



HKCOG

Territory-wide O&G Audit Report

2004



Hong Kong College of
Obstetricians & Gynaecologists



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FOREWORD

Clinical audit is the mechanism whereby practice standards are monitored for continual improvement in the delivery of service. In essence, it is a structured cycle of change, starting with a review of existing practice, identification of desired goals and specific action taken to achieve these goals. The present report, like the previous reports of 1994 and 1999, is published to provide territory-wide data in both public and private sectors in Hong Kong. It records and reflects current local practice in obstetrics and gynaecology. It is a singular achievement we are all proud of.

The present report includes comparison tables for all 3 audits. It enables a comprehensive overview of the changes and trends of our practice across the 10 years 1994-2004. The College has utilized this data to help estimate the specialist and subspecialty manpower projections. In addition, this information has and will continue to guide design of our local specialist and sub-specialist training programmes. The increased use of endoscopic surgery, replacement of surgical with medical therapy for many conditions and the introduction of new technology will undoubtedly shift activity from inpatient to day or ambulatory care. The current report also records the phenomenon of NEP (Non Entitled Person) confinements in Hong Kong that has caused such concern across political, social, economical and medical sectors of our society. This is however but the latest epic in the proud history of obstetrics in Hong Kong. We have been privileged to be both witness to the phenomena and to contribute to the care of these women.

We would like to thank all of you who have helped in the collection of this data. With your effort, the College is able to continue a laudable tradition in continuous quality improvement, benchmarking the achievements of obstetrics and gynaecology in Hong Kong. We would especially like to thank the contributors listed on pages 143-144, whose hard work and dedication have enabled the publication of this report. The College is especially indebted to Dr YUEN Pong Mo who masterminded the whole project and ensured a timely delivery of the present report.

Lawrence C.H. Tang
President
HKCOG

Tony K.H. Chung
Chairman
Q.A. Committee

September 2006

AN OVERVIEW OF THE REPORT

Territory-wide Audit 2004

Following the two previous successful territory-wide audits in 1994 and 1999, the College conducted the third audit exercise in 2004. Besides all the public and private hospitals providing obstetric and/or gynaecological services in Hong Kong, the Family Planning Association of Hong Kong also participated in this exercise. This allowed a more comprehensive coverage of those family planning procedures that required day hospitalization. The “Minimal Data Set” was further revised with addition of information on the Hong Kong residence status, threatened preterm labour, internal iliac artery ligation, uterine artery embolization in the obstetric side, and some new diagnoses and treatment procedures, especially under genital displacement/urinary disorders, in the gynaecology database. The obstetric data of all public hospitals were extracted from the Clinical Management System of the Hospital Authority. The gynaecological database program designed by Dr. Yuen Pong Mo for the 1999 audit was modified and used in all public hospitals for the gynaecological data entry. A web-based version of the database was developed by Prof. Daljit Sahota of the Department of Obstetrics and Gynaecology, Chinese University of Hong Kong and Dr. Yuen Pong Mo to capture both the obstetric and gynaecological data for the private hospitals. The data was first recorded in the audit forms and the forms were returned to the College for centralized data entry through the internet.

Data processing

After pooling of all the data, those records with incomplete and obvious inconsistent data were identified and returned to individual hospital for clarification and verification, if possible. Duplicated records were eliminated if known. The number of records with complete data in the final dataset was 93.7% for obstetrics and 98.6% for gynaecology. However, as the default value of various complications was set as “Nil” and the difficulties in cross-checking the occurrence of complications, especially those delayed complications, the completeness of the reporting of this information could not be verified. Similarly, information on fetal outcomes and neonatal complications relied very much on the effort of information tracing by the obstetricians and feedback from the paediatric colleagues, data accuracy is a great concern and might not reflect the real situation.

Obstetric report

The total number of parturients in 2004 was 49,110 and the total number of births was 49,656. The number was similar to that in 1999 (48,459 and 48,918 respectively) but it was about 27% lower than that in 1994 (67,438 and 67,925 respectively). According to the published data from the Census and Statistics Department of Hong Kong, the total number of registered births (live births and stillbirths) in 2004 was 48,930, meaning that there was an over-reporting of 1.5%. However, the number of stillbirths and neonatal death were under-reported by 28.7% and 19.7% respectively. There were 3 cases of maternal death reported in this exercise but only 2 in the official report.

Almost 20% of the parturients were not Hong Kong residents. The proportion of parturients aged ≥ 35 increased from 13.9% to 24.2% and those aged ≥ 40 increased from 1.5% to

4.5%. The incidence of elderly primigravidae increased from 4.0% to 9.1% while that of grand multiparae (parity \geq 4) decreased from 0.87% to 0.45%.

The overall incidence of diabetes mellitus increased from 3.0% to 6.3% and this was mainly attributed by the increase in the incidence of gestational diabetes (including IGT). Although the overall incidence of hypertensive disorder in pregnancy remained unchanged, the severe form increased from 7.8% to 26.7% and the incidence of eclampsia increased from 0.027% to 0.035%. The proportion of parturients with previous uterine scar increased from 7.4% in 1994 to 9.2% in 1999 and 8.9% in 2004. While the incidence of preterm delivery (<37 weeks) remained at 6-7%, that of post-term delivery (\geq 42 weeks) reduced by almost 4-fold from 5.3% to 1.4%. There were no significant changes in the other medical or obstetric complications.

The incidence of spontaneous onset of labour reduced from 75.5% to 63.8% while that of parturients having no labour increased from 11.7% to 17.9%. The overall Caesarean section rate increased from 22.5% to 30.4% and almost 10% were performed for social reasons. While the spontaneous vertex delivery rate remained unchanged, the rate of instrumental delivery decreased from 16.0% to 10.6%. Vaginal breech delivery became very uncommon and the incidence decreased from 0.7% to 0.2%. Post-partum complication rate remained low.

The incidence of very low birth weight (< 1500 gm) babies increased from 6.6 in 1994 to 7.7 in 1999 and 7.5 per 1,000 total live births in 2004 and that of low birth weight (< 2500 gm) babies increased from 5.4% to 6.0% and 6.5% of total live births respectively. The incidence of low Apgar score (< 7) at 1 minute decreased from 4.1% in 1994 to 3.8% in 1999 and 3.1% in 2004 while that at 5 minutes increased from 0.3% in 1994 to 0.4% in 1999 and 2004. The incidence of babies with congenital anomaly requiring neonatal ICU admission was increased from 2.7 in 1994 to 4.0 in 1999, and decreased back to 2.7 per 1,000 total live births in 2004. While there was a decrease in the incidence of all neonatal complications, the rate of neonatal ICU admissions markedly increased from 2.1% in 1994 to 12.8% in 1999 and 18.0% in 2004. The reasons for the increase in the neonatal admission rate were unclear. Although the 2004 data included all admissions irrespective of the duration while the previous data included only those admitted > 24 hours, the great difference could not purely be accounted for by the change in definition.

There was a general improvement in the mortality rates. Stillbirth rate decreased from 3.1 to 2.4 per 1,000 births and neonatal mortality rate decreased from 3.0 to 1.2 per 1,000 live births. Perinatal mortality rate also decreased from 5.0 to 3.3 per 1,000 births. Maternal mortality ratio decreased from 11.8 to 6.1 per 100,000 live births.

Gynaecological report

The total number of gynaecological admissions increased from 60,809 in 1994 to 76,344 in 1999 and decreased slightly to 75,053 in 2004. Emergency admission accounted for 25-30% and unplanned readmission rate increased from 0.4% to 1.2%. About 98% of the cases were discharged home. The rate of transfer to other specialties dropped from 0.7% to 0.3%. About 40% of the admissions were discharged on the same day and the mean duration of hospital stay for non-day patients decreased from 4.0 to 3.0 days. The number of deaths remained low.

First trimester termination of pregnancy remained the most common diagnosis for admission, however the overall rate dropped from 28% in 1994 to about 20% in 1999 and 2004. Despite the participation of the Family Planning Association of Hong Kong in the current exercise which provides a significant day surgery service for termination of pregnancy, the actual number of cases had not increased in 2004. The second most common diagnosis was spontaneous/silent miscarriage and the overall rate decreased from 13.5% to 9.7%. The rate of other pregnancy related problems remained unchanged. Fibroid became the third most common diagnosis and the rate increased from 6.6% to 9.6%. Threatened miscarriage was the 4th most common diagnosis and its rate remained around 7%. The rate of admission for subfertility doubled between 1994 and 2004 and ranked the 5th. The ranking of dysfunctional uterine bleeding dropped from the 3rd to the 6th because of the addition of menorrhagia as a new diagnosis under the menstrual disorder.

There were minor changes in the ranking of the top ten most common treatment modalities in 2004. Observation and investigation was the most common modality and its rate increased from 16.3% to 24.3%. Suction termination of pregnancy was the second most common modality but its rate decreased from 28.6% to 19.4%. Total abdominal hysterectomy was the most common open procedure and the rate for benign conditions remained at 4.5-5%. However the actual number of hysterectomies (abdominal, laparoscopic and vaginal) performed for benign conditions actually increased by almost 50% from 3376 to 4992. Fibroid was the most common indication for hysterectomy, accounting about 60%, while only 4.3% of the hysterectomies were performed for dysfunctional uterine bleeding/menorrhagia. Laparoscopic ovarian cystectomy was the most common laparoscopic procedure and its rate increased from 1.5% in 1999 to 3.1% in 2004, making it ranked the 7th in the list. There was a significant increase in the loop diathermy excision of the cervix and the rate increased from 0.4% to 2.7%. Whether there is a genuine increase in the number of cases or a change in the practice from outpatient to inpatient management is unknown.

The overall complication rate increased from 0.88% to 1.15% of all admissions. ***The figures should be interpreted with care because of the high possibility of under-reporting based on the clinical experience and data from the literature.*** Fever remained the most common complications. Haemorrhage occurred in 0.25% which was much higher than the 0.16% reported in 1999 and 1994. The incidence of inadvertent organ injury remained at 0.02 to 0.08%, and there was no significant difference in the overall incidence among individual organ. The incidence of deep vein thrombosis however doubled when compared with 1999 and 1994.

Participating Hospitals in Obstetric Audit

Participating hospitals	Number Reported		Number Audited	
	Maternities	Babies	Maternities	Babies
Canossa Hospital	636	642	623	632
Hong Kong Adventist Hospital	705	701	621	628
Hong Kong Baptist Hospital	2383	2397	2415	2436
Hong Kong Sanatorium & Hospital Ltd	724	732	721	729
Kwong Wah Hospital	5179	5237	5179	5237
Maltida International Hospital	838	857	679	695
Pamela Youde Nethersole Eastern Hospital	3707	3740	3707	3740
Prince of Wales Hospital	5491	5572	5491	5572
Princess Margaret Hospital	4209	4220	4203	4238
Queen Elizabeth Hospital	5115	5179	5115	5179
Queen Mary Hospital	3414	3484	3404	3487
St Paul's Hospital	1365	1369	1360	1364
St Teresa's Hospital	3289	3312	3257	3279
Tsuen Wan Adventist Hospital	756	762	745	750
Tuen Mun Hospital	5677	5721	5677	5721
Union Hospital	1380	1390	1356	1367
United Christian Hospital	4588	4603	4557	4602
Total	49456	49918	49110	49656

Number reported refers to the total number of deliveries officially reported by individual hospital

Number audited refers to the total number of cases audited in individual hospital

Participating hospitals	% of hospital return		% of all audited cases	
	Maternities	Babies	Maternities	Babies
Canossa Hospital	98.0%	98.4%	1.3%	1.3%
Hong Kong Adventist Hospital	88.1%	89.6%	1.3%	1.3%
Hong Kong Baptist Hospital	101.3%	101.6%	4.9%	4.9%
Hong Kong Sanatorium & Hospital Ltd	99.6%	99.6%	1.5%	1.5%
Kwong Wah Hospital	100.0%	100.0%	10.5%	10.5%
Maltida International Hospital	81.0%	81.1%	1.4%	1.4%
Pamela Youde Nethersole Eastern Hospital	100.0%	100.0%	7.5%	7.5%
Prince of Wales Hospital	100.0%	100.0%	11.2%	11.2%
Princess Margaret Hospital	99.9%	100.4%	8.6%	8.5%
Queen Elizabeth Hospital	100.0%	100.0%	10.4%	10.4%
Queen Mary Hospital	99.7%	100.1%	6.9%	7.0%
St Paul's Hospital	99.6%	99.6%	2.8%	2.7%
St Teresa's Hospital	99.0%	99.0%	6.6%	6.6%
Tsuen Wan Adventist Hospital	98.5%	98.4%	1.5%	1.5%
Tuen Mun Hospital	100.0%	100.0%	11.6%	11.5%
Union Hospital	98.3%	98.3%	2.8%	2.8%
United Christian Hospital	99.3%	100.0%	9.3%	9.3%
Total	99.3%	99.5%	100%	100%

% of hospital return refers to the percentage of cases returned for audit by individual hospital

% of all audited cases refers to the percentage of audited cases with respect to all audited cases

Participating Hospitals in Gynaecological Audit

Participating hospitals	Number of cases reported	Number of cases audited	% of hospital return	% of all audited cases
Canossa Hospital	1325	847	63.9%	1.2%
Caritas Medical Centre	1612	0	0.0%	0.0%
Evangel Hospital	187	0	0.0%	0.0%
Family Planning Association of Hong Kong	3369	3346	99.3%	4.8%
Hong Kong Adventist Hospital	292	190	65.1%	0.3%
Hong Kong Baptist Hospital	3833	5837	152.3%	8.4%
Hong Kong Sanatorium & Hospital Ltd	4476*	4553	-	6.5%
Kwong Wah Hospital	5405	5211	96.4%	7.5%
North District Hospital	1943	1943	100.0%	2.8%
Our Lady of Maryknoll Hospital	235	218	92.8%	0.3%
Pamela Youde Nethersole Eastern Hospital	3654	2985	81.7%	4.3%
Prince of Wales Hospital	7508	7033	93.7%	10.1%
Princess Margaret Hospital	4231	4217	99.7%	6.0%
Queen Elizabeth Hospital	5918	5799	98.0%	8.3%
Queen Mary Hospital	7100	7755	109.2%	11.1%
St Paul's Hospital	2613	2629	100.6%	3.8%
St Teresa's Hospital	2938	3364	114.5%	4.8%
Tseung Kwan O Hospital	1687	1782	105.6%	2.6%
Tsuen Wan Adventist Hospital	919	179	19.5%	0.3%
Tuen Mun Hospital	4434	4368	98.5%	6.3%
Union Hospital	4732	4208	88.9%	6.0%
United Christian Hospital	3371	3312	98.2%	4.7%
Unknown	0	13	0	0.02%
Total		69789		100%

Number reported refers to the total number of deliveries officially reported by individual hospital

Number audited refers to the total number of cases audited in individual hospital

% of hospital return refers to the percentage of cases returned for audit by individual hospital

% of all audited cases refers to the percentage of audited cases with respect to all audited cases

** Data represents total number of gynaecological operations, not total number of gynaecological admissions*

The Obstetric Report

2004

GENERAL OBSTETRIC STATISTICS

BACKGROUND INFORMATION OF THE RETURNED OBSTETRICAL DATA

	1994		1999		2004	
Records complete without error	59934	88.0%	45737	93.5%	46536	93.7%
Records with inconsistent data	6927	10.2%	1488	3.0%	1848	3.7%
Records with missing data	1202	1.8%	1699	3.5%	1492	3.0%
<i>Missing data on date of delivery</i>	-	-	-	-	145	0.3%
<i>Missing data on age</i>	758	1.1%	320	18.8%	1129	2.3%
<i>Missing data on gestation</i>	351	0.5%	43	0.1%	131	0.3%
<i>Missing data on birth weight</i>	394	0.6%	100	5.9%	115	0.2%
<i>Missing data on Apgar Score</i>	-	-	-	-	211	0.4%

TOTAL NO. OF MATERNITIES

The total number of maternities decreased from 67,438 in 1994 to 48,459 in 1999, and increased slightly to 49110 in 2004. Almost 20% of the parturients were not Hong Kong residents, of whom 62.8% were nulliparous as compared with 54.3% in Hong Kong residents. The incidence of multiple pregnancy remained about 1.1%. While the incidence of triplets remained 0.002%, that of twins increased from 0.7% to 1.1%.

	Singleton Pregnancy		Multiple Pregnancy		Total
	Nulliparous	Multiparous	Nulliparous	Multiparous	
Resident	21117 (77.8%)	17840 (83.3%)	282 (82.0%)	162 (84.4%)	39401 (80.2%)
Non-Resident	6039 (22.2%)	3578 (16.7%)	62 (18.0%)	30 (15.6%)	9709 (19.8%)
Total	27156	21418	344	192	49110

NO. OF FETUSES IN EACH PREGNANCY

	1994		1999		2004	
Total no. of maternities	67438		48459		49110	
<i>Singleton</i>	66927	98.3%	48015	99.0%	48573	98.9%
<i>Twin</i>	495	0.7%	429	0.9%	528	1.1%
<i>Triplet</i>	15	0.02%	15	0.03%	9	0.02%
<i>Quadruplet/above</i>	1	0.001%	0	0	0	0.0%
Total no. of babies	67966		48918		49656	
<i>Live births</i>	67720	99.6%	48706	99.6%	49539	99.8%
<i>Stillbirths</i>	232	0.4%	169	0.3%	117	0.2%
<i>Unknown</i>	164	0.2%	43	0.09%	0	0.0%

ANTENATAL COMPLICATIONS

	1994		1999		2004	
Diabetes mellitus (including IGT)	2047	3.0%	2945	6.1%	3108	6.3%
Anaemia	4249	6.3%	2745	5.7%	1956	4.0%
Thyroid diseases	389	0.6%	643	1.3%	635	1.3%
Cardiac diseases	489	0.7%	442	0.9%	379	0.8%
Respiratory diseases	191	0.3%	307	0.6%	316	0.6%
Surgical diseases	151	0.2%	267	0.6%	218	0.4%
Psychiatric diseases	177	0.3%	177	0.4%	260	0.5%
Immunological diseases	92	0.1%	144	0.3%	69	0.1%
Renal diseases	146	0.2%	131	0.3%	118	0.2%
Epilepsy	80	0.1%	64	0.1%	69	0.1%
Gastrointestinal /biliary tract diseases	57	0.08%	41	0.08%	32	0.07%
Liver diseases	38	0.06%	29	0.06%	26	0.05%

IGT= Impaired glucose tolerance

OBSTETRIC COMPLICATIONS

	1994		1999		2004	
Previous uterine scar	5027	7.4%	4434	9.2%	4373	8.9%
Preterm delivery (<37 weeks)	3815	5.7%	3046	6.3%	3296	6.7%
Breech presentation (parturients)	2210	3.3%	1929	4.0%	1807	3.7%
Post-term delivery (≥42 weeks)	3488	5.2%	1193	2.5%	673	1.4%
Antepartum haemorrhage	1280	1.9%	1129	2.3%	984	2.0%
Pregnancy induced hypertension	1973	2.9%	946	2.0%	1169	2.4%

MODE OF ONSET OF LABOUR

	1994		1999		2004	
Spontaneous	51015	75.5%	32569	67.2%	31319	63.8%
Induced	8463	12.5%	8515	17.6%	9025	18.4%
No labour	7939	11.7%	7344	15.2%	8766	17.9%

PRESENTATION AND LIE AT DELIVERY

	1994		1999		2004	
Vertex	65207	95.80%	45938	93.91%	47362	95.38%
Breech	2354	3.46%	1966	4.02%	2081	4.19%
Brow presentation	14	0.02%	11	0.02%	6	0.01%
Face presentation	26	0.04%	16	0.03%	18	0.04%
Oblique lie	101	0.15%	61	0.12%	29	0.06%
Transverse lie	144	0.21%	141	0.29%	109	0.22%
Compound	11	0.02%	15	0.03%	9	0.02%
Others	29	0.04%	36	0.07%	42	0.08%
Unknown	177	0.26%	734	1.50%	0	0.0%

MODE OF DELIVERY (For Each Baby)

	1994		1999		2004	
Spontaneous vertex delivery	41257	60.7%	27943	57.2%	28898	58.2%
Vacuum extraction	9347	13.8%	6324	12.9%	4823	9.7%
Forceps delivery	1483	2.2%	867	1.8%	465	0.9%
Vaginal breech delivery	503	0.7%	232	0.5%	108	0.2%
Lower segment CS before labour	7871*	11.6%	7445	15.2%	8923	18.0%
Lower segment CS after labour	7450*	11.0%	6021	12.3%	6378	12.8%
Classical Caesarean section	-	-	57	0.1%	60	0.1%
Others/unknown	152	0.2%	29	0.06%	1	0.0002%

* In 1994, there were no differentiation between lower segment and classical Caesarean section (CS)

POSTPARTUM COMPLICATIONS

	1994		1999		2004	
Primary postpartum haemorrhage	2177	3.2%	1503	3.1%	1295	2.6%
Manual removal of placenta	954	1.4%	1224	2.5%	1033	2.1%
Puerperal pyrexia	1172	1.7%	945	2.0%	294	0.6%
Third degree laceration of perineum	86	0.1%	39	0.08%	16	0.03%
Hysterectomy	43	0.06%	29	0.06%	21	0.04%
Rupture of uterus	8	0.01%	7	0.01%	5	0.01%
Internal iliac artery ligation	-	-	-	-	3	0.01%

NEONATAL COMPLICATIONS

	1994		1999		2004	
Apgar score at 1 minutes						
0-3	379	0.6%	215	0.4%	250	0.50%
4-6	2373	3.5%	1633	3.4%	1298	2.6%
Apgar score at 5 minutes						
0-3	155	0.2%	46	0.1%	120	0.2%
4-6	242	0.4%	149	0.3%	123	0.3%
Admission to neonatal ICU	1429	2.1%	6241	12.8%	8953	18.0%
Major congenital abnormalities	655	1.0%	378	0.8%	241	0.5%
Respiratory distress syndrome	208	0.3%	86	0.2%	23	0.05%
Intraventricular haemorrhage	51	0.08%	36	0.07%	1	0.002%
Necrotising enterocolitis	26	0.04%	17	0.03%	5	0.01%
Birth trauma	330	0.5%	272	0.6%	194	0.4%
Major infection	278	0.4%	137	0.3%	22	0.04%

MATERNAL DEATHS

	1994	1999	2004
Number	8	5	3
Total incidence (/100,000 live births)	11.8	10.3	6.1

MORTALITY RATES

	1994	1999	2004
Stillbirths (per 1000 total births)	232 (3.0/1000)	169 (3.5/1000)	117 (2.4/1000)
<i>No anomalies</i>	202 (0.3%)	161 (0.3%)	110 (0.2%)
<i>Birth weight > 1 kg</i>	156 (0.2%)	48 (0.1%)	74 (0.1%)
Neonatal Deaths (per 1000 live births)	171 (3.0/1000)	72 (1.5/1000)	61 (1.2/1000)
<i>No anomalies</i>	129 (0.2%)	63 (0.1%)	46 (0.09%)
<i>Birth weight > 1 kg</i>	108 (0.2%)	34 (0.07%)	31 (0.06%)
Perinatal Deaths (per 1000 total births)	359 (5.0/1000)	225 (4.6/1000)	167 (3.3/1000)
<i>No anomalies</i>	279 (0.4%)	210 (0.4%)	145 (0.3%)
<i>Birth weight > 1 kg</i>	239 (0.4%)	75 (0.2%)	101 (0.2%)

Missing data on fetal outcome in 164 (0.2%) in 1994 and 43 (0.1%) in 1999

AGE AND PARITY OF PARTURIENTS

The proportion of parturients aged ≥ 35 increased significantly from 13.9% in 1994 to 28% in 1999 and decreased slightly to 24.2% in 2004. The proportion of parturients aged ≥ 40 increased from 1.5% in 1994 to 5.1% in 1999 and 4.5% in 2004. The incidence of elderly primigravidae increased from 4.0% in 1994 to 9.1% in 2004 while that of grand multiparae (parity ≥ 4) decreased from 0.87% to 0.45%.

PARITY OF THE PARTURIENTS

	1994		1999		2004	
Para 0	36106	53.5%	26101	53.9%	27500	56.0%
Para 1	22932	34.0%	16968	35.0%	17313	35.3%
Para 2	6365	9.4%	4167	8.6%	3433	7.0%
Para 3	1463	2.2%	870	1.8%	632	1.3%
Para 4	399	0.6%	242	0.5%	159	0.3%
Para 5	101	0.2%	52	0.1%	48	0.1%
Para 6 and above	47	0.07%	36	0.07%	25	0.05%
Unknown	25	0.04%	23	0.05%	0	0.0%
Total	67438		48459		49110	

AGE OF THE PARTURIENTS

	1994		1999		2004	
< 20 years old	1235	1.8%	316	0.7%	395	0.8%
20-24 years	9482	14.1%	3904	8.1%	5358	10.9%
25-29 years	22426	33.3%	12677	26.2%	12564	25.6%
30-34 years	24261	36.0%	17694	36.5%	17759	36.2%
35-39 years	8387	12.4%	11101	22.9%	9672	19.7%
≥ 40 years	983	1.5%	2450	5.1%	2233	4.5%
Unknown	664	1.0%	317	0.7%	1129	2.30%
Total	67438		48459		49110	

AGE VS PARITY OF THE PARTURIENTS

	Para 0	Para 1	Para 2	Para 3 & above
<20	370 (1.4%)	25 (0.1%)	0	0
20-24	4487 (16.8%)	781 (4.6%)	77 (2.3%)	13 (1.5%)
25-29	8238 (30.8%)	3761 (22.1%)	488 (14.4%)	77 (9.0%)
30-34	9216 (34.4%)	7095 (41.8%)	1209 (35.8%)	239 (28.1%)
35-39	3763 (14.1%)	4402 (25.9%)	1172 (34.7%)	335 (39.3%)
40-44	674 (2.5%)	907 (5.3%)	428 (12.7%)	174 (20.4%)
≥ 45	13 (0.05%)	17 (0.1%)	6 (0.2%)	14 (1.6%)
Total	26761	16988	3380	852

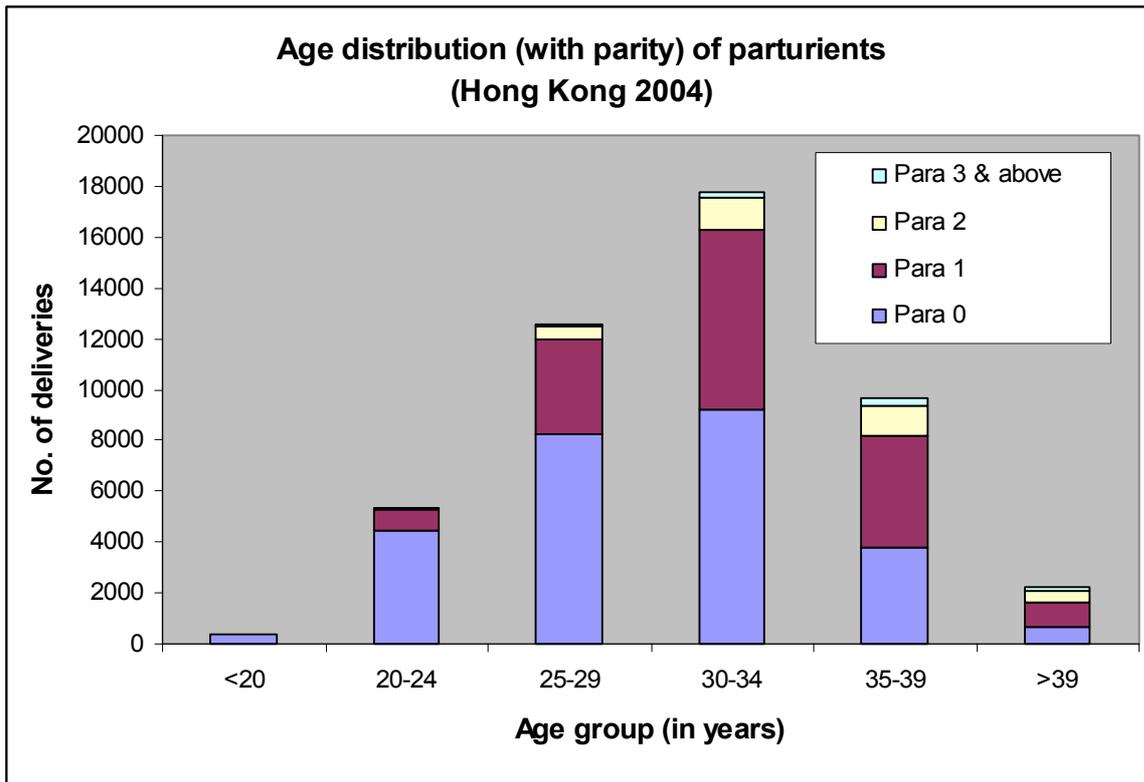


Figure O1 – Age distribution (with parity) of parturients

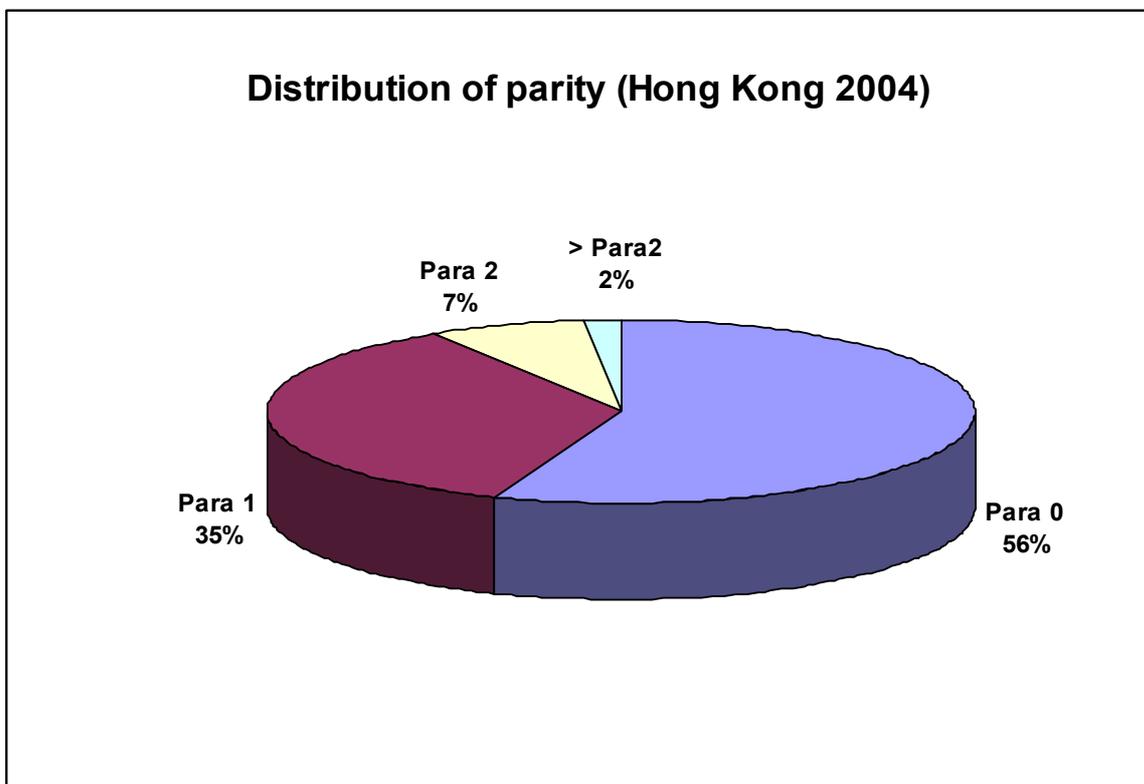


Figure O2 – Distribution of parity

COMMON ANTENATAL COMPLICATIONS

DIABETES MELLITUS

The overall incidence of diabetes mellitus (DM) increased from 3.0% in 1994 to 6.3% in 2004. The incidence of pre-existing diabetes remained roughly unchanged (0.14%-0.17%) while that of gestational diabetes (including IGT) increased from 2.9% to 6.2%.

The incidence among singleton pregnancies increased from 3.0% to 6.3% while that among multiple pregnancies increased from 6.1% to 11.0%. The proportion of nulliparity increased from 39.8% to 47.3%. There was a shift from awaiting spontaneous onset of labour to allowing no labour (almost doubled) while the rate of induction of labour remained at about 30%. Whilst there was no change in the rate of spontaneous vertex delivery, that of instrumental delivery decreased from 14.8% to 9.1% and vaginal breech delivery decreased from 1.2% to 0.2%. The rate of caesarean section before labour increased from 12.9% to 22.0% while that of caesarean section after labour remained unchanged.

The incidence of macrosomia reduced from 8.9% to 5.7%. The rate of stillbirth and neonatal death also dropped from 0.8% to 0.2 and 0.5% to 0.1% respectively. Similar to 1999 audit, there was no reported perinatal death in those with pre-existing diabetes mellitus. This was in contrast to that in 1994 audit which reported a 10-fold increase in perinatal mortality rate. As in 1999, IGT was associated with a lower perinatal mortality rate (1.3 per 1000 total births) than those without diabetes mellitus (3.0 per 1,000 total births). The perinatal mortality rate in those with GDM was 8.0 per 1,000 total births and this was higher than that reported in 1999 (2.0 per 1,000 total births) but lower than that in 1994 (10 per 1,000 total births).

	1994		1999		2004	
Pre-existing diabetes mellitus	95	4.6%	83	2.8%	70	2.3%
Gestational diabetes mellitus*	1952	95.4%	927	31.5%	754	24.3%
Impaired glucose tolerance	-	-	1935	65.7%	2284	73.5%
Total incidence	2047	3.0%	2945	6.1%	3108	6.3%

*Impaired glucose tolerance in pregnancy was classified as gestational diabetes mellitus in 1994

PREGNANCY

	1994		1999		2004	
Singleton	2016	98.5%	2901	98.5%	3049	98.1%
Multiple	31	1.5%	44	1.5%	59	1.9%

PARITY OF THE PATURIENTS

	1994		1999		2004	
Para 0	815	39.8%	1277	43.4%	1471	47.3%
Para 1	801	39.1%	1166	39.6%	1224	39.4%
Para 2	314	15.3%	383	13.0%	318	10.2%
Para 3 & above	117	5.7%	119	4.0%	95	3.1%

MODE OF ONSET OF LABOUR

	1994		1999		2004	
Spontaneous	1236	60.4%	1557	52.9%	1517	48.8%
Induced labour	549	26.8%	908	30.8%	923	29.7%
No labour	262	12.8%	479	16.3%	688	22.1%

MODE OF DELIVERY FOR EACH BABY

	1994		1999		2004	
Spontaneous vertex delivery	1178	56.7%	1652	55.3%	1691	53.5%
Vacuum extraction	238	11.5%	360	12.0%	258	8.1%
Forceps delivery	69	3.3%	44	1.5%	31	1.0%
Vaginal breech delivery	25	1.2%	10	0.3%	7	0.2%
LSCS before labour	269*	12.9%	504	16.8%	698	22.0%
LSCS after labour	298*	14.3%	420	14.0%	476	15.0%
Classical Caesarean section	-	-	4	0.1%	9	0.3%

Caesarean section data in 1994 included both lower segment and classical Caesarean section

MATERNAL COMPLICATIONS

	1994		1999		2004	
Postpartum haemorrhage	93	4.5%	151	5.1%	99	3.2%
Hysterectomy	0	0.0%	0	0.0%	1	0.03%
Preterm (<37 weeks)	176	8.6%	34	1.2%	292	9.4%
<i>Singleton</i>	165	8.1%	-	-	260	8.4%
<i>Multiple</i>	11	0.5%	-	-	32	1.0%
Maternal death	0	0.0%	0	0.0%	1	0.03%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	2050	98.7%	2984	99.6%	3159	99.7%
Stillbirths	16	0.8%	6	0.2%	7	0.2%
Neonatal deaths	10	0.5%	3	0.1%	4	0.1
Low birth weight (<2500 gm)	160	7.7%	-	-	276	8.7%
<i>Singleton</i>	128	6.2%	-	-	201	6.3%
<i>Multiple</i>	32	1.5%	-	-	75	2.4%
Macrosomia (>4000 gm)	185	8.9%	-	-	180	5.7%
Apgar score <4 at 1 minute	20	1.0%	-	-	22	0.7%
Apgar score <4 at 5 minutes	12	0.6%	-	-	9	0.3%

FETAL OUTCOME IN PREGNANCIES COMPLICATED WITH DIABETES MELLITUS

	No disease		Pre-existing DM		Gestational DM		Impaired GT	
Alive	45852	99.7%	69	98.6%	748	99.2%	2281	99.9%
Stillbirth	100	0.2%	0	0.0%	4	0.5%	2	0.1%
<i>Antenatal</i>	80	0.2%	0	0.0%	4	0.5%	1	0.04%
<i>Intrapartum</i>	3	0.006%	0	0.0%	0	0.0%	1	0.04%
<i>Undetermined</i>	17	0.0%	0	0.0%	0	0.0%	0	0.0%
Neonatal death	50	0.1%	1	1.4%	2	0.3%	1	0.04%
<i>Early</i>	42	0.1%	0	0.0%	2	0.3%	1	0.04%
<i>Late</i>	8	0.02%	1	1.4%	0	0.0%	0	0.0%
Total	46002		70		754		2284	

HYPERTENSIVE DISORDER IN PREGNANCY

Although the overall incidence of hypertensive disorder in pregnancy remained unchanged, the mild form decreased from 2.4% to 1.1% while the severe form increased from 0.5% in 1994 to 1.4% in 1999, back to 0.7% in 2004. However, severity of the hypertensive disorder was unknown in almost 30% of the cases in 2004, compared with none in 1999 and 1994. Similarly, the exact nature of the hypertensive disorder was unknown in 25% of the cases in 2004 while that in 1994 and 1999 were 5.0% and 9.5% only. The incidence of eclampsia increased from 0.027% to 0.035%.

The rate of no labour increased from 20.6% to 33.4% with a concomitant rise in the rate of caesarean delivery before labour. The rate of spontaneous vertex delivery decreased from 44.3% to 35.1% and that of instrumental delivery decreased from 17.0% to 11.1%. The rate of caesarean section after labour remained at about 18%

The rate of preterm delivery doubled from 13.4% to 26.2% and it is associated with both singleton and multiple pregnancy. The rate of post-partum haemorrhage was 5-6% and was higher than the general rate of 2.6-3.2%. The incidence of low birth weight also increased from 19.4% to 29.5%. The rate of stillbirth was about 1% while that of neonatal death decreased from 0.7% to 0.4%. The perinatal mortality rate was highest in parturients with severe form of hypertensive disorder (22.5 per 1,000 total births), which was almost 8 times higher than those without hypertension (3.1 per 1,000 total births). The magnitude of increase was similar to that in 1994 but much less than that in 1999 which showed only a 2 fold increase. Parturients with mild form of hypertensive disorder (6.8 per 1,000 total births) also showed a 2 times increase in the perinatal mortality rate. This was not observed before in the previous audits.

	1994		1999		2004	
Severity						
<i>Mild</i>	1622	82.2%	684	72.3%	562	45.0%
<i>Severe</i>	351	7.8%	262	27.7%	334	26.7%
<i>Unknown</i>	0	0.0%	0	0.0%	354	28.3%
Category						
<i>Eclampsia</i>	18	0.9%	10	1.1%	17	1.4%
<i>Mild gestational hypertension</i>	1013	51.3%	352	37.2%	260	20.8%
<i>Severe gestational hypertension</i>	68	3.4%	40	4.2%	34	2.7%
<i>Gestational proteinuria</i>	44	2.2%	22	2.3%	83	6.6%
<i>Mild pre-eclampsia</i>	288	14.6%	120	12.7%	141	11.3%
<i>Severe pre-eclampsia</i>	198	10.0%	157	16.6%	241	19.3%
<i>Chronic hypertension with no proteinuria</i>	110	5.6%	45	4.8%	47	3.8%
<i>Chronic hypertension with superimposed PET</i>	37	1.9%	36	3.8%	27	2.2%
<i>Unclassified</i>	98	5.0%	74	7.8%	90	7.2%
<i>No information</i>	99	5.0%	90	9.5%	310	24.8%
Total incidence	1973	2.9%	946	2.0%	1250	2.5%

PREGNANCY

	1994		1999		2004	
Singleton	1913	97.0%	917	96.9%	1197	95.8%
Multiple	60	3.0%	29	3.1%	53	4.2%

PARITY OF THE PATURIENTS

	1994		1999		2004	
Para 0	1218	61.7%	614	64.9%	812	65.0%
Para 1	516	26.2%	223	23.6%	316	25.3%
Para 2	158	8.0%	87	9.2%	91	7.3%
Para 3 & above	81	4.1%	22	2.3%	31	2.5%

MODE OF ONSET OF LABOUR

	1994		1999		2004	
Spontaneous	787	39.9%	306	32.3%	410	32.8%
Induced labour	780	39.5%	334	35.4%	420	33.6%
No labour	406	20.6%	306	32.3%	420	33.6%

MODE OF DELIVERY FOR EACH BABY

	1994		1999		2004	
Spontaneous vertex delivery	902	44.3%	295	30.2%	457	35.1%
Vacuum extraction	283	13.9%	147	15.1%	128	9.8%
Forceps delivery	63	3.1%	33	3.4%	17	1.3%
Vaginal breech delivery	13	0.6%	3	0.3%	8	0.6%
LSCS before labour	428*	21.0%	322	33.0%	446	34.2%
LSCS after labour	348*	17.1%	170	17.4%	239	18.3%
Classical Caesarean section	-	-	6	0.6%	7	0.5%

Caesarean section data in 1994 included both lower segment and classical Caesarean section

MATERNAL COMPLICATIONS

	1994		1999		2004	
Postpartum haemorrhage	109	5.5%	56	5.9%	59	4.7%
Hysterectomy	-	-	0	0.0%	1	0.08%
Preterm (<37 weeks)	264	13.4%	22	2.3%	306	26.2%
<i>Singleton</i>	238	12.1%	-	-	274	23.4%
<i>Multiple</i>	26	1.3%	-	-	32	2.7%
Maternal death	2	0.1%	1	0.1%	0	0.0%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	2000	98.2%	1674	99.5%	1288	98.8%
Stillbirths	22	1.1%	5	0.3%	10	0.8%
Neonatal deaths	14	0.7%	5	0.3%	5	0.4%
Low birth weight (<2500 gm)	396	19.4%	-	-	384	29.5%
<i>Singleton</i>	323	15.9%	-	-	320	24.6%
<i>Multiple</i>	73	3.6%	-	-	64	0.5%
Macrosomia (>4000 gm)	70	18.4%	-	-	51	3.9%
Apgar score <4 at 1 minute	39	1.9%	-	-	27	2.1%
Apgar score <4 at 5 minutes	8	0.4%	-	-	12	0.9%

FEATAL OUTCOME IN PREGNANCIES COMPLICATED WITH HYPERTENSION

	No disease		Hypertension					
			Mild	Severe	Unclassified			
Alive	48189	99.7%	581	99.3%	347	97.7%	360	99.2%
Stillbirth	107	0.2%	2	0.3%	5	1.4%	3	0.8%
<i>Antenatal</i>	83	0.2%	2	0.3%	5	1.4%	2	0.6%
<i>Intrapartum</i>	4	0.008%	0	0.0%	0	0.0%	0	0.0%
<i>Undetermined</i>	20	0.04%	0	0.0%	0	0.0%	1	0.3%
Neonatal death	56	0.1%	2	0.3%	3	0.8%	0	0.0%
<i>Early</i>	45	0.09%	2	0.3%	3	0.8%	0	0.0%
<i>Late</i>	11	0.02%	0	0.0%	0	0.0%	0	0.0%
Total	48353		585		355		363	

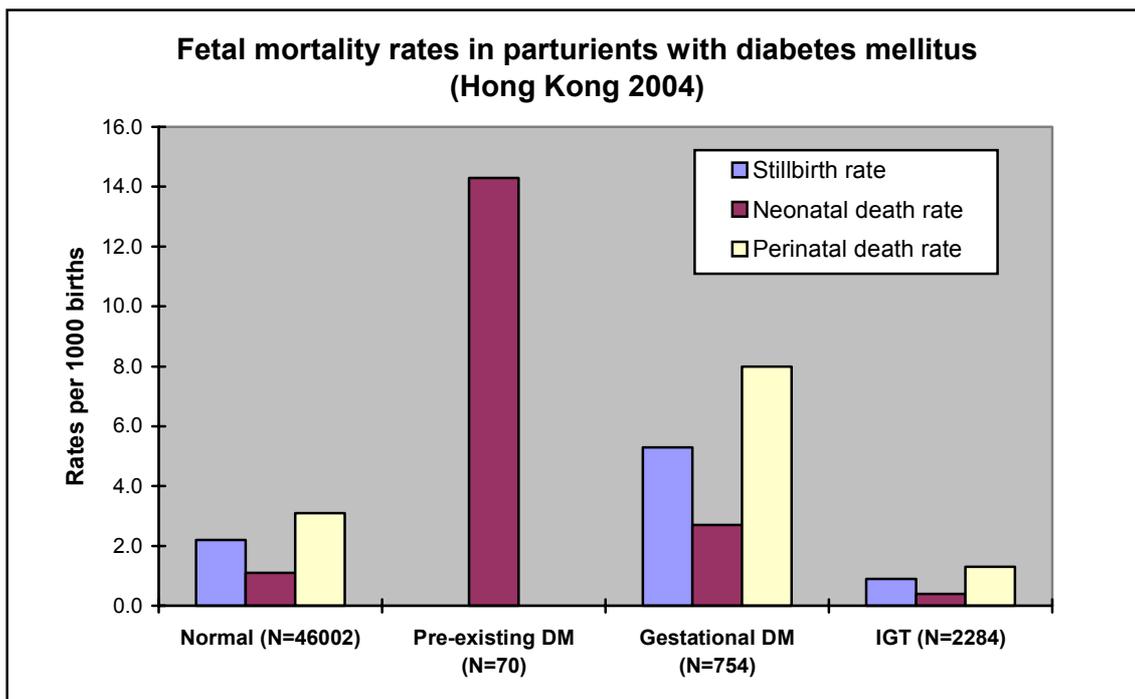


Figure O3 – Fetal mortality rates in parturients with diabetes mellitus

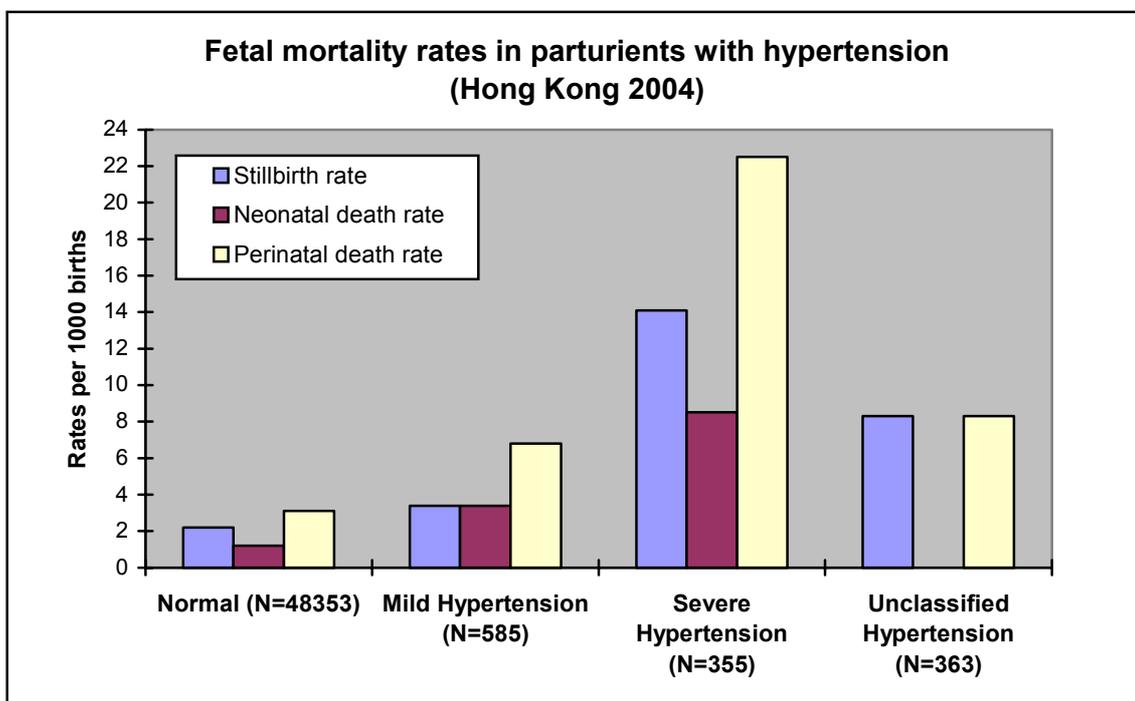


Figure O4 – Fetal mortality rates in parturients with hypertension

CARDIAC DISEASES

The overall incidence of cardiac diseases remained unchanged but the incidence of rheumatic heart disease dropped from 0.2% in 1994 to 0.03% in 2004. Although the incidence of congenital heart disease, mitral valvular prolapse and arrhythmia remained unchanged, the incidence of other unspecified cardiac diseases increased from 0.1% to 0.4%.

There was a significant change in the labour management over the past 10 years. There was a shift from awaiting spontaneous onset of labour to either induction (increased by 10 folds) or allowing no labour (increased by 2 folds). Whilst there was no change in the rate of spontaneous vertex delivery, the rate of instrumental delivery decreased from 22.5% to 8.6%. There was no case of vaginal breech delivery in 2004. The rate of caesarean section before labour doubled while that of caesarean section after labour remained unchanged.

The incidence of preterm delivery increased from 6.1% to 10.3% and it occurred mostly in singleton pregnancy. The incidence of low birth weight also increased but it was mainly associated with multiple pregnancy. Fetal and neonatal mortality rate was low.

	1994		1999		2004	
Rheumatic heart disease	139	28.4%	52	11.8%	17	4.5%
Congenital heart disease	108	22.1%	67	15.2%	66	17.4%
Mitral valvular prolapse	84	17.2%	93	21.0%	62	16.4%
Arrhythmia	62	12.7%	29	6.6%	22	5.8%
Others	96	19.6%	201	45.5%	212	55.9%
Total incidence	489	0.7%	442	0.9%	379	0.8%

PREGNANCY

	1994		1999		2004	
Singleton	488	99.8%	434	98.2%	376	99.2%
Multiple	1	0.2%	8	1.8%	3	0.8%

PARITY OF THE PATIENTS

	1994		1999		2004	
Para 0	234	47.9%	211	47.7%	185	48.8%
Para 1	189	38.7%	167	37.8%	158	41.7%
Para 2	53	10.8%	43	9.7%	28	7.4%
Para 3 & above	13	2.6%	21	4.8%	8	2.1%

MODE OF ONSET OF LABOUR

	1994		1999		2004	
Spontaneous	383	88.3%	288	65.2%	217	57.3%
Induced labour	61	2.5%	92	20.8%	86	22.7%
No labour	45	9.2%	62	14.0%	76	20.1%

MODE OF DELIVERY FOR EACH BABY

	1994		1999		2004	
Spontaneous vertex delivery	273	55.7%	248	54.9%	216	56.5%
Vacuum extraction	97	19.8%	59	13.1%	31	8.1%
Forceps delivery	13	2.7%	13	2.9%	2	0.5%
Vaginal breech delivery	3	0.6%	3	0.7%	0	0%
LSCS before labour	45*	9.2%	66	14.6%	77	20.2%
LSCS after labour	59*	12.0%	63	13.8%	56	14.7%
Classical Caesarean section	-	-	0	0.0%	1	0.3%

Caesarean section data in 1994 included both lower segment and classical Caesarean section

MATERNAL COMPLICATIONS

	1994		1999		2004	
Postpartum haemorrhage	13	2.7%	14	3.2%	7	1.8%
Hysterectomy	0	0.0%	0	0.0%	1	0.3%
Preterm (<37 weeks)	30	6.1%	42	9.5%	39	10.3%
<i>Singleton</i>	30	6.1%	-	-	37	9.8%
<i>Multiple</i>	0	0.0%	-	-	2	0.5%
Maternal death	1	0.2%	1	0.2%	0	0.0%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	486	99.2%	449	99.3%	382	100%
Stillbirths	2	0.4%	3	0.7%	0	0%
Neonatal deaths	2	0.4%	0	0.0%	0	0%
Low birth weight (<2500 gm)	27	5.5%	40	8.8%	31	8.1%
<i>Singleton</i>	27	5.5%	28	6.2%	26	6.8%
<i>Multiple</i>	0	0.0%	12	2.7%	5	1.3%
Macrosomia (>4000 gm)	15	3.1%	12	2.7%	16	4.2%
Apgar score <4 at 1 minute	6	1.2%	2	0.4%	2	0.5%
Apgar score <4 at 5 minutes	1	0.2%	0	0%	0	0%

ANTEPARTUM HAEMORRHAGE

The incidence of antepartum haemorrhage (APH) remained unchanged. However, the incidence of placenta abruptio reduced from 0.22% to 0.15% while that of other causes increased from 0.05% to 0.09%.

The rate of induction of labour and no labour increased from 24.5% to 29.5% and 31.0% to 39.5% respectively. The rate of caesarean section before labour increased from 31.0% to 39.2% while there were no significant changes in the other mode of delivery.

The rate of preterm delivery increased from 25.3% to 34.9%, the increase was more marked in multiple pregnancy. The rate of post-partum haemorrhage was about 5% and higher than the general rate of 3%. Hysterectomy rate remained at 1% while maternal mortality ratio was less than 0.1%. The incidence of low birth weight increased from 21.0% to 28.9%. The rate of stillbirth and neonatal death decreased from 1.3% and 1.1% respectively to 0.8%. APH of unknown origin was associated with a 5-fold increase in the perinatal mortality rate (13.9 per 1,000 total births) compared with those without APH, and the rate was almost doubled that reported in 1999 (7.2 per 1,000 total births). The perinatal mortality rate in those with placenta praevia (6.9 per 1,000 total births) was 2 times higher than those without APH and that in 1999.

	1994		1999		2004	
APH of unknown origin	738	57.7%	682	60.4%	577	58.6%
Placenta praevia	363	28.4%	323	28.6%	290	29.5%
Placenta abruptio	148	11.6%	86	7.6%	72	7.3%
Other causes	31	2.4%	38	3.4%	45	4.6%
Total incidence	1280	1.9%	1129	2.3%	984	2.0%

PREGNANCY

	1994		1999		2004	
Singleton	1264	98.8%	1113	98.6%	951	96.6%
Multiple	16	1.3%	16	1.4%	33	3.4%

PARITY OF THE PATIENTS

	1994		1999		2004	
Para 0	618	48.3%	588	52.1%	547	55.6%
Para 1	489	38.2%	398	35.3%	347	35.3%
Para 2	126	9.8%	105	9.3%	70	7.1%
Para 3 & above	47	3.7%	38	3.3%	20	2.0%

MODE OF ONSET OF LABOUR

	1994		1999		2004	
Spontaneous	569	44.5%	438	38.8%	309	31.4%
Induced labour	314	24.5%	298	26.4%	286	29.1%
No labour	397	31.0%	393	34.8%	389	39.5%

MODE OF DELIVERY FOR EACH BABY

	1994		1999		2004	
Spontaneous vertex delivery	527	40.8%	1146	39.2%	384	37.7%
Vacuum extraction	98	7.6%	449	6.9%	67	6.6%
Forceps delivery	34	2.6%	79	1.1%	6	0.6%
Vaginal breech delivery	12	0.9%	13	0.9%	5	0.5%
LSCS before labour	401*	31.0%	395	34.5%	399	39.2%
LSCS after labour	220*	17.0%	193	16.8%	147	14.4%
Classical Caesarean section	-	-	7	0.6%	11	1.1%

Caesarean section data in 1994 included both lower segment and classical Caesarean section

MATERNAL COMPLICATIONS

	1994		1999		2004	
Postpartum haemorrhage	72	5.6%	54	4.8%	49	5.0%
Hysterectomy	13	1.0%	11	1.0%	9	0.9%
Preterm (<37 weeks)	324	25.3%	72	6.4%	343	34.9%
<i>Singleton</i>	315	24.6%	-	-	313	31.8%
<i>Multiple</i>	9	0.7%	-	-	30	3.0%
Maternal death	1	0.08%	1	0.1%	0	0.0%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	1260	97.5%	1090	98.4%	1003	98.4%
Stillbirths	17	1.3%	9	0.8%	8	0.8%
Neonatal deaths	14	1.1%	8	0.7%	8	0.8%
Low birth weight (<2500 gm)	271	21.0%	-	-	295	28.9%
<i>Singleton</i>	251	19.4%	-	-	236	23.2%
<i>Multiple</i>	20	1.5%	-	-	59	5.8%
Macrosomia (>4000 gm)	33	2.6%	-	-	16	1.6%
Apgar score <4 at 1 minute	42	3.3%	-	-	26	2.6%
Apgar score <4 at 5 minutes	10	0.8%	-	-	11	1.1%

FETAL OUTCOME IN PREGNANCY COMPLICATED WITH APH

	No disease		APH of unknown origin		Placenta praevia		Other causes	
Alive	47978	99.7%	569	98.6%	287	99.0%	116	99.1%
Stillbirth	100	0.1%	3	0.5%	2	0.7%	1	0.9%
<i>Antenatal</i>	79	0.2%	3	0.0%	2	0.7%	1	0.0%
<i>Intrapartum</i>	4	0.006%	0	0.0%	0	0.0%	0	0.0%
<i>Undetermined</i>	17	0.0%	0	0.0%	0	0.0%	0	0.0%
Neonatal death	48	0.1%	5	0.9%	0	0.0%	0	0.0%
<i>Early</i>	39	0.1%	5	0.0%	1	0.3%	0	0.0%
<i>Late</i>	9	0.0%	0	1.4%	0	0.0%	0	0.0%
Total	48126		577		290		117	

BREECH PRESENTATION AT BIRTH

All babies with breech presentation at delivery were included in the analysis. For maternal information, only those singleton pregnancies or multiple pregnancies with first baby in breech presentation were included.

The incidence of breech presentation at delivery increased from 3.5% to 4.2%, of which about 90% were singleton pregnancy. The rate of preterm delivery increased from 15.4% to 20.7% and that of the low birth weight increased from 19.6% to 22.9%, both were much higher than that of the general population. The vaginal delivery rate dropped dramatically from 21.5% to 4.9% and caesarean section before labour increased from 23.9% to 69.2%. About 1% of the babies required a classical caesarean section. The stillbirth rate reduced from 2.5% to 1.5% and the neonatal mortality rate dropped from 1.8% to 0.9%.

The incidence of very low Apgar score (< 4) among those vaginal births was 37.7% and 33.3% at 1 and 5 minutes, both were much higher when compared with previous years.

	1994		1999		2004	
TOTAL INCIDENCE	2354	3.5%	1966	4.0%	2081	4.2%
Singleton	2131	90.5%	1721	87.5%	1805	86.7%
Multiple	223	9.5%	245	12.5%	276	13.3%
<i>First baby, multiple</i>	79	35.4%	-	-	92	33.3%
<i>Subsequent baby, multiple</i>	144	64.6%	-	-	184	66.7%

PARITY OF THE PATURIENTS

	1994		1999		2004	
Para 0	1331	60.2%	1193	60.6%	1211	63.9%
Para 1	645	29.2%	595	30.3%	543	28.6%
Para 2	176	8.0%	130	6.6%	112	5.9%
Para 3 & above	58	2.6%	48	2.5%	30	1.6%

Data in 1999 referred to all babies

MODE OF ONSET OF LABOUR

	1994		1999		2004	
Spontaneous	897	40.6%	580	29.5%	519	27.4%
Induced labour	65	2.9%	67	3.4%	28	1.5%
No labour	1248	56.5%	1319	67.1%	1350	71.2%

Data in 1999 referred to all babies

MODE OF DELIVERY

	1994		1999		2004	
Vaginal delivery	505	21.5%	234	11.8%	102	4.9%
LSCS before labour	563*	23.9%	416	21.2%	1441	69.2%
LSCS after labour	1283*	54.5%	1299	66.1%	519	24.9%
Classical Caesarean section	-	-	17	0.9%	19	0.9%

Caesarean section data in 1994 included both lower segment and classical Caesarean section

MATERNAL COMPLICATIONS

	1994		1999		2004	
Postpartum haemorrhage	48	2.2%	21	1.1%	22	1.2%
Hysterectomy	-	-	4	0.2%	8	0.4%
Internal artery ligation	-	-	-	-	2	0.1%
Preterm (<37 weeks)	341	15.4%	393	20.0%	393	20.7%
<i>Singleton</i>	305	13.8%	292	72.3%	347	18.3%
<i>Multiple</i>	36	1.6%	101	27.7%	46	2.4%
Maternal death	0	0.0%	1	0.05%	2	0.1%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	2251	95.6%	1902	96.7%	2032	97.6%
Stillbirths	59	2.5%	43	2.2%	31	1.5%
<i>Antepartum</i>	46	2.0%	30	69.8%	25	1.2%
<i>Intrapartum</i>	9	0.4%	5	11.6%	1	0.05%
<i>Undetermined</i>	4	0.2%	8	18.6%	5	0.2%
Neonatal deaths	43	1.8%	21	1.1%	18	0.9%
<i>Early</i>	-	-	18	85.7%	14	0.7%
<i>Late</i>	-	-	3	14.3%	4	0.2%
Low birth weight (<2500 gm)	462	19.6%	404	20.5%	476	22.9%
<i>Singleton</i>	327	13.9%	291	72%	304	14.6%
<i>Multiple</i>	135	5.7%	113	28%	172	8.5%
Macrosomia (>4000 gm)	44	1.9%	27	1.4%	38	1.8%
Apgar score <4 at 1 minute	75	3.2%	47	2.4%	65	3.1%
Apgar score <4 at 5 minutes	20	0.8%	15	0.8%	38	1.8%
Birth trauma	9	0.4%	5	0.3%	8	0.4%

LIVEBORN SINGLETONS IN BREECH PRESENTATION WITH LOW APGAR SCORES

Apgar Score	1994		1999		2004	
	Vaginal	Caesarean	Vaginal	Caesarean	Vaginal	Caesarean
At 1 minute						
0 – 3	33 (8.4%)	27 (1.6%)	15(6.4%)	20(1.2%)	26 (37.7%)	29 (1.7%)
4 – 6	101 (25.8%)	152 (9.0%)	46(19.7%)	170(9.8%)	17 (24.6%)	138 (8.0%)
At 5 minutes						
0 – 3	13 (3.3%)	2 (0.1%)	9(3.8%)	1(0.06%)	23 (33.3%)	9 (0.5%)
4 – 6	15 (3.8%)	17 (1.0%)	9(3.8%)	12(0.7%)	2 (2.9%)	10 (0.6%)
Total	392	1690	234	1732	69	1727

EXTERNAL CEPHALIC VERSION

External cephalic version (ECV) was attempted in 188 pregnancies (11.6%), compared with 9.8% in 1999. The procedure was successful in 55.3%, similar to the 54.0% in 1999. For those with successful ECV, vaginal delivery was achieved in 81.8% in contrast to 74.3% in 1999. For those without ECV, the Caesarean section rate increased from 84.2% to 94.1%. For those with failed ECV, the Caesarean section rate remained above 95%.

	1994		1999		2004	
No ECV	-	-	1715	89.0%	1430	88.4%
ECV	-	-	187	9.8%	188	11.6%
<i>Successful ECV</i>	-	-	101	54.0%	104	55.3%
<i>Failed ECV</i>	-	-	86	46.0%	84	44.7%
Total incidence	-	-	1926	3.9%	1618	3.3%

Missing data on ECV in 24 (1.2%) in 1999

	1999			2004		
	No ECV	Successful ECV	Failed ECV	No ECV	Successful ECV	Failed ECV
Spontaneous	35(2.0%)	63(62.4%)	1(1.7%)	13(0.9%)	71(68.3%)	0(0.0%)
Instrumental	15(0.9%)	12(11.9%)	0(0.0%)	2(0.1%)	14(13.5%)	0(0.0%)
Vaginal breech	201(11.7%)	0(0.0%)	3(3.5%)	57(4.0%)	0(0.0%)	2(2.4%)
LSCS	1445(84.2%)	26(25.7%)	81(94.1%)	1339(93.6%)	19(18.3%)	82(97.6%)
Classical CS	15(0.9%)	0(0.0%)	1(1.7%)	18 (1.3%)	0(0.0%)	0(0.0%)
Unknown	4(0.2%)	0(0.0%)	0(0.0%)	1 (0.1%)	0(0.0%)	0(0.0%)
Total	1715	101	86	1430	104	84

PARTURIENTS WITH PREVIOUS UTERINE SCAR

The prevalence of parturients having previous uterine scar was 8.9% compared with 7.5% in 1994 and 9.2% in 1999. The rate of caesarean section before labour increased from 56.2% to 66.5%. The vaginal delivery rate for those who had been in labour reduced from 59.4% to 53.5%. Uterine rupture rate was 0.05% which was much lower than the previous years. Postpartum haemorrhage rate decreased from 2.8% to 1.8%. The rate of hysterectomy was 0.1%, compared with 0.2-0.4% in previous years.

	1994		1999		2004	
TOTAL INCIDENCE	5027	7.5%	4434	9.2%	4373	8.9%
Singleton	4985	99.2%	4400	99.2%	4331	99.0%
Multiple	42	0.8%	34	0.8%	42	1.0%

PARITY OF THE PATURIENTS

	1994		1999		2004	
Para 0	377	7.5%	179	4.0%	122	2.8%
Para 1	3760	74.8%	3470	78.3%	3534	80.8%
Para 2	711	14.1%	647	14.6%	606	13.9%
Para 3 & above	179	3.5%	138	3.1%	111	2.5%

MODE OF ONSET OF LABOUR

	1994		1999		2004	
Spontaneous	2010	40.0%	1520	34.3%	1249	28.6%
Induced labour	190	3.8%	248	5.6%	167	3.8%
No labour	2827	56.2%	2666	60.1%	2957	67.6%

MODE OF DELIVERY FOR EACH BABY

	1994		1999		2004	
NSD	930	18.4%	750	16.8%	625	14.1%
Vacuum extraction	287	5.7%	268	6.0%	113	2.6%
Forceps	72	1.4%	35	0.8%	12	0.3%
Vaginal breech	18	0.4%	6	0.1%	8	0.2%
LSCS before labour	2850	56.2%	2654	59.3%	2939	66.5%
LSCS after labour	907	17.9%	731	16.4%	696	15.8%
Classical Caesarean section	3	0.05%	25	0.6%	24	0.5%

Caesarean section data in 1994 included both lower segment and classical Caesarean section

MATERNAL COMPLICATIONS

	1994		1999		2004	
Postpartum haemorrhage	143	2.8%	125	2.8%	77	1.8%
Hysterectomy	11	0.2%	16	0.4%	6	0.1%
Internal artery ligation	-	-	-	-	1	0.02%
Rupture of uterus	3	0.1%	7	0.2%	2	0.05%
Preterm (<37weeks)	306	6.1%	271	6.1%	280	6.4%
<i>Singleton</i>	292	5.8%	257	5.8%	263	6.0%
<i>Multiple</i>	14	0.3%	14	0.3%	17	0.4%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	5036	99.3%	4445	99.4%	4407	99.8%
Stillbirths	14	0.3%	16	0.4%	6	0.1%
Neonatal deaths	4	0.1%	7	0.2%	4	0.2%
Low birth weight (<2500 gm)	295	5.8%	242	5.4%	265	6.0%
<i>Singleton</i>	263	89.5%	209	86.4%	220	83.0%
<i>Multiple</i>	32	10.5%	33	13.6%	45	17.0%
Macrosomia (>4000 gm)	203	4.0%	192	4.3%	170	3.8
Apgar score <4 at 1 minute	25	0.5%	21	0.5%	18	0.4
Apgar score <4 at 5 minutes	9	0.2%	4	0.1%	6	0.1

PRETERM LABOUR

The data on preterm labour was captured in 1999 but it was not specified whether it ended up with preterm delivery or not. In 2004, the data was specified as threatened preterm labour which did not proceed to delivery, either spontaneously or after tocolytic therapy. *The data on preterm labour included those preterm labours which were arrested either spontaneously or with tocolytic therapy and those which proceeded to delivery irrespective of whether tocolytic therapy was used or not. Those preterm deliveries without labour were excluded.* The data therefore included those with threatened and/or actual preterm labour.

Preterm labour occurred in 5.1% of all deliveries, compared with 4.7% in 1999. The risk of preterm labour was much higher in multiple pregnancy, although the incidence dropped from 50.2% in 1999 to 26.3% in 2004. The incidence of threatened preterm labour occurred in 17.5%, of which 26.5% (n=117) delivered at ≤ 32 weeks and 61.5% (n=272) delivered at 33-37 weeks.

Data on the use of steroid and tocolytic agents was also captured in 1999. However, the effectiveness of tocolytic therapy was not recorded. Overall, tocolytic therapy was used in 2.6% (4.3% in 1999) of all preterm labours, 43% of them had a history of threatened preterm labour. Steroid was used in 11.2% in all preterm labours, of which 42% received tocolytic. The corresponding data in 1999 were 0.9% and 68.2%, however the figures were likely to be inaccurate as the data was missing in over 80% of cases. For those delivered at gestation ≤ 34 weeks, the use of either steroid (4.2%) or tocolytic therapy (3.4%) alone had a higher neonatal mortality rate than those using both therapy (2.3%) or none (2.6%).

	1999		2004	
TOTAL INCIDENCE	2472	4.7%	2527	5.1%
<i>Singleton</i>	2249	91.0%	2386	94.4%
<i>Multiple</i>	223	9.0%	141	5.6%

HISTORY OF THREATENED PRETERM LABOUR

	1999		2004	
TOTAL INCIDENCE	-	-	442	17.5%
<i>Singleton</i>	-	-	401	90.7%
<i>Multiple</i>	-	-	41	9.3%

ONSET OF LABOUR

	1999		2004	
Spontaneous	1949	78.8%	1928	76.9%
Induced labour	520	21.1%	523	21.7%

Missing data on onset of labour in 3 (0.1%) in 1999

USE OF TOCOLYTIC

	1999		2004	
Not used	2365	95.7%	2380	94.2%
<i>With history of threatened preterm labour</i>	-	-	357	15.0%
<i>Without history of threatened preterm labour</i>	-	-	2023	85.0%
Used	107	4.3%	147	5.8%
<i>With history of threatened preterm labour</i>	-	-	85	57.8%
<i>Without history of threatened preterm labour</i>	-	-	62	42.2%

USE OF STEROID

	1999		2004	
Not used	392	15.9%	2244	88.8%
<i>With tocolytic</i>	15	68.2%	28	0.2%
<i>Without tocolytic</i>	7	31.8%	2216	99.8%
Used	22	0.9%	283	11.2%
<i>With tocolytic</i>	15	68.2%	119	42.0%
<i>Without tocolytic</i>	7	31.8%	163	58.0%

Missing data on use of steroid in 2058 (83.2%) in 1999

USE OF STEROID IN THOSE WITH GESTATION AT DELIVERY \leq 34 WEEKS

	1999		2004	
Not used	-	-	836	76.2%
<i>With tocolytic</i>	-	-	27	3.2%
<i>Without tocolytic</i>	-	-	809	96.8%
Used	-	-	261	23.8%
<i>With tocolytic</i>	-	-	115	44.1%
<i>Without tocolytic</i>	-	-	146	55.9%

GESTATION AT DELIVERY FOR THOSE HAVING TOCOLYTIC TREATMENT

	1999		2004	
< 26 weeks	17	15.9%	12	8.1%
26 - 28 weeks	20	18.7%	22	14.9%
29 - 32 weeks	32	29.9%	57	38.5%
33 - 36 weeks	34	31.8%	38	25.7%
37 - 41 weeks	4	3.7%	10	12.8%
\geq 42 weeks	0	0.0%	0	0.0%

FETAL OUTCOME

	1999		2004	
Alive at 28 days	2323	93.8%	2563	96.0%
Stillbirths	110	4.4%	73	2.7%
Neonatal deaths	38	1.5%	34	1.3%

FETAL OUTCOME IN THOSE LIVE BIRTHS DELIVERED AT GESTATION \leq 34 WEEKS

	Alive at 28 days		Neonatal death		Total	
No use of steroid or tocolytic	790	97.4%	21	2.6%	811	(71.5%)
Use of steroid only	160	95.8%	7	4.2%	167	(14.7%)
Use of tocolytic only	28	96.6%	1	3.4%	26	(2.3%)
Use of both steroid and tocolytic	125	97.7%	3	2.3%	128	(11.3%)
Total	1103	97.2%	32	2.8%	1135	100.0%

Percentage in bracket refers to that of the total population

THREATENED PRETERM LABOUR

Of all the reported threatened preterm labour, tocolytic therapy was used in only 19.2% and steroid was used in 27.6%. Almost 90% delivered < 37 weeks. Despite the use of tocolytics, those pregnancies with threatened preterm labour were 3 times more likely to deliver before 33 weeks. There was however no difference in the survival rate at 28 days.

	Use of Tocolytic				Total	
	No		Yes			
TOTAL INCIDENCE	357		85		442	0.9%
<i>Singleton</i>	326	91.3%	75	88.2%	401	90.7%
<i>Multiple</i>	31	8.7%	10	11.8%	41	9.3%

ONSET OF LABOUR

	Use of Tocolytic				Total	
	No		Yes			
Spontaneous	264	73.9%	63	74.1%	327	74.0%
Induced labour	37	10.4%	2	2.4%	39	8.8%
No labour	56	15.7%	20	23.5%	76	17.2%

USE OF STEROID

	Use of Tocolytic				Total	
	No		Yes			
Not used	305	85.4%	15	17.6%	320	72.4%
Used	52	14.6%	70	82.4%	122	27.6%

GESTATION AT DELIVERY

	Use of Tocolytic				Total	
	No		Yes			
< 26 weeks	11	3.1%	7	8.3%	18	4.1%
26 - 28 weeks	17	4.8%	12	14.3%	29	6.6%
29 - 32 weeks	41	11.5%	29	34.5%	70	15.9%
33 - 36 weeks	253	71.1%	19	22.6%	272	61.8%
37 - 41 weeks	32	9.0%	17	20.2%	49	11.1%
\geq 42 weeks	2	0.6%	0	0.0%	2	0.5%

Missing data on gestation at delivery in 2

FETAL OUTCOME

	Use of Tocolytic				Total	
	No		Yes			
Alive at 28 days	381	97.9%	93	97.9%	474	97.9%
Stillbirths	2	0.5%	1	1.1%	3	0.6%
Neonatal deaths	6	1.5%	1	1.1%	7	1.4%

FETAL OUTCOME IN THOSE LIVE BIRTHS DELIVERED AT GESTATION \leq 34 WEEKS

	Alive at 28 days		Neonatal death		Total	
No use of steroid or tocolytic	112	98.2%	2	1.8%	114	(49.8%)
Use of steroid only	43	93.5%	3	6.5%	46	(20.0%)
Use of tocolytic only	7	100.0%	0	0.0%	7	(3.1%)
Use of both steroid and tocolytic	61	98.4%	1	1.6%	62	(27.1%)
Total	223	97.4%	6	2.6%	229	100.0%

Percentage in bracket refers to that of the total population

PRE-TERM DELIVERY

The incidence of preterm delivery (<37 completed weeks) increased from 5.7% to 6.7%. For singleton pregnancy, the incidence increased from 5.1% in 1994 to 5.9% in 1999 and 6.2% in 2004. Similar figures for twin pregnancy were 36.1%, 45.2% and 50.2% and for triplet pregnancy were 86.7%, 93.3% and 88.9%.

The proportion of preterm delivery occurring at gestation < 33 weeks was 20% in 1994, 22.8% in 1999 and 18.6% in 2004. The proportion of very low birth weight (< 1500 gm) was 13.9% in 1994, 15.1% in 1999 and 12.0% in 2004. Despite the increasing incidence, the incidence of respiratory distress syndrome decreased from 3.5% to 0.5%. The stillbirth and neonatal mortality rates decreased from 4.1% to 2.2% and 3.0% to 1.5% respectively.

	1994		1999		2004	
TOTAL INCIDENCE	3574	5.7%	3046	6.3%	3292	6.7%
<i>Singleton</i>	3382	94.6%	2838	93.2%	3019	91.7%
<i>Twin</i>	179	5.0%	194	6.4%	265	8.0%
<i>Triplet or above</i>	13	0.3%	14	0.5%	8	0.2%

PARITY OF THE PATURIENTS

	1994		1999		2004	
Para 0	1875	52.5%	1687	55.4%	1885	57.3%
Para 1	1188	33.2%	966	31.7%	1061	32.2%
Para 2	373	10.4%	290	9.5%	251	7.6%
Para 3 & above	136	3.8%	103	3.4%	95	2.9%

MATERNAL AGE

	1994		1999		2004	
< 20 years	141	3.9%	51	1.7%	58	1.8%
20 - 24 years	542	15.2%	284	9.3%	299	9.1%
25 - 29 years	1026	28.7%	656	21.5%	711	21.6%
30 - 34 years	1210	33.9%	985	32.3%	1124	34.1%
35 - 39 years	536	15.0%	801	26.3%	793	24.1%
≥ 40 years	96	2.7%	254	8.3%	245	7.5%
Missing data	23	0.6%	15	0.5%	62	1.9%

ASSOCIATED ANTENATAL COMPLICATIONS

	1994		1999		2004	
Antepartum haemorrhage	324	9.1%	363	11.1%	343	10.4%
<i>Placenta praevia</i>	147	46.4%	136	37.5%	120	35.0%
<i>Placenta abruptio</i>	62	19.1%	45	12.4%	34	9.9%
<i>APH of unknown origin</i>	109	33.7%	170	46.8%	176	51.3%
<i>Other causes</i>	6	1.9%	12	3.3%	13	3.8%
Diabetes mellitus (including IGT)	176	4.9%	254	7.8%	292	9.9%
Hypertension	264	7.4%	211	6.5%	306	9.3%
<i>Mild</i>	124	44.0%	97	31.8%	92	30.1%
<i>Severe</i>	140	56.0%	134	68.2%	162	52.9%
<i>Unclassified</i>	0	0.0%	0	0.0%	52	17.0%
Anaemia	251	7.0%	197	6.0%	135	4.1%
Cardiac diseases	30	0.8%	46	1.4%	39	1.2%
Surgical diseases	12	0.3%	23	0.7%	23	0.7%
Other medical diseases	107	3.0%	187	5.7%	163	5.0%

PRESENTATION AND LIE AT DELIVERY

	1994		1999		2004	
Vertex	3280	86.8%	2638	80.7%	3002	84.0%
Breech	413	10.9%	440	13.5%	505	14.1%
Brow	0	0.0%	0	0.0%	0	0.01%
Face	4	0.1%	0	0.0%	3	0.08%
Oblique lie	11	0.3%	9	0.3%	4	0.1%
Transverse lie	52	1.4%	53	1.6%	41	1.1%
Compound	3	0.1%	5	0.2%	3	0.08%
Others	8	0.2%	15	0.5%	16	0.4%

Missing data on presentation in 8 (0.2%) in 1994 and 108 (3.3%) in 1999

ONSET OF LABOUR

	1994		1999		2004	
Spontaneous	2548	71.3%	1918	58.7%	1893	57.5%
Induced labour	420	11.8%	513	15.7%	519	15.8%
No labour	604	16.9%	834	25.5%	880	26.7%

Missing data on mode of onset of labour in 2(0.1%) in 1994 and 3 (0.1%) in 1999

MODE OF DELIVERY FOR EACH BABY

	1994		1999		2004	
Spontaneous vertex delivery	2137	56.5%	1590	48.8%	1697	47.5%
Vacuum extraction	240	6.4%	191	5.8%	172	4.8%
Forceps delivery	110	2.9%	70	2.1%	45	1.3%
Vaginal breech delivery	160	4.2%	109	3.3%	66	1.8%
LSCS before labour	654	17.3%	1214	37.1%	1009	28.2%
LSCS after labour	476	12.6%			556	15.6%
Classical Caesarean section	-	-	26	0.8%	28	0.8%
Others/Unknown	2	0.1%	68	2.1%	0	0.0%

Caesarean section data in 1994 included both lower segment and classical Caesarean section

BIRTH WEIGHT AT DELIVERY

	1994		1999		2004	
< 500 gm	13	0.3%	57	1.7%	17	0.5%
500 - 999 gm	200	5.3%	179	5.5%	164	4.6%
1000 - 1499 gm	315	8.3%	257	7.9%	245	6.9%
1500 - 1999 gm	477	12.6%	449	13.7%	505	14.1%
2000 - 2499 gm	1016	26.9%	926	28.3%	1037	29.0%
2500 - 2999 gm	1186	31.5%	976	30.0%	1132	31.7%
3000 - 3499 gm	456	12.1%	347	10.6%	402	11.2%
3500 - 3999 gm	93	2.5%	60	1.8%	56	1.6%
≥ 4000 gm and above	12	0.3%	14	0.4%	11	0.3%
Unknown	11	0.2%	3	0.1%	5	0.1%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	3506	92.8%	3102	94.9%	3450	96.5%
Stillbirths	156	4.1%	115	3.5%	79	2.2%
Neonatal deaths	115	3.0%	50	1.5%	45	1.3%
Unknown outcome	2	0.1%	1	0.03%	0	0.0%

OTHER NEONATAL COMPLICATIONS

	1994		1999		2004	
Low Apgar score at birth						
Apgar score 0-3 at 1 minute	188	5.0%	252	7.7%	136	3.8%
Apgar score 4-6 at 1 minute	530	14.0%	425	13.0%	404	11.3%
Apgar score 0-3 at 5 minutes	62	1.6%	172	5.3%	80	2.2%
Apgar score 4-6 at 5 minutes	102	2.7%	68	2.1%	46	1.3%
Admission to neonatal ICU	653	17.3%	1321	40.4%	1729	48.4%
Respiratory distress syndrome	134	3.5%	68	2.1%	17	0.5%
Major congenital abnormalities	176	4.7%	65	2.0%	31	0.9%
Major infection	47	1.2%	42	1.3%	3	0.08%
Intraventricular haemorrhage	23	0.6%	32	1.0%	0	0.0%
Necrotising enterocolitis	17	0.4%	14	0.4%	3	0.08%
Birth trauma	92	2.4%	13	0.4%	8	0.2%

POST-TERM DELIVERY

The incidence of post-term delivery (≥ 42 completed weeks) decreased from 5.3% in 1994 to 2.5% in 1999 and 1.4% in 2004. The significant drop was related to the widespread practice of performing dating ultrasound scan and the practice of induction of labour by 41 weeks instead of 42 weeks. Induction of labour was performed in 41.1% in 1994, 53.2% in 1999 and 34.5% in 2004, and the rate of caesarean delivery increased from 17.4% to 25.9%. The incidence of birthweight ≥ 4000 gm remained at 10%. Although the incidence of low Apgar score and other major neonatal complications remained low, the admission to neonatal ICU rate increased from 2.8% to 23.9%.

	1994		1999		2004	
TOTAL INCIDENCE	3488	5.2%	1193	2.5%	673	1.4%
Singleton	3485	99.9%	1191	99.8%	672	99.9%
Twin	3	0.1%	1	0.1%	1	0.1%
Triplet or above	0	0.0%	1	0.1%	0	0.0%

PARITY OF THE PATURIENTS

	1994		1999		2004	
Para 0	1800	51.7%	661	55.4%	406	60.3%
Para 1	1169	33.5%	387	32.4%	225	33.4%
Para 2	385	11.0%	108	9.1%	29	4.3%
Para 3 & above	134	3.8%	37	3.1%	13	1.9%

MATERNAL AGE

	1994		1999		2004	
< 20 years	82	2.4%	14	1.2%	5	0.7%
20 - 24 years	711	20.4%	150	12.6%	146	21.7%
25 - 29 years	1345	38.5%	411	34.5%	248	36.8%
30 - 34 years	1050	30.0%	375	31.4%	163	24.2%
35 - 39 years	260	7.5%	197	16.5%	95	14.1%
≥ 40 years	30	0.9%	42	3.5%	15	2.2%
Missing data	10	0.3%	4	0.3%	1	0.1%

ASSOCIATED ANTENATAL COMPLICATIONS

	1994		1999		2004	
Antepartum haemorrhage	23	0.7%	7	0.6%	2	0.3%
<i>Placenta praevia</i>	3	13.0%	3	42.9%	0	0.0%
<i>Placenta abruptio</i>	4	17.3%	0	0.0%	0	0.0%
<i>APH of unknown origin</i>	1	4.3%	4	57.1%	2	0.3%
<i>Other causes</i>	15	65.2%	0	0.0%	0	0.0%
Diabetes mellitus (including IGT)	44	1.3%	35	2.9%	14	2.1%
Hypertension	56	1.6%	10	0.8%	11	1.6%
<i>Mild</i>	51	91.1%	4	40.0%	5	45.5%
<i>Severe</i>	5	8.9%	6	60.0%	2	18.2%
<i>Unclassified</i>	0	0.0%	0	0.0%	4	36.4%
Anaemia	281	8.1%	96	8.0%	25	3.7%
Cardiac diseases	19	0.5%	-	-	3	0.4%
Surgical diseases	10	0.3%	-	-	0	0.0%
Other medical diseases	50	1.5%	-	-	14	2.1%

PRESENTATION AND LIE AT DELIVERY

	1994		1999		2004	
Vertex	3432	98.3%	1146	95.8%	663	98.4%
Breech	51	1.5%	24	2.0%	11	1.6%
Brow	0	0.0%	1	0.1%	0	0.0%
Face	3	0.1%	1	0.1%	0	0.0%
Oblique lie	3	0.1%	1	0.1%	0	0.0%
Transverse lie	1	0.03%	0	0.0%	0	0.0%
Compound	0	0.0%	0	0.0%	0	0.0%
Others	1	0.03%	0	0.0%	0	0.0%

Missing data on presentation and lie in 23 (1.9%) in 1999

MODE OF ONSET OF LABOUR

	1994		1999		2004	
Spontaneous	1928	55.3%	493	41.3%	402	59.7%
Induced labour	1433	41.1%	635	53.2%	232	34.5%
No labour	127	3.6%	64	5.4%	39	5.8%

Missing data on onset of labour in 1 (0.1%) in 1999

MODE OF DELIVERY FOR EACH BABY

	1994		1999		2004	
Spontaneous vertex delivery	2323	66.5%	701	58.6%	430	63.8%
Vacuum extraction	480	13.7%	166	13.9%	61	9.1%
Forceps delivery	72	2.1%	18	1.5%	7	1.0%
Vaginal breech delivery	6	0.2%	2	0.2%	1	0.1%
LSCS before labour	123	3.5%			39	5.8%
LSCS after labour	486	13.9%	309	25.8%	135	20.0%
Classical Caesarean section	-	-			1	0.1%
Others/Unknown	1	0.03%	0	0.0%	0	0.0%

Caesarean section data in 1994 included both lower segment and classical Caesarean section

BIRTH WEIGHT AT DELIVERY

	1994		1999		2004	
< 500 gm	0	0.0%	0	0.0%	1	0.1%
500 - 999 gm	0	0.0%	0	0.0%	1	0.1%
1000 - 1499 gm	1	0.03%	0	0.0%	0	0.0%
1500 - 1999 gm	2	0.1%	5	0.4%	1	0.1%
2000 - 2499 gm	34	1.0%	23	1.9%	15	2.2%
2500 - 2999 gm	490	14.0%	165	13.8%	108	16.0%
3000 - 3499 gm	1540	44.1%	487	40.7%	302	44.8%
3500 - 3999 gm	1093	31.3%	392	32.8%	182	27.0%
≥ 4000 gm	328	9.4%	124	10.4%	64	9.5%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	3477	99.5%	1192	99.7%	672	99.7%
Stillbirths	6	0.2%	1	0.1%	1	0.1%
Neonatal deaths	6	0.2%	3	0.3%	1	0.1%
Unknown outcome	2	0.1%	0	0.0%	0	0.0%

OTHER NEONATAL COMPLICATIONS

	1994		1999		2004	
Low Apgar score at birth						
Apgar score <7 at 1 minute	208	6.0%	84	7.0%	30	4.5%
Apgar score <7 at 5 minutes	21	0.6%	6	0.5%	5	0.7%
Admission to neonatal ICU	98	2.8%	200	16.7%	161	23.9%
Major congenital abnormalities	35	1.0%	16	1.3%	1	0.1%
Major infection	26	0.7%	-	-	1	0.1%
Respiratory distress syndrome	1	0.03%	0	0.0%	0	0.0%
Birth trauma	16	0.5%	6	0.5%	4	0.5%

INDUCTION OF LABOUR

The overall rate of induction of labour increased from 12.5% in 1994 to 18.4% in 2004. Over 99% of the inductions were carried out in singleton pregnancy, while the induction rate in multiple pregnancy dropped by 50%. Prelabour rupture of membranes remained the most common indication, accounting for about 30%.

Prolonged pregnancy was the second most common indication for induction. However, the data was not strictly comparable as there was a change in the coding of this term in the 3 audits. In 1994, 'pastterm' was used which should imply a gestation ≥ 42 weeks. In 1999, 'postterm/postmaturity' was used which again should mainly imply a gestation ≥ 42 weeks. In 2004, the term 'prolonged pregnancy' with a clear specification of gestation ≥ 41 weeks was used. According to the data on post-term delivery, the term actually included those with gestation ≥ 42 weeks in only 56.5% (1433/2535) in 1994, 32.2% (635/1972) in 1999 and 10.7% (232/2160) in 2004.

There was a significant decrease in the induction for hypertension, intrauterine deaths, social reasons and intrauterine growth restriction (IUGR) while that for suboptimal cardiotocography increased. For those undergoing induction of labour, 75-79% delivered vaginally. Post-partum haemorrhage rate remained at 4%. The rate of uterine rupture and hysterectomy remained very low.

	1994		1999		2004	
TOTAL INCIDENCE	8463	12.5%	8515	17.6%	9025	18.4%
<i>Singleton</i>	8371	98.9%	8442	99.1%	8976	99.5%
<i>Multiple</i>	92	1.1%	73	0.9%	49	0.5%

PARITY OF THE PATIENTS

	1994		1999		2004	
Para 0	5508	65.1%	5480	64.4%	5903	65.4%
Para 1	2125	25.1%	2284	26.8%	2379	26.4%
Para 2	625	7.4%	582	6.8%	586	6.5%
Para 3 & above	204	2.4%	169	2.0%	157	1.7%

INDICATIONS (each pregnancy might have more than 1 indication)

	1994		1999		2004	
Prelabour rupture of membranes	2491	29.4%	2471	29.0%	2796	31.0%
Prolonged pregnancy (≥ 41 weeks) *	2535	30.0%	1972	23.2%	2160	23.9%
Diabetes mellitus (including IGT)	449	5.3%	563	6.6%	426	4.7%
Suboptimal cardiotocography	332	3.9%	557	6.5%	662	7.3%
Antepartum haemorrhage	317	3.7%	516	6.1%	377	4.2%
Hypertension	749	9.4%	445	5.2%	323	3.6%
Social reasons	371	4.4%	293	3.4%	230	2.5%
Suspected IUGR/IUGR	333	3.9%	284	3.3%	241	2.7%
Intra-uterine death	109	1.3%	88	1.0%	53	0.6%
Bad obstetric history	62	0.7%	52	0.6%	51	0.6%
Multiple pregnancy	64	0.8%	37	0.4%	36	0.4%
Maternal disease	41	0.5%	31	0.4%	38	0.4%
Fetal anomaly	38	0.4%	20	0.2%	20	0.2%
Others	687	8.1%	1362	16.0%	1613	17.6%

Missing data on indication in 381 (4.5%) in 1999

*Different terminology was used in different audit

MODE OF DELIVERY FOR EACH BABY

	1994		1999		2004	
Spontaneous vertex delivery	4593	53.7%	4688	54.6%	5441	60.0%
Vacuum extraction	1765	20.7%	1517	17.7%	1220	13.4%
Forceps delivery	294	3.4%	215	2.5%	122	1.3%
Vaginal breech delivery	58	0.7%	42	0.5%	22	0.2%
LSCS	1833	21.4%	2123	24.7%	2268	25.0%
Classical Caesarean section	-	-	1	0.01%	2	0.02%
Others/Unknown	12	0.1%	2	0.02%	0	0.0%

Caesarean section data in 1994 included both lower segment and classical Caesarean section

MATERNAL COMPLICATIONS

	1994		1999		2004	
Postpartum haemorrhage	354	4.2%	345	4.1%	349	3.9%
Puerperal pyrexia	264	3.1%	-	-	78	0.9%
Hysterectomy	4	0.05%	7	0.08%	3	0.03%
Uterine rupture	0	0.0%	0	0.0%	2	0.02%
Maternal death	3	0.04%	1	0.01%	1	0.01%
Preterm labour (<37 weeks)	420	5.0%	471	5.5%	519	5.7%
<i>Singleton</i>	402	95.7%	453	96.2%	508	97.9%
<i>Multiple</i>	18	4.3%	18	3.8%	11	2.1%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	8384	98.1%	8468	98.6%	8999	99.2%
Stillbirths	130	1.5%	100	1.2%	63	0.7%
Neonatal deaths	25	0.3%	15	0.2%	13	0.1%
Unknown outcome	8	0.1%	4	<0.05%	0	0.0%
Low birth weights (< 2500 gm)	642	7.5%	572	6.7%	558	6.1%
<i>Singleton</i>	567	88.3%	513	89.7%	521	93.4%
<i>Multiple</i>	75	11.7%	59	10.3%	37	6.6%
Macrosomia (> 4000 gm)	389	4.6%	435	5.1%	481	5.3%
Apgar score < 4 at 1 minute	63	0.7%	48	0.6%	74	0.8%
Apgar score < 4 at 5 minutes	28	0.3%	10	0.1%	54	0.6%

AUGMENTATION OF LABOUR

There was a reduction in the rate of augmentation of labour from 32.2% in 1999 to 22.7% in 2004, which was higher than the 19.3% in 1994. Vaginal delivery rate following augmentation of labour remained 86-89%. Post-partum haemorrhage rate reduced from 4.4% to 2.7%. The rate of uterine rupture and hysterectomy remained very low.

	1994		1999		2004	
TOTAL INCIDENCE	13126	19.3%	15610	32.2%	11157	22.7%
Singleton	13059	99.5%	15547	99.6%	11128	99.7%
Multiple	67	0.5%	63	0.4%	29	0.3%

No information on augmentation of labour in 32 (0.1%) in 1999

PARITY OF THE PATIENTS

	1994		1999		2004	
Para 0	8549	65.1%	8974	57.5%	6805	61.0%
Para 1	3440	26.2%	5011	32.1%	3425	30.7%
Para 2	876	6.7%	1274	8.2%	732	6.6%
Para 3 & above	261	2.0%	351	2.2%	195	1.7%

MODE OF ONSET OF LABOUR

	1994		1999		2004	
Spontaneous	11807	89.9%	14597	93.5%	10199	91.4%
Induced labour	1282	9.8%	1011	6.5%	938	8.4%

Missing data on mode of onset of labour in 2 (<0.05%) in 1999 and 20 were reported to have no labour in 2004

MODE OF DELIVERY FOR EACH BABY

	1994		1999		2004	
Spontaneous vertex delivery	7671	58.2%	10627	67.9%	7777	69.5%
Vacuum extraction	3210	24.3%	2858	18.2%	1908	17.1%
Forceps delivery	382	2.9%	335	2.1%	119	1.1%
Vaginal breech delivery	67	0.5%	45	0.3%	14	0.1%
LSCS before labour					12	0.1%
LSCS after labour	1854	14.1%	1809	11.5%	1356	12.1%
Others/Unknown	9	0.07%	0	0.0%	0	0.0%

Caesarean section data in 1994 included both lower segment and classical Caesarean section

MATERNAL COMPLICATIONS

	1994		1999		2004	
Postpartum haemorrhage	578	4.4%	573	3.7%	302	2.7%
Puerperal pyrexia	224	1.7%	-	-	50	0.4%
Hysterectomy	6	0.05%	0	0.0%	2	0.02
Uterine rupture	2	0.02%	1	0.006%	1	0.009%
Maternal death	-	-	2	0.01%	0	0.0%
Preterm labour (<37 weeks)	418	3.2%	510	3.3%	427	3.8%
<i>Singleton</i>	401	95.9%	485	95.1%	415	97.2%
<i>Multiple</i>	17	4.1%	25	4.9%	12	2.8%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	13154	99.7%	15643	99.8%	11165	99.8%
Stillbirths	18	0.1%	24	0.2%	17	0.2%
Neonatal deaths	9	0.1%	6	0.04%	4	0.04%
Low birth weights (< 2500 gm)	492	3.7%	533	3.4%	372	3.3%
<i>Singleton</i>	439	89.5%	472	88.6%	348	93.5%
<i>Multiple</i>	53	10.5%	61	11.4%	24	6.5%
Macrosomia (> 4000 gm)	460	3.5%	529	3.4%	409	3.7%
Apgar score < 4 at 1 minute	52	0.4%	32	0.2%	24	0.2%
Apgar score < 4 at 5 minutes	15	0.1%	4	0.03%	10	0.1%

Missing data on fetal outcome in 1 (<0.05%) in 1999

EPIDURAL ANALGESIA & ANAESTHESIA

Epidural analgesia/anaesthesia rate during labour or delivery increased from 4.2% in 1994 to 11.5% in 1999, and dropped back to 8.4% in 2004. Spontaneous delivery rate increased from 28.4% to 41.7% while instrumental delivery rate decreased from 34.7% to 26.2%. Although the incidence of hypertension in this group dropped from 10.9% in 1994 to 4.8% in 1999 and increased to 7.5% in 2004, the proportion of parturients with hypertension receiving treatment were 15.6%, 28.1% and 24.6% respectively.

Spontaneous vaginal delivery rate increased from 28.4% to 41.7% while instrumental delivery rate decreased from 34.7% to 26.1%. The epidural rate for caesarean section after labour remained at 25-30% while that for caesarean section before labour decreased from 10.5% to only 1.7%. The reason for the dramatic drop in the latter was not clear and may be related to the more frequent use of spinal anaesthesia. Post-partum haemorrhage rate dropped from 6.9% to 3.9%.

	1994		1999		2004	
TOTAL INCIDENCE	2833	4.2%	5561	11.5%	4111	8.4%
<i>Singleton</i>	2761	97.5%	5491	98.7%	4055	98.6%
<i>Multiple</i>	72	2.5%	70	1.3%	56	1.4%

PARITY OF THE PATURIENTS

	1994		1999		2004	
Para 0	2093	73.9%	4483	80.6%	3318	80.7%
Para 1	589	20.8%	901	16.2%	654	15.9%
Para 2	125	4.4%	138	2.5%	112	2.7%
Para 3 & above	26	0.9%	39	0.7%	27	0.7%

ANTENATAL COMPLICATIONS

	1994		1999		2004	
Diabetes mellitus (including IGT)	198	7.0%	522	9.4%	391	9.5%
Hypertension	308	10.9%	266	4.8%	307	7.5%
Anaemia	287	10.1%	349	6.3%	177	4.3%
Antepartum haemorrhage	90	3.2%	144	2.6%	116	2.8%
Cardiac diseases	49	1.7%	84	1.5%	44	1.1%
Other medical/surgical complications	132	4.8%	321	5.8%	761	18.5%
Previous Caesarean section	-	-	-	-	140	3.4%

MODE OF ONSET OF LABOUR

	1994		1999		2004	
Spontaneous	1371	48.4%	2794	50.3%	1909	46.4%
Induced labour	1165	41.1%	2679	48.2%	2131	51.8%
No labour	297	10.5%	86	1.5%	71	1.7%

Missing data on mode of onset of labour in 2 (<0.05%) in 1999

MODE OF DELIVERY FOR EACH BABY

	1994		1999		2004	
Spontaneous vertex delivery	825	28.4%	2177	38.7%	1738	41.7%
Vacuum extraction	793	27.3%	1396	24.8%	958	23.0%
Forceps delivery	214	7.4%	289	5.1%	131	3.1%
Vaginal breech delivery	36	1.2%	29	0.5%	15	0.4%
LSCS before labour	306	10.5%	88	1.6%	72	1.7%
LSCS after labour	729	25.1%	1649	29.3%	1254	30.1%
Classical Caesarean section	-	-	-	-	0	0.0%

LSCS data in 1994 and 1999 included both lower segment and classical caesarean section

MATERNAL COMPLICATIONS

	1994		1999		2004	
Postpartum haemorrhage	196	6.9%	257	4.6%	162	3.9%
Uterine rupture	1	0.04%	2	0.04%	2	0.05%
Maternal death	-	-	-	-	0	0.0%
Preterm labour (<37 weeks)	158	5.6%	245	4.4%	230	5.6%
<i>Singleton</i>	137	86.7%	221	90.2%	207	90.0%
<i>Multiple</i>	21	13.3%	24	9.8%	23	10.0%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	2892	99.6%	5603	99.6%	4147	99.5%
Stillbirths	7	0.2%	23	0.4%	15	0.4%
Neonatal deaths	5	0.2%	2	0.04%	6	0.1%
Low birth weights (<2500 gm)	233	8.0%	281	5.1%	251	6.0%
<i>Singleton</i>	167	71.7%	215	76.5%	193	76.9%
<i>Multiple</i>	66	28.3%	66	23.5%	58	23.1%
Macrosomia (>4000 gm)	143	4.9%	268	4.8%	198	4.8%
Apgar score < 4 at 1 minute	26	0.9%	35	0.6%	26	0.6%
Apgar score < 4 at 5 minutes	10	0.3%	3	0.1%	13	0.3%

DURATION OF LABOUR

The mean duration of labour in 2004 was 5.6 hours (SD 3.8) and this was similar to the 5.7 hours in 1999 and 5.1 hours in 1994. The proportion of labour lasting longer than 12 hours increased from 4.1% to 5.5%, but the caesarean section rate in this group reduced from 29.9% to 23.2%.

The mean duration of labour was longer in those undergoing induction (5.8 ± 4.0 hrs) than those with spontaneous labour (5.5 ± 3.8 hrs). Nulliparous women (6.9 ± 4.1 hrs) had a long duration of labour than multiparous women (3.9 ± 2.8). Parturients having epidural analgesia had longer duration of labour (9.2 ± 5.0 hrs). The same pattern was seen in all 3 audits.

DISTRIBUTION OF DURATION OF LABOUR BY MODE OF LABOUR ONSET (in hours)

Hours	Spontaneous labour		Induced labour		Total	
	N	%	N	%	N	%
Missing	1249	4.0%	126	1.4%	1375	3.4%
0	1201	3.8%	1056	11.7%	2257	5.6%
1	1711	5.5%	628	7.0%	2339	5.8%
2	3915	12.5%	1039	11.5%	4954	12.3%
3	4363	13.9%	983	10.9%	5346	13.3%
4	4229	13.5%	985	10.9%	5214	12.9%
5	3289	10.5%	779	8.6%	4068	10.1%
6	2989	9.5%	743	8.2%	3732	9.3%
7	1898	6.1%	527	5.8%	2425	6.0%
8	1699	5.4%	496	5.5%	2195	5.4%
9	1120	3.6%	371	4.1%	1491	3.7%
10	954	3.0%	339	3.8%	1293	3.2%
11	641	2.0%	238	2.6%	879	2.2%
12	532	1.7%	226	2.5%	758	1.9%
13-24	1483	4.7%	476	5.3%	1959	4.9%
> 24	46	0.1%	13	0.1%	59	0.1%
Total	31319		9025		40344	

DISTRIBUTION OF DURATION OF LABOUR BY PARITY (in hours)

Hours	Para 0		Para 1		Para2+		Total	
Missing	891	3.9%	394	2.9%	90	2.5%	1375	3.4%
0	1662	7.2%	473	3.5%	122	3.4%	2257	5.6%
1	419	1.8%	1436	10.5%	484	13.3%	2339	5.8%
2	1449	6.3%	2649	19.4%	856	23.5%	4954	12.3%
3	2101	9.1%	2571	18.8%	674	18.5%	5346	13.3%
4	2610	11.3%	2098	15.3%	506	13.9%	5214	12.9%
5	2384	10.4%	1352	9.9%	332	9.1%	4068	10.1%
6	2517	10.9%	1000	7.3%	215	5.9%	3732	9.3%
7	1766	7.7%	535	3.9%	124	3.4%	2425	6.0%
8	1721	7.5%	387	2.8%	87	2.4%	2195	5.4%
9	1186	5.2%	253	1.8%	52	1.4%	1491	3.7%
10	1085	4.7%	170	1.2%	38	1.0%	1293	3.2%
11	762	3.3%	96	0.7%	21	0.6%	879	2.2%
12	664	2.9%	78	0.6%	16	0.4%	758	1.9%
13-24	1766	7.7%	171	1.3%	22	0.6%	1959	4.9%
> 24	43	0.2%	15	0.1%	1	0.02%	59	0.1%
Total	23026		13678		3640		40344	

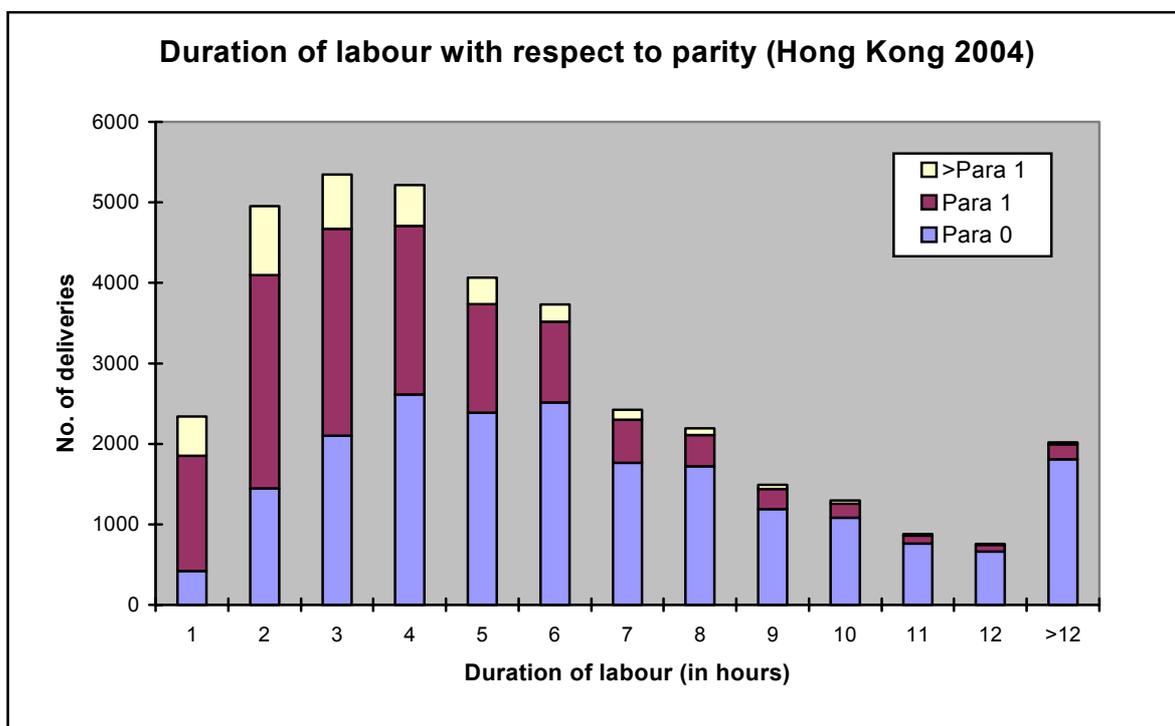


Figure O5 – Duration of labour with respect to parity

MEAN DURATION OF LABOUR (in hours)

	1994		1999		2004	
	N	Mean±SD	N	Mean±SD	N	Mean±SD
All parturients*	56059	5.1±3.6	38229	5.7±3.9	36712	5.6±3.8
Effect of onset of labour						
Spontaneous	48064	5.0±3.5	30636	5.6±3.6	28869	5.5±3.8
Induced	7914	5.5±3.9	7563	6.1±4.1	7843	5.8±4.0
Effect of parity						
Para 0	30034	6.3±3.8	20451	7.1±4.1	20473	6.8±4.1
Para 1	18792	3.9±2.7	16982	3.3±3.1	12811	4.0±2.8
Para 2 & above	7229	3.5±2.6	5378	3.2±2.7	3428	3.6±2.5
With epidural analgesia	2453	8.8±4.6	4991	9.5±4.7	3420	9.2±5.0

*Those parturients with no information on duration of labour were excluded

PARTURIENTS WITH DURATION OF LABOUR OVER 12 HOURS

	1994		1999		2004	
Incidence						
of all pregnancies	2300	3.4%	2280	4.7%	2018	4.1%
actually in labour	2300	4.1%	2280	6.0%	2018	5.5%
Parity						
Nulliparous	2020	87.8%	2021	88.6%	1809	89.6%
Multiparous	208	12.2%	259	11.4%	209	10.4%
Mode of onset of labour						
Spontaneous labour	1885	82%	1719	75.4%	1529	75.8%
Induced labour	412	17.9%	561	24.6%	489	24.2%
Mode of delivery (for the first baby)						
Spontaneous vertex delivery	844	36.7%	900	39.6%	954	47.3%
Vacuum extraction	625	27.2%	710	31.1%	532	26.4%
Forceps delivery	125	5.4%	98	4.3%	62	3.1%
Vaginal breech delivery	18	0.8%	12	0.5%	2	0.1%
Caesarean section	687	29.9%	557	24.4%	468	23.2%
Others/unknown	1	0.002%	3	0.1%	0	0%

SPONTANEOUS VERTEX DELIVERY

Spontaneous vertex delivery remained around 60% of all deliveries throughout the years. Almost half of the babies were from nulliparous women, compared with about 45% in previous years. Episiotomy was performed in 81% of the parturients, of whom 56.8% were nulliparous women. The stillbirth rate and neonatal mortality rate were comparable to the overall figures.

	1994		1999		2004	
TOTAL INCIDENCE (births)	41257	60.6%	27943	57.1%	28898	58.3%
<i>Singleton</i>	40993	99.4%	27766	99.4%	28743	99.5%
<i>Multiple</i>	264	0.6%	177	0.6%	155	0.5%

BIRTH ORDER FOR THOSE BABIES FROM MULTIPLE PREGNANCY

	1994		1999		2004	
Twins	-	-	-	-	100	
<i>First baby</i>	-	-	-	-	94	94.0%
<i>Second baby</i>	-	-	-	-	56	56.0%
Triplets	-	-	-	-	2	
<i>First baby</i>	-	-	-	-	2	100%
<i>Second baby</i>	-	-	-	-	2	100%
<i>Third baby</i>	-	-	-	-	1	50%

PARITY OF THE PATURIENTS (FOR EACH BABY)

	1994		1999		2004	
Para 0	18355	44.5%	12543	45.0%	14260	49.3%
Para 1	16192	39.2%	11250	40.4%	11431	39.6%
Para 2	5010	12.1%	3141	11.3%	2525	8.7%
Para 3 & above	1657	4.0%	941	3.3%	683	2.4%

MODE OF ONSET OF LABOUR (FOR EACH BABY)

	1994		1999		2004	
Spontaneous	36470	88.4%	23139	82.8%	23361	80.8%
Induced labour	4593	11.1%	4672	16.7%	5441	18.8%
Inconsistent or missing information	1943	0.5%	132	0.5%	96	0.4%

MATERNAL COMPLICATIONS (FOR EACH BABY)

	1994		1999		2004	
Postpartum haemorrhage	1427	3.5%	1077	3.9%	957	3.3%
Third degree tear	-	-	18	0.1%	11	0.04%
MROP	-	-	-	-	404	1.4%
Puerperal pyrexia	356	0.9%	-	-	104	0.4%
Hysterectomy	-	-	-	-	3	0.01%
Rupture of uterus	-	-	-	-	0	0.0%
Maternal death	-	-	-	-	1	0.003%
Preterm labour (<37wk)	2137	5.2%	1501	5.4%	1697	5.9%
<i>Singleton</i>	2035	96.2%	1453	5.2%	1629	96.0%
<i>Multiple</i>	102	3.8%	48	0.2%	68	4.0%
Episiotomy	-	-	-	-	23412	81.0%
<i>Nulliparous</i>	-	-	-	-	13288	56.8%
<i>Multiparous</i>	-	-	-	-	10124	43.2%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	41015	99.4%	27802	99.5%	28800	99.7%
Stillbirths	149	0.4%	101	0.4%	74	0.3%
Neonatal deaths	78	0.2%	32	0.1%	24	0.08%
Low birth weights (<2500 gm)	2244	5.4%	1506	5.4%	1454	5.0%
<i>Singleton</i>	2086	5.1%	1397	92.8%	1369	94.2%
<i>Multiple</i>	158	0.4%	109	7.2%	85	5.8%
Macrosomia (>4000 gm)	1012	2.5%	769	2.8%	840	2.9%
Apgar score < 4 at 1 minute	111	0.3%	47	0.2%	89	0.3%
Apgar score < 4 at 5 minutes	85	0.2%	18	0.1%	63	0.2%
Birth trauma	124	0.3%	95	0.3%	110	0.4%

Missing data on fetal outcome in 15 (0.04%) in 1994 and 8 (0.03%) in 1999

VACUUM EXTRACTION

Of all the deliveries, the rate of vacuum extraction decreased from 23.7% to 9.7%. About 75-78% of the babies were from nulliparous women. Prolonged second stage remained the most common indication, accounting for about 35%. The rate of fetal distress as an indication increased from 18.2% to 27.6% while that of maternal distress decreased from 24.2% to 17.6%. Episiotomy was performed in 88.6% and the rate of third degree tear decreased from 0.5% to 0.1%.

	1994		1999		2004	
TOTAL INCIDENCE (births)	9347	23.7%	6324	12.9%	4823	9.7%
<i>Singleton</i>	9279	99.3%	6271	99.2%	4795	99.4%
<i>Multiple</i>	68	0.7%	53	0.8%	28	0.6%

BIRTH ORDER FOR THOSE BABIES FROM MULTIPLE PREGNANCY

	1994		1999		2004	
Twins	-	-	-	-	20	
<i>First baby</i>	-	-	-	-	13	65%
<i>Second baby</i>	-	-	-	-	15	75%

PARITY OF THE PATURIENTS (FOR EACH BABY)

	1994		1999		2004	
Para 0	7161	76.7%	4796	75.9%	3773	78.2%
Para 1	1809	19.4%	1310	20.7%	902	18.7%
Para 2	319	3.4%	181	2.9%	117	2.4%
Para 3 & above	58	0.5%	37	0.5%	31	0.6%

MODE OF ONSET OF LABOUR (FOR EACH BABY)

	1994		1999		2004	
Spontaneous	7562	80.9%	4803	75.9%	3596	74.6%
Induced labour	1765	18.9%	1517	24.0%	1220	25.3%
Inconsistent or missing information	20	0.2%	4	0.1%	7	0.1%

INDICATIONS FOR VACUUM EXTRACTION (Each baby might have more than 1 indication)

	1994		1999		2004	
Prolonged second stage	3296	35.3%	2652	41.9%	1642	34.0%
Fetal distress	1702	18.2%	1420	22.5%	1332	27.6%
Maternal distress	2260	24.2%	1182	18.7%	847	17.6%
Maternal disease	274	2.9%	150	2.4%	86	1.8%
Previous uterine scar	115	1.2%	73	1.2%	36	0.7%
Obstetric complications	161	1.7%	28	0.4%	11	0.2%
Cord prolapse	5	0.1%	-	-	2	0.0%
Others	1353	14.5%	936	14.9%	784	16.3%

Missing data on indications for vacuum extraction in 489 (5.2%) in 1994, 248 (3.9%) in 1999, 298 (6.2%) in 2004

MATERNAL COMPLICATIONS (FOR EACH BABY)

	1994		1999		2004	
Postpartum haemorrhage	428	4.6%	296	4.7%	223	4.6%
Third degree tear	43	0.5%	13	0.2%	3	0.1%
MROP	-	-	-	-	71	1.5%
Puerperal pyrexia	119	1.3%	98	1.5%	32	0.7%
Hysterectomy	0	0.0%	4	0.1%	0	0.0%
Rupture of uterus	0	0.0%	3	0.05%	1	0.02%
Maternal death	1	0.01%	2	0.03%	0	0.0%
Preterm labour (<37 weeks)	240	2.6%	188	3.0%	172	3.6%
<i>Singleton</i>	225	93.7%	176	93.6%	164	95.3%
<i>Multiple</i>	15	6.3%	12	6.4%	8	4.7%
Episiotomy	-	-	-	-	4272	88.6%
<i>Nulliparous</i>	-	-	-	-	3388	79.3%
<i>Multiparous</i>	-	-	-	-	884	20.7%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	9325	99.8%	6315	99.9%	4820	99.9%
Stillbirths	5	0.1%	6	0.1%	1	0.02%
Neonatal deaths	7	0.1%	3	0.05%	2	0.04%
Low birth weights (<2500 gm)	281	3.0%	173	2.7%	122	2.5%
<i>Singleton</i>	252	89.7%	154	89.0%	114	93.4%
<i>Multiple</i>	29	10.3%	19	11.0%	8	6.6%
Macrosomia (>4000 gm)	284	3.0%	198	3.1%	123	2.6%
Apgar score < 4 at 1 minute	40	0.4%	31	0.5%	24	0.5%
Apgar score < 4 at 5 minutes	18	0.2%	2	0.03%	4	0.1%
Birth trauma	144	1.5%	129	2.0%	58	1.2%

FORCEPS DELIVERIES

For instrumental delivery, forceps was still performed far less common than vacuum extraction. The overall rate dropped from 2.2% to 0.9% and about 80% were nulliparous. Similar to vacuum extraction, the commonest indications were prolonged second stage, fetal distress and maternal distress. Postpartum haemorrhage and third degree laceration of the perineum were more common (5.2% and 0.4%) than in vacuum extraction (4.6% and 0.1%).

	1994		1999		2004	
TOTAL INCIDENCE (births)	1483	2.2%	867	1.8%	465	0.9%
<i>Singleton</i>	1451	97.8%	847	97.7%	447	96.1%
<i>Multiple</i>	32	2.2%	20	2.3%	18	3.9%

BIRTH ORDER FOR THOSE BABIES FROM MULTIPLE PREGNANCY

	1994		1999		2004	
Twins					13	
<i>First baby</i>	-	-	-	-	9	69.2%
<i>Second baby</i>	-	-	-	-	9	69.2%

PARITY OF THE PATURIENTS (FOR EACH BABY)

	1994		1999		2004	
Para 0	1186	79.9%	689	79.5%	384	82.6%
Para 1	248	16.7%	145	16.7%	71	15.3%
Para 2	37	2.5%	27	3.1%	8	1.7%
Para 3 & above	11	0.8%	6	0.7%	2	0.4%

MODE OF ONSET OF LABOUR (FOR EACH BABY)

	1994		1999		2004	
Spontaneous	1182	79.7%	652	75.2%	341	73.4%
Induced labour	294	19.8%	215	24.8%	122	26.2%
No informatiom	7	0.5%	0	0.0%	2	0.4%

INDICATIONS FOR FORCEPS DELIVERY (For each baby) (may be more than 1)

	1994		1999		2004	
Prolonged second stage	577	38.9%	387	44.4%	172	37.0%
Fetal distress	555	37.4%	280	32.1%	171	36.8%
Maternal distress	149	10.0%	70	8.1%	39	8.4%
Maternal disease	34	2.3%	17	2.0%	8	1.7%
Obstetric complications	26	1.8%	8	0.9%	2	0.4%
Previous uterine scar	27	1.8%	1	0.1%	1	0.2%
Cord prolapse	-	-	1	0.1%	2	0.4%
Others	154	10.4%	73	8.3%	41	8.8%

Missing data on indications for forceps delivery in 66 (4.5%) in 1994, 78 (9.0%) in 1999

MATERNAL COMPLICATIONS (FOR EACH BABY)

	1994		1999		2004	
Postpartum haemorrhage	128	8.6%	46	5.3%	24	5.2%
Third degree tear	12	0.8%	7	0.8%	2	0.4%
MROP	-	-	-	-	5	1.1%
Puerperal pyrexia	26	1.8%	19	2.2%	4	0.9%
Hysterectomy	0	0.0%	0	0.0%	0	0.0%
Rupture of uterus	0	0.0%	1	0.1%	0	0.0%
Maternal death	0	0.0%	-	-	0	0.0%
Preterm labour (<37 weeks)	110	7.4%	70	8.1%	45	9.7%
<i>Singleton</i>	101	91.8%	59	84.3%	34	75.6%
<i>Multiple</i>	9	8.2%	11	15.7%	11	24.4%
Episiotomy	-	-	-	-	419	90.1%
<i>Nulliparous</i>	-	-	-	-	352	84.0%
<i>Multiparous</i>	-	-	-	-	67	16.0%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	1481	99.9%	864	99.7%	462	99.4%
Stillbirths	1	0.1%	3	0.3%	3	0.6%
Neonatal deaths	1	0.1%	0	0.0%	0	0.0%
Low birth weights (<2500 gm)	116	7.8%	53	6.1%	37	8.0%
<i>Singleton</i>	102	87.9%	40	75.5%	22	59.5%
<i>Multiple</i>	14	12.1%	13	24.5%	15	40.5%
Macrosomia (>4000 gm)	47	3.2%	26	3.0%	14	3.0%
Apgar score < 4 at 1 minute	5	0.3%	4	0.5%	3	0.6%
Apgar score < 4 at 5 minutes	4	0.3%	0	0.0%	3	0.6%
Birth trauma	17	1.1%	22	2.5%	9	1.9%

VAGINAL BREECH DELIVERY

The overall incidence of vaginal breech delivery dropped from 0.7% to 0.2%. The proportion of babies in multiple pregnancy increased from 13.3% to 26.9% and over 90% were aftercoming babies. Nulliparity rate increased from 45.1% to 70.4%. The rate of preterm delivery increased from 31.8% to 61.1% and that of low birth weight (< 2500 gm) increased from 34.8% to 63.0%. The stillbirth rate increased from 10.0% to 24.1% while neonatal mortality remained at around 6-7%. External cephalic version was not attempted in 78.7%, compared with 86.7% in 1999.

	1994		1999		2004	
TOTAL INCIDENCE (BIRTHS)	503	0.7%	232	0.5%	108	0.2%
Singleton	436	86.7%	185	79.7%	79	73.1%
Multiple	67	13.3%	47	20.3%	29	26.9%
<i>First baby in twin</i>	8	1.6%	-	-	2	1.9%
<i>Aftercoming baby</i>	59	11.7%	-	-	27	25.0%

PARITY OF THE PARTURIENTS (For each baby)

	1994		1999		2004	
Para 0	227	45.1%	112	48.2%	50	70.4%
Para 1	196	39.0%	86	37.1%	40	20.4%
Para 2	56	11.1%	22	9.5%	9	8.3%
Para 3 & above	23	4.6%	12	5.2%	9	8.3%

EXTERNAL CEPHALIC VERSION

	1994		1999		2004	
ECV not attempted	-	-	201	86.7%	85	78.7%
ECV successful	-	-	0	0.0%	0	0.0%
ECV failed	-	-	3	1.3%	2	1.9%
Missing/Irrelevant	-	-	28	12.0%	21	19.4%

MODE OF ONSET OF LABOUR (each baby)

	1994		1999		2004	
Spontaneous onset	419	83.3%	184	79.3%	76	70.4%
Induced labour	58	11.5%	42	18.1%	22	20.4%
No labour	26	5.2%	6	2.6%	10	9.3%

MATERNAL COMPLICATIONS

	1994		1999		2004	
Postpartum haemorrhage	18	3.6%	12	5.2%	6	5.6%
Third degree tear	0	0.0%	0	0.0%	0	0.0%
Puerperal pyrexia	16	3.2%	4	1.7%	2	1.9%
Preterm labour (<37 weeks)	160	31.8%	81	34.9%	66	61.1%
<i>Singleton</i>	128	80.0%	63	77.8%	47	71.2%
<i>Multiple</i>	32	20.0%	18	22.2%	19	28.8%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	422	83.8%	178	76.7%	75	69.4%
Stillbirths	50	10.0%	37	15.9%	26	24.1%
<i>Antepartum</i>	38	76.0%	-	-	21	80.8%
<i>Intrapartum</i>	9	18.0%	-	-	1	3.8%
<i>Undetermined</i>	3	6.0%	-	-	4	15.4%
Neonatal deaths	31	6.2%	17	7.4%	7	6.5%
Low birth weight (<2500 gm)	175	34.8%	113	48.7%	68	63.0%
<i>Singleton</i>	133	76.0%	81	71.7%	48	70.6%
<i>Multiple</i>	42	24.0%	32	28.3%	20	29.4%
Macrosomia (>4000 gm)	5	1.0%	0	0.0%	0	0.0%
Apgar score < 4 at 1 minute	41	8.2%	21	10.8%	30	27.8%
Apgar score < 4 at 5 minutes	19	3.8%	12	6.2%	26	24.1%
Birth trauma	6	1.2%	1	0.4%	0	0.0%

CAESAREAN SECTION

The overall Caesarean section rate increased from 22.5% to 30.4%, over 50% were elective sections. Previous uterine scar, cephalo-pelvic disproportion, malpresentation/abnormal lie and fetal distress remained the top 4 most common indications for caesarean section while social reasons became the fifth commonest indication, replacing poor progress of labour.

The overall rate of caesarean section for social reasons increased from 2.9% to 9.8%. The rate of social reasons as the sole indication increased from 5.2% (n=681) in 1999 to 8.2% (n=1230) in 2004. Similar to 1999, 86.8% parturients were nulliparous, 24.3% aged ≥ 35 and 86.1% were section before labour. A quarter of them were not Hong Kong residents.

Caesarean section was associated with 0.1-0.2% hysterectomy rate and 0.01-0.03% maternal death ratio. Neonatal death rate was 0.1-0.3% while birth trauma occurred in 0.1-0.2%.

CAESAREAN SECTIONS (pregnancies)

	1994		1999		2004	
TOTAL PREGNANCIES	15018	22.5%	13149	27.1%	14938	30.4%
Singleton	14727	98.1%	12872	97.9%	14508	97.1%
Multiple	291	1.9%	277	2.1%	430	2.9%
<i>Twins</i>	-	-	-	-	422	98.1%
Both babies	-	-	-	-	410	97.2%
Second baby only	-	-	-	-	12	2.8%
<i>Triplets</i>	-	-	-	-	8	1.9%
All babies	-	-	-	-	7	87.5%
Third baby only	-	-	-	-	1	12.5%

CAESAREAN SECTIONS (births)

	1994		1999		2004	
TOTAL BIRTHS	15321	22.5%	13466	27.5%	15361	30.9%
Singleton	14727	96.1%	12872	95.6%	14509	94.5%
Multiple	593	3.9%	594	4.4%	852	5.5%

PARITY OF THE PARTURIENTS

	1994		1999		2004	
Para 0	9258	61.6%	7972	60.6%	9099	60.9%
Para 1	4564	30.4%	4178	31.8%	4906	32.8%
Para 2	963	6.4%	796	6.1%	789	5.3%
Para 3 & above	231	1.6%	203	1.5%	144	1.0%

Missing data on parity in 2 (<0.05%) in 1994

MODE OF ONSET OF LABOUR

	1994		1999		2004	
Spontaneous	5520	36.8%	3825	29.1%	4023	26.9%
Induced labour	1807	12.0%	2096	15.9%	2256	15.1%
No labour	7691	51.2%	7227	55.0%	8659	58.0%

Missing data on mode of onset of labour in 1 (<0.05%) in 1999

INDICATIONS FOR CAESAREAN SECTIONS (There might be more than 1 indication)

	1994		1999		2004	
Previous uterine scar	4023	26.8%	3334	25.4%	3824	25.6%
Cephalopelvic disproportion	2896	19.3%	2233	17.0%	1937	13.0%
Malpresentation / abnormal lie	2221	14.8%	1730	13.2%	1847	12.4%
Fetal distress	1879	12.5%	1526	11.6%	1393	9.3%
No progress of labour	1572	10.5%	1167	8.9%	1023	6.8%
Social reasons	419	2.8%	898	6.8%	1385	9.3%
Failed induction	482	3.2%	720	5.5%	908	6.1%
Antepartum haemorrhage/PP	582	3.9%	581	4.4%	726	4.9%
Contracted pelvis / unfavourable pelvis	1085	7.2%	573	4.4%	225	1.5%
Suspected big baby	462	3.1%	374	2.8%	241	1.6%
Hypertension	602	4.0%	373	2.8%	328	2.2%
Elderly / infertility	412	2.7%	352	2.7%	302	2.0%
Intrauterine growth retardation	217	1.4%	251	1.9%	257	1.7%
Multiple pregnancy	274	1.8%	243	1.8%	391	2.6%
Diabetes mellitus (including IGT)	225	1.5%	205	1.6%	126	0.8%
Failed instrumental delivery	191	1.3%	132	1.0%	81	0.5%
Bad obstetric history	123	0.8%	99	0.8%	63	0.4%
Genital tumour / anomaly	156	1.0%	69	0.5%	53	0.4%
Maternal diseases	115	0.8%	68	0.5%	66	0.4%
Cord prolapse / cord presentation	70	0.5%	37	0.3%	52	0.3%
Others	1228	8.2%	1613	12.3%	2399	16.1%

Missing data on indication in 271 (1.8%) in 1994, 153 (1.2%) in 1999

MATERNAL COMPLICATIONS

	1994		1999		2004	
Postpartum haemorrhage	197	1.3%	83	0.6%	94	0.6%
Uterine rupture	6	0.04%	3	0.02%	4	0.03%
Hysterectomy	27	0.2%	16	0.1%	18	0.1%
Internal iliac artery ligation	-	-	-	-	3	0.02%
Maternal death	3	0.02%	4	0.03%	2	0.01%
Puerperal pyrexia	661	4.4%	552	4.2%	157	1.1%
Preterm labour (<37 weeks)	1005	6.7%	1063	8.1%	1369	9.2%
<i>Singleton</i>	891	88.7%	928	87.3%	1144	83.6%
<i>Multiple</i>	114	11.3%	122	13.7%	225	16.4%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	15230	99.5%	13423	99.7%	15320	99.7%
Stillbirths	27	0.2%	21	0.2%	13	0.1%
Neonatal deaths	53	0.3%	17	0.1%	28	0.2%
Low birth weight (<2500 gm)	1274	8.3%	1225	9.1%	1582	10.3%
<i>Singleton</i>	961	75.6%	881	71.9%	1060	67.0%
<i>Multiple</i>	312	24.4%	344	28.1%	522	33.0%
Macrosomia (>4000 gm)	762	5.0%	743	5.5%	707	4.6%
Apgar score < 4 at 1 minute	182	1.2%	105	0.8%	104	0.7%
Apgar score < 4 at 5 minutes	29	0.2%	11	0.1%	24	0.2%
Birth trauma	38	0.2%	24	0.2%	17	0.1%

Missing data on fetal outcome in 11 (0.1%) in 1994 and 5 (<0.05%) in 1999

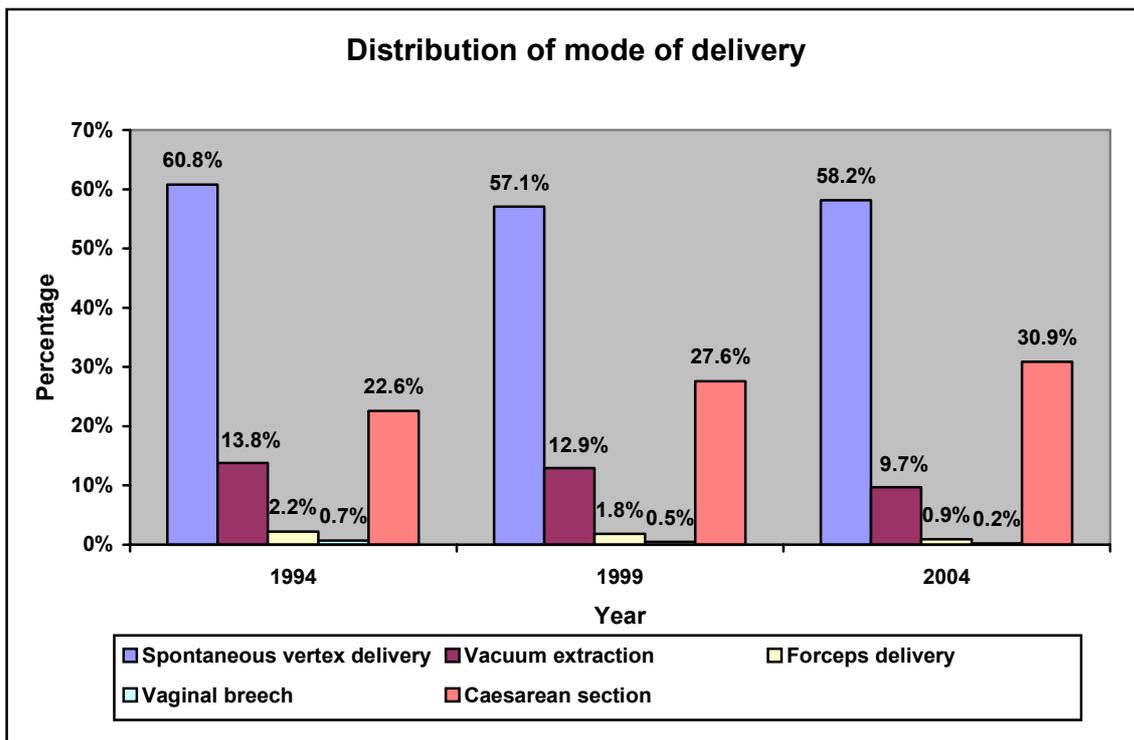


Figure O6 – Distribution of mode of delivery

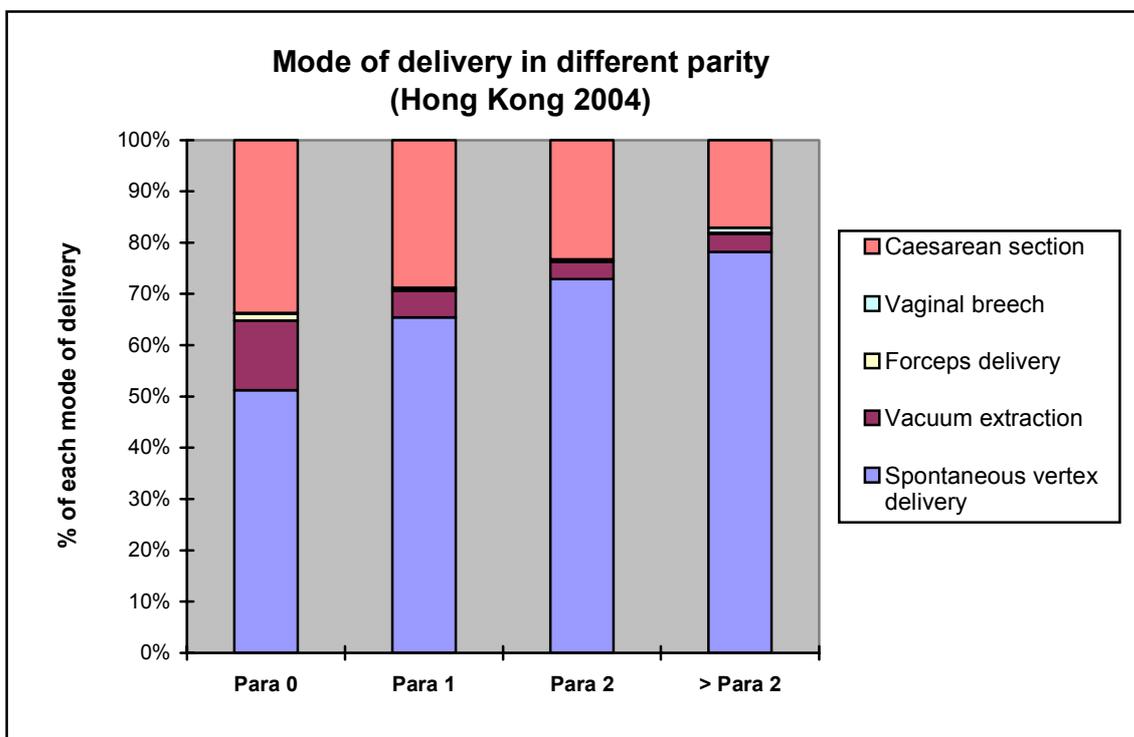


Figure O7 – Mode of delivery in different parity

POSTPARTUM HAEMORRHAGE

The incidence of postpartum haemorrhage (PPH) decreased from 3.2% to 2.6%. Uterine atony remained the most common cause and the incidence increased from 63.2% to 73.0%. The incidence of retained products of gestation decreased from 11.4% to 7.0%. Hysterectomy rate decreased from 1.3% to 0.8%. Internal iliac ligation were performed in 3 cases, 2 had concurrent hysterectomy. There was no case of uterine artery embolisation being reported. As in 1999, there was 1 maternal death attributed to postpartum haemorrhage.

	1994		1999		2004	
TOTAL INCIDENCE	2177	3.2%	1510	3.1%	1295	2.6%
<i>Singleton</i>	2144	98.5%	1487	98.5%	1274	98.4%
<i>Multiple</i>	33	1.5%	23	1.5%	21	1.6%
<i>After vaginal delivery</i>	1980	91.0%	1427	94.5%	1201	92.7%

Missing data on postpartum haemorrhage in 32 (0.1%)

PARITY OF THE PATIENTS

	1994		1999		2004	
Para 0	1113	51.1%	737	48.8%	719	55.5%
Para 1	815	37.4%	618	40.9%	477	36.8%
Para 2	187	8.6%	125	8.3%	80	6.2%
Para 3 & above	62	2.8%	30	2.0%	19	1.5%

CAUSES OF PPH (there might be more than 1 cause for each case)

	1994		1999		2004	
Uterine atony	1375	63.2%	1025	67.9%	945	73.0%
Perineal tear	275	12.6%	211	14.0%	145	11.2%
Retained products of gestation	248	11.4%	84	5.6%	91	7.0%
Vaginal tear	148	6.8%	77	5.1%	39	3.0%
Cervical tear	52	2.4%	44	2.9%	33	2.5%
Genital haematoma	76	3.5%	34	2.3%	25	1.9%
Disseminated intravascular coagulopathy	15	0.7%	10	0.7%	12	0.9%
Rupture of uterus	4	0.2%	4	0.3%	1	0.1%
Acute inversion of uterus	6	0.3%	3	0.2%	3	0.2%
Others	170	7.8%	151	10.0%	102	7.9%

ASSOCIATED ANTENATAL COMPLICATIONS

	1994		1999		2004	
Previous uterine scar	143	6.6%	125	8.3%	77	5.9%
Hypertension	109	5.0%	56	3.7%	59	4.6%
Antepartum haemorrhage	72	3.3%	54	3.6%	47	3.6%
Multiple pregnancy	33	1.5%	23	1.5%	21	1.6%

MODE OF ONSET OF LABOUR

	1994		1999		2004	
Spontaneous	1728	79.4%	1116	73.9%	892	68.9%
Induced labour	354	16.3%	345	22.9%	349	26.9%
No labour	95	4.4%	49	3.2%	54	4.2%

AUGMENTATION OF LABOUR

	1994		1999		2004	
Augmented labour	578	26.6%	576	38.1%	302	23.3%

DURATION OF LABOUR

	1994		1999		2004	
< 2 hours	2905	13.3%	133	8.8%	57	4.7%
2 - 3 hours	61	25.8%	368	24.4%	298	24.6%
4 - 5 hours	473	21.7%	363	24.0%	314	25.9%
6 - 7 hours	341	15.7%	212	14.0%	189	15.6%
8 - 9 hours	205	9.4%	163	10.8%	145	12.0%
10 - 11 hours	153	7.0%	105	7.0%	83	6.9%
12 - 13 hours	71	3.3%	72	4.8%	60	5.0%
> 13 hours	83	3.8%	94	6.2%	65	5.4%

MODE OF DELIVERY FOR EACH BABY

	1994		1999		2004	
Spontaneous vertex delivery	1427	64.74%	1083	70.6%	957	72.7%
Vacuum extraction	428	19.4%	306	19.9%	223	16.9%
Forceps delivery	128	5.8%	46	3.0%	24	1.8%
Vaginal breech delivery	18	0.8%	12	0.8%	6	0.5%
LSCS before labour	99	4.5%	52	3.4%	63	4.8%
LSCS after labour	106	4.8%	35	2.3%	42	3.2%
Classical Caesarean section	-	-	-	-	1	0.1%

Caesarean section data in 1994 included both lower segment and classical Caesarean section

Missing data on mode of delivery in 1 (<0.05%) in 1999

OTHER MATERNAL POST-PARTUM COMPLICATIONS

	1994		1999		2004	
Hysterectomy	29	1.3%	16	1.1%	11	0.8%
Internal iliac artery ligation	-	-	-	-	3	0.2%
Manual removal of placenta	-	-	-	-	106	8.2%
Maternal death	-	-	1	0.1%	1	0.1%

PUERPERAL PYREXIA

The incidence of puerperal pyrexia decreased from 1.7% to 0.6%. It was associated with Caesarean section in about 55%; about two-thirds of which were Caesarean sections after labour. Duration of labour was 12 hours or more in 12.3%. The exact causes of puerperal pyrexia were not explored in the audit and the possible associated conditions listed might not necessarily be the cause of the fever.

	1994		1999		2004	
TOTAL INCIDENCE	1172	1.7%	945	2.0%	294	0.6%
<i>Singleton</i>	147	97.9%	920	97.4%	281	95.0%
<i>Multiple</i>	25	2.1%	25	2.6%	13	4.4%

PARITY OF THE PATIENTS

	1994		1999		2004	
Para 0	760	64.8%	581	61.5%	202	68.7%
Para 1	310	26.5%	279	29.5%	70	23.8%
Para 2	69	5.9%	65	6.9%	17	5.8%
Para 3 & above	33	2.8%	20	2.1%	5	1.7%

ASSOCIATED CONDITIONS OF POSTPARTUM PYREXIA (may have more than 1 cause)

	1994		1999		2004	
Manual removal of placenta	-	-	80	8.5%	15	5.1%
Wound infection	132	11.3%	48	5.1%	19	6.5%
Urinary tract infection	279	23.8%	27	2.9%	14	4.8%
Genital tract infection	126	10.8%	11	1.2%	4	1.4%
Breast problems	155	13.2%	5	0.5%	2	0.7%
Hysterectomy	-	-	5	0.5%	0	0.0%
Third degree tear	-	-	1	0.1%	0	0.0%

DURATION OF LABOUR

	1994		1999		2004	
< 2 hours	407	34.8%	311	33.0%	7	2.4%
2 - 3 hours	153	13.1%	117	12.4%	25	8.5%
4 - 5 hours	139	11.9%	119	12.6%	34	11.6%
6 - 7 hours	141	12.0%	124	13.0%	26	8.8%
8 - 9 hours	95	8.1%	84	8.9%	27	9.2%
10 - 11 hours	72	6.1%	74	7.8%	30	10.2%
12 - 13 hours	79	6.7%	44	4.7%	18	6.1%
> 13 hours	86	7.3%	72	7.6%	16	5.4%

MODE OF DELIVERY FOR EACH BABY

	1994		1999		2004	
Spontaneous vertex delivery	356	29.7%	296	30.5%	102	33.1%
Vacuum extraction	119	9.9%	98	10.1%	32	10.4%
Forceps delivery	26	2.2%	19	2.0%	4	1.3%
Vaginal breech delivery	16	1.3%	4	0.4%	2	0.6%
LSCS before labour	203	17.0%	195	20.1%	63	20.5%
LSCS after labour	476	39.8%	357	36.8%	105	34.1%
Classical Caesarean section	-	-	-	-	0	0.0%

Caesarean section data in 1994 included both lower segment and classical Caesarean section

OTHER MATERNAL COMPLICATIONS

	1994		1999		2004	
Hysterectomy	2	0.2%	5	0.5%	0	0.0%
Internal iliac artery ligation	-	-	-	-	0	0.0%
Maternal death	-	-	-	-	0	0.0%

THIRD DEGREE LACERATION OF THE PERINEUM

The incidence of third degree laceration of the perineum decreased from 0.1% to 0.03%. Although the proportion of cases occurred following spontaneous vaginal delivery increased from 36.0% to 68.8%, the risk of third degree tear after spontaneous vaginal delivery actually decreased from 0.08% to 0.04%. Similarly, the risk of third degree tear after vacuum extraction decreased from 0.5% to 0.06% and that after forceps delivery decreased from 0.8% to 0.4%.

This was in contrast to 1994 where half of the cases were associated with vacuum extraction. Similar to 1994, the risk of third degree tear was higher after a forceps delivery (0.8%) than vacuum extraction (0.2%).

	1994		1999		2004	
TOTAL INCIDENCE	86	0.1%	39	0.1%	16	0.03%
<i>Singleton</i>	-	-	39	100.0%	16	100.0%
<i>Multiple</i>	-	-	0	0.0%	0	0.0%

PARITY OF THE PATURIENTS

	1994		1999		2004	
Nulliparous	66	76.7%	30	76.9%	6	37.5%
Multiparous	20	23.3%	9	23.1%	10	62.5%

DURATION OF LABOUR

	1994		1999		2004	
< 2 hours	4	4.7%	0	0.0%	2	12.5%
2 - 3 hours	17	19.8%	10	25.6%	4	25.0%
4 - 5 hours	21	24.3%	8	20.5%	2	12.5%
6 - 7 hours	12	14.0%	7	17.9%	3	18.8%
8 - 9 hours	11	12.8%	3	7.7%	4	25.0%
10 - 11 hours	10	11.6%	5	12.8%	1	6.3%
12 - 13 hours	4	4.7%	1	2.6%	0	0.0%
> 13 hours	7	8.1%	2	5.1%	0	0.0%

MODE OF DELIVERY FOR EACH BABY

	1994		1999		2004	
Spontaneous vertex delivery	31	36.0%	19	48.8%	11	68.8%
Vacuum extraction	43	50.0%	13	33.3%	3	18.8%
Forceps delivery	12	14.0%	7	17.9%	2	12.5%

OTHER ASSOCIATED CONDITIONS

	1994		1999		2004	
Postpartum haemorrhage	17	19.8%	4	10.3%	1	6.3%
Rupture of uterus	-	-	1	2.6%	0	0.0%
Hysterectomy	-	-	1	2.6%	0	0.0%
Macrosomia	5	5.7%	-	-	3	18.8%

UTERINE RUPTURE

The incidence of uterine rupture remained at 0.01% and did not necessarily associate with previous uterine scar or multiparity. The incidence of postpartum haemorrhage decreased from 62.5% to 20.0%. In contrast to previous years, none of the cases required a hysterectomy. There was no maternal or perinatal death.

	1994		1999		2004	
TOTAL INCIDENCE	8	0.01%	7	0.01%	5	0.01%
Nulliparous	1	12.5%	0	0.0%	3	60.0%
Multiparous	7	87.5%	7	100.0%	2	40.0%

ASSOCIATED CONDITIONS

	1994		1999		2004	
Previous uterine scar	3	37.5%	7	100.0%	2	40.0%
Postpartum haemorrhage	5	62.5%	4	57.1%	1	20.0%
Hysterectomy	3	37.5%	3	42.9%	0	0.0%

MODE OF ONSET OF LABOUR

	1994		1999		2004	
Spontaneous	5	62.5%	6	85.7%	3	60.0%
Induced labour	0	0.0%	0	0.0%	2	40.0%
No labour	3	37.5%	1	14.3%	0	0.0%

AUGMENTATION OF LABOUR

	1994		1999		2004	
Augmented labour	2	25.0%	1	14.9%	1	20.0%

MODE OF DELIVERY

	1994		1999		2004	
Vacuum extraction	0	0.0%	3	42.9%	1	20.0%
Forceps delivery	0	0.0%	1	14.2%	0	0.0%
Caesarean section	7	87.5%	3	42.9%	4	80.0%
Others/Unknown	1	12.5%	0	0.0%	0	0.0%

2004: 4 C/S, 3 LSCS after labour and 1 Classical section after labour

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	6	75.0%	7	100.0%	5	100.0%
Stillbirth	0	0.0%	0	0.0%	0	0.0%
Neonatal death	2	25.0%	0	0.0%	0	0.0%

HYSTERECTOMY

The incidence of hysterectomy after delivery decreased from 0.1% to 0.04%. The risk of hysterectomy in the presence of placenta praevia varied between 2.3 and 3.3% and that in previous uterine scar was 0.14-0.36%. The proportion of hysterectomy preceded by a Caesarean section increased from 62.8% to 85.7%. There was one maternal death in this group in 2004, but none in the previous audits.

	1994		1999		2004	
TOTAL INCIDENCE	43	0.1%	29	0.06%	21	0.04%
<i>Nulliparous</i>	10	23.3%	6	20.7%	4	19.0%
<i>Multiparous</i>	33	76.7%	23	79.3%	17	81.0%

ASSOCIATED CONDITIONS

	1994		1999		2004	
Postpartum haemorrhage	29	67.4%	16	55.2%	11	52.4%
Antepartum haemorrhage	13	30.2%	11	37.9%	9	42.9%
<i>Placenta praevia</i>	12	92.3%	7	63.6%	9	100%
<i>Unknown origin</i>	-	-	3	27.3%	0	0.0%
<i>Placental abruptio</i>	-	-	1	9.1%	0	0.0%
Previous uterine scar	11	25.6%	16	55.2%	6	28.6%
Internal iliac artery ligation	-	-	-	-	2	9.5%

MODE OF ONSET OF LABOUR

	1994		1999		2004	
Spontaneous	21	48.8%	9	85.7%	7	33.3%
Induced labour	4	9.3%	7	0.0%	3	14.3%
No labour	18	41.9%	13	14.3%	11	52.4%

AUGMENTATION OF LABOUR

	1994		1999		2004	
Augmented labour	6	14.0%	5	17.2%	2	9.5%

MODE OF DELIVERY

	1994		1999		2004	
Vaginal delivery	16	37.2%	11	37.9%	3	14.3%
<i>Spontaneous</i>	-	-	7	24.1%	3	12.5%
<i>Vacuum extraction</i>	-	-	4	13.8%	0	0.0%
<i>Forceps delivery</i>	-	-	0	0.0%	0	0.0%
Caesarean delivery	27	62.8%	18	62.1%	18	85.7%
<i>LSCS before labour</i>	-	-	-	-	8	38.1%
<i>LSCS after labour</i>	-	-	-	-	7	33.3%
<i>Classical Caesarean section</i>	-	-	-	-	3	14.3%

Caesarean section data in 1994 included both lower segment and classical Caesarean section

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	43	100.0%	29	100.0%	23	95.8%
Stillbirth	0	0.0%	0	0.0%	1	4.2%
Neonatal death	0	0.0%	0	0.0%	0	0.0%

INFORMATION ABOUT BABY

DISTRIBUTION OF GESTATIONAL AGE AT DELIVERY AND THE RESPECTIVE MEAN BIRTH WEIGHTS

The mean birth weight for all babies in 2004 was 3167 (SD 493) gm and that of all term babies (≥ 37 weeks) was 3231 (SD 412) gm, both were similar to the previous audits. The mean birth weight for all singleton term babies was 3238 (SD 407) gm. The mean birth weight increased with gestation except beyond 42 weeks and the magnitude of increase was largest between 32 and 37 weeks. As in 1999, the mean birth weight for those < 26 weeks was about 1000 gm, suggesting that there were wrong coding in this group.

Gestation in weeks	1994			1999			2004		
	No.	% of total deliveries	Mean birth weight (gm)	No.	% of total deliveries	Mean birth weight (gm)	No.	% of total deliveries	Mean birth weight (gm)
> 42	899	1.3%	3343	256	0.5%	3264	244	0.5%	3280
42	2592	3.8%	3407	939	1.9%	3455	430	0.9%	3434
41	7924	11.6%	3392	202	10.6%	3452	4800	9.7%	3455
40	16943	24.9%	3301	11025	22.5%	3363	10468	21.2%	3362
39	18029	26.5%	3206	13142	26.9%	3249	13053	26.3%	3245
38	12975	19.1%	3090	10897	22.3%	3129	11942	24.1%	3124
37	4571	6.7%	2918	4018	8.2%	2947	4972	10.0%	2938
36	1626	2.4%	2714	1319	2.7%	2700	1526	3.1%	2723
35	682	1.0%	2483	605	1.2%	2497	696	1.4%	2464
34	446	0.7%	2257	363	0.7%	2497	415	0.8%	2262
33	257	0.4%	2031	212	0.4%	2064	238	0.5%	2046
32	175	0.3%	1850	139	0.3%	1840	177	0.4%	1867
31	110	0.2%	1658	97	0.2%	1684	111	0.2%	1632
30	120	0.2%	1520	83	0.2%	1613	98	0.2%	1562
29	74	0.1%	1405	69	0.1%	1450	63	0.1%	1308
28	80	0.1%	1348	48	0.1%	1323	64	0.1%	1234
27	59	0.1%	1111	44	0.1%	1130	50	0.1%	1091
26	45	0.1%	1135	27	0.1%	1017	47	0.1%	941
< 26	105	0.2%	480	156	0.3%	1118	84	0.2%	1001

Missing data on gestation in 351 (0.5%) in 1994, 277 (0.6%) in 1999 and 178 (0.4%) in 2004

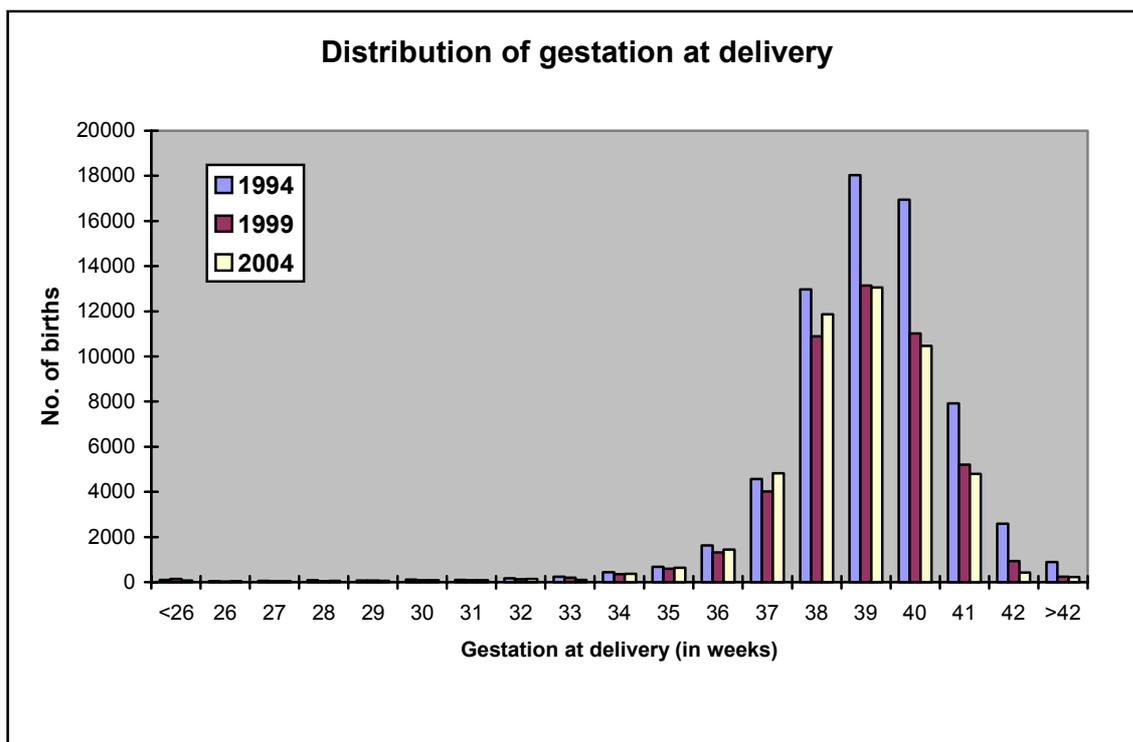


Figure O8 – Distribution of gestation at delivery

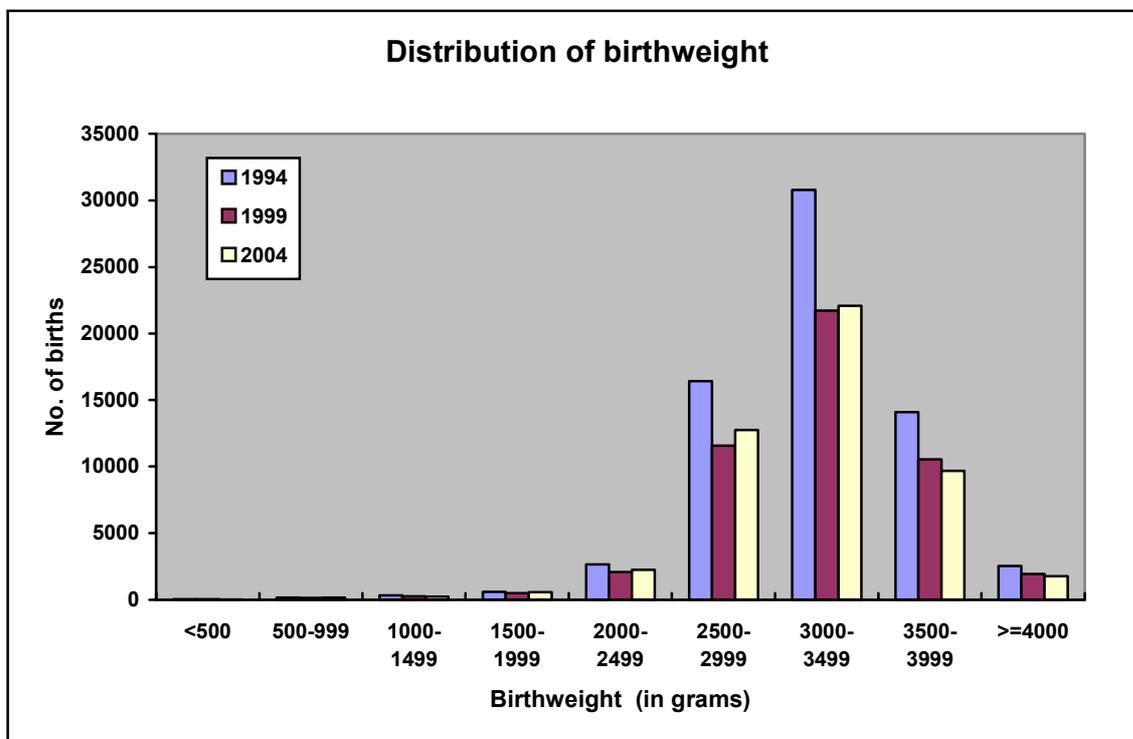


Figure O9 – Distribution of birth weight at delivery

FETAL OUTCOME WITH RESPECT TO GESTATION

As in previous audits, 99.8% of those babies born ≥ 33 weeks survived for at least 28 days. For those born < 26 weeks, about 60% survived for at least 28 days and the neonatal death rate was 20.05 in 1994, 22.8% in 1999 and 23.8% in 2004.

Gestation in weeks	Alive at 28 days		Stillbirth		Neonatal death		Total
	No.	%	No.	%	No.	%	
≥ 42	672	99.7%	1	0.1%	1	0.1%	674
37 - 41	45220	99.9%	36	0.1%	15	0.03%	45271
33 - 36	2849	98.9%	24	0.8%	7	0.2%	2880
29 - 32	424	94.4%	18	4.0%	7	1.6%	449
26 - 28	127	78.9%	23	14.3%	11	6.8%	161
< 26	50	59.5%	14	16.7%	20	23.8%	84

Missing data on fetal outcome or gestation in 137 (0.3%)

SURVIVAL RATES WITH RESPECT TO BIRTH WEIGHTS

For those live births with birth weight < 1 kg, the survival rate increased from 62.1% in 1994 to 76.2% in 1999 and 79.2% in 2004 irrespective of any major congenital anomalies. For those live births with birth weight ≥ 1 kg, the survival rate was 99.9%.

Birth weights	Born alive			Born alive without major anomalies		
	Total	Survived at 28 days	%	Total	Survived at 28 days	%
< 500 gm	9	4	44.4%	9	4	44.4%
500 - 999 gm	135	110	81.5%	134	110	82.1%
1000 - 1499 gm	229	224	97.8%	226	223	98.7%
1500 - 1999 gm	564	559	99.1%	558	556	99.6%
2000 - 2499 gm	2250	2242	99.6%	2225	2220	99.8%
2500 - 2999 gm	12726	12720	100.0%	12670	12666	100.0%
3000 - 3499 gm	22061	22057	100.0%	21967	21965	100.0%
3500 - 3999 gm	9666	9664	100.0%	9628	9628	100.0%
≥ 4000 gm	1784	1783	99.9%	1773	1772	99.9%
Total	49424	49363	99.9%	49190	49144	99.9%

Missing data on fetal outcome or birth weight in 115 (0.2%)

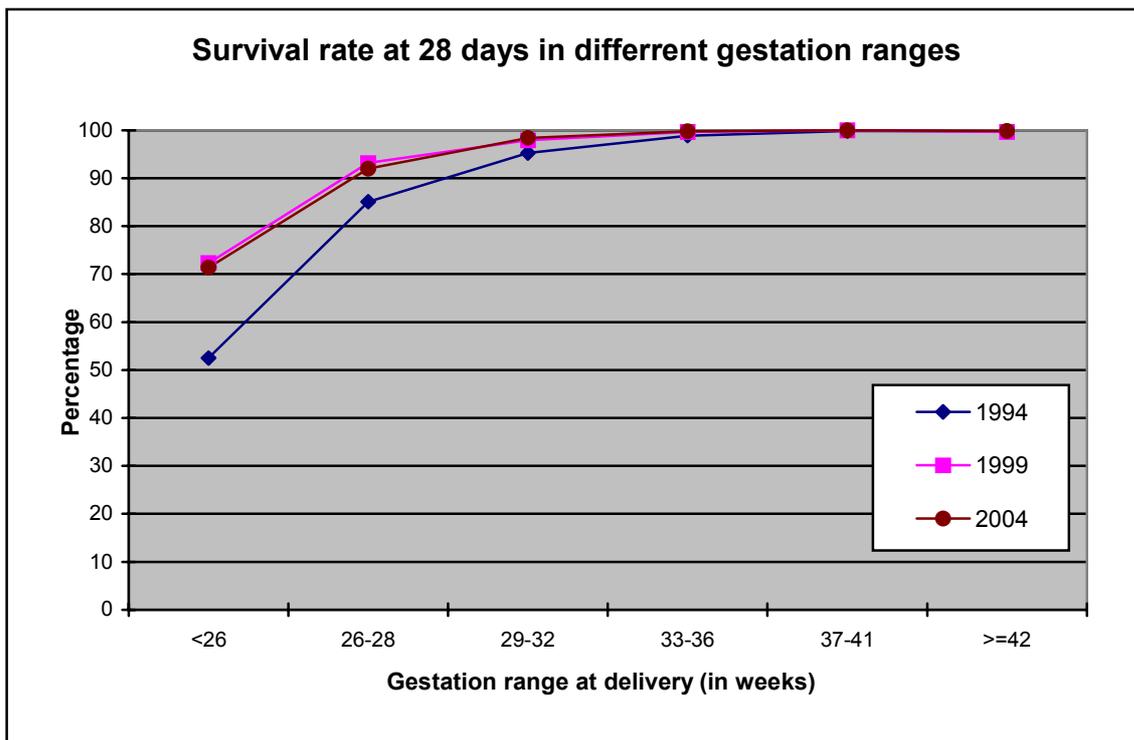


Figure O10 – Survival rate at 28 days of all live births in different gestation ranges

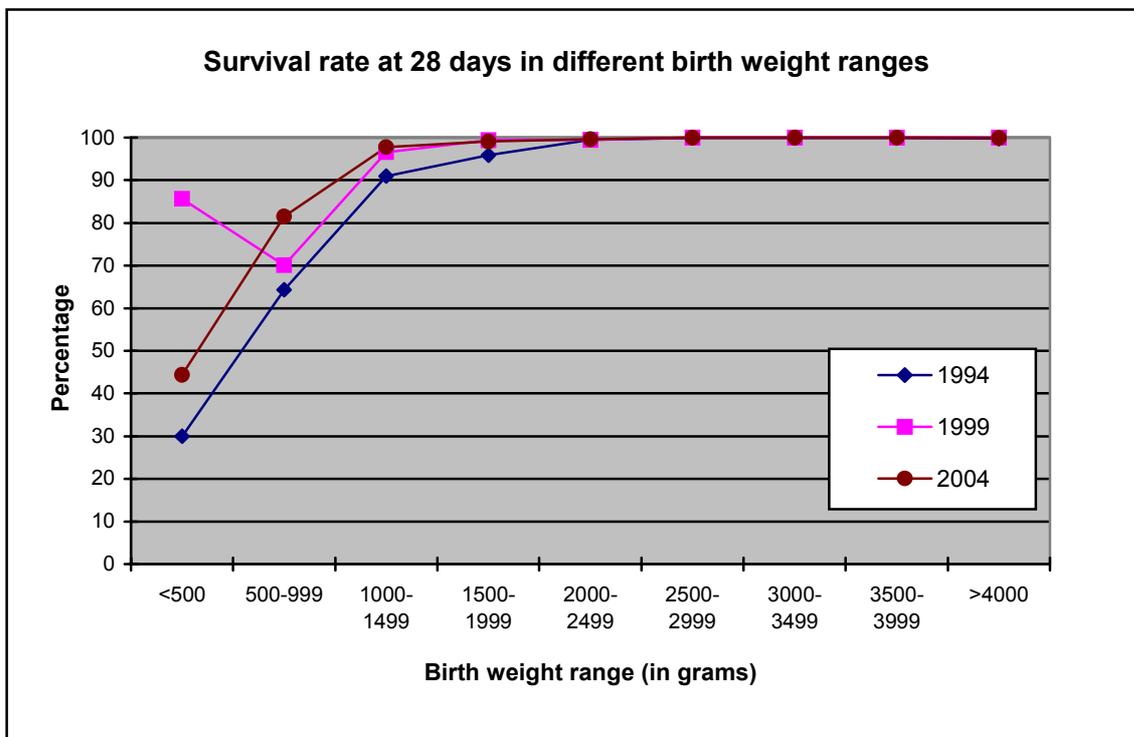


Figure O11 – Survival rate at 28 days of all live births in different birth weight ranges

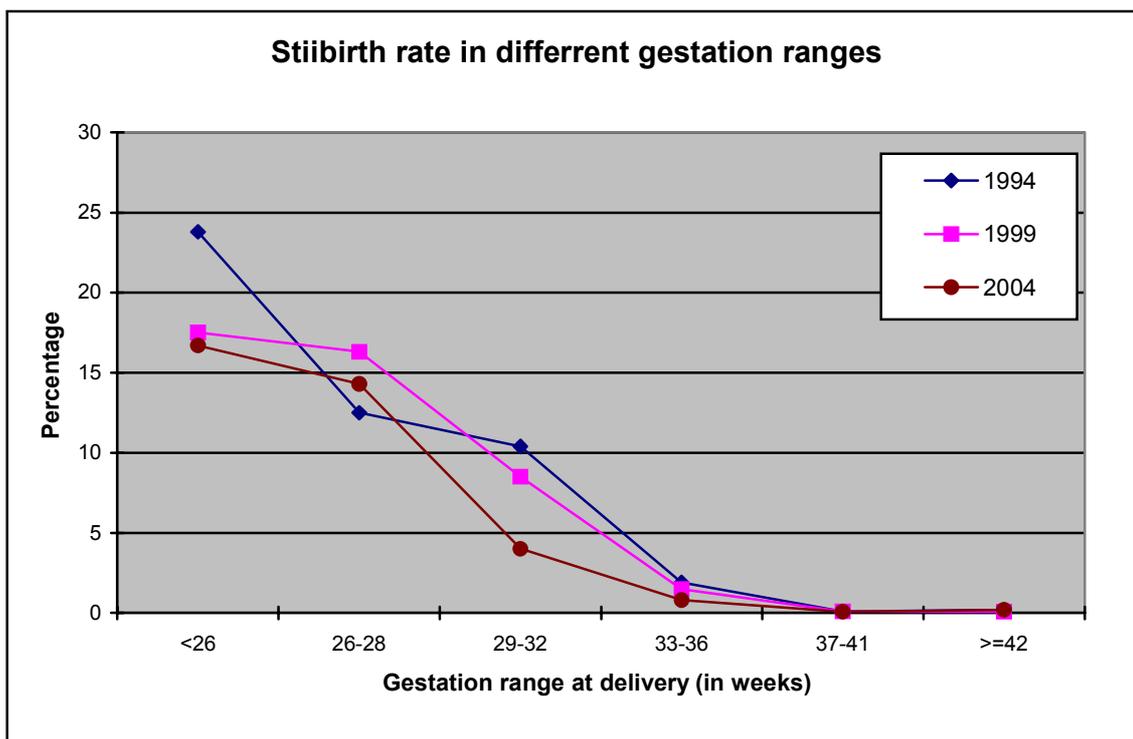


Figure O12 – Stillbirth rate of all births in different gestation ranges

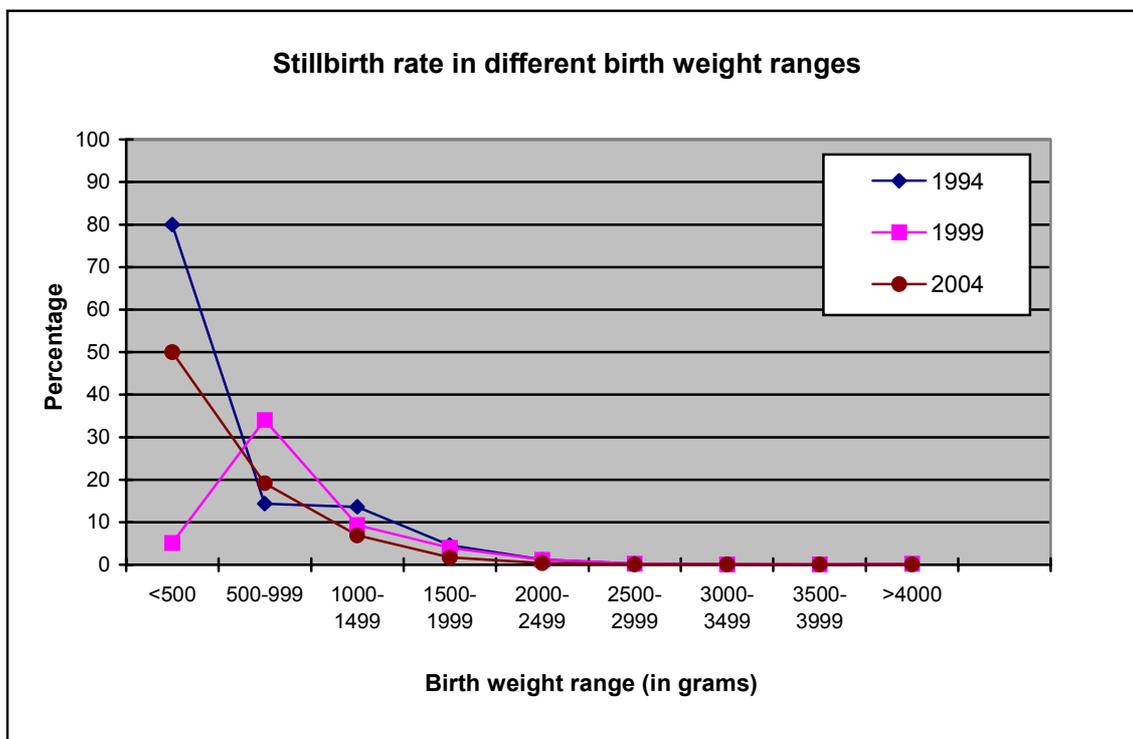


Figure O13 – Stillbirth rate of all births in different birth weight ranges

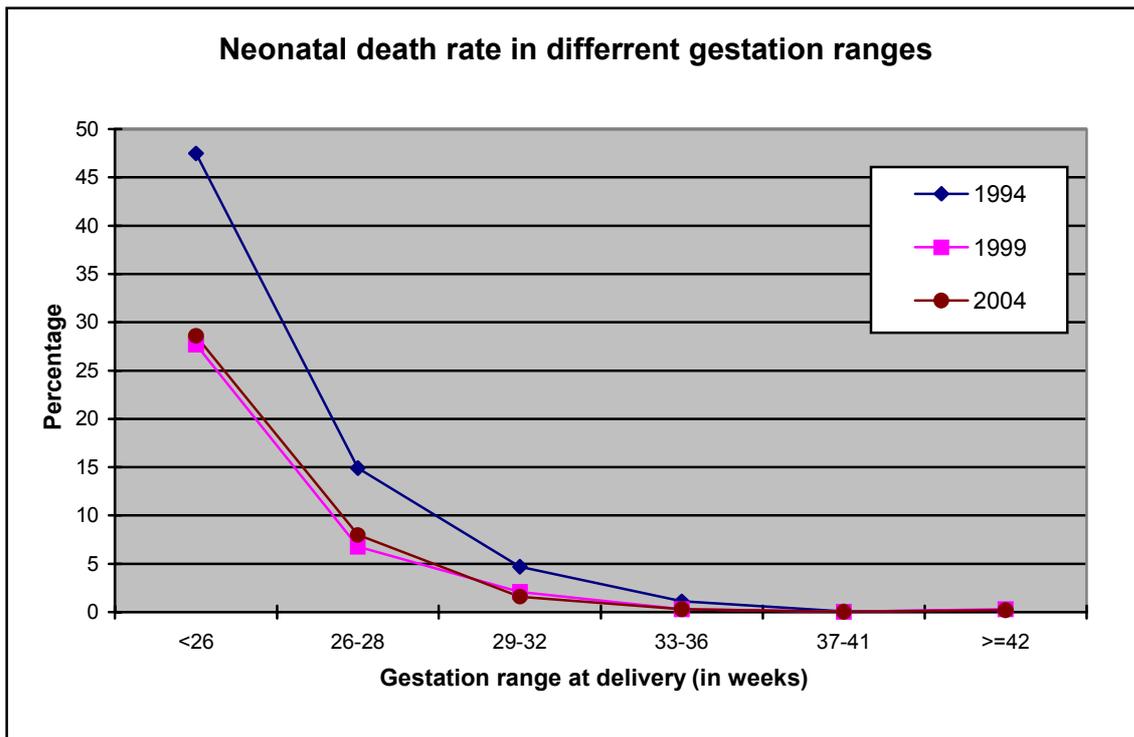


Figure O14 – Neonatal death rate of all live births in different gestation ranges

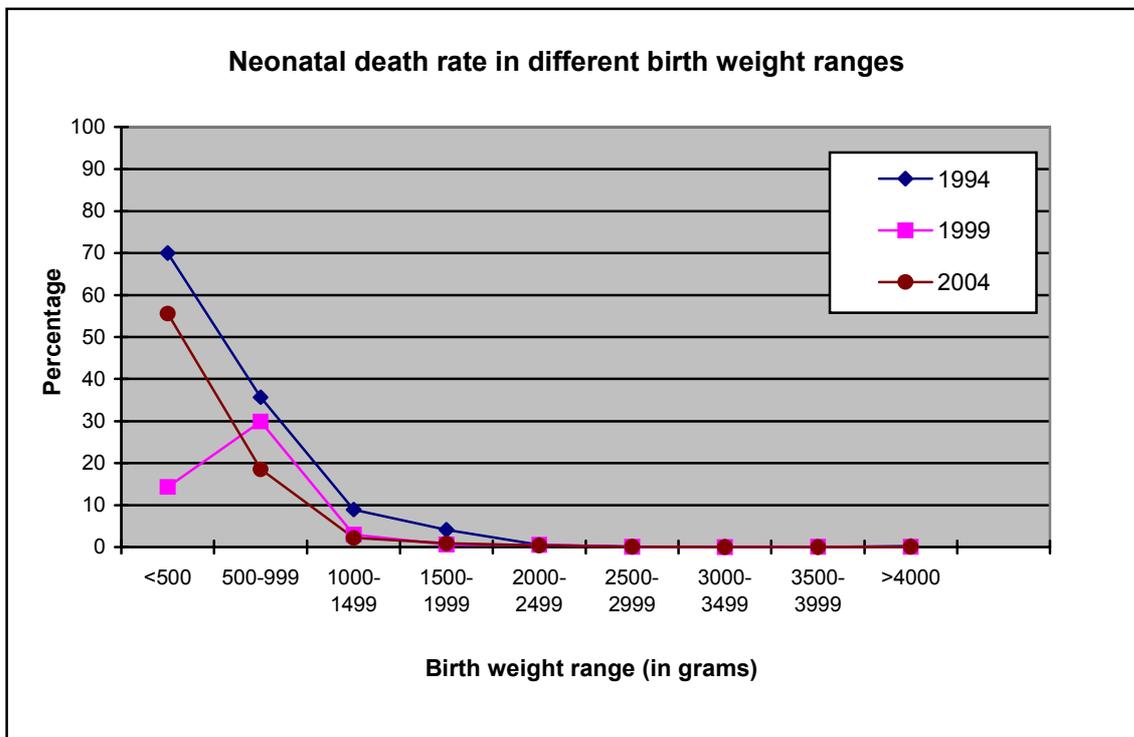


Figure O15 – Neonatal death rate of all live births in different birth weight ranges

INFANTS BORN WITH CONGENITAL ANOMALIES

Congenital anomaly was reported only if it was of major significance and apparent at or soon after birth. The overall incidence decreased from 1.0% to 0.5%. This might be related to the implementation of routine morphology scan, however the possibility of under-reported could not be excluded. Maternal age of 35 years or more, which constituted 24.2% (13.9% in 1994 and 28% in 1999) of all the parturients, was associated with 25% of the cases. This compared with 16.5% in 1994 and 35% in 1999. The rate of preterm delivery (< 37 weeks) decreased from 22% to 12.8% while that of low birth weight (< 2500 gm) decreased from 25% to 16.2%. The corresponding figures for all deliveries were 6.7% and 6.6% respectively. The stillbirth rate decreased from 5.2% to 2.9% while neonatal death rate decreased from 8.8% to 6.2%. These were 12 and 52 times higher than the overall figures respectively.

	1994		1999		2004	
TOTAL INCIDENCE	701	1.0%	408	0.8%	241	0.5%
<i>Singleton</i>	679	96.9%	387	94.9%	234	97.1%
<i>Multiple</i>	3	0.4%	21	5.1%	7	2.9%

PARITY OF THE PATURIENTS

	1994		1999		2004	
Nulliparous	359	51.2%	187	46.2%	145	60.2%
Multiparous	339	48.4%	218	53.8%	96	39.8%

AGE DISTRIBUTION

	1994		1999		2004	
< 20 years old	15	2.1%	2	0.5%	2	0.8%
20 - 24 years	96	13.7%	29	7.2%	19	8.0%
25 - 29 years	230	32.8%	107	26.4%	60	24.9%
30 - 34 years	232	33.1%	123	30.4%	93	38.6%
35 - 39 years	111	15.8%	107	26.4%	48	19.9%
≥ 40 years	12	1.7%	35	8.6%	13	5.4%
Unknown	5	0.7%	2	0.5%	6	2.5%

ANTENATAL COMPLICATIONS

	1994		1999		2004	
Anaemia	67	9.6%	25	6.4%	14	5.8%
Hypertension	39	5.6%	12	3.1%	8	3.3%
Antepartum haemorrhage	21	3.0%	6	1.5%	8	3.3%
Diabetes mellitus (including IGT)	39	5.6%	4	1.0%	14	5.8%
Cardiac disease	5	0.7%	1	0.3%	2	0.8%
Other medical/surgical diseases	20	2.8%	34	8.7%	10	4.1%

MODE OF ONSET OF LABOUR

	1994		1999		2004	
Spontaneous	482	68.8%	249	61.5%	136	56.4%
Induced labour	113	16.1%	85	21.0%	49	20.3%
No labour	103	14.7%	71	17.5%	56	23.2%

PRESENTATION AND LIE AT DELIVERY

	1994		1999		2004	
Vertex	616	87.9%	226	55.4%	218	90.5%
Breech	75	10.7%	37	9.1%	18	7.5%
Oblique	0	0.0%	125	30.6%	0	0.0%
Face	0	0.0%	0	0.0%	1	0.4%
Transverse	0	0.0%	0	0.0%	2	0.8%
Others	7	1.0%	18	4.4%	2	0.8%
Unknown	3	0.4%	2	0.5%	0	0.0%

MODE OF DELIVERY FOR EACH BABY

	1994		1999		2004	
Spontaneous vertex delivery	415	59.2%	226	55.4%	138	57.3%
Vacuum extraction	63	9.0%	37	9.1%	16	6.6%
Forceps delivery	16	2.3%	3	0.7%	1	0.4%
Vaginal breech delivery	30	4.3%	15	3.7%	2	0.8%
LSCS before labour	102	14.6%	125	30.6%	55	22.8%
LSCS after labour	74	10.6%			29	12.0%
Unknown	1	0.1%	2	0.5%	0	0.0%

Caesarean section data in 1994 included both lower segment and classical Caesarean section

GESTATION AT DELIVERY (in completed weeks)

	1994		1999		2004	
< 26 weeks	4	0.6%	6	1.5%	0	0.0%
26 - 28 weeks	10	1.4%	12	2.9%	4	1.7%
29 - 32 weeks	36	5.1%	24	5.9%	5	2.1%
33 - 36 weeks	96	13.7%	41	10.0%	22	9.1%
37 - 41 weeks	513	73.2%	307	75.2%	209	86.7%
> 41 weeks	35	5.0%	17	4.2%	1	0.4%
Unknown	7	1.0%	1	0.2%	0	0.0%

BIRTH WEIGHT AT DELIVERY (in grams)

	1994		1999		2004	
< 500 gm	0	0.0%	4	1.0%	0	0.0%
500 - 999 gm	16	2.3%	13	3.2%	4	1.7%
1000 - 1499 gm	32	4.6%	17	4.2%	3	1.2%
1500 - 1999 gm	56	8.0%	18	4.4%	7	2.9%
2000 - 2499 gm	72	10.3%	46	11.3%	25	10.4%
2500 - 2999 gm	174	24.8%	94	23.0%	58	24.0%
3000 - 3499 gm	224	32.0%	137	33.6%	94	39.0%
2500 – 3999	95	13.6%	63	15.4%	39	16.2%
≥ 4000 gm	29	4.1%	15	3.7%	11	4.6%
Unknown	3	0.4%	1	0.2%	0	0.0%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	602	85.9%	363	89.0%	219	90.9%
Stillbirths	37	5.2%	20	4.9%	7	2.9%
<i>Antepartum</i>	26	3.7%	14	3.4%	3	1.2%
<i>Intrapartum</i>	10	1.4%	4	1.0%	2	0.8%
<i>Undetermined</i>	1	0.1%	2	0.5%	2	0.8%
Neonatal deaths	62	8.8%	23	5.6%	15	6.2%
<i>Early</i>	48	6.8%	18	4.4%	15	6.2%
<i>Late</i>	14	2.0%	5	1.2%	0	0.0%

Missing data on fetal outcome in 2 (0.5%) in 1999

ASPHYXIA NEONATORUM

	1994		1999		2004	
Apgar score at 1 minute						
0 – 3	41	5.8%	37	9.0%	16	6.6%
4 – 6	81	11.6%	37	9.0%	14	5.8%
Apgar score at 5 minutes s						
0 – 3	23	3.3%	26	6.4%	10	4.1%
4 – 6	22	3.1%	17	4.2%	7	2.9%

OTHER NEONATAL COMPLICATIONS

	1994		1999		2004	
Admission to neonatal ICU	186	26.5%	197	48.3%	136	56.4%
Major infection	16	2.3%	11	2.7%	0	0.0%
Respiratory distress syndrome	16	2.3%	8	2.0%	2	0.8%
Intraventricular haemorrhage	4	0.6%	7	1.7%	1	0.4%
Necrotising enterocolitis	5	0.7%	5	1.2%	1	0.4%
Birth trauma	11	1.6%	4	1.0%	2	0.8%

BIRTH ASPHYXIA

The Apgar score was less than 7 at 1 and 5 minutes in 3.1% and 0.4% of babies respectively. Compared with previous audits, the incidence of low Apgar score was lower at 1 minute (4.1% in 1994 and 3.8% in 1999) but similar at 5 minutes (0.3% in 1994 and 0.4% in 1999). Similar to previous audits, the incidence of low Apgar score was highest in those with vaginal breech delivery and the incidence of very low Apgar score (< 4) increased from 8.2% to 29.1% at 1 minute and 3.8% to 25.2% at 5 minutes.

	1994		1999		2004	
Apgar score at 1 minute						
0 – 3	379	0.2%	215	0.4%	250	0.5%
4 – 6	2373	3.9%	1633	3.4%	1298	2.6%
Unknown	277	0.4%	106	0.2%	203	0.4%
Apgar score at 5 minutes						
0 – 3	155	0.1%	46	0.1%	120	0.2%
4 – 6	242	0.2%	149	0.3%	123	0.2%
Unknown	331	0.5%	195	0.4%	207	0.4%

LOW APGAR SCORE AND MODE OF DELIVERY

APGAR SCORE <4 AT 1 MINUTE

	1994		1999		2004	
Spontaneous vertex delivery	111	0.3%	47	0.2%	89	0.3%
Vacuum extraction	40	0.4%	31	0.5%	24	0.5 %
Forceps delivery	5	0.3%	4	0.5%	3	0.6%
Vaginal breech delivery	41	8.2%	21	10.8%	30	29.1%
LSCS before labour	79	1.1%	52	0.7%	55	0.6%
LSCS after labour	103	1.3%	53	0.9%	43	0.7%
Classical Caesarean section	-	-	7	12.3%	6	10.2%
Others/unknown	0	0.0%	0	0.0%	0	0.0%

*Caesarean section data in 1994 included both lower segment and classical Caesarean section
Percentage refers to the percentage of the total number of the corresponding mode of delivery*

APGAR SCORE 4-6 AT 1 MINUTE

	1994		1999		2004	
Spontaneous vertex delivery	764	1.8%	466	1.7%	369	1.3%
Vacuum extraction	427	4.6%	323	5.1%	214	4.4%
Forceps delivery	68	4.6%	39	0.5%	18	3.9%
Vaginal breech delivery	120	23.9%	49	25.1%	24	23.3%
LSCS before labour	682	8.7%	301	4.0%	289	3.2%
LSCS after labour	310	4.2%	447	7.4%	368	5.8%
Classical Caesarean section	-	-	8	14.0%	15	25.4%
Others/unknown	2	1.3%	0	0.0%	1	100.0%

*Caesarean section data in 1994 included both lower segment and classical Caesarean section
Percentage refers to the percentage of the total number of the corresponding mode of delivery*

APGAR SCORE <4 AT 5 MINUTES

	1994		1999		2004	
Spontaneous vertex delivery	85	0.2%	18	0.1%	63	0.2%
Vacuum extraction	18	0.2%	2	0.0%	4	0.1%
Forceps delivery	4	0.3%	0	0.0%	3	0.6%
Vaginal breech delivery	19	3.8%	12	6.2%	26	25.2%
LSCS before labour	14	0.2%	6	0.0%	15	0.2%
LSCS after labour	15	0.2%	5	0.0%	7	0.1%
Classical Caesarean section	-	-	3	5.3%	2	3.4%
Others/unknown	0	0.0%	0	0.0%	0	0.0%

Caesarean section data in 1994 included both lower segment and classical Caesarean section

Percentage refers to the percentage of the total number of the corresponding mode of delivery

APGAR SCORE 4-6 AT 5 MINUTES

	1994		1999		2004	
Spontaneous vertex delivery	82	0.2%	42	0.2%	33	0.1%
Vacuum extraction	34	0.4%	27	0.4%	19	0.4%
Forceps delivery	3	0.2%	4	0.5%	1	0.2%
Vaginal breech delivery	16	3.2%	9	4.6%	4	3.9%
LSCS before labour	67	0.9%	31	0.4%	29	0.3%
LSCS after labour	40	0.5%	34	0.6%	35	0.6%
Classical Caesarean section	-	-	2	3.5%	2	3.4%
Others/unknown	0	0.0%	0	0.0%	0	0.0%

Caesarean section data in 1994 included both lower segment and classical Caesarean section

Percentage refers to the percentage of the total number of the corresponding mode of delivery

BIRTH TRAUMA

The incidence of birth trauma remained at 0.4-0.6%. As in previous audits, the commonest types of birth trauma were cephalhaematoma, fractures and soft tissue trauma. Although the absolute number of birth trauma in spontaneous vertex delivery was high, the actual risk remained at around 0.3% only. Caesarean section was associated with the lowest risk of birth trauma (0.1-0.2%). This compared with the 1.9% in forceps delivery and 1.2% in vacuum extraction. There was no birth trauma reported following vaginal breech delivery.

	1994		1999		2004	
TOTAL INCIDENCE	330	0.5%	272	0.6%	194	0.4%
<i>Singleton</i>	328	99.4%	269	99.3%	193	99.5%
<i>Multiple</i>	2	0.6%	2	0.7%	1	0.5%

CLASSIFICATION OF BIRTH TRAUMA (might be more than 1 for each baby)

	1994		1999		2004	
Cephalhaematoma	192	58.2%	157	57.9%	120	61.9%
Fractures	54	16.4%	54	19.9%	59	30.4%
Soft tissue trauma	50	15.2%	30	11.1%	9	4.6%
Nerve injury	25	7.6%	18	6.6%	9	4.6%
Subaponeurotic haemorrhage	8	2.4%	13	4.8%	5	2.6%
Intracranial haemorrhage	10	3.0%	4	1.5%	1	0.5%
Visceral injury	2	0.6%	0	0.0%	0	0.0%

PARITY OF THE PARTURIENTS

	1994		1999		2004	
Nulliparous	233	70.6%	186	68.4%	131	67.5%
Multiparous	97	29.4%	86	31.6%	63	32.5%

MODE OF DELIVERY

	1994		1999		2004	
Spontaneous vertex delivery	124	37.6%	96	35.3%	110	56.7%
Vacuum extraction	144	43.6%	129	47.6%	58	29.9%
Forceps delivery	17	5.2%	22	8.1%	9	4.6%
Vaginal breech delivery	6	1.8%	1	0.4%	0	0.0%
LSCS before labour	8	2.4%	6	2.2%	3	1.5%
LSCS after labour	30	9.1%	18	6.6%	14	7.2%
Others/unknown	1	0.3%	0	0.0%	0	0.0%

Caesarean section data in 1994 included both lower segment and classical Caesarean section

FETAL WEIGHT DISTRIBUTION

	1994		1999		2004	
<500 gm	-	-	0	0.0%	0	0.0%
500 - 999 gm	-	-	1	0.4%	0	0.0%
1000 – 1499 gm	-	-	1	0.4%	0	0.0%
1500 - 1999 gm	-	-	1	0.4%	1	0.5%
2000 - 2499 gm	-	-	5	1.8%	0	0.0%
2500 - 2999 gm	-	-	50	18.4%	41	21.1%
3000 - 3499 gm	-	-	106	39.0%	89	45.9%
3500 - 3999 gm	-	-	93	34.2%	45	23.2%
≥ 4000 gm	-	-	15	5.5%	18	9.3%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	324	98.2%	271	99.6%	194	100.0%
Stillbirths	0	0.0%	0	0.0%	0	0.0%
Neonatal deaths	6	1.8%	1	0.4%	0	0.0%
Low birth weights (<2500 gm)	19	5.8%	7	2.6%	1	0.5%
<i>Singleton</i>	18	94.5%	7	100.0%	0	0.0%
<i>Multiple</i>	1	5.5%	0	0.0%	1	100.0%
Macrosomia (>4000 gm)	31	9.4%	15	5.5%	18	9.3%
Apgar score < 4 at 1 minute	16	4.8%	7	2.6%	2	1.0%
Apgar score < 4 at 5 minutes	4	1.2%	0	0.0%	3	1.5%

MAJOR NEONATAL INFECTIONS

The incidence of major neonatal infections of all live births decreased from 0.4% to 0.04%, of which 90% survived for at least 28 days. Since the 1999 audits, only 2 categories of neonatal infection were captured, namely congenital infection and major infections. Although the proportion of congenital infection increased from 7.2% to 36.4%, the actual incidence of congenital infection remained at 0.03%, while that of major infections decreased from 0.4% to 0.03%. These infections might be late complications and the babies might have been transferred to the neonatal unit, or even to another hospital for management. Hence, the incidence might be under-reported.

	1994		1999		2004	
TOTAL INCIDENCE (LIVEBIRTHS)	278	0.4%	149	0.3%	22	0.04%
<i>Singleton</i>	262	94.2%	134	89.9%	22	100.0%
<i>Multiple</i>	16	5.8%	15	10.1%	0	0.0%

CLASSIFICATION OF MAJOR NEONATAL INFECTIONS

	1994		1999		2004	
Congenital infection	20	7.2%	14	9.4%	8	36.4%
Major infections	258	92.8%	135	90.6%	14	63.6%
<i>Pneumonia</i>	92	24.0%	-	-	-	-
<i>Septicaemia</i>	83	32.2%	-	-	-	-
<i>Meningitis</i>	3	1.2%	-	-	-	-
<i>Others</i>	80	31.0%	-	-	-	-

MODE OF ONSET OF LABOUR

	1994		1999		2004	
Spontaneous	207	74.5%	77	51.7%	16	72.7%
Induced labour	44	15.8%	40	26.8%	4	18.2%
No labour	27	9.7%	32	21.5%	2	9.1%

DURATION OF LABOUR

	1994		1999		2004	
< 2 hours	64	23.0%	55	36.9%	2	9.1%
2 - 3 hours	49	17.6%	23	15.4%	5	22.7%
4 - 5 hours	46	16.5%	17	11.4%	4	18.2%
6 - 7 hours	39	14.0%	17	11.4%	3	13.6%
8 - 9 hours	26	9.4%	7	4.7%	3	13.6%
10 - 11 hours	20	7.2%	13	8.7%	1	4.5%
12 - 13 hours	16	5.8%	3	2.0%	2	9.1%
> 13 hours	18	6.5%	9	6.0%	1	4.5%

Missing data on duration of labour in 5 (3.4%) in 1999 and 2 (9.1%) in 2004

MODE OF DELIVERY

	1994		1999		2004	
Spontaneous vertex delivery	137	49.3%	61	40.8%	16	72.7%
Vacuum extraction	41	14.7%	21	14.1%	1	4.5%
Forceps delivery	9	3.2%	1	0.7%	0	0.0%
Vaginal breech delivery	11	4.0%	8	5.4%	0	0.0%
LSCS before labour	27	9.7%	57	38.3%	2	9.1%
LSCS after labour	53	19.1%			3	13.6%
Classical Caesarean section	-	-	1	0.7%	0	0.0%

Caesarean section data in 1994 included both lower segment and classical Caesarean section

GESTATION AT DELIVERY

	1994		1999		2004	
< 29 weeks	33	11.9%	15	10.1%	0	0.0%
29 - 32 weeks	38	13.7%	22	14.8%	3	13.6%
33 - 36 weeks	32	11.5%	18	12.1%	0	0.0%
37 - 41 weeks	175	62.9%	93	62.4%	18	81.8%
> 41 weeks					1	4.5%

Missing data on gestation in 1 (0.7%) in 1999

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	251	90.3%	126	84.6%	20	90.9%
Neonatal deaths	27	9.7%	23	15.4%	2	9.1%
<i>Early</i>	14	5.0%	18	12.1%	2	9.1%
<i>Late</i>	13	4.7%	5	3.4%	0	0.0%

NEONATAL COMPLICATIONS

(Respiratory Distress Syndrome, Intraventricular Haemorrhage, Necrotising Enterocolitis)

The incidences of all these complications reduced over the past 10 years with intraventricular haemorrhage having the greatest reduction of 40 folds while respiratory distress syndrome reduced by 6 folds and necrotising enterocolitis by 4 folds. The survival rate also improved with intraventricular haemorrhage having the greatest improvement of 2 folds, while the other 2 conditions increased by 1.3 folds. There was also a significant increase in the mean birth weight in all 3 conditions, suggesting that the babies were more mature and therefore less likely to develop these complications. However, these are late complications and the data accuracy depended very much on the feedbacks from the paediatricians. An under-reporting of these complications could not be excluded.

RESPIRATORY DISTRESS SYNDROME

	1994		1999		2004	
TOTAL INCIDENCE (LIVEBIRTHS)	208	0.3%	86	0.2%	23	0.05%
<i>Singleton</i>	178	85.6%	68	79.1%	23	100%
<i>Multiple</i>	30	14.4%	18	20.9%	0	0.0%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	162	77.9%	79	91.8%	22	95.7%
Neonatal deaths	46	22.1%	7	8.2%	1	4.3%
<i>Early</i>	27	13.0%	6	7.0%	0	0.0%
<i>Late</i>	19	9.1%	1	1.2%	1	4.3%
Mean birth weight \pm SD (gm)	1617	\pm 846	-	-	2412	\pm 766

BIRTH ASPHYXIA

	1994		1999		2004	
Apgar score < 7 at 1 minute	131	63.0%	42	48.8%	5	21.7%
Apgar score < 7 at 5 minutes	44	21.1%	16	18.6%	2	8.7%

INTRAVENTRICULAR HAEMORRHAGE

	1994		1999		2004	
TOTAL INCIDENCE (LIVEBIRTHS)	51	0.08%	36	0.07%	1	0.002%
<i>Singleton</i>	41	80.4%	24	66.7%	1	100.0%
<i>Multiple</i>	10	19.6%	12	33.3%	0	0.0%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	26	51.0%	34	94.4%	1	100.0%
Neonatal deaths	25	49.0%	2	5.6%	0	0.0%
<i>Early</i>	11	21.6%	1	2.8%	0	0.0%
<i>Late</i>	14	27.4%	1	2.8%	0	0.0%
Mean birth weight \pm SD (gm)	1091	\pm 531	-	-	3375	-

BIRTH ASPHYXIA

	1994		1999		2004	
Apgar score < 7 at 1 minute	44	86.3%	16	44.4%	0	0.0%
Apgar score < 7 at 5 minutes	17	33.3%	6	22.2%	0	0.0%

NECROTISING ENTEROCOLITIS

	1994		1999		2004	
TOTAL INCIDENCE (LIVEBIRTHS)	27	0.04%	17	0.03%	5	0.01%
<i>Singleton</i>	25	92.6%	10	58.8%	4	80.0%
<i>Multiple</i>	2	7.4%	7	41.2%	1	20.0%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28 days	17	63.0%	16	94.1%	4	80.0%
Neonatal deaths	9	27.0%	1	5.9%	1	20.0%
<i>Early</i>	2	7.4%	0	0.0%	0	0.0%
<i>Late</i>	7	25.9%	1	5.9%	1	20.0%
Mean birth weight \pm SD (gm)	1473	\pm 785	-	-	2399	\pm 982

BIRTH ASPHYXIA

	1994		1999		2004	
Apgar score < 7 at 1 minute	18	66.7%	8	47.1%	0	0.0%
Apgar score < 7 at 5 minutes	6	22.2%	3	17.6%	0	0.0%

STILLBIRTHS

The number of stillbirths reported in 2004 was 117. According to the data from the Census and Statistics Department of Hong Kong, the total number of stillbirths in 2004 was 164. The under-reporting rate was 28.7%.

The incidence of reported stillbirths decreased from 3.4 to 2.4 per 1,000 total births. About 80% were detected during the antepartum period before the onset of labour. The incidence of low birth weight (< 2500 gm) decreased from 72.9% to 57.3%, while the incidence of macrosomia (\geq 4000 gm) increased from 0.4% to 1.7%. Most stillbirths were attributed to other causes which accounted for 40% of the cases and 12.0% were not investigated. The incidence of unexplained stillbirth decreased from 49.5% to 23.1%. The incidence of associated hypertension, antepartum haemorrhage and diabetes mellitus during pregnancy was lower than that in 1999 but similar to that in 1994. The incidence of hypertension and antepartum haemorrhage was higher than the overall figures (2.5% and 2.0% respectively) while that of diabetes mellitus were similar (6.3%).

INCIDENCE

	1994		1999		2004	
TOTAL INCIDENCE (BIRTHS)	232	0.34%	169	0.35%	117	0.24%
<i>Antepartum</i>	193	83.2%	137	81.1%	92	78.6%
<i>Intrapartum</i>	27	11.6%	11	6.5%	4	3.4%
<i>Undetermined</i>	12	5.2%	21	12.4%	21	17.9%
Singleton	207	89.2%	156	66.7%	101	86.3%
Multiple	25	10.8%	13	33.3%	16	13.7%

DATA FROM CENSUS AND STATISTICS DEPARTMENT

	1994		1999		2004	
TOTAL INCIDENCE (LIVEBIRTHS)	343	0.48%	228	0.45%	164	0.33%

PARITY OF THE PARTURIENTS

	1994		1999		2004	
Nulliparous	120	51.7%	94	55.6%	71	60.7%
Multiparous	112	48.3%	75	44.4%	46	39.3%

MATERNAL AGE

	1994		1999		2004	
< 20 years	8	3.4%	2	1.2%	3	2.6%
20 - 24 years	33	14.2%	12	7.1%	18	15.4%
25 - 29 years	81	34.9%	52	30.8%	29	24.8%
30 - 34 years	65	28.0%	57	33.7%	32	27.4%
35 - 39 years	37	15.9%	29	17.1%	26	22.2%
\geq 40 years	7	3.0%	16	0.6%	8	6.8%
Unknown	1	0.4%	1	0.6%	1	0.9%

ASSOCIATED ANTENATAL COMPLICATIONS

	1994		1999		2004	
Anaemia	25	10.8%	17	10.1%	9	7.7%
Antepartum haemorrhage	17	7.3%	9	5.3%	8	6.8%
<i>Placenta praevia</i>	4	23.5%	1	11.1%	3	37.5%
<i>Placenta abruptio</i>	11	64.7%	6	66.7%	1	12.5%
<i>APH of unknown origin</i>	2	11.8%	2	22.2%	4	50.0%
Hypertension	22	9.5%	5	3.0%	10	8.5%
<i>Mild</i>	10	45.5%	2	40.0%	2	20.0%
<i>Severe</i>	12	54.5%	3	60.0%	5	50.0%
<i>Unclassified</i>	0	0.0%	0	0.0%	3	30.0%
Diabetes mellitus (including IGT)	16	6.9%	6	3.6%	7	6.0%
Other medical/surgical diseases	14	6.1%	9	5.3%	0	0.0%

MAIN CAUSES FOR STILLBIRTHS

	1994		1999		2004	
Unclassifiable / Miscellaneous	28	12.1%	71	42.0%	47	40.2%
Uninvestigated					14	12.0%
Unexplained	115	49.5%	45	26.6%	27	23.1%
Congenital anomalies	30	12.9%	17	10.1%	16	13.7%
Mechanical	7	3.0%	4	2.4%	3	2.6%
Maternal disorders	18	7.8%	1	0.6%	2	1.7%
Pregnancy-induced hypertension	7	3.0%	1	0.6%	2	1.7%
Antepartum haemorrhage	12	5.2%	7	4.1%	1	0.9%
Unknown	15	6.5%	23	13.6%	5	4.3%

MODE OF DELIVERY

	1994		1999		2004	
Spontaneous vertex delivery	149	64.2%	101	59.8%	74	63.2%
Vacuum extraction	5	2.2%	6	3.6%	1	0.9%
Forceps delivery	1	0.4%	3	1.8%	3	2.6%
Vaginal breech delivery	50	21.6%	37	21.9%	26	22.2%
LSCS before labour	19	8.2%	10	5.9%	9	7.7%
LSCS after labour	8	3.4%	11	6.5%	3	2.6%
Classical Caesarean section	-	-	0	0.6%	1	0.9%

Caesarean section data in 1994 included both lower segment and classical Caesarean section

GESTATION AT DELIVERY

	1994		1999		2004	
< 26 weeks	25	10.8%	20	11.8%	14	12.0%
26 - 28 weeks	23	9.9%	23	13.6%	23	19.7%
29 - 32 weeks	50	21.6%	36	21.3%	18	15.4%
33 - 36 weeks	58	25.0%	37	21.9%	24	20.5%
37 - 41 weeks	68	29.3%	52	30.8%	36	30.8%
> 41 weeks	6	2.6%	1	0.6%	1	0.9%
Unknown	2	0.9%	0	0.0%	1	0.9%

BIRTH WEIGHT AT DELIVERY

	1994		1999		2004	
< 500 gm	64	27.6%	3	1.8%	9	7.7%
500 - 999 gm			45	26.6%	32	27.4%
1000 - 1499 gm	46	19.9%	24	14.2%	17	14.5%
1500 - 1999 gm	27	11.6%	20	11.8%	10	8.5%
2000 - 2499 gm	32	13.8%	25	14.8%	9	7.7%
2500 - 2999 gm	28	12.1%	17	10.1%	18	15.4%
3000 - 3499 gm	24	10.3%	19	11.2%	16	13.7%
3500 - 3999 gm	4	1.7%	12	7.1%	4	3.4%
≥ 4000 gm	1	0.4%	3	1.8%	2	1.7%
Unknown	6	2.6%	1	0.6%	0	0.0%

NEONATAL DEATHS

The number of neonatal deaths reported in 2004 was 61. According to the data from the Census and Statistics Department of Hong Kong, the total number of neonatal deaths in 2004 was 76. The under-reporting rate was 19.7%.

The neonatal death rate decreased from 2.5 to 1.2 per 1000 live births. The official reported figures by the government were 2.8, 1.6 and 1.6 per 1,000 live births respectively. The death was mostly attributed to congenital anomalies and the incidence increased from 24.6% to 32.8%. Other unclassifiable causes accounted for about 30% of the cases and almost 10% were not investigated. The incidence of antepartum haemorrhage increased from 8.2% to 13.1% and majority of them were of unknown origin.

INCIDENCE

	1994		1999		2004	
TOTAL INCIDENCE (LIVEBIRTHS)	171	0.25%	72	0.15%	61	0.12%
Early neonatal deaths	127	0.19%	56	0.11%	50	0.1%
Late neonatal deaths	44	0.06%	16	0.03%	11	0.02%
Singleton	146	85.4%	61	84.7%	49	80.3%
Multiple	25	14.6%	11	15.3%	12	19.7%

DATA FROM CENSUS AND STATISTICS DEPARTMENT

TOTAL INCIDENCE (LIVEBIRTHS)	202	0.28%	79	0.16%	76	0.16%
Early neonatal deaths	145	0.2%	59	0.12%	60	0.12%
Late neonatal deaths	57	0.08%	20	0.04%	16	0.03%

PARITY OF THE PARTURIENTS

	1994		1999		2004	
Nulliparous	79	46.2%	35	48.6%	40	65.6%
Multiparous	92	53.8%	37	51.4%	21	34.4%

MATERNAL AGE

	1994		1999		2004	
< 20 years	6	3.5%	3	4.2%	2	3.3%
20 - 24 years	20	11.7%	5	6.9%	7	11.5%
25 - 29 years	51	29.8%	12	16.7%	9	14.8%
30 - 34 years	57	33.3%	23	31.9%	22	36.1%
35 - 39 years	29	17.0%	26	36.1%	18	29.5%
≥ 40 years	5	2.9%	3	4.2%	3	4.9%
Unknown	3	1.8%	1	0.6%	1	0.9%

ANTENATAL COMPLICATIONS

	1994		1999		2004	
Anaemia	16	9.4%	2	2.8%	5	8.2%
Antepartum haemorrhage	14	8.2%	9	12.5%	8	13.1%
<i>Placenta praevia</i>	1	7.2%	0	0.0%	1	12.5%
<i>Placenta abruptio</i>	9	64.2%	2	22.2%	0	0.0%
<i>APH of unknown origin</i>	4	28.6%	6	66.7%	7	87.5%
<i>Other causes</i>	0	0.0%	1	11.1%	0	0.0%
Hypertension	18	8.2%	3	4.2%	5	8.2%
<i>Mild</i>	8	57.1%	1	33.3%	2	40.0%
<i>Severe</i>	6	42.9%	2	66.7%	3	60.0%
<i>Unclassified</i>	0	0.0%	0	0.0%	0	0.0%
Diabetes mellitus (including IGT)	10	5.8%	3	4.2%	4	6.6%
Other medical/surgical diseases	9	5.3%	2	2.8%	2	3.3%

MAIN OBSTETRIC CAUSES ACCOUNTING FOR THE NEONATAL DEATHS

	1994		1999		2004	
Congenital anomalies	42	24.6%	23	31.9%	20	32.8%
Unclassifiable / Miscellaneous	47	27.5%	21	29.2%	20	32.8%
Uninvestigated					6	9.8%
Unexplained	22	12.9%	6	8.3%	7	11.5%
Mechanical	5	2.9%	2	2.8%	0	0.0%
Maternal disorder	9	5.3%	1	1.4%	0	0.0%
Antepartum haemorrhage	8	4.7%	1	1.4%	2	3.3%
Pregnancy induced hypertension	2	1.2%	1	1.4%	1	1.6%
Unknown	36	21.1%	17	23.6%	5	8.2%

MODE OF DELIVERY

	1994		1999		2004	
Spontaneous vertex delivery	78	45.6%	32	44.4%	24	39.3%
Vacuum extraction	7	4.1%	3	4.2%	2	3.3%
Forceps delivery	1	0.6%	0	0.0%	7	11.5%
Vaginal breech delivery	31	18.1%	17	23.6%	0	0.0%
LSCS before labour	27	15.8%	10	13.9%	13	21.3%
LSCS after labour	26	15.2%	7	9.7%	13	21.3%
Classical Caesarean section	-	-	3	4.2%	2	3.3%
Unknown	1	0.6%	1	0.6%	0	0.0%

Caesarean section data in 1994 included both lower segment and classical Caesarean section

GESTATION AT DELIVERY

	1994		1999		2004	
< 26 weeks	38	22.2%	26	36.1%	20	32.8%
26 - 28 weeks	24	14.0%	8	11.1%	11	18.0%
29 - 32 weeks	20	11.7%	8	11.1%	7	11.5%
33 - 36 weeks	33	19.3%	8	11.1%	7	11.5%
37 - 41 weeks	47	27.5%	19	26.4%	15	24.6%
> 41 weeks	6	3.5%	3	4.2%	1	1.6%
Unknown	3	1.8%	0	0.0%	0	0.0%

BIRTH WEIGHT AT DELIVERY

	1994		1999		2004	
< 500 gm	7	4.1%	8	11.1%	5	8.2%
500 - 999 gm	51	29.8%	26	36.2%	25	41.0%
1000 - 1499 gm	26	15.2%	7	9.7%	5	8.2%
1500 - 1999 gm	23	13.5%	3	4.2%	5	8.2%
2000 - 2499 gm	13	7.6%	10	13.9%	8	13.1%
2500 - 2999 gm	16	9.4%	5	6.9%	6	9.8%
3000 - 3499 gm	23	13.5%	6	8.3%	4	6.6%
3500 - 3999 gm	4	2.3%	5	6.9%	2	3.3%
≥ 4000 gm	6	3.5%	1	1.4%	1	1.6%
Unknown	2	1.2%	1	1.4%	0	0.0%

MATERNAL DEATHS

Maternal death in this report was defined as death from conception up to 1 year after delivery. The exact cause of maternal death was not captured in the audit exercise and the information was obtained from individual hospital. The maternal mortality ratio (MMR) decreased from 11.8 to 6.1 per 100,000 live births. The official reported figures from the Census and Statistics Department were 11.2, 2.0 and 4.1 per 100,000 registered live births respectively. The difference in the number is probably related to the different definition used.

INCIDENCE

	1994	1999	2004
Number	8	5	3
MMR (Per 100,000 live births)	11.8	10.3	6.1

CAUSES OF MATERNAL DEATH

	1994	1999	2004
Aminotic fluid embolism	5	0	0
Cardiac disease	1	0	0
Ruptured aortic aneurysm	1	0	0
Suicide	1	1	1
Pneumonia	0	1	0
Pulmonary embolism	0	1	0
Ruptured vertebral artery aneurysm	0	1	0
Massive Post-partum Haemorrhage	0	0	1
Hepatic failure	0	0	1
No cause identified	0	1	0

DATA FROM CENSUS AND STATISTICS DEPARTMENT

	1994	1999	2004
Number	8	1	2
MMR (per 100,000 registered live births)	11.1	2.0	4.1
Cause of death			
<i>Haemorrhage of pregnancy & childbirth</i>	2	0	0
<i>Obstetrical pulmonary embolism</i>	5	1	0
<i>Other direct obstetric deaths</i>	0	0	2
<i>Others</i>	1	0	0

Maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes (ICD-10).

Maternal mortality ratio refers to the number of maternal deaths in a calendar year per hundred thousand live births of that year.

PARITY OF PARTURIENTS

	1994		1999		2004	
Nulliparous	6	75.0%	3	60.0%	2	66.7%
Multiparous	2	25.0%	2	40.0%	1	33.3%

MATERNAL AGE

	1994		1999		2004	
20 - 24 years	1	12.5%	1	20.0%	0	0.0%
25 - 29 years	1	12.5%	0	0.0%	1	33.3%
30 - 34 years	3	37.5%	0	0.0%	1	33.3%
35 - 39 years	2	25.0%	2	40.0%	1	33.3%
≥ 40 years	1	12.5%	2	40.0%	0	0.0%

ASSOCIATED COMPLICATIONS

	1994		1999		2004	
Hypertension	2	25.0%	1	20.0%	0	0.0%
Antepartum haemorrhage	1	12.5%	1	20.0%	0	0.0%
Cardiac disease	1	12.5%	1	20.0%	0	0.0%
Anaemia	1	12.5%	0	0.0%	1	33.3%
Diabetes mellitus	0	0.0%	0	0.0%	1	33.3%
Post-partum haemorrhage	-	-	-	-	1	33.3%
Hysterectomy	-	-	-	-	1	33.3%

There might be more than 1 complication in each parturient

MODE OF ONSET OF LABOUR

	1994		1999		2004	
Spontaneous	3	37.5%	1	20.0%	1	33.3%
Induced labour	3	37.5%	1	20.0%	1	33.3%
No labour	2	25.0%	3	60.0%	1	33.3%

MODE OF DELIVERY

	1994		1999		2004	
Normal spontaneous delivery	3	37.5%	0	0.0%	1	33.3%
Vacuum extraction	1	12.5%	1	20.0%	0	0.0%
LSCS before labour	2	25.0%	4	80.0%	1	33.3%
LSCS after labour	1	12.5%	0	0.0%	1	33.3%

Caesarean section data in 1994 included both lower segment and classical Caesarean section

GESTATION AT DELIVERY

	1994		1999		2004	
26 - 28 weeks	0	0.0%	0	0.0%	1	33.3%
29 - 32 weeks	1	12.5%	1	20.0%	0	0.0%
33 - 36 weeks	0	0.0%	0	0.0%	0	0.0%
37 - 41 weeks	6	75.0%	4	80.0%	2	66.7%
≥ 42 weeks	1	12.5%	0	0.0%	0	0.0%

BIRTH WEIGHT AT DELIVERY

	1994		1999		2004	
1000 - 1499 gm	1	12.5%	0	0.0%	1	33.3%
1500 - 1999 gm	0	0.0%	1	20.0%	0	0.0%
2000 - 2499 gm	0	0.0%	0	0.0%	0	0.0%
2500 - 2999 gm	1	12.5%	1	20.0%	0	0.0%
3000 - 3499 gm	1	12.5%	1	20.0%	0	0.0%
3500 - 3999 gm	2	25.0%	1	20.0%	1	33.3%
≥ 4000 gm	2	25.0%	0	0.0%	1	33.3%
Unknown	1	12.5%	1	20.0%	0	0.0%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28days	6	75.0%	5	100.0%	3	100.0%
Intrauterine death (unborn)	1	12.5%	0	0.0%	0	0.0%
Neonatal death	1	12.5%	0	0.0%	0	0.0%

MULTIPLE PREGNANCIES

The incidence of multiple pregnancies increased from 0.8% to 1.1% and most of them were twins. The incidence of triplets increased from 2.9% in 1994 to 3.4% in 1999 and decreased down to 1.7% in 2004. Higher multiple pregnancy was reported once in 1994, but not thereafter. There was an overall increase in maternal age with the incidence of age between 35-39 increased from 13.1% to 29.2% and ≥ 40 increased from 2.3% to 8.0%. The incidence of diabetes mellitus increased from 6.1% to 11.0% and that of antepartum haemorrhage increased from 3.1 to 6.1%. The incidence of hypertension decreased from 11.7% in 1994 to 6.4% in 1999 and returned to 9.9% in 2004. Caesarean section before labour became the most common mode of delivery with the rate increased from 34.6% to 57.2%. The stillbirth rate decreased from 2.4% to 1.5% and that of neonatal death dropped from 2.3% to 1.1%.

	1994		1999		2004	
Total incidence	511	0.8%	450	0.9%	537	1.1%
<i>Twin pregnancy</i>	495	96.9%	435	96.6%	528	98.3%
<i>Triplet pregnancy</i>	15	2.9%	15	3.4%	9	1.7%
<i>Quadruplet or above</i>	1	0.2%	0	0.0%	0	0.0%
Total no. of babies	1039	1.5%	915	1.9%	1083	2.2%

PARITY OF PARTURIENTS

	1994		1999		2004	
Para 0	272	53.1%	284	63.1%	344	64.1%
Para 1	176	34.4%	127	28.2%	154	28.7%
Para 2	46	9.0%	27	6.0%	29	5.4%
Para 3 & above	17	3.3%	12	2.7%	10	1.9%

MATERNAL AGE

	1994		1999		2004	
< 20 years	3	0.6%	1	0.4%	4	0.7%
20 - 24 years	51	10.0%	25	5.6%	41	7.6%
25 - 29 years	158	30.9%	91	20.2%	100	18.6%
30 - 34 years	218	42.5%	165	36.7%	180	33.5%
35 - 39 years	67	13.1%	138	30.7%	155	28.9%
≥ 40 years	12	2.3%	28	6.2%	42	7.4%
Unknown	2	0.4%	2	0.4%	15	2.8%

ANTENATAL COMPLICATIONS

	1994		1999		2004	
Anaemia	69	13.5%	35	7.6%	31	5.8%
Antepartum haemorrhage	16	3.1%	16	3.6%	33	6.1%
<i>Placenta praevia</i>	8	50.0%	2	12.5%	7	21.2%
<i>Placenta abruptio</i>	1	6.3%	1	6.3%	0	0.0%
<i>APH of unknown origin</i>	7	43.7%	12	75.0%	25	75.8%
<i>Other causes</i>	0	0.0%	1	6.3%	1	3.0%
Hypertension	60	11.7%	29	6.4%	53	9.9%
<i>Mild</i>	44	73.3%	19	65.5%	24	45.3%
<i>Severe</i>	16	26.7%	10	34.5%	20	37.7%
<i>Unclassified</i>	0	0.0%	0	0.0%	9	17.0%
Diabetes mellitus (including IGT)	31	6.1%	44	9.8%	59	11.0%
Other medical/surgical diseases	11	2.2%	34	7.6%	26	4.8%

MATERNAL COMPLICATIONS

	1994		1999		2004	
Postpartum haemorrhage	33	6.4%	23	5.1%	21	3.9%
Rupture of uterus	1	0.2%	0	0.0%	0	0.0%
Hysterectomy	2	0.4%	0	0.0%	2	0.4%

MODE OF ONSET OF LABOUR

	1994		1999		2004	
Spontaneous	237	46.3%	166	36.9%	175	32.6%
Induced labour	92	18.0%	73	16.2%	49	9.1%
No labour	182	35.5%	211	46.9%	313	58.3%

GESTATION AT DELIVERY

	1994		1999		2004	
< 26 weeks	10	2.0%	8	1.8%	10	1.9%
26-28 weeks	12	2.3%	11	2.4%	14	2.6%
29 - 32 weeks	35	6.8%	38	8.4%	52	9.7%
33 - 36 weeks	135	26.4%	149	33.1%	197	36.7%
37 - 41 weeks	316	61.8%	235	52.2%	255	47.5%
> 41 weeks	3	0.6%	2	0.4%	1	0.2%
Unknown	0	0.0%	7	1.6%	8	1.5%

PRESENTATION AND LIE FOR EACH BABY

	1994		1999		2004	
Vertex	762	73.3%	606	66.2%	776	71.7%
Breech	223	21.5%	246	26.9%	276	25.5%
Transverse lie	1	0.1%	26	2.8%	19	1.8%
Oblique lie	6	0.6%	8	0.9%	2	0.2%
Compound	29	2.8%	2	0.2%	1	0.1%
Others	3	0.3%	14	1.5%	9	0.8%
Unknown	15	1.4%	13	1.4%	0	0.0%

MODE OF DELIVERY FOR EACH BABY

	1994		1999		2004	
Spontaneous vertex delivery	264	25.4%	177	19.3%	155	14.3%
Vacuum extraction	68	6.5%	53	5.8%	28	2.6%
Forceps delivery	32	3.1%	20	2.2%	18	1.7%
Vaginal breech delivery	67	6.4%	47	5.1%	29	2.7%
LSCS before labour	360	34.6%	415	45.4%	619	57.2%
LSCS after labour	233	22.4%	179	19.6%	232	21.4%
Classical Caesarean section	-	-	2	0.2%	2	0.2%
Others	0	0.0%	9	1.0%	0	0.0%
Unknown	15	1.4%	13	1.4%	0	0.0%

Caesarean section data in 1994 included both lower segment and classical Caesarean section

BIRTH WEIGHT AT DELIVERY

	1994		1999		2004	
< 500 gm	0	0.0%	19	2.1%	7	0.6%
500 - 999 gm	2	0.2%	28	3.1%	43	4.0%
1000 - 1499 gm	33	3.2%	65	7.1%	61	5.6%
1500 - 1999 gm	73	7.0%	140	15.3%	176	16.3%
2000 - 2499 gm	145	14.0%	282	30.8%	363	33.5%
2500 - 2999 gm	302	29.1%	305	33.3%	356	32.9%
3000 - 3499 gm	362	34.8%	64	7.0%	60	5.5%
3500 - 3999 gm	96	9.2%	6	0.7%	2	0.2%
≥ 4000 gm	11	1.1%	0	0.0%	0	0.0%
Unknown	15	1.4%	6	0.7%	15	1.4%

FETAL OUTCOME

	1994		1999		2004	
Alive at 28days	975	95.3%	869	95.3%	1054	97.4%
Stillbirths	25	2.4%	13	1.4%	16	1.5%
<i>Antepartum</i>	-	-	-	-	12	75.0%
<i>Unknown</i>	-	-	-	-	4	25.0%
Neonatal death	24	2.3%	11	1.2%	12	1.1%
<i>Early</i>	-	-	-	-	9	75.0%
<i>Late</i>	-	-	-	-	3	25.0%

Missing data in fetal outcome 19 (2.1%) in 1999

OTHER NEONATAL COMPLICATIONS

	1994		1999		2004	
Apgar score <4 at 1 minute	47	4.6%	21	2.3%	30	2.8%
Apgar score 4-6 at 1 minute	148	14.5%	127	13.9%	99	9.1%
Apgar score <4 at 5 minutes	15	1.5%	6	0.7%	17	1.6%
Apgar score 4-6 at 5 minutes	20	2.0%	14	1.5%	7	0.6%
Admission to neonatal ICU	164	16.0%	367	40.2%	464	42.8%
Major congenital abnormalities	21	2.1%	19	1.8%	8	0.7%
Respiratory distress syndrome	30	2.9%	18	2.0%	0	0.0%
Intraventricular haemorrhage	10	1.0%	12	1.3%	0	0.0%
Necrotising enterocolitis	2	0.2%	7	0.8%	1	0.1%
Birth trauma	2	0.2%	2	0.2%	1	0.1%
Major infection	16	1.6%	14	1.5%	0	0.0%

OUTCOME OF PREGNANCIES WITH NORMAL AND ABNORMAL ANTENATAL COURSE

The parturients were divided into two groups according to whether they had any antenatal complications. Parturient was considered to have normal antenatal course all of the following criteria were satisfied:

1. age less than 35
2. a singleton pregnancy in vertex presentation
3. no medical/surgical disease
4. no obstetrical complications
5. no previous uterine scar

The proportion of parturients with normal antenatal course decreased from 66.2% to 53.7%. The decrease in incidence might be explained by a higher proportion of parturients with advanced maternal age which increased from 13.9% to 24.2%.

INCIDENCE

	1994		1999		2004	
TOTAL INCIDENCE	67438		48459		49656	
<i>Normal antenatal course</i>	44644	66.2%	26560	54.8%	26664	53.7%
<i>Abnormal antenatal course</i>	22794	33.8%	21899	45.2%	22992	46.3%

MODE OF DELIVERY

About 2/3 of the parturients with a normal antenatal course delivered spontaneously as compared with less than half of those with an abnormal antenatal course. On the other hand, the Caesarean section rate in those with an abnormal antenatal course was about 40% compared with less than 18% in those with a normal antenatal course. There was a trend of increasing Caesarean section rate in parturients with both a normal and an abnormal antenatal course.

PRETERM DELIVERIES AND LOW BIRTHWEIGHT

The rates of preterm delivery and low birth weight were significantly higher when the parturients had an abnormal antenatal course. These rates had not changed much over the past 10 years.

FETAL OUTCOME

The rates of asphyxiation (Apgar score <4 at 5 minutes for live births), stillbirth and neonatal death were significantly higher in those with an abnormal antenatal course. However, there was an improvement in the fetal outcome in these 3 parameters over the past 10 years and the improvement was more marked in those with abnormal antenatal course.

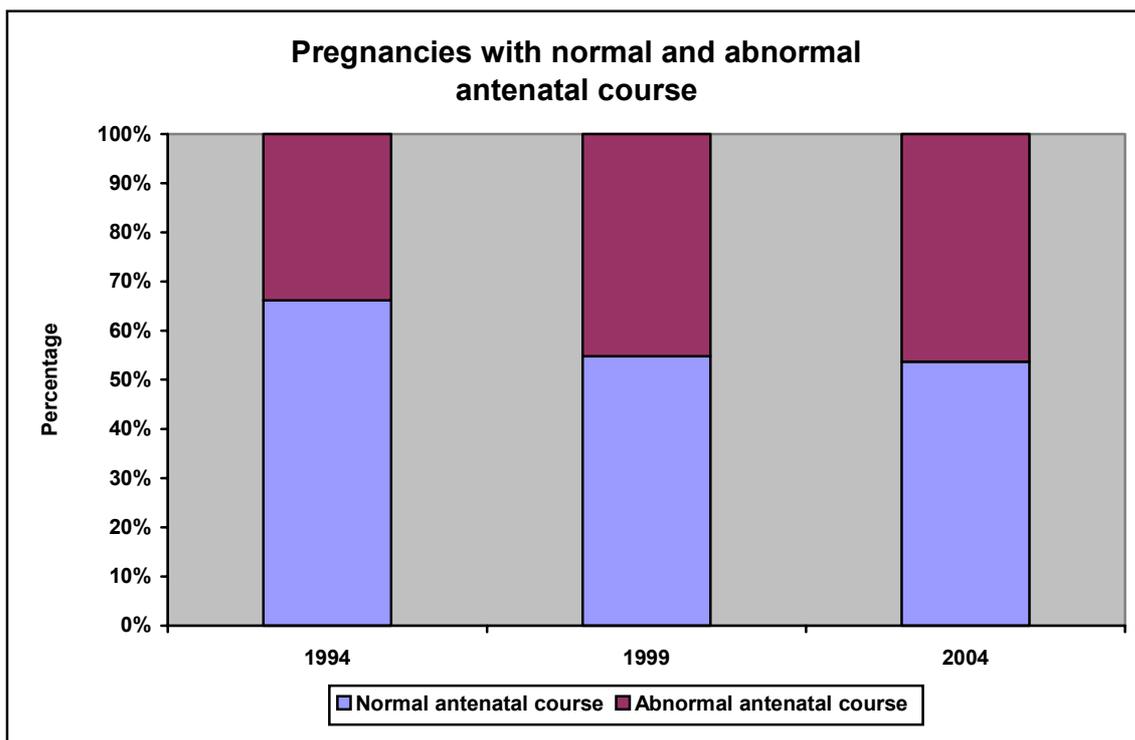


Figure O16 – Normal and abnormal antenatal course

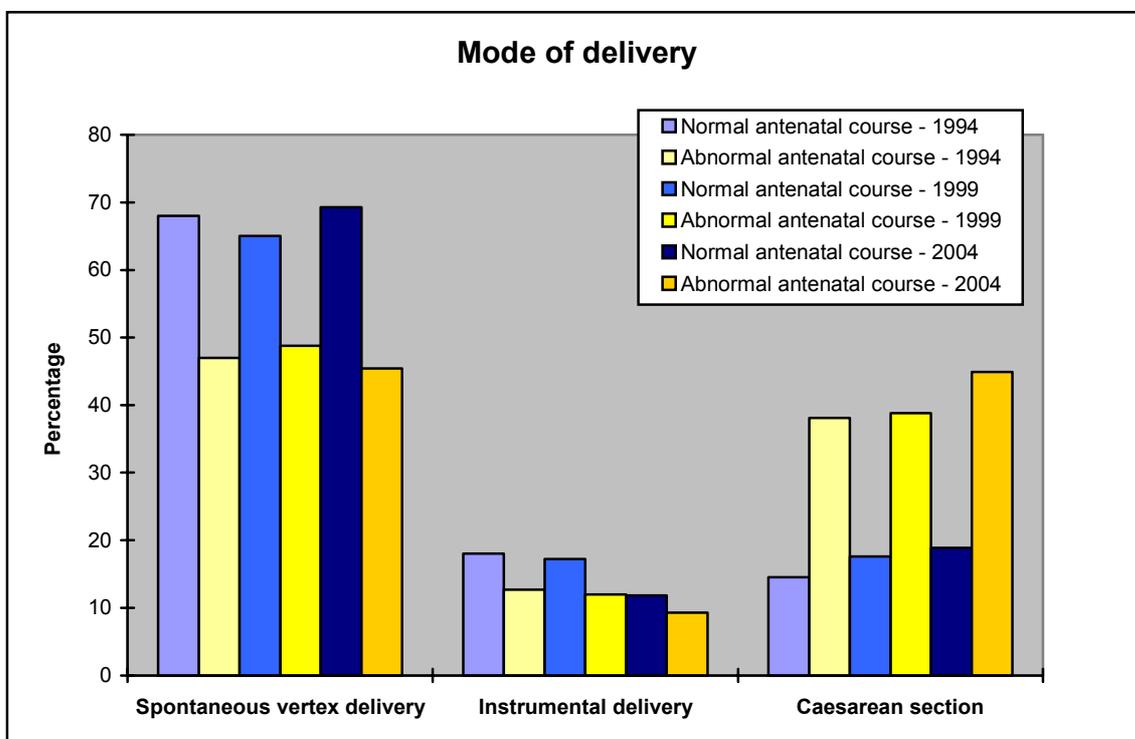


Figure O17 – Mode of delivery

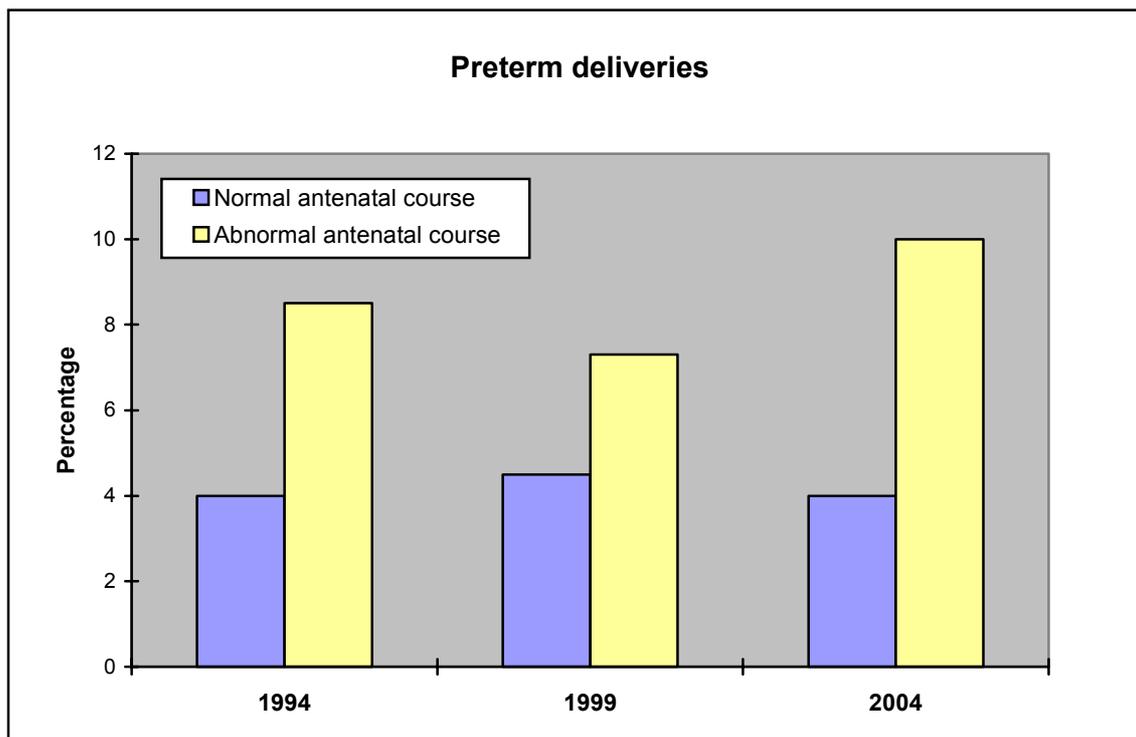


Figure O18 – Preterm deliveries

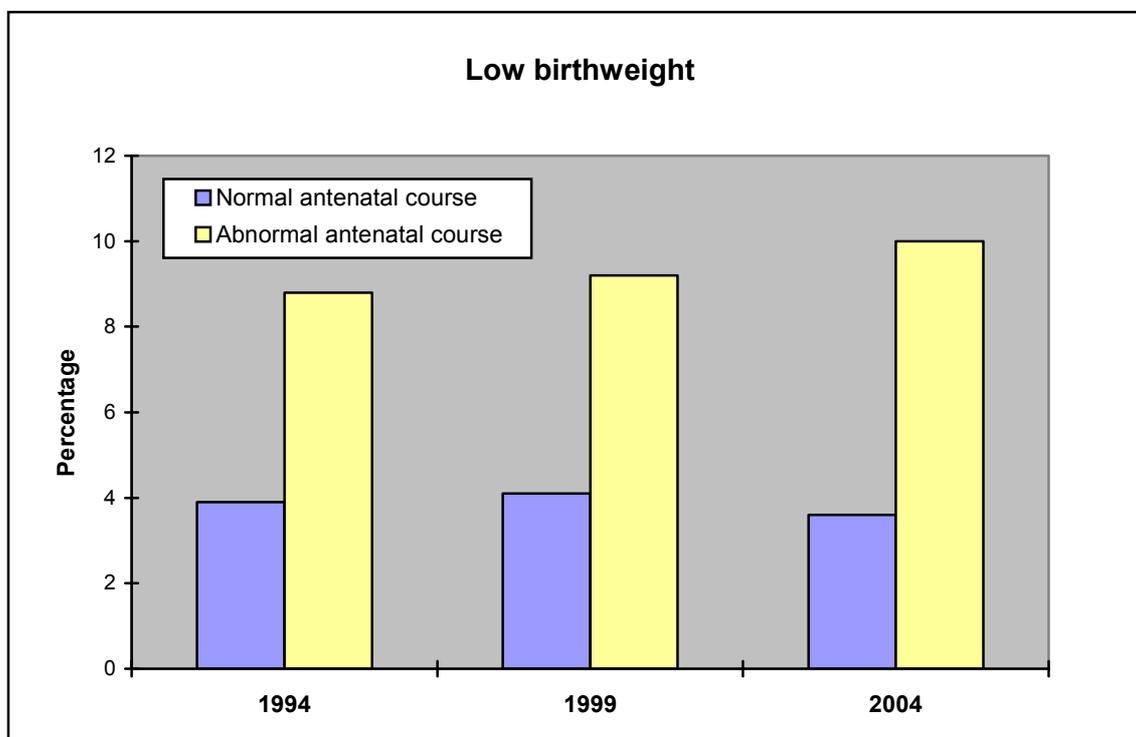


Figure O19 – Low birth weight

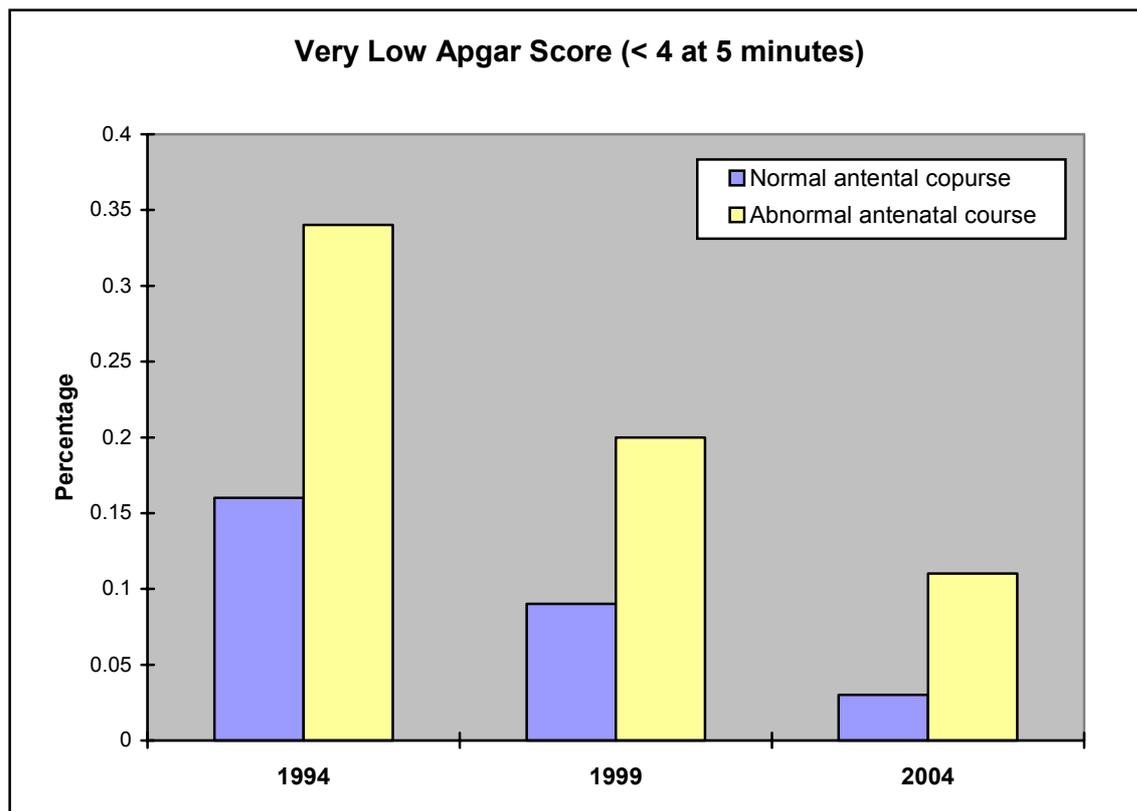


Figure O20 – Very low Apgar score

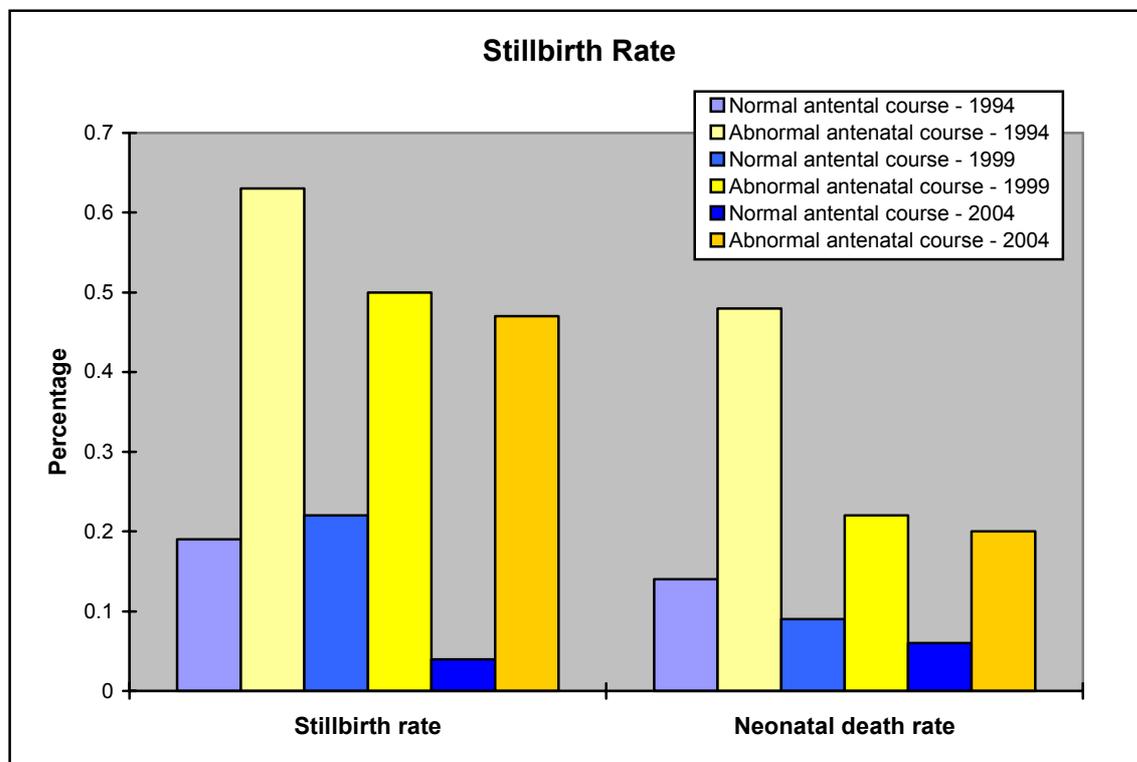


Figure O21 – Stillbirth and neonatal death rate

OUTCOME OF PREGNANCIES IN RESIDENTS AND NON-RESIDENTS

In recent years, there has been an influx of parturients from mainland China delivering in Hong Kong, a significant proportion of them are not Hong Kong residents. The obstetric characteristics and performance of these so called non-entitled persons (NEP) were audited in this current exercise and compared with local residents.

Parturients who were non-residents accounted for 19.8% of the total number of maternities. Their mean age was 28.3 ± 4.5 years, which was significantly younger than the local residents (mean age 31.6 ± 5.0 years). A higher proportion of them were nulliparous and 72.9% were considered to have normal antenatal course (as previously defined), compared with only 49.7% in the local residents. They also had a lower incidence of having obstetric complication, with an overall rate of 9.8% compared with 13.3% in the local residents. The incidence of preterm delivery was lower (5.1% versus 7.1%) but that of post-term delivery was much higher (3.2% versus 0.9%). The mean gestational age at delivery was significantly higher among the non-residents (39.0 ± 1.8 versus 38.6 ± 1.9).

The incidence of born before arrival was higher among the non-residents (0.5% versus 0.3%), though the overall incidence was low. They were more likely to have a spontaneous vaginal delivery and less likely to require a caesarean section. The mean birth weight of the babies was higher (3210 ± 459 versus 3155 ± 501 gm) and the incidence of low birth weight was lower (4.9% versus 7.0%). The rate of admission to neonatal ICU was lower (15.8% versus 18.6%), but there was no difference in the other neonatal complications.

Peri-partum hysterectomy rate was lower in the non-residents and there were no maternal death reported.

	Residents		Non-Residents	
Total no. of maternities	39401	80.2%	9709	19.8%
<i>Singleton</i>	38956	98.9%	9617	99.1%
<i>Twins</i>	437	1.1%	91	1.1%
<i>Triplets</i>	8	0.02%	1	0.01%
Total no. of babies	39854	80.3%	9802	19.7%

PARITY OF THE PATURIENTS

	Residents		Non-Residents	
Para 0	21399	54.3%	6101	62.8%
Para 1	14179	36.0%	3134	32.3%
Para 2	3038	7.7%	395	4.1%
Para 3 & above	785	2.0%	79	0.8%

AGE OF THE PATIENTS

	Residents		Non-Residents	
< 20 years	334	0.8%	61	0.6%
20 - 24 years	3297	8.4%	2061	21.2%
25 - 29 years	8606	21.8%	3958	40.8%
30 - 34 years	15255	38.7%	2504	25.8%
35 - 39 years	8877	22.5%	795	8.2%
≥ 40 years	2079	5.3%	154	1.6%
Unknown	953	2.4%	176	1.8%

ASSOCIATED ANTENATAL COMPLICATIONS

	Residents		Non-Residents	
Antepartum haemorrhage	896	2.3%	88	0.9%
<i>Placenta praevia</i>	255	28.5%	35	39.8%
<i>Placenta abruptio</i>	64	7.1%	8	9.1%
<i>APH of unknown origin</i>	534	59.6%	43	48.9%
<i>Other causes</i>	43	4.8%	2	2.3%
Diabetes mellitus (including IGT)	3016	7.7%	92	0.9%
<i>Pre-existing DM</i>	68	2.3%	2	2.2%
<i>GDM</i>	719	23.8%	35	38.0%
<i>IGT</i>	2229	73.9%	55	59.8%
Hypertension	1097	2.8%	153	1.6%
<i>Mild</i>	503	45.9%	59	38.6%
<i>Severe</i>	280	25.5%	54	35.3%
<i>Unclassified</i>	314	28.6%	40	26.1%
Anaemia	1705	4.3%	251	2.6%
Cardiac diseases	352	0.9%	27	0.3%
Surgical diseases	201	0.5%	17	0.2%
Other medical diseases	1397	3.5%	62	0.6%

MODE OF ONSET OF LABOUR

	Residents		Non-Residents	
Spontaneous	24444	62.0%	6875	70.8%
Induced labour	7480	19.0%	1545	15.9%
No labour	7477	19.0%	1289	13.3%

GESTATION AT DELIVERY

	Residents		Non-Residents	
< 26 weeks	65	0.2%	6	0.1%
26-28 weeks	135	0.3%	11	0.1%
29 - 32 weeks	348	0.9%	46	0.5%
33 - 36 weeks	2249	5.7%	430	4.4%
37 - 41 weeks	36118	91.7%	8896	91.6%
> 41 weeks	365	0.9%	308	3.2%
Unknown	121	0.3%	10	0.1%

MODE OF DELIVERY FOR EACH BABY

	Residents		Non-Residents	
Spontaneous vertex delivery	22520	56.5%	6378	65.1%
Vacuum extraction	3902	9.8%	921	9.4%
Forceps delivery	373	0.9%	92	0.9%
Vaginal breech delivery	81	0.2%	27	0.3%
LSCS before labour	7624	19.1%	1299	13.3%
LSCS after labour	5299	13.3%	1079	11.0%
Classical CS before labour	40	0.1%	5	0.05%
Classical CS after labour	14	0.04%	1	0.01%
Others	1	0.003%	0	0.0%

BIRTH WEIGHT AT DELIVERY

	Residents		Non-Residents	
< 500 gm	16	0.04%	2	0.02%
500 - 999 gm	154	0.4%	13	0.1%
1000 - 1499 gm	229	0.6%	17	0.2%
1500 - 1999 gm	485	1.2%	89	0.9%
2000 - 2499 gm	1897	4.8%	362	3.7%
2500 - 2999gm	10428	26.2%	2316	23.6%
3000 - 3499 gm	17504	43.9%	4573	46.7%
3500 - 3999 gm	7612	19.1%	2058	21.0%
≥ 4000 gm and above	1419	3.6%	367	3.7%
Unknown	110	0.3%	5	0.1%

MATERNAL COMPLICATIONS

	Residents		Non-Residents	
Born before arrival	126	0.3%	49	0.5%
Postpartum haemorrhage	1024	2.6%	271	2.8%
Manual removal of placenta	837	2.1%	196	2.0%
Puerperal pyrexia	239	0.6%	55	0.6%
Third degree laceration of perineum	12	0.03%	4	0.04%
Hysterectomy	20	0.5%	1	0.01%
Rupture of uterus	4	0.01%	1	0.01%
Uterine artery ligation	2	0.005%	1	0.01%
Preterm (<37 weeks)	2797	7.1%	495	5.1%
<i>Singleton</i>	2575	92.1%	444	89.7%
<i>Multiple</i>	222	7.9%	51	10.3%
Maternal death	3	0.008%	0	0.0%

FETAL OUTCOME

	Residents		Non-Residents	
Alive at 28 days	39712	99.6%	9766	99.6%
Stillbirths	92	0.2%	25	0.3%
<i>Antepartum</i>	73	79.3%	19	76.0%
<i>Intrapartum</i>	4	4.3%	0	0.0%
<i>Undetermined</i>	15	16.3%	6	24.0%
Neonatal deaths	50	0.1%	11	0.1%
<i>Early</i>	40	80.0%	10	90.9%
<i>Late</i>	10	20.0%	1	9.1%
Low birth weight (<2500 gm)	2781	7.0%	483	4.9%
<i>Singleton</i>	533	19.2%	117	24.2%
<i>Multiple</i>	2248	80.8%	366	75.8%
Macrosomia (>4000 gm)	1342	3.4%	342	3.5%
Apgar score <4 at 1 minute	197	0.5%	53	0.5%
Apgar score <4 at 5 minutes	91	0.2%	29	0.3%

OTHER NEONATAL COMPLICATIONS

	Residents		Non-Residents	
Admission to neonatal ICU	7408	18.6%	1545	15.8%
Major congenital abnormalities	201	0.5%	40	0.4%
Respiratory distress syndrome	20	0.05%	3	0.03%
Intraventricular haemorrhage	1	0.003%	0	0.0%
Necrotising enterocolitis	4	0.01%	1	0.01%
Birth trauma	13	0.03%	6	0.1%
Major infection	18	0.05%	4	0.04%

The Gynaecological Report

2004

GENERAL GYNAECOLOGICAL STATISTICS

BACKGROUND INFORMATION OF THE RETURNED GYNAECOLOGICAL DATA

	1994		1999		2004	
Total number of records collected	-		76626		75168	
<i>Admission date not in the year 2004</i>	-	-	282	0.4%	2	0.003%
<i>Records with no data</i>	-	-	-	-	13	0.02%
Total number of records analyzed	60809		76344		75053	
<i>Records with complete data</i>	55227	90.8%	70772	92.7%	73967	98.6%
<i>Records with incomplete data</i>	5582	9.2%	5572	7.3%	1188	1.6%
Missing data on age	2694	4.9%	898	1.2%	231	0.3%
Missing data on both admission/discharge date	506	0.8%	376	0.5%	621	0.8%
Missing data on admission/discharge status	-	-	-	-	233	0.3%
No diagnosis recorded	1047	1.7%	1721	2.3%	325	0.43%
No procedure recorded	1897	3.1%	2002	2.6%	385	0.51%
No diagnosis and procedure recorded	-	-	-	-	295	0.39%

STATUS AT ADMSSION

The total number of gynaecological admissions increased from 60,809 in 1994 to 76,344 in 1999 and decreased slightly to 75,053 in 2004. Elective admissions remained around 70% of all admissions, of which 20% in 2004 were day admission. The latter information was not captured in previous audits. Emergency admissions constituted 25-29% of all admissions throughout the years. There was a 3 fold increase in the unplanned readmission rate from 0.4% to 1.2%.

	1994		1999		2004	
Emergency admissions	14906	24.5%	21955	28.8%	19906	26.5%
Elective admissions	44338	72.9%	51001	66.8%	41996	56.0%
Day admissions	-		-		11071	14.7%
Unplanned readmissions	247	0.4%	610	0.8%	895	1.2%
Transfer in from other specialties	950	1.6%	1229	1.6%	973	1.3%
Missing data	368	0.6%	1549	2.0%	212	0.3%
Total no. of admissions	60809		76344		75053	

STATUS AT DISCHARGE

Majority of the cases were discharged home and the rate remained about 98%. The number of deaths remained very low. The rate of transfer to other specialties decreased from 0.7% to 0.3%.

	1994		1999		2004	
Home	59774	98.3%	73540	97.6%	74229	98.9%
Transfer to convalescence hospitals	68	0.1%	73	0.1%	63	0.08%
Transfer to other specialties	529	0.7%	418	0.5%	247	0.3%
Discharge against medical advice	200	0.3%	264	0.3%	275	0.4%
Death	34	0.06%	26	0.03%	22	0.03%
Missing data	204	0.3%	1023	1.3%	217	0.3%
Total no. of admissions	60809		76344		75053	

SUMMARY OF DISTRIBUTION OF VARIOUS DIAGNOSES

For each admission, there might be more than one diagnosis under different or same category. Compared with 1999, the rate of admission for most disease categories remained unchanged except for disease of the uterus, disease of the ovaries and genital displacement/urinary disorders which showed a 1.5 fold, 1.3 fold and 2 fold increases respectively.

Disorders of pregnancy and reproduction remained the most common condition for admission with a rate of about 50%. Diseases of the uterus replaced menstrual disorders as the second most common condition with the rate increased from around 10% to 15.5%. The admission rate for menstrual disorder remained at 12-14%.

Classification of diagnoses	1994		1999		2004	
Vulva, perineum and urethra	1244	2.0%	1862	2.4%	1882	2.5%
Vagina	487	0.8%	566	0.7%	486	0.7%
Cervix	3361	5.5%	5529	7.2%	5240	7.0%
Uterus	5600	9.2%	7738	10.1%	11615	15.5%
Fallopian tubes	1059	1.7%	1585	2.1%	1742	2.3%
Ovaries	4342	7.1%	5784	7.6%	7508	10.0%
Broad ligaments & pelvic peritoneum	859	1.4%	861	1.1%	957	1.3%
Genital displacement / urinary disorders	864	1.4%	1101	1.4%	2129	2.8%
Menstrual disorders	7438	12.2%	10658	14.0%	9235	12.3%
Pregnancy and reproductive disorders	36020	59.2%	38376	50.3%	36211	48.3%
Non-obstetric diseases in pregnancy	782	1.3%	1747	2.3%	1909	2.5%
Other gynaecological diseases	1729	2.8%	2473	3.2%	2542	3.4%
Other non-gynaecological diseases	1987	3.3%	2434	3.2%	2251	3.0%
<i>Total no. of admissions</i>	60809		76344		75053	

TEN COMMONEST DIAGNOSES

First trimester termination of pregnancy and miscarriage remained the first two most common diagnoses for admission, however the overall rate dropped from 28.0% to 19.4% and 13.5% to 9.7% respectively. Fibroid became the third most common diagnosis and the rate increased from 6.6% to 9.6%. Threatened abortion remained the 4th most common diagnosis and its rate remained around 7%. The rate of admissions for subfertility doubled between 1994 and 2004. Dysfunctional uterine bleeding became the 6th most common diagnosis, compared with the third in 1994 and 1999. This is because of the addition of menorrhagia as a new diagnosis under the menstrual disorder, which ranked the 10th most common diagnosis in 2004.

Diagnoses	1994		1999		2004	
	Ranking	%	Ranking	%	Ranking	%
First trimester termination of pregnancy	1	28.0	1	20.5	1	19.4
Silent /spontaneous miscarriage	2	13.5	2	11.4	2	9.7
Fibromyoma	5	6.6	5	7.2	3	9.6
Threatened abortion	4	7.1	4	7.7	4	6.7
Subfertility	7	3.3	6	4.2	5	6.6
Dysfunctional uterine bleeding	3	9.2	3	10.9	6	6.0
Cervical intra-epithelial neoplasia	14	1.4	7	3.6	7	4.0
Benign ovarian tumour/benign cysts	8	2.8	9	3.0	8	3.6
Endometriotic cyst	10	2.0	11	2.5	9	3.2
Menorrhagia	-	-	-	-	10	3.2

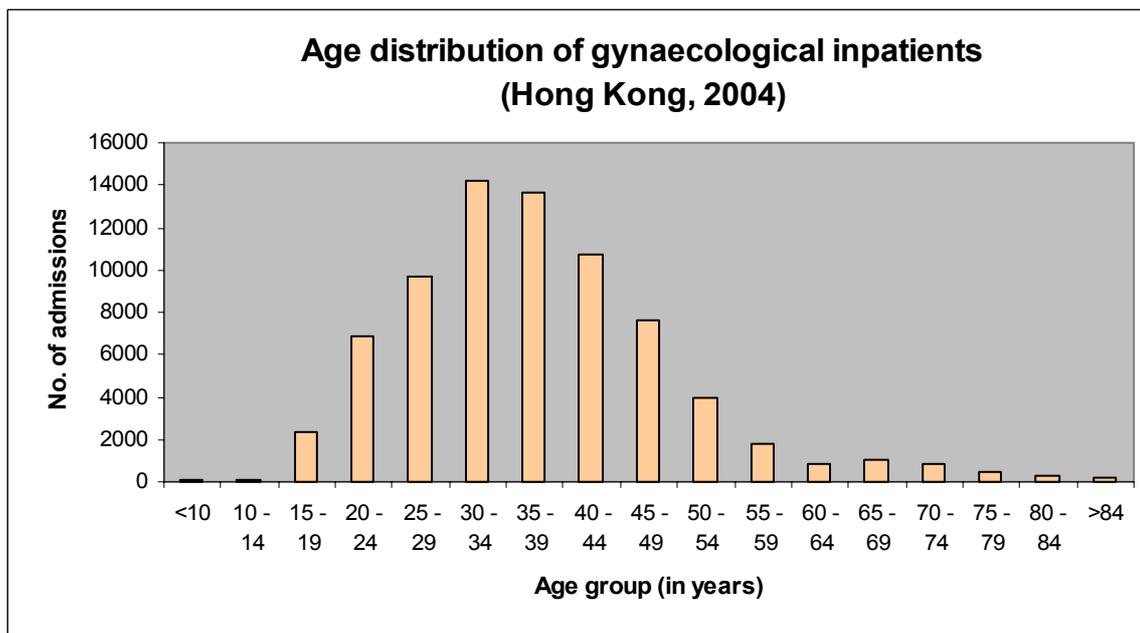


Figure G1 – Age distribution of gynaecological inpatients admission

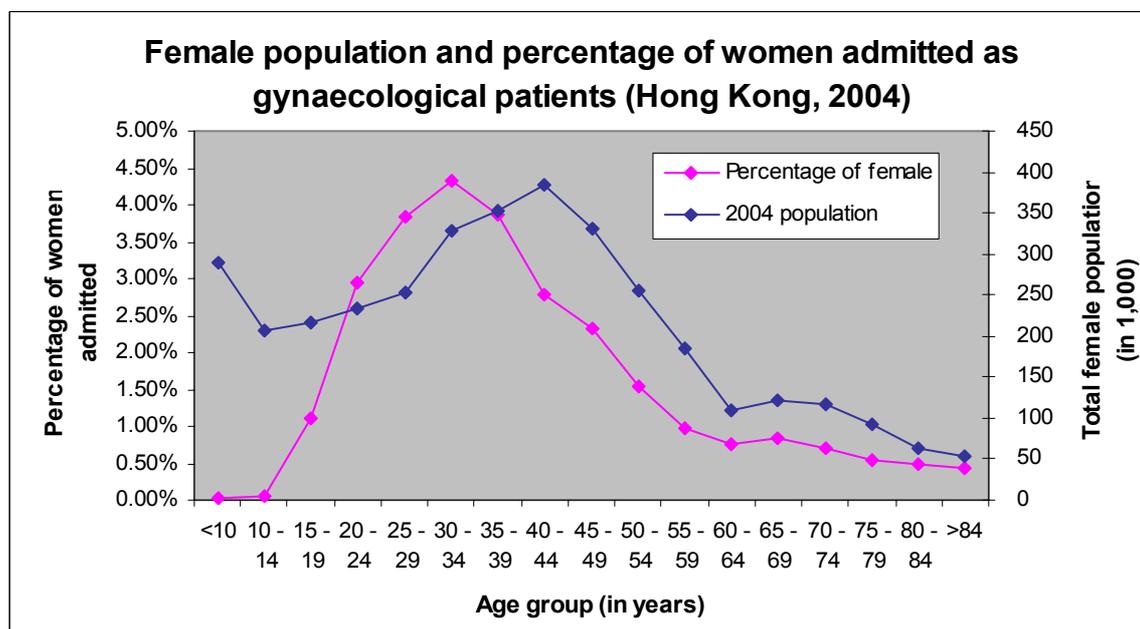


Figure G2 – Percentage of women admitted

DETAILED BREAKDOWN OF INDIVIDUAL DIAGNOSIS

DISEASES OF VULVA, PERINEIUM AND URETHRA

The total number of admissions with this diagnosis remained unchanged after an almost 50% increase between 1994 and 1999. The overall rate of benign neoplasm increased from 0.16% in 1994 to 0.22% in 1999 and 0.26% in 2004. The overall rate of congenital anomalies was 0.07%, compared with 0.03% in 1994 and 1999.

	1994		1999		2004	
Infection	393	31.6%	767	41.2%	895	48.7%
Retention cyst	392	31.5%	331	17.8%	317	17.3%
Trauma	108	8.7%	148	7.9%	104	5.7%
Benign neoplasm	96	7.7%	168	9.0%	194	10.6%
Vulval dystrophy	81	6.5%	166	8.9%	84	4.6%
Malignant neoplasm	35	2.8%	87	4.7%	80	4.4%
Urethral lesions	31	2.5%	17	0.9%	29	1.6%
Congenital anomalies	17	1.4%	22	1.2%	52	2.8%
Miscellaneous	123	9.9%	171	9.2%	127	6.9%
Total no. of admissions	1244	2.0%	1862	2.4%	1837	2.4%

DISEASES OF VAGINA

Compared with 1999, the total number of admissions with this diagnosis decreased by 15.9% and was similar to that in 1994. The overall rate of vaginal intra-epithelial neoplasia increased from 0.05% in 1994 to 0.08% in 1999 and 0.13% in 2004. The overall rate of malignant neoplasm remained at 0.09% after a significant rise from 0.03% in 1994 to 0.1% in 2004.

	1994		1999		2004	
Infection	126	25.9%	128	22.6%	99	20.7%
Retention cyst	37	7.6%	50	8.8%	35	7.3%
Trauma	36	7.4%	38	6.7%	47	9.8%
Vaginal intra-epithelial neoplasia	33	6.8%	64	11.3%	96	20.0%
Benign neoplasm	28	5.7%	40	7.1%	39	8.1%
Congenital anomalies	22	4.5%	26	4.6%	24	5.0%
Malignant neoplasm	19	3.9%	74	13.1%	64	13.4%
Fistula	17	3.5%	21	3.7%	9	1.9%
Atrophic vaginitis	-	-	56	9.9%	18	3.8%
Miscellaneous	173	35.5%	73	12.9%	55	11.5%
Total no. of admissions	487	0.8%	566	0.7%	479	0.6%

DISEASES OF UTERINE CERVIX

The total number of admissions with cervical diseases decreased by 6.2%, after a 64.5% increase between 1994 and 1999. Admission for cervical intra-epithelial neoplasia continued to rise with an overall rate of 4.0% compared with 1.4% in 1994 and 3.6% in 1999. Admission for carcinoma of cervix gradually decreased with the overall admission rate dropped from 1.8% to 1.3%.

	1994		1999		2004	
Carcinoma of cervix	1116	33.2%	1049	19.0%	951	18.3%
Benign neoplasm	1093	32.5%	939	17.0%	890	17.2%
Cervical intra-epithelial neoplasia	856	25.5%	2725	49.3%	3016	58.1%
Infection	141	4.2%	650	11.8%	146	2.8%
Congenital anomalies	27	0.8%	23	0.4%	22	0.4%
Trauma	16	0.5%	27	0.5%	20	0.4%
Other malignancies of cervix	6	0.2%	12	0.2%	29	0.6%
Miscellaneous	159	4.7%	158	2.9%	171	3.3%
Total no. of admissions	3361	5.5%	5529	7.2%	5187	6.9%

DISEASES OF UTERINE BODY

The total number of admissions for uterine body diseases increased by 2 folds over the past 10 years, making it the second most common diagnosis for admission. Admission for endometrial polyp showed a 5-fold increase over the 10 years with the overall rate increased from 0.5% in 1994 to 0.9% in 1999 and 2.0% in 2004. The number of admission for fibroid increased by 1.8 folds with the overall rate increased from 6.6% to 9.6%. The overall rate of carcinoma of corpus almost doubled (1.3% in 2004 versus 0.7-0.8% in 1999 and 1994), similar to other malignancy of the uterine body (0.12% in 2004 versus 0.06% in 1999 and 1994).

	1994		1999		2004	
Fibromyoma	3996	71.4%	5422	70.1%	7190	65.1%
Adenomyosis	605	10.8%	572	7.4%	959	8.7%
Carcinoma of corpus	402	7.2%	622	8.0%	983	8.9%
Endometrial polyp	298	5.3%	658	8.5%	1512	13.7%
Endometrial hyperplasia	200	3.6%	258	3.3%	365	3.3%
Infection	143	2.6%	202	2.6%	267	2.4%
Congenital anomalies	61	1.1%	66	0.9%	66	0.6%
Other malignancy of the uterine body	39	0.7%	46	0.6%	92	0.8%
Trauma	23	0.4%	37	0.5%	26	0.2%
Atrophic endometritis	-	-	36	0.5%	32	0.3%
Myohyperplasia	65	1.2%	31	0.4%	34	0.3%
Miscellaneous	116	2.1%	126	1.6%	89	0.8%
Total no. of admissions	5600	9.2%	7738	10.1%	11044	14.7%

DISEASES OF FALLOPIAN TUBES

Compared with 1999, there was an 8.6% increase in the total number of admissions in this category, in contrast to the 49.7% increase between 1994 and 1999. The overall rate of acute pelvic inflammatory disease increased from 1.1% in 1994 to about 1.5% in 1999 and 2004, while that of the chronic form remained at 0.5%

	1994		1999		2004	
Acute pelvic inflammatory disease	655	61.9%	1051	66.3%	1129	65.6%
Chronic pelvic inflammatory disease	280	26.4%	362	22.8%	440	25.6%
Tuberculosis salpingitis	34	3.2%	26	1.6%	14	0.8%
Benign neoplasm	29	2.7%	37	2.3%	54	3.1%
Malignant neoplasm	26	2.5%	49	3.1%	37	2.1%
Miscellaneous	44	4.2%	68	4.3%	68	3.9%
Total no. of admissions	1059	1.7%	1585	2.1%	1722	2.3%

DISEASES OF OVARY

The number of admissions for diseases of ovary steadily increased by about 30% over each 5-year period. The overall rate of admission for endometriotic cyst increased from 2.0% in 1994 to 2.5% in 1999 and 3.2% in 2004 while that of benign ovarian tumour increased from around 3% in 1994 and 1999 to 3.6% in 2004. The overall rate of admission for primary epithelial malignant tumour increased to from 1.3% to 2.0% and that of borderline malignant tumour increased from 0.07% to 0.13%.

	1994		1999		2004	
Benign tumour/benign cyst	1704	39.2%	2254	39.0%	2701	36.6%
Endometriotic cyst	1229	28.3%	1891	32.7%	2426	32.9%
Primary malignant tumour – epithelial	841	19.4%	975	16.9%	1526	20.7%
Retention/functional cyst	418	9.6%	455	7.9%	462	6.3%
Primary malignant tumour – non-epithelial	112	2.6%	82	1.4%	137	1.9%
Borderline malignant tumour	44	1.0%	59	1.0%	101	1.4%
Secondary malignant tumour	32	0.7%	27	0.5%	41	0.6%
Miscellaneous	45	1.0%	122	2.1%	114	1.5%
Total no. of admissions	4342	7.1%	5784	7.6%	7381	9.8%

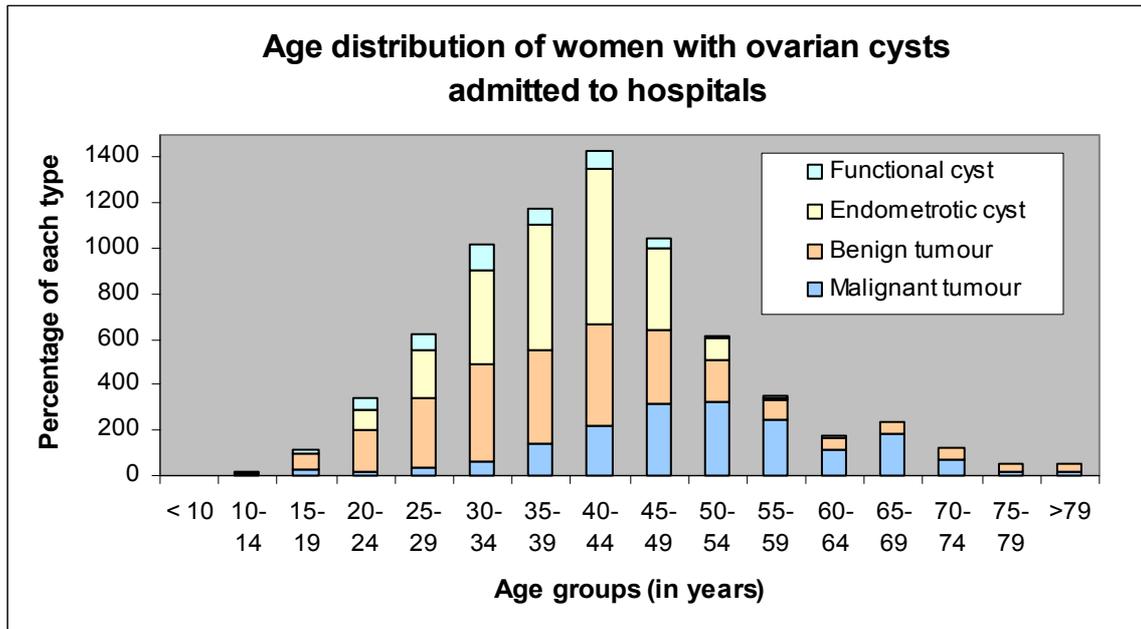


Figure G3 – Ovarian tumour: age distribution in number

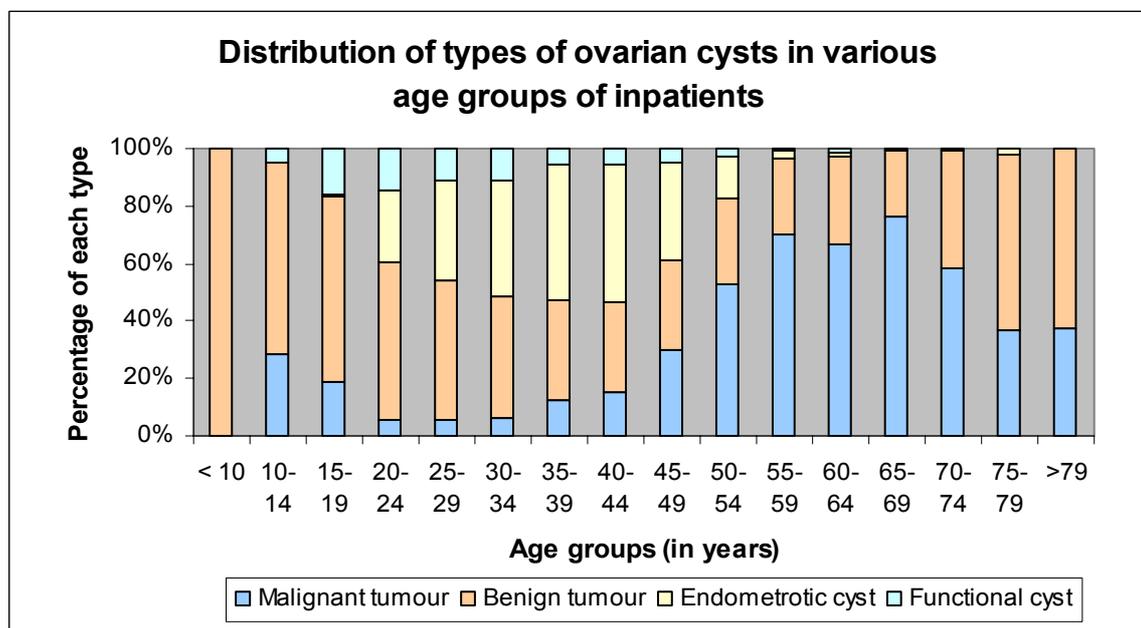


Figure G4 – Ovarian tumour: age distribution in percentage

DISEASES OF BROAD LIGAMENTS AND PELVIC PERITONEUM

There was no significant change in the total number of admissions for this category which accounted for 1.3% of the total admissions. The overall rate of admissions for pelvic endometriosis remained around 1% while that of paraovarian cyst increased from 0.1% to 0.2%.

	1994		1999		2004	
Pelvic endometriosis	716	83.4%	688	79.2%	681	72.4%
Paraovarian cyst	69	8.0%	94	10.8%	140	14.9%
Miscellaneous	78	9.1%	87	10.0%	136	14.5%
Total no. of admissions	859	1.4%	861	1.1%	940	1.3%

GENITAL DISPLACEMENT/URINARY DISORDERS

The total number of admissions for this category increased by almost three quarters over the past 10 years. There were 5 new diagnoses being added in this category in 2004, which in total accounted for 20% of the admissions for this category. The overall rate of admission for stress incontinence increased from 0.3% to 0.4% while that for uterine and vaginal prolapse remained at around 1% and 0.6% respectively.

	1994		1999		2004	
Uterine prolapse	571	66.1%	806	73.2%	854	56.7%
Cystocele/rectocele/enterocele	392	45.4%	398	36.1%	555	36.9%
Stress incontinence	164	19.0%	195	17.7%	327	21.7%
Detrusor instability	49	5.7%	18	1.6%	77	5.1%
Detrusor hyperreflexia	-	-	-	-	4	0.3%
Sensory urgency	-	-	-	-	41	2.7%
Voiding difficulty	-	-	-	-	114	7.6%
Vault prolapse	-	-	-	-	31	2.1%
Other urinary disorders	-	-	-	-	100	6.6%
Miscellaneous	46	5.3%	47	4.3%	26	1.7%
Total no. of admissions	864	1.4%	1101	1.4%	1505	2.0%

DISORDERS OF MENSTRUATION

Compared with 1999, there was a 14% decrease in the total number of admissions for menstrual disorder, making it the third most common diagnosis for admission. Menorrhagia was a new diagnosis being added in 2004 and accounted for 3.2% of the total admissions. This resulted in a reduction in the overall admission rate for dysfunctional uterine bleeding down to 6.0%. The overall rate of admission for postmenopausal bleeding remained at 2.5%

	1994		1999		2004	
Dysfunctional uterine bleeding	5586	75.1%	8209	77.0%	4515	49.5%
Menorrhagia	-		-		2396	26.3%
Postmenopausal bleeding	1455	19.6%	1931	18.1%	1816	19.9%
Dysmenorrhea	176	2.4%	301	2.8%	299	3.3%
Secondary amenorrhoea	68	0.9%	92	0.9%	83	0.9%
Primary amenorrhoea	58	0.8%	45	0.4%	30	0.3%
Miscellaneous	142	1.9%	141	1.3%	91	1.0%
Total no. of admissions	7438	12.2%	10658	14.0%	9122	12.2%

DISORDERS OF PREGNANCY AND REPRODUCTION

This category remained the most common diagnosis over the past 10 years and constituted about 50% of the total admissions. The overall rate of admission for first trimester termination of pregnancy dropped from 28.5% in 1994 to 20.3% in 1999 and 19.4% in 2004, while that of second trimester termination of pregnancy remained at 1.5%. The overall rate of threatened miscarriage, ectopic pregnancy and hydatidiform mole/trophoblastic diseases remained at 7%, 1.3% and 0.3% respectively, that of spontaneous/silent miscarriage dropped from 13.5% in 1994 to 11.3% in 1999 and 9.7% in 2004. The overall rate of subfertility increased from 3.3-4.1% to 6.6% in 2004. Admission for tubal occlusion/sterilization decreased dramatically from 3-3.5% to 0.6%.

	1994		1999		2004	
First trimester termination of pregnancy	17324	48.1%	15482	40.3%	14584	40.6%
Spontaneous/Silent miscarriage	8189	22.7%	8608	22.4%	7272	20.3%
Threatened miscarriage	4319	12.0%	5820	15.2%	4994	13.9%
For tubal occlusion / sterilization	2143	5.9%	2346	6.1%	677	1.9%
Subfertility	2021	5.6%	3138	8.2%	4974	13.9%
Second trimester termination of pregnancy	886	2.5%	1233	3.2%	1098	3.1%
Ectopic pregnancy	761	2.1%	926	2.4%	1049	2.9%
Hyperemesis gravidarum	541	1.5%	726	1.9%	539	1.5%
Hydatidiform mole/trophoblastic diseases	295	0.8%	213	0.6%	213	0.6%
Puerperal problems other than secondary postpartum haemorrhage	239	0.7%	243	0.6%	188	0.5%
Secondary postpartum haemorrhage	228	0.6%	145	0.4%	147	0.4%
Miscellaneous	365	1.0%	526	1.4%	458	1.3%
Total no. of admissions	36020	59.2%	38376	50.3%	35903	47.8%

NON-OBSTETRIC COMPLICATIONS IN PREGNANCY

Compared with 1999, the total number of admissions for non-obstetric complications in pregnancy increased by 8.9%, in contrast to the 123% between 1994 and 1999. The overall rate of admission for non-specific abdominal pain complicating pregnancy remained at 1.6% after a 2.5 fold increase between 1994 and 1999. Compared with 1994 and 1999, the overall rate of admission for malignant tumours of the genital tract during pregnancy increased from 0.02% to 0.04% while that of benign tumours decreased from 0.2% to 0.08%.

	1994		1999		2004	
Non-specific abdominal pain	381	48.1%	1177	67.4%	1254	65.9%
Medical diseases	253	32.4%	385	22.0%	524	27.5%
Benign tumour of the genital tract	95	12.1%	127	7.3%	57	3.0%
Surgical diseases	46	5.9%	47	2.7%	42	2.2%
Malignant tumour of the genital tract	11	1.4%	13	0.7%	32	1.7%
Total no. of admissions	782	1.3%	1747	2.3%	1902	2.5%

MISCELLANEOUS GYNAECOLOGICAL CONDITIONS

The overall rate of admissions for complications subsequent to previous treatment remained at around 1.5%; about 2/3 to 3/4 of which were instituted in the same hospital. The overall rate of abdominal pain of unknown cause remained at 1.0% in 1999 and 2004, compared with 0.7% in 1994.

	1994		1999		2004	
Complications subsequent to previous treatment in same hospital	638	39.4%	754	31.9%	813	32.4%
Abdominal pain of unknown cause	411	25.4%	781	33.0%	861	34.3%
Complications subsequent to previous treatment in other hospitals	194	12.0%	374	15.8%	396	15.8%
Retained IUCD	266	16.4%	377	15.9%	328	13.1%
Translocated IUCD	-	-	-	-	10	0.4%
Miscellaneous	118	7.3%	190	8.0%	134	5.3%
Total no. of admissions	1618	2.8%	2463	3.3%	2509	3.3%

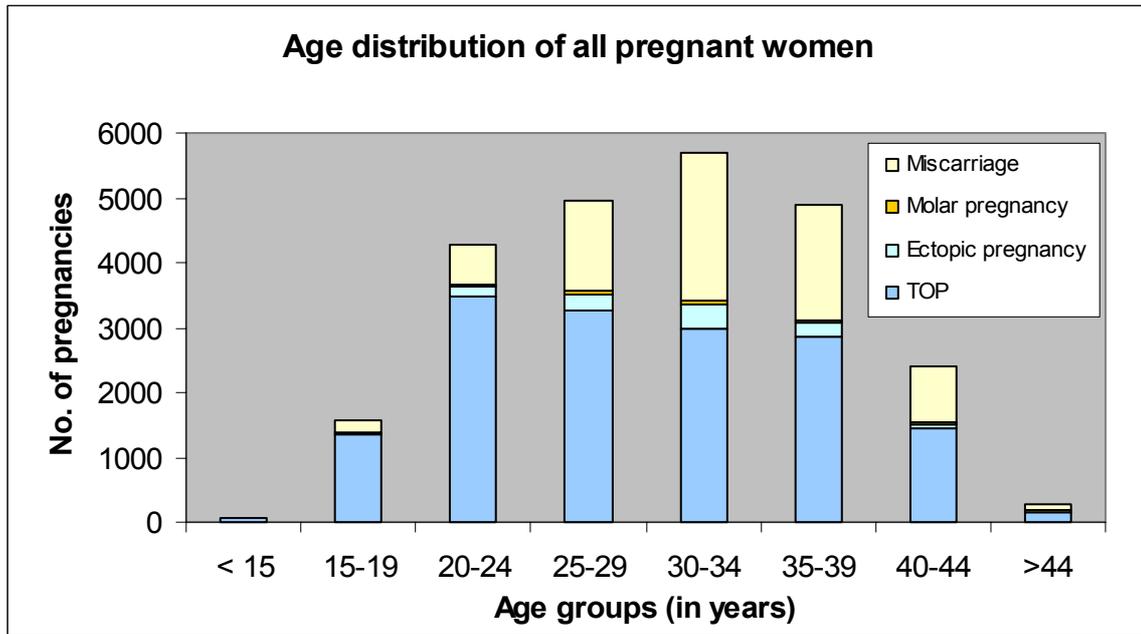


Figure G5 – Age distribution of all pregnant women

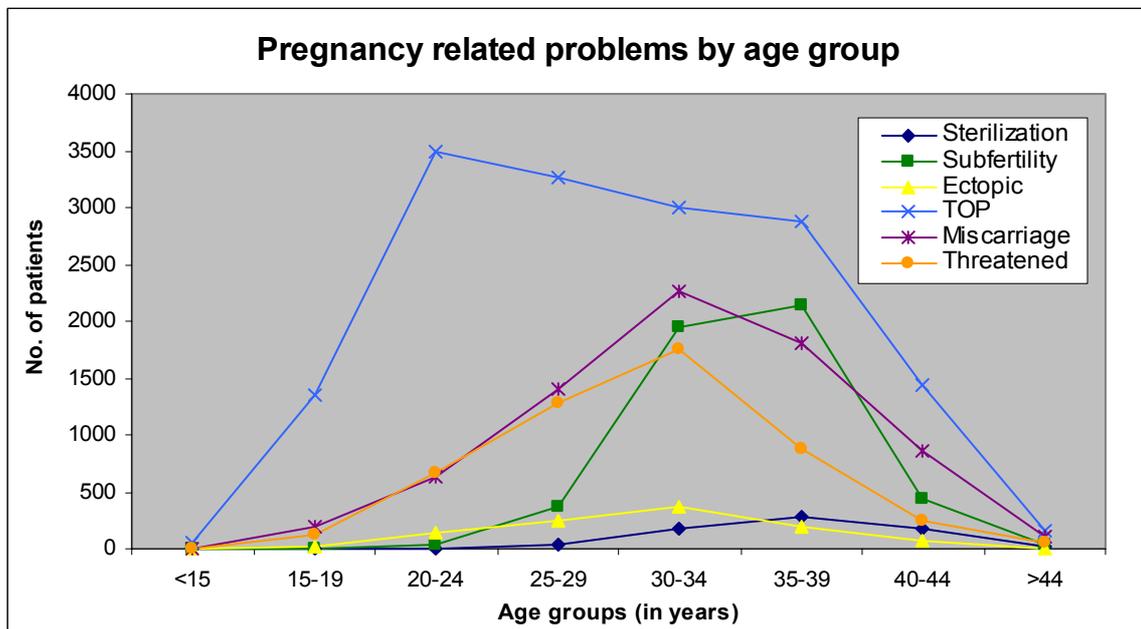


Figure G6 – Pregnancy related problems by age groups

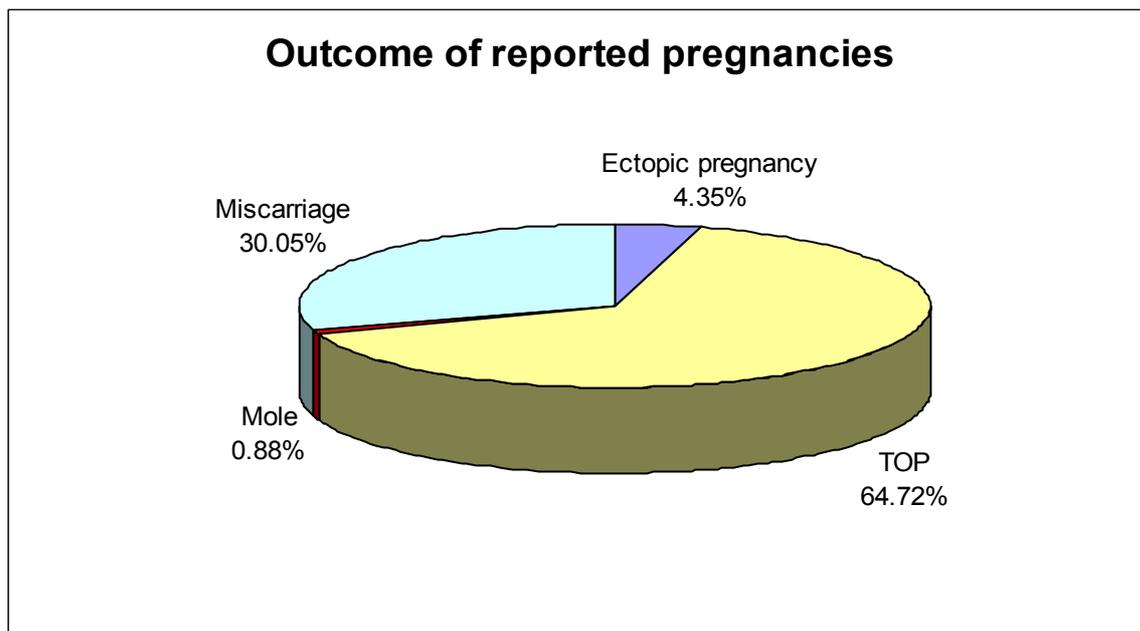


Figure G7 – Abnormal outcome of reported pregnancies

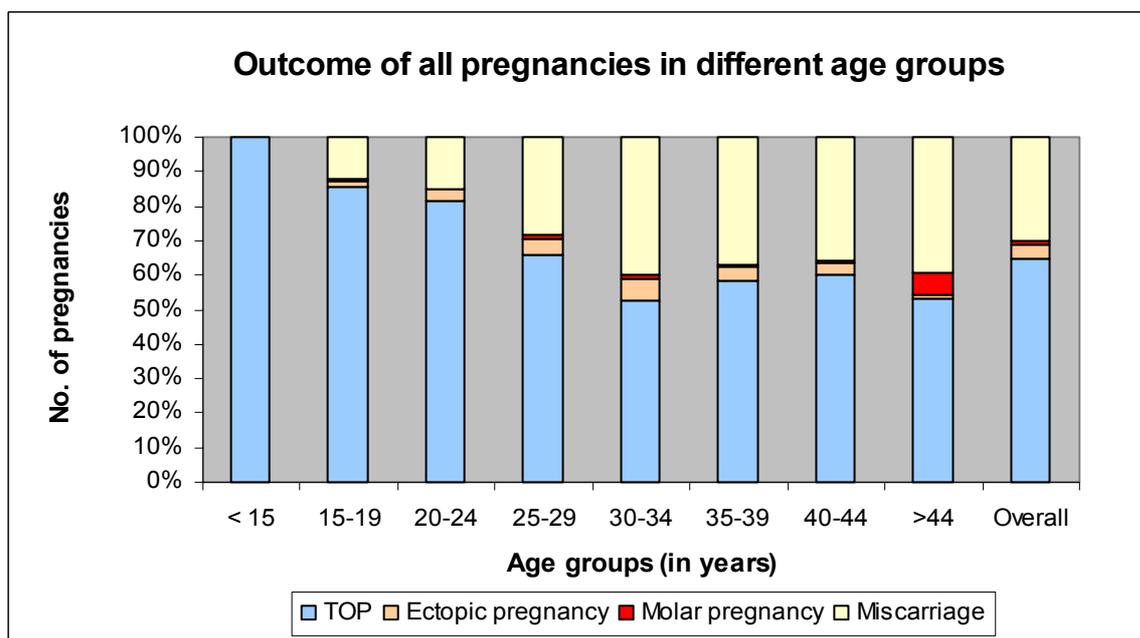


Figure G8 – Abnormal outcome of all pregnancies in different age groups

MISCELLANEOUS NON-GYNAECOLOGICAL CONDITIONS

The overall admission rate for concurrent non-gynaecological diseases decreased from 3.2-3.3% to 2.9% in 2004. Diseases of the urinary tract remained the most common condition under this category. In general, there was a decrease in the overall admission rate for most of the disease entities with the exception of breast disease which increased from 0.1% in 1994 and 1999 to 0.4% in 2004. The number of admissions with no diagnosis increased dramatically with an overall rate of less than 0.03% to 0.3% in 2004.

	1994		1999		2004	
Urinary tract disease	435	21.9%	490	20.1%	374	17.0%
Gastrointestinal tract disease	326	16.4%	378	15.5%	279	12.7%
Cardiovascular disease	305	15.3%	233	9.6%	201	9.1%
Endocrine disease	299	15.0%	237	9.7%	126	5.7%
Blood disease	290	14.6%	212	8.7%	231	10.5%
Respiratory disease	104	5.2%	94	3.9%	49	2.2%
Musculocutaneous disease	61	3.1%	88	3.6%	114	5.2%
Breast disease	61	3.1%	76	3.1%	305	13.9%
Central nervous system disease	40	2.0%	102	4.2%	61	2.8%
No diagnosis	18	0.9%	8	0.3%	230	10.5%
Miscellaneous	230	11.6%	631	25.9%	281	12.8%
<i>Total no. of admissions</i>	<i>1987</i>	<i>3.3%</i>	<i>2434</i>	<i>3.2%</i>	<i>2199</i>	<i>2.9%</i>

SUMMARY OF DISTRIBUTION OF TREATMENT

The data represented the actual outcome procedure performed, not according to the original intention approach. For each admission, there may be more than one form of treatment under the same or different category. The leading form of treatment was still minor vaginal/vulval operations but its overall rate has dropped by 15.7% over the 10 years period. Non-operative treatment is the second most common form of treatment and its rate increased by 10.7%. The rate of endoscopic operations continued to rise with a 2.5 fold increase over 10 years. Compared with 1994 and 1999, there was a 2 fold increase in major abdominal operations for malignant conditions and 1.6 fold increase in major vaginal operations.

	1994		1999		2004	
Major abdominal operations (benign)	6274	10.3%	6210	8.1%	6418	8.6%
Major abdominal operations (malignant)	681	1.1%	796	1.0%	1643	2.2%
Major vaginal operations	488	0.8%	648	0.8%	972	1.3%
Major vulval operations	56	0.1%	94	0.1%	103	0.1%
Endoscopic operations	4710	7.7%	10743	14.1%	13842	18.4%
Colposcopic related procedures	913	1.5%	3387	4.4%	3102	4.1%
Assisted reproduction procedures	1131	1.9%	2420	3.2%	3464	4.6%
Minor abdominal operations	1575	2.6%	854	1.1%	210	0.3%
Minor vaginal/vulval operations	32906	54.1%	32077	42.0%	28798	38.4%
Radiotherapy	338	0.6%	133	0.2%	183	0.2%
Non-operative treatment	15591	25.6%	24461	32.0%	27282	36.4%
Total no. of admissions	60809		76344		75053	

TEN COMMONEST TREATMENT MODALITIES

Compared with 1999, there was no change in the first six most common treatment modalities. The rate of laparoscopic ovarian cystectomy doubled and became the 7th most common treatment modality. The rate of loop diathermy excision increased from 0.4% in 1994 to 1.7% in 1999 and 2.7% in 2004, making it ranked 9th in the list.

Treatment Modalities	1994		1999		2004	
	Ranking	%	Ranking	%	Ranking	%
Observations and investigations	2	16.3	1	21.9	1	24.3
Suction termination of pregnancy	1	28.6	2	19.9	2	19.4
Evacuation of uterus after miscarriage	3	12.0	3	9.2	3	6.9
Diagnostic hysteroscopy	6	2.9	4	7.1	4	6.5
D&C/polypectomy	4	10.9	5	6.9	5	6.0
Total hysterectomy ± SO (benign)	5	5.0	6	4.5	6	4.8
Laparoscopic ovarian cystectomy	-	-	14	1.5	7	3.1
Antibiotics (as primary treatment)	7	2.7	7	2.8	8	2.7
Loop diathermy excision	28	0.4	13	1.7	9	2.7
Endometrial biopsy	-	-	9	2.2	10	2.6

DETAILED BREAKDOWN OF INDIVIDUAL TREATMENT

MAJOR ABDOMINAL OPERATIONS FOR BENIGN AND PRE-MALIGNANT CONDITIONS

There was no change in the total number of admissions for major abdominal operation for benign and pre-malignant conditions. While the overall rate of hysterectomy remained at 5%, the rate of myomectomy increased to from 1.0% to 1.5%. The overall rate of different forms of adnexal surgery decreased to less than 1%. The overall rate of abdominal operations for stress incontinence decreased to 0.04% after an increased from 0.02% in 1994 to 0.08% in 1999. These changes were related to the more popular use of minimal access surgery.

	1994		1999		2004	
Total hysterectomy ± SO	3036	48.4%	3428	55.2%	3761	61.3%
Ovarian cystectomy	1387	22.1%	1141	18.4%	760	12.4%
Myomectomy	614	9.8%	888	14.3%	1142	18.6%
Salpingo-oophorectomy/oophorectomy	625	10.0%	497	8.0%	436	7.1%
Salpingectomy	566	9.0%	271	4.4%	153	2.5%
Tuboplasty/adhesiolysis	110	1.8%	69	1.1%	59	1.0%
Operations for stress incontinence	14	0.2%	59	1.0%	31	0.5%
Salpingotomy	51	0.8%	48	0.8%	24	0.4%
Subtotal hysterectomy ± SO	45	0.7%	36	0.6%	66	1.1%
Repair of fistula	5	0.1%	3	0.05%	6	0.1%
Drainage of pelvic abscess	-	-	-	-	23	0.4%
Miscellaneous	246	3.9%	177	2.9%	101	1.6%
Total no. of admissions	6274	10.3%	6210	8.1%	6137	8.2%

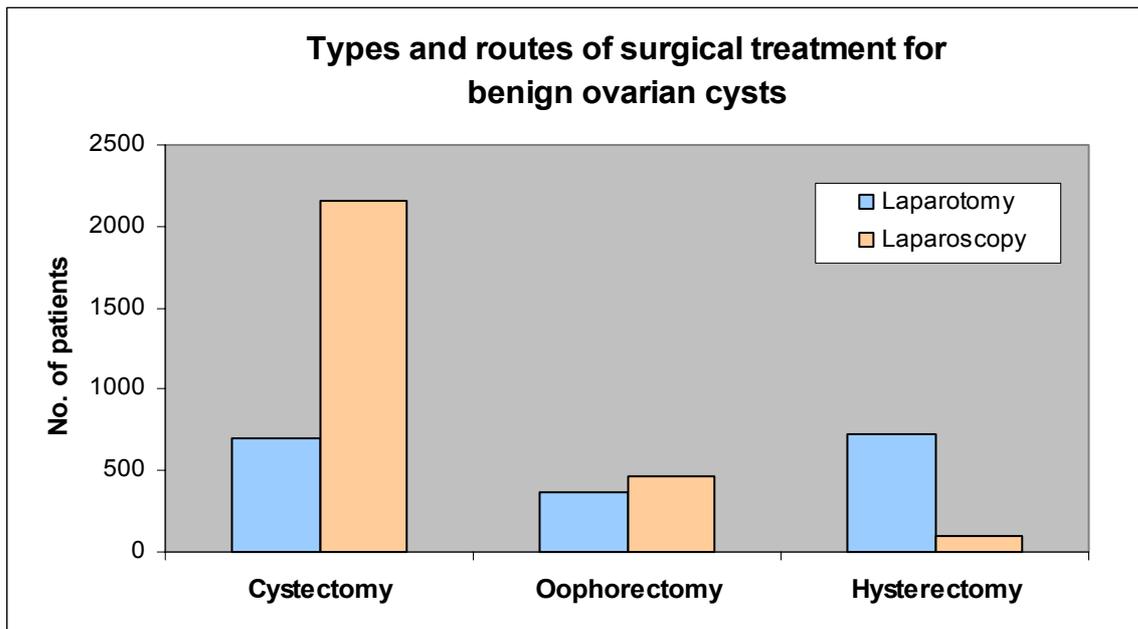


Figure G9 – Types and routes of surgical treatment for benign ovarian cysts

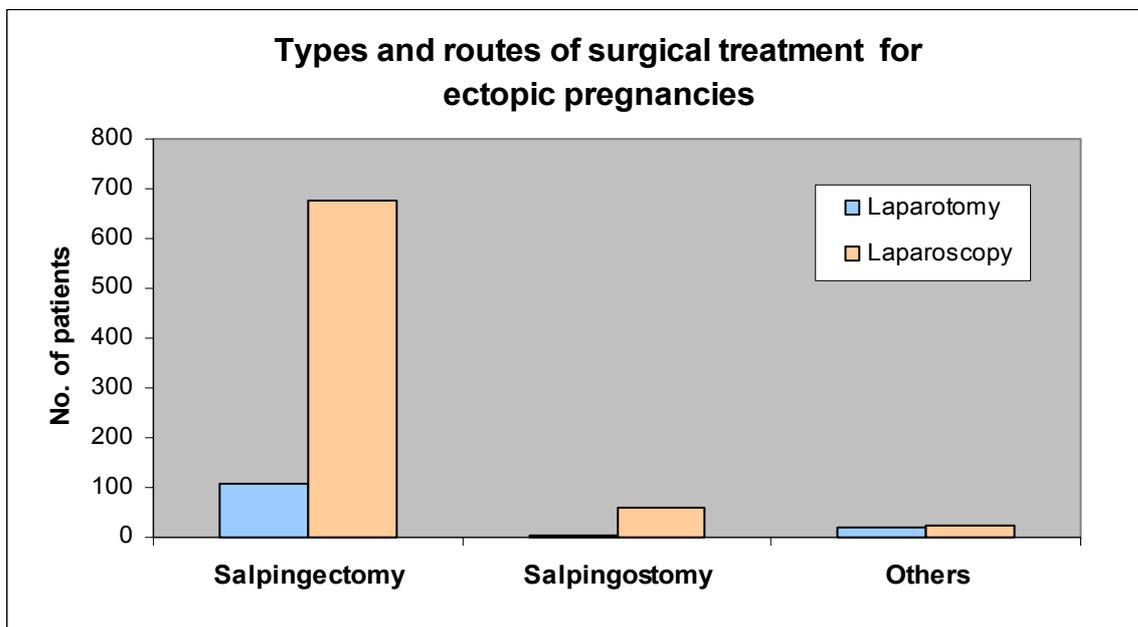


Figure G10 – Types and routes of surgical treatment for ectopic pregnancies

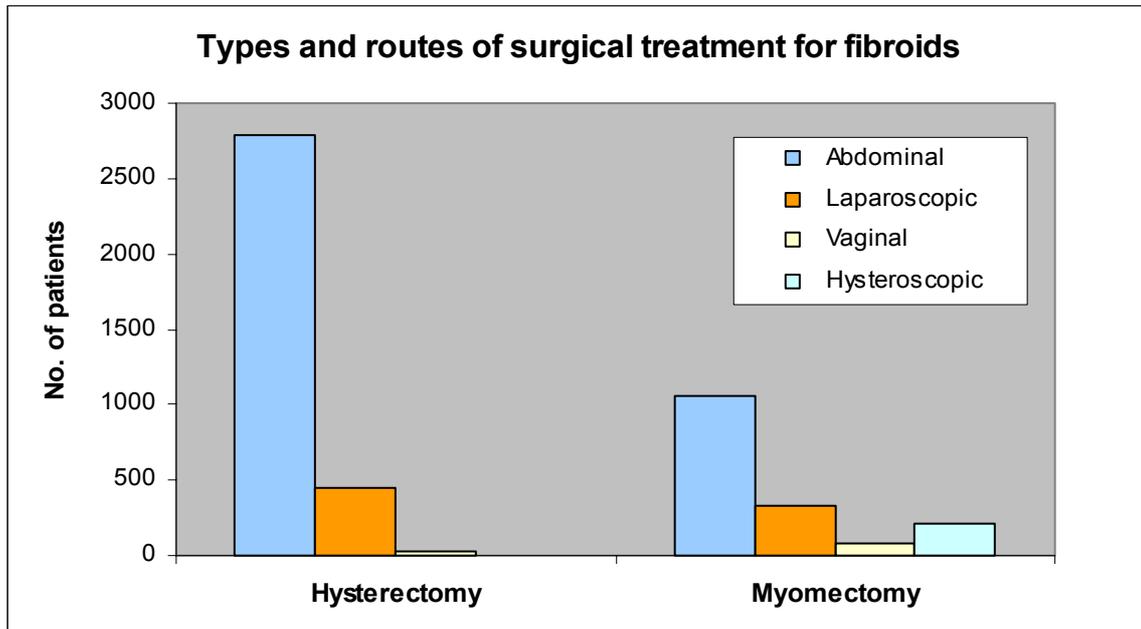


Figure G11 – Types and routes of surgical treatment for fibroids

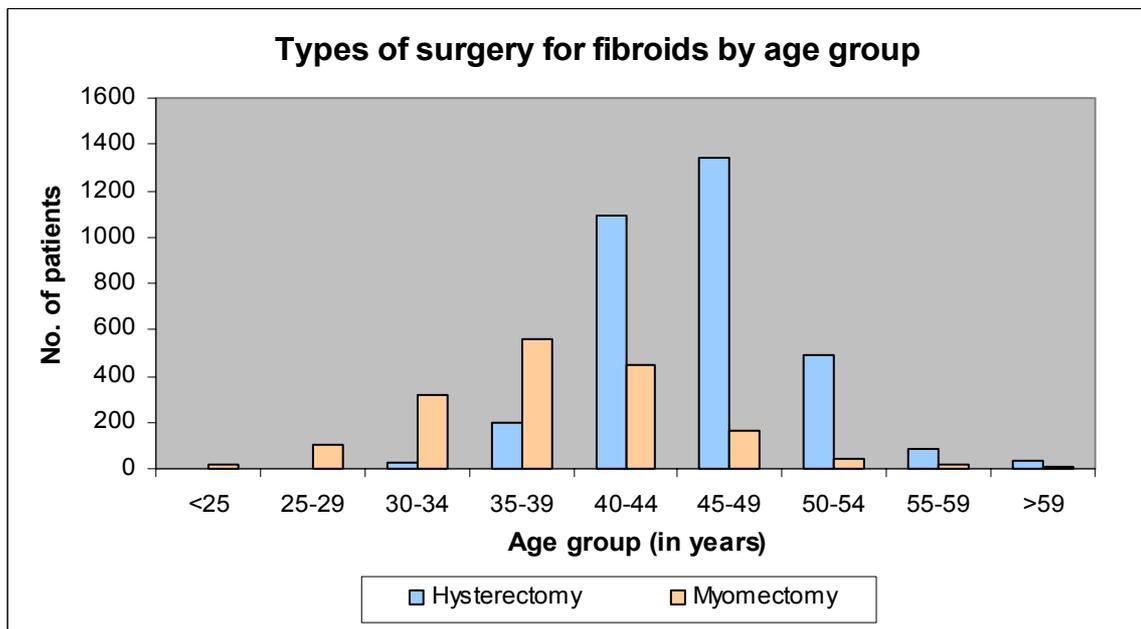


Figure G12 – Types of surgery for fibroids by age groups

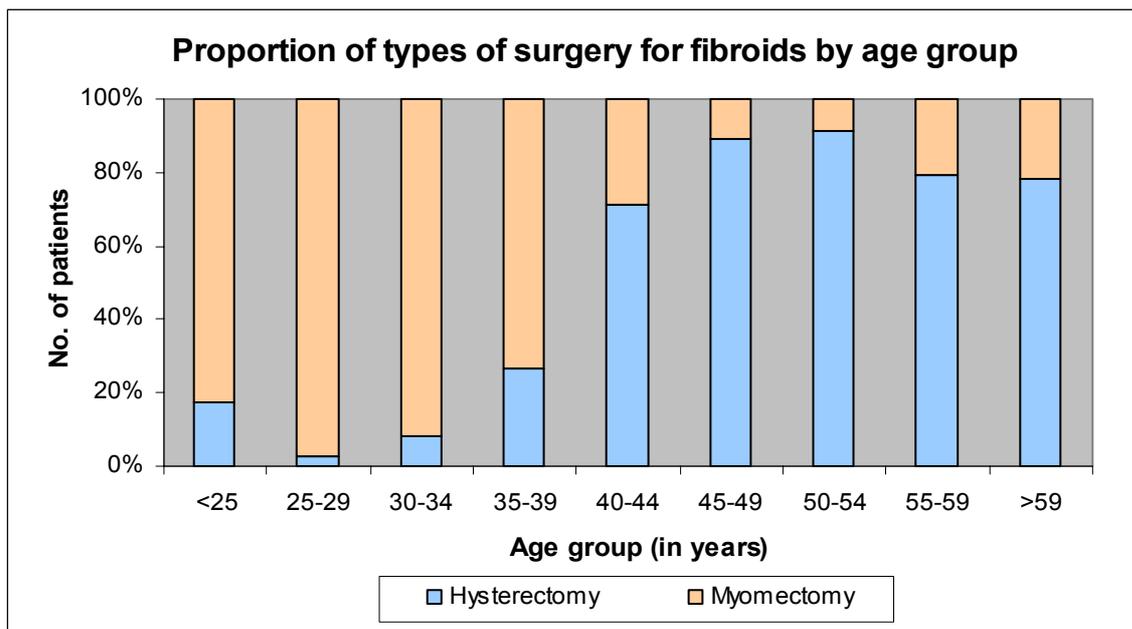


Figure G13 – Surgical treatment of uterine fibroid: age distribution in percentage

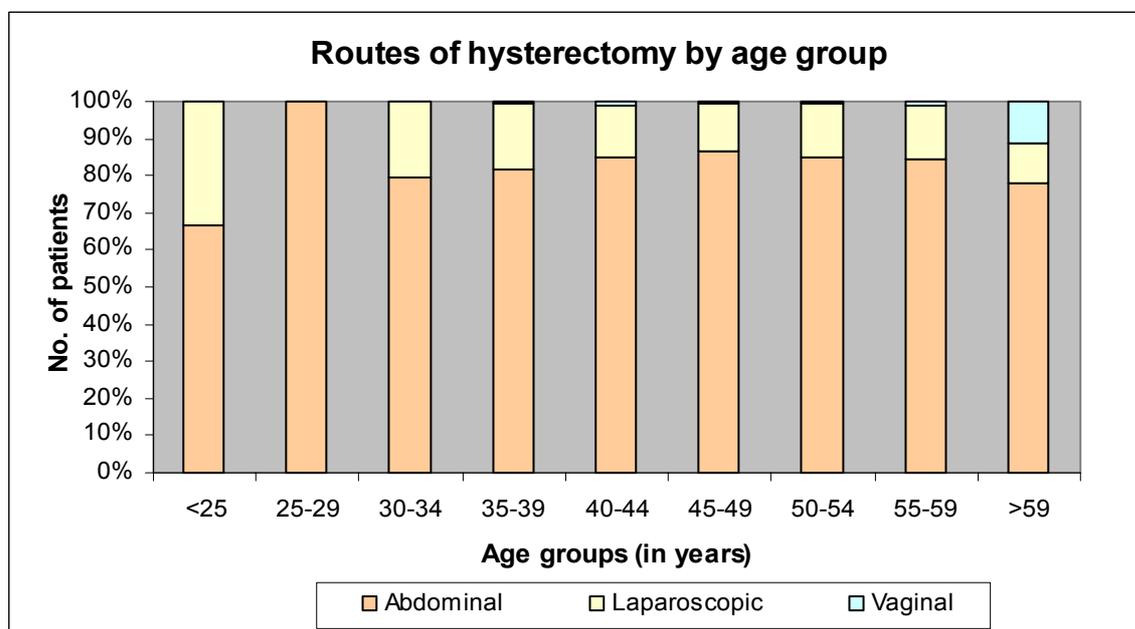


Figure G14 – Routes of hysterectomy for fibroids: age distribution in percentage

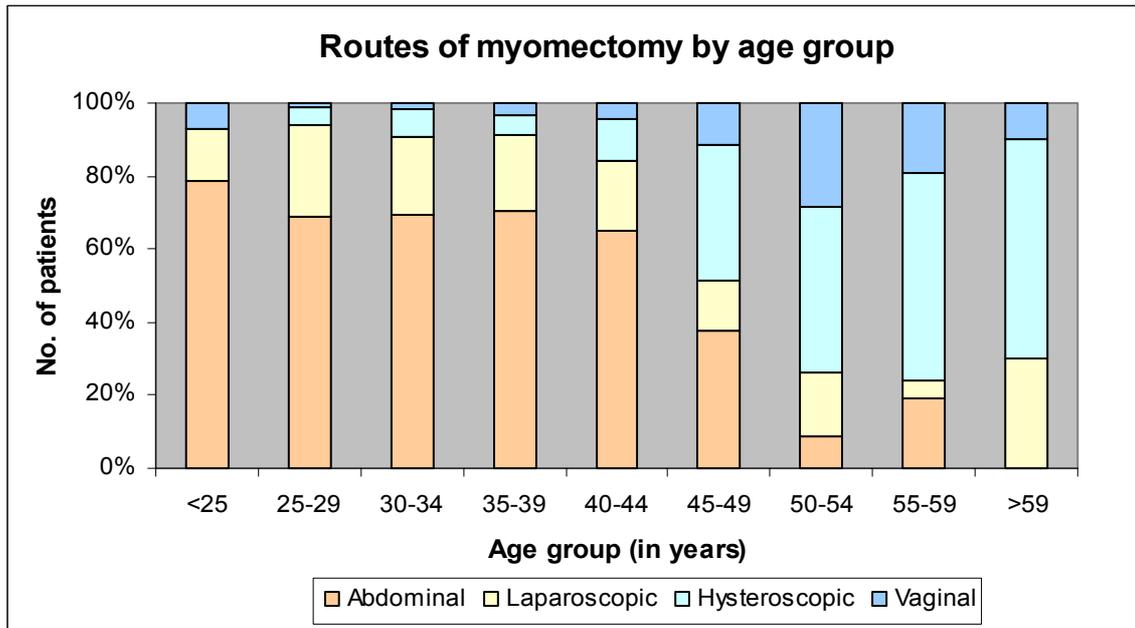


Figure G15 – Routes of myomectomy for fibroids: age distribution in percentage

MAJOR ABDOMINAL OPERATIONS FOR MALIGNANT CONDITIONS

Compared with 1999, the total number of admissions for major abdominal operations for malignant diseases increased by 22.4%, at least 3-quarters of which were hysterectomy. The overall incidence of total, extended and radical hysterectomy remained at 0.7-0.8%, 0.03-0.04% and 0.1-0.2% respectively. Extended hysterectomy was coded only under malignant conditions. Of the 23 cases of extended hysterectomy reported, the procedure was performed for malignant conditions in 13, pre-malignant conditions in 4 and benign conditions in 6.

There was a dramatic increase in the number of debulking operation reported in 2004. However, there seems to be a difference in the reporting of concurrent procedures in debulking operation. Of the 177 cases reported, total hysterectomy \pm SO was concurrently reported in 75, extended hysterectomy in 7, radical hysterectomy in 3, pelvic exenteration in 2, subtotal hysterectomy \pm SO in 2 and laparoscopic hysterectomy in 1, together with 31 salpingo-oophorectomy, 27 pelvic and 17 para-aortic lymphadenectomy/lymph node sampling. Of the remaining 89 cases, there were 12 salpingo-oophorectomy, 12 pelvic and 3 para-aortic lymphadenectomy/lymph node sampling. A standardized definition of debulking operation is required for proper interpretation of the reported data on this category of treatment.

	1994		1999		2004	
Total hysterectomy \pm SO	480	70.5%	534	67.1%	610	62.6%
Radical hysterectomy	88	12.9%	113	14.2%	130	13.3%
Debulking operation	37	5.4%	51	6.4%	177	18.2%
Extended hysterectomy	22	3.2%	24	3.0%	23	2.4%
Subtotal hysterectomy \pm SO	9	1.3%	7	0.9%	4	0.4%
Pelvic exenteration	7	1.0%	6	0.8%	10	1.0%
Pelvic lymphadenectomy / LN sampling	-	-	-	-	255	26.2%
Paraotic lymphadenectomy / LN sampling	-	-	-	-	59	6.1%
Laparotomy alone \pm biopsy	-	-	-	-	31	3.2%
Miscellaneous	61	9.0%	58	7.3%	45	4.6%
<i>Total no. of admissions</i>	681	1.1%	796	1.1%	974	1.3%

MAJOR VAGINAL OPERATIONS

Compared with 1999, the total number of admissions for major vaginal operations increased by 34.6%, similar to that of 32.8% between 1994 and 1999. The overall incidence of vaginal hysterectomy with or without pelvic floor repair remained at 0.6-0.8%. Of the 507 vaginal hysterectomy reported, 39 (7.7%) were performed in the absence of genital prolapse (no coding for vaginal prolapse and/or genital prolapse under the diagnosis). The number of admissions for vaginal operation for urinary incontinence increased by 10 folds with an overall rate of 0.03% in 1994 to 0.08% in 1999 and 0.2% in 2004. However, how many of these procedures were performed using the tension-free-vaginal tape (TVT) was unknown. Vaginal myomectomy was a new entity and the overall rate was 0.1%.

	1994		1999		2004	
Vaginal hysterectomy & pelvic floor repair	278	57.0%	338	52.2%	420	48.2%
Pelvic floor repair	63	12.9%	103	15.9%	133	15.3%
Vaginal hysterectomy	62	12.7%	112	17.3%	87	10.0%
Vaginal operation for urinary incontinence	17	3.5%	60	9.3%	165	18.9%
Repair of urinary fistula	4	0.8%	3	0.5%	2	0.2%
Vaginal myomectomy	-	-	-	-	94	10.8%
Miscellaneous	64	13.1%	63	9.7%	66	7.6%
Total no. of admissions	488	0.8%	648	0.8%	872	1.2%

MAJOR VULVAL OPERATIONS

Following the 67.9% increase between 1994 and 1999, there was no further increase in the number of admissions for major vulval operations in 2004. The number of admission for radical vulvectomy doubled every 5 years with the overall rate from 0.005% in 1994 to 0.02% in 2004. The overall admission rate for wide local excision and simple vulvectomy remained 0.03% and 0.02% respectively.

	1994		1999		2004	
Wide local excision	-	-	23	24.5%	26	25.7%
Simple vulvectomy	10	17.9%	13	13.8%	13	12.9%
Radical vulvectomy	3	5.4%	7	7.4%	14	13.9%
Miscellaneous	43	76.8%	52	55.3%	50	49.5%
Total no. of admissions	56	0.1%	94	0.1%	101	0.1%

ENDOSCOPIC PROCEDURES

The number of admissions for endoscopic procedures continued to rise but to a much lesser extent over the recent 5 years (9.5%), compared with the 128% increase between 1994 and 1999. The number of hysteroscopic procedures stabled at 6,000 per year with diagnostic hysteroscopy accounted for over 80% of the cases. The number of admissions for laparoscopic procedures increased by 34% between 1999 and 2004, in contrast to the 90% increase between 1994 and 1999. There was a 50% reduction in the rate of admission for both diagnostic and sterilization/tubal occlusion procedures while that of operative laparoscopy increased from 1.5% in 1994 to 4.2% in 1999 and 8.3% in 2004. Laparoscopy allows both diagnostic and therapeutic procedure to be carried out at the same time, some of these procedures might be considered as operative laparoscopy without being coded as diagnostic laparoscopy.

	1994		1999		2004	
Diagnostic hysteroscopy	1739	36.9%	5418	50.4%	4847	41.2%
Diagnostic laparoscopy	1201	25.5%	934	8.7%	756	6.4%
Laparoscopic sterilization/ Tubal occlusion	896	19.0%	1521	14.2%	611	5.2%
Other laparoscopic operative procedures	894	19.0%	3222	30.0%	6237	53.0%
Other hysteroscopic procedures	75	1.6%	415	3.9%	915	7.8%
Cystoscopy	105	2.2%	172	1.6%	210	1.8%
Endometrial resection/ablation	42	0.9%	166	1.5%	176	1.5%
Miscellaneous	56	1.2%	121	1.1%	78	0.7%
Total no. of admissions	4710	7.7%	10743	14.1%	11765	15.7%

HYSTEROSCOPIC PROCEDURES (excluding diagnostic procedures)

The number of admissions for hysteroscopic procedures increased by 1.9 folds with the overall rate being 1.4%. Polypectomy was the most common procedure performed and the overall rate increased from 0.2% in 1999 to 0.7% in 2004. The overall rate of myomectomy increased from 0.1% to 0.3% while that of endometrial resection/ablation remained at 0.2%.

	1999		2004	
Endometrial resection/ablation	166	30.2%	187	18.4%
Polypectomy	161	29.3%	514	50.5%
Myomectomy	87	15.8%	236	23.2%
Miscellaneous	167	30.4%	165	16.2%
Total no. of admissions	549	0.7%	1017	1.4%

LAPAROSCOPIC PROCEDURES (excluding diagnostic procedures and sterilization/tubal occlusion alone)

There was a 2 fold increase in the number of admissions for operative laparoscopy with the overall rate increased from 3.3% to 8.3%. In general, the overall rate of different procedures increased by 2-3 folds except for myomectomy and lymphadenectomy which increased by 5.4 and 4.6 folds respectively. There was however a reduction in the number of laparoscopic colposuspension, likely because of the more popular use of the tension-free-vaginal tape (TVT) procedures which are simpler, quicker and safer.

Among all operative laparoscopies, ovarian cystectomy remained the most common laparoscopic procedure with the overall rate increased from 1.5% to 3.1%. All adnexal surgeries for benign conditions were performed primarily using the laparoscopic approach (4.1% versus 1.6% for ovarian surgery and 1.4% versus 0.2% for tubal surgery) while uterine surgeries were still performed via laparotomy (5.1% versus 1.1% for hysterectomy and 1.5% versus 0.5% for myomectomy).

	1999		2004	
Laparoscopic ovarian cystectomy	1130	45.5%	2313	43.3%
Laparoscopic salpingectomy	454	18.3%	872	16.3%
Laparoscopic adhesiolysis	284	11.4%	462	8.7%
Laparoscopic hysterectomy	255	10.3%	798	15.0%
Laparoscopic oophorectomy/SO	252	10.1%	720	13.5%
Laparoscopic salpingotomy	187	7.5%	183	3.4%
Laparoscopic ablation of endometriosis	146	5.9%	176	3.3%
Laparoscopic myomectomy	67	2.6%	355	6.7%
Laparoscopic drainage of abscess	17	0.7%	39	0.7%
Laparoscopic ovarian drilling	17	0.7%	54	1.0%
Laparoscopic colposuspension	9	0.4%	4	0.1%
Laparoscopic lymphadenectomy	9	0.4%	41	0.8%
Laparoscopic myolysis	6	0.2%	16	0.3%
Miscellaneous	353	14.2%	198	3.7%
<i>Total no. of admissions</i>	<i>2484</i>	<i>3.3%</i>	<i>5336</i>	<i>8.3%</i>

COLPOSCOPIC RELATED PROCEDURES

Compared with 1999, there was no further increase in the overall rate of admissions for colposcopic procedures, in contrast to the 3-fold increase between 1994 and 1999. Loop diathermy excision was the commonest procedure and its incidence increased from 0.4% in 1994 to 1.7% in 1999 and 2.7% in 2004. The increase was compensated by a significant reduction in the number of admissions for miscellaneous colposcopic related procedures. Whether this was due to a change in practice of inpatient care or a more accurate coding of procedure is unknown.

	1994		1999		2004	
Loop diathermy excision	269	29.5%	1285	37.9%	2007	66.3%
Cervical cautery	197	21.6%	246	7.3%	283	9.3%
Cone biopsy	137	15.0%	298	8.8%	252	8.3%
Laser vaporization	24	2.6%	55	0.4%	58	1.9%
Laser cone	35	3.8%	12	1.6%	24	0.8%
Miscellaneous	251	27.5%	1512	44.6%	478	15.8%
Total no. of admissions	913	1.5%	3387	4.4%	3029	4.0%

ASSISTED REPRODUCTIVE PROCEDURES

The overall admission rate for assisted reproductive procedures continued to rise and was mostly related to oocyte retrieval and embryo transfer. The overall rate of oocyte retrieval increased from 1.1% in 1994 to 1.5% in 1999 and 1.8% in 2004; most of them were performed under ultrasound guidance (>95%). Gamete intra-fallopian transfer and pronuclear stage tubal transfer were seldom performed.

	1994		1999		2004	
Embryo transfer	674	59.6%	1202	49.7%	1716	53.9%
USG guided oocyte retrieval	623	55.1%	1001	41.4%	1356	42.6%
Gamete intra-fallopian transfer	54	4.8%	131	5.4%	3	0.1%
Laparoscopic oocyte retrieval	48	4.2%	124	5.1%	32	1.0%
Pronuclear stage tubal transfer	7	0.6%	1	0.04%	3	0.1%
Miscellaneous	2	0.2%	279	11.5%	354	11.1%
Total no. of admissions	1131	1.9%	2420	3.6%	3184	4.2%

MINOR ABDOMINAL OPERATIONS

The total number of admissions for minor abdominal operations dropped dramatically by over 90% over the past 10 years with an overall rate of only 0.2%. Of all the admissions for sterilization, laparoscopic sterilization/tubal occlusion was performed in 83%, compared with 65% in 1999 and 40% in 1994.

	1994		1999		2004	
Tubal ligation/occlusion	1421	90.2%	758	88.8%	112	79.4%
Resuturing of gapped abdominal wound	97	6.2%	59	6.9%	68	48.2%
Miscellaneous	57	3.6%	38	4.4%	30	21.3%
Total no. of admissions	1575	2.6%	854	1.1%	141	0.2%

OTHER MINOR VAGINAL/VULVAL OPERATIONS

As in previous years, this was the most common treatment modality for all admissions, but the overall rate dropped from 54.1% in 1994 to 37.3% in 2004. Suction termination of pregnancy and evacuation of products of gestation were the 2nd and 3rd most common procedure of all treatment modalities, the overall rate dropped from 28.6% to 19.4% and 12.0% to 6.8% respectively in the 10 years period. Admission for D&C/polypectomy remained at about 6% and that of endometrial biopsy was 2.6%. The overall admission rate for cervical cerclage also decreased from 0.08% to 0.03%.

	1994		1999		2004	
Suction termination of pregnancy	17407	52.9%	15165	47.3%	14589	52.1%
Evacuation of uterus after miscarriage	7316	22.2%	7024	21.9%	5139	18.3%
D&C/polypectomy	6608	20.1%	5269	16.4%	4519	16.1%
Endometrial biopsy	-	-	1649	5.1%	1975	7.1%
Other vulval surgery	495	1.5%	680	2.1%	589	2.1%
Marsupialization	537	1.6%	663	2.1%	711	2.5%
Examination under anaesthesia	87	0.3%	173	0.5%	118	0.4%
Cervical cerclage	51	0.2%	35	0.1%	22	0.1%
Insertion / removal of IUCD	-	-	-	-	726	2.6%
Miscellaneous	779	2.4%	2180	6.8%	410	1.5%
Total no. of admissions	32906	54.1%	32077	42.0%	28008	37.3%

RADIOTHERAPY

The total number of admission for radiotherapy remained low as most of these patients were managed under the Department of Radiotherapy and Oncology instead of Gynaecology.

	1994		1999		2004	
Intracavity radiation therapy	165	48.8%	31	23.3%	35	19.3%
External radiation therapy	114	33.7%	81	60.9%	68	37.6%
Miscellaneous	75	22.2%	29	21.8%	79	43.6%
Total no. of admissions	338	0.6%	133	0.2%	181	0.2%

NON-OPERATIVE TREATMENT

Compared with 1999, the total number of admissions for non-operative treatment increased by 7.8%, in contrast to the 56.9% increase between 1994 and 1999. The overall rate of admission for observation and investigations as the management increased from 16.3% in 1994 to 21.9% in 1999 and 24.3% in 2004. The use of hormonal treatment also increased from 1.2-1.4% to 2.5%. Of all the admissions, 0.5% was for pre-anaesthetic assessment. This information was not captured in previous audits.

	1994		1999		2004	
Observation and investigations	9925	63.7%	16742	65.8%	18208	69.0%
Antibiotic (as primary treatment)	1636	10.5%	2165	8.5%	2042	7.7%
Prostaglandins	1419	9.1%	1796	7.1%	1438	5.5%
Other medications	752	4.6%	889	3.5%	874	3.3%
Hormones	709	4.5%	1065	4.2%	1909	7.2%
Chemotherapy	645	4.1%	554	2.2%	992	3.8%
Pre-anaesthetic assessment	-	-	-	-	388	1.5%
Miscellaneous	1105	7.1%	2224	8.7%	1415	5.4%
Total no. of admissions	15591	25.6%	24461	33.7%	26381	35.1%

COMPLICATIONS

Complications were counted according to intention to treat, not the actual procedure performed. *The figures should be interpreted with care because of the high possibility of under-reporting based on the clinical experience and data from the literature.* Conversion from laparoscopic or vaginal to abdominal approach was counted as complication. There might be more than one complication for each admission, and there might be more than one complication for each operation performed. When the complication was associated with multiple procedures, it was considered to have occurred with each individual procedure.

The overall complication rate was 1.15% which was slightly higher than the 1.02% and 0.88% reported in 1999 and 1994 respectively. The commonest complication reported was febrile morbidity which was defined as fever $>38^{\circ}\text{C}$ at least 4 hours apart 24 hours after operations with no identifiable cause. Haemorrhage occurred in 0.25% which was much higher than the 0.16% reported in 1999 and 1994. The incidence of inadvertent organ injury remained at 0.02 to 0.08%, and there was no significant difference in the overall incidence among individual organ. The incidence of deep vein thrombosis however doubled when compared with 1999 and 1994.

	1994		1999		2004	
Febrile morbidity*	241	0.40%	204	0.27%	247	0.35%
Wound complication	75	0.12%	56	0.07%	153	0.22%
Excessive intra-operative blood loss requiring blood transfusion	76	0.12%	87	0.11%	142	0.20%
Urinary tract infection	227	0.37%	208	0.27%	126	0.18%
Conversion of laparoscopic procedure to laparotomy	-	-	31	0.04%	60	0.09%
Injury of the urinary tract	39	0.06%	47	0.06%	59	0.08%
Injury to the uterus	29	0.05%	36	0.05%	39	0.06%
Post-operative haemorrhage requiring blood transfusion	33	0.05%	38	0.05%	36	0.05%
Deep vein thrombosis	6	0.01%	8	0.01%	26	0.04%
Unplanned re-operation before discharge	-	-	-	-	23	0.03%
Injury to the bowels	15	0.02%	15	0.01%	15	0.02%
Chest infection	16	0.03%	9	0.02%	7	0.01%
Major vascular injury	-	-	4	0.01%	2	0.003%
Intraoperative cardiopulmonary arrest	1	0.002%	0	0	2	0.003%
Postoperative cardiopulmonary arrest					1	0.001%
Others	93	0.15%	132	0.17%	88	0.13%
Total no. of admissions	535	0.88%	777	1.02%	862	1.15%

*Febrile morbidity - Fever $>38^{\circ}\text{C}$ at least 4 hours apart 24 hours after operations with no cause identified to account for the fever

COMPLICATION RATES IN RELATION WITH COMMON TYPES OF OPERATIONS

The percentage reflected the incidence of all complications of an individual operation. There could be more than one complication for each operation. Radical hysterectomy was associated with the highest morbidity of 15.7% which was much lower than the 38% and 33% reported in 1999 and 1994 respectively. The morbidity associated with simple hysterectomy for malignant conditions was reduced to the same level as that for benign conditions and it was only half that of radical hysterectomy. The morbidity of laparoscopic hysterectomy was slightly higher for malignant conditions (6.6%) than for benign conditions (5.7%), but both were lower than the open approach (7.7%) and vaginal approach (6.9%). The overall morbidity of vaginal hysterectomy reduced from 19.5% in 1994 to 6.9% in 2004. The complication rate of all hysteroscopic surgeries was higher than that reported before, but the overall incidence remained low.

	1994		1999		2004	
	N	%	N	%	N	%
Abdominal operations						
Total hysterectomy ± SO (benign)	3036	8.0	3455	7.6	3840	7.7
Ovarian cystectomy	1387	3.3	1136	1.7	758	3.2
Salpingo-oophorectomy/oophorectomy	625	7.4	492	4.9	426	7.3
Myomectomy	614	4.9	889	3.6	1139	2.6
Salpingectomy	566	6.9	267	4.5	145	8.3
Total hysterectomy ± SO (malignant)	489	9.4	541	10.7	534	7.5
Radical hysterectomy	88	33.0	113	38.1	127	15.7
Vaginal operations						
Hysterectomy ± pelvic floor repair	340	19.4	451	8.2	507	6.9
Myomectomy	-	-	-	-	94	0
Laparoscopic operations						
Diagnostic laparoscopy	1201	1.7	934	3.0	756	4.0
Laparoscopic sterilization	896	0.1	1521	0.8	611	0.8
Common laparoscopic procedure						
<i>Ovarian cystectomy</i>	-	-	1139	2.4	2312	1.9
<i>Salpingectomy</i>	-	-	458	3.3	880	2.3
<i>Salpingo-oophorectomy/oophorectomy</i>	-	-	258	5.0	720	3.2
<i>Hysterectomy (benign)</i>	-	-	233	10.3	724	5.7
<i>Hysterectomy (malignant)</i>	-	-	32	9.4	76	6.6
<i>Salpingotomy</i>	-	-	187	1.1	186	4.3
<i>Myomectomy</i>	-	-	67	4.5	358	2.0
Hysteroscopic operations						
Diagnostic hysteroscopy	1856	0.5	5418	0.5	4846	0.5
Hysteroscopic procedure						
<i>Endometrial resection</i>	-	-	166	0.5	187	1.1
<i>Polypectomy</i>	-	-	161	0	514	0.8
<i>Myomectomy</i>	-	-	87	0	236	2.5
D&C/evacuation of uterus	27331	0.3	27458	0.3	24122	0.2

COMPLICATIONS OF TUBAL SURGERY

Tubal surgery was associated with very low morbidity irrespective of the operative approach and conversion rate for laparoscopic approach was low. Open salpingectomy was associated with a higher complication rate than laparoscopic salpingectomy with intra-operative haemorrhage being the most common complication.

	Salpingectomy		Salpingostomy	
	Open (n=145)	Lap (n=880)	Open (n=22)	Lap (n=186)
Febrile morbidity	4(2.8%)	3(0.3%)	0(0.00%)	2(1.1%)
Urinary tract infection	2(1.4%)	4(0.5%)	0(0.00%)	2(1.1%)
Wound complication	0(0.00%)	0(0.00%)	0(0.00%)	0(0.00%)
Chest infection	0(0.00%)	0(0.00%)	0(0.00%)	0(0.00%)
Intra-operative blood loss with transfusion	7(4.8%)	2(0.2%)	0(0.00%)	0(0.00%)
Post-operative haemorrhage with transfusion	0(0.00%)	0(0.00%)	0(0.00%)	0(0.00%)
Injury to uterus	0(0.00%)	1(0.1%)	0(0.00%)	1(0.5%)
Injury to urinary tract	1(0.7%)	0(0.00%)	0(0.00%)	0(0.00%)
Injury to bowels	0(0.00%)	0(0.00%)	0(0.00%)	0(0.00%)
Major vascular injury	0(0.00%)	0(0.00%)	0(0.00%)	0(0.00%)
Deep vein thrombosis	0(0.00%)	0(0.00%)	0(0.00%)	1(0.53%)
Conversion	--	11(1.3%)	--	3(1.6%)
Unplanned-re-operation before discharge	0(0.00%)	0(0.00%)	0(0.00%)	0(0.00%)
Cardiopulmonary arrest (Intra-operation)	0(0.00%)	0(0.00%)	0(0.00%)	0(0.00%)
Others	0(0.00%)	1(0.22%)	0(0.00%)	0(0.00%)
<i>Total no. of admissions</i>	<i>12(8.28%)</i>	<i>20(2.27%)</i>	<i>0(0.00%)</i>	<i>8(4.30%)</i>

COMPLICATIONS OF OVARIAN SURGERY

Ovarian cystectomy was associated with a lower complication rate than salpingo-oophorectomy irrespective of the operative approach. Laparoscopic ovarian cystectomy was associated with a lower complication rate than the open procedure. Most of the complications reported were minor in nature. Urinary tract injury seems to have occurred more often in open surgery.

	Cystectomy		Salpingo-oophorectomy	
	Open (n=1136)	Lap (n=2312)	Open (n=492)	Lap (n=720)
Febrile morbidity	7(0.93%)	18(0.78%)	8(1.88%)	10(1.39%)
Urinary tract infection	3(0.40%)	6(0.26%)	5(1.17%)	0(0.00%)
Wound complication	2(0.27%)	3(0.13%)	4(0.94%)	0(0.00%)
Chest infection	0(0.00%)	1(0.04%)	1(0.23%)	0(0.00%)
Intra-operative blood loss with transfusion	3(0.40%)	4(0.17%)	4(0.94%)	2(0.28%)
Post-operative haemorrhage with transfusion	0(0.00%)	2(0.09%)	3(0.70%)	1(0.14%)
Injury to uterus	0(0.00%)	4(0.17%)	0(0.00%)	2(0.28%)
Injury to urinary tract	2(0.27%)	0(0.00%)	4(0.94%)	1(0.14%)
Injury to bowels	0(0.00%)	0(0.00%)	1(0.23%)	1(0.14%)
Major vascular injury	0(0.00%)	0(0.00%)	0(0.00%)	0(0.00%)
Deep vein thrombosis	1(0.13%)	0(0.00%)	1(0.23%)	0(0.00%)
Conversion	--	7(0.30%)	--	4(0.56%)
Unplanned-re-operation before discharge	0(0.00%)	0(0.00%)	1(0.23%)	1(0.14%)
Cardiopulmonary arrest (Intra-operation)	0(0.00%)	1(0.04%)	0(0.00%)	0(0.00%)
Others	1(0.09%)	6(0.26%)	2(0.47%)	3(1.16%)
<i>Total no. of admissions</i>	<i>18(2.39%)</i>	<i>43(1.89%)</i>	<i>31(7.28%)</i>	<i>23(3.19%)</i>

COMPLICATIONS OF MYOMECTOMY

Laparoscopic myomectomy was associated with a lower complication rate than open and hysteroscopic myomectomy. Febrile morbidity was the most common complication after abdominal myomectomy. The risk of bleeding was 1.1%, 0.8% and 0.4% after abdominal, laparoscopic and hysteroscopic approach respectively. Inadvertent organ injury was uncommon after myomectomy. Perforation of uterus occurred in 1.3% of hysteroscopic myomectomy. The risk of hysterectomy for the abdominal approach was only 0.2%, compared with 2% in 1999. The risk of hysterectomy for the laparoscopic approach was none, compared with 1.5% in 1999. No complication was reported following vaginal myomectomy.

	Open (n=1139)	Lap (n=358)	Hys (n=236)	Vaginal (n=94)
Febrile morbidity	11 (1.0%)	0(0.00%)	2 (0.8%)	0(0.00%)
Urinary tract infection	2 (0.2%)	0(0.00%)	0(0.00%)	0(0.00%)
Wound complication	5 (0.4%)	0(0.00%)	0(0.00%)	0(0.00%)
Chest infection	0(0.00%)	0(0.00%)	0(0.00%)	0(0.00%)
Intra-operative blood loss with transfusion	13 (1.1%)	3 (0.8%)	1 (0.4%)	0(0.00%)
Post-operative haemorrhage with transfusion	0(0.00%)	0(0.00%)	0(0.00%)	0(0.00%)
Injury to uterus	0(0.00%)	0(0.00%)	3 (1.3%)	0(0.00%)
Injury to urinary tract	0(0.00%)	1 (0.3%)	0(0.00%)	0(0.00%)
Injury to bowels	0(0.00%)	0(0.00%)	0(0.00%)	0(0.00%)
Major vascular injury	1 (0.1%)	0(0.00%)	1 (0.4%)	0(0.00%)
Deep vein thrombosis	0(0.00%)	0(0.00%)	0(0.00%)	0(0.00%)
Conversion to laparotomy	0(0.00%)	3 (0.8%)	0(0.00%)	0(0.00%)
Unplanned re-operation before discharge	0(0.00%)	0(0.00%)	1 (0.4%)	0(0.00%)
Cardiopulmonary arrest	0(0.00%)	0(0.00%)	1 (0.4%)*	0(0.00%)
Others	1 (0.1%)	1 (0.3%)	0(0.00%)	0(0.00%)
Total no. of admissions	30 (2.6%)	7 (2.0%)	6 (2.5%)	0(0.00%)

* Intra-operation

COMPLICATIONS OF HYSTERECTOMY (BENIGN CONDITIONS)

Among the 3 different routes of hysterectomy, abdominal approach was associated with the highest complication rate. Intra-operative haemorrhage and febrile morbidity occurred more common in abdominal and vaginal approach. Inadvertent organ injury occurred in 1.8% after vaginal hysterectomy, 0.8% after laparoscopic approach and 0.6% after abdominal hysterectomy. The risk of deep vein thrombosis was similar among the 3 different routes of hysterectomy.

	Abdominal (n=3819)	Laparoscopic (n=724)	Vaginal (n=505)
Febrile morbidity	113(2.96%)	11(1.51%)	14(2.77%)
Urinary tract infection	52(1.36%)	3(0.41)	3(0.59%)
Wound complication	41(1.07%)	1(0.14%)	0(0.00%)
Chest infection	1(0.03%)	0(0.00%)	0(0.00%)
Intra-operative blood loss with transfusion	66(1.73%)	7(0.96%)	9(1.78%)
Post-operative haemorrhage with transfusion	17(0.45%)	1(0.14%)	1(0.20%)
Injury to urinary tract	17(0.45%)	6(0.82%)	8(1.58%)
Injury to bowels	4(0.10%)	0(0.00%)	1(0.20%)
Injury to uterus	1(0.03%)	0(0.00%)	0(0.00%)
Major vascular injury	0(0.00%)	0(0.00%)	0(0.00%)
Deep vein thrombosis	12(0.31%)	2(0.27%)	1(0.20%)
Conversion to laparotomy	--	9(1.24%)	2(0.40%)
Unplanned-re-operation before discharge	9(0.24%)	0(0.00%)	0(0.00%)
Cardiopulmonary arrest (Intra-operation)	1 (0.03%)	0(0.00%)	0(0.00%)
Others	17(0.45%)	7(0.96%)	3(0.59%)
Total no. of admissions	296(7.75%)	41(5.66%)	35(6.93%)

**Figures include subtotal hysterectomy.*

ANALYSIS ON HYSTERECTOMY

MODES AND TYPES OF HYSTERECTOMY

Abdominal route was still the main approach for the majority of hysterectomies with laparoscopic approach being employed in 14% and 9% of benign and malignant conditions respectively. Vaginal route was used in about 10% of benign conditions and 0.2% of malignant conditions.

	By intention		By outcome	
	1999	2004	1999	2004
Benign condition	4146	5058	4146	5058
<i>Simple abdominal hysterectomy</i>	3455(83.3%)	3819 (75.5%)	3464(83.6%)	3830 (75.7%)
<i>Vaginal hysterectomy</i>	451(10.9%)	505 (10.0%)	450(10.9%)	503 (9.9%)
<i>Laparoscopic hysterectomy</i>	233(5.6%)	724 (14.3%)	225(5.4%)	715 (14.1%)
<i>Extended hysterectomy</i>	7(0.2%)	10 (0.2%)	7(0.2%)	10 (0.2%)
Malignant condition	701	834	701	834
<i>Simple abdominal hysterectomy</i>	539(76.9%)	613 (72.7%)	541(77.2%)	614 (73.6%)
<i>Extended hysterectomy</i>	17(2.4%)	13 (1.6%)	17(2.4%)	13 (1.6%)
<i>Radical hysterectomy</i>	113(16.1%)	130 (15.6%)	113(16.1%)	130 (15.6%)
<i>Laparoscopic hysterectomy</i>	32(4.7%)	76 (9.1%)	30(4.3)	75 (9.0%)
<i>Vaginal hysterectomy</i>	0	2 (0.2%)	0	2 (0.2%)

CONDITIONS ASSOCIATED WITH SIMPLE HYSTERECTOMY

Of the top 10 most common conditions associated with simple abdominal and laparoscopic hysterectomy, fibroid and adenomyosis were the commonest conditions in both groups. There were 76 malignancies being treated laparoscopically; of which 57 were for carcinoma of corpus, 11 for cervical carcinoma, 5 for ovarian carcinoma, 2 for tubal malignancy and 1 for other uterine malignancy.

Abdominal hysterectomy	No. (%)	Laparoscopic hysterectomy	No. (%)
Fibromyoma	2801 (61.1%)	Fibromyoma	456 (56.6%)
Adenomyosis	564 (12.3%)	Adenomyosis	108 (13.4%)
Endometriotic cyst	395 (8.6%)	Menorrhagia / DUB	70 (8.7%)
Benign ovarian tumour	350 (7.6%)	Carcinoma of corpus	59 (7.3%)
Carcinoma of corpus	329 (7.2%)	Prolapse of uterus	57 (7.1%)
CIN	197 (4.3%)	Endometriotic cyst	49 (6.1%)
Carcinoma of ovary (epithelial)	167 (3.6%)	CIN	47 (5.8%)
Carcinoma of cervix	161 (3.5%)	Benign ovarian tumour	41 (5.1%)
Menorrhagia / DUB	145 (3.2%)	Endometrial hyperplasia	41 (5.1%)
Pelvic endometriosis	127 (2.8%)	Vaginal wall prolapse	37 (4.6%)

DURATION OF HOSPITAL STAY

The duration of hospital stay was calculated from the time of admission till discharge. Pre-operative assessment, in principle, would have been included. The length of hospital stay was divided into 3 groups and the grouping varies according to different types of procedure. About 40% of the admissions were discharged on the same day, and 54% were discharged within 7 days. Only 3.8% of all the admissions had length of stay longer than 1 week and this was much lower than the 5.4% in 1999 and 7.4% in 1994. For those who stayed in hospital overnight, the mean duration of stay was 3.0 days and this was again shorter than that in 1999 and 1994.

	Mean* (days)	S.D. (days)	Day 0	Day 1-7	Day 8-14	>14 days
1994	4.0	4.8	40.0%	52.6%	6.0%	1.4%
1999	3.4	4.3	39.0%	55.6%	4.5%	0.9%
2004	3.0	3.5	42.4%	53.8%	3.1%	0.7%

* Excluding those with no information and day patients.

DURATION OF STAY FOR MAJOR ABDOMINAL SURGERY

The length of stay after major abdominal surgery reported was shorter than that reported in 1994. Both simple and subtotal hysterectomy had longer length of stay when performed for malignant conditions. The mean length of stay following radical hysterectomy and debulking operation were much shorter than that reported in 1994. The mean length of stay following pelvic exenteration was reported to be 12.2 days. Except for operations for stress incontinence and urinary fistula, over $\frac{3}{4}$ of all major abdominal surgeries for benign conditions were discharged within 7 days. This compared to less than 50% for all major abdominal surgeries for malignant conditions.

	Total no. of admissions	Mean (days)	S.D. (days)	1-7 days	8-14 days	>14 days
TAH \pm BSO (benign)	3735	6.3	3.7	2817	828	90
Ovarian cystectomy	750	5.1	2.4	646	101	3
Myomectomy	1134	5.1	2.3	1028	100	5
Salpingo-oophorectomy/oophorectomy	423	6.0	3.5	9	99	11
Salpingectomy	145	4.9	2.6	313	16	2
Tuboplasty/adhesiolysis	58	5.2	2.9	50	7	1
Abdominal surgery for stress incontinence	31	8.8	4.6	16	12	3
Salpingotomy	22	5.1	2.5	18	4	0
Subtotal hysterectomy \pm BSO (benign)	66	5.4	2.5	57	8	1
Operation for urinary fistula	6	8.8	8.5	3	2	1
Miscellaneous (benign)	100	6.7	5.8	71	24	5
TAH \pm BSO (malignant)	604	9.2	6.0	262	275	67
Radical hysterectomy	130	11.9	11.0	51	39	40
Debulking \pm Omentectomy	177	11.2	7.4	45	103	29
Extending hysterectomy	22	11.2	6.6	5	11	6
Subtotal hysterectomy \pm BSO (malignant)	4	9.8	5.1	1	2	1
Pelvic exenteration	10	12.2	8.5	2	6	2
Miscellaneous (malignant)	30	3.4	3.4	26	3	1

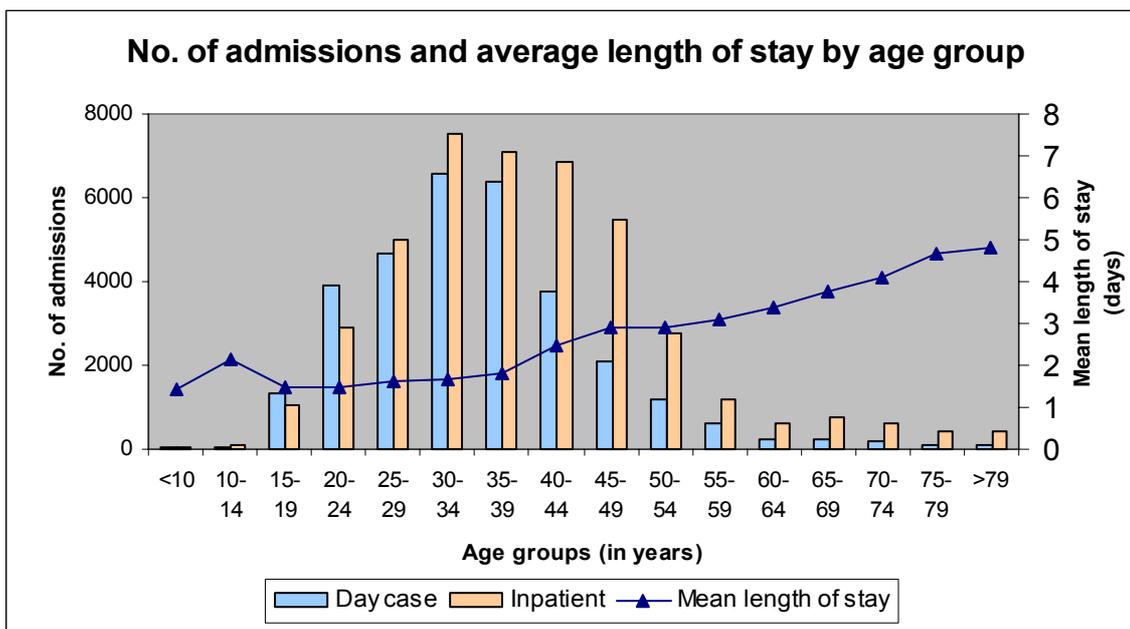


Figure G16 – No. of admissions and average length of stay by age groups

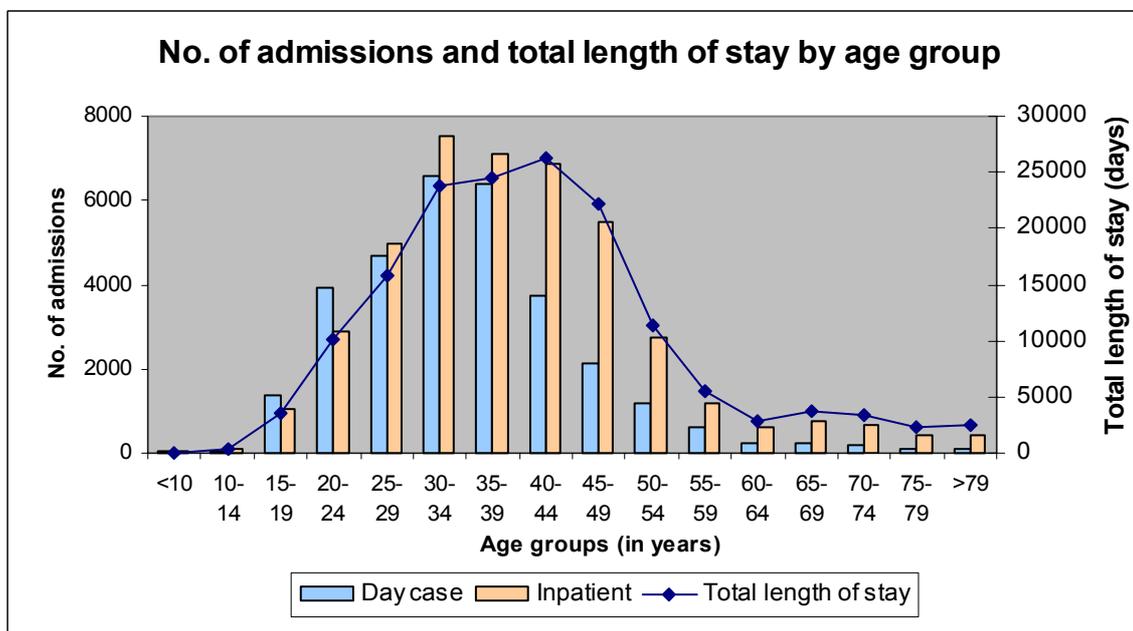


Figure G17 – No. of admissions and total length of stay by age groups

DURATION OF STAY FOR MAJOR VAGINAL AND VULVAL SURGERY

About 80% of the vaginal procedures could be discharged within 7 days, compared with about 60% in 1999. Hospital stay associated with vaginal hysterectomy alone was shorter than pelvic floor repair alone, while the combined procedure was associated with a longer duration of stay. Similar to 1999, over 70% of the vulval procedures could be discharged within 7 days. Wide local excision was associated with a shorter hospital stay than radical vulvectomy.

	Total no. of admissions	Mean (days)	S.D. (days)	1-7 days	8-14 days	>14 days
Vaginal hysterectomy with PFR	418	6.3	3.6	304	98	16
Vaginal hysterectomy	91	4.4	2.2	84	7	0
Pelvic floor repair	131	5.7	3.6	103	23	5
Vaginal surgery for SI	164	5.5	3.7	129	29	6
Vaginal myomectomy	94	2.6	3.4	91	2	1
Repair of urinary fistula	2	1	-	2	0	0
Miscellaneous vaginal surgery	66	3.7	3.7	57	7	2
Wide local excision	26	9.2	10.4	16	4	6
Simple vulvectomy	13	7.7	8.1	7	5	1
Radical vulvectomy	14	11.9	10.3	6	3	5
Miscellaneous vulval surgery	50	2.7	3.7	47	2	1

DURATION OF STAY FOR MINOR VAGINAL AND VULVAL SURGERY

The duration of stay under this category was similar to that reported in previous audits. Suction termination of pregnancy was mainly performed as a day procedure. Evacuation of uterus following abortion however was associated with a longer length of stay.

	Total no. of admissions	Mean (days)	S.D. (days)	Same day discharge	1-3 days	>3 days
Suction termination of pregnancy	14264	1.1	0.5	13373	833	58
Evacuation of uterus	5104	1.6	1.4	1558	3331	215
D&C	4492	1.5	1.8	1714	2546	232
Marsupialization	707	1.4	1.0	172	510	25
Other vulval surgery	583	2.0	3.4	193	333	57
Cervical cerclage	22	4.1	4.2	1	13	8
Miscellaneous	405	2.1	2.3	117	236	52

DURATION OF STAY FOR LAPAROSCOPIC SURGERY

As short hospital stay is one of the reported advantages of laparoscopic surgery, the length of hospital stay was therefore divided using 3 and 7 days as cut-off points. Overall, about 70% of the hospital stay was within 3 days, compared with 64% in 1999. The exception included salpingo-oophorectomy (56.9%), hysterectomy (20.7% for subtotal and 47.6% for total), drainage of abscess (20.5%) and lymphadenectomy (36.6%).

	Total no. of admissions	Mean (days)	S.D. (days)	≤3 days	4-7 days	>7 days
Laparoscopic sterilization/tubal occlusion	608	1.7	1.4	569	36	3
Laparoscopic ovarian cystectomy	2299	2.9	2.2	1712	546	41
Diagnostic laparoscopy	750	2.6	2.1	596	125	29
Laparoscopic salpingectomy	878	2.9	2.0	647	207	24
Laparoscopic adhesiolysis	456	2.8	2.4	349	96	11
Laparoscopic SO/oophorectomy	717	3.6	2.3	408	277	32
Laparoscopic total hysterectomy	720	4.0	2.5	343	333	44
Laparoscopic salpingotomy	186	3.1	2.1	143	33	10
Laparoscopic ablation of endometriosis	173	2.4	1.3	147	25	1
Laparoscopic myomectomy	356	3.1	1.5	244	108	4
Laparoscopic subtotal hysterectomy	77	4.1	1.3	16	60	1
Laparoscopic drainage of abscess	39	6.5	5.7	8	21	10
Laparoscopic ovarian drilling	52	2.4	1.5	42	9	1
Laparoscopic lymphadenectomy	41	5.0	3.0	15	22	4
Laparoscopic colposuspension	4	12.5	9.8	0	2	2
Laparoscopic myolysis	15	1.3	0.6	15	0	0
Laparoscopic repair of genital prolapse	5	5.8	5.5	2	1	2
Laparoscopic radical hysterectomy	1	13	-	0	0	1
Miscellaneous	196	3.4	3.3	137	44	15

DURATION OF STAY FOR HYSTEROSCOPIC SURGERY

Only 60% of the diagnostic hysteroscopy were performed as a day procedure, compared with 90% in 1999. The mean length of hospital stay for all other hysteroscopic procedures was less than 2.2 days. The hospital stay was within 3 days in over 95% of the cases, compared with 75% in 1999.

	Total no. of admissions	Mean (days)	S.D. (days)	Same day discharge	1-3 days	>3 days
Diagnostic hysteroscopy	4838	1.5	1.6	2893	1735	210
Endometrial resection/ablation	187	1.7	1.1	39	140	8
Hysteroscopic polypectomy	505	1.6	1.2	137	351	17
Hysteroscopic myomectomy	235	2.2	1.9	26	185	24
Miscellaneous	159	1.8	1.7	46	100	13

DURATION OF STAY FOR LAPAROTOMY VERSUS LAPAROSCOPY

Irrespective of the magnitude of the procedure, laparoscopic surgery was associated with a shorter hospital stay than open surgery, with a mean difference of 2.3 days (range 1.3-4.3 days).

	Laparotomy Days \pm SD	Laparoscopy Days \pm SD
Total hysterectomy \pm salpingo-oophorectomy (malignant)	9.2 \pm 6.0	4.9 \pm 2.8
Total hysterectomy \pm salpingo-oophorectomy (benign)	6.3 \pm 3.7	3.9 \pm 2.4
Subtotal hysterectomy \pm salpingo-oophorectomy (benign)	5.4 \pm 2.5	4.1 \pm 1.3
Myomectomy	5.1 \pm 2.3	3.1 \pm 1.5
Salpingo-oophorectomy/oophorectomy	6.0 \pm 3.5	3.6 \pm 2.3
Ovarian cystectomy	5.1 \pm 2.4	2.9 \pm 2.2
Salpingotomy	5.1 \pm 2.5	3.1 \pm 2.1
Salpingectomy	4.9 \pm 2.6	2.9 \pm 2.0

Appendix 1. List of Participating Hospitals/Institutes and Co-ordinators

Hospital / Institute	Coordinator
Canossa Hospital	Dr. Lee Tat Choi Eric
Caritas Medical Centre	Dr. Lee Kai Wan
Evangel Hospital	Dr. Liu Yuk Kuen
Family Planning Association of Hong Kong	Dr. Grace Wong
Hong Kong Adventist Hospital	Ms. Angela Chan
Hong Kong Baptist Hospital	Dr. Sum Tak Keung
Hong Kong Sanatorium & Hospital Ltd.	Dr. Chan Woon Tong Joseph
Kwong Wah Hospital	Dr. Wong Kin Sun
Matilda International Hospital	Dr. Hans Schrader
North District Hospital	Dr. Leung Pui Ling
Our Lady of Maryknoll Hospital	Dr. Wong Kin Sun
Pamela Youde Nethersole Eastern Hospital	Dr. Ng Tai Keung
Precious Blood Hospital	Dr. Chan Wing Kin
Prince of Wales Hospital	Dr. Leung Pui Ling
Princess Margaret Hospital	Dr. Lee Kai Wan
Queen Elizabeth Hospital	Dr. Chan Yuk May May
Queen Mary Hospital	Dr. Pun Ting Chung
St. Paul's Hospital	Dr. Chung Ka Leung
St. Teresa's Hospital	Dr. Lau Woon Chung
The Hong Kong Central Hospital Ltd.	Dr. Lee Kai Cheung Stephen
Tsuen Wan Adventist Hospital	Dr. So Kon Ping
Tuen Mun Hospital	Dr. Tsoi Chiu Wing
Union Hospital	Dr. Yu Ka Man
United Christian Hospital	Dr. Fung Suk Yee Alice

Appendix 2. Lists of Committee and Subcommittee

Task Force on HKCOG Territory-wide Audit 2004

	Year of membership	Remarks
Dr. CHAN Yuk May, May	2003	
Dr. PUN Tin Chung	2003	
Dr. TSANG Sing Wing	2003	
Dr. TSE Hei Yee Lowina	2003	
Dr. WONG Shu Pong	2003	
Dr. YUEN Pong Mo	2003	Co-ordinator

Clinical Audit Subcommittee 2003-2006

	Year of membership	Remarks
Dr. CHAN Yuk May, May	2003 – 2005	
Dr. HO Lau Cheung	2003	
Dr. LEUNG Wing Cheong	2006	
Dr. NG Tai Keung	2003	
Dr. PUN Ting Chung	2003 – 2006	
Dr. SIU King Sang Catherine	2003	
Dr. SO Kon Ping	2003	
Dr. SO Wai Ki, William	2003	
Dr. TO Wing Kee, William	2006	
Dr. TSANG Sing Wing	2003 – 2006	Chairman (2003)
Dr. TSE Hei Yee, Lowina	2004 – 2005	
Dr. WONG Shu Pong	2004 – 2006	
Dr. YUEN Pong Mo	2003 – 2006	Chairman (2004-2006)

Quality Assurance Committee 2003 – 2006

	Year of membership	Remarks
Dr. CHAN Chung Sum, Sammy	2004 – 2006	
Dr. CHAN Woon Tong, Joseph	2003 – 2006	
Dr. CHAN Yuk May, May	2003 – 2006	
Dr. CHEUNG Kai Bun	2003 – 2006	
Dr. CHEUNG Tak Hong	2003 – 2006	
Dr. CHU Wai Yee	2003 – 2006	
Prof. CHUNG Kowk Hung, Tony	2004 – 2006	Chairman (2004-2006)
Dr. FOK Lai Ling, Nancy	2003 – 2006	
Dr. HO Lau Cheung	2003	
Prof. LAO Tzu Hsi, Terence	2003 – 2006	
Dr. LAW Chiu Fung	2003 – 2006	
Dr. LI Fuk Him, Dominic	2004 – 2006	
Dr. LEUNG Kwok Yin	2004 – 2006	
Dr. MOK Ka Ming, Charles	2003 – 2006	
Dr. NG Tai Keung	2003 – 2006	
Prof. NGAN Yuen Sheung, Hextan	2003 – 2006	
Dr. SIU King Sang, Catherine	2003	
Dr. SO Wai Ki, William	2003	
Dr. TANG Chang Hung, Lawrence	2003 – 2006	Chairman (2003)
Dr. TSANG Sing Wing	2003	
Dr. WONG Shu Pong	2003 – 2006	
Dr. YU Kai Man	2003 – 2006	
Dr. YUEN Pong Mo	2004 – 2006	

Appendix 3. Obstetric Audit Form

OBSTETRICS AUDIT FORM – HKCOG 2004

NAME : _____ (initials)		Date of Delivery : _____ (dd/mm/yy)	
AGE : _____		Status : * HK Resident / Non-HK Resident	
ID. No : _____ X(X) (at least 5 digits)		Maternal Death : * No / Yes	
ANTENATAL COMPLICATIONS		INFORMATION ABOUT LABOUR	
Cardiac Disease	* 1. No 2. Rheumatic heart disease 3. Congenital heart disease 4. MVP 5. Arrhythmia 6. Others	Onset of Labour	* Spontaneous / Induced / No Labour
Diabetes	* 1. No 2. Pre-existing DM 3. Gestational DM 4. Impaired glucose tolerance (IGT)	Duration of Labour _____ hours	
Anaemia	* No / Yes	Indication for Induction (at most 3)	
Renal Disease	* No / Yes	* 1. No / irrelevant	
Liver Disease	* No / Yes	2. DM / GDM / IGT	
Respiratory Disease	* No / Yes	3. Maternal disease	
GI / Biliary Disease	* No / Yes	4. Bad obstetrical history	
Epilepsy	* No / Yes	5. Prolonged pregnancy / Post- date (≥ 41 weeks)	
Psychiatric Disease	* No / Yes	6. Hypertension	
Immunological Disease	* No / Yes	7. PROM ± intraut. Infection	
Thyroid Disease	* No / Yes	8. APH	
Surgical Disease	* No / Yes	9. Multiple pregnancy	
		10. Suspected IUGR / IUGR	
		11. IUD	
		12. Fetal anomaly	
		13. Suboptimal CTG / fetal distress	
		14. Others _____	
		Syntocinon Augmentation	* No / Yes
		Epidural Anaesthesia	* No / Yes
		Episiotomy	* No / Yes
OBSTETRIC HISTORY & COMPLICATIONS		POSTNATAL COMPLICATIONS	
Parity	* 0 / 1 / 2 / 3 / 4 / 5 / 5+	Postpartum Haemorrhage (at most 3)	
Multiple Pregnancy	* Singleton/Twins/Triples/Higher	* 1. No	
Previous Uterine Scar	* No / Yes	2. Uterine atony	
Hypertension	Severity * No / Mild / Severe	3. Retained POG	
	Classification	4. Rupture of uterus	
	* 1. Irrelevant	5. Cervical tear	
	2. Eclampsia	6. Vaginal tear	
	3. Gestational hypertension	7. Perineal wound	
	4. Gestational proteinuria	8. Genital haematoma	
	5. Gest. Proteinuric HT (PET)	9. Acute inversion of uterus	
	6. Chr. HT – no proteinuria	10. DIC	
	7. Chr. HT – with PET	11. Others	
	8. Unclassified		
Antepartum Haemorrhage	* 1. No	Puerperal Pyrexia	* No / Yes
	2. APH of ? origin	Mastitis / Breast Abscess	* No / Yes
	3. Placenta praevia	UTI	* No / Yes
	4. Placental abruption	Genital Tract Infection	* No / Yes
	5. Others	Wound Problem requiring Intervention	* No / Yes
ECV	* 1. Irrelevant	Third Degree Tear	* No / Yes
	2. No ECV	Uterine Rupture / Scar Dehiscence	* No / Yes
	3. Successful ECV	MROP	* No / Yes
	4. Failed ECV	Hysterectomy	* No / Yes
Threatened Preterm Labour	* No / Yes	Internal iliac artery ligation	* No / Yes
Use of tocolytic	* No / Yes	Uterine artery embolisation	* No / Yes
Use of steroid	* No / Yes		

* represents the default value

INFORMATION ABOUT DELIVERY – BABY *1 / 2 / 3		
Mode of Delivery	* 1. NSD 2. V/E 3. Forceps 4. Breech 5. LSCS 6. Classical CS 7. Others 8. Unknown	BBA * No / Yes
Presentation / Lie at Birth	* 1. Vertex 2. Breech 3. Brow 4. Face 5. Oblique 6. Transverse 7. Compound 8. Others	Indication for VE / Forceps (at most 3) * 1. No / irrelevant 2. Maternal disease 3. Maternal distress 4. Previous CS 5. Obs complication 6. Fetal distress 7. Cord prolapse 8. Prolonged 2 nd stage 9. Others _____
		Indication for C/S (at most 3) * 1. No / irrelevant 2. DM / GDM / IGT 3. Maternal disease 4. Previous uterine scar 5. Bad obs. History 6. APH / placenta praevia 7. Hypertension 8. Multiple pregnancy 9. Fetal distress 10. Cord prolapse / presentation 11. Suspected IUGR / IUGR 12. Malpresentation / lie 13. No progress 14. CPD 15. Contracted / unfavourable pelvis 16. Failed instrumental delivery 17. Genital tumour / anomaly 18. Failed induction 19. Elderly / infertility 20. Suspected macrosomia 21. Social reason 22. Others
INFORMATION ABOUT BABY – BABY *1 / 2 / 3		
Gestation _____ weeks	Fetal Outcome	Cause of NND (circle 1 only)
Birth Weight _____ gm	* 1. Alive 2. SB – antepartum 3. SB – intrapartum 4. SB – unknown 5. NND – first week 6. NND – 2 to 4 week	* 1. Irrelevant 2. Congenital anomaly 3. Isoimmunisation 4. PIH 5. APH 6. Mechanical 7. Maternal disorder 8. Others 9. Unexplained 10. Uninvestigated
Apgar Score at 1 min _____	Cause of *Stillbirth (circle 1 only)	Contributory Factor to NND
Apgar Score at 5 min _____	* 1. Irrelevant 2. Congenital anomaly 3. Isoimmunisation 4. PIH 5. APH 6. Mechanical 7. Maternal disorder 8. Others 9. Unexplained 10. Uninvestigated	Congenital anomaly * None / major / attributable Haemolytic disease * None / major / attributable Hypoxia * None / major / attributable Birth trauma * None / major / attributable RDS * None / major / attributable Intracranial haemorrhage * None / major / attributable Infection * None / major / attributable Miscellaneous * None / major / attributable Unclassifiable * None / major / attributable
Admission to NICU * No / Yes		
Congenital Anomalies * No / Yes		
Birth Trauma (at most 3)		
* 1. No 2. Cephalhaematoma 3. Soft tissue trauma 4. Subaponeurotic haemorrhage 5. Intracranial haemorrhage 6. Fractures 7. Nerve injury 8. Visceral injury		
Gestational / Congenital Infection * No / Yes		
Major Infections * No / Yes		
RDS * No / Yes		
IVH * No / Yes		
NEC * No / Yes		

* represents the default value

Appendix 4. Gynaecology Audit Form

GYNAECOLOGY AUDIT FORM – HKCOG 2004

_____ HOSPITAL

Name:	_____	<i>(initials)</i>
Age:	_____	
ID No.	_____	()
(Last 2 characters may be omitted)		

Date of Admission: _____

Date of Discharge: _____

Status at Admission

- (1) Transfer in
- (2) Emergency
- (3) Routine
- (4) Unplanned readmission (within 28 days of last admission)
- (5) Day case

Status at Discharge

- (1) Home
- (2) Transfer for convalescence
- (3) Transfer (referral)
- (4) DAMA
- (5) Death

DIAGNOSIS (in code) _____

For ONCOLOGY cases only : (circle as appropriate)

Old case / New case

Stage of Disease : Recurrent / Unstaged / Stage I / Stage II / Stage III / Stage IV

TREATMENT (in code) _____

COMPLICATIONS

- | | |
|--|----------|
| (1) Fever >38°C after first 24 hours
(readings at least 4 hours apart; ONLY if no cause to account for the fever) | Yes / No |
| (2) Bowel injury (ONLY if mucosa was involved) | Yes / No |
| (3) Urinary tract injury (ONLY if mucosa was involved) | Yes / No |
| (4) Perforation of uterus | Yes / No |
| (5) Chest infection (there SHOULD be radiological OR bacteriological evidence) | Yes / No |
| (6) Urinary tract infection (ONLY with positive culture IN ADDITION to fever or symptoms) | Yes / No |
| (7) Wound complications (ONLY if presence of pus or gapping that required resuturing or burst abdomen) | Yes / No |
| (8) Deep vein thrombosis (ONLY if anticoagulant therapy was required) | Yes / No |
| (9) Cardiopulmonary arrest (Intra-operation) | Yes / No |
| (10) Operative blood loss requiring transfusion (not for treatment of anaemia) | Yes / No |
| (11) Postoperative haemorrhage requiring re-operation or transfusion | Yes / No |
| (12) Major vascular injury | Yes / No |
| (13) Conversion of laparoscopic procedure to laparotomy | Yes / No |
| (14) Unplanned re-operation before discharge (specify) | Yes / No |
| (15) Cardiopulmonary arrest (Post-operation) | Yes / No |
| (16) Others (specify) _____ | Yes / No |

Appendix 5. HKCOG Audit Guidelines For Coding (2004 Version)

GENERAL INSTRUCTIONS

Study period for 2004 audit: 1 January 2004 to 31 December 2004.

Cases for audit:

- OBSTETRICS – all deliveries with date of delivery within the study period
- GYNAECOLOGY – all episodes of hospitalization with date of admission within the study period

IMPORTANT : Patient's I.D. number must be entered. The last two characters may be omitted e.g. A12345X(X).

OBSTETRICS AUDIT FORM 2004

EXPLANATORY NOTES ON DATA ENTRY

Patient Identification

Name

I.D. No

Date of Delivery dd/mm/yyyy

Age Number with 2 digits in completed years

Status Resident / Non-Resident

Maternal death From conception up to 1 year after delivery

Antenatal, Medical / Surgical Complications

- | | |
|-------------------|---|
| Cardiac disease | <ol style="list-style-type: none">1. No disease2. Rheumatic valvular disease3. Congenital heart disease4. Mitral valve prolapse5. Arrhythmia requiring treatment or regular cardiac treatment6. Others |
| Diabetes mellitus | <ol style="list-style-type: none">1. No disease2. Pre-existing DM – known DM before the indexed pregnancy disregarding treatment was instituted or not3. Gestational DM – DM diagnosed during pregnancy or postpartum by an OGTT4. Impaired glucose tolerance – IGT diagnosed during pregnancy or postpartum according to OGTT criteria used |
| Anaemia | Hb level <10g/dl at any time of gestation (thalassaemia without anaemia is EXCLUDED) |
| Renal disease | Disease of the urinary tract during pregnancy either <ol style="list-style-type: none">a. with symptoms orb. with impaired renal function orc. requiring treatmentd. asymptomatic bacteriuria is EXCLUDED |

Liver disease	Liver diseases during pregnancy with impaired liver function
Respiratory disease	Only those requiring treatment during pregnancy or with impaired respiratory function Upper respiratory tract infection is EXCLUDED
Gastrointestinal biliary disease	Include only those requiring hospitalization and treatment
Epilepsy	Only those requiring treatment during pregnancy
Psychiatric disease	Only those requiring treatment during pregnancy
Immunological disease	Only those requiring treatment during pregnancy
Thyroid disease	Only those requiring treatment during pregnancy
Surgical disease	Major surgical conditions / laparotomy or major operations that require general anaesthesia during pregnancy or puerperium (except PPS)

Obstetric History & Complications

Parity	Including liveborns and stillbirths after 24 weeks or over 500gm
Previous scar	Including previous Caesarean section / myomectomy / hysterotomy / plastic operation / perforation of uterus requiring repair
Hypertension / eclampsia	Severity : <ol style="list-style-type: none"> 1. No 2. Mild-DBP < 110mmHg AND no proteinuria 3. Severe-DBP \geq 110 mmHg AND / OR proteinuria Classification : <ol style="list-style-type: none"> 1. Irrelevant 2. Eclampsia 3. Gestational hypertension <ul style="list-style-type: none"> - BP normal before 20 weeks and no previous history of hypertension - DBP \geq110mmHg on any 1 occasion or \geq90mmHg on 2 or more occasions at 4 hours apart 4. Gestational proteinuria (proteinuria \geq300 mg/24 hours; or 2 MSU / CSU collected \geq4 hours apart with 1 g/l; or 2+ or more on reagent strips 5. Gestational proteinuric hypertension 6. Chronic hypertension with proteinuria 7. Chronic hypertension with superimposed preeclampsia – proteinuria developing for the first time during pregnancy 8. Unclassified – BP unknown before 20 weeks
Antepartum haemorrhage	Bleeding per vaginam from the 24th week to the time of delivery <ol style="list-style-type: none"> 1. No 2. APH of unknown origin – including those with “show” but not going into labour within 72 hours 3. Placenta praevia – including those who do not bleed 4. Accidental haemorrhage – including those with no revealed bleeding 5. Other causes
ECV	Performance of external cephalic version

Threatened preterm labour	Diagnosed or suspected to have labour before 37 weeks of gestation which does not proceed to delivery either spontaneously or after tocolytic therapy
Use of tocolytics	Use of tocolytic agent(s) to suppress preterm labour
Use of steroid	Use of antenatal steroid to enhance fetal lung maturity

Information About Labour

Onset of labour	<p>Definition - a retrospective diagnosis</p> <ul style="list-style-type: none"> - regular contractions with cervix at least 3cm dilated or there is progressive cervical effacement or dilatation over 4 hours
Induction of labour	<p>An obstetric procedure designed to pre-empt the natural process of labour by initiating its onset artificially before this occurs spontaneously</p> <p>Indications :</p> <ol style="list-style-type: none"> 1. Maternal diseases / conditions <ol style="list-style-type: none"> (I) DM / GDM / IGT (II) Maternal medical / surgical condition 2. Bad obstetric history 3. Antenatal / obstetric complications <ol style="list-style-type: none"> (I) Prolonged pregnancy (II) Hypertensive disease (III) PROM / intrauterine infection (IV) Antepartum haemorrhage (V) Multiple pregnancy 4. Fetal and cord conditions <ol style="list-style-type: none"> (I) Suspected IUGR / IUGR (II) Intrauterine death (III) Severe fetal abnormality (IV) Suboptimal antepartum cardiotocography 5. Others
Augmentation of labour	<p>The use of synthetic oxytocin to accelerate labour process after it is already begun and that its quality of progress is unsatisfactory – use of amniotomy is NOT counted as augmentation</p>
Duration of labour	<p>Summation of first stage and second stage (if any) of labour to the closest number of hours. Enter 1 if duration <1 hour</p>

Postnatal Complications

Primary PPH (choose at most 3)	<p>Bleeding over 500ml within 24 hours of delivery</p> <ol style="list-style-type: none"> 1. Uterine atony 2. Retained POG 3. Injuries to genital tract <ul style="list-style-type: none"> - ruptured uterus - cervical tear - vaginal tear - perineal wound 4. Genital haematoma 5. Uterine inversion
--------------------------------	--

6. DIC
7. Others

Uterine rupture / scar Includes dehiscence of previous scar with no PPH dehiscence

Hysterectomy Include those performed up to 6 weeks postpartum

Puerperal pyrexia Temperature >38 degree C within 14 days of delivery

Information About Delivery

- | | |
|---|--|
| Mode of delivery | <ol style="list-style-type: none"> 1. Spontaneous vertex delivery 2. Ventouse extraction 3. Forceps delivery 4. Breech delivery 5. Lower segment Caesarean section 6. Classical Caesarean section 7. Unknown 8. Others |
| BBA | Birth before arrival |
| Presentation / lie at delivery | <ol style="list-style-type: none"> 1. Vertex 2. Breech 3. Brow 4. Face 5. Oblique lie 6. Transverse lie 7. Compound presentation 8. Others |
| Indications for instrumental delivery (maximum 3 indications) | <ol style="list-style-type: none"> 2. Maternal diseases / conditions <ul style="list-style-type: none"> - maternal disease complicating pregnancy - maternal distress 3. Past obstetrical history <ul style="list-style-type: none"> - previous Caesarean section 4. Antenatal / obstetric complications e.g. hypertension 5. Fetal and cord conditions <ul style="list-style-type: none"> - fetal distress (except cord prolapse) - cord prolapse / presentation 6. Labour and delivery problems <ul style="list-style-type: none"> - prolonged second stage - after-coming head of breech is EXCLUDED 7. Others |
| Indications for Caesarean section (maximum 3 indications) | <ol style="list-style-type: none"> 1. Maternal disease / conditions <ul style="list-style-type: none"> - GDM / DM / IGT - maternal disorders 2. Past obstetrical history <ul style="list-style-type: none"> - previous sections / uterine scar |

- bad obstetrical history
- 3. Antenatal / obstetric complications
 - antepartum haemorrhage
 - hypertensive disorders
 - multiple pregnancy
- 4. Fetal and cord conditions
 - fetal distress
 - cord prolapse / presentation
 - suspected IUGR / IUGR
 - suspected macrosomia
- 5. Labour and delivery problems
 - abnormal lie / presentation
 - failure to progress
 - cephalopelvic disproportion
 - contracted / unfavourable pelvis
 - failed instrumental delivery
 - tumour / congenital anomaly of genital tract
 - failed induction – cervix fails to reach 3cm
- 6. Others
 - elderly mother / infertility
 - social reason
 - others

Information About the Baby

Gestation	In completed weeks according to best estimate
Birth weight	Weight in grams
Apgar score	Range 0 – 10, or unknown
Fetal outcome	<ol style="list-style-type: none"> 1. Alive and no neonatal death 2. Stillbirth (fetus born without sign of life at or after 24 weeks of gestation, or with birth weight over 500 gm when gestation is uncertain) <ul style="list-style-type: none"> - antepartum - intrapartum - undetermined – mother is already in labour on admission and fetal heart not detected (evidence of fetal viability is accepted only if obtained by a medical / midwifery staff) 3. Neonatal death <ul style="list-style-type: none"> - early (up to 6 days 23 hours 59 minutes) - later (form 7 days to 27 days 23 hours 59 minutes)
Cause of stillbirth / NND	<p>Choose only one of the following</p> <ol style="list-style-type: none"> 1. Congenital anomaly 2. Isoimmunisation 3. Pregnancy-induced hypertension 4. Antepartum haemorrhage 5. Mechanical

	6. Maternal disorder
	7. Others
	8. Unexplained
	9. Uninvestigated
Contributory factor to NND	1. Congenial anomaly 2. Haemolytic disease of newborn 3. Intrauterine hypoxia / birth asphyxia 4. Birth trauma 5. Respiratory distress / conditions 6. Intracranial haemorrhage 7. Infection 8. Miscellaneous 9. Unclassifiable
Congenital anomalies	Only include those significant ones detected before discharge
Birth trauma (choose at most 3)	1. Cephalhaematoma 2. Soft tissue trauma e.g. laceration 3. Subaponeurotic haemorrhage 4. Intracranial haemorrhage 5. Fractures 6. Nerve injuries 7. Visceral injuries
Major infections	1. Meningitis 2. Pneumonia 3. Septicaemia 4. Other major infections
RDS	Respiratory distress syndrome
IVH	Intraventricular haemorrhage
NEC	Necrotising enterocolitis

GYNAECOLOGY AUDIT FORM 2004

I. Principles in coding diagnosis

1. If an operation was performed on the patient, the pathological diagnosis would be coded. If an operation was not performed, the MOST PROBABLE clinical diagnosis would be coded.
2. Significant changes in the diagnosis noted after the audit form had been filled can be amended by submitting a second audit form marked with the patient's name, I.D. number, date of admission, the correct diagnosis code and remark" AMENDED FORM'
3. Minor incidental finding which was asymptomatic and did not require treatment SHOULD NOT be coded.
4. Non-gynaecological conditions which were not related to the cause of admission SHOULD NOT be coded.

5. Cases of malignancy should be denoted as NEW or OLD case for each episode of hospitalization.
6. Complications which occurred as a result of treatment in the same unit should be coded separately from complications of treatment performed in another unit.

II. Definition of diagnosis

1. Disseminated malignancies and the primary site couldn't be confirmed, the diagnosis would be coded as L2.
2. For diagnoses under Disorders of Menstruation, known causes should be coded as well if found.
3. Primary amenorrhoea should be coded as I3 and secondary amenorrhoea (duration of amenorrhoea more than 6 months) as I4 irrespective of the cause. If there was a known cause, it should also be coded e.g. primary amenorrhoea due to vaginal atresia should be coded as I3 and B3; secondary amenorrhoea due to tuberculous endometritis should be coded as I4 and D5.
4. Postmenopausal bleeding is defined as genital tract bleeding occurred 1 year after the last menstrual period. If there is an organic cause, it should also be coded e.g. post-menopausal bleeding with endometrial polyp should be coded as I6 and D10.
5. Genital warts should be quoted as infection of the organ involved, e.g. vulval warts should be coded as A5 and cervical warts as C5
6. Dysfunctional uterine bleeding is defined as heavy, prolonged or frequent bleeding of uterine origin in the absence of demonstrable pelvic disease, complications of pregnancy or systematic disease.

Diagnosis

A. Diseases of Vulva, Perineum and Urethra

2. Miscellaneous
3. Congenital abnormality
4. Trauma
5. Infection (including Bartholin's abscess)
6. Benign neoplasm
7. Malignant neoplasm
8. Retention cyst
9. Vulval dystrophy (hypertrophic or non-hypertrophic dystrophy, intraepithelial neoplasia)
10. Urethral lesions

B. Diseases of Vagina

2. Miscellaneous
3. Congenital abnormality
4. Trauma (excluding fistula)
5. Infection
6. Benign neoplasm
7. Malignant neoplasm
8. Retention cyst

9. Fistula
 10. Intraepithelial neoplasia
 11. Atrophic vaginitis
- C. Diseases of Uterine Cervix
2. Miscellaneous
 3. Congenital abnormality
 4. Trauma
 5. Infection
 6. Benign neoplasm including polyp
 7. Carcinoma of cervix
 8. Other malignant neoplasm
 9. Intraepithelial neoplasia
- D. Diseases of Uterine Body
2. Miscellaneous
 3. Congenital abnormality
 4. Trauma including perforation of uterus
 5. Infection
 6. Fibromyoma
 7. Carcinoma of corpus uteri
 8. Other malignant neoplasm
 9. Myohyperplasia of uterus
 10. Endometrial polyp
 11. Adenomyosis
 12. Hyperplasia of endometrium
 13. Atrophic endometritis
- E. Diseases of Fallopian Tubes
2. Miscellaneous
 3. Acute pelvic inflammatory disease (acute salpingitis, acute salpingo-oophoritis, pyosalpinx and tubo-ovarian abscess)
 4. Chronic pelvic inflammatory disease (chronic salpingitis, chronic salpingo-oophoritis, hydrosalpinx and tubo-ovarian cyst)
 5. Tuberculous salpingitis
 6. Benign neoplasm
 7. Malignant neoplasm
- F. Diseases of Ovary
2. Miscellaneous
 3. Retention cysts, follicular / corpus luteal cyst
 4. Endometriotic cyst
 5. Benign ovarian tumour / cyst
 6. Primary malignant neoplasm – epithelial
 7. Primary malignant neoplasm – non-epithelial
 8. Secondary malignant neoplasm
 9. Borderline malignant neoplasm

- G. Diseases of Broad Ligaments and Pelvic Peritoneum
 - 2. Miscellaneous
 - 3. Pelvic endometriosis
 - 4. Parovarian/paratubal cyst

- H. Genital displacement / Urinary Disorders
 - 2. Miscellaneous
 - 3. Prolapse of uterus
 - 4. Cystocoele, rectocoele or enterocoele
 - 5. Genuine stress incontinence
 - 6. Detrusor instability
 - 7. Vault prolapse
 - 8. Detrusor hyperreflexia
 - 9. Sensory urgency
 - 10. Voiding difficulty
 - 11. Other urinary disorders

- I. Disorders of Menstruation (*Causes should be coded as well if found*)
 - 2. Miscellaneous
 - 3. Primary amenorrhoea
 - 4. Secondary amenorrhoea
 - 5. Dysfunctional uterine bleeding
 - 6. Postmenopausal bleeding
 - 7. Dysmenorrhoea
 - 8. Menorrhagia

- J. Disorders of Pregnancy & Reproduction
 - 2. Miscellaneous
 - 3. Subfertility
 - 4. Vomiting in pregnancy
 - 5. Threatened miscarriage
 - 6. Spontaneous / Silent miscarriage
 - 7. Complete hydatidiform mole
 - 8. Partial hydatidiform mole
 - 9. Residual trophoblastic disease
 - 10. Metastatic malignant trophoblastic neoplasia, chorioepithelioma
 - 11. Secondary postpartum haemorrhage
 - 12. Other postpartum complications
 - 13. Ectopic pregnancy
 - 14. Conditions leading to termination of pregnancy – 1st trimester (≤ 12 weeks)
 - 15. Conditions leading to termination of pregnancy – 2nd trimester (> 12 weeks)
 - 16. Condition leading to sterilization/tubal occlusion
 - 17. Pregnancy after sterilization/tubal occlusion

- K. Disease Complications in Pregnancy
 - 2. Benign neoplasm of genital tract

3. Malignant neoplasm of genital tract
 4. Medical disease
 5. Surgical disease
 6. Non-specific abdominal pain complicating pregnancy
- L. Miscellaneous Gynaecological Conditions
2. Miscellaneous
 3. Retained IUCD
 4. Abdominal or pelvic pain of unknown cause
 5. Complication of previous treatment / procedure performed in the same unit (outpatient or inpatient)
 6. Complication of previous treatment / procedure performed outside the unit
 7. Translocated IUCD
- M. Miscellaneous Conditions
1. No disease identified
 2. Miscellaneous
 3. Diseases of breasts
 4. Diseases of urinary tract
 5. Diseases of gastrointestinal tract
 6. Diseases of cardiovascular system
 7. Diseases of respiratory system
 8. Diseases of central nervous system
 9. Diseases of endocrine
 10. Diseases of blood
 11. Diseases of skin / musculoskeletal system

III. Coding for operations / treatment

1. All operative procedures should be coded e.g. salpingectomy after diagnostic laparoscopy should be coded as E3 and A9.
2. Medical treatment for ectopic pregnancy using methotrexate should be coded as K7. If subsequent surgery is also required, the exact procedure should also be quoted.
3. Medical treatment for miscarriage using prostaglandins should be coded as K5. If subsequent evacuation of uterus is also required, the treatment should be quoted as K5 and I5.
4. Dilatation and Curettage (D&C) or obtaining endometrium with a curette should be quoted as I3. Any other form of endometrial biopsy using special designed device such as endometrial sampler or Vabra aspirator should be quoted as I10.
5. Surgery for pre-malignant conditions should be quoted under “Benign and Pre-Malignant Conditions”, not under “Malignant Conditions”.

Treatment

- A. Benign and Pre-Malignant Conditions – Major Abdominal Operations
 2. Miscellaneous
 3. Total hysterectomy ± bilateral / unilateral salpingo-oophorectomy

4. Subtotal hysterectomy ± bilateral / unilateral salpingo-oophorectomy
5. Repair of urinary fistulae
6. Myomectomy
7. Ovarian cystectomy
8. Oophorectomy / salpingo-oophorectomy
9. Salpingectomy
10. Salpingotomy / Salpingostomy
11. Surgery for stress incontinence
12. Adhesiolysis / tuboplasty
13. Drainage of pelvic abscess
14. Surgery for genital prolapse

B. Malignant Conditions – Major Abdominal Operations

2. Miscellaneous
3. Total hysterectomy ± bilateral / unilateral salpingo-oophorectomy
4. Subtotal hysterectomy ± bilateral / unilateral salpingo-oophorectomy
5. Radical hysterectomy
6. Pelvic exenteration
7. Debulking ± Omentectomy
8. Extended hysterectomy
9. Oophorectomy / salpingo-oophorectomy
10. Pelvic lymphadenectomy / lymph node sampling
11. Para-aortic lymphadenectomy / lymph node sampling
12. Laparotomy alone ± biopsy

C. Major Vaginal Operations

2. Miscellaneous
3. Surgery for urinary incontinence
4. Vaginal hysterectomy
5. Vaginal hysterectomy with repair of prolapse
6. Repair of prolapse
7. Repair of urinary fistulae
8. Vaginal myomectomy

D. Major Vulval Operations

2. Miscellaneous
3. Radical vulvectomy
4. Simple vulvectomy
5. Wide local excision

E. Endoscopic Procedures

2. Miscellaneous
3. Diagnostic laparoscopy ± chromotubation
4. Laparoscopic sterilization / tubal occlusion
5. Other laparoscopic procedures
6. Diagnostic hysteroscopy
7. Endometrial resection / ablation

8. Other hysteroscopic procedures
 9. Cystoscopy
 10. Laparoscopic assisted vaginal hysterectomy (LAVH) / laparoscopic hysterectomy (LH)
 11. Laparoscopic assisted subtotal hysterectomy (LASH)
 12. Laparoscopic myomectomy
 13. Laparoscopic myolysis
 14. Laparoscopic ovarian / paraovarian cystectomy
 15. Laparoscopic oophorectomy / salpingo-oophorectomy
 16. Laparoscopic ovarian drill
 17. Laparoscopic salpingectomy
 18. Laparoscopic salpingotomy / salpingostomy
 19. Laparoscopic colposuspension
 20. Laparoscopic adhesiolysis
 21. Laparoscopic ablation / resection of endometriosis
 22. Laparoscopic drainage of abscess
 23. Laparoscopic lymphadenectomy
 24. Hysteroscopic polypectomy
 25. Hysteroscopic myomectomy
 26. Laparoscopic repair of genital prolapse
 27. Laparoscopic radical hysterectomy
- F. Colposcopy Related Procedures
2. Miscellaneous (including cervical biopsy)
 3. Cervical cautery / cryotherapy / cold coagulation
 4. Laser vaporization of cervical lesions
 5. Laser cone
 6. Loop diathermy excision
 7. Cone biopsy
- G. Assisted Reproduction Procedures
2. Miscellaneous
 3. Ultrasound guided oocyte retrieval
 4. Laparoscopic oocyte retrieval
 5. Gamete intrafallopian transfer
 6. Pronuclear stage tubal transfer
 7. Embryo transfer
- H. Minor Abdominal Operation
2. Miscellaneous
 3. Tubal ligation /occlusion
 4. Resuturing of abdominal wound
- I. Other Minor Operations
2. Miscellaneous
 3. Diagnostic curettage (including avulsion of polyp)
 4. Therapeutic abortions (suction evacuation)

5. Evacuation of retained products of conception (including suction evacuation of silent / incomplete miscarriage, post-medical evacuation)
 6. Marsupialization
 7. Cervical cerclage
 8. Other minor vulval operations (including evacuation of vulval haematoma, vulval biopsy)
 9. E.U.A.
 10. Endometrial biopsy
 11. Insertion / Removal of IUCD
- J. Radiotherapy
2. Miscellaneous
 3. Intracavitary radium / cesium
 4. External irradiation
- K. Other Forms of Treatment
2. Miscellaneous
 3. Observation and investigation
 4. Antibiotic as primary treatment
 5. Prostaglandins
 6. Hormones (O.C. progestogens, danazol, GnRH α)
 7. Chemotherapy
 8. Other medication
 9. Pre-anaesthetic assessment

Schering Adv

Takeda Adv

Ferring Adv

