



Government of **Western Australia**
Department of **Health**

REPORT ON REVIEW OF MATERNITY SERVICES IN METROPOLITAN NON TERTIARY PUBLIC HOSPITALS

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Executive Summary

A review of the current provision of maternity services in WA metropolitan non-tertiary hospitals was undertaken. The emphasis was on safety, quality, staffing and efficiency in the management of low-moderate (medium) risk pregnancies.

The safe capacity of each hospital was assessed and a reconfiguration of services without compromising safety is recommended.

The inevitable effect of the opening of Fiona Stanley Hospital (FSH) on existing services was addressed and recommendations about changing capacity were made. The potential of FSH with respect to specialist support services to the south metropolitan region was explored and the risks of not reaching its full potential emphasised.

King Edward Memorial Hospital (KEMH) has had a massive increase in its workload not only of tertiary services but the significant number of low-moderate risk births managed in that facility. Most of the transfers to KEMH should be for tertiary maternal and fetal expertise and capacity transfers from secondary facilities should be directed to elsewhere in the system. This would reduce its workload to better match capacity and enhance specialist focus on tertiary services.

Hospital capacity transfers (i.e. non-urgent transfers not requiring tertiary services) should be coordinated and centralised. A model for such an initiative is outlined.

The current standard model of care is medical which incorporates specialist and general practitioner care. In some situations efficiency and sustainability are at risk and alternative accepted and safe contemporary models of care are recommended. Such models should be introduced incrementally and in parallel with existing models of care in the first instance and in consultation with the medical profession. The preferred model is midwifery group practice (MGP) or caseload midwifery and data is presented to support its safety and efficiency.

The Statewide Obstetric Support Unit (SOSU) is briefly referred to and it is likely that in the decade since it was established its need may have changed. It would benefit from a strategic review to assess whether the current model is still contemporary and whether it has been superseded by other educational and operational initiatives and imperatives.

Introduction

Concern for the safety, efficiency and quality of maternity services provided by non-tertiary public hospitals in the Perth metropolitan area prompted this review.

Issues to be addressed were confined to metropolitan non-tertiary public hospitals and included safe staffing, sustainable contemporary models of care and the optimal number and configuration of maternity services and at which sites.

Given the opening of the maternity services at FSH in 2014, the impending commissioning of St John of God Midland Public Hospital (SJOG Midland) in November 2015 and the simultaneous closure of Swan District Hospital (SDH) services, it was appropriate timing to undertake this review and to determine the proposed configuration of maternity services in the Perth metropolitan area.

The review and the recommendations that follow will be integral to the future operational planning of maternity services.

While FSH was not a specific part of this review, its maternity services capacity into the future and its impact on the provision of services in metropolitan non-tertiary hospitals and KEMH would be a major consideration in any future planning strategy for the size and configuration of maternity services.

The following relevant reports which remain pertinent to this review were considered:

1. Report of the Ministerial Task Force to Review Obstetric Gynaecological and Neonatal Services in Western Australia (1990)
2. Western Australian Statewide Obstetric Services Review Discussion Paper (April 2003)
3. Framework for the Care of Neonates in Western Australia (March 2009)
4. Maternity and Neonatal Services MAP 4 (October 2014)

The settled Terms of Reference for this review were:

1. Review the current provision of maternity services in metropolitan non-tertiary public hospitals to ensure quality, safety and efficiency of these services.
2. Review the current staffing arrangements for maternity services provided by metropolitan non-tertiary public hospitals and make recommendations where any deficiency in these services is identified.
3. Such recommendations necessary in the interests of safety and quality are to consider the implementation of accepted contemporary models of care, and the optimal number and configuration of maternity services in metropolitan non-tertiary hospitals, and at which sites.

Recommendations

1. The increased capacity for safe maternity services in metropolitan non-tertiary public hospitals has been identified and strategic implementation planned.
2. Reconfiguration of maternity services is necessary to allow the safe absorption of the increased birth numbers where capacity exists.
3. Discontinue maternity services at Bentley Hospital (BH) when possible and after consultation with the medical profession, the Bentley community and providing FSH has reached the number projected in its transition strategic plan.
4. The following hospitals address their increased capacity potential in any strategic planning over the next twelve months:
 - (1) Armadale Kelmscott Memorial Hospital (AKMH)
 - (2) Rockingham General Hospital (RGH)
 - (3) Osborne Park Hospital (OPH)

- (4) Joondalup Health Campus (JHC)
- (5) St John of God Midland Public Hospital (SJOG Midland)
5. In order for OPH to increase its capacity safely and to fully utilise its potential, some modest resource increase will be necessary.
6. Defer utilisation of post code restrictions currently used to control capacity or implement a modification of any such restriction.
7. Consider a review of FSH maternity services to ensure it reaches its capacity and appropriate level of care.
8. Consider a strategic review of KEMH to assess its strategic direction and the impact of the reconfiguration of maternity services provided by metropolitan non-tertiary public hospitals.
9. Increase training opportunities in obstetrics and gynaecology in collaboration with the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) and rationalise the rotation of trainees through non-tertiary hospitals.
10. Increase secondary neonatal capacity in metropolitan/rural areas outside of tertiary hospitals following review of training and accreditation in neonatal resuscitation according to the *Framework for the Care of Neonates in Western Australia* (2009) as the care of the newborn is pivotal in any reconfiguration of maternity services.
11. Reorganise method and provision of midwifery care in public hospitals to introduce contemporary models of care incrementally and in consultation with the medical profession.
12. The preferred model of care is MGP (caseload midwifery) and this to be introduced where possible in those hospitals providing maternity services. Health service contracts in the Private/Public Partnership Agreements to include these models may need to be negotiated.
13. After a decade of operation SOSU be reviewed to ensure it continues to fulfil the original concept of the service or should focus its attention on other service imperatives.
14. Introduce a central command model to place and track capacity obstetric transfers.

Methodology

Review of the current service provision and staffing arrangements was undertaken by visiting the non-tertiary hospitals where possible and meeting with key staff members.

The following non-tertiary metropolitan hospitals were visited:

- Bentley Hospital (BH)
- Joondalup Health Campus (JHC)
- Armadale Kelmscott Memorial Hospital (AKMH)
- Rockingham General Hospital (RGH)

- Osborne Park Hospital (OPH)
- Swan District Hospital (SDH)/SJOG Midland

Senior medical staff, senior nursing and midwifery staff and senior administrative staff of north metropolitan health services and south metropolitan health services were individually met to discuss operational and strategic issues.

In order to assess capacity and flexibility for maternity services, KEMH and FSH were referred to in this review; given that both have the capacity to accommodate low (normal risk) and moderate (medium) risk pregnancies as well as high risk pregnancies.

Normal or low risk pregnancies imply the absence of any risk factors that may lead to pregnancy complications requiring the services of a specialist obstetrician. Women in this category may deliver in CSF level 2 or 3 maternity units and may be managed by general practitioners, midwives or specialist obstetricians.

Most maternity hospitals in WA provide primary neonatal care CSF level 1, 2 and 3 which require only a level 1 neonatal nursery. CSF classifies the clinical services role between level 1 and 6. Neonatal nurseries however are classified as level 1, 2a, 2b or 3.

Level 1 neonatal services (CSF 1, 2 and 3) provide routine care for babies in postnatal wards. Level 2 nurseries are located in secondary units with 2a (CSF level 4) providing low dependency care and 2b (CSF level 5) providing high dependency care. Level 3 neonatal services (CSF level 6) are located in tertiary centres. In WA such a service is provided only by KEMH.

Moderate risk pregnancies imply a pregnancy complicated by foetal or maternal risk factors which may lead to adverse outcomes.

Specialist obstetric care in these circumstances is essential and may vary from total management or at the very least appropriate consultation. Birthing is usually in a maternity unit of at least CSF level 4.

Preterm birth if anticipated must not be predicted to be less than 32 weeks gestation at which gestation level 3 neonatal facilities are required.

High risk patients have major foetal or maternal risk factors requiring management by a specialist obstetrician and delivery usually in a CSF level 6 unit. In some cases CSF level 5 may be appropriate depending on the anticipated neonatal outcome and availability of subspecialists for consultation and providing fetal maturity is greater than 32 weeks.

These levels of care clarify the capable risk capacity of the non-tertiary hospitals for maternity services and the consequent need for efficiency and safety in such circumstances.

Contemporary Models of Maternity Care

In recent years much discussion has occurred about changes in models of care so that the fragmented care that may take place in public hospitals is avoided. In this situation, women often meet different midwifery and obstetric staff and continuity of care does not always occur.

Midwifery services in maternity hospitals can be restructured to provide continuity of midwifery care resulting in greater satisfaction for the woman and without compromise of safety. One such successful model of care is MGP.

Safety issues are dependent on the appropriate selection and triaging of normal (low) risk pregnant women for team midwifery cases.

Multi-mix risk women may be referred for such care but more medical practitioner oversight may be required. In both groups of women, continuity of midwifery care occurs and there is evidence available to support that a sustainable midwifery workforce results from such a model.

Models that support continuity of care include:

- Caseload midwifery
- Midwifery group practice
- Team midwifery care
- Shared maternity care

In Western Australia, MGP models have been established in non-tertiary facilities at Bunbury and Broome Hospitals and more recently AKMH. KEMH has three such units.

These are the organisational units of caseload midwives and usually consist of a team of four to six midwives. Each midwife has an individual caseload of 36 – 40 women per year for whom she/he is the primary midwife and provides back-up as well for the women managed by MGP colleagues.

Review of both the Bunbury and Broome MGPs has demonstrated significant savings in terms of cost and hospital bed days over a 12 month period. There have been no safety issues and the model is supported by the women.

The major sources of savings were due to:

- A reduction in postnatal length of stay.
- A reduction in caesarean section rates.
- A reduction in antenatal admissions.

A similar recent model of care study in NSW comprising caseload midwifery care and standard maternity care for women of any risk (Sally Tracy et al, *Lancet* 2013:382:1723-32 and at Attachment 2) showed that for women of any risk, caseload midwifery is safe and cost effective.

Neonatal outcomes did not differ between the groups.

There is sound evidence available that indicates that midwifery models of care are safe and cost effective and should be considered for introduction into maternity units in metropolitan hospitals providing maternity services. Medical practitioner support and availability will be essential for the non-tertiary sites.

With the opening of FSH, the closure of Kaleeya Hospital and the impending commissioning of SJOG Midland the capacity of the non-tertiary hospitals for maternity services was reviewed. Based on this information, it is possible to consider the optimal number and reconfiguration of maternity services in the metropolitan non-tertiary hospitals.

Each of these facilities is addressed with particular reference to its capacity for maternity services and the impact this may have not only on tertiary hospital maternity services but also for WACHS. Any such capacity into the future must also take into account the provision of care for the neonates which may be a limiting factor.

A. North Metropolitan Health Service

1. Joondalup Health Campus (JHC)

Joondalup Health Campus is a co-located campus with both public and private patient facilities. Only the public patient component of maternity services will be considered.

In 2014 JHC had 2,451 public patient births.

This is a busy and well organised campus that has had a significant growth in maternity services (the birth numbers increasing from 1,803 in 2008 to 2,451 in 2014). The projected immediate increase is in the order of 2,600 births in 2014/15.

The unit manages low (normal) and medium (moderate) risk pregnancies. Some high risk patients with diabetes are managed on-site. These clinics have been established because of need and are not funded by ABF.

The CSF is level 4 with level 2a neonatal services with the capacity to increase to CSF level 5 for both obstetric and neonatal services (level 2b nursery). This reflects the increasing complexity of pregnancies managed on-site. Neonatal occupancy rates have risen continuously and significantly since 2006.

Currently there are 16 cots.

The neonatal services are led by a neonatologist who participates in the out-of-hours roster and who provides additional back up to the general paediatricians on the staff.

There is on-site access to obstetricians, paediatricians and anaesthetists.

Obstetric staffing consists of:

Obstetricians - 5.75 FTE increasing to 7 FTE by the end of 2015.

Registrars x 4

- 1 senior registrar
- 3 trainees

Career Medical Officers (service registrars) x 3

- 2 IMG trained but did not wish to enter a training program
- 1 waiting for a trainee vacancy

The model of care is a medical/midwife model without plans to introduce a MGP model at this time.

Despite this, midwives manage the labour and undertake the majority of the spontaneous vaginal deliveries and there is a midwifery lead model in the antenatal clinic.

The combined elective and emergency caesarean section rate is 28% which is below the State average.

This is well organised unit with considerable capacity to increase births to 2,800 – 3,000 with the current model of care and workforce.

The unit comprises eight public patient delivery suite rooms and 41 maternity beds. Using the benchmark of 350 births per birthing suite, the number would equate to at least 2,800 deliveries without compromising safety. Further capacity could occur with more midwifery participation.

Any increase in clinical activity in what is a rapidly growing northern metropolitan area would meet the need and would, at the same time, reduce the load for KEMH.

Additional training opportunities would occur. Level 2b neonatal facilities will need to be confirmed by the neonatal workforce.

Maternal transfers from JHC, because of complex or emergency obstetric or neonatal care, are referred to KEMH. Transfers for demand management are referred to OPH or SDH. This will require review with the commissioning of SJOG Midland.

2. Osborne Park Hospital (OPH)

A CSF level 4 hospital but providing only level 3 (primary) neonatal care. No specific nursery facilities are on-site.

Births have remained stable (around 1,500 – 1,600) over the last six years, except in 2011/12 when the number reached 1,806. There were 1,517 births in 2014.

The facility is probably under-utilised for maternity care. This is probably the result of obstetric reviews undertaken in the past (2008, 2011) because of concerns about safety issues. As a result of the implementation of most of the recommendations from the 2011 review the situation has changed although to increase its capacity safely some increased resources will be necessary.

There are six delivery suites with a recently added separate labour ward assessment area. Only three of these suites are operational at any one time because of midwife staffing issues and current delivery numbers.

There is no staffed nursery and therefore only babies over 36 weeks gestation not requiring any intervention can be retained on-site.

There are 20 funded obstetric beds with better than average utilisation because of a robust community midwifery service.

The patient clientele are culturally diverse (African, Chinese and Vietnamese) of whom 10% require an interpreter and can strain resources. Despite this, the facility must be maintained.

Staffing Arrangements

Specialist Obstetric Staff

There are three on-site specialists made up of 1 x 1.0 FTE, 1 x 0.5 FTE and 1x 0.6 FTE.

Junior Staff

Resident Medical Officers – there are five non-training positions providing 24 hour a day cover on a shift roster.

Registrars – there is funding for five registrars of whom four are currently appointed. Of these, two are in college training positions (2-4 year levels) and two are junior registrars at pre-training levels/or advanced GP obstetrician level.

There is good supervision of junior staff and adequate clinical exposure for obstetric trainees.

There are VMP specialist paediatricians providing a 24 hour a day on-call roster for the obstetric unit which includes neonatal resuscitation. However there is no staffed nursery. Anaesthetists cover a 24 hour a day on-call roster.

There are no on-site paediatric or anaesthetic staff. All are on-call out-of-hours. The neonatal education service provided by the Women and Newborn Health Network for midwives is excellent and has improved the quality of resuscitation. Junior medical staff should attend more frequently.

It is projected that the number of births could increase to approximately 2,000 without difficulty. This is well within the benchmark capacity for six delivery suites.

The caesarean section rate is 30% of which approximately half are non-elective. There are no out-of-hours on-site theatre staff therefore the time to undertake an out-of-hours caesarean section when staff are called may not meet the Category 1 caesarean section criteria according to RANZCOG.

At present OPH undertakes the management of normal to moderate risk pregnancies.

Any increase in numbers should be initially restricted to normal (low) risk pregnancies and could be achieved by introducing a more contemporary model of care. There is sufficient medical staff to have safe oversight of a MGP model for normal risk pregnancies.

Any increase in the number of births which would be necessary in the metropolitan area should avoid, for the present, the management of moderate risk pregnancies which could be transferred to JHC or to SJOG Midland (depending on the ultimate configuration of the latter facility).

Currently there is no neonatal capacity to undertake the management of moderate risk pregnancies at OPH although a CSF level 4 facility is proposed in the near future.

The introduction of a MGP model would allow for greater utilisation of the available birthing suites and improvement in the recruitment and retention of midwives who would not be required to backfill general nursing shortages in other areas of the hospital when they occur.

A further factor complicating future capacity will be the introduction of post code restrictions for patients attending OPH for birthing.

Such an initiative if introduced would reduce maternity numbers to less than 1,500 per year. This would question the safety and viability of the facility. Insufficient case load would become an issue in order to maintain skills.

Some reconfiguration of the post code allocation of patients should be considered if this outcome is to be avoided.

Osborne Park Hospital has capacity to increase its birthing numbers but will require some further resources to do so. These include:

- (a) Staffing of the labour ward assessment area to be extended initially to weekends and then to a 24/7 arrangement. This would increase safety and efficiency. At present, staffing is provided only Monday to Friday 7:00 am to 7:00 pm.
- (b) Provision of a nursery facility to provide CSF level 4 services (2a level nursery) with staffing arrangements appropriate for a level 2a nursery.
- (c) The current classification for OPH requires clarification. It implies that there is a nursery facility available which is incorrect.
- (d) Availability of an on-site out-of-hours registrar.

3. Swan District Hospital (SDH)/SJOG Midland)

There were 1,276 births at SDH in 2012/13. These numbers have slowly increased to 1,456 births in 2014 but in very recent times, the delivery numbers have been reduced to align with available midwives. In 2012/13, 6.7% (86) births were to Aboriginal women.

Normal-moderate risk pregnancies are managed with approximately a 25% caesarean section rate.

Swan District Hospital maternity services have five delivery suites, 17 maternity beds and four neonatal cots.

Both the obstetric and neonatal services are CSF level 4 (i.e. level 2a neonatal care).

SJOG Midland will have five birthing suites, four neonatal cots and 24 maternity beds. The birthing suite capacity at SJOG Midland will be capable of 1,750 – 1,800 births per year. However, indications are that the purchased birthing activity from SJOG Midland will be 1,500 births per year in the first instance.

Whilst this is higher than current SDH delivery numbers, there is capacity to increase the number of births at this site and this should be considered by North Metropolitan Health Service when preparing the Annual Notice (range and number of services “purchased” from SJOG to be provided at Midland Public Hospital) in early 2016 for the 2016/17 financial year.

The low-medium risk (level 4 in CSF) pregnancies currently managed at SDH are expected to transition to SJOG Midland.

The level 2a neonatal care is expected to be maintained with similar facilities that are available at SDH. The neonatal unit at the Midland Public Hospital will be maintained at a CSF level 4 nursery with four cots and one isolation cot. The out-of-hours obstetrician/anaesthetist/theatre staff/paediatric staff facilities currently at SDH are expected to transition to SJOG Midland and will need review after the facility is opened.

Whilst still 6 months from opening, at this stage SJOG Midland have indicated that midwifery staffing (which has been an issue at SDH in recent times due to staff transfers to FSH) for the new unit is anticipated to be sufficient to provide the contracted circa 1,500 deliveries per annum.

Maintenance of current out-of-hours operating theatre availability and rosters to provide on-call caesarean section will be essential. During the transition period (the lead up to opening Midland Public Hospital) such rosters have thus far been maintained albeit as indicated above, ongoing provision of a safe service has required some redistribution of births from SDH to other sites because a significant number of SDH midwives have moved to the new Obstetric Unit at FSH.

B. South Metropolitan Health Service

1. Armadale Kelmscott Memorial Hospital (AKMH)

This is a well organised maternity service which managed 2,485 births in 2014.

There are 24 obstetric beds with a probable capacity to increase to 28, together with five delivery suites and two ante rooms which can be used for birthing. The assessment unit is outside of the delivery ward.

Using the accepted benchmark for births per delivery suites, it is clear that with the present accommodation, AKMH is at capacity. Low-medium risk births are managed essentially by GP obstetricians who are very experienced.

Paediatric Staff

The nursery has four cots and provides level 4 CSF care, i.e. level 2a neonatal unit care is provided by three experienced paediatricians but they are not supported by a neonatologist on-site. The paediatricians provide neonatal care and arrange transfers to tertiary paediatric facilities when necessary.

Obstetric Staff

The care provided is essentially a specialist/general practitioner model. Recently a MGP model has been successfully introduced. It is planned to increase the number of these models of care.

There is a robust visiting midwifery program which facilitates an increased number of births through the existing birthing suites.

There are eight GP obstetricians some of whom can undertake operative vaginal delivery and caesarean section. Four FTE obstetricians provide specialist care and funding for a further one FTE has been provided. However because of choice, the appointee preferred a 0.5 FTE appointment.

The service is managed very safely and efficiently.

Anaesthetic cover is 24 hours a day and on-site because of the cover required for ICU and emergency department out-of-hours. During the day there is a dedicated obstetric anaesthetist.

Medical models of care include a larger than usual successful VBAC population and the caesarean section rate is fairly stable at around 23% (one of the lowest in Australia).

Antenatal clinics are mainly midwifery clinics (three) with one GP obstetrician clinic and one specialist clinic. The GP obstetrician deliveries are funded by a fee-for-service arrangement.

There are currently no junior medical staff and it is evident that some junior medical staff could easily be accommodated both for service and training. At present there is no capacity for registrar rotation from KEMH. Armadale Kelmscott Memorial Hospital as a training facility should be considered particularly in light of a predicted obstetric workforce shortage in 2021. The limit for birthing numbers at present is 2,500. Different models of care using MGPs could increase the numbers safely but more delivery suites would be required.

It has been suggested that the Bickley Unit in the adjacent Galliers Centre could be recommissioned for low risk deliveries and the introduction of another MGP model.

There is possible increased capacity by strengthening the current model of care which provides for the increased throughput of the delivery suites above the standard benchmark.

There is no post code restriction for maternity patient management at AKMH. If this was imposed it would reduce births to 1,800 – 2,000.

The application of a post code restriction would be counter-productive and the status quo (no post code restriction) should be continued. The level 4 CSF neonatal care however should remain as such.

Armadale Kelmscott Memorial Hospital is a safe, efficient maternity unit which is capable of increasing its birthing capacity safely with appropriate facilities.

2. Bentley Hospital (BH)

In 2014 BH undertook 1,045 births, an increase of 162 from 883 in 2012/13. These were low risk deliveries in a CSF 3 facility. The nursery facility is also CSF 3 or level 1.

The model of care is predominantly medical consisting of specialist and GP obstetric care.

Caesarean section is undertaken with a rate of approximately 30%. The response time for emergency caesarean section can be up to 60 minutes which is not consistent with safe practice as there would not be the ability to perform a Category 1 caesarean section.

Bentley Hospital has two operating theatres, one of which is planned to close (or be converted for endoscopy) although the timeframe is not clear. This will leave one theatre with no dedicated caesarean section facility. Under these circumstances where the theatre is shared with general surgery, the response for a caesarean section at any time (i.e. not just out-of-hours) is likely to be delayed.

Anaesthetic services are provided on a 24 hour a day availability basis (not on-site) which is sub-optimal.

Staffing

There is a fulltime Head of Department who is competent, enthusiastic and motivated. She is culturally sensitive and attracts an increasing number of patients. It seems clear that her motivation is responsible for the increased number of births in the last 12 months. She is located 0.8 FTE at BH and 0.2 FTE at FSH. Over the last 12 months a dedicated gynaecology clinic has been established. There are eleven credentialed GP obstetricians (of whom about six participate in the roster) with five on-call specialists contributing to the caesarean section cover.

Appropriate and good supervision is provided by the Head of Department. Of the credentialed GP obstetricians, four are permanent.

The paediatric on-call roster is covered by two general paediatricians. There is no registrar or resident medical officer backup for maternity services.

In order for small (reduced critical mass) maternity units to be safe, it is necessary to have well trained staff, facilities and an appropriate referral strategy. While much of this may be possible during the day it is not maintained out-of-hours.

Despite a low risk facility and careful patient selection for such a unit, a 30% incidence of caesarean section occurs. On current delivery numbers, this represents in excess of 300 caesarean section operations in an environment where there is a delayed response rate (out-of-hours) for caesarean section and future reduction in operating theatre availability.

Where there is competition from other surgical disciplines, inevitably this will also delay the response time for caesarean section during normal working hours.

Ready access to an operating theatre for caesarean section and some operative vaginal deliveries is essential for maintaining safety. The development and implementation of obstetric protocols and guidelines are available and intended to enhance safety however need to be considered in the context of the aforementioned safety related issues.

In addition, BH is an unsatisfactory facility that is badly in need of refurbishing. It is not conducive to establishing a different and safe contemporary model of care. The hospital is already at capacity undertaking about 1,000 births per annum through three delivery suites. Achieving a greater critical mass will not be possible.

It is recommended that BH, for the reasons of potential lack of safety, not continue to provide maternity services into the future. Withdrawal of maternity services should be at an appropriate time as assessed and following consultation with the staff, the medical profession and community groups. There is potential capacity in the other facilities (particularly FSH) to absorb the resulting patient load.

The funded 0.8 FTE specialist obstetrician could be relocated to another facility eg FSH to manage its likely increased numbers in any reconfiguration of maternity services.

Any GP obstetric training should also be relocated to a more appropriate facility.

Junior medical staff training is not undertaken and therefore relocation is not a consideration.

It would be appropriate and in order to cope with the sensitivities that would arise with the closure of this service, that community representatives be met and informed of the reasons for closure.

3. Rockingham General Hospital (RGH)

This hospital has a large maternity unit which managed 1,820 births in 2013/14, an increase from 1,703 in 2012/13.

A major redevelopment in 2010 included obstetric services which resulted in an increase in facilities to 16 postnatal beds and five delivery suites.

There has been an increase in demand for services which are working to capacity and at times extended. The service manages low-moderate risk pregnancies CSF level 4 and a neonatal unit CSF level 4 (level 2a neonatal facilities).

The model of care is a medical model with specialist obstetricians and GP obstetricians. The majority of the work is undertaken by the GP obstetricians (fee-for-service arrangement) with specialist oversight.

The caesarean section rate is low at 23% and the out-of-hours response time is 30 minutes.

Staffing

Obstetric medical staff comprise four salaried FTE specialist obstetricians and nine VMO GP obstetricians who have admitting rights to the hospital. Anaesthetic cover is 24 hours a day with a dedicated on-call labour ward and caesarean section service.

There is 24 hour a day paediatric cover provided by three general paediatricians who provide the neonatal services.

All staff are not on-site during out-of-hours but on-call as required.

There is an accredited RANZCOG trainee in gynaecology only. There are no obstetric trainees.

Routine antenatal care is undertaken in the GP obstetrician's practice. A high risk antenatal clinic requiring specialist services has been established on-site.

The increasing demand for maternity services is somewhat of a strain to the current service. In order to relieve this strain a more contemporary model of care will be necessary. With robust and safe midwifery postnatal services both in the hospital and community and a group midwifery practice model for birthing it will be possible to maintain and even slightly increase the number of deliveries without increasing the pressure on the facility.

The specialist referral process should be strengthened to reduce any inherent risk in the current model of care.

As indicated above, there is a capacity to increase the birthing numbers but this cannot be achieved with the present model of care. A MGP could be introduced and could initially function in parallel with the GP obstetrician model. On-site midwifery antenatal clinics could be established in consultation with the medical staff. Comparison of the models of care could be undertaken to assess sustainability and outcome.

Better use could be made of the potential training capacity for RANZCOG trainees. Given that there will be an increased demand and reduced supply of obstetricians in 2021 (Medical Workforce Report 2014) it would be appropriate to investigate the possibility of accredited training positions with RANZCOG.

Rockingham General Hospital is a busy obstetric unit providing a safe service which could be further improved by reconsidering the current model of care.

4. Peel Health Campus (PHC)

Peel Health Campus is a private/public patient facility on a co-located campus.

In 2012/13 there were 1,033 births and of these 746 were public patients. The total number of births has remained consistent over the past six years.

Low-medium risk patients (level 3) are managed in a facility which has three delivery suites and 20 antenatal/post natal beds. It is a combined medical (GP/obstetrician) model of care which is unlikely to have capacity for extra births and the benchmark of 350 births/birth suite/year would suggest this projection. An alternative to the medical model of care is unlikely.

The caesarean section rate is around 30% with almost 60% spontaneous vaginal births.

Obstetric staffing consists of one specialist obstetrician, five VMO advanced RANZCOG GP obstetricians and four VMO/GP obstetricians with a Diploma from the RANZCOG (DRANZCOG).

The nursery facilities are level 3 with rostered paediatricians providing the service. Consultant anaesthetists as well as general practitioner anaesthetists provide a 24 hour a day anaesthetic roster.

Theatre staff are on-call but not on-site for out-of-hours emergency caesarean sections.

Impact of Tertiary Hospital Maternity Services

The non-tertiary metropolitan public hospitals providing maternity services have been reviewed and the details of quality, staffing, efficiency, safety and birthing capacity have been discussed.

It would not be possible to strategically predict the optimal number and configuration of maternity services necessary to meet any increasing demand safely without briefly considering the facilities at:

- (a) Fiona Stanley Hospital
- (b) King Edward Memorial Hospital

- (a) Fiona Stanley Hospital

A level (CSF) 5 obstetric unit and level 5 neonatal unit opened in December 2014.

Initially the births scheduled for Kaleeya Hospital (which closed at the end of 2014) were to be transferred to FSH. Following the closure of Kaleeya Hospital, the number of births were to increase from 42 per week (April 2015) to 63-69 per week (December 2015). This represents a projected total of 3,300 births per year when operating at full capacity. These data were obtained from the FSH strategic plan for maternity services. This would more than cope with the Kaleeya Hospital number of about 1,162 births per year resulting in an increased capacity in excess of 2,000 births.

There are six birth suites and two assessment rooms which could be used for birthing if required. Thirty four obstetric beds are available of which 18 are currently in use. A robust home midwifery service is planned for postnatal care with an early discharge policy resulting in a reduction of the average length of stay.

Obstetric staffing is 6.3 FTE obstetricians with an additional 0.2 FTE provided by the Head of Department of Obstetrics (full time) at BH. Present calculations of available data indicates a 24-26% caesarean section rate although this may change when the facility is fully operational.

As an integrated campus, FSH is well placed to manage medical disorders in pregnancy particularly diabetic women (60% of diabetics managed at KEMH live south of the river) and women with a high body mass index.

Neonatology services are well covered by a neonatologist and general paediatricians.

The nursery facility is CSF level 5 or 2b neonatal services as on-site cover is available.

Anaesthetic services are well covered.

Junior medical staff consists of eight registrars and seven RMOs on rotation from KEMH. It is not clear at this point how many will be accredited training positions.

The potential for FSH maternity services is considerable. It will cope with the number of births transferred from Kaleeya Hospital as well as having the potential to develop services in its own right. Staffing is adequate so safety should not be an issue.

In addition to the numbers from the closure of Kaleeya Hospital there is the capacity to accept up to another 2,000 births in any configuration planning. The opening of maternity services at FSH has not as yet had an impact on KEMH activity but the timing is too early for any prediction. It is envisaged that there will be considerable impact on the specialised management of medical disorders in pregnancy.

The level 2b neonatal unit (CSF level 5) at FSH will restrict the type of complex pregnancy management. If there is a potential need for neonatal intensive care facilities, a CSF level 6 facility will be necessary and hence patient management should be transferred to KEMH.

Any such capacity may change in the future.

The 1990 ministerial taskforce report supported a second neonatal intensive care unit south of the river on a multidisciplinary integrated campus. This, for a number of reasons, was not considered at that time.

Some women with major maternal risk factors may be appropriately managed in a CSF level 5 unit. There is a risk that FSH may not be permitted to expand to reach its true potential. A review of its maternity services may be necessary in 12-18 months to assess this potential.

There would be the capacity to manage adult tertiary services but without the corresponding neonatal backup. This has the potential to restrict the management of high risk and complex pregnancies at a new tertiary hospital campus.

(b) King Edward Memorial Hospital

In 2014, the KEMH birth number was 5,977; an increase of 275 births compared to 2013.

It is the only tertiary obstetric facility in the State and has the largest neonatal intensive care facility in Australia (probably the southern hemisphere).

The model of care includes a medical specialist care model together with shared care, team midwifery and family birth centre and MGP caseload care.

The facility is well staffed with 16 funded consultant obstetrician positions together with 65 FTE non-specialist medical staff (includes training positions). Eight FTE anaesthetic consultants provide a comprehensive 24 hour a day anaesthetic cover. On-site theatre staff provide 24 hour a day cover. Of the 16 funded consultant obstetricians, 13 are currently filled and are fulltime or University staff.

There has been an increase in workload and a massive increase in staffing over the last decade. This together with any impact on KEMH resulting from reconfiguration of non-tertiary metropolitan hospital maternity services and the opening of FSH demonstrates the need to review its strategic plan into the future. Except for complex CSF level 6 neonatal services (which are to be directed to KEMH) it may be possible for each of the two tertiary hospital facilities to provide high risk maternity services respectively to north and south metropolitan health services.

It would also be possible to redirect some secondary maternity services to the non-tertiary sector where capacity would exist consequent upon a reconfigured model and this would reduce any capacity pressure at KEMH.

Contemporary Models of Maternity Care

The dominant model of maternity care in Australia is a conventional medical model managed in either a public or private hospital facility. Concern however is increasing about the rising caesarean section rate and the potential long term morbidity with the procedure.

In the public sector, care is fragmented and the pregnancy is often managed by a variety of health professionals including the midwife, the obstetrician and junior medical staff who may or may not be in a training program.

Continuity of care is the model preferred by most women and this is reflected in the findings of the 2009 review of maternity services in Australia *Commonwealth of Australia, Improving Maternity Services in Australia: Report of the Maternity Services Review* (February 2009) which confirmed the demand for models of care other than the conventional medical model. The review also found that collaborative models of maternity care which supported continuity of care drew on the knowledge and skills of different health professionals valued by both the women and health professionals. Continuity of care was seen as the fundamental component of midwifery practice that had been lost in the move to fragmented hospital-based care.

Where midwives are an integral part of the workforce, recruitment and retention is more likely and makes for a sustainable maternity service. Fewer midwives sought alternative employment when they were able to practice the full scope of midwifery and were not being asked to backfill areas where there were general nursing shortages.

Because it is clear that the predominantly medical model of care is not sustainable, alternative safe and contemporary models need to be explored.

Models that Support Continuity of Care

There are a number of models that support continuity of care which have now been evaluated from the aspects of safety, efficiency and cost.

These models include:

- (a) Caseload midwifery
- (b) Midwifery group practice is the organisational unit of caseload midwives and usually consists of 4 FTE midwives. Each midwife has an individual caseload of 36-40 women per year for whom she/he is the primary midwife and where necessary also provides cover for the other midwives in the group.

This model has been established in WA hospital facilities in:

- Broome –15 months
- Bunbury – 18 months
- KEMH – 6 months.

A fourth practice was established at AKMH in April 2014.

Evaluation of the Bunbury and Broome MGPs has already demonstrated savings in terms of reduced length of stay and the associated cost of reduced bed days.

Over a twelve month period the Broome MGP estimated a saving of 150 hospital bed days while the Bunbury MGP estimated 219 bed days over a similar period. These demonstrate that a considerable savings can be achieved.

- (c) Team midwifery care
- (d) Shared maternity care
- (e) Eligible midwifery model

Privately practicing midwives in a private or public hospital setting.

- (e) Community midwifery practice.

The most appropriate and preferred model is caseload midwifery (or MGP) where there is considerable data available from NSW indicating it is efficient, safe, cost effective and acceptable to both the mother and midwife.

In a similar UK study similar outcomes were found in the One to One Midwifery Group Practice Model (Sandall J, Davies J & Warwick C, *Evaluation of the Albany Midwifery Practice: Final Report*, Florence Nightingale's School of Nursing and Midwifery. King's College 2000).

This model caters for all risk women at all stages of care with the midwives working in partnerships or groups. Each midwife carried a caseload of 40 women per year with a named specific midwife for each woman.

Evaluation of this model found that the midwifery costs to the service were not increased.

The major sources of savings were due to:

- (a) A reduction in postnatal length of stay when compared with women receiving standard care.
- (b) A reduction in caesarean section rates.
- (c) A reduction in antenatal admissions.

The evaluation of this study in the UK demonstrated that continuity of care could improve women's satisfaction with their care, gave midwives greater job satisfaction with an increase in their autonomy and reduced intervention rates.

More recent reports from NSW showed a similar experience.

One study (Tracy et al, *BMC Pregnancy and Childbirth 2014*, and at Attachment 1) undertook a comparison of caseload midwifery with standard public patients and private obstetric care in a public teaching hospital in NSW.

At the time of the study, there were two main maternity models offered at the hospital. These were standard medical public hospital care or private obstetric care in the public hospital.

The models of caseload were introduced to compare outcomes with the existing medical models.

To ensure safety, consultation and referral in the caseload model was available and occurred as necessary and according to the Australian Midwifery Consultation and Referral Guidelines (Australian College of Midwives 2010). More recently (2014) these referrals for medical consultation by the managing midwife were updated by RANZCOG and the Australian College of Midwives in combined guidelines. These guidelines were endorsed by RANZOG in January 2015.

In the standard care model, women received care from rostered midwives and public hospital obstetric care (obstetric staff, trainees and community based general practitioners). The patients attended discrete wards or clinics.

In the standard model, decisions about labour and birth management could be made by more than one medical practitioner while in the private obstetric model any such decision was made by the private obstetrician.

The sample of women in this study numbered 6,020 who planned to give birth at the hospital. The outcomes for a cohort of low risk first time mothers known as the “standard primipara” are described to control for the difference in casemix.

Attachment 1 shows the maternal and infant characteristics for all women in the study and in the labour and birth outcomes for all women having a singleton pregnancy. Amongst women with a singleton pregnancy, the MGP group were significantly more likely to have a spontaneous onset of labour, less analgesia and a higher vaginal delivery rate with a lower admission rate to a neonatal nursery.

Higher intervention rates were seen in both the standard and private models of care.

In the standard low risk primigravida group, the MGP model of care women were more likely to have a spontaneous onset of labour, a higher incidence of unassisted vaginal delivery and a lower caesarean section rate of 1.6% compared with the standard care (5.3%) and the private obstetric care (17.2%).

Average length of stay is decreased as a result of less intervention and therefore costs are significantly reduced.

The study demonstrates a level of unexplained variation in outcomes in the same patient cohort in the three different models of care. This is more obvious in the low risk primigravida cohort.

A second Study (Tracy et al in 2013 and at Attachment 2) assessed the clinical and cost outcomes of caseload midwifery care for women irrespective of risk factors. Prior to this study the only data available for comparison was for low risk women allocated to a caseload midwifery (MGP) model.

In Attachment 2 it can be seen that in both groups of all risk women the intervention rate, caesarean section rate and perinatal outcomes are no different. However the women in the caseload group were significantly more likely to have a spontaneous onset of labour, less likely to have an induction of labour and more likely to have augmentation of labour when compared with the standard group. The caseload group were more likely to be discharged from hospital within two days of birth and had a shorter median postnatal stay.

Postpartum blood loss was reduced in the caseload midwifery group.

The study suggests that caseload midwifery seems to cost less than standard care with similar clinical outcomes and without compromise of safety.

Both of these contemporary studies in Australia indicate that the reorganisation in which maternity care is delivered in the public hospital system could assist better management of public hospital expenditure.

The introduction of MGP models into those hospitals providing maternity care could play a major role in the future reducing the public health burden by increasing normal outcomes and promoting more efficient use of funds (Tracy et al in 2014 and at Attachment 1).

Evidence has been presented to indicate that the model is efficient with greater patient satisfaction, cost effective, safe and more productive than standard models of care. Its general introduction into WA public hospitals should be incremental with medical profession consultation and obstetric and medical support available.

In the first instance, it would be appropriate that women without risk factors have their pregnancy managed by the caseload model of care which has been shown to be safe and cost effective in such an environment. Women, irrespective of risk factors, could be introduced into the model at a subsequent time.

In those non-tertiary metropolitan hospitals where historically the model of maternity care has been provided predominantly by general practitioners, any introduction of a MGP model should be in parallel and simultaneous with the existing model. Comparison of outcomes of each model can be undertaken to ensure safety, quality and sustainability and the numbers in each model reviewed.

Current referral guidelines of the Australian College of Midwives and RANZCOG (2014) must be adhered to when establishing a caseload midwifery model and these could be mandated with an operational directive.

The model is a reorganisation of existing midwifery care and not a threat to communication lines. It reflects the needs of women who are not ill.

Redistribution of Births

Any reconfiguration of maternity services provided by non-tertiary metropolitan public hospitals will inevitably have an effect on their birthing capacity. Redistribution of births will become necessary and the following data demonstrates the capability that will be necessary and that this can be achieved.

Birth Numbers	2014	2013
Armadale	2,485	2,360
Bentley	1,045	921
Rockingham	1,803	1,784
Joondalup	2,451	2,342
Osborne Park	1,517	1,534
Peel	750	746
Swan District	1,456	1,346
Kaleeya	(Jan-Oct) 1,162	1,421

In 2013, there were 12,454 births at public metropolitan non-tertiary hospitals.

In 2014, there were 12,669 births, an increase of 215 births (approximately 1.8%) over the 2013 data (sans FSH activity in November/December 2014).

The increase is well within the projected increases in birth rates of about 3% per annum.

With the closure of SDH and services transferred to SJOG Midland, approximately 1,500 delivery capacity will be needed and this level of activity is being “purchased” as part of the contract between the North Metropolitan Health Service and SJOG Midland.

The capacity at SJOG Midland using the benchmark 350 births per birthing suite per annum can increase to a 1,750 delivery potential.

This increased capability at SJOG Midland is unlikely to be required on opening but may need to be reached incrementally.

The recommended closure of BH will require that approximately 1,000 births will need to be reaccommodated. By December 2015, FSH is predicted to be at full capacity and managing 3,300 births per year. In other words, a fully functional FSH service can cater for the circa 1,400 deliveries per annum previously undertaken at Kaleeya Hospital as well as approximately 1,900 additional births per annum.

There is potential increased capacity at OPH, SJOG Midland and JHC which will allow for further absorption of increased numbers that may occur based on the current predicted 2-3% increase in births per annum.

In WA, 41.7% of hospital births were in private hospitals in 2012 compared to the national average of 29%. There would also be some additional capacity in the public system to meet demand if this ratio changed in favour of the public hospital system.

Whatever the reason for such a change (may be economical) it is necessary that the care for the increased number of births that would inevitably occur in the public sector is provided. Reconfiguration and sustainability of maternity services becomes an even greater imperative.

Currently the facilities available at the metropolitan non-tertiary hospitals are adequate to cover the current need required by any reconfiguration of maternity services, with the exception of a need for a neonatal facility at OPH.

This does not include the implementation of any accepted and safe alternative models of care which could lead to increased numbers being managed in these facilities, greater efficiency and cost effectiveness.

Births from the closure of BH could be accommodated at FSH and SJOG Midland where there is capacity for low to moderate risk pregnancies. The current BH Head of Department can be employed at FSH on a fulltime basis without a cost increase.

Rigid post code restrictions for birth services is not sensible at this time while any reconfiguration of services (closure of Kaleeya Hospital, opening of FSH and closure of BH) is being finalised, notwithstanding some temporary arrangements required to manage caseload at SDH during the transition to opening SJOG Midland Public Hospital.

Rigid application of post code restrictions would reduce births at OPH to below 1,500 per year which threatens safety and viability. Similarly such an initiative would reduce births at AKMH

from 2,500 to about 1,800 – 2,000 per year. Overall capacity in these hospitals would be reduced and existing facilities would struggle to cope with the excess numbers that would result from post code restriction.

This will potentially remove any capacity to absorb any redistribution of numbers as a result of reconfiguration of maternity services. For the present, the timing of the introduction of post code restriction for maternity services in metropolitan non-tertiary hospitals should be deferred and flexible. Some remodification of boundaries may be necessary.

Statewide Obstetric Support Unit (SOSU)

This unit was established in 2005 following a recommendation of the Western Australian Statewide Obstetric Services Discussion Paper (2003). Many of the recommendations made at that time may no longer be relevant.

The model of an integrated service model was complex and the clinical governance system was unwieldy.

The view of the metropolitan non-tertiary hospitals undertaking maternity services is currently that a single point of reference that was clearly identified in 2003 is no longer necessary and most facilities prefer to be responsible for their own teaching and training with guidance from the clinical colleges. Several of the facilities commented that the service had little profile, too KEMH centric and was probably no longer necessary. There was overlap with the Post Graduate Medical Education Committee of WA and the colleges who were responsible for integrated training and education. The original recommendations which are probably no longer relevant were a mixture of governance, clinical issues and industrial issues.

The establishment of regional centres with specialist resources reduces the need for a central outreach facility.

The maternity and neonatal services MAP published by SOSU and which contains a considerable amount of information is not utilised by the non-tertiary facilities.

One of the major concerns of the secondary hospitals and WACHS was the transfer of patients in labour and ambulance bypass. A centre to coordinate hospital capacity transfers was suggested and that this function could be similar to the command centre model established to coordinate demand management strategies during the period of the South Metropolitan Health Service reconfiguration. This was implemented to support the safe opening of FSH. It managed patient flow in WA hospitals.

The risk of maternity patient overload and delays in care while waiting for transfer could be minimal if managed centrally in a similar way.

This could be undertaken by the current resource of SOSU which could track and control hospital transfers.

It could function from a central desktop and be managed by a senior midwife who would require administrative and medical support.

The principle should be considered and its details of operationalisation investigated for urgent as well as hospital capacity transfers and this would take pressure off KEMH which is usually the last resort if the facilities contacted cannot accommodate the transfer. Urgent tertiary level care patients would of course need to be transferred to KEMH but transfers due to a lack of capacity at maternity sites could be simplified using such a model.

Review of the SOSU after a decade of operation to ensure that it is currently relevant would be appropriate.

Conclusion

This review has demonstrated that it is possible to safely increase the capacity of non-tertiary metropolitan public hospital maternity services with the introduction of a more contemporary and proven model of care. This allows reorganisation of the delivery of midwifery care which reflects the needs of well women.

Tertiary education of midwives is now the only model and leads to better training and increased capacity for responsibility. The recent RANZCOG approved and endorsed *National Midwifery Guidelines for Consultation and Referral*, 3rd Edition Australian College of Midwives (January 2015) ensures the safety of caseload midwifery (MGP) which is clearly supported in the current medical literature. The opening of FSH and later this year the SJOGH Midland, provides a unique opportunity to redistribute and reconfigure metropolitan maternity services by introducing an efficient, safe, contemporary model of care.

Some increased neonatal capacity may be required to reflect any reconfiguration of maternity services in non-tertiary metropolitan hospitals and advice may be sought from the Women and Newborn Health Network.

The recommendations made reflect the needs identified in this review.



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