

**Title: Australian general practice registrars and their experience with postpartum consultations: a cross sectional analysis of prevalence and associations**

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**Australian general practice registrars and their experience with postpartum consultations: a cross sectional analysis of prevalence and associations**

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- ii. Table 2: Frequency of most common postpartum problems/diagnoses
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**ABSTRACT:**

**Background:** In Australia, general practitioners (GPs) are recognised as an essential source of postpartum care. However, there remains a paucity of research pertaining to this, and in particular, to that of GP trainees (in Australia, termed “registrars”). Previous post-graduate experience in obstetrics and gynaecology (O&G) is not a pre-requisite for GP training and thus it is imperative that vocational training provides adequate exposure to postpartum consultations.

**Aim:** To investigate the prevalence and associations of Australian general practitioner registrars’ (trainees’) experience in postpartum care.

**Materials & Methods:** A cross-sectional study employing data from the Registrar Clinical Encounters in Training (ReCEnT) project. ReCEnT is an ongoing cohort study where GP registrars’ record 60 consecutive consultations mid-way through each training term. The outcome variable was postpartum problem/diagnosis (compared to all other problems/diagnoses). The independent variables included registrar, practice, patient, consultation, clinical and educational factors. Analyses employed univariate and multivariable regression.

**Results:** Analysis included 2234 registrars (response rate 96.1%), 289,594 consultations, and 453,786 problems/diagnoses. Postpartum care (897) comprised 0.2% (95% CI: 0.19-0.21) of all problems/diagnoses in 0.3% (95% CI: 0.27-0.31) of all consultations. Significant multivariable associations included registrar’s gender (female) and obtainment of post-graduate O&G qualifications. Postpartum consultations were longer and resulted in more learning goals being generated.

**Discussion:** An overall low prevalence was established. Both male registrars, and those without pre-existing O&G qualifications, may have particularly limited experience. These findings should inform educational policy and practice regarding postpartum care experience in general practice training.

**Introduction:**

In Australia, general practitioners (GPs) provide a broad spectrum of care relating to antenatal care, pregnancy and the postpartum period<sup>1</sup>. Postpartum care has been described as the “orphan”, or “poor sister”, of care to mothers and their babies, as it attracts less attention, less funding and less research<sup>2</sup>. The majority of Australian women give birth in hospital environments and the average length of stay is between 2-4 days<sup>3</sup>. The modern emphasis on

“early discharge” highlights the need for comprehensive community-based postpartum follow-up.

Primary care is recognised as an essential source of postpartum care, with one Queensland study finding that 90% of Australian women see their GP within three months postpartum, regardless of whether their antenatal care was midwifery, GP or specialist led<sup>4</sup>. However, there remains a paucity of research pertaining to Australian GPs’ experience in postpartum care. There is also a specific lack of research on the experience of early-career GPs, including GPs in vocational training programs (in Australia, termed “registrars”). This vocational training is practice-based, with the majority of learning occurring in-practice<sup>5</sup>. As post-graduate experience in obstetrics and gynaecology (O&G) is not a prerequisite for training in the Royal College of Australian General Practitioners (RACGP)<sup>6</sup>, it is possible that some registrars may have little or no practical experience in postpartum care prior to entering their training. While the small proportion of registrars enrolled in the Australian College of Rural and Remote Medicine (ACRRM) are expected to complete substantive O&G training either prior to or during their fellowship this, again, is not a condition for training commencement. It therefore remains imperative that GP registrars receive adequate exposure to postpartum consultations during their Australian General Practice Training (AGPT) program, irrespective of the college of which they are enrolled.

Australian GPs are required to have skills to provide postpartum care regardless of the context in which they work<sup>1</sup>. The World Health Organisation recommends a review of both mother and newborn at day 3, between days 7-10, and then again at approximately 6 weeks postpartum<sup>7</sup>. In Australia it is recommended that the timing of the postpartum visit be individualised to each women’s needs, however, in practice, the majority of postpartum check-ups are undertaken at 6 weeks<sup>8</sup>. It is recognised that both maternal and infant morbidity is increased in the first twelve months postpartum<sup>3</sup>. Pregnancy and family planning consultations account for 2.3% of GP consultations, with prenatal and postnatal checks together making up 0.6% of all total GP encounters<sup>9</sup>. The prevalence of all postpartum consultations, including routine checks, problem encounters and follow-up for GPs is not known.

RACGP registrars spend a minimum of 18-months of their clinical GP experience learning within an apprenticeship-like model of practice<sup>6</sup>, whereas ACRRM registrars may spend as little as 6 months in this setting. In this model registrars have considerable clinical independence but have recourse to advice and assistance from experienced supervisors<sup>5</sup>. They are expected to gain experience in postpartum care through consulting with patients

within this model. The Royal Australian College of General Practitioner's (RACGP's) curriculum expectations related to postpartum care include screening for depression, supporting breastfeeding, and detecting and managing postpartum complications and conditions of the mother and newborn<sup>1</sup>. These curriculum expectations are mirrored in ACRRM's Primary Curriculum<sup>10</sup>. Learning objectives in relation to postpartum care are supported by the RACGP's Guidelines for preventative activities in general practice. However, these guidelines have been criticised as having a limited focus, and not providing a comprehensive approach to the mother-infant dyad<sup>11</sup>. International guidelines also lack satisfactory clinical direction<sup>11</sup>. In order for registrars to become knowledgeable and confident primary care specialists, the RACGP mandates training programs to provide "an appropriate number and variety of patients and case mix to ensure maximum training opportunities"<sup>6</sup>. This will include adequate postpartum care exposure.

The aim of this study was to establish the prevalence of GP registrars' postpartum consultations and the associations with practice, registrar, patient, and consultation factors.

### **Methods:**

Setting: Australia General Practice Training (AGPT) program

AGPT involves three to four years of full-time equivalent practice, with a minimum of three 6-month terms (for RACGP registrars) in general practice. AGPT has been delivered in geographically-defined regions across Australia by Regional Training Providers (RTPs: 2001-2015) and Regional Training Organisations (RTOs: from 2016). The AGPT includes registrars from both Australian training colleges, the RACGP and ACRRM.

Setting: ReCEnT

This was a cross-sectional study employing data from the Registrar Clinical Encounters in Training (ReCEnT) project. ReCEnT is an ongoing cohort study of GP registrars' in-consultation clinical and educational experiences<sup>12</sup>. Data has been collected across five of Australia's 17 RTPs (2010-2015) and three of nine RTOs (2016-2018). This analysis included data from 17 data collection rounds from 2010-2018.

ReCEnT is an integrated aspect of the registrars' training organisations' educational program, and registrars may optionally provide written consent for their data to be used for research purposes<sup>13</sup>. GP registrars provide information pertaining to their personal and

practice demographics. At approximately half-way through each GP term registrars record data of 60 consecutive office-based consultations. Sixty consultations equates to an average registrar working week.

#### Outcome variable

The outcome variable was a problem/diagnosis recorded by the registrar pertaining to postpartum care. Diagnoses or Problems in ReCEnT are coded according to the International Primary Care Classification (ICPC-2)<sup>14</sup>. See Appendix for complete list of inclusions of “postpartum diagnoses/problems”. The authors recognise that some groups view the mother and infant dyad as a single unit during the first three months of extra-uterine life<sup>15</sup>, however, this study focussed solely on maternal consultations.

#### Independent variables

The independent variables included registrar, practice, patient, consultation, clinical, and educational factors.

Registrar variables included; age, gender, training term, full-time or part-time status, country of primary medical degree, whether the registrar had worked at that practice previously, and obtainment of post-graduate qualifications in O&G (e.g. Certificate of Women’s Health, Diploma of Obstetrics).

Practice variables included; practice size, rurality status (postcode was used to determine the Australian Standard Geographical Classification Remoteness Area – ASGC-RA), socio-economic status (using the Socioeconomic Index of Area Index of Relative Socio-Economic Disadvantage), billing policy (whether wholly “bulk-billed”; i.e. at no cost to patient and covered wholly by the national public insurer, or not), and “Region” (RTP/RTO-based classification).

Patient variables; age, Aboriginal or Torres Strait Islander status, non-English speaking background (NESB), if the patient was new to the practice, and if the patient was new to the registrar.

Consultation variables; consultation duration, number of problems managed, whether problem was new, and if assistance was sought (e.g. supervisors, or specialist input, books or electronic resources).

Consultation outcome variables; referrals made, pathology or imaging ordered, follow-up requested, medication prescribed, or if learning goals were generated.

## Ethical approval

The ReCEnT project has approval from the University of Newcastle Human Research Ethics Committee, Reference H-2009-0323.

## Statistical Analysis

Statistical analysis was at the level of problem/diagnosis. The proportion of problems/diagnoses that were postpartum care was calculated with 95% CIs, adjusted for repeated measures within registrars. Statistical analyses used STATA 14.0 and SAS V9.4. Predictors were considered statistically significant if the p-value < 0.05.

For descriptive statistics, frequencies were used for categorical variables and the mean +/- standard deviation for continuous variables. Categorical variables were compared using Chi-squared tests (or Fisher's exact, as appropriate) and continuous variables were compared using t-tests.

Associations with "postpartum diagnoses/problems" were tested with sequential logistic regression models (see below) within the generalised estimating equations (GEE) framework to account for repeated measures within registrars. An exchangeable correlation structure was assumed.

Univariate analyses were conducted on each covariate, with covariates with a p-value < 0.20 considered for inclusion in the multiple regression model. All significant covariates were then fitted, and model reduction was assessed. If covariates were no longer significant (p<0.2) in the multivariable model then they were tested for removal. If the removal did not change the resultant model substantively (defined as a change in odds ratio of >10%) then it was removed from the final model. Analysis was carried out using STATA 14.0 and SAS V9.4.

In order to examine different aspects of our research question, three regression models were built.

To examine the question of associations of a registrar encountering a postpartum care problem/diagnosis patient, practice and registrar independent variables were entered in an initial logistic regression model.

To examine the question of how consultation content related to postpartum diagnoses/problems differs from that of other diagnoses/problems, the above variables were entered in a second model along with the "consultation variables".

To examine the question of whether actions arising from postpartum care problems/diagnoses differ from those arising from other problems/diagnoses, all variables

entered in the previous two models were entered in a third model along with “consultation outcome variables”.

The rationale for this sequential approach is that whether a patient presents with a postpartum problem/diagnosis will be influenced by patient, registrar, and practice factors, but evaluation of these influences may be distorted by inclusion in the multivariable model of factors operating once the consultation is progressing. Similarly, consideration of consultation content related to postpartum care may be distorted by the inclusion in this model of actions arising from the consultation.

### **Results:**

The analysis included 2234 participating registrars, 4875 registrar-rounds (response rate was 96.1%), 289,594 consultations, and 453,786 problems/diagnoses. See Table 1 for participant registrar and practice demographics.

Postpartum problems/diagnoses (897) comprised 0.2%, [95% CI: 0.19-0.21] of all problems/diagnoses in 0.3% [95% CI: 0.27-0.31] of all consultations. See Table 2 for the most common postpartum problems/diagnoses. The characteristics associated with postpartum consultations and the univariate and multivariable logistic regression analyses are presented in Tables 3 and 4.

Significant multivariable associations of a problem/diagnosis being postpartum care included registrar’s gender (female) and obtainment of post-graduate O&G qualifications. Patients were significantly more likely to be Aboriginal or Torres Strait Islander or NESB. Consultations containing postpartum care were longer in duration and involved a lower number of problems/diagnoses. Postpartum problems/diagnoses resulted in more learning goals being generated than non-postpartum care problems/diagnoses.

### **Discussion:**

#### Main findings and comparison with previous literature

This was the first study to investigate Australian GP registrar exposure to postpartum care. Although there is no literature to enable direct comparisons with the prevalence of established Australian GPs’ postpartum experience, the prevalence of consultations involving a postpartum problem/diagnosis appears quite modest – 0.2% of all problems/diagnoses seen.

## GP registrar experience in postpartum care

On average, a postpartum problem/diagnosis is seen approximately every 5-6 weeks, which equates to approximately 14 occasions during a registrar's 18 months of core general practice training.

The strong association with registrar female gender is consistent with other findings from the ReCENT study relating to antenatal problems/diagnoses (Pappalardo et al, under review) and menopause-related diagnoses<sup>16</sup>. It is also consistent with the association of postpartum care and female gender in Australian established GPs<sup>17</sup>. Gender concordance is a recognised phenomenon in general practice and we have also previously established high prevalence of gender concordance of GP registrars and their patients<sup>18</sup>. Associations with gender concordance for GP registrars in our previous analysis included patient female gender, and reproductive/contraceptive/genital problems<sup>18</sup>.

The association of postpartum care with Aboriginal or Torres Strait Islander and NESB background was independent of socioeconomic status and rurality. It is possible that these patient groups' over-representation reflects less access to private obstetrics services. This has been demonstrated for South Australian Aboriginal and Torres Strait Islander women<sup>19</sup> and Victorian NESB women<sup>20</sup>. Aboriginal and Torres Strait Islander women are known to have higher rates of serious medical conditions in pregnancy, as well as pregnancy-induced diabetes, hypertension and poor infant outcomes<sup>19</sup>. This medical burden has not been correlated with higher engagement in GP primary care services in the postpartum period<sup>19</sup> and therefore seems an unlikely explanation for the significant findings in our study.

Consultations including a postpartum problem/diagnosis were longer (mean duration of consultations 23 minutes versus 19 minutes) and had less additional problems managed. The duration of maternal postpartum consultations has been described as "longer than expected" by surveyed GPs with greater than one-quarter taking more than 25 minutes<sup>17</sup>. A contributing factor in the literature is opportunistic infant consults, which increase consultation times<sup>17</sup>. However, in our study registrars recorded one patient per encounter. The significant association with a reduced "number of problems" seen per consult, likely points to patients being seen for their initial, routine postpartum/postnatal check-up. The single-problem consult may also reflect the cultural expectation held by Australian GPs that all postpartum women should be seen in general practice whether or not they have physical or emotional problems<sup>17</sup>.

### Strengths/Limitations

## GP registrar experience in postpartum care

Strengths include the large number of consultations, high response rate<sup>21</sup> and comprehensive geographic coverage (five of Australia's six states, and all classifications of rurality from major city to very remote). Thus, the findings have good generalisability to Australian GP vocational training and are likely to have generalisability to other apprenticeship-like practice-based GP training programs<sup>22</sup>.

A limitation is that, as the analyses are cross-sectional, association only (not causality) can be inferred. A further limitation is that the postpartum interval (time from delivery) cannot be ascertained from our data. Registrars' exposure could not be characterised as early versus late postpartum exposure.

### Implications for education and future research

As noted, registrars' exposure to postpartum care seems limited. Furthermore, as there are strong associations with some registrar demographics, a conclusion is that some registrars will see considerably less postpartum presentations – notably male registrars (univariate OR for females 3.64), and those without post-graduate O&G qualifications (OR 2.07 for those with qualifications). Such O&G qualifications are not a pre-requisite for GP training and are only held by 7.3% of registrars in our study. This finding may suggest practice-level facilitation of GP registrars with an existing interest in women's health being preferentially scheduled patients who fit their existing interests/expertise. There was also an association of exposure with later training terms, again suggesting that registrars' experience may influence postpartum consultation scheduling.

Registrars were more likely to generate learning goals from the postpartum problem/diagnosis. However, there was no association with in-consultation information or assistance-seeking. This may suggest that although "check-up" consultations may be formulaic in their approach, and not require real-time resources, registrars still perceive learning needs and attribute educational value to these encounters. This is probably due to the overall low exposure to postpartum problems/diagnoses.

These findings (of overall prevalence, registrar demographic associations, and learning needs), taken together, have implications for GP training. They suggest likely deficits in training experience in postpartum care for many registrars (including male registrars) and that mechanisms at the practice level to facilitate postpartum care experience across the entire population of registrars is required.

## GP registrar experience in postpartum care

Further research could assess GP registrar attitudes towards postpartum care, patient acceptability of male registrars, and the overall impact of prior learning and gender on postpartum care.

### Conclusion

This was the first study to describe the exposure of Australian GP registrars to postpartum care. We established what is likely an overall low prevalence and that male registrars and those without pre-existing O&G expertise may have particularly limited experience before proceeding to independent post Fellowship practice. These findings should inform future learning interventions to increase opportunities in GP registrar training.

### References:

1. The Royal Australian College of General Practitioners. Curriculum for Australian General Practice 2016 – CS16 Core skills unit. East Melbourne, Vic: RACGP, 2016.
2. Senate Community Affairs References Committee, 1999, Rocking the cradle: A report into childbirth procedures, Canberra, ACT. ISBN 0 642 71042 2, ([https://www.aph.gov.au/Parliamentary\\_Business/Committees/Senate/Community\\_Affairs/Completed\\_inquiries/1999-02/child\\_birth/report/index](https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Community_Affairs/Completed_inquiries/1999-02/child_birth/report/index)).
3. Brodribb, W., Zadoroznyj M., Dane A., The views of mothers and GPs about postpartum care in Australian general practice. BMC Fam Practice 2013;14:139.
4. Miller, Y.D., Thompson R., Porter J., Prosser, S.J. Findings from the Having a Baby in Queensland Survey, 2010. Queensland Centre for Mothers and Babies, The University of Queensland. 2011.
5. Thomson, J.S., Anderson, K.J., Mara, P.R., Stevenson, A.D. Supervision--growing and building a sustainable general practice supervisor system. Med J Aust 2011; 194(11), S101-4.
6. The Royal Australian College of General Practitioners. Standards for general practice training. 2nd edn. East Melbourne, Vic: RACGP, 2017.
7. World Health Organisation, 2013. WHO recommendations on Postnatal care of the mother and newborn. Geneva, Switzerland.
8. Piejko, E., The postpartum visit: Why wait 6 weeks, Aust Fam Physician, 2006; 35(9): 674-678.

9. Britt, H., Miller, G.C, Henderson, J., et al. General practice activity in Australia 2014–15. General practice series no. 38. Sydney: Sydney University Press. 2015. Available at <[purl.library.usyd.edu.au/sup/9781743324523](http://purl.library.usyd.edu.au/sup/9781743324523)>
10. Australian College of Rural and Remote Medicine. Primary Curriculum. 4th edn. Brisbane, Qld. Version 02/2013. ACRRM, 2013.
11. Haran, C., van Driel, M, Mitchell, B.L, Brodribb, W.E. Clinical guidelines for postpartum women and infants in primary care—a systematic review. *BMC Pregnancy and Childbirth* 2014; 14:51.
12. Morgan, S., Magin, P.J., Henderson, K.M., et al. Study protocol: The registrar clinical encounters in training (ReCEnT) study. *BMC Fam Practice*, 2012; 13:50.
13. Magin P., Morgan S., Henderson, K. The Registrars' Clinical Encounters in Training (ReCEnT) project: educational and research aspects of documenting GP trainees' clinical experience. *Aust J General Practice*. 2015; 44(9): 681-684.
14. Classification Committee of the World Organization of Family Doctors. ICPC-2: International Classification of Primary Care. 2nd ed. Oxford: Oxford University Press; 1998.
15. Brodribb, W.E., Zadoroznyi, M, Dane, A.C. Evaluating the implementation of the Universal Postnatal Contact Services in Queensland: Experiences of Health Care Providers and Mothers. Brisbane, Australia: Queensland Centre for Mothers & Babies. 2012.
16. De Giovanni J.M., Tapley, A., Druce, P. GP registrar consultations addressing menopause-related symptoms: a cross-sectional analysis. *The Journal of The North American Menopause Society*, 2018; 25(5):563-570.
17. Brodribb, W.E, Michell B.L., van Driel, M.L. Postpartum consultations in Australian general practice, *Aust J Primary Health*, 2016; 22:128-132
18. Thomson, A., Morgan, S., Tapley, A., et al. Prevalence and associations of gender concordance in general practice consultations: a cross sectional analysis, *European Journal for Person Centered Healthcare*, 2015; 3(4):470-477
19. Yelland, J., Weetra, D., Stuart-Butler, D., et al. Primary health care for Aboriginal women and children in the year after birth: findings from a population-based study in South Australia, *Aust NZ J Public Health*, 2016; 40:418-23.
20. Yelland, J., Riggs, E., Small, R., et al. Maternity services are not meeting the needs of immigrant women of non-English speaking background: Results of two consecutive Australian population based studies. *Midwifery*, 2015; 31:664-670.

21. Bonevski, B., Magin, P., Horton, G., et al. Response rates in GP surveys – trialling two recruitment strategies. *Aust Fam Physician*; 2011; 40: 427–30.
22. Hays, R. B., Morgan, S. Australian and overseas models of general practice training. *Med J Aust* 2011; 194(11), S63-4.

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**Appendix:**

**Appendix 1. List of ICPC-2 Codes Included**

|            |  |                                    |          |          |   |  |  |        |
|------------|--|------------------------------------|----------|----------|---|--|--|--------|
| <b>W14</b> | <b>CONTRACEPTION FEMALE, OTHER</b>         |                                    | <b>1</b> | <b>W</b> |   |  |  |        |
| 7854       | Contraception;postpartum                   | postpartum contraception           | W14      | 20       | A |  |  |        |
| <b>W17</b> | <b>POSTPARTUM BLEEDING</b>                 |                                    | <b>1</b> | <b>W</b> |   |  |  |        |
| 4259       | Bleeding;postpartum                        | postpartum bleeding                | W17      | 1        | A |  |  |        |
| 4786       | Haemorrhage;postpartum                     | postpartum haemorrhage             | W17      | 2        | A |  |  |        |
| 4788       | Haemorrhage;puerperal                      | puerperal haemorrhage              | W17      | 3        | A |  |  |        |
| <b>W18</b> | <b>POSTPARTUM SYMPTOM/COMPLAINT, OTHER</b> |                                    | <b>1</b> | <b>W</b> |   |  |  |        |
| 490        | Pain;postpartum                            | postpartum pain                    | W18      | 1        | A |  |  |        |
| 2195       | Sympt/complaint;postpartum                 | postpartum symptom or<br>complaint | W18      | 2        | A |  |  |        |
| 2202       | Complaint(s);postpartum                    | n/a                                | W18      | 3        | I |  |  | W18002 |
| <b>W19</b> | <b>BREAST/LACTATION SYMPTOM/COMPLAINT</b>  |                                    | <b>1</b> | <b>W</b> |   |  |  |        |
| 3755       | Unable (to);breastfeed                     | unable to breastfeed               | W19      | 1        | A |  |  |        |
| 4269       | Blocked;milk duct                          | blocked milk duct                  | W19      | 2        | A |  |  |        |
| 439        | Pain;breast;lactating                      | breast pain while lactating        | W19      | 3        | A |  |  |        |

|            |   |                           |          |          |   |        |
|------------|---|---------------------------|----------|----------|---|--------|
| 1382       | Problem;breast feeding                    | breast feeding problem    | W19      | 4        | A |        |
|            |   | symptom or complaint of   |          |          |   |        |
| 2070       | Sympt/complaint;lactation                 | lactation                 | W19      | 5        | A |        |
| 2092       | Complaint(s);lactation                    | n/a                       | W19      | 6        | I | W19005 |
| 5519       | Weaning                                   | weaning                   | W19      | 7        | A |        |
| 5521       | Galactorrhoea;lactation                   | galactorrhoea (lactation) | W19      | 8        | A |        |
|            |   | requests suppression of   |          |          |   |        |
| 5522       | Lactation suppression;requests            | lactation                 | W19      | 9        | A |        |
| 5523       | Disorder;lactation                        | lactation disorder        | W19      | 10       | A |        |
| 5649       | Lactation;suppressed                      | suppressed lactation      | W19      | 11       | A |        |
| 5824       | Lactation;failed                          | failed lactation          | W19      | 12       | A |        |
| <b>W20</b> | <b>Deleted, included with W19</b>         |                           |          |          |   |        |
| 628        | Problem;postpartum;breast                 | n/a                       | W20      | 1        | I | W19013 |
| 1534       | Engorged breast                           | n/a                       | W20      | 2        | I | W19014 |
| 1533       | Engorged breast;postpartum                | n/a                       | W20      | 3        | I | W19015 |
|            | <b>MEDICAL EXAMIN/HEALTH EVAL PARTIAL</b> |                           |          |          |   |        |
| <b>W31</b> | <b>PREGNANCY</b>                          |                           | <b>2</b> | <b>W</b> |   |        |
| 4664       | Exam;postnatal                            | postnatal examination     | W31      | 1        | A |        |
| 579        | Check up;postnatal                        | postnatal check-up        | W31      | 2        | A |        |
| 594        | Postnatal care                            | postnatal care            | W31      | 3        | A |        |
| 1993       | Exam;postpartum                           | postpartum examination    | W31      | 5        | A |        |

|            |   |                                |          |          |   |        |
|------------|---|--------------------------------|----------|----------|---|--------|
| 5991       | Check up;postpartum                         | postpartum check-up            | W31      | 8        | A |        |
|            | <b>REPAIR/FIX-SUTURE/CAST/PROSTH DEVICE</b> |                                |          |          |   |        |
| <b>W54</b> | <b>PREGNANCY</b>                            |                                | <b>3</b> | <b>W</b> |   |        |
| 841        | Repair;episiotomy                           | episiotomy repair              | W54      | 10       | A |        |
| 3344       | Repair;reproductive                         | repair (reproductive system)   | W54      | 13       | A |        |
| 3371       | Fixate;reproductive                         | fixate (reproductive system)   | W54      | 14       | A |        |
| 5267       | Repair;postpartum;perineal                  | postpartum perineal repair     | W54      | 15       | A |        |
| 5351       | Repair;postpartum;vaginal                   | postpartum vaginal repair      | W54      | 16       | A |        |
| 5352       | Repair;postpartum;anal                      | postpartum anal repair         | W54      | 17       | A |        |
| 5353       | Repair;tear;first degree                    | repair of first degree tear    | W54      | 18       | A |        |
| 5354       | Repair;tear;second degree                   | repair of second degree tear   | W54      | 19       | A |        |
| 5355       | Repair;tear;third degree                    | repair of third degree tear    | W54      | 20       | A |        |
| 9626       | Repair;tear;fourth degree                   | repair of fourth degree tear   | W54      | 22       | A |        |
|            | <b>THERAPEUTIC COUNSELLING/LISTENING</b>    |                                |          |          |   |        |
| <b>W58</b> | <b>PREGNANCY</b>                            |                                | <b>3</b> | <b>W</b> |   |        |
| 5406       | Counselling;genetic;postnatal               | n/a                            | W58      | 10       | I | A98002 |
|            | <b>REFERRAL TO OTHER PRIMARY HEALTH</b>     |                                |          |          |   |        |
| <b>W66</b> | <b>PROVIDER PREGNANC</b>                    |                                | <b>6</b> | <b>W</b> |   |        |
| 9732       | Referral;lactation support                  | referral for lactation support | W66      | 5        | A |        |
| <b>W68</b> | <b>OTHER REFERRAL NEC PREGNANCY</b>         |                                | <b>6</b> | <b>W</b> |   |        |
| 9711       | Referral;postnatal support                  | referral for postnatal         | W68      | 4        | A |        |

|            |  |                              |           |          |
|------------|--|------------------------------|-----------|----------|
|            |  | support                      |           |          |
| <b>W70</b> | <b>PUERPERAL INFECTION/SEPSIS</b>                    |                              | <b>8</b>  | <b>W</b> |
| 677        | Sepsis;puerperal                                     | puerperal sepsis             | W70       | 1 A      |
| 5789       | Endometritis;puerperal                               | puerperal endometritis       | W70       | 2 A      |
| 6334       | Infection;puerperal                                  | puerperal infection          | W70       | 3 A      |
| <b>W90</b> | <b>UNCOMPLICATED LABOUR/DELIVERY, LIVEBIRTH</b>      |                              | <b>12</b> | <b>W</b> |
|            |  | normal vaginal delivery of a |           |          |
| 4055       | Delivery;normal vag;liveborn                         | liveborn                     | W90       | 1 A      |
| <b>W91</b> | <b>UNCOMPLICATED LABOUR/DELIVERY,<br/>STILLBIRTH</b> |                              | <b>12</b> | <b>W</b> |
|            |  | normal vaginal delivery of a |           |          |
| 279        | Delivery;normal vag;stillbirth                       | stillborn                    | W91       | 2 A      |
|            |  | traumatic delivery of        |           |          |
| 4067       | Delivery;traumatic;liveborn(s)                       | liveborn(s)                  | W92       | 1 A      |
| <b>W92</b> | <b>COMPLICATED LABOUR/DELIVERY, LIVEBIRTH</b>        |                              | <b>12</b> | <b>W</b> |
|            |  | traumatic delivery of        |           |          |
| 4067       | Delivery;traumatic;liveborn(s)                       | liveborn(s)                  | W92       | 1 A      |
| 9416       | Tear;obstetric;first degree                          | first degree obstetric tear  | W92       | 31 A     |
| 9417       | Tear;obstetric;second degree                         | second degree obstetric tear | W92       | 32 A     |
| 9418       | Tear;obstetric;third degree                          | third degree obstetric tear  | W92       | 33 A     |
| 9625       | Tear;obstetric;fourth degree                         | fourth degree obstetric tear | W92       | 34 A     |

|            |   |                                |           |          |   |        |
|------------|---|--------------------------------|-----------|----------|---|--------|
| 2763       | Retained placenta;liveborn(s)                   | retained placenta (liveborn)   | W92       | 22       | A |        |
| 90         | Laceration;perineum (obstet)                    | obstetric perineal laceration  | W92       | 8        | A |        |
| <b>W93</b> | <b>COMPLICATED LABOUR/DELIVERY, STILLBIRTH</b>  |                                | <b>12</b> | <b>W</b> |   |        |
| 2760       | Retained placenta;stillbirth                    | retained placenta (stillbirth) | W93       | 12       | A |        |
| 67         | Mastitis;puerperalis                            | mastitis puerperalis           | W94       | 1        | A |        |
| 6343       | Abscess;breast;puerperal                        | puerperal breast abscess       | W94       | 2        | A |        |
| <b>W94</b> | <b>PUERPERAL MASTITIS</b>                       |                                | <b>12</b> | <b>W</b> |   |        |
| 67         | Mastitis;puerperalis                            | mastitis puerperalis           | W94       | 1        | A |        |
| 6343       | Abscess;breast;puerperal                        | puerperal breast abscess       | W94       | 2        | A |        |
|            | <b>BREAST DISORDER IN PREGNANCY/PUERPERIUM,</b> |                                |           |          |   |        |
| <b>W95</b> | <b>OTHER</b>                                    |                                | <b>12</b> | <b>W</b> |   |        |
| 3999       | Cracked;nipple;puerperal                        | puerperal cracked nipple       | W95       | 1        | A |        |
| 1495       | Disorder;postpartum;breast                      | postpartum breast disorder     | W95       | 5        | A |        |
| <b>W96</b> | <b>COMPLICATIONS OF PUERPERIUM, OTHER</b>       |                                | <b>12</b> | <b>W</b> |   |        |
| 1434       | Complication;postnatal                          | postnatal complication         | W96       | 1        | A |        |
| <b>P71</b> | <b>ORGANIC PSYCHOSIS, OTHER</b>                 |                                | <b>12</b> | <b>P</b> |   |        |
| 701        | Psychosis;puerperal                             | n/a                            | P71       | 3        | I | P98008 |
| 678        | Psychosis;postpartum                            | n/a                            | P71       | 4        | I | P98009 |
| <b>P76</b> | <b>DEPRESSIVE DISORDER</b>                      |                                | <b>12</b> | <b>P</b> |   |        |
| 4053       | Depression;postnatal                            | postnatal depression           | P76       | 2        | A |        |
| 699        | Depression;puerperal                            | puerperal depression           | P76       | 9        | A |        |

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|            |                             |                      |           |          |   |
|------------|-----------------------------|----------------------|-----------|----------|---|
| <b>P98</b> | <b>PSYCHOSIS NOS, OTHER</b> |                      | <b>12</b> | <b>P</b> |   |
| 6602       | Psychosis;puerperal         | puerperal psychosis  | P98       | 8        | A |
| 6603       | Psychosis;postpartum        | postpartum psychosis | P98       | 9        | A |

**Postpartum Appendix**

**Appendix 1. List of ICPC-2 Codes Included**

|            |  |                             |          |          |   |        |
|------------|--|-----------------------------|----------|----------|---|--------|
| <b>W14</b> | <b>CONTRACEPTION FEMALE, OTHER</b>         |                             | <b>1</b> | <b>W</b> |   |        |
| 7854       | Contraception;postpartum                   | postpartum contraception    | W14      | 20       | A |        |
| <b>W17</b> | <b>POSTPARTUM BLEEDING</b>                 |                             | <b>1</b> | <b>W</b> |   |        |
| 4259       | Bleeding;postpartum                        | postpartum bleeding         | W17      | 1        | A |        |
| 4786       | Haemorrhage;postpartum                     | postpartum haemorrhage      | W17      | 2        | A |        |
| 4788       | Haemorrhage;puerperal                      | puerperal haemorrhage       | W17      | 3        | A |        |
| <b>W18</b> | <b>POSTPARTUM SYMPTOM/COMPLAINT, OTHER</b> |                             | <b>1</b> | <b>W</b> |   |        |
| 490        | Pain;postpartum                            | postpartum pain             | W18      | 1        | A |        |
|            |  | postpartum symptom or       |          |          |   |        |
| 2195       | Sympt/complaint;postpartum                 | complaint                   | W18      | 2        | A |        |
| 2202       | Complaint(s);postpartum                    | n/a                         | W18      | 3        | I | W18002 |
| <b>W19</b> | <b>BREAST/LACTATION SYMPTOM/COMPLAINT</b>  |                             | <b>1</b> | <b>W</b> |   |        |
| 3755       | Unable (to);breastfeed                     | unable to breastfeed        | W19      | 1        | A |        |
| 4269       | Blocked;milk duct                          | blocked milk duct           | W19      | 2        | A |        |
| 439        | Pain;breast;lactating                      | breast pain while lactating | W19      | 3        | A |        |
| 1382       | Problem;breast feeding                     | breast feeding problem      | W19      | 4        | A |        |
| 2070       | Sympt/complaint;lactation                  | symptom or complaint of     | W19      | 5        | A |        |

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|            |   |                           |          |          |        |
|------------|---|---------------------------|----------|----------|--------|
|            |   | lactation                 |          |          |        |
| 2092       | Complaint(s);lactation                      | n/a                       | W19      | 6 I      | W19005 |
| 5519       | Weaning                                     | weaning                   | W19      | 7 A      |        |
| 5521       | Galactorrhoea;lactation                     | galactorrhoea (lactation) | W19      | 8 A      |        |
|            |   | requests suppression of   |          |          |        |
| 5522       | Lactation suppression;requests              | lactation                 | W19      | 9 A      |        |
| 5523       | Disorder;lactation                          | lactation disorder        | W19      | 10 A     |        |
| 5649       | Lactation;suppressed                        | suppressed lactation      | W19      | 11 A     |        |
| 5824       | Lactation;failed                            | failed lactation          | W19      | 12 A     |        |
| <b>W20</b> | <b>Deleted, included with W19</b>           |                           |          |          |        |
| 628        | Problem;postpartum;breast                   | n/a                       | W20      | 1 I      | W19013 |
| 1534       | Engorged breast                             | n/a                       | W20      | 2 I      | W19014 |
| 1533       | Engorged breast;postpartum                  | n/a                       | W20      | 3 I      | W19015 |
|            | <b>MEDICAL EXAMIN/HEALTH EVAL PARTIAL</b>   |                           |          |          |        |
| <b>W31</b> | <b>PREGNANCY</b>                            |                           | <b>2</b> | <b>W</b> |        |
| 4664       | Exam;postnatal                              | postnatal examination     | W31      | 1 A      |        |
| 579        | Check up;postnatal                          | postnatal check-up        | W31      | 2 A      |        |
| 594        | Postnatal care                              | postnatal care            | W31      | 3 A      |        |
| 1993       | Exam;postpartum                             | postpartum examination    | W31      | 5 A      |        |
| 5991       | Check up;postpartum                         | postpartum check-up       | W31      | 8 A      |        |
| <b>W54</b> | <b>REPAIR/FIX-SUTURE/CAST/PROSTH DEVICE</b> |                           | <b>3</b> | <b>W</b> |        |

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| <b>PREGNANCY</b>                         |                                     |                                |          |          |          |
|--|-------------------------------------|--------------------------------|----------|----------|----------|
| 841                                      | Repair;episiotomy                   | episiotomy repair              | W54      | 10       | A        |
| 3344                                     | Repair;reproductive                 | repair (reproductive system)   | W54      | 13       | A        |
| 3371                                     | Fixate;reproductive                 | fixate (reproductive system)   | W54      | 14       | A        |
| 5267                                     | Repair;postpartum;perineal          | postpartum perineal repair     | W54      | 15       | A        |
| 5351                                     | Repair;postpartum;vaginal           | postpartum vaginal repair      | W54      | 16       | A        |
| 5352                                     | Repair;postpartum;anal              | postpartum anal repair         | W54      | 17       | A        |
| 5353                                     | Repair;tear;first degree            | repair of first degree tear    | W54      | 18       | A        |
| 5354                                     | Repair;tear;second degree           | repair of second degree tear   | W54      | 19       | A        |
| 5355                                     | Repair;tear;third degree            | repair of third degree tear    | W54      | 20       | A        |
| 9626                                     | Repair;tear;fourth degree           | repair of fourth degree tear   | W54      | 22       | A        |
| <b>THERAPEUTIC COUNSELLING/LISTENING</b> |                                     |                                |          |          |          |
| <b>W58</b>                               | <b>PREGNANCY</b>                    |                                | <b>3</b> | <b>W</b> |          |
| 5406                                     | Counselling;genetic;postnatal       | n/a                            | W58      | 10       | I A98002 |
| <b>REFERRAL TO OTHER PRIMARY HEALTH</b>  |                                     |                                |          |          |          |
| <b>W66</b>                               | <b>PROVIDER PREGNANC</b>            |                                | <b>6</b> | <b>W</b> |          |
| 9732                                     | Referral;lactation support          | referral for lactation support | W66      | 5        | A        |
| <b>W68</b>                               | <b>OTHER REFERRAL NEC PREGNANCY</b> |                                | <b>6</b> | <b>W</b> |          |
| 9711                                     | Referral;postnatal support          | referral for postnatal support | W68      | 4        | A        |
| <b>W70</b>                               | <b>PUERPERAL INFECTION/SEPSIS</b>   |                                | <b>8</b> | <b>W</b> |          |

GP registrar experience in postpartum care

|            |  |                               |           |          |   |
|------------|--|-------------------------------|-----------|----------|---|
| 677        | Sepsis;puerperal                                 | puerperal sepsis              | W70       | 1        | A |
| 5789       | Endometritis;puerperal                           | puerperal endometritis        | W70       | 2        | A |
| 6334       | Infection;puerperal                              | puerperal infection           | W70       | 3        | A |
| <b>W90</b> | <b>UNCOMPLICATED LABOUR/DELIVERY, LIVEBIRTH</b>  |                               | <b>12</b> | <b>W</b> |   |
|            |  | normal vaginal delivery of a  |           |          |   |
| 4055       | Delivery;normal vag;liveborn                     | liveborn                      | W90       | 1        | A |
| <b>W91</b> | <b>UNCOMPLICATED LABOUR/DELIVERY, STILLBIRTH</b> |                               | <b>12</b> | <b>W</b> |   |
|            |  | normal vaginal delivery of a  |           |          |   |
| 279        | Delivery;normal vag;stillbirth                   | stillborn                     | W91       | 2        | A |
|            |  | traumatic delivery of         |           |          |   |
| 4067       | Delivery;traumatic;liveborn(s)                   | liveborn(s)                   | W92       | 1        | A |
| <b>W92</b> | <b>COMPLICATED LABOUR/DELIVERY, LIVEBIRTH</b>    |                               | <b>12</b> | <b>W</b> |   |
|            |  | traumatic delivery of         |           |          |   |
| 4067       | Delivery;traumatic;liveborn(s)                   | liveborn(s)                   | W92       | 1        | A |
| 9416       | Tear;obstetric;first degree                      | first degree obstetric tear   | W92       | 31       | A |
| 9417       | Tear;obstetric;second degree                     | second degree obstetric tear  | W92       | 32       | A |
| 9418       | Tear;obstetric;third degree                      | third degree obstetric tear   | W92       | 33       | A |
| 9625       | Tear;obstetric;fourth degree                     | fourth degree obstetric tear  | W92       | 34       | A |
| 2763       | Retained placenta;liveborn(s)                    | retained placenta (liveborn)  | W92       | 22       | A |
| 90         | Laceration;perineum (obstet)                     | obstetric perineal laceration | W92       | 8        | A |

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|            |   |                                |           |          |   |        |
|------------|---|--------------------------------|-----------|----------|---|--------|
| <b>W93</b> | <b>COMPLICATED LABOUR/DELIVERY, STILLBIRTH</b>  |                                | <b>12</b> | <b>W</b> |   |        |
| 2760       | Retained placenta;stillbirth                    | retained placenta (stillbirth) | W93       | 12       | A |        |
| 67         | Mastitis;puerperalis                            | mastitis puerperalis           | W94       | 1        | A |        |
| 6343       | Abscess;breast;puerperal                        | puerperal breast abscess       | W94       | 2        | A |        |
| <b>W94</b> | <b>PUERPERAL MASTITIS</b>                       |                                | <b>12</b> | <b>W</b> |   |        |
| 67         | Mastitis;puerperalis                            | mastitis puerperalis           | W94       | 1        | A |        |
| 6343       | Abscess;breast;puerperal                        | puerperal breast abscess       | W94       | 2        | A |        |
|            | <b>BREAST DISORDER IN PREGNANCY/PUERPERIUM,</b> |                                |           |          |   |        |
| <b>W95</b> | <b>OTHER</b>                                    |                                | <b>12</b> | <b>W</b> |   |        |
| 3999       | Cracked;nipple;puerperal                        | puerperal cracked nipple       | W95       | 1        | A |        |
| 1495       | Disorder;postpartum;breast                      | postpartum breast disorder     | W95       | 5        | A |        |
| <b>W96</b> | <b>COMPLICATIONS OF PUERPERIUM, OTHER</b>       |                                | <b>12</b> | <b>W</b> |   |        |
| 1434       | Complication;postnatal                          | postnatal complication         | W96       | 1        | A |        |
| <b>P71</b> | <b>ORGANIC PSYCHOSIS, OTHER</b>                 |                                | <b>12</b> | <b>P</b> |   |        |
| 701        | Psychosis;puerperal                             | n/a                            | P71       | 3        | I | P98008 |
| 678        | Psychosis;postpartum                            | n/a                            | P71       | 4        | I | P98009 |
| <b>P76</b> | <b>DEPRESSIVE DISORDER</b>                      |                                | <b>12</b> | <b>P</b> |   |        |
| 4053       | Depression;postnatal                            | postnatal depression           | P76       | 2        | A |        |
| 699        | Depression;puerperal                            | puerperal depression           | P76       | 9        | A |        |
| <b>P98</b> | <b>PSYCHOSIS NOS, OTHER</b>                     |                                | <b>12</b> | <b>P</b> |   |        |
| 6602       | Psychosis;puerperal                             | puerperal psychosis            | P98       | 8        | A |        |

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**Tables****i. Table 1: Demographics of participating registrars and their practices**

| <b>Registrar characteristics (n=2234)</b>                      |                | <b>n (%)</b>   |
|--|----------------|----------------|
| Registrar gender   | Male           | 839 (37.6)     |
|  | Female         | 1395 (62.4)    |
| Qualified as doctor in Australia                               | Yes            | 1813 (81.6)    |
|  | No             | 408 (18.4)     |
| Enrolled College   | RACGP          | 2079 (97)      |
|  | ACRRM          | 34 (2)         |
|  | Both           | 25 (1)         |
| Have post-graduate qualification in obstetrics and gynaecology | Yes            | 162 (7.3)      |
| <b>Registrar-round characteristics (n=4875)</b>                |                |                |
| Registrar works full-time                                      | Yes            | 1059 (22.4)    |
|  | No             | 3665 (77.6)    |
| Age (years)  | Mean $\pm$ SD  | 32.4 $\pm$ 6.2 |
| Term   | Term 1         | 2108 (43.2)    |
|  | Term 2         | 1545 (31.7)    |
|  | Term 3         | 1222 (25.1)    |
| Registrar worked at practice previously                        | Yes            | 1072 (22.3)    |
|  | No             | 3739 (77.7)    |
| Practice routinely bulk bills                                  | Yes            | 1214 (25.2)    |
|  | No             | 3604 (74.8)    |
| No. GPs working at the practice                                | 1-4            | 1762 (37.4))   |
|  | 5-10+          | 2950 (62.6)    |
| Rurality   | Major city (1) | 2958 (60.8)    |

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| Registrar characteristics (n=2234) | n (%)                                  |
|------------------------------------|--|
|                                    | Inner regional (2) 1232 (25.3)         |
|                                    | Outer regional remote (3-5) 679 (14.0) |
| SEIFA <sup>†</sup> index           | Mean ± SD 5.5 ± 2.8                    |

<sup>†</sup>Socioeconomic Index for Area Index of Relative Disadvantage

**Postpartum Tables****ii. Table 2: Frequency of most common postpartum problems/diagnoses**

| <b>Postpartum Problem (n=897)</b> | <b>Frequency</b> | <b>Percent</b> |
|-----------------------------------|------------------|----------------|
| Routine Check up                  | 456              | 50.83          |
| Mental health                     | 199              | 22.18          |
| Breast problem/Lactation          | 161              | 17.95          |
| Placental/Bleeding                | 31               | 3.45           |
| Postpartum symptom/problem        | 18               | 2.01           |
| Contraception                     | 11               | 1.23           |
| Perineal trauma                   | 11               | 1.23           |

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**Postpartum Tables****iii. Table 3: Factors associated with postpartum problems/diagnoses – univariate analysis**

| Factor group      | Variable                             | Class            | No               | Yes          | p         |        |
|-------------------|--------------------------------------|------------------|------------------|--------------|-----------|--------|
| Patient factors   | Patient age group                    | 0-19             | 85607 (19%)      | 35 (4%)      | <0.001    |        |
|                   |                                      | 20-29            | 63388 (14%)      | 358 (41%)    |           |        |
|                   |                                      | 30-39            | 59792 (13%)      | 438 (50%)    |           |        |
|                   |                                      | 40+              | 237062 (53%)     | 42 (5%)      |           |        |
|                   | Aboriginal or Torres Strait Islander | No               | 416368 (98%)     | 810 (96%)    | <0.001    |        |
|                   |                                      | Yes              | 7245 (2%)        | 32 (4%)      |           |        |
|                   | NESB <sup>‡</sup>                    | No               | 390888 (92%)     | 752 (89%)    | 0.0049    |        |
|                   |                                      | Yes              | 35770 (8%)       | 94 (11%)     |           |        |
|                   | Patient/practice status              | Existing patient | Existing patient | 186531 (42%) | 393 (45%) | <0.001 |
|                   |                                      |                  | New to registrar | 223808 (51%) | 380 (43%) |        |
| New to practice   |                                      |                  | 32271 (7%)       | 105 (12%)    |           |        |
| Registrar factors | Registrar gender                     | Male             | 161495 (36%)     | 120 (13%)    | <0.001    |        |
|                   |                                      | Female           | 291394 (64%)     | 777 (87%)    |           |        |
|                   | Registrar FT or PT                   | Part-time        | 100619 (23%)     | 251 (29%)    | 0.0011    |        |
|                   |                                      | Full-time        | 338781 (77%)     | 619 (71%)    |           |        |
|                   | Term                                 | Term 1           | 199278 (44%)     | 332 (37%)    | 0.0011    |        |
|                   |                                      | Term 2           | 141422 (31%)     | 316 (35%)    |           |        |

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| Factor group     | Variable  | Class                               | No           | Yes       | p      |
|------------------|---|-------------------------------------|--------------|-----------|--------|
| Practice factors |   | Term 3                              | 112189 (25%) | 249 (28%) |        |
|                  | Worked at practice previously                       | No                                  | 345994 (77%) | 643 (73%) | 0.0041 |
|                  |   | Yes                                 | 101029 (23%) | 241 (27%) |        |
|                  | Qualified as doctor in Australia                    | No                                  | 76788 (17%)  | 129 (14%) | 0.11   |
|                  |   | Yes                                 | 373721 (83%) | 763 (86%) |        |
|                  | Post-graduate Obstetric/ gynaecology qualifications | No                                  | 417987 (92%) | 765 (85%) | <0.001 |
|                  |   | Yes                                 | 34902 (8%)   | 132 (15%) |        |
|                  | Registrar age                                       | mean (SD)                           | 32 (6)       | 32 (6)    | 0.11   |
|                  | Practice size                                       | Small (<6 GPs)                      | 166296 (38%) | 295 (34%) | 0.08   |
|                  |   | Large (6+ GPs)                      | 271986 (62%) | 564 (66%) |        |
|                  | Practice routinely bulk bills                       | No                                  | 335594 (75%) | 660 (74%) | 0.58   |
|                  |   | Yes                                 | 112414 (25%) | 226 (26%) |        |
|                  | Rurality  | Major city                          | 273175 (60%) | 544 (61%) | 0.04   |
|                  |   | Inner regional                      | 114794 (25%) | 251 (28%) |        |
|                  |   | Outer regional/ remote/ very remote | 64470 (14%)  | 102 (11%) |        |
|                  | Region  | Region 1                            | 112807 (25%) | 252 (28%) | 0.15   |
|                  | Region 2  | 36129 (8%)                          | 67 (7%)      |           |        |
|                  | Region 3  | 55136 (12%)                         | 127 (14%)    |           |        |
|                  | Region 4  | 168656 (37%)                        | 314 (35%)    |           |        |

GP registrar experience in postpartum care

| Factor group                 | Variable                        | Class                  | No           | Yes          | p         |        |
|------------------------------|---------------------------------|------------------------|--------------|--------------|-----------|--------|
| Consultation factors         |                                 | Region 5               | 10390 (2%)   | 22 (2%)      |           |        |
|                              |                                 | Region 6               | 55377 (12%)  | 85 (9%)      |           |        |
|                              |                                 | Region 7               | 14394 (3%)   | 30 (3%)      |           |        |
|                              |                                 | SEIFA† index decile    | mean (SD)    | 5 (3)        | 5 (3)     | 0.69   |
|                              |                                 | New problem seen       | No           | 183793 (44%) | 222 (26%) | <0.001 |
|                              |                                 |                        | Yes          | 230592 (56%) | 626 (74%) |        |
|                              |                                 | Sought help any source | No           | 375496 (83%) | 729 (81%) | 0.16   |
|                              |                                 | Yes                    | 77393 (17%)  | 168 (19%)    |           |        |
| Consultation outcome factors | Consultation duration (minutes) | mean (SD)              | 19 (10)      | 23 (10)      | <0.001    |        |
|                              | Number of problems              | mean (SD)              | 2 (1)        | 2 (1)        | <0.001    |        |
|                              | Imaging ordered                 | No                     | 418097 (92%) | 873 (97%)    | <0.001    |        |
|                              |                                 | Yes                    | 34792 (8%)   | 24 (3%)      |           |        |
|                              | Pathology ordered               | No                     | 375672 (83%) | 768 (86%)    | 0.02      |        |
|                              |                                 | Yes                    | 77217 (17%)  | 129 (14%)    |           |        |
|                              | Learning goals generated        | No                     | 352759 (82%) | 629 (74%)    | <0.001    |        |
|                              |                                 | Yes                    | 75438 (18%)  | 223 (26%)    |           |        |
|                              | Follow-up ordered               | No                     | 254562 (56%) | 469 (52%)    | 0.02      |        |
|                              |                                 | Yes                    | 198327 (44%) | 428 (48%)    |           |        |
| Referral ordered             |                                 | No                     | 396932 (88%) | 775 (86%)    | 0.34      |        |
|                              |                                 | Yes                    | 55957 (12%)  | 122 (14%)    |           |        |

GP registrar experience in postpartum care

| Factor group | Variable              | Class | No           | Yes       | p      |
|--------------|-----------------------|-------|--------------|-----------|--------|
|              | Medication prescribed | No    | 255516 (56%) | 613 (68%) | <0.001 |
|              |                       | Yes   | 197373 (44%) | 284 (32%) |        |

†Socioeconomic Index for Area Index of Relative Disadvantage

‡ Non-English Speaking Background

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**Postpartum Tables****iv. Table 4: Factors associated with postpartum problems/diagnoses – multivariable analysis**

| Model            | Factor group      | Variable                             | Class             | Univariate        |                   | Adjusted          |        |
|------------------|-------------------|--------------------------------------|-------------------|-------------------|-------------------|-------------------|--------|
|                  |                   |                                      |                   | OR (95% CI)       | p                 | OR (95% CI)       | p      |
| Model i          | Patient factors   | Aboriginal or Torres Strait Islander | Yes               | 2.28 (1.50, 3.47) | <0.001            | 1.97 (1.27, 3.05) | 0.002  |
|                  |                   | NESB†                                | Yes               | 1.41 (1.11, 1.80) | 0.005             | 1.30 (1.01, 1.68) | 0.04   |
|                  |                   | Patient age group                    | 0-19              | 0.07 (0.05, 0.10) | <0.001            | 0.07 (0.05, 0.10) | <0.001 |
|                  |                   | Referent: 20-29                      | 30-39             | 1.29 (1.11, 1.51) | <0.001            | 1.32 (1.12, 1.55) | <0.001 |
|                  |                   |                                      | 40+               | 0.03 (0.02, 0.04) | <0.001            | 0.03 (0.02, 0.04) | <0.001 |
|                  |                   | Patient/practice status              | New to practice   | 1.54 (1.22, 1.94) | <0.001            | 1.16 (0.91, 1.47) | 0.24   |
|                  |                   | Referent: existing patient           | New to registrar  | 0.82 (0.70, 0.95) | 0.011             | 0.87 (0.74, 1.02) | 0.09   |
|                  | Registrar factors | Qualified as doctor in Australia     | Yes               | 1.21 (0.96, 1.51) | 0.11              | 1.28 (0.98, 1.67) | 0.07   |
|                  |                   | Post-graduate O&G qualifications     | Yes               | 2.07 (1.65, 2.59) | <0.001            | 1.64 (1.31, 2.06) | <0.001 |
|                  |                   | Registrar age                        |                   | 0.99 (0.98, 1.00) | 0.11              | 1.00 (0.99, 1.02) | 0.58   |
| Registrar gender |                   | Female                               | 3.64 (2.94, 4.51) | <0.001            | 2.91 (2.31, 3.67) | <0.001            |        |
|                  | Term              | Term 2                               | 1.34 (1.13, 1.59) | 0.001             | 1.27 (1.03, 1.55) | 0.02              |        |

GP registrar experience in postpartum care

| Model                | Factor group | Variable                        | Class                                    | Univariate        |                   | Adjusted          |                   |      |
|----------------------|--------------|---------------------------------|--|-------------------|-------------------|-------------------|-------------------|------|
|                      |              |                                 |  | OR (95% CI)       | p                 | OR (95% CI)       | p                 |      |
| Practice factors     |              | Referent: Term 1                | Term 3                                   | 1.33 (1.11, 1.59) | 0.002             | 1.28 (1.05, 1.57) | 0.01              |      |
|                      |              | Worked at practice previously   | Yes                                      | 1.28 (1.08, 1.52) | 0.004             | 1.20 (0.98, 1.46) | 0.07              |      |
|                      |              | Region                          | Referent: Region 1                       | Region 2          | 0.81 (0.58, 1.14) | 0.23              | 0.80 (0.56, 1.15) | 0.23 |
|                      |              |                                 | Region 3                                 | 1.02 (0.80, 1.30) | 0.85              | 0.97 (0.73, 1.28) | 0.83              |      |
|                      |              |                                 | Region 4                                 | 0.84 (0.69, 1.03) | 0.09              | 0.77 (0.61, 0.97) | 0.03              |      |
|                      |              |                                 | Region 5                                 | 0.96 (0.59, 1.57) | 0.87              | 0.79 (0.42, 1.50) | 0.47              |      |
|                      |              |                                 | Region 6                                 | 0.68 (0.50, 0.92) | 0.01              | 0.51 (0.35, 0.73) | <0.001            |      |
|                      |              |                                 | Region 7                                 | 0.94 (0.63, 1.41) | 0.77              | 1.44 (0.93, 2.23) | 0.10              |      |
|                      |              |                                 | Rurality                                 | Inner regional    | 1.08 (0.91, 1.29) | 0.37              | 1.09 (0.85, 1.41) | 0.50 |
|                      |              | Referent: Major City            | Outer regional/<br>remote/very<br>remote | 0.77 (0.60, 0.99) | 0.04              | 0.96 (0.70, 1.31) | 0.78              |      |
| Consultation factors |              | Consultation duration (minutes) |  | 1.03 (1.02, 1.03) | <0.001            | 1.03 (1.03, 1.04) | <0.001            |      |
|                      |              | New problem seen                | Yes                                      | 2.27 (1.93, 2.67) | <0.001            | 2.01 (1.68, 2.40) | <0.001            |      |

GP registrar experience in postpartum care

| Model     | Factor group                 | Variable                 | Class | Univariate        |        | Adjusted          |        |
|-----------|------------------------------|--------------------------|-------|-------------------|--------|-------------------|--------|
|           |                              |                          |       | OR (95% CI)       | p      | OR (95% CI)       | p      |
|           |                              | Number of problems       |       | 0.87 (0.81, 0.94) | <0.001 | 0.80 (0.73, 0.89) | <0.001 |
| Model iii | Consultation outcome factors | Imaging ordered          | Yes   | 0.32 (0.21, 0.50) | <0.001 | 0.24 (0.15, 0.38) | <0.001 |
|           |                              | Learning goals generated | Yes   | 1.70 (1.44, 2.00) | <0.001 | 1.75 (1.43, 2.14) | <0.001 |
|           |                              | Medication prescribed    | Yes   | 0.60 (0.52, 0.70) | <0.001 | 0.59 (0.50, 0.70) | <0.001 |
|           |                              | Pathology ordered        | Yes   | 0.80 (0.66, 0.97) | 0.02   | 0.46 (0.37, 0.58) | <0.001 |

† Non-English Speaking Background

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