

NATIONAL OBSTETRIC INFORMATION SYSTEM (NOIS)

MALTA

ANNUAL REPORT 2007

*Department of Health Information and Research (DHIR)
National Obstetric Information System (NOIS), Malta*

www.sahha.gov.mt/pages.aspx?page=92

DHIR, NOIS Registry team:

Principal Medical Officer (Contact person):

Dr. Miriam Gatt

Data management:

Ms. Vivienne Parnis

Ms. Marianne Mallia

NATIONAL OBSTETRIC INFORMATION SYSTEMS (NOIS)

A national obstetric information system was launched in the beginning of 1999 and now covers all deliveries taking place on the islands of Malta and Gozo.

Data collection and Sources of Information

Systematic data collection for NOIS commences once the mother delivers her baby. Information regarding the course and outcome of each pregnancy is recorded by the relevant staff at each centre on a standard NOIS sheet. Once the data are recorded, the sheets are forwarded to the DHIR on a regular basis. At the DHIR the relevant sheets are processed and entered into the NOIS database. The system registers all infants/fetuses of 22 weeks gestation and over or 500g birthweight or more.

The maternity centres actively participating in this information system in 2007 were: St. Lukes / Mater Dei Hospital, Gozo General Hospital, St James Hospital Sliema and Zabbar and St. Philip's Hospital. Home deliveries which are not subsequently referred to a hospital are not captured by this system. During November 2007, the one State hospital in Malta migrated from St. Luke's Hospital to Mater Dei Hospital.

Report

This report analyses the national deliveries and infant/fetal births reported to the Registry that occurred in 2006 and compares it to the figures reported for last year. The data in this report describes statistics for all deliveries and births reported to and registered into the system.

Data is sent to the Registry from all hospitals on the Maltese Islands. Accuracy and completeness of data sent on the NOIS reporting sheets is the responsibility of the hospital providing data. Unfortunately, towards the end of 2007 the major hospital on the islands encountered some problems with data collection and this accounts for the increased number of unspecified / unknown variables seen in this report as compared to those of previous years.

ANALYSIS OF REPORTED DATA

There were a total of 3853 deliveries reported and registered for the Maltese Islands in 2007. These resulted in a total of 3898 infant/fetal births. The table below gives the number of deliveries and births in Malta and Gozo and registered in NOIS since 1999.

Year	Deliveries	Total Births*
1999	4311	4382
2000	4311	4377
2001	3918	3955
2002	3873	3927
2003	3995	4054
2004	3838	3902
2005	3804	3865
2006	3822	3891
2007	3853	3898

* Total births include all reported live and still births

Of the registered 3853 deliveries (3898 births), 3575 deliveries (3618 births) occurred in Malta and 278 deliveries (280 births) occurred in Gozo.

DELIVERIES

MATERNAL AGE, MARITAL STATUS, NATIONALITY AND PARITY

Maternal Age:

The maternities have been grouped into 5-year age groups and the frequency distribution of deliveries according to maternal age group is given. In 2007, the greatest number of deliveries - 1282 (33%), occurred in the age group 25 to 29 years whilst the least number of deliveries 3 (<1%) occurred in the oldest age group 45+ years. There were 4 deliveries in the youngest age group less than 15 years. The minimum age at delivery of the mothers was 13 years while the maximum age was 45 years. The most frequent maternal age at delivery was 30 years and average maternal age was 28 years.

The frequency distribution of deliveries in 2007 according to maternal age group is given in the following table.

Deliveries according to maternal age groups:

<i>Age group (years)</i>	<i>2007</i>		<i>2006</i>	
	<i>Frequency</i>	<i>%</i>	<i>Frequency</i>	<i>%</i>
<15	4	<1	4	<1
15-19	243	6	233	6
20-24	649	17	645	17
25-29	1282	33	1353	35
30-34	1182	31	1137	30
35-39	407	11	374	10
40-44	77	2	65	2
45+	3	<1	3	<1
Unspecified	6	<1	8	<1

Marital Status:

This year, 888 (23%) of all deliveries occurred to mothers who were reported as never married (single); while 2838 (74%) of all deliveries occurred to mothers reported as married, and 126 (3%) were reported as being widowed, separated or divorced. For the remaining one delivery the mother had no marital status specified.

In 2007, according to the data registered in NOIS, no mothers were reported as ‘not having support at home to raise the infant’.

Nationality:

91% (3511) of all deliveries this year, occurred to women of Maltese nationality while 8% (308) were Non-Maltese. In the remaining 1% (34) nationality was not specified.

Parity:

There were 51% of mothers who were primiparas while 49% were multiparas in 2007. The following table gives a breakdown of mothers by age and previous parity (includes all previous live and still births).

Parity of mothers by maternal age group:

Mother's Age Group	Delivery order*							Total
	1 st	2 nd	3 rd	4 th	5 th	>5 th	Unknown	
Under 20	219	26	2	0	0	0	0	247
20-24	471	144	29	4	1	0	0	649
25-29	771	390	102	13	3	3	0	1282
30-34	418	541	139	53	21	10	0	1182
35-39	77	176	93	38	15	8	0	407
40-44	13	16	21	18	4	5	0	77
45-49	0	0	1	1	0	1	0	3
Unknown	4	1	1	0	0	0	0	6
Total	1973	1294	388	127	44	27	0	3853

**Both previous live births and still births are included*

MATERNAL LIFESTYLES

There were 115 (3%) of mothers who were reported to smoke one or more cigarettes during pregnancy this year. No mothers were reported to drink alcohol regularly during pregnancy and 19 (0.5%) were reported as being drug abusers.

The following table gives the reported smoking, alcohol and drug habits of mothers for 2007 and 2006.

<i>Maternal Lifestyles</i>	<i>2007</i>	<i>2006</i>
	<i>No.</i>	<i>No.</i>
<i>Cigarette smoking during pregnancy:</i>		
1 to 3/day	25	22
>than 3/day	90	83
Do not smoke	3493	3605
Unspecified	245	112
<i>Alcohol consumption during pregnancy:</i>		
Up to 1 unit/day	0	1
>than 1 unit/day	0	1
None	3607	3708
Unspecified	246	112
<i>Drug Abuse during pregnancy</i>		
Yes	19	9
No	3589	3701
Unspecified	245	112

PATHOLOGY DURING PREGNANCY

In 2007 there were 20 mothers registered as having made use of assisted reproduction (ART), this includes all forms of ART namely ovulation stimulation, IVF and ICSI.

The table below gives the number of mothers for this year and last year that were reported with specific obstetric pathology during pregnancy. The most frequently reported was gestational hypertension, with 6.3% of mothers registered as having gestational hypertension.

<i>Pathology during pregnancy</i>	<i>2007</i>			<i>2006</i>		
	<i>Yes</i>	<i>No</i>	<i>Unspec.</i>	<i>Yes</i>	<i>No</i>	<i>Unspec.</i>
Antepartum Haemorrhage	36	3700	117	23	3799	0
Gestational hypertension	242	3500	111	202	3620	0
Pre-eclampsia	7	3729	117	21	3801	0
Eclampsia	1	3735	117	0	3822	0
Placenta praevia	56	3680	117	34	3788	0
Abruption of placenta	8	3728	117	9	3813	0
Suspected IUGR*	164	3574	115	153	3669	0
Cardiovascular disease	8	3729	116	6	3815	1

**IUGR – intrauterine growth retardation*

DIABETES IN PREGNANCY

In 2007 there were 13 mothers who were reported as being Insulin Dependent Diabetic before this pregnancy while there was one mother reported with Non-Insulin Dependent diabetes prior to pregnancy. In addition, there were a total of 66 mothers registered with gestational diabetes who were controlled without the use of insulin, and 2 mothers registered as having gestational diabetes treated with insulin.

CATEGORY OF MATERNITY ACCORDING TO DELIVERY

For this year, there were a total of 3811 (98.9%) singleton and 40 (1.0%) twin deliveries, 1 triplet and 1 quadruplet delivery

<i>Category</i>	<i>2007</i>	<i>2006</i>
Singleton	3811	3756
Twin	40	63
Triplet	1	3
Quadruplet	1	0

SITE AND ONSET OF DELIVERY

In 2007 of the total 3853 deliveries registered by NOIS, 3847 (99.8%) occurred in a hospital while there were 6 deliveries that occurred at home or another site but were later referred to a hospital. Four of the hospital deliveries were reported as being underwater.

Of the total 3853 deliveries, 47% (1829) were reported as spontaneous onset of contractions, 36% (1372) were induced by drugs or artificial rupture of membranes and 17% (652) were planned caesarian sections.

INFANT/FETAL BIRTHS

METHOD OF BIRTH

In 2007 there were a total of 3898 infant/fetal births. Of these 2458 (63%) were delivered as a vertex delivery, 1287 (33%) by emergency or elective Caesarean Section and 153 (4%) by assisted vaginal delivery (includes forceps, ventouse and breech).

<i>Method of Birth*</i>	2007	2006
Infants/fetuses delivered by:		
Vertex delivery	2458	2322
Elective/emergency Caesarean Section	1287	1395
Forceps	15	6
Ventouse	136	167
Breech deliveries	2	1

**Data analysed according to total infant/fetal births*

For 2007 there were 1287 infants/fetuses delivered by caesarian section but 1243 caesarian operations performed, this due to the fact that a number of caesarians are done in multiple birth deliveries. The Caesarean section operation rate in 2007 was 32.3% of the total 3853 maternal deliveries.

GENDER DISTRIBUTION OF BIRTHS

The gender distribution of births is given in the table below. As usually seen, there were more male infants/fetuses delivered than female.

<i>Gender</i>	2007		2006	
	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>
Male	2063	53	2057	53
Female	1835	47	1834	47

BIRTHWEIGHT OF INFANTS/FETUSES

In 2007, there were 3620 (93%) of the total births that occurred in the birth weight range of 2500g to 4999g. 223 (6%) of the total births were in the low birth weight range of 1500g to 2499g, while 31 (<1%) of births were of very low birth weight 500g to 1499g. This year there were 4 babies of birth weight less than 500g but 22 completed weeks gestation. 17 babies were of birth weight 4500g and over. In 20 babies, the birth weight was not recorded. The lowest birthweight recorded this year was 300g and this baby was an early neonatal death at 23 weeks gestation. The highest birth weight recorded was 4960g. The average birth weight was 3200g.

<i>Birthweights</i>	<i>2007</i>		<i>2006</i>	
	<i>Number*</i>	<i>%</i>	<i>Number</i>	<i>%</i>
<500g	4	0.1	1	<0.1
500-999g	12	0.3	11	0.3
1000-1499g	19	0.5	18	0.5
1500-1999g	36	0.9	45	1.2
2000-2499g	187	4.8	181	4.7
2500-2999g	850	21.8	907	23.3
3000-3499g	1750	44.9	1688	43.4
3500-3999g	877	22.5	859	22.1
4000-4499g	126	3.2	160	4.1
4500-4999g	17	0.4	17	0.4
5000+	0	0	0	0
Unspecified	20	0.5	4	0.1

*Babies of 22 weeks gestation and over are registered into the system.

OUTCOME OF BIRTH

The number of live births registered in 2007 was 3886 which accounted for 99.7% of the total births at a national level. The remaining 12 births were reported as stillbirths. Of the livebirths, there were 17 cases of early neonatal deaths and 3 cases of late neonatal deaths (see tables below). All births of 22 weeks and over irrespective of birth weight are registered into NOIS.

<i>Outcome of Birth</i>	<i>2007</i>	<i>2006</i>
Livebirths	3886	3880
Stillbirths	12	11

<i>Neonatal deaths</i>	<i>2007</i>	<i>2006</i>
Early Neonatal deaths	17	4
Late Neonatal deaths	3	5

INFANT FEEDING METHODS AT DISCHARGE

Infant feeding habits are recorded by hospital staff at the time of discharge, little can be said on the actual infant feeding habits as these may change soon after discharge from the birthing facilities.

<i>Infant feeding methods at time of discharge</i>	<i>2007</i>	<i>2006</i>
Breast only	2143	2384
Bottle only	1019	1032
Mixed (Breast & Bottle)	521	415
Other*	68	57
Unspecified	147	3

* 'Other' - include babies who are still at hospital after 28 days and those who die before discharge

MATERNAL, FETAL, PERINATAL AND NEONATAL MORTALITY INDICATORS
(Compiled in conjunction with the National Mortality Register of the Department of Health Information and Research)

Maternal, fetal, perinatal and neonatal mortality statistics are good indicators of the quality of health care and these statistics are presented since 1999 when the NOIS database was started in the format it is today.

Definitions of the various rates presented are given below and follow the definitions given by WHO ICD-10 (International Statistical Classification of Diseases and Related Health Problems – Tenth Revision). Indicators given in the tables below refer to fetuses / infants of birthweight 500g and over to allow for better comparison with currently available international databases.

Maternal deaths 1999 - 2007

Year	Maternal Deaths
1999	1
2000	0
2001	2
2002	0
2003	0
2004	0
2005	0
2006	0
2007	0

Fetal death rates 1999 - 2007

Year	Fetal death rate 500g and over	
	Number	Rate/1000 total births
1999	27	6.2
2000	16	3.6
2001	20	5.1
2002	20	5.1
2003	16	3.9
2004	15	3.8
2005	8	2.1
2006	10	2.6
2007	11	2.8

Neonatal mortality rates 1999 - 2007

	Neonatal mortality rate 500g and over	
	Number	Rate/1000 total births
1999	21	4.8
2000	23	5.3
2001	12	3.0
2002	20	5.1
2003	20	5.0
2004	17	4.4
2005	17	4.4
2006	9	2.3
2007	17	4.4

Early Neonatal mortality rates 1999 - 2007

Year	Early neonatal mortality rate 500g and over	
	Number	Rate/1000 live births
1999	16	3.7
2000	16	3.6
2001	10	2.5
2002	16	4.1
2003	18	4.5
2004	12	3.1
2005	13	3.4
2006	4	1.0
2007	14	3.6

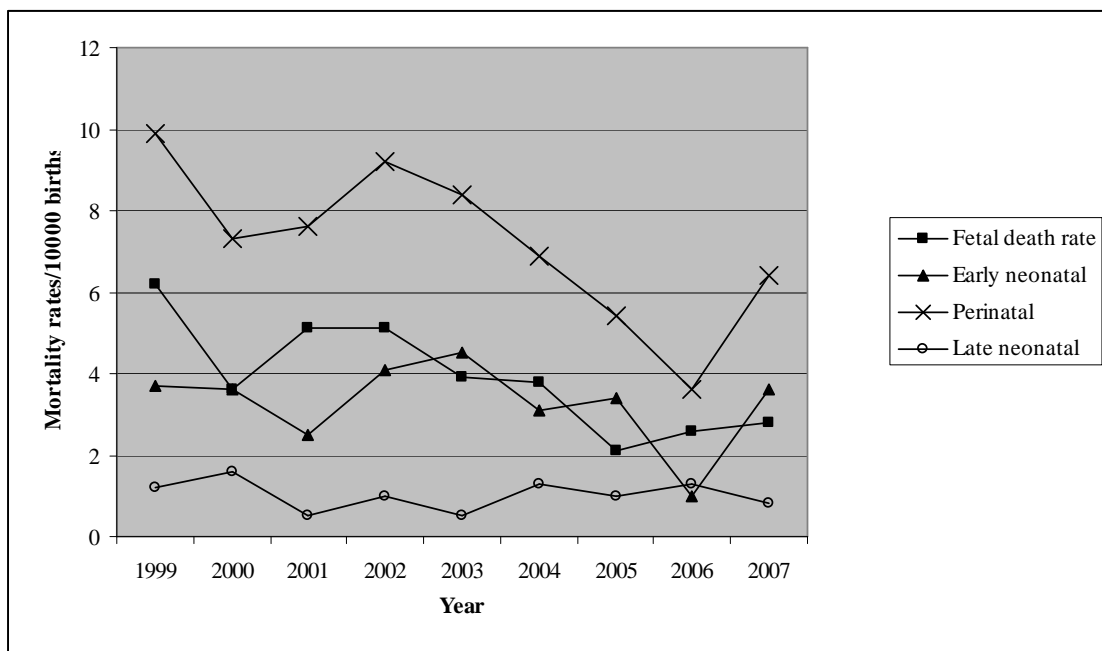
Late Neonatal mortality rates 1999 - 2007

Year	Late neonatal mortality rate 500g and over	
	Number	Rate/1000 live births
1999	5	1.2
2000	7	1.6
2001	2	0.5
2002	4	1.0
2003	2	0.5
2004	5	1.3
2005	4	1.0
2006	5	1.3
2007	3	0.8

Perinatal mortality rates since 1999 - 2007

Year	Perinatal mortality rate 500g and over	
	Number	Rate/1000 total births
1999	43	9.9
2000	32	7.3
2001	30	7.6
2002	36	9.2
2003	34	8.4
2004	27	6.9
2005	21	5.4
2006	14	3.6
2007	25	6.4

Fetal, Neonatal and Perinatal mortality rates 1999-2007 (for infants/fetuses of birth weight 500g and over)



Fetal, early neonatal and perinatal mortality show an overall decreasing trend since 1999.

Annex I gives some selected comparative birth and perinatal mortality statistics for Malta and the EU.

ANNEX I

Selected comparative statistics for Malta and EU – taken from the WHO – European Health for All Database (HFA-DB): <http://data.euro.who.int/hfad/> as available at May 2008. Only data until 2005 is currently complete on this database.

Live births per 1000 population

Year	Malta	EU members before May 2004	EU members since 2004 or 2007
2001	10.01	10.59	9.42
2002	9.86	10.52	9.27
2003	10.12	10.58	9.32
2004	9.69	10.67	9.50
2005	9.56	10.63	9.72

Total Fertility Rate

Year	Malta	EU members before May 2004	EU members since 2004 or 2007
2001	1.50	1.50	1.25
2002	1.40	1.50	1.25
2003	1.50	1.53	1.24
2004	1.37	1.55	1.26
2005	1.37	1.56	1.28

Maternal deaths per 100000 live births

Year	Malta	EU members before May 2004	EU members since 2004 or 2007
2001	50.83*	5.36	14.26
2002	0	5.45	10.79
2003	0	5.25	11.37
2004	0	5.67	10.88
2005	0	5.29	8.95

*There were 2 maternal deaths in 2001

Fetal Deaths per 1000 births

Year	Malta	EU members before May 2004	EU members since 2004 or 2007
2001	5.06	4.40	5.40
2002	5.09	4.36	5.36
2003	3.95	4.23	5.23
2004	3.84	4.15	5.13
2005	2.07	na	4.99

na= not available

Neonatal Deaths per 1000 live births

Year	Malta	EU members before May 2004	EU members since 2004 or 2007
2001	3.05	3.12	6.13
2002	5.38	3.02	5.83
2003	5.20	2.98	5.64
2004	4.37	2.92	5.74
2005	4.41	na	5.22

na= not available

DEFINITIONS (Following the International Statistical Classification of Diseases and Related Health Problems – Tenth Revision, Volume II ICD-10, WHO, Geneva)

Maternal Death

A maternal death is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.

Birth Weight

The first weight of the fetus or newborn obtained after birth.

Low birth weight is less than 2500g (up to and including 2499g).

Very low birth weight is less than 1500g (up to and including 1499g).

Extremely low birth weight is less than 1000g (up to and including 999g)

Gestational Age

The duration of gestation is measured from the first day of the last menstrual period. Gestational age is expressed in complete days or completed weeks.

For the purposes of calculation of gestational age from the date of the first day of the last normal menstrual period to the date of delivery, it should be borne in mind that the first day is day zero and not day one; days 0-6 therefore correspond to completed week zero;

Fetal Death

Fetal death is the death prior to the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of the pregnancy; the death is indicated by the fact that after such separation, the fetus does not breathe or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles.

Fetal Death Rate

The number of fetal deaths in a year expressed as a proportion of the total number of births (live births plus fetal deaths) in the same year. Rates are usually expressed per 1000 total births.

$$\text{Fetal death rate} = \frac{\text{no. of fetal deaths in a year}}{\text{Number of live births plus fetal deaths in that year}} * 1000$$

Live Birth

Live birth is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy, which, after separation, breathes or shows any evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of the voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached; each product of such a birth is considered live born.

Neonatal Period

The neonatal period commences at birth and ends 28 completed days after birth. Neonatal deaths (deaths among live births during the first 28 completed days of life) may be subdivided into early neonatal deaths, occurring during the first seven days of life, and late neonatal deaths, occurring after the seventh day but before 28 completed days of life.

Age at death during the first day of life (day 0) should be recorded in units of completed minutes or hours of life. For the second (day 1), third (day 2) and through 27 completed days of life, age at death should be recorded in days.

Neonatal Mortality Rate

The number of deaths during the neonatal period in that year expressed as a proportion of the total number of live births in the same year. Rates are expressed per 1000 live births.

$$\text{Neonatal mortality rate} = \frac{\text{no. of neonatal deaths in a year}}{\text{no. of live births in that year}} * 1000$$

Early Neonatal Mortality Rate

The number of deaths during the early neonatal period (during first 7 days of life) in that year expressed as a proportion of the total number of live births in the same year. Rates are expressed per 1000 live births.

$$\text{Early Neonatal mortality rate} = \frac{\text{no. of early neonatal deaths in a year}}{\text{no. of live births in that year}} * 1000$$

Late Neonatal Mortality Rate

The number of deaths during the late neonatal period (occurring after the seventh day but before 28 completed days of life) in that year expressed as a proportion of the total number of live births in the same year. Rates are expressed per 1000 live births.

$$\text{Late Neonatal mortality rate} = \frac{\text{no. of early neonatal deaths in a year}}{\text{no. of live births in that year}} * 1000$$

Perinatal Period

The perinatal period commences at 22 completed weeks (154 days) of gestation (the time when birth weight is normally 500g) and ends at seven completed days after birth.

Perinatal Mortality Rate

The number of deaths during the perinatal period in a year expressed as a proportion of the total number of births (live births plus fetal deaths) in the same year.

$$\text{Perinatal mortality rate} = \frac{\text{no. of perinatal deaths in a year}}{\text{no. of live births plus fetal deaths in that year}} * 1000$$

CONTRIBUTING HOSPITALS

This report would not have been possible without the collaboration of the various contributing hospitals throughout 2007:

St. Luke's Hospital (SLH), Pieta / Mater Dei Hospital, Tal-Qroqq
Gozo General Hospital (GGH), Victoria
St. James Hospital, Sliema
St. James Hospital, Zabbar
St. Philip's Hospital, Sta Venera.

ACKNOWLEDGEMENTS

The NOIS registry staff would like to acknowledge all the midwives and nurses working at the respective antenatal clinics, antenatal, labour and postnatal wards within all the contributing hospitals.

We would especially like to acknowledge the significant work of the various people contributing directly to data collection in 2007:

- Ms. Valentina Caruana, NOIS Survey nurse SLH / MDH
- Mr. Michael Axiaq, GGH
- The team of midwives at St. James Hospital, Zabbar and Sliema
- The team of midwives at St. Philip's Hospital, Sta Venera

Acknowledgements also go to all Heads of Departments and Managerial staff for approving this data collection in 2007 and for their co-operation whenever requested:

- Dr. Ray Busuttil, Director General, Health Regulation
- Dr. Natasha Azzopardi Muscat, Director General, Strategy and Sustainability
- Dr. Neville Calleja, Director, Health Information and Research and all staff at the Department of Health Information
- Profs. Mark Brincat, Chairman, Department of Obstetrics and Gynaecology and his team of obstetricians
- Mr. Ray Galea, Consultant, Obstetrics and Gynaecology
- Dr. Simon Attard Montalto, Chairman Paediatrics
- Ms. Natalie Zammit, Manager Midwifery Services, SLH
- Ms. Marcelle Cipriott, Midwifery Officer, Labour Ward, SLH and her team of midwives
- Dr. Anthony Livori, Superintendent GGH and the hospital team of obstetricians and midwives
- The Directors, St. James Hospital, Zabbar and Sliema and their hospital team of obstetricians and midwives
- The Director, St. Philip's Hospital, Sta Venera and the hospital team of obstetricians and midwives