成效頗佳，於是1911年波士頓產科醫院正式成立了產前門診，進行產前檢查的工作，大大地降低了孕產婦、胎兒及新生兒的死亡率。1914年約翰霍浦金斯醫學院也成立產前門診，結果發現，有系統的產前檢查至少使胎兒死亡率降低百分之四十。

經過數十年婦幼衛生工作者的努力，台灣的產檢率高達百分之九十八，但仍有許多尚待努力之處。例如：對產前檢查的時程與內容缺乏共識，品質參差，經費來源，……等。同時更有一些當前的課題如先天性畸形、早產、多胞胎等問題亟需解決。

產前檢查更非只針對該次懷孕，它還是對孕婦本人及其家人提供衛生保健服務的良機。是以，如何在產前檢查工作中加入癌症及慢性疾病之防治亦應一併考慮。

由於實施在即的全民健保，將產前檢查納入給付。因此已對產前檢查的時程及內容得到共識，而經濟面也獲得解決。我們正宜利用此一契機，落實產前檢查的品質，確保母子健康。

周產期醫學會致力於孕產婦、胎兒及新生兒的照護，深覺產前檢查的重要性，是以選擇〝產前檢查〞為本年度婦幼衛生白皮書的主題，收集台灣產前檢查的現況，並展望21世紀的前景。希望能對這一婦幼衛生的重點工作有一完整的呈現與企劃。

感謝衛生署、陳麗美教授、謝燦堂醫師、何師竹醫師提供資料，華筱玲醫師、陳欽德醫師、及陳輔卿小姐協助製作。

中華民國周產期醫學會

理事長　謝　豐　舟

1994年12月

Prenatal Care for the 21st Century in Taiwan

The goal of perinatologist in the 21st century in Taiwan is to improve the quality of prenatal care with the implementation of National Health Insurance Program. Prenatal care is an important indicator of medical care in a nation. In the United States, the goal of prenatal care in the 21st century is 90% of pregnant women begin prenatal care at the 1st trimester.

The annual births in Taiwan is around 320,000 in recent 3 years (Fig 1) [Health Statistics, 1984-1991]. According to a cohort study performed by Chen LM in Taiwan, 98.5% of pregnant women received prenatal care, 85.8% of them started prenatal care at the 1st trimester, and 64.9% of them had blood tests in the 1st trimester〔陳麗美1990〕. However, the data from Municipal Hospitals of Taipei City showed only 10% to 33% of pregnant women received blood tests in the 1st trimester [Annual Report of TMWCH, 1993; Annual Report of TMCHH, 1993]. The actural percentage of pregnant women with routine blood tests in the 1st trimester should be between 33% to 65%. It is still far from the goal for the 21st century set by our DOH, that is, 90% of pregnant women starting prenatal care with blood tests at 1st trimester.

According to the studies by Chang in 1980 and by Chen in 1989, most of the pregnant women received their prenatal care at hospitals and private obstetric clinics (Table 1) [Chang M 1980; 陳麗美1990]. Most of the attendanee of prenatal care were obstetricians (Table 2) 〔陳麗美1990〕. Forty-nine percent of babies were delivered in hospitals, and 48% were delivered in private obstetric clinics (Tab 3) 〔陳麗美1990〕 Therefore, it is important to ensure "Quality" perinatal care in private clinics.

The professionalism of birth attendanee changed remarkably in the past 40 years in Taiwan (Tab 4). In 1951, only 3% of birth attendanee were physicians, while midwives took care of 51% of deliveries. By 1991, almost all deliveries were taken care by physicians [Health Statistics 1992; Yu YM 1993]. The function of midwives vanished rapidly.

The current cesarean section rate in Taiwan is about 24% (Tab 5) 〔陳麗美1990〕, which is much higher than the rate (about 10%) in Norway. Because in Norway, there is a one-midwife-to-one-patient care system during labor, and 90% of spontaneous delivery is attended by midwives. This way helps to lower the cesarean section rate. In Taiwan, we hope the midwives regain their function in prenatal care, intrapartum care, and postpartum follow-up under the obstetricians' supervision.

The leading complications of delivery are malpresentation, premature rupture of the membranes and contracted pelvis (Tab 6) 〔陳麗美1990〕. The perinatal mortality rate, infantile mortality rate, neonatal mortality rate and maternal mortality rate in

Taiwan is 10.2/1,000, 9.1/1,000, 6.67/1,000, and 6.85/100,000, respectively (Tab 7) [Health Statistics 1991]. The rates are much lower than which in Bangladesh (Tab 8) [Begum K, 1993].

Our present challenges in perinatal care are congenital malformation (Tab 9, 10), prematurity and multiple pregnancy.

The incidences of prematurity were 6.1% in 1979-90 and 8.8% in 1992-93, according to the study of Hsieh at Chang Gung Memorial Hospital (Tab 11). In the same study, the incidences of twin pregnancy were 1.17% in 1979-90 and 1.59% in 1992-93 (Tab 12) [Hsieh TT 1992]. Aging of the mothers and the assisted reproductive technology were considered to contribute to this increase of multiple pregnancies. There are several problems confronted by multiple pregnancy, including prematurity, twin-to-twin transfusion syndrome, twins with one intrauterine fetal demise, twins with malformation and discordant twins (Tab 13).

The reported incidence of congenitial malformation was 0.87% in 1955-62, which increased to 1.69% in 1990 with improved reporting system (Tab 14, Fig 2) [Health Statistics 1991]. The incidence of anomalies of individual sysmtem is presented in Table 15 to 20 [Annual Report of Society of Perinatology 1993; Chao MC 1985; Hsieh FJ, 1989; Shyu MK, 1992]. With pediatricians' thorough examination, most of the congenital malformation could be found and managed as soon as possible.

In Taiwan the genetic protection programs were started in 1984. Genetic amniocentesis, newborn screening, thalassemia screening, maternal serum screening for Down syndrome, ultrasound screening and gestational diabetes mellitus screening are now available in this country (Table 21).

Thalassemia is the most common single gene disorder in Taiwan. About 4% Taiwanese are alpha-thalassemia trait and 1% Taiwanese are beta-thalassemia trait [Ko TM 1989]. Therefore, there would be 120 alpha-thalassemia major and 10 beta-thalassemia major babies born each year among the 320,000 live births in Taiwan. The screening procedures of thalassemia are presented in Figure 3. It is important not to misclassify thalassemia by electrophoresis of hemoglobin only. Up to now only 30% of pregnant women received thalassemia screening. Dissemination of correct methodology of thalassemia to obstetricians and public awareness is of utmost importance. Screening center in central and southern Taiwan should be established for convenience of the patients.

In Taiwan, almost every obstetrical clinic has an ultrasound unit and over 90% of pregnant women received ultrasound examination during pregnancy (Tab 22). Ultrasonic screening is quite important in prenatal care. For example, the diagnosis of conjoined twins totally depends on ultrasound examination. According to the experience at National Taiwan University Hospital, the conjoined twins could only be diagnosed after birth without prenatal ultrasound examination before 1980. during 1981 to 1990, all the 5 pairs of conjoined twins

were diagnosed in the 3rd trimester (28-40 weeks) [Hsieh FJ 1988]. After 1991, 2 pairs of conjoined twins were diagnosed before the 20th gestational week with early ultrasound screening, and could be terminated before viability. Since prenatal ultrasound screening is widely available nowadays, the birth of conjoined twins without prenatal diagnosis would be the shame of the obstetricians.

Improvement of prenatal diagnosis of Down syndrome is also a importnat goal in Taiwan. According to the study by Lin, the incidence of Down syndrome is 1.18 in 1,000 live births in Taiwan (Fig4) [Lin SJ 1991]. About 400 babies with Down syndrome are born each year in Taiwan. The average cost of raising a Down baby to 35 years old is 4.47 million NT dollar 〔吳昭原 1993〕. Women of advanced age are at higher risk to give birth to Down syndrome babies. However, 80% of Down babies were delivered by women below 34 years old (Fig 5) [Lin SJ 1991]. In Taiwan 7-10% of pregnant mothers were older than 34 years old and this percentage is increasing with current [Health Statistics 1991]. Amniocentesis is indicated in mothers above 34 years old, can detect a variety of fetal chromosome aberrations (Tab 23, 24) [Hsieh FJ, 1992; Annual report of Society of Perinatology, 1993]. However, only 20-25% of pregnant women above 34 years old underwent amniocentesis presently in Taiwan social conditions (Tab 25) [Health Statistics 1991; Yu YM 1993]. For those mothers below 34 years old, maternal serum screen for Down Syndrome should be helpful and is propagated now. Taiwan Society of Perinatology is undertaking a pilot project of maternal serum screening for Down syndrome with collaboration of several major medical centers. This pilot project is endorsed by Health Administraion.

Prenatal examination is also an opportunity to focus on the total health and well-being of the family. The leading causes of cancer death for females in Taiwan are lung cancer, hepatoma, cervical cancer, colorectal cancer and breast cancer (Tab 26) [Health Statistics 1992]. Pap smear and breast examination performed in prenatal care could be beneficial to early detection of cervical cancer and breast cancer.

Eleven to fourteen percent of pregnant women of hepatitis B carrier are at risk for hepatoma [Hsieh FJ 1979; Lin HH 1994]. The level of alpha-fetoprotein checked in maternal serum screen for Down syndrome may also serve the function of hepatoma screening. Three cases of pregnant women with asymptomatic hepatoma has been found by this way at National Taiwan University Hospital.

Prevention of vertical transmission of hepatitis B is an important task in Taiwan, since there is a high hepatitis B carrier rate here. The HBsAg-positive rate and HBeAg-positive rate in pregnant women in 11-14% and 3.6-4.3%, respectively [Hsieh FJ 1979; Lin HH 1994]. Those neonates born to HBeAg-positive mothers should receive hepatitis B immunoglobulin injection within 24 hours. And all infants have to receive

scheduled hepatitis B vaccination (Fig 6). This is a team work by obstetricians, pediatricians and perinatal nurses. The vertical transmission rate of hepatitis B decreased from 6-21% in HBsAg-positive only mothers and 86-96% in HBeAg-positive mothers to 3-4% in HBsAg-positive only mothers and 4-14% in HBeAg-positive mothers with scheduled Hepatitis B vaccination and immunoglobulin injection (Tab 27) [Stevens CE 1975; Beasley RP 1981; Beasley RP 1983a; Beasley RP 1983b; Lee CY 1991; Lee PI 1994, Department of Health].

The screening of gestational diabetes mellitus is also important to early prevention of overt diabetes, because gestational diabetes is an indicator of future diabetes. According to the study by Chou at Taichung Veterns Genereal Hospital, the positive rate of 50 gm 1-hour glucose challenge test and 100 gm 3-hour oral glucose tolerance test is 18.4% and 3.1%, respectively [Chou MM 1993]. Approximately half of the women with GDM will develop impaired glucose tolerance or non-insulin dependent diabetes within 10 years of their index pregnancy [O'Sullivan JB 1982]. Therefore the diagnosis of gestational diabetes provides a unique opportunity to identify those individuals at risk of non-insulin dependent diabetes at a time when lifestyle interventions would be expected to reduce overall diabetic morbidity [Dornhorst A 1994].

The pitfalls of prenatal care in Taiwan include misconception about prenatal care, no consensus about the schedule and content of prenatal care, variation in quality and economic problems. The economic problems can be resolved with the implementation of our National Health Insurance Program starting in 1995, because the program covers prenatal care and delivery. The protocol of prenatal care scheduled by DOH is shown in Table 29 and 30. Fifteen times of prenatal examinations are suggested, and 10 times of them will be paid by the insurance program. The laboratory routines, physical examination, and pap smear should be performed at the 6-8th gestational week. Ultrasound screening should be done at the 8th, 20th, and 34th gestational week. The special examinations, such as maternal serum screen for Down syndrome at 16-18 weeks, genetic amniocentesis at 16-18 weeks and gestational diabetes mellitus screen at 24-28 weeks, wouldn't be covered by national health insurance. However, subsidy would be offered to women at risk through public health programs.

Prenatal care should do no harm. This principle should be kept in mind. Since most fetuses receiving prenatal diagnosis are normal, the highest concern should be the welfare of the fetus and the safest methods should be chosen. According to the study by Hsieh, the incidence of fetal limb defects increased 9 folds after chorionic villus sampling in Taiwan. The spectrum of limb defects is quite specific ranging from hypodactyly, adactyly, transverse limb reduction to oromandibular limb hypogenesis. The earlier the chorionic villus sampling done, the severer the limb defects presented [Hsieh FJ 1995]. It means the invasive diagnostic

methods as chorionic villus sampling should be performed with great care and only in cases really indicated.

In conclusion, to further imporve the prenatal care in Taiwan in the coming 21st century, we have to raise public awareness of the importance of quality of prenatal care, to implement quality assurance program of prenatal care, to decrease congenital malformation and prematurity, to take better care of multiple pregnancy and to incorporate cancer prevention and other public health measure into our prenatal care program.

台灣之產前檢查—展望21世紀

在台灣，二十一世紀努力的方向，是藉全民健保的實施，提高產前檢查的品質，確保母子健康。

產前檢查是醫療水準的重要指標，即使在美國，二十一世紀的產前檢查目標，是希望有百分之九十的孕婦，在第一孕期 (First Trimester) 開始作產前檢查，可見即使在最先進的國家，產前檢查仍是一項極重要的工作。

一、台灣產前檢查的現況：

台灣近十年來的生產，由1984年的三十九萬降到1991年的三十二萬，最近三年都在三十二、三萬左右(如圖一) [Health Statistics 1984-1991] 。依據陳麗美教授1989年的世代研究，在台灣98.5%的懷孕婦女接受產前檢查，85.8%在第一孕期就開始產前檢查而64.9%在第一孕期進行抽血檢查〔陳麗美1990〕。而依台北市立婦幼及忠孝醫院的統計，分別只有10%及33%的孕婦在第一孕期有驗血檢查 [Annual Report of TMWCH 1993; Annual Report of TMCHH 1993] 。實際上在第一孕期接受驗血的孕婦應介於33%到65%之間。衛生署所訂定台灣在公元2000年的目標是有90%以上的孕婦在第一孕期開始作包括驗血的產前檢查。

依據張媚及陳麗美之統計，在1980到1989之間孕婦作產前檢查的場所差別不大，大部份在醫院及婦產科診所，少數在一般科診所(包括衛生所)，而在助產士診所檢查者極少(如表1) [Chang M 1980; 陳麗美1990] 。提供產前檢查的人以產科醫師最多，佔80%(如表2)。生產地點，醫院及診所各佔一半(如表3)〔陳麗美1990〕，所以如何協助診所做好產前檢查的工作，也是未來亟須努力的重點。接生的人員，依衛生署的統計在1950年代由助產士及未受專業訓練接生者約各佔一半，當時由醫師接生者很少。在1970年代，則由醫師及助產士接生者，各佔一半。到了1990年代則99%為醫師所接生，助產士的功能很少(如表4) [Health Statistics 1992; Yu YM 1993] 。

依陳麗美教授1989年的統計，台灣地區的剖腹產約佔24%(如表5)〔陳麗美1990〕。在挪威，助產士對產婦是一對一的照顧，且在陣痛過程中持續不斷地陪產及觀察，而90%的自然生產為助產士接生，有特殊問題的才找醫師處理。在台灣，目前衛生單位核發之助產士證書有41,932張，而領有執照者僅1,891人。以台灣的現狀，助產士不合適再像以前一樣獨立執業，但我們希望助產士能轉型為周產期護士而在醫師的指導下發揮其在產前檢查、生產過程及產後檢查追蹤的功能，必能使整個周產期照護的水準更形提昇。目前周產期醫學會已

舉辦周產期護士訓練，共有226人結訓，未來將再繼續辦理。

目前生產的併發症以胎位不正、早期破水及骨盆狹窄為最多(如表6)〔陳麗美1990〕，而周產期死亡率、嬰兒死亡率及新生兒死亡率各為10.2／1,000、9.1／1,000、6.67／1,000，孕婦的死亡率則為6.85／100,000 (如表7)〔Health Statistic 1991] 。所以台灣地區每年約有23名婦女因懷孕生產而喪生，較諸孟加拉的情況產檢率11%，周產期死亡率143／1,000，孕產婦死亡率2,510／100,000好很多(如表8) [Begum K 1993] 。

二、台灣周產期照護之挑戰

台灣目前周產期照護最迫切的課題：第一是先天性畸形，佔新生兒死因之第二位(如表9)及嬰兒死因的第一位(如表10)；第二是早產；第三是多胞胎帶來的問題。

早產的發生率，依長庚醫院謝燦堂醫師的統計，在1979-90年為6.1%，在1992-93年為8.8%，略為增加(如表11) [Hsieh TT, 1992]。依陳麗美教授統計則為4.9%〔陳麗美1990〕。

多胞胎的發生率，依長庚醫院謝燦堂醫師的統計，在1979-1990年為1.17%，在1992-93年為1.59%，也有增加的趨勢(如表12) [Hsieh TT 1992] 。其原因之一為孕婦的高齡化，其二為人工輔助生殖技術之應用。而多胞胎面臨的問題很多，主要有下列五項：1)早產，2)雙胞胎輸血症候群，3)雙胞胎併一個胎死腹中，4)雙胞胎併先天性畸形，5)雙胞胎併生長差異(如表13)。

台灣地區先天畸形的發生率，在1955-62年為0.87%，在1986-90年為1.40% (如表14)，而近八年來的統計是1986年的1.17%到1990年的1.69%(如圖二) [Health Statistic 1991] ，事實上發生率並未增加，而是通報的數字在近年來較為確實，而各種系統的畸形率在衛生署、台大、高醫及長庚的統計列在表15-20 [Annual Report of Society of Perinatology 1993; Chao MC 1985; Hsieh FJ 1989; Shyu MK, 1992] ，新生兒的檢查，應請小兒科專科醫師協助，才能確實發現問題，提早診治。

三、台灣的優生保健工作及產前篩檢：

在台灣的優生保健，十年內建立了許多篩檢系統(如表21)，包括：1)羊水檢查；2)新生兒篩檢；3)地中海型貧血篩檢；4)母血唐氏症篩檢；5)超音波篩檢；6)妊娠糖尿症篩檢。如何落實這些篩檢系統於每一個孕婦的產前檢查，是目前的重點。

以地中海型貧血篩檢為例，台灣甲型地中海型貧血帶因者約為4%，乙型地

中海型貧血帶因者為1% [Ko TM 1989] 。所以每年約產生120個重型甲型地中海型貧血胎兒及10個重型乙型地中海型貧血胎兒。孕婦只要檢查紅血球體積(MCV)，就可了解自己有無可能生下地中海貧血的胎兒。若有可能產生這種胎兒的孕婦，應作絨毛採樣檢查、羊水檢查或胎兒採血。正確的篩檢程序及方法十分重要(如圖三)，要確定是甲型或乙型地中海貧血帶因者，需作基因分析並測血中鐵含量及血紅素A2比率，用電泳法分析紅血素是不準確的，這是很多醫師誤解的地方。

台灣的超音波檢查很普遍，婦產科診所絕大多數有超音波設備，而且超音波檢查收費極低，甚至不收費。估計產前檢查曾接受超音波的孕婦達90%(如表22)。超音波對產前檢查極為重要，例如連體嬰的診斷。依台大醫院的經驗，在1980年以前，超音波不普遍時，連體嬰無法在產前診斷，只能在生下來後考慮分割，如忠仁、忠義兄弟；在1981-90年，超音波篩檢漸漸發展，產前轉診到台大醫院的5對病例，都在第三孕期(28-40週)才發現 [Hsieh FJ 1988] 。在1990年以後，以超音波篩檢發現而在產前轉診到台大醫院的2對病例，都是懷孕20週以前被發現及確定診斷，而提早用催生方式終止懷孕。目前超音波篩檢是產前檢查的必要項目，若有連體嬰在逃過產前診斷的情況下出生，可說是〝產科醫師之恥〞。

唐氏症的產前診斷，也是產前檢查的目標之一，依林秀娟醫師的統計，台灣的唐氏症發生率為千分之1.18(如圖四) [Lin SJ 1991] ，一年約有300-400個唐氏症兒在台灣出生，也就是每天都有一個唐氏症兒降生在台灣。撫養一個唐氏症兒到35歲，至少約需447萬台幣〔吳昭原1993〕，再加上鉅大的心理負擔及社會成本。高齡產婦生下唐氏症兒的危險率較高，但大多數唐氏症兒仍為小於34歲產婦所生(如圖五) [Lin SJ, 1991] 。對高齡孕婦應作羊膜穿刺檢查，可查出各種的胎兒染色體異常(如表23、24) [Hsieh FJ 1992; Annual report of Society of Perinatology 1993] ，但目前只有20-25%的高齡孕婦接受羊水穿刺檢查(表25) [Health Statistics 1991; Yu YM 1993] ；對小於34歲的孕婦，目前正在積極推廣母血篩檢唐氏症。在16-18週時抽取母血，檢查其胎兒蛋白(AFP)及絨毛膜激素(β—HCG)，配合孕婦年齡及體重，可以估算出懷有唐氏症胎兒的機率。一般若此機率高於1／270(34歲婦女在第二孕期懷有唐氏症胎兒的機率)，則建議做羊水檢查。初步結果顯示可以篩檢出70%之唐氏症胎兒。經由每一孕婦負擔數百元的〝風險分擔〞，希望在五年內能把〝智障〞最主要的成因——唐氏症——減少百分之七十。

四、落實健康維護於產前檢查

產前檢查不只是針對該次懷孕，還可以發現其他的疾病。事實上產前檢查給醫護人員一個絕佳的機會，對孕婦及其家人之健康，甚至社經狀況加以了解，並提供協助。

目前台灣婦女致死率最高的五種癌症依次為：肺癌、肝癌、子宮頸癌、大腸直腸癌及乳癌(如表26) [Health Statistics 1992] 。其中子宮頸癌為台灣婦女最易得的癌症，可藉子宮頸抹片篩檢，早期發現。但目前只有20%的婦女接受抹片檢查，而產前檢查正是施行子宮頸抹片檢查的良機，千萬不要放過。在台灣，一年有740位婦女死於乳癌，其中70%在診斷時大於2公分，若產前檢查時醫師能作乳房檢查，有些病人應可提早發現病灶。此外亦可藉此機會傳授乳房自我檢查的方法。產前檢查時由醫護人員提供對子宮頸癌及乳癌正確防治觀念及篩檢方法，應是一個防治這兩種主要婦女癌症的絕佳機會。

肝癌是台灣女性癌症死因的第二位。在產前檢查時，經由篩檢B型肝炎之帶原者，發現11-14%孕婦為帶原者 [Hsieh FJ 1979; Lin HH 1994] ，這些人是肝癌的高危險群，而作母體血清篩檢唐氏症時，測定母血甲型胎兒蛋白，對肝癌檢查也有幫助，目前台大醫院由此篩檢已發現3例無症狀的肝癌孕婦。

台灣B型肝炎的防治工作實際上是在〝周產期〞—產前及新生兒期—來進行。因為B型肝炎主要是經由周產期之垂直感染而傳遞。在台灣HBsAg陽性孕婦為11-14%，HBeAg陽性孕婦為3.6-4.3%[Hsieh FJ 1979; Lin HH 1994] 。HBeAg陽性之胎兒，須在出生24小時內接受HBIG注射，而所有新生兒及嬰兒都應接受定期的B型肝炎疫苗注射(如圖六)，這些要靠婦產科及小兒科醫護人員密切合作。目前研究發現，如果沒有B型肝炎免疫球蛋白及疫苗之注射，HBsAg陽性孕婦與HBeAg陽性孕婦之得到 B 型肝炎之機率各為6-21%及86-96%，若依照規定作預防注射如圖六之流程，則發生B型肝炎垂直之機率則降為3-4%及4-14%左右(如表27) [Stevens CE 1975; Beasley RP 1981; Beasley RP 1983a; Beasley RP 1983b; Lee CY 1991; Lee PI 1994, Department of Health] 。

妊娠糖尿病之篩檢對糖尿病的提早防治也很重要。依台中榮總之統計，妊娠糖尿病篩檢陽性率為18.4%，而符合妊娠糖尿病定義的孕婦為3%(如表28) [Chou MM, 1993] ，這些婦女在10年內有一半會發生明顯的糖尿病 [O'Sullivan JB, 1982] 。若對這些妊娠糖尿病的婦女提早進行糖尿病的防治工作，當可減少他們日後糖尿病的病苦 [Dornhorst A, 1994] 。

五、台灣產前檢查的缺失

台灣的產前檢查雖然在統計上看起來不錯，但仍有以下的缺失：1)孕婦誤以為產前檢查應在懷孕第3或第4個月才開始；2)沒有公認的產前檢查時程及項

目；3)產前檢查品質良莠不齊；4)產前檢查費用的負擔。

台灣計劃自1995年起實施的全民健保，其中包括產前檢查及生產的給付。目前衛生署保健處規劃，建議懷孕中作15次產前檢查，其中10次由全民健保給付，孕婦可憑產前檢查的〝配給票〞，接受包括基本的驗血及一次超音波篩檢的產前檢查，而特殊的優生保健檢查如：母血篩檢唐氏症、羊水穿刺及妊娠糖尿病篩檢等，則未列入給付範圍。但將由衛生署編列預算對特定對象加以補助，如目前對高齡孕婦羊水穿刺之補助。

目前衛生署建議的理想產前檢查時程如表29、30。全民健保將在20週前給付二次，20-28週給付二次，28週以後給付六次。第一次的驗孕則將以醫療給付，所以實際上給付達11次。這樣的設計是依照美國 Parkland Hospital 之經驗，在30週以前需要做驗血等檢查時才做產檢，而在30週以後則開始密集產檢，這樣可以減少產檢次數，而仍能維持產檢的效果，節省不少資源。特別需要強調的是，產前檢查在證實懷孕之後應儘早開始。所以在妊娠6-8週應驗血、驗尿及施行包含子宮頸抹片及乳房檢查之身體檢查；8週左右看報告以及時做必要的進一步檢查。超音波檢查在8週、20週及34週建議各做一次。20週時建議詳細掃描胎兒的器官及外型，30週以後為傳統的密集產前檢查，因為很多併發症如子癇前症等，常在懷孕後期出現。其他特殊檢查如母血篩檢唐氏症在16-18週施行，羊水穿刺在16-18週施行，而妊娠糖尿病篩檢在24-28週施行。

六、產前檢查結果之記錄及保存

在全民健保施行之後，衛生署將印行全國通用的〝母子健康手冊〞。產前檢查結果應確實記錄於該手冊之內，一方面藉以保證各項檢查均確實執行，另一方面也可方便孕婦在不同的醫療院所進行產前檢查而不必重覆檢查。尤有進者，有些不會變動的項目在下次懷孕時可以省略，以減少資源浪費。母子手冊也包含有新生兒及嬰幼兒的各項生長發育及預防接種記錄，使我們對小朋友的健康情況從出生以前就有完整的掌握。

七、產前檢查的展望

產前檢查的最高目標是胎兒與母體的福祉與健康，所以切記要避免〝醫原性傷害〞，畢竟大多數接受檢查的胎兒是正常的，所以務必將胎兒的安全謹記在心，使用最安全的方法進行各種產前診斷。在台灣，根據統計，作絨毛採樣之後的胎兒，肢體缺損的機率比一般高9倍，其中嚴重的肢體缺損增加22倍。絨毛採樣後之肢體缺損與自然發生的肢體缺損確有不同，從缺指、無指、斷肢到最嚴重的頜肢畸形，構成一獨特而罕見的畸形，而愈早作絨毛採樣則缺損愈嚴

重(如表31) [Hsieh FJ 1995]，絨毛採樣與肢體缺損的確有相關性，值得大家對產前診斷的安全性加以重視注意。絨毛採樣若確有必要，應在妊娠滿10週以後施行，則可將肢體缺損的可能性減至最低。在16週—18週施行的羊水穿刺則與肢體缺損無關，因其時胎兒肢體已發育完全。。

二十一世紀的產前檢查，首先要喚起公眾對產前檢查品質的重視，並經由品質管制落實產前檢查的品質。透過種種努力減少先天畸形及早產，並對多胞胎妊娠提供更好的照顧。在產前檢查中納入癌症防治及其他公共衛生措施，以經由產前檢查促進對全家人健康的維護。

表 1　產前檢查的場所

Table 1 Place of Prenatal Care

場所 Place	1980(%)	1989(%)
醫院 Hospital	47.2	36.4
私人產科診所 Private obs clinic	41.1	45.2
一般產科診所 General practitioner's clinic	5.5	17.1
助產士診所 Midwife's clinic	2.8	1.1
其他 Others	3.4	0.2

Chang M, 1980 ; Chen LM, 1989

表 2　提供產前檢查的人員

Table 2 Attendence of Prenatal Care (%)

產科醫師 Obstetrician	76.7
一般科醫師 General practitioner	2.9
助產士 Midwife	6.2
護士 Nurse	13.8
其他 others	0.4

Chen LM, 1989

表 3　生產的地點

Table3　Place of delivery

地點 Place	(%)
醫院 Hospital	48.9
私人產科診所 Private obstetric clinic	47.7
助產士診所 Midwife's clinic	1.6
一般科醫師診所 General practitioner's clinic	1.7
其他 others	0.1

Chen LM 1989

表 4　台灣接生人員的消長

Table 4　Birth Attendance in Taiwan (%)

	醫 師 Physician	助產士 Midwife	其他 others
1951	3.00	51.00	46.00
1972	47.81	44.77	7.42
1992	98.98	0.86	0.16

Department of Health

表 5 生產方式

Table5 Methods of Delivery

方 式 Type	(%)
自然生產 Normal spontaneous delivery	62.7
引產 Induction of labor	8.3
真空吸引輔助生產 Vacuum delivery	4.8
產鉗輔助生產 Forceps delivery	0.3
剖腹產 Cesarean section	23.9

Chen LM, 1989

表 6 生產的併發症

Table 6 Complications of delivery (%)

無 No		81
有 Yes		19.0
	胎位不正 Malpresentation	64.2
	骨盆狹窄 Contracted pelvis	16.1
	前置胎盤 Placenta previa	4.7
	胎盤早期剝離 Placenta abruption	2.8
	早期破水 Premature rupture of membranes	29.1
	異常的子宮收縮 Abnormal uterine contraction	7.6
	產後出血 Postpartum hemorrhage	6.7
	裂傷 Trauma	4.1
	感染 Infection	1.9
	其他 others	5.4

表 7　台灣的周產期統計

Table 7　Statistics of Taiwan

周產期死亡率 Perinatal mortality rate	10.2/1,000
嬰兒死亡率 Infant mortality rate	9.1/1,000
新生兒死亡率 Neonatal mortality rate	6.67/1,000
孕產婦死亡率 Maternal mortality rate	6.85/100,000

Health Statistics, Department of Health 1992

表 8　孟加拉的周產期統計資料

Table 8 Statistics in Bangladesh

產前檢查接受率 Prenatal care	11%
孕產婦死亡率 Maternal mortality rate	2,510/100,000
周產期死亡率 Perinatal mortality rate	143/1,000

Begum K. 1993

表 9　台灣地區新生兒死因

Table 9. Causes of neonatal death in Taiwan

	第一 1st	第二 2nd	第三 3rd
1960	早產 prematurity(50%)	感染 infection(22%)	寄生虫 parasite(14%)
1970	感染 infection(30%)	早產 prematurity(28%)	肺部發育不全 RDS(11%)
1980	週產期原因 perinatal(50%)	先天畸型 malformation(16%)	肺炎 pneumonia(15%)
1990	週產期原因 perinatal(54%)	先天畸型 malformation(31%)	敗血症 sepsis(4%)
	Cause		

資料來源：衛生署，衛生統計，1991年
Source: Health statistics, Department of Health, 1991
RDS: respiratory distress syndrome

表10　台灣地區嬰兒死因

Table 10. Causes of infant death in Taiwan

	第一 1st	第二 2nd	第三 3rd
1960	早產 prematurity(25%)	腸胃道感染 GI infection(20%)	肺炎 pneumonia(19%)
1970	早產 prematurity(16%)	氣管炎 bronchitis(15%)	其他感染 other infections(14%)
1980	肺炎 pneumonia(23%)	週產期原因 perinatal cause(21%)	先天畸型 malformation(19%)
1990	先天畸型 malformation(30%)	週產期原因 perinatal cause(24%)	意外 accident(12%)

資料來源：衛生署，衛生統計，1991年
Source: Health statistics, Department of Health, 1991

表11 早產的發生率

Table 11 Incidence of Preterm Delivery

	單胞胎 Singleton	所有懷孕 All pregnancies
1979-90	5.6%	6.1%
1992-93	7.5%	8.8%

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表12 多胞胎妊娠與母親的年齡

Table12 Multiple Pregnancy & Maternal Age

	雙胞胎發生率 Incidence of twins	母親年齡 Maternal age 單胞胎 Singleton	 雙胞胎 Twins
1979-90	1.17%	27.8±3.4	28.5±3.9
1992-93	1.59%	29.4±4.1	30.1±4.0

Hsieh TT, Chang Gung MH

表13 多胎妊娠的難題

Table 13 Problems of Multiple Pregnancies

1. 早產
   Prematurity
2. 雙胞胎輸血症候群
   twin-to-twin Transfusion syndrome
3. 雙胞胎合併一個胎死腹中
   Twins with one IUFD
4. 雙胞胎合併先天性畸形
   Twins with one malformation
5. 雙胞合併生長差異（或雙胞胎大小漢）
   Discordant twins

表14 台灣地區先天畸型的發生率

Table 14. Incidence of congenital malformation in Taiwan

	百分比 percentage
1955-1962	0.87
1965-1968	1.32
1971-1975	0.82
1977-1978	0.67
1986-1990	1.40

資料來源：衛生署，衛生統計，1991年
Source: Health statistics, Department of Health, 1991

表15 中樞神經系統畸型率（每1000個活產兒）

Table 15. Incidence of anomalies of the central nervous system (per 1000 births)

	台大 NTUH	衛生署 81-85	衛生署 86-89	高醫 KMC	長庚 CGMH
無腦 Anencephaly	1.29	0.40	0.40	0.78	1.02
水腦 Hydrocephaly	0.51	0.19	0.28	0.19	0.35
空腦 Holoprosencephaly	0.16				0.02
腦膨出 Encephalocele	0.15	0.10	0.14		0.14
脊柱裂 Open spina bifida	0.13	0.10	0.14		0.07
小腦 Microcephaly	0.09			0.58	
腦膜膨出 Meningocele					0.11
其他 Others					0.11

NTUH: National Taiwan University Hospital, KMC: Kaohsiung Medical College, CGMH: Chang Gung Memorial Hospital

表16 頭顏面畸型率（每1000個活產兒）

Table 16. Incidence of craniofacial defects

	台大 NTUH	衛生署 81-85	衛生署 86-89	高醫 KMC	長庚 CGMH
兔唇+顎裂 Cleft lip+palate	1.49	0.85	0.77	0.97	1.02
兔唇 Cleft lip		0.22	0.30	0.58	0.36
顎裂 Cleft palate		0.60	0.32	0.58	0.36
眼距過寬 Hypertelorism					0.05
其他 Others					0.14

NTUH: National Taiwan University Hospital, KMC: Kaohsiung Medical College, CGMH: Chang Gung Memorial Hospital

表17 腸胃系統畸型率（每1000個活產兒）

Table 17. Incidence of anomalies of the gastrointestinal system

	台大 NTUH	衛生署 81-85	衛生署 86-89	高醫 KMC	長庚 CGMH
氣管食道廔管 Tracheoesophageal fistula					0.09
無肛症 Imperforate anus	0.33	0.22	0.28	0.19	0.30
腸阻塞 Intestinal obstruction	0.24			0.19	0.16
其他 Others					0.14

NTUH: National Taiwan University Hospital, KMC: Kaohsiung Medical College, CGMH: Chang Gung Memorial Hospital

表18 肌肉骨骼系統異常率（每1000個活產兒）

Table 18. Incidence of anomalies of the musculo-skeletal system

	台大 NTUH	衛生署 81-85	衛生署 86-89	高醫 KMC	長庚 CGMH
末端異常 Distal anomalies	0.67	0.36	0.74	3.89	1.50
內翻／外翻 Inversion/eversion leg	0.15				0.27
侏儒 Dwarfism	0.16				0.09
成骨不全 Osteogenesis imperfecta	0.07				0.02
四肢發育不良 Limb dysplasia					0.25

NTUH: National Taiwan University Hospital, KMC: Kaohsiung Medical College, CGMH: Chang Gung Memorial Hospital

表19 泌尿系統畸型率（每1000個活產兒）

Table 19. Incidence of anomalies of the genito-urinary system

	台大 NTUH	衛生署 81-85	衛生署 86-89	高醫 KMC	長庚 CGMH
尿道下裂 Hypospadia	0.27	0.43	0.4	0.36	0.18
外生殖器不明 Ambiguous genitalia	0.15				
水腎 Hydronephrosis	0.13				0.30
囊狀腎 Cystic Kidney	0.09			0.19	0.18
腎發育不全 Dysplastic Kidney	0.05			0.19	0.07
美克氏症候群 Meckel's syndrome	0.02				

NTUH: National Taiwan University Hospital, KMC: Kaohsiung Medical College, CGMH: Chang Gung Memorial Hospital

表20 腹壁缺損率（每1000個活產兒）

Table 20. Incidence of abdominal wall defects

	臺大 NTUH	長庚 CGMH
腹壁裂 Gastroschisis	0.09	0.32
臍膨出 Omphalocele	0.09	0.23
橫膈疝氣 Diaphragmatic hernia		0.20

NTUH: National Taiwan University Hospital, CGMH: Chang Gung Memorial Hospital

表21 台灣的優生保健措施

Table 21 Genetic Protection Program in Taiwan

1.	羊水檢查 Genetic amniocentesis
2.	新生兒篩檢 Newborn screening
3.	地中海貧血篩檢 Thalassemia screening
4.	母血篩檢唐氏症 Maternal serum screening for Down syndrome
5.	超音波篩檢 Ultrasound screening
6.	妊娠糖尿病篩檢 GDM screening

表22 台灣的醫用超音波

Table 22 Medical Ultrasound in Taiwan

☆ 台灣醫用超音波學會（ＴＳＵＭ）
The Taiwan Society of Ultrasound in Medicine
—台灣最大的醫學會
—the biggest medical society in Taiwan
會員總數：4,400
membership: 4,400

☆ 70％的婦產科專科醫師是ＴＳＵＭ的會員（1,400/2,000）
70% of OB/GYN specialists are members of TSUM. (1,400/2,000)

☆ 參加資格：一天的密集課程與36小時的實際操作
Qualification : one day intensive course and 36 hours hand on session

☆ 每一個婦產科診所都必需有超音波
Every obstetric clinic has an ultrasound unit - essential & indispensable.

☆ 超過90％的孕婦接受超音波檢查
Over 90% of pregnant women received ultrasound examinations.

☆ 收費極低甚至不收費
No or very low charge

表23 羊水穿刺檢查之染免體異常率

Table 23. chromosomal aberration in amniocentesis

	長庚 CGMH	台大 NTUH	榮總 VGH	總合 total
接受羊水個案 Amniocentesis	2488	2975	4062	9525
染色體異常率 Abnormal rate	2.37%	2.99%	2.50%	2.62%
數目異常 Numeric	58.0%	59.6%	54.5%	57.4%
唐氏症 (Trisomy 21)	(16%)	(27%)	(22%)	(22%)
構造異常 Structural	42.0%	40.4%	45.5%	42.6%

CGMH: Chang Gung Memorial Hospital, NTUH: National Taiwan University Hospital, VGH: Veterans General Hospital

表24 羊水穿刺檢查胎兒異常率

Table 24. Results of genetic amniocentesis

	總數 Total no.	不正常個案數 abnormal no.	百分比 %
1986	2237	64	2.9%
1987	1197	46	3.8%
1988	2336	72	3.1%
1989	2975	106	3.6%
1990	3558	95	2.7%
1991	3070	123	4.0%

Source: Health statistics, Department of Health, 1991

表25 高齡產婦接受羊水穿刺檢查率

Table 25. Genetic amniocentesis for advanced maternal age

	34歲以上產婦 >34Y delivery	接受羊水穿刺個案數 cases of amniocentesis	百分比 %
1987	8752	672	7.7
1988	10577	1163	11.0
1989	11695	1828	15.6
1990	12927	2214	17.1

Source: Health statistics, Department of Health, 1991
Y: year-old

表26 台灣婦女致死率最高的癌症

Table 26 The Leading Causes of Cancer Death for Female in Taiwan

1. 肺癌	Lung cancer
2. 肝癌	Liver cancer
3. 子宮頸癌	Cervical cancer
4. 大腸直腸癌	Colorectal cancer
5. 乳癌	Breast cancer

Health Statistics, Department of Health 1992

表27　台灣B型肝炎的垂直傳染

Table 27　Vertical Transmission on Hepatitis B in Taiwan

	HBsAg (+) only	HBeAg (+)
Without vaccination	6-21%	86-96%
HBIG + HB vaccine	3-4%	4-14%

Stevens CE, 1975
Beasley RP, 1983
Lee CY, 1991
Lee PI, 1994
Health Statistics, Department of Health

表28 台中榮總的妊娠糖尿病篩檢結果

Table 28　Gestational Diabetes Screening in TVGH

Total	2561
妊娠糖尿病篩檢陽性 GDM screening* positive	470 (18.4%)
耐糖測驗陽性 OGTT positive	80 (3.1%)

*50 gm glucose,　1 hour≧140mg%
OGTT: 100gm 3-hour oral glucose tolerance test

Chou MM 1993

表29 產前檢查表

Table 29 Protocol of Prenatal Care

妊娠週數 Gestational weeks	檢查項目 Items of examination
6 8	實驗室檢驗： Lab. examination： 血液常規、血型、Rh因子、血清梅毒反應、德國麻疹抗體、尿液常規、子宮頸抹片細胞檢驗 blood routines (WBC, RBC, Plt, Hct, Hb, MCV), blood group, Rh type, VDRL, Rubella IgG, urine routine & microscopic examination, cervical cytology 身體檢查： Physical examinations: 體重、身高、牙齒、甲狀腺、乳房、心臟、肺、骨盆 body weight, body height, teeth, thyroid gland, breast, heart, lung, pelvic examination
8	例行產檢、超音波檢查 Routine antenatal care, Ultrasound
12	例行產檢 Routine antenatal care
16	例行產檢 Routine antenatal care
20	例行產檢、超音波檢查 Routine antenatal care, Ultrasound

表30 產前檢查表

Table 30 Protocol of Prenatal Care

妊娠週數 Gestational weeks	檢查項目 Items of examination
24	例行產檢 50公克耐糖試驗 Routine antenatal care, 50gm glucose stress test
28	例行產檢 Routine antenatal care
30	例行產檢 Routine antenatal care
32	例行產檢、B型肝炎表面抗原、B型肝炎e抗原、梅毒血清反應 Routine antenatal care, HBsAg, HBeAg, VDRL
34	例行產檢、超音波檢查 Routine antenatal care, Ultrasound
36	例行產檢 Routine antenatal care
37	例行產檢 Routine antenatal care
38	例行產檢 Routine antenatal care
39	例行產檢 Routine antenatal care
40	例行產檢 Routine antenatal care

表31 四肢缺損與絨毛取樣

Table 31 Limb Defects & DVS

☆ 做過絨毛取樣，四肢缺損的機率增加 9 倍
The chance of limb defects increases 9 folds after CVS.

☆ 做過絨毛取樣，四肢缺損的機率增加22倍
The chance of severe limb defects increases 22 folds after CVS.

☆ 因絨毛採樣術造成的四肢缺損，從缺指畸形、無指畸形、斷指畸形到最嚴重的口頜肢體畸形
The spectrum of limb defects after CVS is quite specific ranging from hypodactyly, adactyly, transeverse limb reduction to oromandibular limb hypogensis.

☆ 愈早做絨毛採樣術，四肢缺愈嚴重
The earlier the CVS, the severer the limb defects.

Hsieh FJ, 1995

圖1 台灣地區年出生數

Figure 1. Annual births in Taiwan

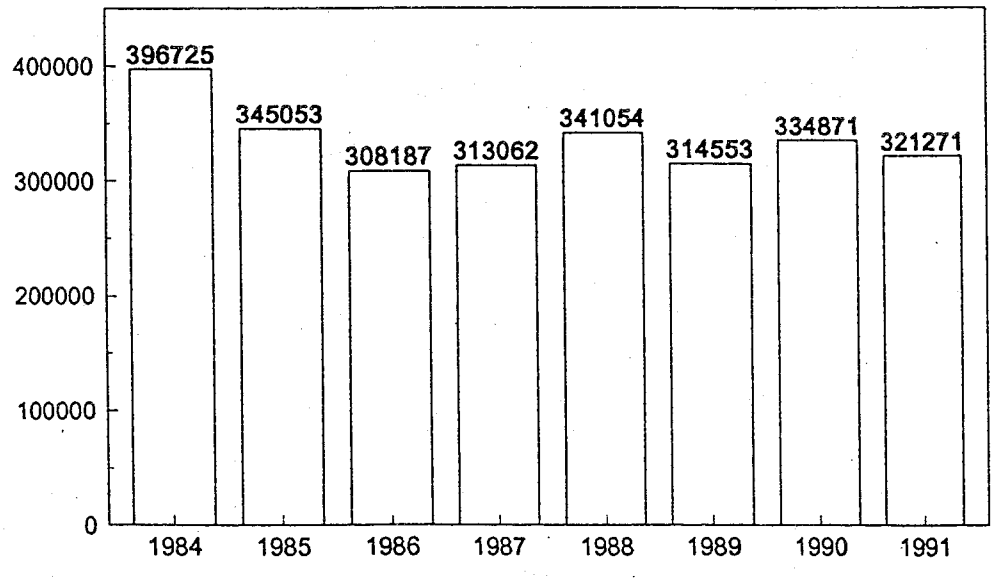


圖2 台灣地區先天畸型發生率

Figure 2. Congenital malformation surveillance in Taiwan

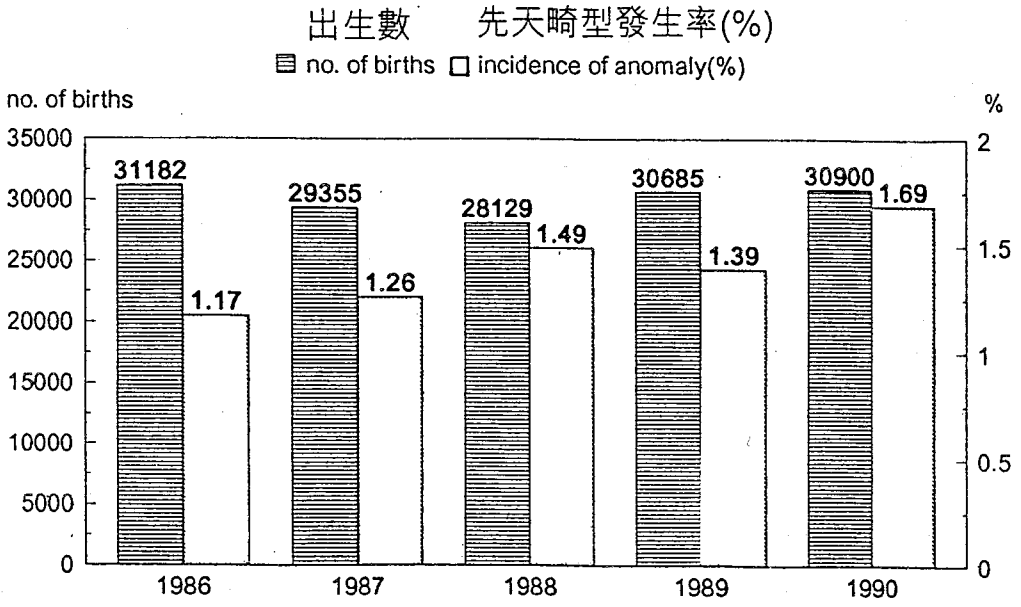
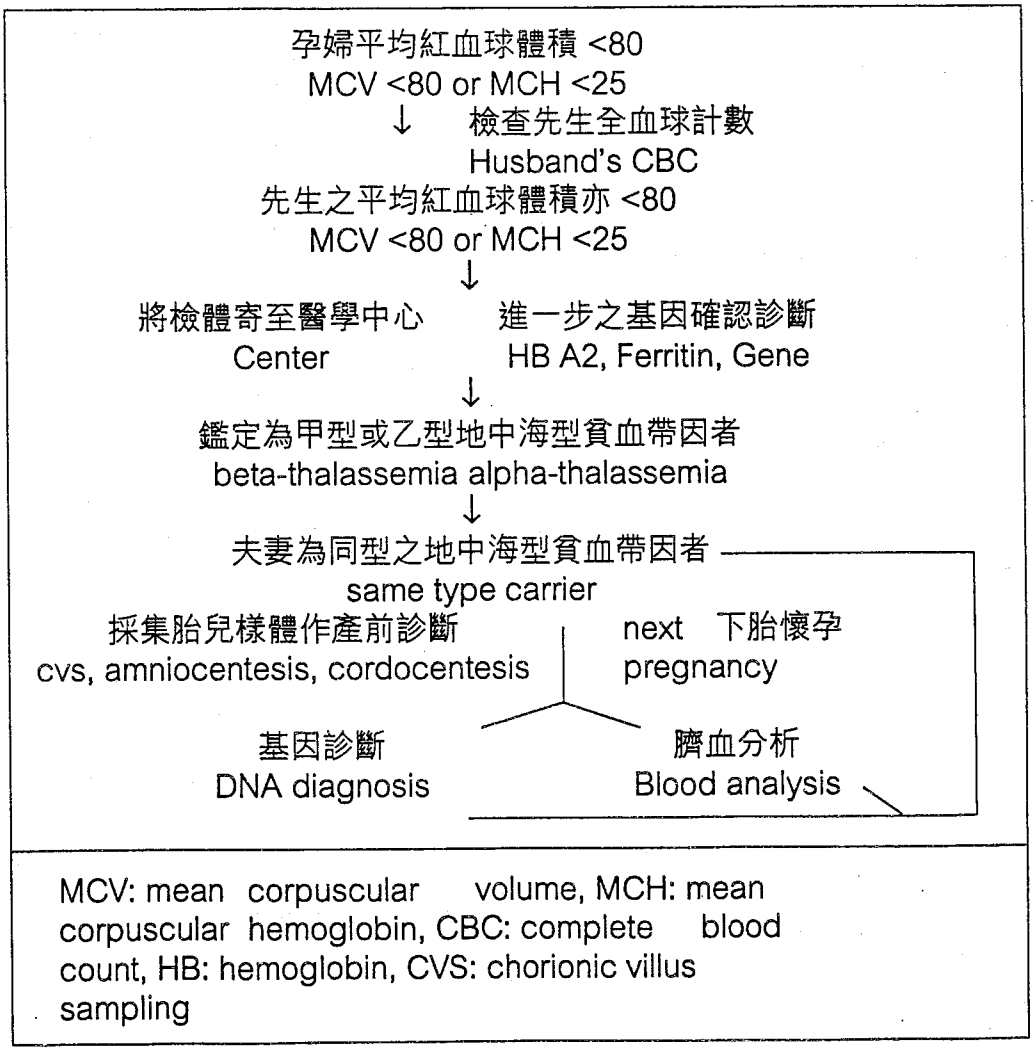


圖3 地中海型貧血篩檢系統

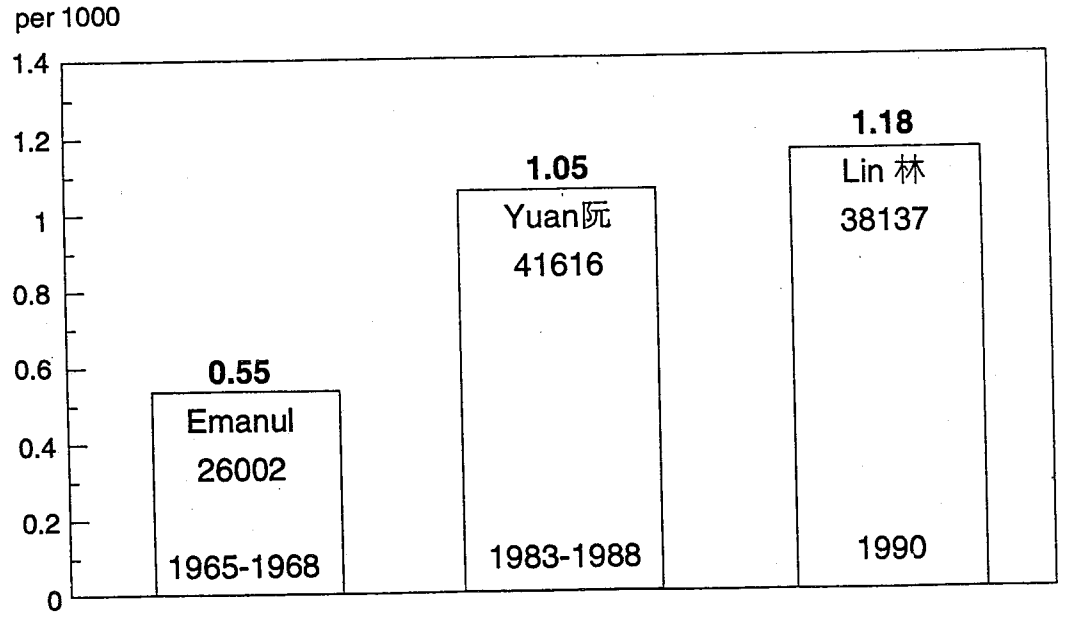
Figure 3. Thalassemia screening system



MCV: mean corpuscular volume, MCH: mean corpuscular hemoglobin, CBC: complete blood count, HB: hemoglobin, CVS: chorionic villus sampling

圖4 台灣地區唐氏症之發生率

Figure 4. Incidence of Down syndrome in Taiwan



Source: Emanul:Incidence of malformations in Chinese population. Teratology 1971;5:159-70. Yuan(阮正雄)：Down syndrome. Manucipal report of Taipei 1988. Lin (林秀娟)：Survey of Down (unpublished data)

圖5 各年齡層婦女產下唐氏症兒的比例

Figure 5. Percentage of women in the population delivering a Down or normal baby

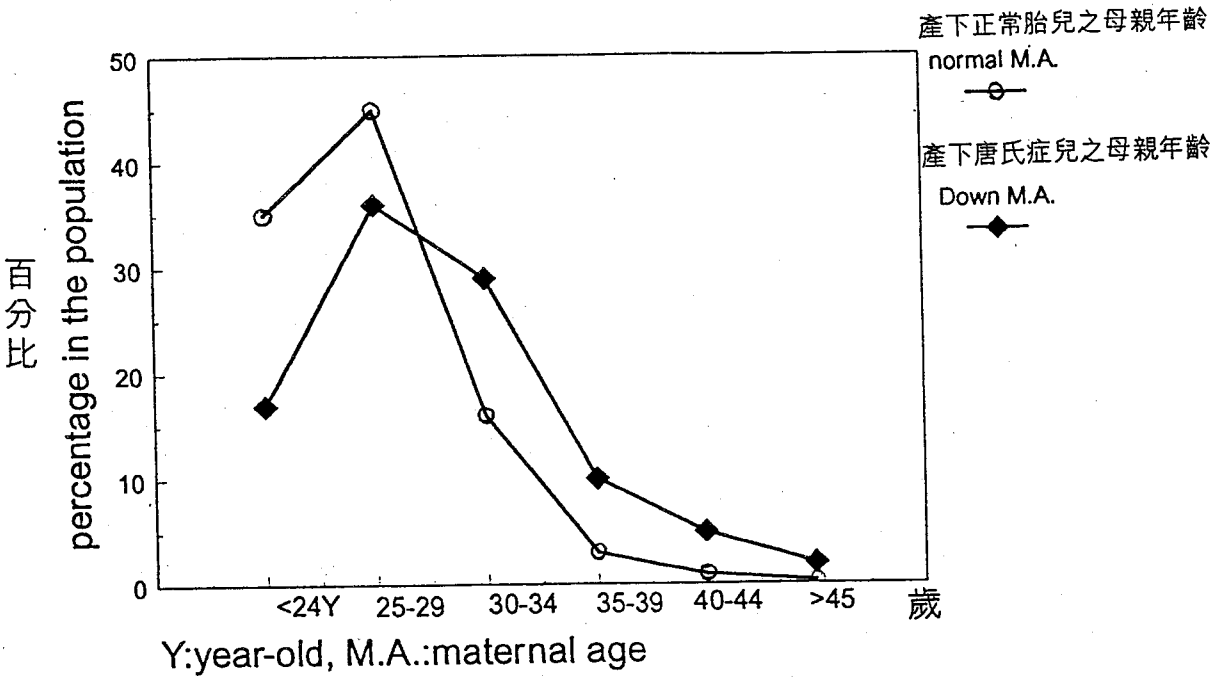
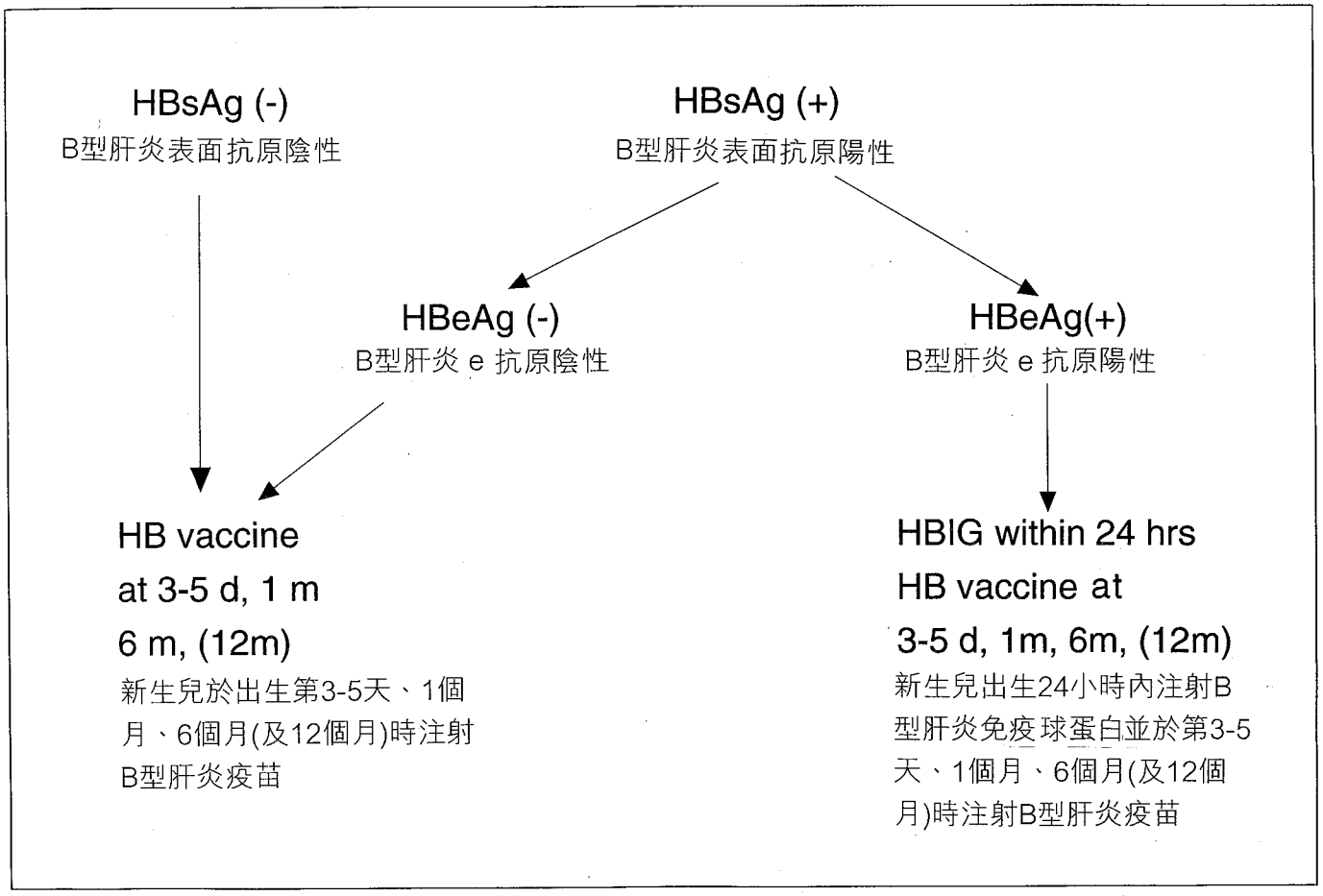


圖6　台灣地區預防B型肝炎垂直感染的流程

Figure 6. Scheme for preventing vertical transmission of Hepatitis B in Taiwan



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