

# The Role Of General Surgical Registrars In Reducing Inter-Hospital Transfers For Emergency Surgical Referrals In A District Elective Surgical Hospital - A Victorian Multicenter Healthcare Network Experience.

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## Abstract

Casey Hospital (CH) is one of Southern Health (SH) centres offering elective surgical services in various specialties including general surgery. CH also has an emergency department, but does not have the resources to deal with emergency surgical patients. Referrals from the emergency department are referred to the general surgical registrar. In-hours (7.30 am to 5 pm on weekdays) patients are physically assessed by the rostered CH general surgical registrar whilst afterhours and weekend cases are discussed over the phone with a tertiary centre surgical registrar. Management decisions are then made over the telephone, including the need for transfer to the tertiary centre. The aim of our study was to look at the efficacy of having an after-hours surgical registrar in reducing inter-hospital transfers. We retrospectively reviewed all the surgical referrals made between May and July 2010. The time of referrals, type of assessment and the outcomes of patients were recorded. Our study showed that although physically-assessed patients were less likely to require transfer to a tertiary centre, the overall outcome compared to patients discussed over the telephone was not clinically significant to warrant the rostering of an after-hours surgical registrar in an elective hospital.

## INTRODUCTION

Southern Health (SH) is the largest health care network within Victoria. Casey Hospital (CH) is one of the SH centres offering dedicated elective surgical services in many specialties including general surgery. There are two dedicated general surgical registrars who service the elective theatre lists and the emergency department; however, there are no theatre resources to deal with emergency surgical patients. If patients are assessed as requiring emergency surgery, they are transferred to a tertiary hospital within the SH network. The decision for the need to transfer is made by the general surgical registrars at CH, who are rostered from 7.30am to 5.00pm on weekdays only. There are no registrars rostered on weekends. Referrals and transfers after 5.00pm on weekdays are phone discussed with the on-call general surgical registrar at a SH tertiary centre, prior to any action taken. This results in patients being directly admitted under a surgical service at a tertiary centre without a physical assessment by the surgical registrar. This could potentially affect patient care, as inter-hospital transfers of surgical

patients are associated with elevated mortality and are significantly more costly<sup>1</sup>.

## AIM

Our study aims to evaluate the efficacy of having an after-hours surgical registrar in an elective surgical hospital in reducing inter-hospital transfers.

## METHODS

We retrospectively reviewed all the patients who presented to CH emergency department (ED) with general surgical problems over a period of 3 months (May 2010 – July 2010). Patients who presented over the weekends have been excluded from the study. The hospital auditing database for the CH ED and medical records were reviewed to analyze the date and time of presentations, time of referral to a surgical registrar, and the outcome of these patients. There were five possible outcomes: admit at CH, discharge from CH, transfer to tertiary hospital, transfer to private hospital, admit under another specialty. We have subsequently made a comparison of outcomes for patients who were physically

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assessed by the surgical registrar at CH during business hours and patients who had phone consults with surgical registrars at a SH tertiary centre after hours.

We assessed a p-value of <0.05 to be statistically significant with a confidence interval of 95%. We used SAS Software Version 9.0 (SAS Institute Inc., Cary,NC, USA) for all data analysis.

**RESULTS**

Between May and July 2010, a total of 207 general surgical referrals from CH ED were made. The breakdown of the numbers is shown in Table 1. None of the patients were Category 1 Trauma patients.

**Figure 1**

Table 1: Referrals per month

May	June	July
62	68	77

There were a total of 169 referrals during weekdays, and 38 referrals during weekends (Table 2).

**Figure 2**

Table 2: Referrals per month

Month	May	June	July
Weekdays	49	53	67
Weekends	13	15	10

For the purposes of our study, weekend referrals were excluded because there are no surgical registrars rostered on site for CH. We noted the following breakdown of referrals based on time of the day for weekdays (Table 3).

**Figure 3**

Table 3: Numbers of referrals based on time for weekdays

Time	
0000-0730	17
0730-1700	112
1700-2100	30
2100-2400	10

After reviewing individual patient records, we noted that

sometimes patients referred after hours were in fact reviewed physically by the CH surgical registrar. We noted this was largely because they were already reviewing earlier referrals in the CH ED, therefore staying back to review additional referrals received after 5.00pm. Furthermore, we also noted that patients referred during business hours were sometimes reviewed after hours possibly due to theatre commitments on those days.

Table 4 details the patient break down between physical assessments by the surgical registrar and phone consults.

**Figure 4**

Table 4

	Seen by surg. reg.	Phone consult
May	32	17
June	40	13
July	48	19

In total, there were 120 patients who were physically assessed by the CH surgical registrar compared to 49 patients who were discussed on the phone at a SH tertiary centre.

A total of 102 patients (60%), who had either a physical assessment or a phone consult with surgical registrars at the SH tertiary centre, were transferred to a tertiary centre with after-hours surgical services. Thirty-one patients (18%) were discharged home, and the remainder were either referred to a private hospital, admitted as an inpatient in at CH or referred to another inpatient specialty.

The comparison of outcomes for patients who had a physical consult by the surgical registrar and those who had phone consults are demonstrated in Table 5 and Figure 1.

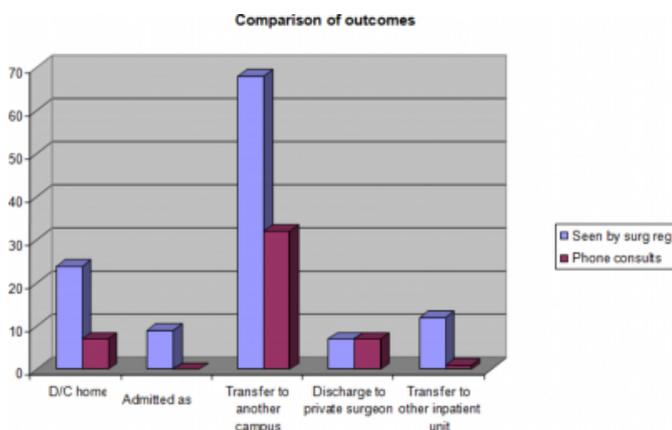
**Figure 5**

Table 5

	Seen by surg. reg.	Phone consults
D/C home	24	7
Admitted as Casey inpatient	9	0
Transfer to tertiary SH centre	68	34
Discharge to private hospital	7	7
Admit to other inpatient unit	12	1

**Figure 6**

Figure 1



Among the patients seen by CH surgical registrar, 52 patients (43%) did not require ambulance transfers to another hospital campus, as compared to 15 patients (30%) who had phone consults. (See Table 6)

**Figure 7**

Table 6: Number of ambulance transfers saved

	Number of ambulance transfers saved
Seen by Casey reg.	52 (43.3%)
Phone Consults	15 (30.6%)

*P = 0.09 (CI 95%)*

Our aim of this study was to see whether extending the roster for the CH surgical registrar past 5.00pm on weekdays will have a reduction in the number of patients subsequently transferred to SH tertiary centre. After statistical analysis to look at the number of transfers saved, we obtained a p-value of 0.09.

**DISCUSSION**

To our knowledge, there has not been a study published that evaluates the efficacy of physical assessments of surgical patients by a surgical registrar compared to making decisions by phone consults. Our hypothesis was that a physical assessment by a surgical registrar at CH would significantly reduce the number of transfers of patients to a SH tertiary. This would suggest the extension of their rostered hours to beyond 5.00 pm on week days. It is interesting to note, however, that a Swedish study aimed at evaluating the difference between telephone consultations and physical consultations in a primary care setting showed no difference in history recorded and a high level of concordance in

management decisions<sup>2</sup>.

In our study, we noted that 71% (n=120) of all referrals were physically seen by the surgical registrar on site, and 29% (n=49) were discussed on the phone with a remotely located registrar. All of the phone consults occurred after business hours.

Assuming that the function of the surgical registrar would be the same after hours, as it is during business hours, we can use this data to determine the effectiveness of the registrar in reducing the number of inter-hospital transfers.

We noted that 43% (n=52) of patients physically seen did not require transfer to a SH tertiary centre. This was due to a number of factors such as: patients did not have a surgical issue therefore were discharged home or to an appropriate specialty or patients had private health insurance qualifying for private hospital treatment. We calculated 7% (n=9) of physically seen patients were admitted at CH as inpatients under general surgery. We noted most of these patients required observation for 24 hours as part of their surgical treatment. We did not have enough data to follow up the end outcomes of these patients.

In the phone consult group, 30% (n=15) of patients did not require transfer to a SH tertiary centre due to similar factors described above. Interestingly, none of these patients were admitted to CH as inpatients. Furthermore, almost 50% of patients in the phone consult group were transferred to a private hospital compared to 20% of patients in the physical assessment group.

In addition, only 20% (n=24) of patients physically assessed by the surgical registrar were discharged home compared to 14% (n=7) in the phone consult group. Despite almost 3 times as many patients discharged in the group physically assessed by a surgical registrar, we obtained a p-value of 0.51 making the difference in discharges to not be statistically significant.

In the group where patients were physically seen by the registrar, 56% (n=68) required transfer to a SH tertiary centre. In the phone consult group, 69% (n=34) required transfer. We noted this 13% difference in extra transfers in the phone consult group was not statistically significant (p=0.09, CI 95%).

Our result may have occurred due to the low volume of surgical referrals at a district-size hospital like CH. There is

no doubt that in higher volume hospitals, physical assessments of surgical patients by the respective registrar yields more value rather than subjecting all clinical decisions to phone consults. However, in our experience the difference in number of inter-hospital transfers saved (n=37) between the two groups was not significant for the volume of referrals we receive at CH.

## **CONCLUSION**

General surgical patients physically assessed by surgical registrars are less likely to be unnecessarily transferred to

another hospital; however, our results were not statistically significant to warrant extension of the current rostered hours.

## **References**

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