



The Royal
Children's
Hospital
Melbourne

Newborn Emergency Transport Service (NETS) and Perinatal Emergency Referral Service (PERS)*

ANNUAL REPORT 2012-13

*Now: Paediatric Infant Perinatal Emergency Retrieval Service (PIPER)

Authorship

This report has been prepared by the staff of PIPER (NETS and PERS)

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1 Introduction

On 1st September 2011, The Royal Children's Hospital (RCH) assumed responsibility for administering the Newborn Emergency Transport Service (NETS) and the Perinatal Emergency Referral Service (PERS), after 35 years at The Royal Women's Hospital. In addition, the RCH continues to coordinate the Paediatric Emergency Transport Service (PETS).

NETS and PERS moved to the new RCH on 7th December 2011 and collocated with the PETS leadership team. This was an important step towards creating a single, state-wide emergency referral and retrieval service for Victoria's women, newborn babies and children.

A new Director, Ian Patrick was appointed in 2011 to lead and manage the amalgamation of the 3 services.

The next step in this process was the implementation of a single point of contact for all three services. Since Monday 16 April 2012, the single point of contact for all PETS, NETS and PERS calls is 1300 137 650.

We have also adopted a name change for the service which is **Paediatric, Infant, Perinatal Emergency Retrieval (PIPER)**.

This means that all referral and retrieval calls are now coordinated in one unified centre with immediate access to neonatal, paediatric and perinatal expertise.

PIPER Hotline

1300 137 650

Websites

www.netsvic.org.au / www.pers.org.au



2 Newborn Emergency Transport Service (NETS)

2.1 Introduction and Overview

Welcome to the NETS annual report, the first since relocating to The Royal Children's Hospital in December 2011. Some highlights of the past year include:

- Continuing high levels of demand for emergency and non-emergency referrals.
- Bedding down the single coordination centre for NETS, PETS and PERS.
- Providing a broad range of education services to more than 2,500 clinicians.
- Planning for the introduction of a high frequency oscillator.
- Establishing the ground work to employ our first Neonatal Nurse Practitioner.
- Developing a model for the further integration of NETS, PERS and PETS.

Transitioning governance from one health service to another is of itself a major challenge, and when you combine this with relocation a new hospital the complexity increases exponentially. NETS moved from The Royal Women's after a 35 year partnership where NETS was conceived, developed and supported by RWH to the busy state-wide service it has become today. On behalf of past and present NETS staff, we would like to acknowledge the support and governance provided by The Royal Women's Hospital.

In 2012/13 NETS undertook more than 2,800 patient transfers, coordinated neonatal bed access across 4 tertiary, 34 public and private level 2 special care nurseries, provided education programs on perinatal care to more than 2,500 clinicians and participated in multiple Department of Health and other collaborative meetings to be part of monitoring and planning of perinatal services in Victoria.

The move to the new RCH brings opportunities for significant service development and improvement. The integration of NETS and PERS with PETS provides an opportunity to realise synergies and efficiencies across both clinical and administrative domains. The single point of access to call coordination occurred in April 2012 resulting in an improved experience for referrers, and unburdening RCH PICU /PETS staff from time-consuming clerical tasks. There are many challenges that lie ahead in the amalgamation, but you can be reassured that there will be no compromise of the current high level of specialist care provided by the retrieval teams. Indeed the aim is to improve the quality of clinical care and provide a more flexible service that has a level of responsiveness that better matches patient acuity.

The primary objective of NETS is to ensure optimal advice and support is provided to clinicians managing sick babies outside tertiary centres and then to ensure safe and high quality clinical care for babies who require medical retrieval. Every process and activity undertaken by NETS clinical and non-clinical staff should be able to be mapped to this primary purpose. Every day there are competing priorities for health care services and the perinatal system as a whole, and often these priorities can be competing. It is NETS role to promote the importance of system considerations when priorities appear to be out of sync so that effective, safe, efficient, accessible, equitable and patient centred care can be provided.

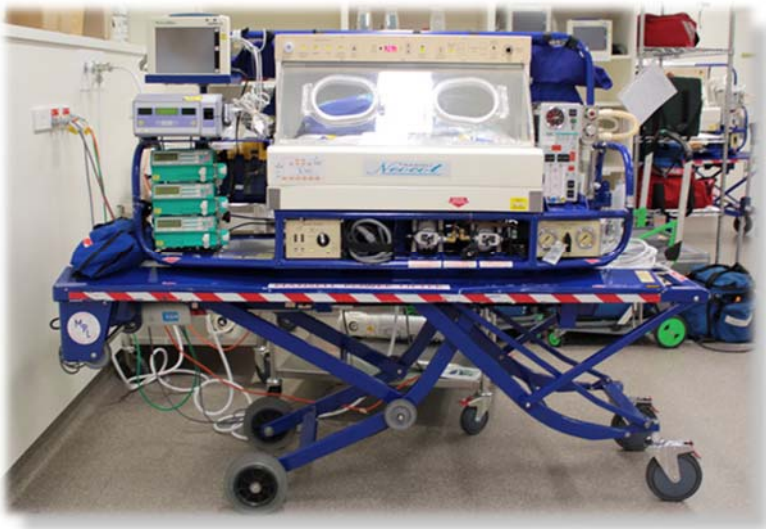
NETS collaborates with many partners and acknowledges the support provided by the RCH Executive, the clinical staff of the 4 tertiary hospitals, and all Victorian public and private special care nurseries and their maternity units. Ambulance Victoria remains a key partner

in the provision of transport services and we acknowledge their collaboration. The Department of Health has been active in supporting us during this period of complex change, and we look forward to further strengthening this relationship.

We are particularly grateful for the support provided by Variety The Children's Charity, and Chain Reaction whose generous fund-raising efforts have enabled us to purchase and fit-out a new emergency vehicle.

Finally, to all the staff of NETS we appreciate your dedication, clinical care, willingness to start early, finish late and change plans at short notice. You are the cornerstone of our service and continue to serve the sick babies of Victoria.

Dr Michael Stewart FRACP MHIth. Serv. Mt.
Medical Director
Newborn Emergency Transport Service



2.2 NETS Education

NETS Education continues to adapt and contribute to the learning needs of the perinatal community through the modification of existing programs as well as the development of new education methods. We seek to be innovative, varied, responsive and evidence-based in our approach to the training and education provided throughout Victoria.

For over 30 years the nursing and medical staff of NETS Education have provided a range of highly valued services to clinicians caring for newborn babies across Victoria, especially to midwives, nurses and doctors practising in less well-resourced areas of our State. A range of formal education programs are provided as well as a “hot line” for nursing and midwifery staff to access information about both clinical and equipment issues related to the care of the sick newborn.

Five nurse educators (2.7 FTE) are supported by a Consultant Neonatologist (0.2 FTE). Salaries are supported by a combination of public funds (80%) and cost recovery (20%). There is no salary cost recovery for nursing time for programs provided to public hospitals in Victoria. Moreover costs recovered for programs delivered to the private, academic and commercial sectors partially offset the costs incurred in providing programs in the public sector.

On another note we wish to thank Loni Meiksans (Administration) who retired in 2013 after over 20 years of dedicated service.

Highlights of 2012/13 include:

- More than 2,500 clinicians utilised our learning resources.
- The move away from large groups to small group interactive learning continued.
- A high fidelity simulation program emphasising resuscitation and retrieval scenarios has been introduced under the guidance of Dr Jenni Sokol and Meredith Allen as a RCH, RWH and Epworth collaborative.
- A combined NETS and PETS team led by Dr Jenni Sokol was invited to facilitate a 2 day simulation program pertaining to care of the sick neonate/paediatric patient for aeromedical retrieval teams at The Royal Darwin Hospital.
- The reintroduction of bimonthly videoconferences has been particularly popular with staff from rural and regional areas. Thirteen Level 1 hospitals hosted NETS Education sessions in 2012/13. NETS Education is very aware of its responsibility to support staff in small maternity hospitals and provides education sessions based on the individual hospitals learning needs.
- Programs were provided across the public and private sector as well as Universities and private industry.
- The neoResus First Response Program and the neoResus Advanced Resuscitation program have been well attended in 2012/13. These multidisciplinary programs cover the principles of resuscitation of the newborn infant using web-based learning, scenario-based hands-on learning and opportunities to become familiar with newborn resuscitation equipment. A major factor responsible for the increased attendance has been the promotion of multidisciplinary enrolment to better simulate the reality of the workplace. More than 228 medical staff participated in our programs in 2012/13, an increase of more than 250% compared to 2011/12.

- NETS Education has facilitated the roll out of the neoResus program across Queensland and is currently assisting Tasmania with a similar project.
- Nursing and Medical staff from NETS Education joined with the Maternity Services Education Program to run combined workshops in Victorian rural hospitals (Alpine Health and Corryong). These workshops focus on the continuum of care from the management of the pregnant woman during the intrapartum period and the neonate in the newborn period. It is anticipated that this collaboration will grow as feedback has been very positive. Emphasising crisis resource management principles in the scenarios is a large component of these workshops. A multidisciplinary team, including local paramedics, attend these programs.
- An important collaborative has seen NETS Education provide Neonatal Resuscitation education programs for undergraduate student paramedics studying at Monash University, as well as paramedics undertaking the MICA post graduate program at Monash. These programs are based on the 2010 Ambulance Victoria Newborn Clinical Practice Guidelines that were co-authored by NETS Education staff.



NETS Education Staff: (left to right)
Avril McLean, Jacqui Whitelaw, Robyn Smith, Rosemarie Boland (Narelle Wiseman not in image).

2.2.1 NETS Education Activity Report 2012/2013

From 1st July 2012 until 30th June 2013, NETS Education staff provided 539.5 contact hours of education for Victorian and interstate healthcare professionals involved with perinatal care.

Education formats – *Supporting Diversity in Learning*

Format	Contact hours
Continuing education programs	488.5
NETS Continuing Education Program in Newborn Nursing Care (CEPNNC)	36
Videoconferences	7
Neonatal competency assessments	8
TOTAL:	539.5

Education Programs

135 programs (including 2 NETS CEPNNC, 7 videoconferences and 4 competency assessment sessions) were conducted in 2012/2013.

- 35 at Private Hospitals
- 61 at Public Hospitals
- 17 at Universities or other health care providers or stakeholders
- 13 at NETS

A total of 29 country/interstate seminars/study days were held.

NETS Education staff travelled more than 16,846 km to facilitate these programs.

Participant Profile – *Supporting Multidisciplinary Learning*

Status	No. of participants
Nursing/Midwifery/Students	1172
Medical	228
Student Paramedics/MICA Paramedics	187
Other	129
Not recorded	779
TOTAL:	2495

NETS Education Activity Report Comparison— 2010/11, 2011/12, 2012/13

Hospitals Visited:	2010/11	2011/12	2012/13
Level I	11 hospitals 18 programs	14 hospitals 20 programs	13 hospitals 20 programs
Level II	27 hospitals 76 programs	21 hospitals 67 programs	24 hospitals 73 programs
Level III	4 hospitals 5 programs	5 hospitals 6 programs	5 hospitals 5 programs
Public:	23 hospitals 55 programs	25 hospitals 55 programs	28 hospitals 61 programs
Private:	16 hospitals 40 programs	11 hospitals 33 programs	11 hospitals 35 programs
Universities:	8 11 programs	9 12 programs	9 14 programs
Others: Independent Practicing Midwives, Ramsay Healthcare, RANZCOG, Staffing Synergy, Victorian Newborn Resuscitation Project, MNCN conference	7 facilities 19 programs	9 facilities 20 programs	5 facilities 16 programs
Doctor assisted sessions/programs		33	46
Total sessions	125	120	126
Total hours	411.5	436.5	488.5
Total attendees	2628	2346	2495



2.3 NETS Return Transport Service

“Moving babies closer to home”

The NETS Return Transport service (RTS) is a key service in Victoria’s perinatal system. The key features include:

- Provides experienced and highly specialised nurses and equipment to enable transfer of higher acuity babies that could not be managed by other non-emergency patient transfer services
- Enables more than 1600 babies per year to spend part of their special care course closer to home. Family dislocation is very stressful for families when their baby is in NICU.
- Assists in optimizing neonatal cot management across both tertiary and non-tertiary services
- Significantly increased nursing resources (EFT 3.3) to ensure we remain flexible, responsive and service oriented.
- Recruiting own establishment of drivers to improve efficiency and responsiveness.
- Maintains a fleet of 3 customized ambulances, one of which is provided by GE Fleet, to ensure the very best of care can be provided for the babies in transport.
- Developed a baby safety harness to meet standards for securing patients during transfer.
- Provides phototherapy, monitoring and other vital equipment to ensure continuity of care during transport.



2.4 NETS Research

Over the past 10 years there has been an increasing appreciation of the opportunities neonatal retrieval presents for audit and research. This reached a pinnacle with Dr Sue Jacobs receiving NH&MRC funding to undertake the ICE trial that looked at the efficacy of therapeutic hypothermia as a neuroprotection intervention in babies suffering hypoxic-ischaemic encephalopathy in the first 6 hours after birth.

This landmark randomised controlled trial complemented the other large, exclusively tertiary hospital based studies that were undertaken in the UK and North America. The ICE trial showed that therapeutic hypothermia could be safely initiated at non-tertiary referring hospitals and maintained in a safe and effective manner throughout transport.

The list of papers, abstracts and presentations listed below reflects the enthusiasm of the NETS Fellows and Nursing staff, the NETS Consultants, as well as collaborations with academic staff especially at RWH and RCH. NETS have combined with tertiary units to provide part time fellows positions to a number of PhD candidates at the tertiary units. This is a win-win-win result for NETS, the research fellow and the hosting tertiary institution. From NETS perspective we directly benefit from having highly trained clinical staff, as well as maintaining academic output.

NETS acknowledges the broad range of staff who have contributed to this impressive achievement.

Papers

Stewart M. **Improving the paediatrician's understanding of mechanical ventilation: the importance of context.** Journal of paediatrics and child health. 2013;49(1):81. Epub 2013/01/17.

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Fleming PF, Richards S, Waterman K, Davis PG, Kamlin CO, Stewart M, Sokol J. **Medical retrieval and needs of infants with bronchiolitis: an analysis by gestational age.** Journal of paediatrics and child health. 2013;49(3):E227-31. Epub 2012/12/12.

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O'Mahony E, Stewart M, Sampson A, East C, Palma-Dias R. **Perinatal outcome of congenital diaphragmatic hernia in an Australian tertiary hospital.** The Australian & New Zealand journal of obstetrics & gynaecology. 2012;52(2):189-94. Epub 2011/12/08

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Susan E Jacobs, MD, Colin J Morley, MD, Terrie E Inder, MD, Michael Stewart, MD Katherine Smith, MBiostat., Patrick J McNamara, MD, Ian Wright, MD, Haresh M Kirpalani, MD, Brian

Darlow, MD, Lex W Doyle, MD, for the ICE Collaboration. **Whole-Body Hypothermia for Term and Near-Term Newborns with Hypoxic-Ischaemic Encephalopathy.** Arch Pediatr Adolesc Med Published online April 4, 2011.

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Murray PG, Stewart MJ. **Use of Nasal CPAP During Neonatal Transport.** Pediatrics, April 2008 121: e754-758

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CD Lilley, M Stewart, CJ Morley. **Respiratory function monitoring during neonatal emergency transport.** Archives of Disease in Childhood Fetal & Neonatal Edition. 90(1):F82-3, 2005 Jan.

Abstracts – Poster presentations

Gupta N, Kamlin O, Stewart M, Cheung M, Patel N. **Diagnostic accuracy in the retrieval of infants with suspected duct-dependent congenital heart disease.** PSANZ 2013, P405.

Gupta N, Kamlin O, Stewart M, Cheung M, Patel N. **Benefits of Prostaglandin E₁ use during transfer of the hypoxaemic newborn with suspected duct-dependent heart disease or persistent pulmonary hypertension.** PSANZ 2013, P404.

McKinnon R, Palma Dias R, Sokol J. **Pre and Post-natal outcome of Gastroschisis in Victoria: A Collaborative Project.** PSANZ 2013

Gregor J, Patel N, Stewart M. **Diagnosis and management of infants with Tachyarrhythmia retrieved by the Newborn Emergency Transport Service (NETS) Victoria.** PSANZ 2013, P406.

Behrsin J, Bhatia R, Stewart M. **Developing a training programme within a retrieval service: Is there a need and what modalities can be used to deliver training to staff.** PSANZ 2013, P419

McCall K, Stewart M, Bhatia R. **Neonatal retrieval of infants with Pneumothoraces: what are we doing and what can we do better?** PSANZ 2013. OP012.

Whitelaw J, Thio M, Smith R, McLean A, Wiseman N, Boland R, Stewart M. **The Victorian neoResus Training Program: Feedback from participants.** PSANZ 2013. OP149

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- E Hart-Davis, K Wheeler, M Stewart. **A retrospective case note review of NETS referrals for babies initially managed on CPAP.** PSANZ 2011
- Presbury FE, Dawson JA, Kamlin COF, Piriatsinski J, Smith R, Stewart M. **Successful back transfers in Victoria are they a myth?** PSANZ 2011, COINN 2013
- RA Boland, T Penny, J Geer, D Inglis, J Kenneally, G Smith & MJ Stewart. **Development of a newborn resuscitation clinical practice guideline for Ambulance Victoria.** PSANZ 2011
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- RA Boland, M Barnett , G Brown, W Capell, R McNeil, D Haynes, J Leigh, J McAlpine, D Patterson, N Roy, J Shaw & MJ. Stewart. **The transition to NeoResus: Evaluation of a standardised, multidisciplinary training program for newborn resuscitation.** PSANZ 2011
- Roufaeil CO, Stewart M, Theda C. **Patient characteristics and other factors affecting stabilization time during Neonatal Retrieval: a retrospective performance review.** PSANZ 2011
- Theda C, Stewart MJ. **The Challenge of Thermoregulation during Neonatal Retrievals: A two year retrospective performance review.** PSANZ 2010
- Jacobs SE, Stewart M, McNamara P, Wright I, Kirpalani H, Darlow B, Inder TE, Doyle LW, Morley CJ for the ICE Collaboration. **'ICE' Safety of Whole Body Cooling for Hypoxic-Ischaemic Encephalopathy (HIE) during Neonatal Retrieval.** PSANZ 2010,
- P Shilson, C Theda, G Pinczower, J Sokol. **Comparison of clinical management and outcome during neonatal retrieval, in infants diagnosed ante- and post-natally, with Coarctation of the Aorta.** PSANZ 2010
- Jacobs SE, Stewart M, McNamara P, Wright I, Kirpalani H, Darlow B, Inder TE, Doyle LW, Morley CJ for the ICE Collaboration. **The 'ICE' Randomised Trial of Whole Body Cooling for Hypoxic-Ischaemic Encephalopathy (HIE).** PSANZ 2010, PAS 2010
- Sokol J, Carse E, Moody A, et al. **Setting up a Melbourne-wide Neonatal Fellowship Education Program: Pros and pitfalls.** PSANZ, 2009
- Presbury FE, Dawson JA, Kamlin COF, Stewart MJ. **A review of clinical practice in Non Tertiary Special Care Nurseries in Victoria**
- Sokol J, Carse E, Moody A, et al. **Setting up a Credentialing program of clinical skills in Neonatal trainees.** PSANZ 2009
- Fox L, Sokol J, Kerr L. **Correlation of lactate and haemodynamic parameters in newborns requiring neonatal retrieval.** PSANZ, 2009

Etta LR, Sokol J, Kamlin O, Stewart M, Moate A. **An audit of inotrope use in the stabilization and retrieval of preterm neonates.** PSANZ, 2009

Mun KS, Sokol J. **Retrieval of newborns and infants with seizures: the Victorian Experience.** PSANZ 2009

Bhatia R, Stewart MJ. **Phototherapy during Neonatal Transport.** PSANZ 2007.

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CPF O'Donnell, SE Jacobs, LW Doyle, MJ Stewart, JF King, PG Davis. 2005. **Extremely preterm and low birth weight infants delivered in level 1 and 2 hospitals in Victoria.**



2.5 Innovations and Initiatives 2012-2013

Hong Kong Nurses

NETS were approached by the Hong Kong Authority to discuss the centralization of their retrieval services in the future. NETS were asked to develop a training program for six of their senior neonatal nurses from several different Perinatal Centres in Hong Kong. An orientation/training program was submitted and accepted by the Hong Kong Authority. Six nurses (two at a time) had a four week retrieval nurse training which provided a positive result and a solid platform for the nurses to develop and structure on their return to Hong Kong.

Fundraising

Chain Reaction has again assembled a dedicated and energetic group of riders for a marathon bike ride to fundraise for PIPER. The money raised is being used for a purpose-built ambulance to accommodate critically ill neonatal and paediatric patients.

Capital Equipment Funding

The Department of Health provided a substantial capital grant in 2012-13. This was the first time that PIPER (NETS/PETS) had combined a Capital Grant, this enabled the services to replace critical equipment and also to fund some new technology initiatives for the services.



2.6 NETS Performance Indicators

Clinical Quality Indicators

The PIPER accountability framework stipulates 2 neonatal clinical quality indicators as part of its mandatory reporting. The results for these indicators are presented.

A. Proportion of high risk babies who meet the agreed temperature target.

Rationale: Hypo and hyperthermia are associated with increased mortality and morbidity in extremely low birthweight babies. Effective temperature management is one of cornerstones of high quality neonatal care.

Patient group: Babies transferred by NETS who are <7 days of age and <1500g birthweight.

Measure: Patients have a temperature at the end of the transport \geq to 36° and \leq 37.5°

Target: 100%

Reporting format: Annual; percentage and raw numbers

	2009	2010	2011	2012	Target
Total Number	49	56	38	67	
Missing data	3	2	1	4	0
Temperature \geq 36	37/46	50/54	33/37	58/63	
	80%	93%	89%	92%	100%

Comment

The 80% result in 2009 was unacceptable. A process was undertaken to raise staff awareness of this result and seek their input on ways to change practice. By focusing on a number of simple factors as well as introducing 2 new interventions – placing newlyborn, very low birthweight babies into polyethylene bags immediately after birth and using a heated gel mattress – performance has significantly improved. This remains a clinical quality focus.



B. Proportion of babies who meet the agreed blood glucose management target

Rationale: Hypoglycaemia is common in the sick newborn and is associated with significant adverse outcomes if not effectively managed.

Patient group: All NETS retrievals where the initial blood glucose is ≤ 2.6

Measure: Percentage of these babies where a subsequent blood glucose is $>$ the initial measurement

Target: 100%

Reporting format: Annual; percentage and raw numbers

	2009	2010	2011	2012	Target
Total Number:	1206	1268	1161	1324	
Glucose less than 2.6 at First Assessment:	64	74	43	62	
Subsequent Glucose not recorded (where initial <2.6)	18	11	7	12	0%
Subsequent Glucose increased:	37/46 80%	53/63 84%	34/36 94%	41/50 82%	100%

Comment:

Referring hospitals are very good at preventing and managing hypoglycaemia (96% of babies referred in 2012 were normoglycaemic).

While NETS are reasonably effective at managing hypoglycaemia the deterioration in performance from 2011/2012 provides an opportunity for improvement.

Response Indicators

Emergency Transfers – Time Parameters

Mobilisation Time (median)					
		2009/10	2010/11	2011/12	2012/13
Road	Time Critical	35	33	37	39
	Urgent	44	45	47	53
Fixed Wing	Time Critical	37	33	31	30
	Urgent	36	37	49	60
Rotary Wing	Time Critical	24	29	24	23
	Urgent	36	28	43	60

Mobilisation Time: Time from decision to retrieve to departure on mission.

- 39 minutes to mobilize for time critical retrievals by road is too long.
- The most common rate limiting factor is the time taken for the off site, on-call contracted driver to arrive. Increasing traffic as well as the move further west are major contributors to this.
- Options for a new model that includes onsite drivers for part or all of the time are being examined.
- It is pleasing to see mobilisation times for time critical retrievals using fixed wing are more acceptable. Air ambulance and NETS have targeted this parameter as a priority as reserving an aircraft for >1hour can encroach on other AAV demand.

Response Time (median)					
		2009/10	2010/11	2011/12	2012/13
Road	Time Critical	65	61	68	67
	Urgent	82	82	89	95
Fixed Wing	Time Critical	152	145	142	145
	Urgent	148	159	170	183
Rotary Wing	Time Critical	97	106	101	123
	Urgent	121	102	132	148

Response Time: Time from decision to retrieve to arrival at referring hospital.

- As well as factors that influence mobilisation time, response time varies according to the profile of referring hospital distribution.
- It is concerning that response times for retrievals using helicopters has increased significantly over the past 3 years. While an increased mobilisation time may account for the increase response time for urgent transfers it is not obvious why response times have increased for time critical retrievals using a helicopter. This requires further analysis.

Stabilisation Time (median)					
		2009/10	2010/11	2011/12	2012/13
<i>Road</i>	<i>Time Critical</i>	90	95	83	102
	<i>Urgent</i>	65	63	67	74
<i>Fixed Wing</i>	<i>Time Critical</i>	119	110	170	156
	<i>Urgent</i>	90	77	88	80
<i>Rotary Wing</i>	<i>Time Critical</i>	133	104	128	100
	<i>Urgent</i>	70	86	78	87

Stabilisation Time: Time from first look to departure from referring hospital.

- We have analysed factors that impact on stabilisation times and the dominant one is the number of procedures that are required. For example if a baby requires intubation and umbilical line insertion then it is rare this can be achieved in under 2 hours (including x-ray).

Total Mission Duration Time (median)					
		2009/10	2010/11	2011/12	2012/13
Road	Time Critical	270	251	261	281
	Urgent	260	245	260	271
Fixed Wing	Time Critical	472	432	494	480
	Urgent	446	422	440	460
Rotary Wing	Time Critical	368	339	380	365
	Urgent	340	311	388	352

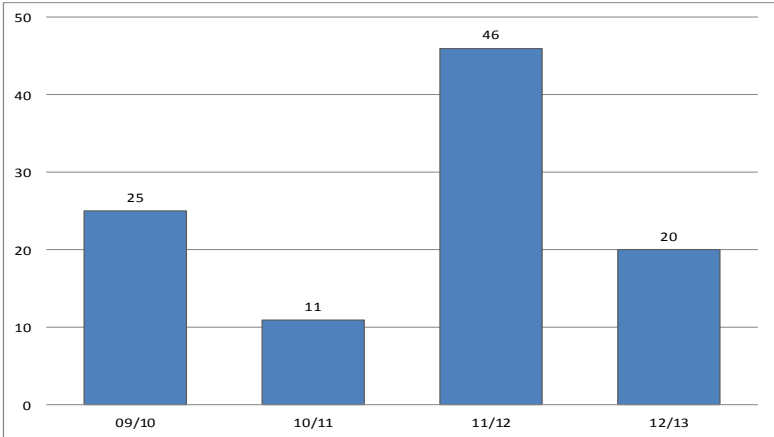
Mission Duration: Time from decision to retrieve to arrival at receiving hospital.

System Performance Indicators

In 1976 the NETS Advisory committee was formed as a mechanism through which NETS could transparently report perinatal system activity to its key stakeholders – tertiary and non-tertiary neonatal and maternity services and the Department of Health. This role was absorbed into the Neonatal Services Advisory Committee in 2000 which in turn became part of the Perinatal Services Advisory Committee, a ministerial committee formed in 2012. Through these committees NETS fulfils its responsibilities in the areas of system performance monitoring and system planning.

The Indicators reported below – Intertertiary overflow transfers and Interstate transfers, reflect performance in 2 of the key measures of quality – access and equity. Such transfers are used as a pressure relief valve during periods of extreme system demand for NICU cots.

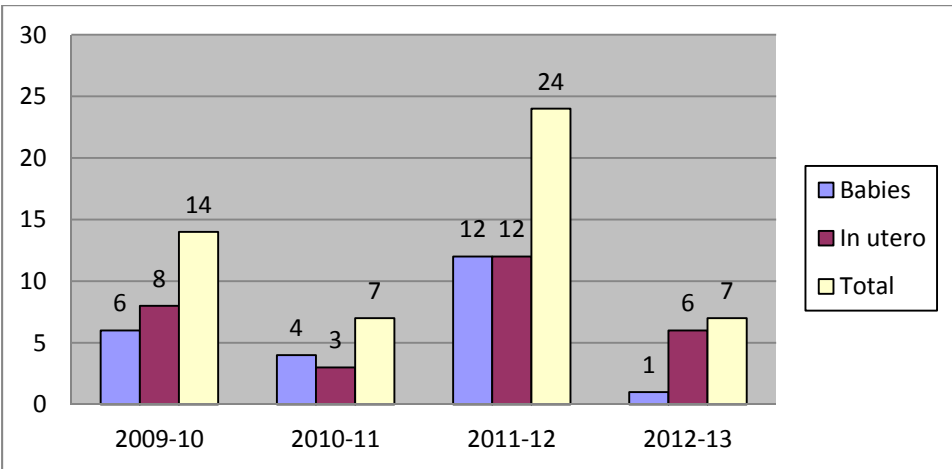
NETS Overflow Intertertiary Transfers



95% of interstate transfers are from the “border” areas of Victoria to tertiary units in South Australia, the ACT and NSW.

Significant work has been done to ensure appropriate escalation to locate beds in Victoria. Ideally interstate transfers should not be necessary.

NETS/PERS Interstate Transfers



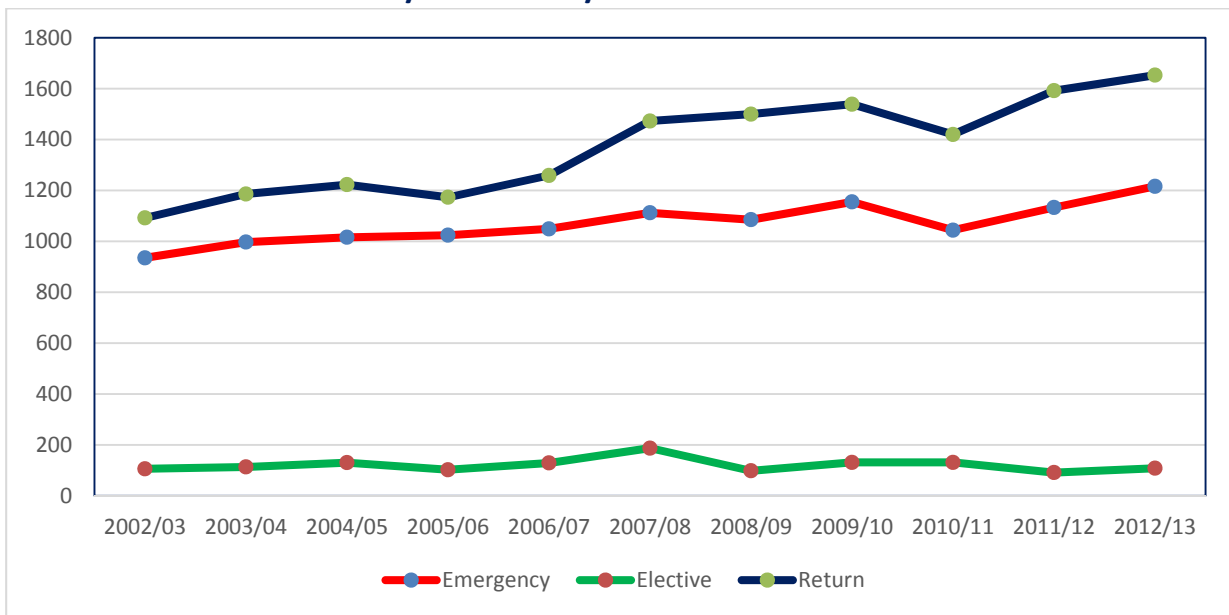
3 Clinical Activity

In this report we contrast 2012/13 data with the previous 3 financial years. Some discrepancies in data for 2010/11 will be evident due to a 3 month period where data entry was compromised. In addition, as this is the first annual report since June 2006, we have included statistical data for the 3 intervening financial years in Appendices A and B to preserve continuity of data reporting.

3.1 Clinical Activity – NETS

In 2012/13, NETS received 3308 referrals and transferred 2977 babies.

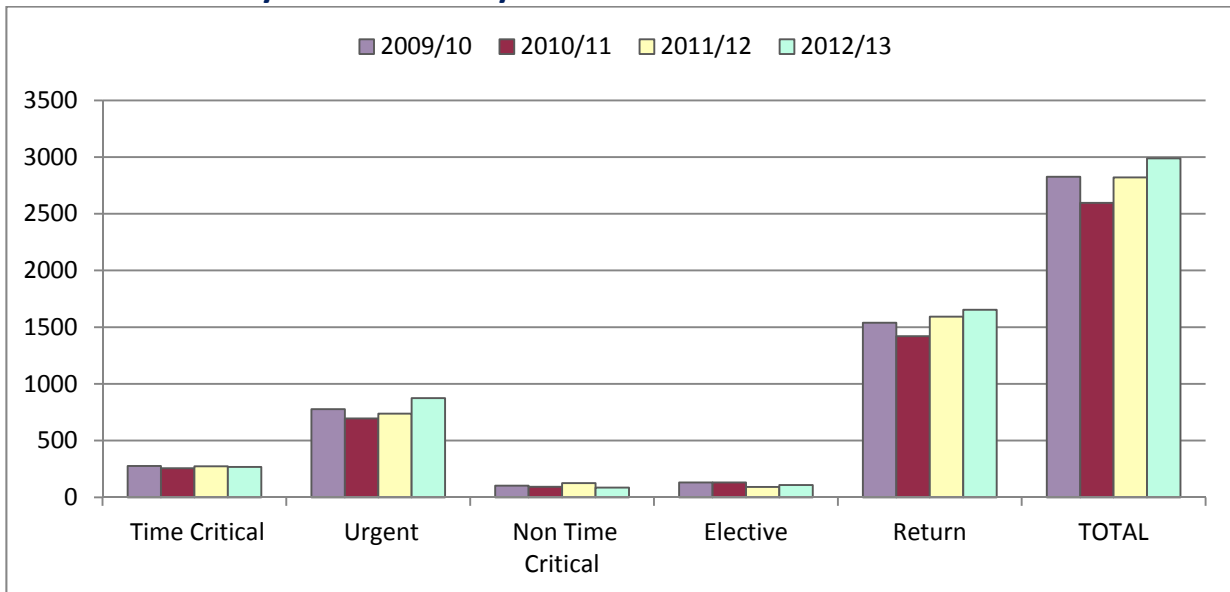
NETS Transfers from 2002/03 to 2012/13



Overview—Emergency, Elective and Return Transfers

Emergency Transfers				
	<i>2009/10</i>	<i>2010/11</i>	<i>2011/12</i>	<i>2012/13</i>
Metropolitan				
Road	761	678	783	825
Fixed Wing	2	0	0	0
Rotary Wing	3	9	1	2
Country				
Road	178	147	169	189
Fixed Wing	129	143	127	155
Rotary Wing	70	57	44	45
Interstate				
Road	1	2	1	0
Fixed Wing	11	8	8	0
Rotary Wing	0	0	0	0
Sub Total	1155	1044	1133	1216
Elective Transfers				
	<i>2009/10</i>	<i>2010/11</i>	<i>2011/12</i>	<i>2012/13</i>
Metropolitan				
Road	115	113	82	93
Fixed Wing	2	0	0	0
Rotary Wing	0	0	0	0
Country				
Road	11	8	6	8
Fixed Wing	3	7	2	6
Rotary Wing	0	0	0	0
Interstate				
Road	0	2	1	1
Rotary Wing	0	1	0	0
Sub Total	131	131	91	108
Return Transfers				
	<i>2009/10</i>	<i>2010/11</i>	<i>2011/12</i>	<i>2012/13</i>
Road	1395	1298	1477	1530
Fixed Wing	144	122	115	123
Rotary Wing	0	0	0	0
Sub Total	1539	1420	1592	1653
Total	2825	2595	2816	2977
NETS Consultations				
	<i>2009/2010</i>	<i>2010/2011</i>	<i>2011/2012</i>	<i>2012/2013</i>
Neonatal	236	266	313	331

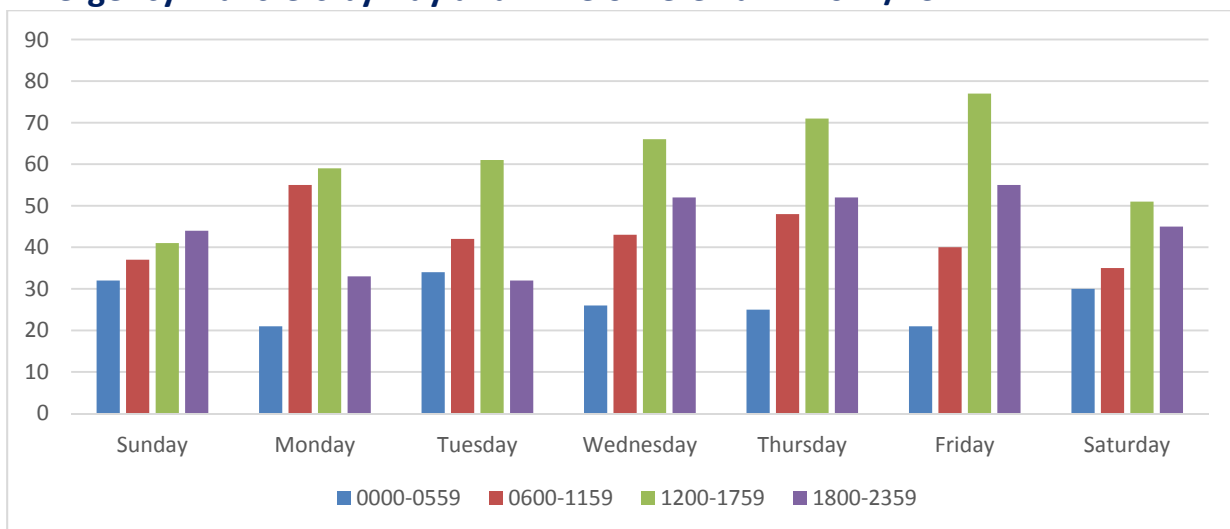
NETS Transfers by Level of Acuity



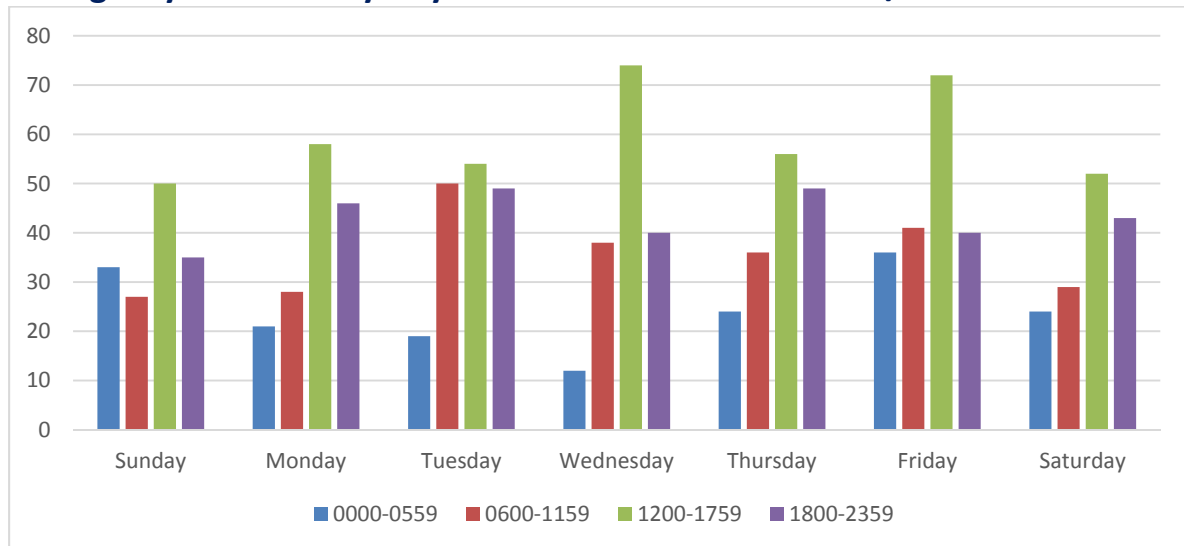
Interventions on Emergency Transfers

	<i>2009/10</i>	<i>2010/11</i>	<i>2011/12</i>	<i>2012/13</i>
Ventilation	319	293	308	385
Nasal CPAP	316	282	314	367
Prostaglandin	115	106	92	134
Surfactant	107	64	99	99

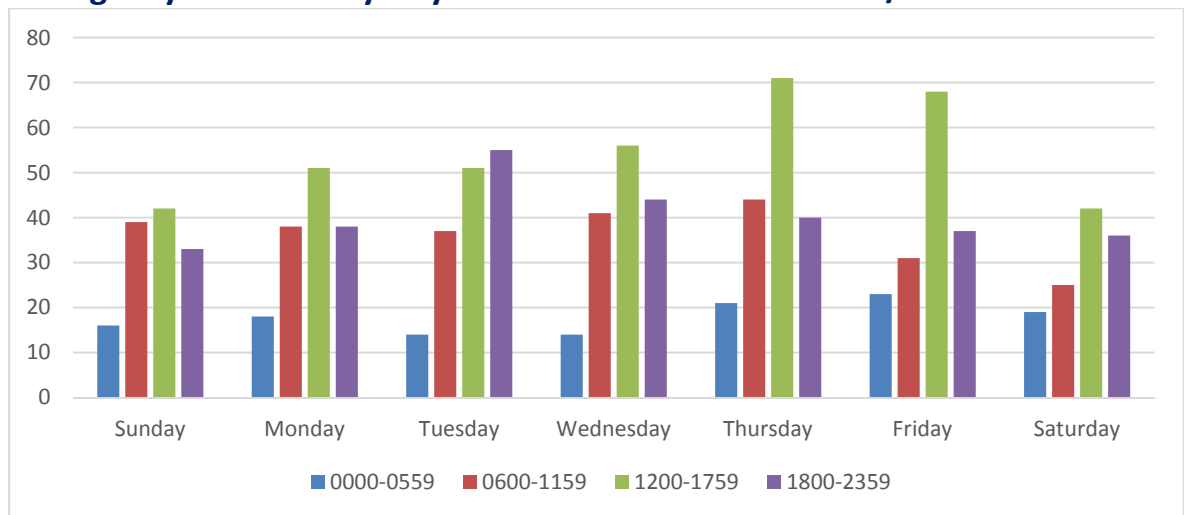
Emergency Transfers by Day and Time of referral in 2012/13



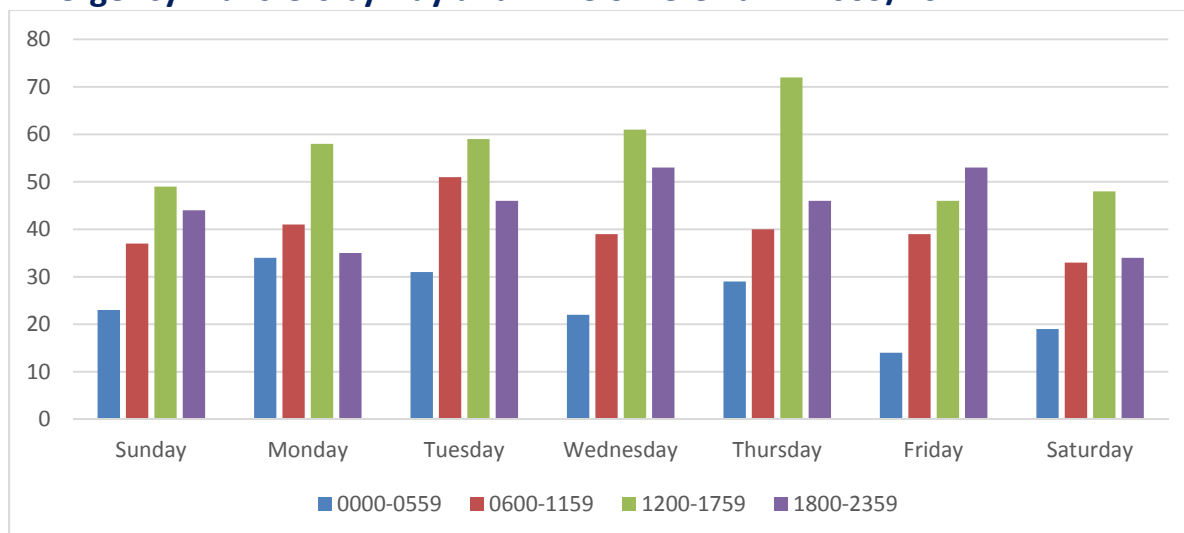
Emergency Transfers by Day and Time of referral in 2011/12



Emergency Transfers by Day and Time of referral in 2010/11



Emergency Transfers by Day and Time of referral in 2009/10



Emergency Transfers– Referring Hospital

<i>Location</i>	<i>2009/10</i>	<i>2010/11</i>	<i>2011/12</i>	<i>2012/13</i>
Metropolitan				
Alfred	0	0	0	2
Angliss	27	23	24	28
Austin	7	12	15	17
Berwick	17	14	15	21
Box Hill	25	29	34	37
Cabrini	16	15	17	19
Dandenong	54	44	43	40
Casey	32	26	38	38
Epworth	1	0	4	2
Frances Perry House	11	3	14	9
Frankston	50	34	52	65
Frankston Peninsula Private	15	4	5	3
Epworth Freemasons	42	36	32	31
Hawthorn	0	0	1	0
Jessie McPherson	0	0	1	0
Knox	6	9	11	8
Maroondah	3	3	4	5
Masada	10	7	0	0
Mercy Hospital for Women	46	39	60	63
Mitcham	17	16	18	21
Monash Medical Centre	22	17	18	13
North Park	15	10	10	11
Northern	30	24	35	48
Royal Children's Hospital	19	30	20	11
Royal Melbourne Hospital	0	3	0	0
Royal Women's Hospital	115	110	128	129
Sandringham	17	18	17	23
South Eastern	7	8	8	1
St Vincent's Private	32	25	29	29
Sunshine	76	78	94	95
Waverley	15	12	11	17
Werribee Mercy	37	36	24	41
Western General	0	1	0	0
Sub-Total	764	686	782	827

Emergency Transfers – Referring Hospital (cont'd)

<i>Location</i>	<i>2009/10</i>	<i>2010/11</i>	<i>2011/12</i>	<i>2012/13</i>
Country				
Ararat & District Hospital	1	2	0	3
Bacchus Marsh	8	7	11	20
Bairnsdale	6	2	10	6
Ballarat Health	28	29	42	31
Ballarat SJOG	6	4	6	9
Benalla	3	2	2	1
Rosebud	1	1	0	1
Portland	1	3	2	1
Bendigo Health	19	29	15	21
Bendigo SJOG	3	1	3	9
Birchip	0	0	0	1
Bright	0	1	0	0
Seymour	12	2	1	3
Camperdown	0	3	1	0
Castlemaine	2	0	3	3
Cohuna	0	1	0	2
Colac	5	5	7	5
Sale	13	9	12	12
Corryong	1	0	0	0
Donald	13	15	13	16
Echuca	9	12	4	16
Foster	0	3	2	2
Geelong Bellarine	48	40	48	48
Geelong SJOG	12	12	5	8
Hamilton	1	5	2	4
Healesville	1	0	0	0
Horsham	12	8	7	6
Kerang	3	3	5	3
Kilmore	7	6	7	6
Kyabram	1	3	1	0
Kyneton	1	0	2	0
Leongatha	7	11	10	4
Lorne	1	0	0	0
Mansfield	1	1	2	2
Maryborough	7	3	2	3
Mildura Base	2	4	6	7
Mornington	11	11	6	8
Omeo	0	0	0	1
Orbost	0	0	1	1
Portland	1	3	2	1
Rosebud	1	1	0	1
Sale	13	9	12	12
Seymour	12	2	1	3

Emergency Transfers – Referring Hospital (cont'd)

<i>Location</i>	<i>2009/10</i>	<i>2010/11</i>	<i>2011/12</i>	<i>2012/13</i>
<i>Country (cont'd)</i>				
Shepparton Goulburn	20	21	30	29
St Arnaud	0	0	2	0
Stawell	0	1	0	0
Swan Hill	9	6	9	12
Terang	1	0	2	1
Traralgon	44	34	21	19
Wangaratta	11	10	9	9
Warragul	22	20	26	26
Warrnambool Base	9	10	7	10
Warrnambool SJOG	0	1	0	0
Wodonga	29	22	15	32
Wonthaggi	14	14	8	12
Yarrawonga	0	0	0	1
Sub-Total	208	173	161	190
<i>Interstate</i>				
Albury Base	3	7	4	5
Alice Springs	2	0	0	0
Burnie	0	0	0	1
Deniliquin	4	1	2	2
Finley	0	0	0	1
Griffith	1	0	0	0
Hobart	0	0	1	1
Launceston Queen	2	0	0	1
Townsville	0	0	1	0
Wagga Base	0	1	1	0
Prima Medika (Bali)	0	1	0	0
Sub-Total	12	10	9	11
Total	220	183	170	201



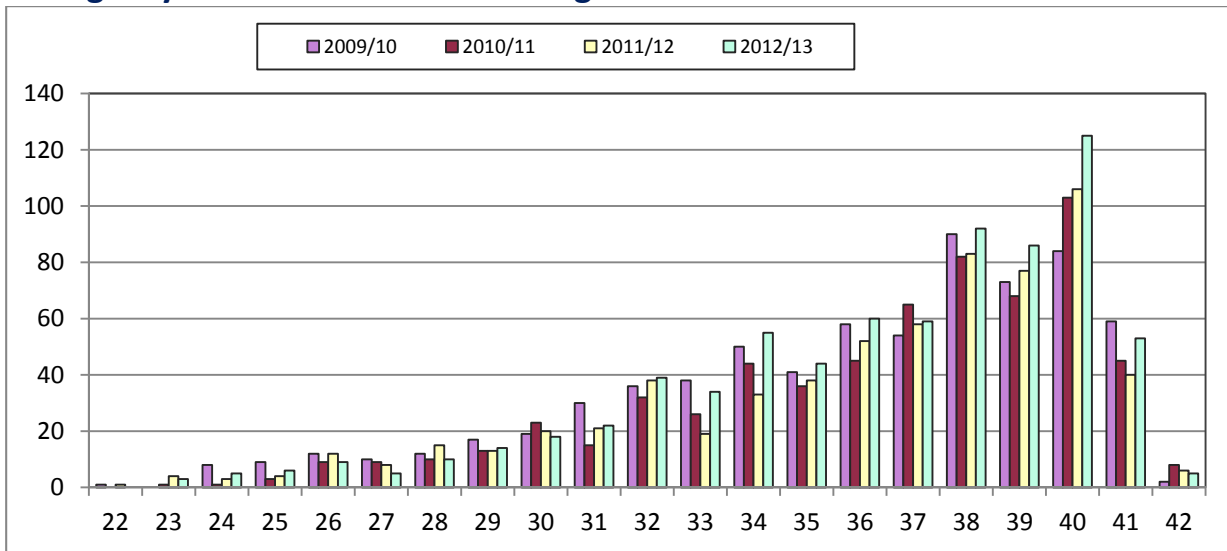
Emergency Transfers – Receiving Hospital

<i>Hospital Level</i>	<i>2009/10</i>	<i>2010/11</i>	<i>2011/12</i>	<i>2012/13</i>
<i>Tertiary</i>				
Adelaide Women & Children's	1	0	3	0
Canberra Hospital	1	2	1	1
Monash Medical Centre				
MMC	61	58	62	95
MMC - NICU	52	72	61	95
MMC - Emerg	25	23	34	25
MMC - PICU	22	19	34	25
Mercy Hospital for Women	124	164	149	142
Royal Children's Hospital				
RCH - not specified	64	32	49	47
RCH - PICU	65	72	81	100
RCH - Emerg	36	26	22	17
RCH - NNU	359	326	346	298
RCH - Cardiac	32	22	16	18
Royal Women's Hospital	221	166	184	284
Sub-Total	1063	982	1042	1147
<i>Non-Tertiary</i>				
Ballarat Health	3	1	2	5
Bendigo Health	6	4	9	9
Berwick	0	0	0	1
Box Hill	4	2	6	5
Dandenong	4	11	14	7
Frankston	9	4	2	4
Epworth Freemasons	1	0	0	0
Geelong Bellarine	1	3	5	4
Hamilton	0	0	0	1
Kilmore	0	0	1	0
North Park	0	0	1	0
Northern	15	4	4	5
RMH	1	3	0	0
Sale	1	0	0	1
Sandringham	1	0	2	1
Shepparton Goulburn	1	3	1	1
St Vincent's Private	1	0	0	0
Sunshine	14	6	14	7
Traralgon	2	0	0	3
Wangaratta	2	1	1	1
Warragul	0	0	2	0
Warrnambool Base	1	1	2	0
Waverley	0	0	0	2
Werribee Mercy	2	4	4	1
Wodonga	1	0	2	2

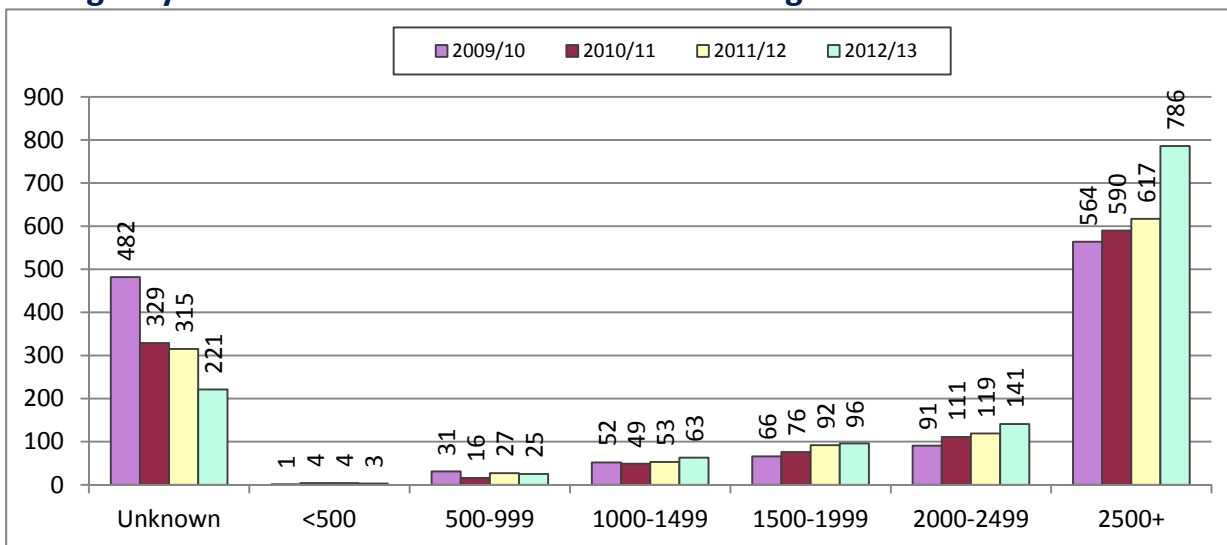
Emergency Transfers – Receiving Hospital (cont'd)

Hospital Level	2009/10	2010/11	2011/12	2012/13
Non-Tertiary (cont'd)				
Casey	2	1	0	1
Very Special Kids (Palliative Care)	0	1	0	0
Sub-Total	72	49	72	61
TOTAL	1135	1031	1114	1208

Emergency Transfers – Gestational Age at Transfer



Emergency Transfers – Weight at Transfer



Elective Transfers – Referring Hospital

<i>Location</i>	<i>2009/10</i>	<i>2010/11</i>	<i>2011/12</i>	<i>2012/13</i>
Metropolitan				
Angliss	0	3	1	0
Box Hill	1	1	0	2
Cabrini	1	0	1	0
Casey	2	1	1	0
Dandenong	7	6	4	4
Epworth Freemasons	0	0	1	0
Frances Perry House	3	2	0	3
Frankston	2	2	2	2
Knox	1	1	0	0
Mercy Hospital for Women	23	15	9	27
Mitcham	0	0	0	1
Monash Medical Centre				
MMC - Other	13	8	14	12
MMC - NICU	4	2	3	5
Northern	2	3	12	9
Royal Children's Hospital				
RCH - Other	5	12	4	2
RCH - PICU	2	1	1	1
RCH - Emerg	0	0	0	2
RCH - NNU	9	8	3	1
Royal Melbourne Hospital	0	5	1	0
Royal Women's Hospital	25	22	16	17
Sandringham	3	2	3	2
South Eastern	1	0	1	0
St Vincent's Private	0	0	1	0
Sunshine	3	6	4	1
Waverley	0	1	0	0
Werribee Mercy	10	12	0	2
Sub-Total	117	113	82	93



Elective Transfers – Receiving Hospital

<i>Hospital Level</i>	<i>2009/10</i>	<i>2010/11</i>	<i>2011/12</i>	<i>2012/13</i>
<i>Tertiary</i>				
Monash Medical Centre				
MMC - Other	18	15	9	13
MMC - NICU	2	5	3	1
MMC - Emerg	1	0	0	1
Mercy Hospital for Women	6	1	11	6
Newcastle - NSW	2	0	0	0
Royal Children's Hospital				
RCH - Other	31	25	14	25
RCH - PICU	1	2	5	3
RCH - Emerg	2	0	1	0
RCH - NNU	38	38	24	35
RCH - 7W	11	13	10	14
Royal Women's Hospital	13	16	10	6
Sub-Total	125	115	87	104
<i>Non-Tertiary</i>				
Angliss	0	1	0	0
Austin	0	0	1	0
Box Hill	0	1	0	0
Dandenong	1	1	0	0
Frankston	1	0	0	0
Epworth Freemasons	0	0	0	1
Royal Melbourne Hospital	1	6	1	0
Sunshine	0	1	0	2
Werribee Mercy	1	3	1	0
Very Special Kids (Palliative Care)	0	1	0	0
Sub-Total	4	14	3	3
TOTAL	129	129	90	107



Return Transfers — Referring Hospital

<i>Hospital Level</i>	<i>2009/10</i>	<i>2010/11</i>	<i>2011/12</i>	<i>2012/13</i>
<i>Tertiary</i>				
Adelaide Women & Children's	1	1	2	1
Brisbane	0	0	0	1
Canberra Hospital	2	1	0	1
Flinders Medical Centre	1	4	0	0
Mercy Hospital for Women	262	273	299	252
Monash Medical Centre	456	501	456	476
Royal Women's Hospital	473	385	496	607
Royal Children's Hospital	262	183	238	228
Royal Hospital for Women	0	0	1	0
Sydney North Shore	1	1	0	0
Sub-Total	1458	1349	1492	1566
<i>Non-Tertiary</i>				
Adelaide Lyell	0	1	0	0
Alfred	0	0	0	5
Angliss	1	0	1	0
Ballarat Health	1	0	0	5
Ballarat SJOG	0	0	1	1
Bendigo SJOG formerly Mt Alvernia (Bendigo)	0	0	1	0
Box Hill	9	10	11	12
Cabrini	0	0	2	0
Casey	5	1	2	1
Dandenong	7	11	17	4
Epworth	1	0	0	0
Frances Perry House	8	5	6	1
Frankston	6	2	3	2
Epworth Freemasons	5	3	2	1
Geelong Bellarine	10	5	11	5
Jessie McPherson	1	3	4	5
Knox	0	1	0	0
Mitcham	0	0	0	1
North Park	2	1	1	0
Northern	8	5	12	12
Sandringham	0	1	1	5
Shepparton Goulburn	1	2	0	3
St Vincent's Private	3	2	4	4
Sunshine	10	14	16	12
Traralgon	0	0	0	1
Warragul	0	2	1	0
Waverley	0	0	0	2
Werribee Mercy	3	2	3	5
Wodonga	0	0	1	0
Sub-Total	81	71	100	87
TOTAL	1539	1420	1592	1653

Return Transfers – Receiving Hospital

<i>Location</i>	<i>2009/10</i>	<i>2010/11</i>	<i>2011/12</i>	<i>2012/13</i>
Metropolitan				
Alfred	0	0	0	4
Angliss	55	55	59	66
Austin	0	0	1	1
Berwick	9	9	10	9
Box Hill	51	47	70	51
Cabrini	14	20	26	15
Casey	95	80	99	80
Dandenong	194	213	212	179
Epworth	4	1	1	1
FPH	4	5	11	7
Frankston	107	84	93	100
Frankston Peninsula Private	11	8	0	1
Epworth Freemasons	29	25	33	29
Hawthorn	0	0	1	0
Jessie McPherson	0	0	1	3
Knox	14	7	6	4
Masada	13	6	0	0
Mitcham	27	26	27	30
Mercy Hospital for Women	26	13	19	23
Monash Medical Centre	10	20	10	18
North Park	19	27	23	21
Northern	94	73	106	116
Not known (Metropolitan)	0	1	0	0
Royal Children's Hospital	1	1	0	0
Royal Women's Hospital	23	18	18	15
Sandringham	43	46	55	80
South Eastern	11	7	7	0
St Vincent's Private	32	15	37	27
Sunshine	132	134	128	146
Vaucluse	1	0	0	0
Waverley	27	20	15	20
Werribee Mercy	94	93	123	130
Sub-Total	1140	1054	1191	1176



Return Transfers – Receiving Hospital (cont'd)

<i>Location</i>	<i>2009/10</i>	<i>2010/11</i>	<i>2011/12</i>	<i>2012/13</i>
Country				
Ararat & District Hospital	1	0	0	1
Bacchus Marsh	3	0	6	5
Bairnsdale	0	1	0	0
Ballarat Health	42	34	42	65
Ballarat SJOG	10	12	9	18
Bellarine	0	0	0	1
Benalla	0	1	0	0
Bendigo Health	51	46	37	79
Bendigo SJOG	2	3	7	5
Bellarine	0	0	0	1
Benalla	0	1	0	0
Bendigo Health	51	46	37	79
Bendigo SJOG formerly Mt Alvernia (Bendigo)	2	3	7	5
Camperdown	0	1	0	0
Castlemaine	0	0	1	2
Cohuna	0	0	0	1
Echuca	1	0	2	0
Geelong Bellarine	40	39	62	50
Geelong SJOG	14	10	8	12
Healesville	0	0	1	0
Horsham	4	1	3	1
Kerang	0	1	0	0
Kilmore	1	0	1	1
Leongatha	0	0	3	1
Maryborough	1	1	0	0
Mildura Base	5	8	8	9
Mornington	9	1	4	4
Not Known (Country)	0	0	1	0
Sale	34	19	34	24
Seymour	3	7	5	9
Shepparton Goulburn	33	39	36	27
Shepparton Private	0	0	0	1
Swan Hill	4	4	4	1
Terang	0	0	1	0
Timboon	2	0	0	0
Traralgon	48	33	30	29
Wangaratta	11	15	20	31
Warragul	18	18	18	21
Warrnambool Base	17	20	10	21
Wodonga	40	41	36	43
Wonthaggi	1	6	1	1
Sub-Total	395	361	390	463

Return Transfers – Receiving Hospital (cont'd)

<i>Location</i>	<i>2009/10</i>	<i>2010/11</i>	<i>2011/12</i>	<i>2012/13</i>
Interstate				
Adelaide Women & Children's Hospital	0	0	1	0
Albury Base	1	1	3	5
Brisbane	0	0	0	1
Canberra Hospital	0	0	0	1
Deniliquin	1	0	0	1
Hobart	1	0	0	0
Launceston QV Maternity Hospital	0	1	0	0
Launceston Queen	0	0	1	0
Newcastle - NSW	0	0	0	1
Wagga Base	0	0	0	1
Wagga Calvary	0	0	0	1
Sydney North Shore Private Hospital	0	0	1	0
Sub-Total	3	2	6	11
TOTAL	1538	1417	1587	1650



4 Perinatal Emergency Referral Service (PERS)

The Perinatal Emergency Referral Service (PERS) collocated with the Newborn Emergency Retrieval Service (NETS) in November 2005, and the two services moved to the New RCH hospital in December 2011 to facilitate the progressive functional and administrative consolidation of these services with the Paediatric Emergency Transport Service (PETS). We now share a common emergency telephone number, as well as common telecommunications and triage infrastructure ('Co-ordination').

PERS differs from the other two services as we do not perform patient retrievals but rather rely on the ambulance service (principally the Ambulance Victoria paramedics), but on occasion the Adult Retrieval Victoria (ARV) team of medically qualified intensivists may be called upon to perform in utero transfers.

What we have been able to offer reliably is rapid access 24 hours a day 7 days a week to a senior consultant obstetrician which provides clinical advice and enables decision making in regard to the need for perinatal transfer and the urgency with which this needs to be effected, and where necessary to facilitate access to a bed in a maternity service able to provide the required level of care for the mother, and if delivery is expected, for the neonate. Data is collated on the ultimate clinical outcome of each of these consultations and transfers, and generate regular reports to the referring and receiving clinical services, Department of Health, and most importantly to the consultant obstetricians who are rostered on-call for PERS, to support reflective practice and continuous quality improvement. Our referrals come from medical practitioners and midwives involved in the provision of maternity care across the state, both in the public and private sectors, from both hospital and community settings, and from metropolitan and rural areas. However we also provide support to staff in hospitals without an on-site maternity service who may find themselves unexpectedly confronted by a pregnant woman requiring urgent care, and to Ambulance Victoria paramedics across the state. A small number of referrals are also received from the NSW Riverina area, and from Tasmania.

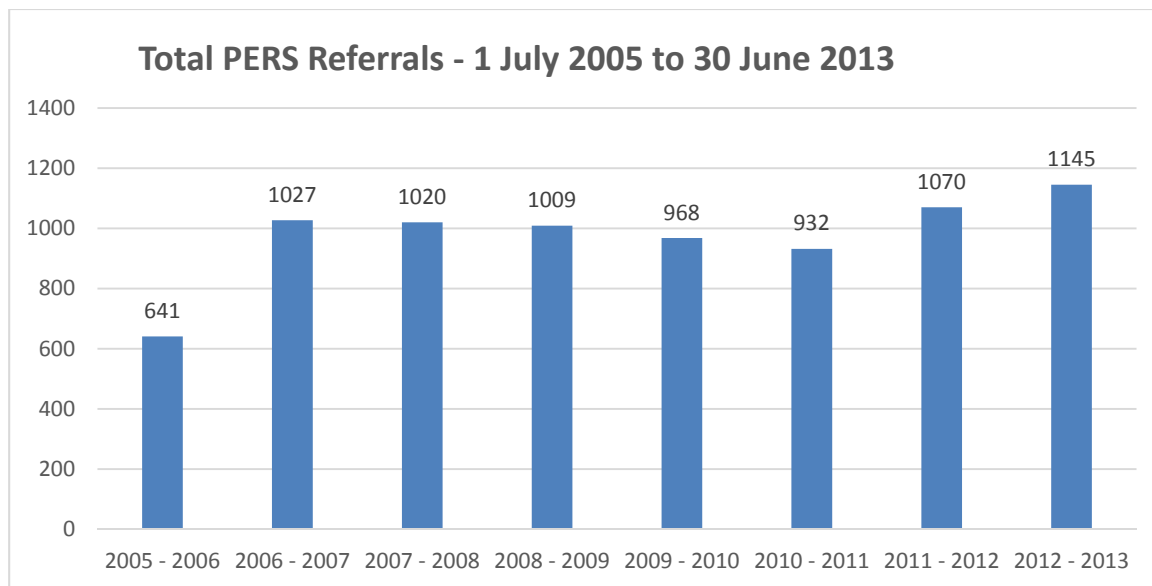
Activity has been maintained, and follows state-wide trends for birthing numbers.

Access to perinatal beds, especially in the three tertiary maternity units, has become increasingly problematic due both to the high occupancy in the associated nurseries and the heavy demand on their associated birthing suites and inpatient antenatal beds. Tighter escalation processes have recently been developed, with the assistance of the Department of Health, to facilitate timely in utero transfers during periods of high demand. We are also prospectively collecting data around the geographical relationship between referring and receiving hospitals, to ascertain the extent to which services for women are able to be provided within region. It is hoped that this may demonstrate some opportunities for developing tighter regional linkages between providers and thereby offer services that better meet the needs of women and their families.

Dr Jacqui Smith

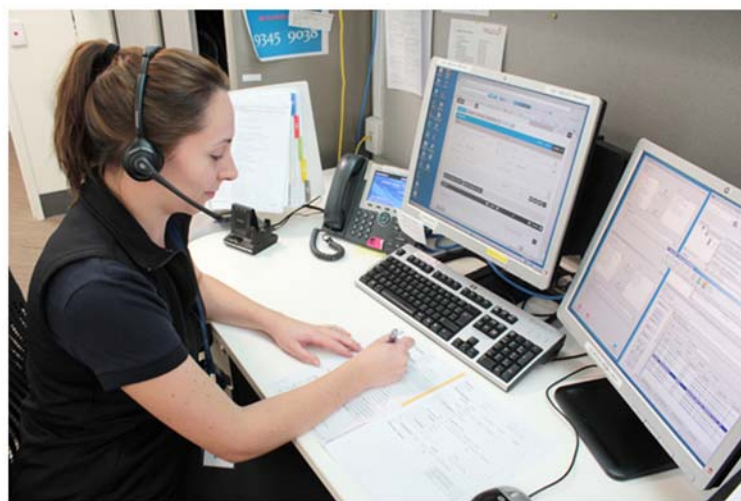
Medical Director PERS

Clinical Activity – PERS

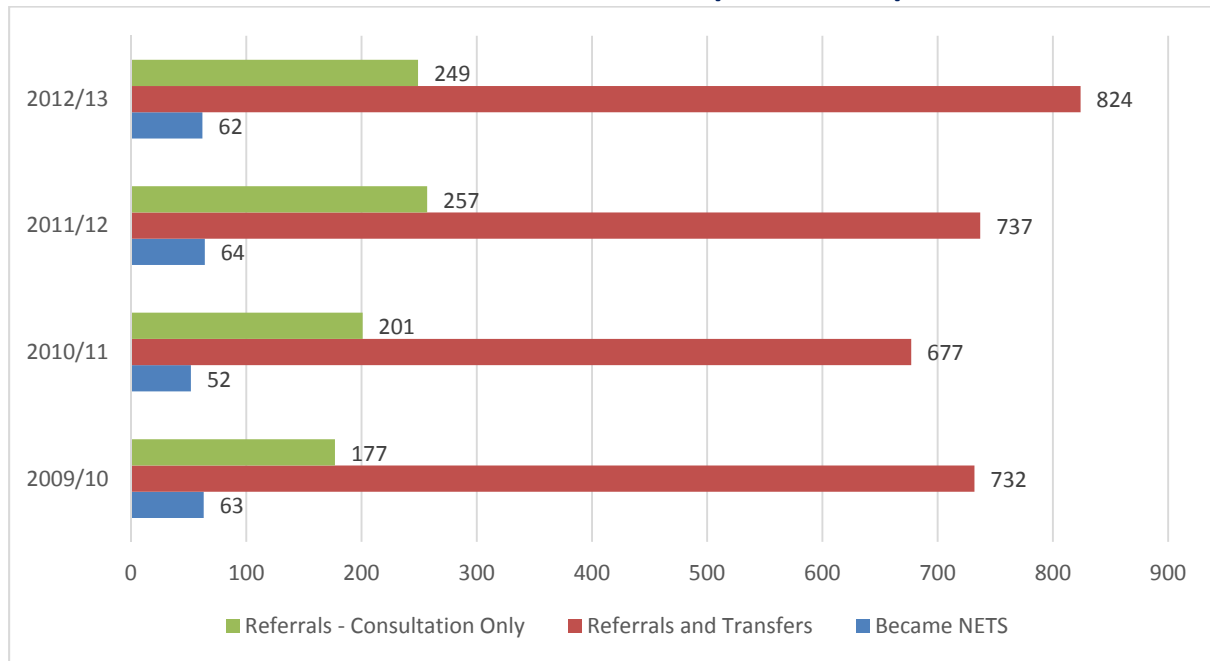


PERS Transfers By Regions Between 01-Jul-2009 And 30-Jun-2013

		Receiving Hospitals												
		Barwon	Grampians	Loddon Mallee	NorthWest Metro	RWH	Hume	Eastern Metro	MHW	Gippsland	Southern Metro	MMC	Other / Interstate	Unknown
Referring Hospitals	Barwon	51	2		10	115			69			13	5	
	Grampians	9	39	10	26	96		2	77			17		
	Loddon Mallee		18	64	47	93	16	4	87		1	18	11	
	NorthWest Metro	3			30	258		4	273		4	33		
	RWH				1	1		1	5			1		
	Hume	3	1	4	54	95	25	12	125			37	11	
	Eastern Metro				3	64		11	137		7	92		
	MHW					2			2			1	1	
	Gippsland				9	50		13	66	10	32	144		
	Southern Metro				3	87		25	112		37	177		
	MMC				1	3			3					
	Other / Interstate				2	10	5		6			1	7	
	Unknown				1	4			3			3		



Breakdown of Total PERS Referrals from 2009/10 to 2012/13



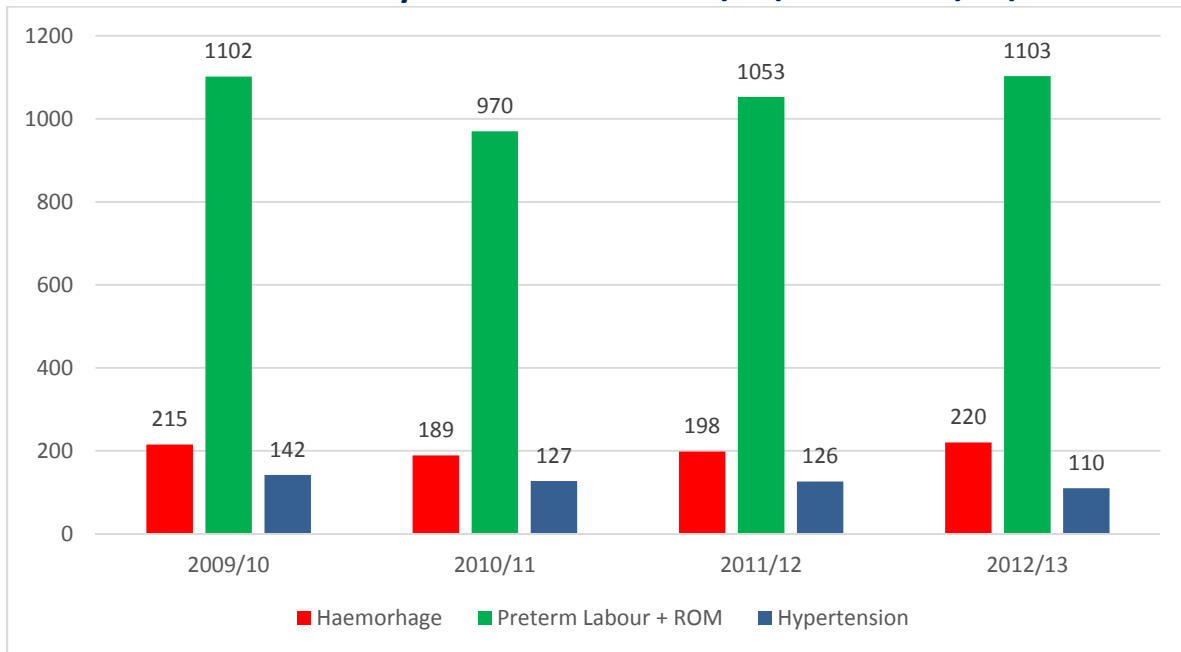
Origin Of PERS Referrals

	<i>2009/10</i>	<i>2010/11</i>	<i>2011/12</i>	<i>2012/13</i>
Level 3 to Level 3	6	2	10	4
Interstate Requests	12	4	4	5
Metro Level 2	410	408	454	428
Rural Level 2	263	278	320	363
Metro Level 3	8	6	21	6
Ref Hospitals Lower than level 2	270	227	244	300

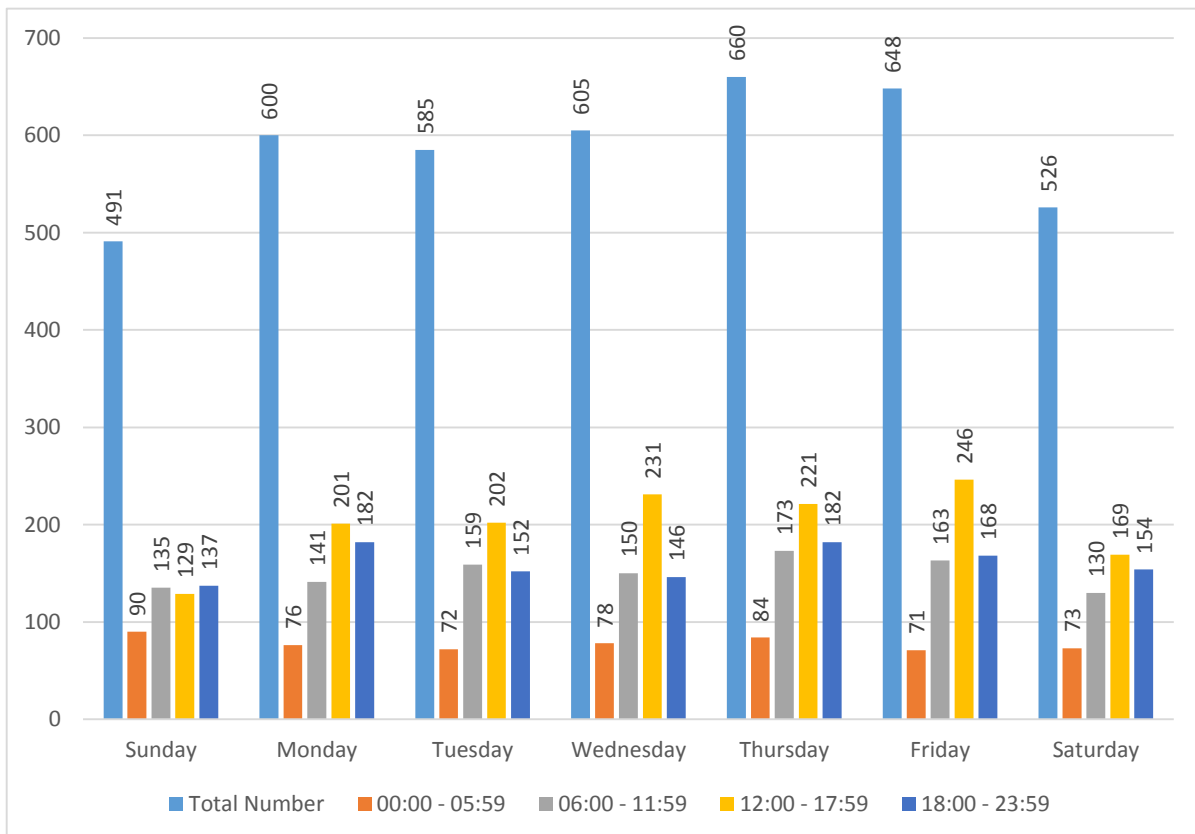
Destination of PERS Transfers

	<i>2009/10</i>	<i>2010/11</i>	<i>2011/12</i>	<i>2012/13</i>
Interstate	12	3	15	7
Level 3	603	573	613	682
Metro Level 2	83	68	98	96
Rural Level 2	56	51	69	86
Hospitals Lower than level 2	4	6	2	11

Perinatal Consultations by Clinical Details – 01/07/2009 to 30/06/2013



Frequency of PERS Referrals by Day and Time of Referral Call between 01-07-09 and 30-06-13



5 Appendix A

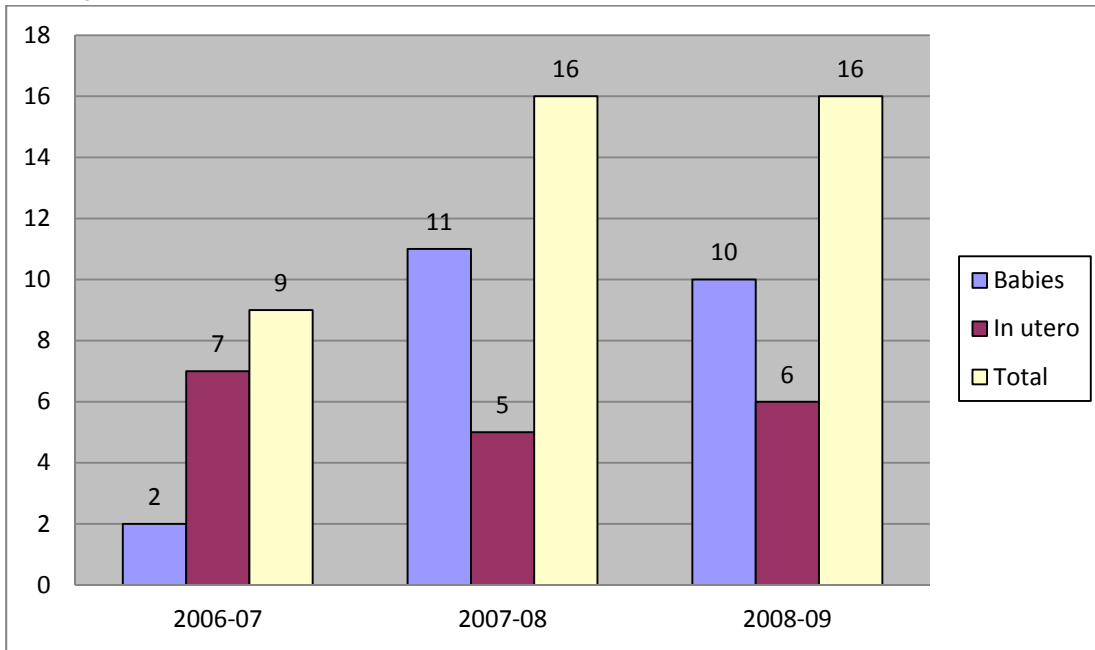
5.1 NETS Activity Data from 1st July 2006 to 30th June 2009

Response Indicators

Emergency Transfers – Time Parameters				
Mobilisation Time (median)				
		<i>2006/2007</i>	<i>2007/2008</i>	<i>2008/2009</i>
Road	Time Critical	29	30	28
	Urgent	40	41	43
Fixed Wing	Time Critical	23	30	30
	Urgent	27	46	36
Rotary Wing	Time Critical	11	17	18
	Urgent	20	28	25
Mobilisation Time: Time from decision to retrieve to departure on mission.				
Response Time (median)				
		<i>2006/2007</i>	<i>2007/2008</i>	<i>2008/2009</i>
Road	Time Critical	70	61	60
	Urgent	82	80	81
Fixed Wing	Time Critical	143	146	142
	Urgent	150	172	160
Rotary Wing	Time Critical	80	67	72
	Urgent	98	91	113
Response Time: Time from decision to retrieve to arrival at referring hospital.				
Stabilisation Time (median)				
		<i>2006/2007</i>	<i>2007/2008</i>	<i>2008/2009</i>
Road	Time Critical	220	213	220
	Urgent	184	181	181
Fixed Wing	Time Critical	406	365	354
	Urgent	334	368	351
Rotary Wing	Time Critical	274	261	232
	Urgent	246	239	249
Stabilisation Time: Time from first look to departure from referring hospital.				
Total Mission Duration Time (median)				
		<i>2006/2007</i>	<i>2007/2008</i>	<i>2008/2009</i>
Road	Time Critical	265	262	266
	Urgent	228	232	237
Fixed Wing	Time Critical	460	406	400
	Urgent	388	420	418
Rotary Wing	Time Critical	315	314	298
	Urgent	327	308	369
Mission Duration: Time from decision to retrieve to arrival at receiving hospital.				

System Performance Indicators

NETS/PERS Interstate Transfers



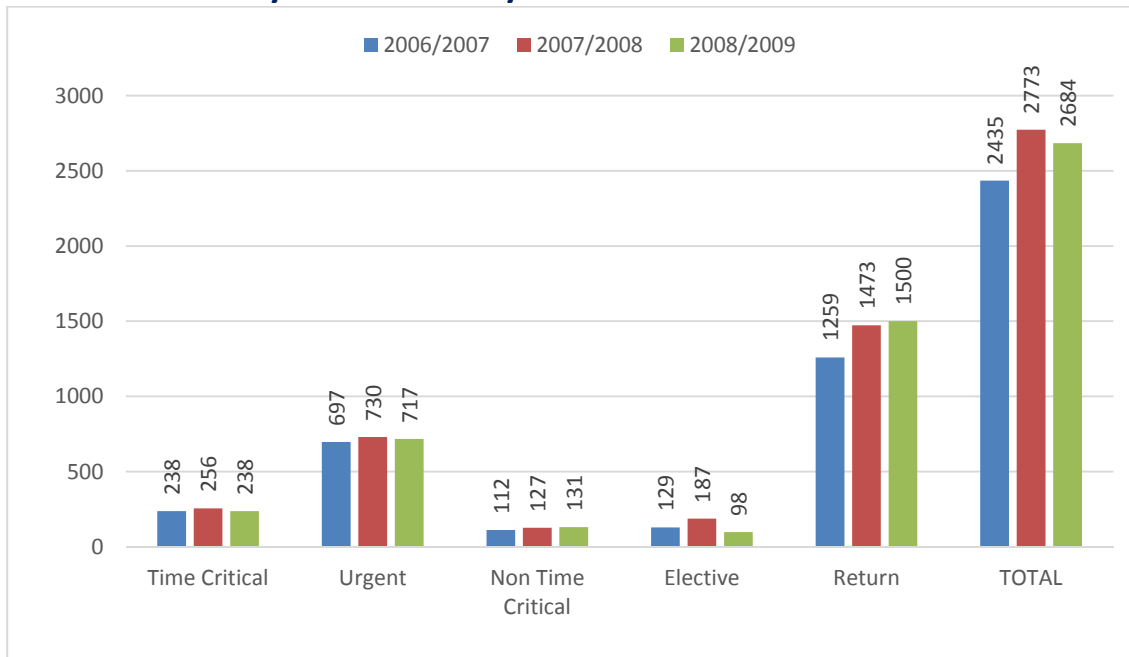
NETS Overflow Intertertiary Transfers



Overview—Emergency, Elective and Return Transfers

Emergency Transfers			
	<i>2006/2007</i>	<i>2007/2008</i>	<i>2008/2009</i>
Metropolitan			
Road	676	747	724
Fixed Wing	0	1	2
Rotary Wing	7	9	8
Country			
Road	157	151	170
Fixed Wing	157	151	143
Rotary Wing	31	42	26
Interstate			
Road	3	0	1
Fixed Wing	15	12	9
Rotary Wing	1	0	1
Sub Total	1047	1113	1084
Elective Transfers			
Metropolitan			
Road	119	179	91
Fixed Wing	1	0	0
Rotary Wing	0	0	0
Country			
Road	7	6	3
Fixed Wing	1	2	4
Rotary Wing	0	0	0
Interstate			
Road	1	0	0
Rotary Wing	0	0	0
Sub Total	129	187	98
Return Transfers			
Road	1123	1327	1355
Fixed Wing	136	146	144
Rotary Wing	0	0	0
Sub Total	1259	1473	1499
Total	2435	2773	2681
NETS Consultations			
	<i>2006/2007</i>	<i>2007/2008</i>	<i>2008/2009</i>
Neonatal	192	205	221

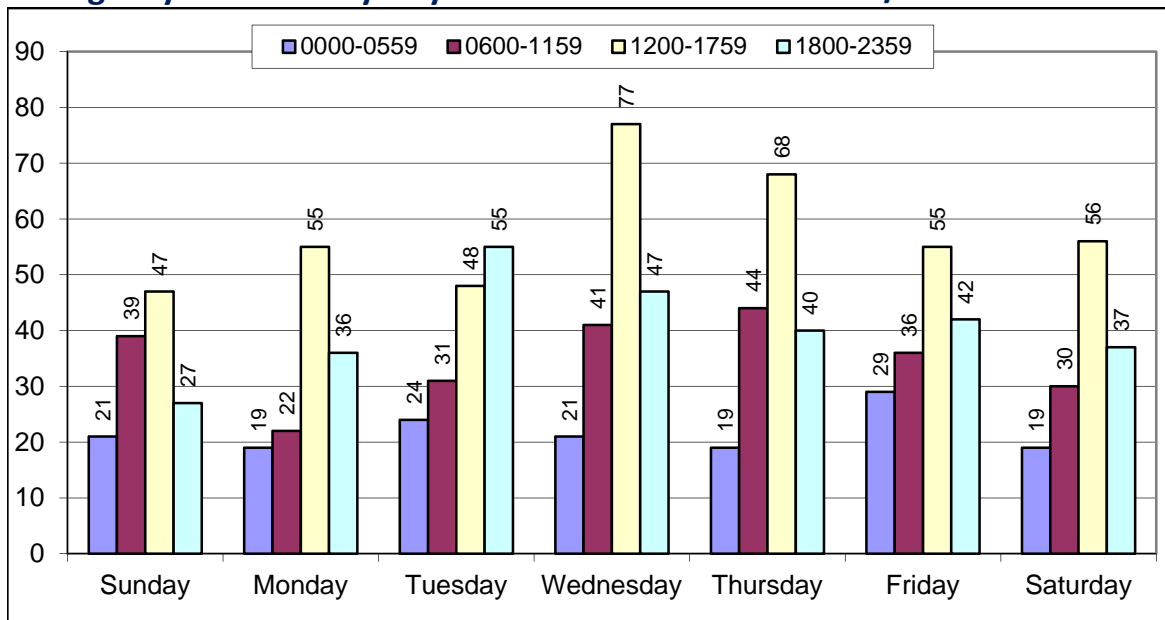
NETS Transfers by Level of Acuity



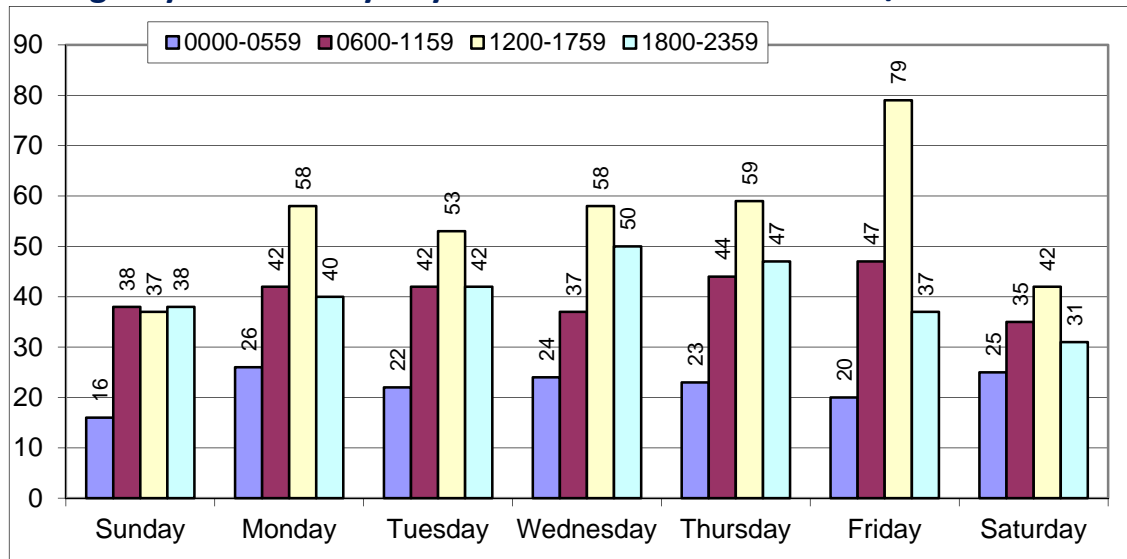
Interventions on Emergency Transfers

	<i>2006/2007</i>	<i>2007/2008</i>	<i>2008/2009</i>
Ventilation	279	295	291
Nasal CPAP	247	255	285
Prostaglandin	90	129	112
Surfactant	84	88	80

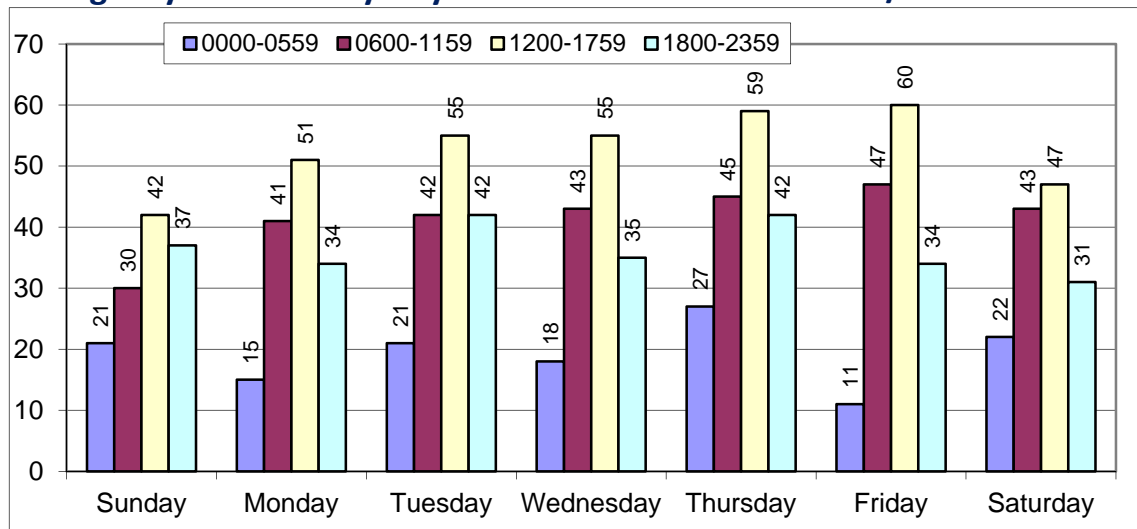
Emergency Transfers by Day and Time of referral in 2008/2009



Emergency Transfers by Day and Time of referral in 2007/2008



Emergency Transfers by Day and Time of referral in 2006/2007



Emergency Transfers – Referring Hospital

<i>Metropolitan</i>	<i>2006/2007</i>	<i>2007/2008</i>	<i>2008/2009</i>
Angliss	35	29	25
Austin	2	4	7
Berwick	8	9	4
Box Hill	30	29	20
Cabrini	14	18	13
Dandenong	32	42	61
FPH	23	13	18
Mornington Peninsula Hospital - Frankston	40	42	48
Frankston Peninsula Private	9	7	10
Epworth Freemasons	22	26	29
Knox	5	6	7
Maroondah	3	8	2
Masada	7	7	11
Mitcham	15	15	12
MMC	21	27	17
North Park	5	11	22
Northern	44	35	31
RCH	3	2	6
RMH	1	2	0
RWH	112	143	125
Sandringham	19	8	13
South Eastern	9	10	7
St Vincent's Public	0	1	0
St Vincent's Private	29	37	34
Sunshine	62	53	57
Waverley	14	16	3
Werribee Mercy	26	30	32
Williamstown	1	0	0
RCH - PICU	3	3	1
RCH - Emerg	0	2	4
RCH - NNU	8	11	10
MMC - NICU	3	8	7
MMC - Emerg	2	5	4
MMC - PICU	0	1	0
Alfred	1	2	0
MPH	0	1	0
Western General	0	0	1
Epworth	0	0	2
Casey	20	29	34
MHW	55	64	59
Sub-Total	683	756	736

Emergency Transfer – Referring Hospital (cont'd)

<i>Country</i>	<i>2006/2007</i>	<i>2007/2008</i>	<i>2008/2009</i>
Alexandra	1	0	1
Apollo Bay	1	0	0
Ararat & District Hospital	1	2	2
Bacchus Marsh	6	8	8
Bairnsdale	8	3	4
Ballarat Health	28	27	30
Ballarat SJOG	5	5	1
Benalla	1	0	2
Bendigo Health	15	19	23
Bendigo SJOG formerly Mt Alvernia (Bendigo)	3	4	4
Boort	0	0	1
Camperdown	1	1	1
Castlemaine	1	1	3
Cohuna	1	0	0
Colac: South West Alliance of Rural Health	3	5	3
Daylesford	3	2	0
Donald	2	0	2
Echuca	11	9	8
Foster	1	3	2
Geelong Bellarine	28	27	31
Geelong SJOG	6	6	9
Hamilton	6	3	4
Healesville	3	3	1
Horsham	10	15	10
Kerang	3	1	3
Kilmore	5	3	1
Korrumburra	0	1	1
Kyabram	4	4	2
Kyneton	5	3	3
Leongatha	3	5	7
Mansfield	0	1	2
Maryborough	3	4	4
Mildura Base	12	14	6
Mornington	4	5	6
Mt Beauty (Tawonga)	1	0	0
Not Known (Country)	0	1	0
Orbost	0	0	1
Portland	3	0	4
Rosebud	6	0	0
Sale	5	11	9
Seymour	3	0	4
Shepparton Goulburn	28	28	22
Shepparton Private	1	0	0
Stawell	1	1	0

Emergency Transfer – Referring Hospital (cont'd)

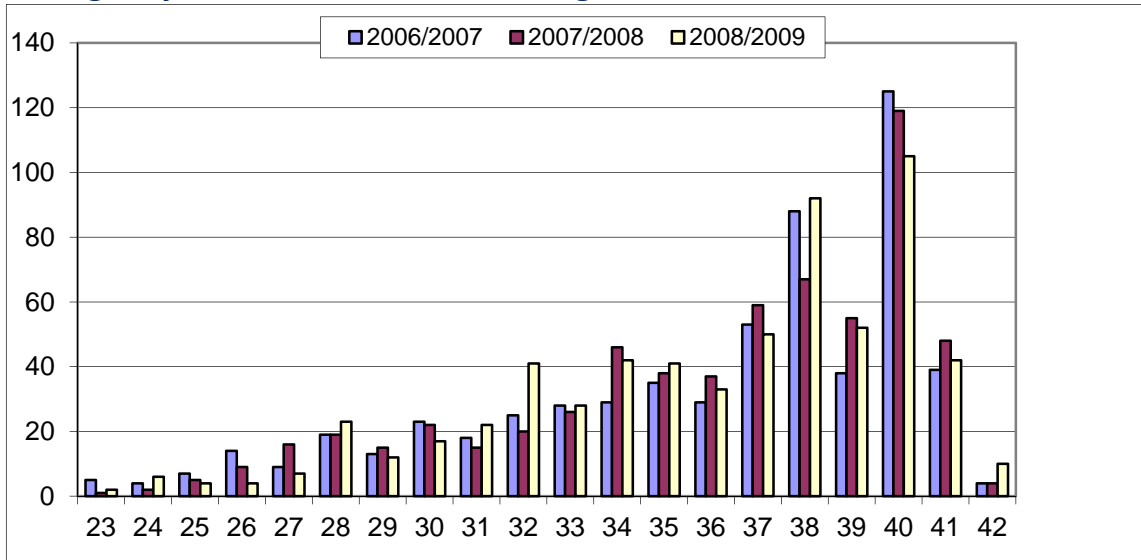
<i>Country (cont'd)</i>	<i>2006/2007</i>	<i>2007/2008</i>	<i>2008/2009</i>
Swan Hill	7	14	6
Traralgon	42	34	33
Wangaratta	18	16	11
Warragul	16	14	24
Warrnambool Base	12	13	13
Wodonga	13	20	23
Wonthaggi	4	8	3
Yarram	1	0	0
Yarrawonga	1	0	0
Sub-Total	346	344	338
<i>Interstate</i>	<i>2006/2007</i>	<i>2007/2008</i>	<i>2008/2009</i>
Adelaide Women & Children's Hospital	0	1	0
Albury Base	4	2	4
Alice Springs	0	0	1
Brisbane	2	0	0
Brisbane Mater	1	0	0
Burnie	1	0	0
Canberra Hospital	0	1	0
Deniliquin	3	4	4
Devonport	0	0	1
Griffith	0	1	0
Hobart	0	2	0
King Island	0	0	1
Launceston QV Maternity Hospital	0	1	0
Launceston Queen	1	0	0
Non- Australian Hospital	2	0	0
Wagga Base	2	0	0
Westmead	1	0	0
Royal Darwin	1	0	0
Pambula	1	0	0
Sub-Total	19	12	11
TOTAL	1048	1112	1085



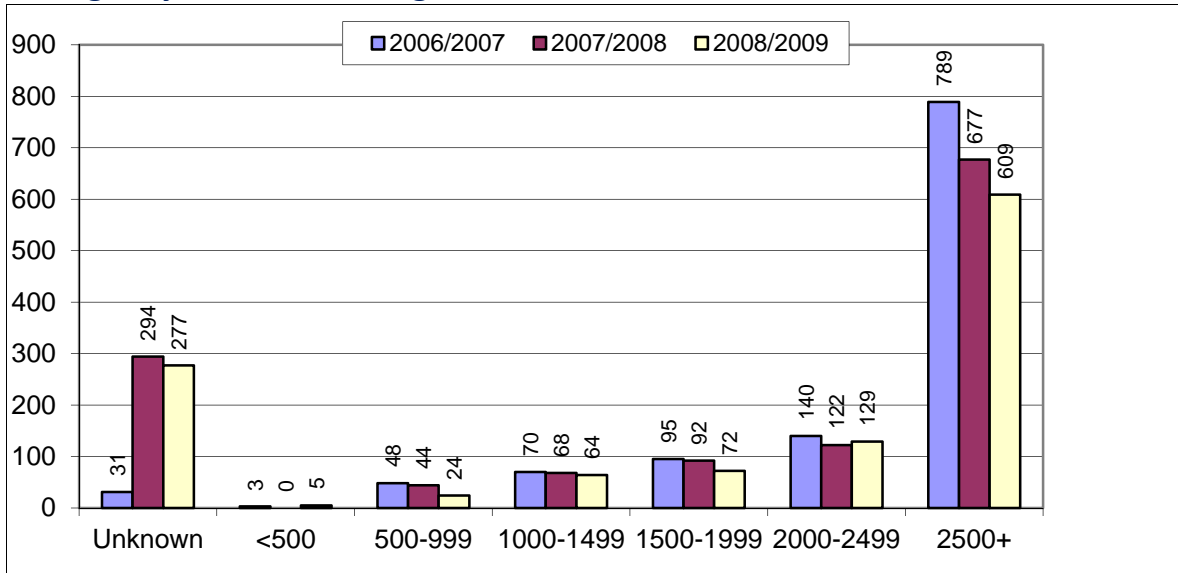
Emergency Transfers – Receiving Hospital

Hospital Level	2006/2007	2007/2008	2008/2009
Tertiary			
Adelaide Women & Children's Hospital	0	2	0
Canberra Hospital	3	8	5
MMC	117	86	53
RCH	38	78	42
RWH	145	146	181
RCH - PICU	61	79	73
RCH - Emerg	27	27	27
RCH - NNU	365	291	316
MMC - NICU	29	34	56
MMC - Emerg	12	24	19
MMC - PICU	22	14	19
RCH - 7W	35	42	43
Flinders Medical Centre	0	0	1
MHW	147	194	180
Liverpool	0	1	1
Sub-Total	1001	1026	1016
Non-Tertiary			
Angliss	0	2	0
Ballarat Health	6	1	3
Bendigo Health	5	2	5
Box Hill	2	2	2
Dandenong	1	11	3
Mornington Peninsula Hospital - Frankston	2	2	2
Geelong Bellarine	1	1	2
Horsham	1	0	0
Northern	1	4	3
Shepparton Goulburn	0	2	2
St Vincent's Private	2	1	2
Sunshine	3	14	7
Traralgon	1	0	1
Wangaratta	2	1	1
Warragul	0	0	1
Warrnambool Base	0	2	5
Werribee Mercy	2	0	1
Wodonga	1	0	0
Casey	0	1	0
Sub-Total	30	46	40
TOTAL	1031	1072	1056

Emergency Transfers – Gestational Age at Transfer



Emergency Transfer – Weight at Transfer



Emergency Transfers – Main Diagnoses

		2009/10	2010/11	2011/12	2012/13
1	Respiratory Distress	185	138	158	164
2	Bowel Obstruction	91	64	102	81
3	Prematurity	96	68	86	74
4	Bronchiolitis	65	44	53	66
5	Sepsis	31	38	42	58
6	Congenital Heart Disease	54	40	53	52
7	Hypoxic Ischaemic Encephalopathy	46	42	29	50
8	Meconium Aspiration Syndrome	21	16	15	32
9	Convulsions	34	21	33	32
10	Jaundice	17	18	11	25
11	Pneumothorax	11	12	9	22
12	Hypoglycaemia	19	17	25	21
13	Apnoea	19	10	15	19
14	Gastroschisis	11	10	12	16
15	Oesophageal atresia +/- fistula	15	11	15	15
16	Necrotising enterocolitis	14	7	15	15
17	Congenital Diaphragmatic Hernia	12	7	12	12
18	Upper airway Obstruction	10	12	14	9
19	Exomphalos	3	3	5	5



Elective Transfers – Referring Hospital

<i>Metropolitan</i>	<i>2006/2007</i>	<i>2007/2008</i>	<i>2008/2009</i>
Angliss	0	0	1
Box Hill	4	0	0
Cabrini	0	1	0
Dandenong	1	0	7
FPH	5	8	2
Mornington Peninsula Hospital - Frankston	0	2	1
Frankston Peninsula Private	1	0	0
Epworth Freemasons	1	1	1
Knox	1	1	0
Masada	1	0	0
MMC	9	13	8
Northern	2	1	1
RCH	1	1	1
RMH	1	0	0
RWH	66	128	45
St Vincent's Private	2	1	5
Sunshine	1	1	1
Werribee Mercy	1	1	5
RCH - PICU	0	1	0
RCH - NNU	6	1	2
MMC - NICU	2	3	2
RCH - 7W	1	1	0
Casey	0	1	0
MHW	14	13	9
Sub-Total	120	179	91
<i>Country</i>	<i>2006/2007</i>	<i>2007/2008</i>	<i>2008/2009</i>
Ballarat Health	3	1	3
Bendigo Health	0	1	0
Geelong Bellarine	2	1	0
Geelong SJOG	1	1	0
Mornington	0	2	0
Portland	1	0	0
Sale	0	1	0
Shepparton Goulburn	0	0	1
Traralgon	1	0	1
Warrnambool Base	0	0	1
Wodonga	0	1	1
Sub-Total	8	8	7
<i>Interstate</i>	<i>2006/2007</i>	<i>2007/2008</i>	<i>2008/2009</i>
Non- Australian Hospital	1	0	0
Sub-Total	1	0	0
TOTAL	129	187	98

Elective Transfers – Receiving Hospital

<i>Hospital Level</i>	<i>2006/2007</i>	<i>2007/2008</i>	<i>2008/2009</i>
<i>Tertiary</i>			
MMC	2	6	8
RCH	60	77	40
RWH	6	53	5
RCH - PICU	5	6	3
RCH - NNU	36	17	22
MMC - NICU	0	1	1
RCH - 7W	13	11	13
MHW	2	3	2
Royal Darwin	1	1	0
Sub-Total	125	175	94
<i>Non-Tertiary</i>			
Angliss	1	0	0
Bendigo Health	0	0	2
FPH	1	1	0
Mornington Peninsula Hospital - Frankston	0	2	0
RMH	1	0	0
Sunshine	0	0	1
Sub-Total	3	3	3
TOTAL	128	178	97



Return Transfers – Referring Hospital

<i>Hospital Level</i>	<i>2006/2007</i>	<i>2007/2008</i>	<i>2008/2009</i>
<i>Tertiary</i>			
Brisbane	0	1	0
Canberra Hospital	1	0	6
MMC	356	417	430
RCH	165	164	111
RWH	375	421	466
RCH - PICU	1	1	1
RCH - NNU	9	41	72
MMC - NICU	0	5	14
RCH - 7W	3	11	19
Flinders Medical Centre	1	0	2
MHW	293	335	285
Sub-Total	1204	1396	1406
<i>Non-Tertiary</i>			
Alice Springs	1	0	0
Angliss	0	0	2
Ballarat Health	0	4	0
Box Hill	3	8	12
Dandenong	7	9	14
FPH	16	15	28
Mornington Peninsula Hospital - Frankston	2	3	5
Epworth Freemasons	0	2	0
Geelong Bellarine	1	0	7
Jessie McPherson	8	6	3
Mitcham	0	1	2
Northern	3	8	6
Sandringham	0	1	0
Shepparton Goulburn	0	1	0
St Vincent's Private	5	3	4
Sunshine	6	12	8
Traralgon	1	0	0
Waverley	0	1	0
Werribee Mercy	2	1	0
Casey	0	2	0
Princess Margaret Hospital Perth	0	0	1
Met at Melbourne Airport (Tulla)	0	0	1
Sub-Total	55	77	93
TOTAL	1259	1473	1499

Return Transfers – Receiving Hospital

<i>Metropolitan</i>	<i>2006/2007</i>	<i>2007/2008</i>	<i>2008/2009</i>
Angliss	45	59	64
Austin	0	1	0
Berwick	5	1	1
Box Hill	64	57	60
Cabrini	11	18	15
Dandenong	151	185	201
FPH	20	8	15
Mornington Peninsula Hospital - Frankston	62	99	79
Frankston Peninsula Private	5	1	7
Epworth Freemasons	21	30	29
Jessie McPherson	2	0	0
Knox	9	8	11
Masada	14	11	10
Met at Air Ambulance	2	0	0
Mitcham	18	26	25
MMC	11	17	24
North Park	21	21	31
Northern	91	115	100
RCH	0	1	0
RWH	18	28	26
Sandringham	28	27	34
South Eastern	4	7	11
St Vincent's Public	0	1	0
St Vincent's Private	25	30	27
Sunshine	105	114	146
Waverley	10	32	16
Werribee Mercy	79	88	87
RCH - NNU	1	1	0
Epworth	1	2	0
Casey	38	63	89
MHW	16	28	14
Sub-Total	877	1079	1122
<i>Country</i>	<i>2006/2007</i>	<i>2007/2008</i>	<i>2008/2009</i>
Bacchus Marsh	3	3	4
Ballarat Health	51	44	48
Ballarat SJOG	7	6	2
Bendigo Health	51	59	37
Bendigo SJOG formerly Mt Alvernia (Bendigo)	10	5	1
Daylesford	0	0	1
Echuca	0	0	2
Geelong Bellarine	50	43	45
Geelong SJOG	13	17	13
Hamilton	3	0	1

Return Transfers – Receiving Hospitals (Cont'd)

<i>Country (cont'd)</i>	<i>2006/2007</i>	<i>2007/2008</i>	<i>2008/2009</i>
Horsham	4	8	2
Kilmore	0	3	1
Kyneton	2	0	0
Leongatha	2	6	6
Mildura Base	9	14	11
Mornington	7	2	8
Rosebud	0	1	0
Sale	18	17	21
Seymour	0	0	4
Shepparton Goulburn	43	42	30
Sunbury	1	1	0
Swan Hill	0	1	3
Timboon	1	0	0
Traralgon	23	28	35
Wangaratta	21	20	22
Warracknabeal	1	0	1
Warragul	14	20	13
Warrnambool Base	11	16	24
Warrnambool SJOG	2	0	0
Wodonga	29	30	30
Wonthaggi	0	0	1
Sub-Total	376	386	366
<i>Interstate</i>			
Alice Springs	1	0	3
Canberra Hospital	1	1	1
Darwin Private	0	0	1
Deniliquin	1	2	1
Griffith	0	1	0
Hobart	0	0	1
Launceston Queen	0	0	1
Wagga Base	1	0	1
Marter	1	0	0
Sydney North Shore Private Hospital	0	0	1
Sydney Mater	1	0	0
Princess Margaret Hospital Perth	0	0	1
Sub-Total	6	4	11
TOTAL	1259	1469	1499

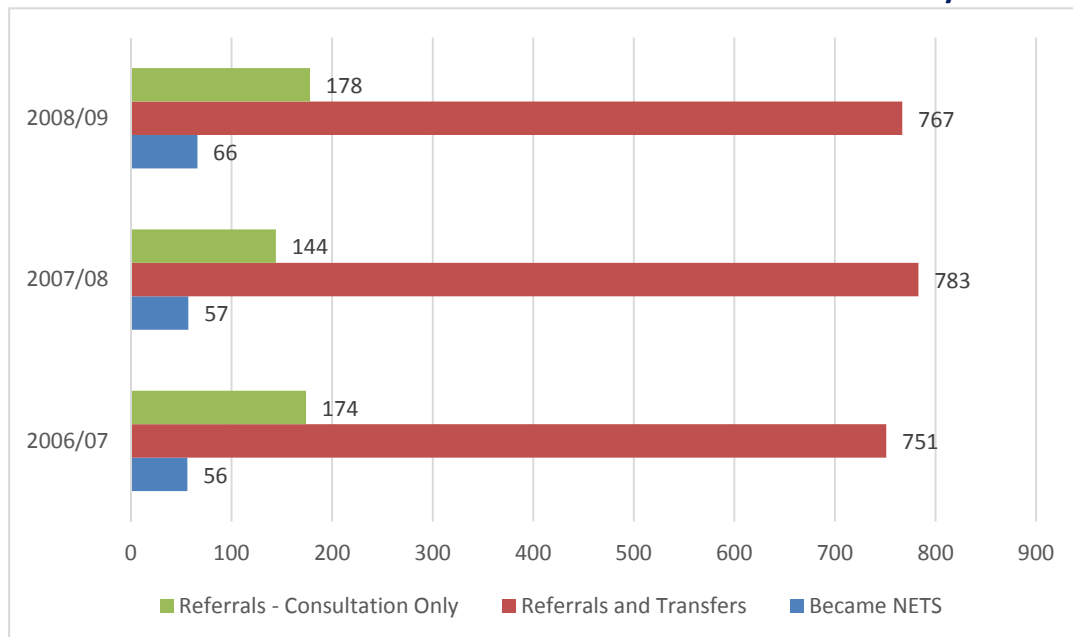
6 Appendix B

6.1 PERS Activity Data from 1st July 2006 to 30th June 2009

PERS Transfers By Regions Between 01-Jul-2006 And 30-Jun-2009

		Receiving Hospitals												
		Barwon	Grampians	Loddon Mallee	NorthWest Metro	RWH	Hume	Eastern Metro	MHW	Gippsland	Southern Metro	MMC	Other / Interstate	Unknown
Referring Hospitals	Barwon	12	2		8	72		1	57			25	2	
	Grampians	4	14	1	18	68		1	58			20	2	
	Loddon Mallee		4	22	28	104	7	1	93			38	7	
	NorthWest Metro	1	1		30	191		2	198		3	51	1	
	RWH					3		1	6		1	5		
	Hume	1			17	68	5	5	95		1	39	9	
	Eastern Metro				4	68		10	94		4	77		
	MHW					3			1			1		
	Gippsland	1			1	48		7	62	11	11	86		
	Southern Metro				2	90		10	109		25	155		
	MMC					5		3	16			4		
	Other / Interstate				1	12	2		7		2	5	10	
	Unknown				3	4			7			4		

Breakdown of Total PERS Referrals from 2006/07 to 2008/09



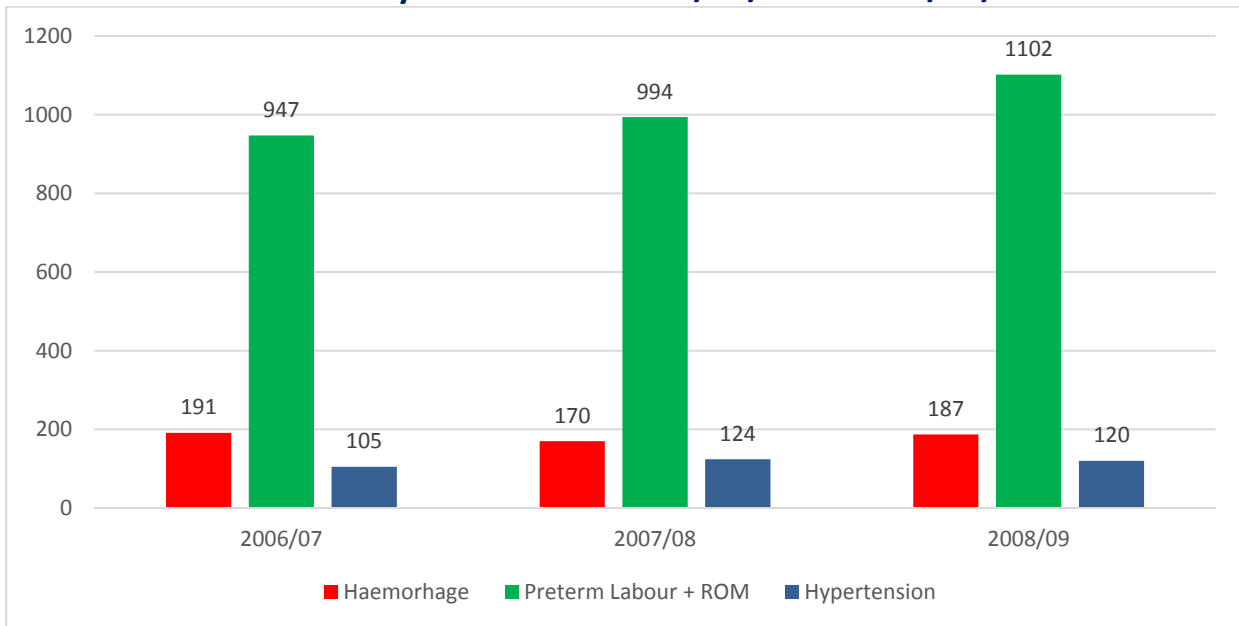
Origin of PERS Referrals

	2006/07	2007/08	2008/09
Level 3 to Level 3	27	19	8
Interstate Requests	7	16	6
Metro Level 2	431	460	454
Rural Level 2	319	313	268
Metro Level 3	36	27	16
Ref Hospitals Lower than level 2	222	203	260

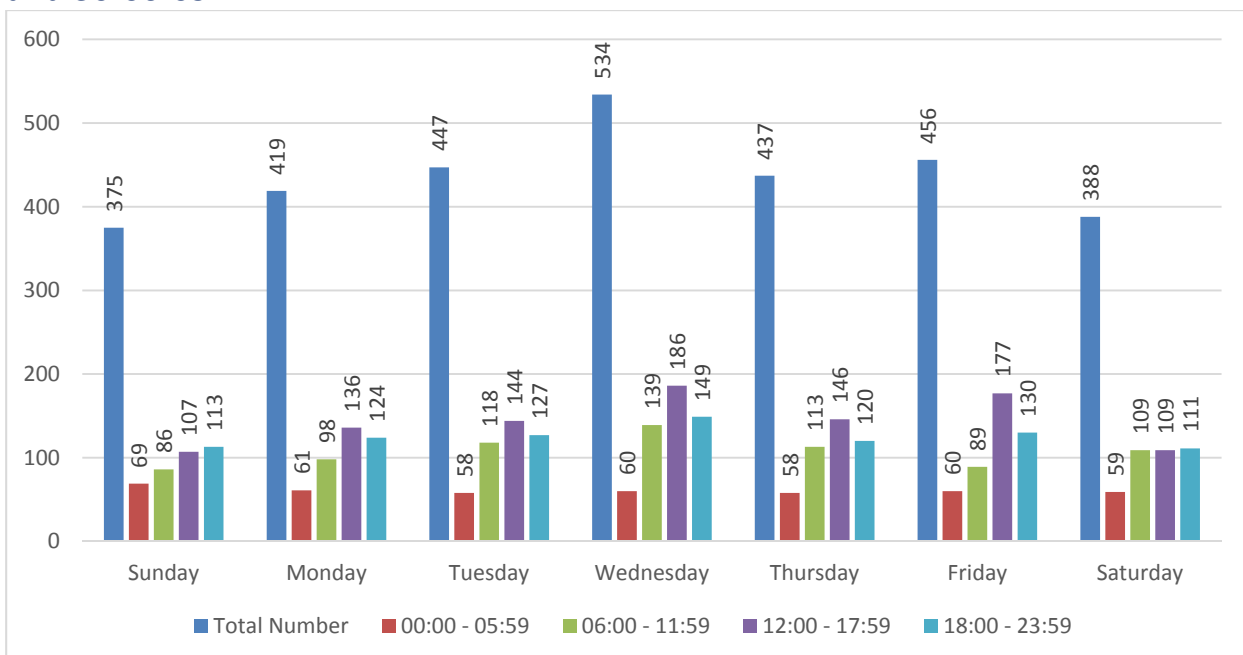
Destination of PERS Transfers

	2006/07	2007/08	2008/09
Interstate	9	13	7
Level 3	721	723	662
Metro Level 2	53	67	80
Rural Level 2	18	20	46
Hospitals Lower than level 2	1	4	5

Perinatal Consultations by Clinical Details 01/07/2006 to 30/06/2009



Frequency of PERS Referrals by Day and Time of Referral Call between 01-07-06 and 30-06-09



know your transport

— CLASSIFICATION —

★ Primary Time Critical: depart within 15 minutes **PRIORITY 1**

- for:*
- Ongoing resuscitation
 - ▶ collapse or shock
 - ▶ severe asphyxia
 - ▶ cyanosis or bradycardia
 - Extreme prematurely
 - ▶ < 32 weeks in level 1 hospital
 - ▶ ≤ 28 weeks in level 2 hospital
 - Ventilated in
 - ▶ any nursery without medical ventilator
 - ▶ level 1 hospital
 - ▶ low dependency level 2 hospital
 - ▶ greater than 60% oxygen
 - Infant in hospital without staff or equipment to deal with clinical situation
 - bile stained vomiting – rule out malrotation
- Consider helicopters
- Consider rapid response vehicle

★ Primary Urgent: depart within 25 minutes **PRIORITY 2**

- for:*
- all other transports except those classified under non-time critical below

★ Primary Non-Time Critical: depart within 60 minutes **PRIORITY 3**

- for:*
- Overflow transfers (some)
 - Other acute transfers from level 3 hospitals (some)
 - Other non-elective transfers (e.g. special investigations, MRI)
 - All 'returns' on respiratory support (booked)

★ Elective & Return: booked time **PRIORITY 4**

- for:*
- Non-ventilated, booked, transports (e.g. CT/MRI, special investigations)
 - Back transfer of infants who are **NOT** on respiratory support

★ Consultation – neonatal:

- for:*
- Contact with NETS in which the infant is **NOT** transported within 24 hours of initial call

★ Consultation – perinatal:

- for:*
- In-utero bed finding
 - Perinatal advice
 - Does **NOT** result in mobilisation of transport team



LIST OF ACRONYMS

AV	Ambulance Victoria
AAV	Air Ambulance Victoria
ARV	Adult Retrieval Victoria
DH	Department of Health
ICU	Intensive Care Unit
MMC	Monash Medical Centre, Melbourne
NETS	Newborn Emergency Transport Service, Victoria
NSW	New South Wales
PERS	Perinatal Emergency Referral Service
PETS	The Victorian Paediatric Emergency Transport Service
PICU	Paediatric Intensive Care Unit
RCH	The Royal Children's Hospital, Melbourne
TAS	Tasmania
VIC	Victoria
WA	Western Australia



Adjunct Professor Ian Patrick, Director of Nursing (NETS/PERS) – Fay Presbury and neonatal transport nurse Anne-Marie Fenton with a 'NETS' family



PIPER HOTLINE

1300 137 650

Paediatric Infant Perinatal Emergency Retrieval Service (PIPER)*

*Previously: Newborn Emergency Transport Service (NETS)
and Perinatal Emergency Referral Service (PERS)

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