Methodology and definitions for the MMPO Midwives Annual Reports on Care Activities and Outcomes

Contents

1 The Midwifery and Maternity Providers Organisation (MMPO)

1.1 The MMPO dataset

1.2 Data quality

2 Methodology for the report

2.1 Data cleaning

2.2 Data merge

2.3 Data validation

2.4 Ethnicity data

3 Data analysis

3.1 Percentages

3.2 Tables

3.3 Figures

3.4 Missing data

4 Strengths and Limitations

5 Definitions/List of Terms

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1 The Midwifery and Maternity Providers Organisation (MMPO)

In 1997, the Midwifery and Maternity Providers Organisation (MMPO) was established by the New Zealand College of Midwives (the College). The main purpose was to provide midwife members with a practice management and quality assurance infrastructure, thereby supporting the provision of high quality continuity of care for women by midwives throughout Aotearoa, New Zealand.

The key objectives of the MMPO are:

- To ensure midwives continue to have an environment where they can provide maternity care to women within the midwifery model of care as articulated in the College's Standards for Practice, by providing information, management systems and support to midwives
- To collect relevant maternity outcome data to ensure midwives can review their work against the standards of the profession, and to guide the achievement of high quality outcomes from midwifery-led maternity care
- To ensure that all midwife members take part in quality assurance activities and are members of their national recognised professional body, the New Zealand College of Midwives
- To support the professional role of the College to position, develop and service the profession of midwifery in New Zealand
- To provide aggregated clinical information to member midwives and the College

From small beginnings the MMPO has grown, with the support of the College, to become the largest maternity provider organisation in New Zealand. The MMPO is located in Christchurch, New Zealand, where a small team of data entry staff manage both hard copy and electronic data related to midwifery activities and care outcomes. The data is gathered in a standardised manner through the use of a specifically designed set of maternity notes. These notes function as a clinical record for both the woman and the midwife during care, in addition to being a mechanism for recording the data required to generate clinical outcomes reports, and for claiming service payment from Sector Services.

1.1 The MMPO dataset

The data in the annual reports is obtained from data collected by the midwives, via the MMPO maternity notes, which is either captured in hard copy or electronically. The majority of midwives now submit their data electronically on their own computer through a replica of the master database.

The process of **collecting hard copy data** includes:

- MMPO midwife members use MMPO Maternity Notes with each woman who registers with them for lead maternity care. The notes are the woman's and midwife's record of all the woman's clinical care and outcomes at every visit or contact. They contain pink carbonated forms, which are situated beneath each page of clinical notes the midwife uses to document her assessment and care. The forms are generally set out as tick boxes or as blank boxes for midwives to fill in, and include information such as dates, times and specified aspects of care or outcomes.
- The notes also include information required for the Ministry of Health Sector Services to process Section 88 claims (see list of terms).
- Once completed by the midwife, the pink carbonated copy is sent to the MMPO by post. Unique codes are used on these forms to de-identify the woman, thereby retaining her confidentiality.
- On receipt of the forms, MMPO data professionals enter the midwives' handwritten clinical data into an electronic database and submit the required claiming component to Sector Services for payment electronically. This claiming data, plus additional clinical data submitted in the forms, is retained and aggregated electronically to form a series of midwifery activities and outcomes reports within the MMPO database.

The process of **collecting the data electronically** includes:

- The midwives download the MMPO IT maternity clinical information system to their personal computer.
- Information related to the woman's maternity care is entered during maternity care provision.
- This data is uploaded to the master database once the computer is online.

A portion of the data fields are mandatory. These include compulsory data required by the Ministry of Health to enable claiming, as well as clinical or practice related fields which fulfil the dataset required for the midwives' Midwifery Standards Review (MSR; see list of terms).

The MMPO staff deal with any Sector Services claim rejections and data queries, in addition to managing inadequate and inaccurate data prior to submission for midwives. This ensures that only the most accurate and complete data is entered into in the MMPO database. Midwife members are regularly informed of Section 88 compliance responsibilities and the need to submit 'clean' data.

1.2 Data quality

The MMPO midwifery practice management system has a number of inbuilt features that reduce the risk of data entry error. The system is also continually being improved. The data used in this report were able to be cross-checked and audited using a number of processes, namely:

- Individual LMC reports are produced using the same database. Midwives use these reports for their New Zealand College of Midwives MSR. Midwives check their individual reports for gaps in data, which can then be followed up by MMPO data entry staff.
- The MMPO audits the data entry quality by generating random reports and then checking for data accuracy.
- Claims entered into the MMPO database must meet MMPO standard criteria before they are submitted. This motivates the midwife to submit complete and accurate information to ensure there are no delays in payment.
- Definitions in the notes to ensure clear and consistent understanding of what each field is recording

2 Methodology for the report

The annual report provides data on women who have received full care from a LMC midwife within the calendar year and who have given birth after 20 weeks' gestation. The data is sourced from all pregnant women who registered during their pregnancy and gave birth between 01 January and 31 December. Anonymised, aggregated data is extracted from the database and provided in two excel data files, one related to maternal information and the second to birth and baby related information. This data is imported into SPSS as two files - maternal and birth/baby.

2.1 Data cleaning

Full records are removed if the pregnancy resulted in a legal abortion or miscarriage (<20 weeks), or if the woman has no data in the labour record or does not have a full set of antenatal, intrapartum and postpartum details. To ensure the accuracy of the report, each variable used in the report is reviewed with data removed/deleted (missing) if it is outside of normal parameters for that variable.

2.2 Data merge

Once the data is cleaned, the two datasets (maternal and baby) are merged using the unique maternal identity number generated by the system. Cases are removed if the gestational age of the baby is less than 20 weeks (onset of labour), or if there is no information in the baby status or condition variables (this may happen when baby is a transfer of responsibility at birth).

The baby data set is checked for duplicate maternal ID to identify the twins and triplets. This is matched to the number of women with multiples identified in the maternal dataset. Babies without maternal information in the dataset are also removed from the cohort.

2.3 Data validation

Following the merge, the data is further validated through cross checking certain variables. For example, the number of women giving birth at home and the transfers from home and primary units should match and be consistent. Each variable is then recoded to ensure the data is provided in the report formatted groups (age/gestation/BMI groups).

2.4 Ethnicity data

Ethnicity data is provided as reported by the woman at pregnancy registration. There is a list of 15 ethnic group options with an addition of 'other/declined' and a comments box available. Multiple ethnicities can be identified for both the mother and the baby. The ethnicity data is then prioritised as per the Health Information Standards Ethnicity Data Protocols (see list of terms) for prioritising ethnicity. Where multiple ethnic groups are recorded, the minority ethnic group is prioritised.

3 Data analysis

3.1 Percentages

Percentages are displayed with one decimal place and rounded up. Due to rounding, some of the percentages do not add up to 100.0 exactly.

3.2 Tables

Tables provide both actual numbers and the percentage of that number for the total cohort. Where the table does not include the full cohort, the reason for exclusion is provided at the bottom of the table. Information related to the baby (birth, gestation, Apgar etc.) relates to the full cohort and includes the second or third baby from a multiple birth. However, within

tables that refer to the mother's demographics or clinical characteristics, the table will present the cohort of women/mothers only (without the second/third babies from the multiple births).

3.3 Figures

Figures have been generated to provide a visual illustration of the data from a table using the percentages only.

3.4 Missing data

Missing data is identified for each table as either 'missing' or 'unknown'. For the majority of tables the proportion of missing data is low.

4 Strengths and limitations

The data provided in the reports provides information for women who have received continuity of care from a midwife Lead Maternity Carer. The data is accurate and reliable due to consistency of collection, minimal missing data and other inbuilt features of the system. The women in the report are a subset of women who are included in the Ministry of Health annual reports on maternity. As such, the data in the MMPO report may differ because of the care provider and demographic characteristics of women, and may not be reflective of all maternity care provision in New Zealand.

5 Definitions/List of Terms

Apgar score Numerical score used to evaluate the infant's condition at one, five and ten minutes after birth. Five variables are scored: colour, breathing, heart rate, irritability and muscle tone. A baby may be able to be resuscitated after an initial one-minute score of zero, but a five-minute score of zero usually means that the infant cannot be resuscitated. If no heart rate had been heard before or during resuscitation, then this would be documented as a stillbirth. If a heart rate had been heard, but the baby could not be fully resuscitated, this would be called a live birth and neonatal death.

Birth The birth of a baby (or babies for a multiple birth) after a minimum of 20 weeks 0 days of gestation and/or with a birth weight of more than 400g.

Birth weight	The first weight of the baby obtained after birth (usually measured to the nearest five grams and obtained within one hour of birth). Low = <2,500g Very low = <1,500g Extremely low = <1,000g
Breastfeeding, exclusive	The infant has never, to the mother's knowledge, had any water, formula, or other liquid or solid food. Only breast milk from the breast or expressed, or prescribed medicines defined as per the Medicines Act 1981 have been given to the baby from birth.
Breastfeeding, fully	The infant has taken breast milk only. No other liquids or solids except for a minimal amount of water or prescribed medicines in the previous 48 hours.
Breastfeeding, partial	The infant has taken some breast milk and some infant formula or other solid food in the past 48 hours.
Feeding, artificial	The infant has had no breast milk, but has had alternative liquid such as infant formula with or without solid food in the past 48 hours.
Caesarean section	Operative birth through an abdominal incision.
Caesarean section, emergency (acute)	Caesarean section performed urgently for clinical reasons (such as the health of the mother or baby being endangered).
Caesarean section, elective	Caesarean section performed as a planned procedure.
District Health Board (DHB)	An organisation established as a District Health Board by, or under, Section 19 of the New Zealand Public Health and Disability Act 2000.

Epidural anaesthesia and analgesia	Involves the placing of a needle into the epidural space. Local anaesthetic and/or opioid is injected either directly through the needle, or more commonly through a fine catheter which has been passed through the needle into the epidural space. The epidural space is the space outside the dura mater through which nerve roots pass to and from the spinal cord.
Episiotomy	An incision of the perineal tissue surrounding the vagina at the time of birth.
Ethnicity	The ethnic group that the woman identifies herself with.
Fetal death	The death of a baby born at 20 weeks or beyond or weighing at least 400g if gestation is unknown. Fetal death includes stillbirth and termination of pregnancy.
Forceps	Assisted birth using an instrument called obstetric forceps (which are metal spoon shaped).
Full-term birth/labour	Birth/labour at 37 or more gestational weeks.
Gestational age	The duration of pregnancy in completed weeks, calculated from the date of the first day of a woman's last menstrual period and her infant's date of birth, or derived from clinical assessment during pregnancy, or from examination of the infant after birth
Gravida	The total number of pregnancies the woman has experienced, including the current one. For example, a woman who has one previous pregnancy and is currently pregnant is designated as 'gravida 2'.
Health Information Standards Ethnicity Data Protocols	A standard for ensuring consistent reporting of ethnicity in New Zealand. HISO 10001:2017 Ethnicity Data Protocols, Ministry of Health https://www.health.govt.nz/publication/hiso-100012017-ethnicity-data-protocols
Home birth	A birth that takes place in a person's home and not in a maternity facility, or a birth where management of the labour commences at home and there is a documented plan to give birth at home.

Induction of labour	An intervention undertaken to stimulate the onset of labour by pharmacological or other means.
Instrumental vaginal birth	The vaginal birth of a baby assisted by the use of instruments, such as forceps, ventouse, and the Kiwi cup (a type of vacuum extraction).
Lead maternity carer (LMC)	An authorised practitioner who is either a registered midwife, or an obstetrician or general practitioner with a Diploma of Obstetrics (or equivalent, as determined by the NZ College of General Practitioners), who has been chosen by the woman to provide her lead maternity care.
Live birth	The birth of a baby, irrespective of duration of pregnancy, which breathes or shows evidence of life, such as beating of the heart, pulsation of the umbilical cord or definitive movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached.
Maternity facility	A facility that provides both labour and birth services as well as inpatient postnatal care, as described in the relevant service specification issued by the Ministry of Health.
Primary	A maternity facility for labour, birth and postnatal care provided by midwives – does not have 24-hour, on-site obstetric specialist services available.
Secondary	A facility that provides antenatal, labour, birth, and postnatal care for women who experience complications and require specialist input from obstetricians, paediatricians or anaesthetists.
Tertiary	A facility that proves a multidisciplinary specialist team for women and babies with complex and/or rare maternity needs who require access to such a team.
MMPO	Midwifery and Maternity Providers Organisation, a practice management system provider for Lead Maternity Carer (LMC) midwives.
Midwifery Standards Review (MSR)	A quality assurance process that midwives undertake annually. It includes reviewing statistical outcome data about their practice. Individualised reports for MSR are generated from the data submitted by midwives through the MMPO maternity notes dataset.

Multiple births	More than one birth per pregnancy (twins/triplets).
Neonatal death	The death of a baby that has occurred up to 27 days after birth Early neonatal death = death before 7 days Late neonatal death = death between 7-27 days
New Zealand College of Midwives (the College)	The national professional body for midwives.
Normal birth	The spontaneous birth of a live baby born vaginally in a cephalic position.
Parity	The number of previous pregnancies resulting in live births or stillbirths.
Nulliparous	A woman who has never given birth to a viable infant.
Primiparous	A woman who has given birth only once.
Multiparous	A woman who has subsequent births.
Perinatal death	A category that includes fetal deaths of 20 weeks' gestation or 400g birth weight (stillbirth), plus infant deaths within less than 168 completed hours (seven days) after birth (early neonatal death).
Perinatal related death	Fetal deaths and early and late neonatal deaths born at 20 weeks' gestation or beyond or weighing at least 400g if gestation is unknown.
Postnatal	All pregnancy-related events following birth.
Registration	The documentation showing that a woman has selected a lead maternity carer.
Rural area	An area is defined as rural if the census area unit (domicile) is located in an area of fewer than 10,000 people.
Section 88	The Primary Maternity Services Notice is often identified as Section 88 because it is 'pursuant to Section 88 of the New Zealand Public Health and Disability Act 2000'. It sets out the terms and conditions on which the Crown will make a payment to a maternity provider for providing primary maternity service.

Spinal anaesthesia	The injection of local anaesthetic into the cerebrospinal fluid around the spinal cord, by passing a needle into the subarachnoid space (through both dura mater and arachnoid mater).
Stillbirth	Death prior to the complete expulsion or extraction from its mother of a baby of 20 or more completed weeks' gestation, or of 400g or more birth weight. Death is indicated after separation either when the fetus does not breathe or show any other evidence of life.
Urban area	An area is defined as urban if the census area unit (domicile) is located in an area of more than 10,000 people.
Vacuum extraction (ventouse)	Assisted birth using a suction cup applied to the baby's head.
Vaginal breech birth	Birth in which the baby's buttocks or lower limbs are the presenting parts, rather than the head.
Viable infant/ pregnancy	A baby born at more than 20 weeks of gestation.
WHO	World Health Organization