

# **Report on the Short Stay Unit Paediatric Emergency Room Project at the Royal North Shore Hospital Emergency Department (RNSH ED). October 2011 to November 2012**

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## **Summary**

The Short Stay Unit Paediatric Emergency Room (SSUPER) Project was undertaken in response to several factors

1. A desire to improve paediatric patient care at the Royal North Shore Hospital Emergency department by improving patient flow and staffing.
2. The availability of funding through the Ministerial Taskforce on Emergency Care process
3. The identification of a cohort of patients that needed observation for > 4 hours but went home in less than 12 hours from triage time
4. The availability of clinical space in the Paediatric Emergency Department
5. The onsite presence of medical and nursing staff capable of caring for these patients

A clinical space in the Paediatric Emergency department was opened up and an extra nursing staff member dedicated to the SSUPER was rostered on. The project funding from MTEC was used to supplement the RNSH ED nursing complement to supply this shift. All the funding from MTEC went on nursing staff expenses. Initially this allowed SSUPER to open for 12 hours per day from the 11th October 2011 to 8<sup>th</sup> of February 2012, however after that, by rearrangement of nursing shifts, the SSUPER was able to open 24 hours a day 7 days per week.

Admission criteria were kept as clear and simple with the final decision resting with Emergency Department Consultants. ([see appendix 1](#)). The patients were admitted under the Emergency Consultant rostered to cover paediatrics for that shift and moved to the dedicated area. The junior medical staff member who was caring for them in the emergency department continued their care in SSUPER in liaison with the ED consultant.

It ran from October 2011 to November 2012 when the RNSH ED moved to the new Acute Services Building.

It was a success with patients, their carers and staff recognising an improvement in patient care and comfort both for those admitted to SSUPER and the non SSUPER emergency patients who benefitted from the increased space and improved flows.

RNSH ED plans to continue this model in the new Acute Services Building (ASB) renaming it The Paediatric Emergency Medical Unit when appropriate adjustments can be made to the clinical space in the new Emergency department.

## Background

RNSH ED has over the last 15 years developed an excellent model for paediatric emergency care. Since 1997 there has been a dedicated area of the department for paediatrics with doors that are closed to the adjacent adult sections. This prevents utilisation of paediatric beds by adult patients while allowing easy access to all areas by staff. There has also been the establishment of 24 hour 7 day per week dedicated paediatric Junior Medical Staff separately rostered from the adult section but with flexibility to work in other parts of the department when there is greater need and vice versa. These Junior Medical Officers (JMO) are a mixture of Paediatric and Emergency Medicine Trainees. There were also 1 to 2 nursing staff specifically allocated to the area. During the night shift when there are no JMOs on the Children's Ward at RNSH the Paediatric ED registrar would cover the ward necessitating at least one visit every shift and usually more. Our children's ward is a level 4 unit and therefore does not have a High dependency unit. Patients requiring ICU are transferred to the children's hospitals by NETS.

Paediatric presentations to RNSH ED have been steadily increasing over these years and access block with overcrowding were becoming an issue. Nursing staff were often overwhelmed with the demands on their time. In 2011 a review by Mrs Clare Davies the paediatric CNC at RNSH and others of our patient movements identified a group of patients that stayed in ED for 4 to 12 hours and was discharged home. The serendipitous availability of MTEC funding for projects to improve flow lead to the establishment of SSUPER.

## Types of Patients admitted to SSUPER

### Diagnoses

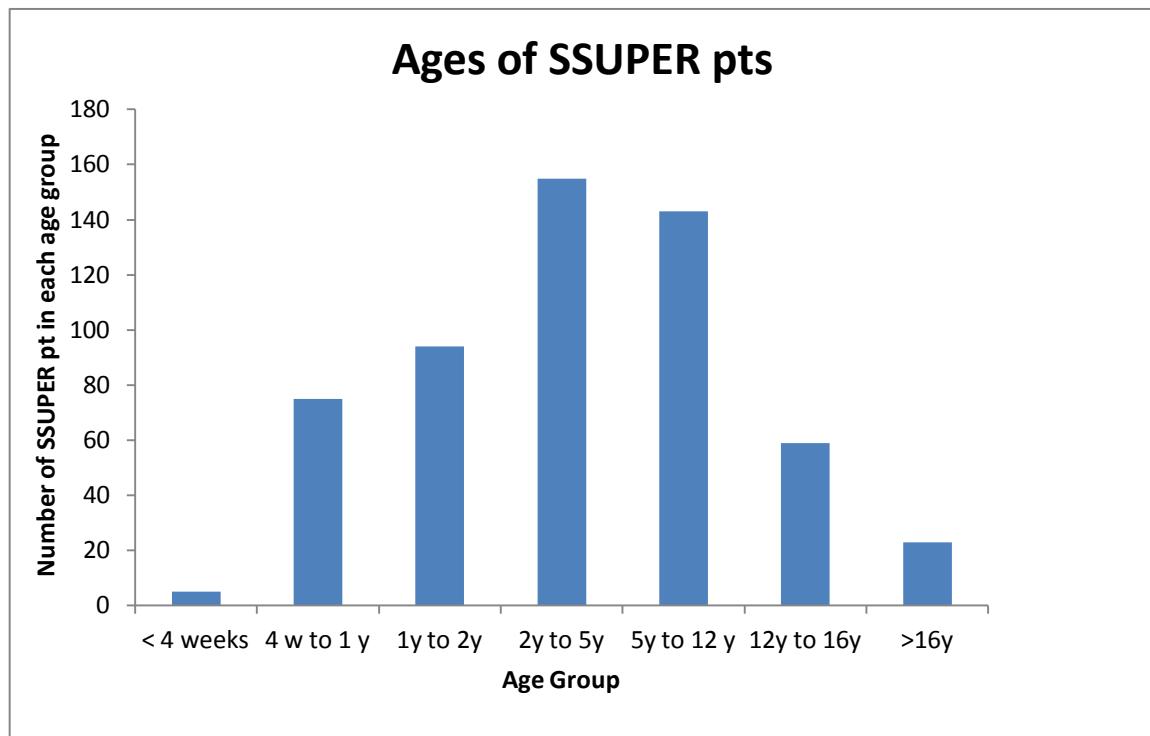
Table 1 Outlines the Diagnoses of Patients admitted to SSUPER sorted in descending order of frequency. Asthma and Head injury were the 2 most common diagnoses. However there was a wide range of paediatric medical, surgical and mental health problems admitted. 171 different diagnoses are summarised in the table.

**Table 1 Diagnoses of those admitted to SSUPER**

Diagnostic Groups	Number of Presentations	Number of pres %
Asthma	131	23.6%
Head injury	87	15.7%
Other Medical	51	9.2%
Allergic reaction	43	7.7%
Croup	31	5.6%
Trauma not head injury	30	5.4%
Gastroenteritis	28	5.0%
Vomiting	27	4.9%
Viral illness	20	3.6%
Bronchiolitis	19	3.4%
Abdominal pain	18	3.2%
Convulsion/Seizure	16	2.9%
Toxicology	14	2.5%
Other	18	3.2%
Fever	10	1.8%
Surgical	9	1.6%
Mental Health	3	0.5%
Grand Total	555	100.0%

## Ages

Figure 1 depicts the ages of patients admitted to SSUPER.



## Numbers of Patients admitted to SSUPER

**Table 2 - Royal North Shore Hospital Emergency Department Paediatric Admissions by Volume**

Years	Month	Paed Presentation	Padiatric Admissions, incl SSUPER	SSUPER Admissions
2011	Nov	1106	208	21
	Dec	1145	200	28
2012	Jan	1087	180	18
	Feb	1254	275	63
	Mar	1384	307	58
	Apr	1194	261	57
	May	1416	279	53
	Jun	1351	243	50
	Jul	1327	259	37
	Aug	1355	304	70
	Sep	1229	262	56
	Oct	1223	230	44
<b>Total</b>		<b>15071</b>	<b>3008</b>	<b>555</b>

Table 2 shows the number of patients admitted to SSUPER compared to overall admissions and presentations. SSUPER admissions started at about 10% of all admissions and then rose to about 20% when the service was available 24 hours 7 days per week.

**Table 3**

**SSUPER Admissions and Transfers from SSUPER to Childrens Ward**  
**Nov 2011 - Oct 2012**

SSUPER Transfers				Total SSUPER Admissions
Years	Month	SSUPER	SSUPER -> CW	
2011	Nov	18	3	21
	Dec	23	5	28
2012	Jan	18		18
	Feb	54	9	63
	Mar	52	6	58
	Apr	46	11	57
	May	42	11	53
	Jun	41	9	50
	Jul	28	9	37
	Aug	60	10	70
	Sep	49	7	56
	Oct	37	7	44
<b>Total SSUPER Admissions</b>		<b>468</b>	<b>87</b>	<b>555</b>

Table 3 Shows the number of admissions to SSUPER that eventually were admitted to the children's ward. Overall these were 16% of the total SSUPER admissions a little bit higher than our target of 10%. However it proved difficult to predict the course of some illnesses at admission especially for Bronchiolitis see Table 4

**Table 4 Transfers from SSUPER to Children's ward by diagnoses**

Diagnostic Groups	Number of Presentations	Number transferred from SSUPER to CW	Transferred %
Bronchiolitis	19	10	52.6%
Viral illness	20	7	35.0%
Surgical	9	3	33.3%
Gastroenteritis	28	8	28.6%
Asthma	131	37	28.2%
Convulsion/Seizure	16	3	18.8%
Other	18	3	16.7%
Other Medical	51	7	13.7%
Vomiting	27	3	11.1%
Fever	10	1	10.0%
Croup	31	3	9.7%
Toxicology	14	1	7.1%
Abdominal pain	18	1	5.6%
Head injury	87	1	1.1%
Allergic reaction	43	0	0.0%
Trauma not head injury	30	0	0.0%
Mental Health	3	0	0.0%

## Length of Stay

Table 5 shows the average length of stay of patients who were admitted to SSUPER both from triage time to SSUPER admission and from SSUPER admission to discharge. Patients were averaging a little over 7 hour in hospital during the project. Table 5

<u>Royal North Shore Hospital</u> <u>Length of Stay in ED and LOS in SSUPER</u> <u>Nov 2011 - Oct 2012</u>			
<u>Years</u>	<u>Month</u>	<u>Length of Stay LOS in ED, Avg</u>	<u>LOS in SSUPER, avg</u>
2011	Nov	3:00	3:05
	Dec	2:51	2:09
2012	Jan	2:44	2:37
	Feb	3:32	4:05
	Mar	3:35	3:59
	Apr	3:03	3:43
	May	3:23	5:32
	Jun	3:17	3:41
	Jul	3:20	5:27
	Aug	3:20	4:10
	Sep	3:24	4:25
	Oct	3:21	4:48
<b>Total</b>		<b>3:15</b>	<b>4:09</b>

Length of Stay showed in **hour:minute** format

Length of Stay in SSUPER does not include LOS in Emergency prior transfer to SSUPER.

## Comparison with Non SSUPER time

Statistical comparisons with times before SSUPER was opened was limited by the introduction of a new patient tracking system, Firstnet, in July 2011. Consequently most comparisons are between 1<sup>st</sup> of July 2011 until the 10<sup>th</sup> of October 2011 (the Pre SSUPER period) and the SSUPER period.

There was an improvement in the flow of patients in general because of the extra space and Nursing Staff opened up. This is demonstrated by the fact that the time to be first seen by a doctor after triage improved from an average of 40 minutes in the pre SSUPER time to 33 minutes in the SSUPER period.

National Emergency Access Target (NEAT, in this report this means discharge from ED in < 4 hours from time of triage) performance also improved going from an average of 67% in the Pre SSUPER period to 72.6% in the SSUPER period. In the Pre SSUPER period NEAT performance for all patients admitted was 27%. Throughout the SSUPER period the NEAT performance of all patients admitted to SSUPER and the children's ward was 33%. During the SSUPER period those admitted to SSUPER had a better NEAT performance than those admitted to the ward (56% vs 28%). However both are well below the target for that year of 70% an issue which is discussed in the Challenges section of this report. Admission rates rose during the SSUPER period as compared with the Pre SSUPER period (19.8% vs 16.4%) some of this increase would be due to SSUPER patients that in the pre SSUPER period would have languished unadmitted in the department.

## Patient Feedback

Anecdotally parent's opinions of SSUPER were good to excellent. A small sample of patients was surveyed on their level of satisfaction ([see the survey form in appendix 2](#)). 69% rated their experience of overall care at RNSH as excellent with the remaining 31% rating it as good or very good. The rating of their experience in SSUPER itself was 75% excellent with the rest being good or very good. When asked if they would prefer admission to SSUPER as opposed to an overnight stay on the ward 75% agreed or strongly agreed, 19% were uncertain and 6% strongly disagreed. The least satisfied patients were those who ended up being transferred from SSUPER to Children's ward. This is discussed further in the Challenges section of this report

## Staff feedback

The ED staffs' opinions of SSUPER were almost universally positive. Most saw it operating in a very similar way to the Adult EDs Emergency Medicine Unit (EMU) and thus were very comfortable with moving patients through in this way. The proximity of the SSUPER to the Paediatric ED meant that it was not a problem for Junior Medical staff to continue care of their ED patients in SSUPER and that the nurse covering SSUPER could assist in Paediatric ED and vice versa. Since moving to our new ED in the RNSH ASB 3 weeks ago the SSUPER project has been wound up and staff have commented that they miss it. This is further evidence of its utility

## Challenges/future plans

### Infectious patients

The lack of an isolation bed excluded many patients that would have been otherwise suitable for SSUPER. For example; there were 656 patients with some form of gastroenteritis who were discharged with a mean length of stay of 190 minutes and 173 of them stayed more than 4 hours. Another 115 were admitted to the children's ward; some of those may have been suitable for rehydration in SSUPER and discharge. This would have lead to an approximate 30% increase in SSUPER admissions. Despite the ban on infectious patients 5% of those admitted to SSUPER had a diagnosis of Gastroenteritis. In most of these cases the diagnosis was not apparent until after admission to SSUPER. There were no reported cases of cross infection.

### Patients needing transfer to Children's ward

16% of patients needed transfer to children's ward and transfer of care from the ED specialist to the paediatrician. This was the most frequent cause of parent dissatisfaction. Attempt to reduce this fraction by more careful selection early in the SSUPER period lead to underutilisation and later admission to SSUPER. It seems that progress of sick children is difficult to predict especially in the very young. In the end a policy of admitting to SSUPER and early consultation with paediatricians if there was a concern that the SSUPER patients were not going to get home was the best policy. In future in our Paediatric EMU we plan to set the target for discharge home at 80%. This will allow staff to feel more comfortable about admitting patients to SSUPER earlier in their stay in ED thus improving the flow of patients through the department and our NEAT performance.

### Improving average length of stay and Neat performance for those admitted to SSUPER

As noted above 56% NEAT performance for those admitted to SSUPER is well below target. Associated with this was the fact that the average length of stay for all patients in the SSUPER period was 202 minutes, in the pre SSUPER period it was 211 minutes an improvement of 5%. This was less than hoped for and one of the reasons was outlined above. Another reason is that because the SSUPER admission criteria mentioned 4 hours that staff often waited until 4 hours was up before making the decision. A third reason was the lack of

awareness of NEAT performance criteria among staff. Changing the trigger time to 3 hours and educating staff on NEAT criteria will improve this in future.

## **Size of SSUPER**

At most times 2 beds were adequate however at our busiest times especially during winter sports season on Saturdays SSUPER was full and appropriate patients could not get in. It is difficult to overcome this problem in a fixed bed ward.

## **The requirements for a short stay unit**

In the national agreement on NEAT short stay units are defined as being a

“Short Stay Units or their equivalent must have the following characteristics<sup>i</sup>:

- designated and designed for the short term treatment, observation, assessment and reassessment of patients initially triaged and assessed in the emergency department;
- have specific admission and discharge criteria and policies;
- designed for short term stays no longer than 24 hours;
- physically separated from the emergency department acute assessment area;
- have a static number of beds with oxygen, suction and patient ablution facilities; and
- not a temporary emergency department overflow area nor used to keep patients solely awaiting an inpatient bed nor awaiting treatment in the emergency department.”

SSUPER satisfied all these requirements except perhaps that it was not physically separate from the emergency department. It was 2 previously unused bed spaces in a corner of the paediatric ED; there was no physical wall between it and the Paediatric ED. If the meaning of “physical separate” was that they were not virtual beds where a patient was admitted to SSUPER and their ED bed became a SSUPER bed then this model satisfied that criteria. The same 2 bed spaces were always the SSUPER beds and patients were physically moved to those spaces. However if the meaning requires a wall or partition between the ED and SSUPER it does not satisfy that criteria. Is a wall necessary? I have already outlined the advantages of the proximity for staff. The advantages for patients included the fact that they could use the play equipment in the paediatric ED section and they could easily get the attention of their treating doctors if needed. One disadvantage is that there could be no isolation in SSUPER another is the loss of differentiation between SSUPER patients and ED patients that sometimes occurred in the minds of the staff. Our proposed solution is a PEMU with at least one isolation room and one other bed partitioned off from the main area.

## **Patient Safety**

There were no major adverse events reported during the SSUPER period. The only complaint from the paediatricians was that patients that were eventually admitted to the Children’s ward were observed for too long in SSUPER. This was an inconvenience and disappointment for the parents and patient but did not significantly change their management. The problem disappeared with advice to medical staff to consult early if the patient was not improving.

## **SSUPER vs Short Stay Unit in Paediatric ward.**

In previous winters there has been a temporary SSU set up on our children’s ward. Although there is some overlap the 2 models are more complementary than competitive because the SSU on children’s ward had longer staying, more complicated patients and more paediatric medical patients than SSUPER ([see the list of diagnoses in SSUPER](#)). Also our SSU model was 12 hours per day and also took booked admissions. One great advantage of SSUPER was that the patient was admitted under an ED staff specialist who was in the

department 16 hours per day. This meant the decision to admit was rapid and that review by a senior specialist could be frequent. The 2 models never operated together during the SSUPER period but in future we hope they will bring further benefits for patient convenience and flow. The main reason for changing the name from SSUPER to Paediatric EMU in future is to bring out this complementarity.

## **Did SSUPER reduce admissions to the Children's ward?**

This is difficult to say for certain although the increase in admissions outlined above would suggest that the answer is no. This confirms the finding that SSUPER patients were different to Children's ward patients with a very short average length of stay in SSUPER of 4 hours as opposed to 12 to 24 hours or more in the ward.

## **Applicability of SSUPER model to other Emergency Departments**

As mentioned in the Background section of this report RNSH ED already had very good separate paediatric facilities. On top of that it has ED consultant presence 16 hours a day 7 days a week and paediatric registrar presence 24/7. Many hospitals may not have these advantages and so their model of a SSUPER or paediatric EMU may have to differ from ours. However the principles are the same; an area securely separated from adults with convenient paediatric facilities but close enough to allow ED staff to easily review patients with admission under ED consultants and early discussion of possible long stayers with paediatricians.

## **Conclusion**

An often crowded Paediatric ED section with often overworked nurses was changed by the advent of SSUPER into a less crowded calmer and happier environment with Nurses who were still busy but had time to do the careful checking and important paediatric tasks. They could also support the doctors more expediently with procedures (e.g. by administering Nitrous Oxide and other analgesics). Patients had to spend less time in chairs and in waiting rooms because more beds were available due to better patient flow. SSUPER made these and many other things better for patients and staff and we plan to continue as outlined above.

## **Thanks**

Because all the funding from MTEC went towards the Nursing Staff many people have found time and resources from their already busy lives to make SSUPER happen. Mr Brian McKee-Hata, Nurse Manager RNSH ED, approached the project with passion and especially did a lot of work to get SSUPER open 24 hours a day. Without his efforts it would not have succeeded. Mr Marko Hallikainen RN gave many hours of his IT genius to extract the figures from Firstnet and to work with IMT to create the SSUPER ward in the hospital databases. Our director Dr Robert Day and our deputy director Dr Elizabeth Swinburn gave a lot of time and effort and good advice. Having said that, all the staff of the RNSH ED and the Paediatric department and those involved in administration of MTEC are to be thanked.

## **Appendix 1**

### **Admission criteria for SSUPER:**

#### **Inclusion criteria**

Any paediatric patient in the ED who;

1. Has a probable diagnosis
2. Is likely to need to be in the department for more than 4 hours
3. Has a clinical management plan that will likely lead to discharged home within 12 hrs of admission to SSUPER

#### **Exclusion criteria**

- a. Patients known to be infectious
- b. Patients with diarrhoea
- c. Patients need a significant amount of expertise of other specialties apart from Emergency Medicine (eg Orthopaedics etc)

#### **Other Considerations**

1. Where a child is a known patient of a paediatrician especially if under their care for a chronic and/or complex condition relevant to this presentation discussion with that paediatrician may be required to establish whether the child should admitted to SSUPER or the Children's ward
2. The aim is for a maximum 12 hr stay however if a child's 12 hrs will be completed in the early hours of the morning it is acceptable to extend their stay until a more reasonable hour.

## Appendix 2

### Satisfaction survey

 **Health**  
Northern Sydney  
Local Health Network

**Parent/Carer Satisfaction Survey**

Place pt Sticker here 

**Short Stay Unit Paediatric Emergency Rooms (SSUPER)**  
Your child has been admitted to the Short Stay Unit of the Paediatric Emergency Room (SSUPER). This is a separate section of the paediatric emergency room situated in bed spaces 10 and 11. It is for children who are likely to stay more than 4 hours but will probably go home in less than 12 hours.

This initiative of the Royal North Shore Hospital Emergency Department (ED) is designed to improve your child's experience whilst in hospital. A nurse is rostered to care for your child in SSUPER.

We welcome your feedback on this project and would be grateful if you could answer a few questions. We encourage you to involve your child in completing this survey. The only information that is extracted about your child identity is age, time of admission, time of discharge and diagnosis, the data will be made anonymous. When completed please put the survey in the box provided. Please don't hesitate to contact the staff for further information.

What is your relationship to the patient (eg mother, father, sister etc.)?		
Where you with the patient for the majority of their time in hospital?	Yes	No
Are there any comments you would wish to make?		



**PTO for further questions**



	<b>With regard to your child's stay in the SSUPER how would you rate the following?</b>	Poor	Fair	Good	Very Good	Excellent	<i>Not applicable</i>
1	The overall care and treatment your child received in Royal North Shore						
2	The overall care and treatment your child received particularly in SSUPER						
3	Waiting time (from arrival to being seen by a doctor)						
4	Your total time in the hospital from triage to discharge						
5	The care and attention you received from the nursing staff						
6	The care and attention you received from the medical staff						
7	The level of comfort/ Convenience in SSUPER						
8	If your child had a painful condition, the management of his/her pain						
9	The information given about your child's condition and its management						
10	The information and instruction you received on discharge						
11	The respect shown to your child and the family						
12	<i>The degree to which your child's emotional needs were met</i>						

 **Do you agree with the following statement?**

Being admitted to SSUPER is better than being admitted overnight to the hospital ward.	Strongly disagree	Disagree	Uncertain	Agree	Strongly agree	n/a
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Thank you for your help in improving the care of children at Royal North Shore Hospital



