

# Implementation of acute care surgery model at a private institution: Our experience over a period of 6 months

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## Abstract

**Background:** Acute Care Surgery units are an integral part of most tertiary Australian and New Zealand public hospital services. Several papers have outlined the importance of these units in a public hospital set up. However, there is minimal data on the implementation and outcomes of this model of care in a private hospital set-up.

**Methods:** We set up a dedicated unit to evaluate the outcomes of acute care surgery in a private hospital setting. Three fellows of the Royal Australasian College of Surgeons were an integral part of the roster. Following ethics approval data was collected prospectively over a period of 6 months.

**Results:** Over a period of 6 months there were 51 patients, 31 males with age range 11 to 90, American Society of Anaesthesiology grades from 1E to 4E. Average theatre access times ranged from 30 to 500 minutes depending upon time of presentation to emergency department and theatre availability. However, all patients requiring operative intervention underwent surgery prior to completion of 24 hours as an inpatient. Seven patients were managed with non-operative intervention. Two patients required readmission for a post-operative event not requiring surgical intervention.

**Conclusions:** Given the increase in work load of acute care surgical units at public hospital there might be potential delays in access to operating theatres and thus increasing length of in hospital stay. Implementation of the acute care surgery model at private hospital set up might lead to overcome these potential road blocks.

## Introduction

The introduction of Acute Care Surgical Units across major hospitals in Australia and New Zealand has brought about a paradigm shift in the management of emergency general surgical patients [1-3]. However, with increase in the work load of acute care surgical units at public hospitals there might be potential delays in access to operating theatres and thus increase length of in hospital stay [4]. Private hospitals do provide acute and emergency care, however there is minimal data on the implementation and outcomes of acute care units in a private hospital set-up in Australia and New Zealand.

## Methods

### System

We set up a dedicated unit to evaluate the outcomes of acute care surgery in a private hospital setting. The institution is a 250 bedded hospital with 24-hour Emergency, Intensive Care and Radiology Unit back up in a metropolitan area. The institution does not deal with trauma patients as there is a major trauma center in the vicinity. There are 13 theatres with one hybrid suite. Following approval from the Hospital Ethics committee, data was collected on all patients following consent in a prospective database. The data was collected and reported as per the Standards for Quality Improvement Reporting Excellence (SQUIRE) criteria.

Three General Surgical Fellows of the Royal Australasian College of Surgeons were an integral part of 24 hour on call roster including weekends. Two of the fellows have regular list at the hospital and do have the ability to add emergency general surgical procedures to the end of their list.

## Results

Over a period of 6 months there were 51 patients, 31 males with age range 11 to 90, American Society of Anaesthesiology grades from 1E to 4E. Average theatre access times ranged from 30 to 500 minutes depending upon time of presentation to emergency department and theatre availability. However, all patients requiring operative intervention underwent surgery prior to completion of 24 hours as an inpatient. The range for length of in hospital stay was 1-7 days.

All patients managed under the unit with their demographics are shown in Table 1.

Seven patients were managed with non-operative intervention. There was no representation, operation, morbidity or mortality in this subset.

Two patients required readmission for a post-operative event not requiring surgical intervention.

One was a known smoker who presented with post-operative pain and fever on Day 2 of discharge following laparoscopic cholecystectomy and intra operative cholangiogram for acute calculous cholecystitis. A Computed tomography was suggestive of bilateral atelectasis which settled with intense physiotherapy for 72 hours.

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**Table 1.** Demographics of patient cohort

Age	Gender	Diagnosis	ASA	Intervention/Outcome	Length of stay/Complication
23	M	Acute Appendicitis	IE	Laparoscopic Appendectomy Discharge	2 days
33	M	Acute Appendicitis	IE	Laparoscopic Appendectomy Discharge	2 days
62	M	Acute cholecystitis	IIIIE	Laparoscopic Cholecystectomy and cholangiogram Discharge	2 days
90	F	Adhesive Small Bowel Obstruction	III	Gastrograffin Discharge	3 days
29	F	Acute Appendicitis	IE	Laparoscopic Appendectomy Discharge	2 days
59	F	Acute appendicitis	IE	Laparoscopic Appendectomy Discharge	3 days
96	M	Diverticulitis	III	Intravenous Antibiotics, Discharge	3 days
86	M	Diverticulitis	III	Intravenous Antibiotics, Discharge	3 days
14	M	Acute Appendicitis	IE	Laparoscopic Appendectomy Discharge	2 days
70	M	Perforated Appendicitis	IIIIE	Laparoscopic Appendectomy Discharge	3 days, urinary retention
70	M	Gall Stone Pancreatitis	IIIIE	Laparoscopic Cholecystectomy cholangiogram Discharge	2 days
34	F	Umbilical hernia	IIIE	Umbilical Hernia Repair Discharge	2 days
56	M	Adhesive Small Bowel Obstruction	III	Gastrograffin Discharge	2 days
41	M	Perianal abscess	IE	Incision and Drainage Discharge	2 days
60	M	Diverticulitis	II	Intravenous Antibiotics Discharge	2 days
58	M	Acute cholecystitis	IIE	Laparoscopic Cholecystectomy Cholangiogram Discharge	2 days, readmit consolidation
58	F	Alcohol induced Pancreatitis	II	Discharge	2 days
41	M	Acute Appendicitis	IE	Laparoscopic Appendectomy Discharge	3 days
11	M	Mesenteric addenitis	I	Observation Discharge	2 days
52	F	Perianal abscess	IIIE	Incision and Drainage Discharge	2 days
84	F	Small Bowel Obstruction	IIIIE	Laparotomy and band division	2 days
58	F	Acute cholecystitis	IIIE	Laparoscopic Cholecystectomy Cholangiogram Discharge	2 days
60	F	Strangulated umbilical hernia	IIE	Open Umbilical hernia repair Discharge	3 days
57	M	Diverticulitis	II	Intravenous Antibiotics, Discharge	3 days
35	M	Infected sebaceous cyst	IIE	Incision and Drainage Discharge	1 day
44	M	Recurrent non obstructed epigastric hernia	II	Observation	2 days
43	F	Acute Cholecystitis	IIE	Laparoscopic cholecystectomy Cholangiogram Discharge	2 days
66	M	Perforated Appendicitis	IIIIE	Laparoscopic Adhesiolysis and Appendectomy Discharge	5 days
56	F	Acute cholecystitis	IE	Laparoscopic cholecystectomy Cholangiogram Discharge	2 days
28	F	Small Bowel Obstruction	I	Gastrograffin Discharge	2 days
70	M	Acalulous cholecystitis	III	Intravenous Antibiotics Discharge	5 days

33	F	Appendicitis	IIE	Laparoscopic Appendicectomy Discharge	2 days
88	M	SBO	IVE	Laparotomy- Band Adhesion Discharge	5 days
66	M	Diverticulitis	IIE	Laparoscopic Anterior Resection Discharge	7 days
66	M	Pancreatitis	I	Observation Discharge	5 days
53	F	Appendicitis	IE	Laparoscopic Appendicectomy Discharge	3 days
22	M	Acalulous cholecystitis	I	Observation Discharge	3 days
38	M	Fissure in ano	I	Conservative Discharge	1 day
33	F	Biliary colic	IE	Laparoscopic cholecystectomy Cholangiogram Discharge	1 day
57	M	Pilonidal abscess	IE	Excision Discharge	1 day
35	F	Acute appendicitis	IE	Laparoscopic appendicectomy Discharge	1 day
33	M	Acute appendicitis	IE	Laparoscopic Appendicectomy Discharge	1 day
83	M	Pseudoobstruction	IIIIE	Colonic decompression	4 days, icu
33	F	Biliary colic	IIE	Laparoscopic Cholecystectomy Discharge	5 days
64	M	Acute Cholecystitis	IIIIE	Laparoscopic Cholecystectomy Cholangiogram Discharge	5 days -CBD Calculi ERCP
35	M	Acute appendicitis	IE	Laparoscopic Appendicectomy Discharge	2 days
22	M	Abdominal wall abscess	IE	Incision and Drainage Discharge	1 day
48	M	Thrombosed hemorrhoid	IIE	Hemorrhoidectomy Discharge	1 day
41	M	Thrombosed hemorrhoid	IE	Hemorrhoidectomy Discharge	1 day
40	F	Acute cholecystitis	IIE	Laparoscopic Cholecystectomy Cholangiogram Discharge	2 days

Second morbidity was in an elderly patient who required indwelling catheter for 48hours following laparoscopic appendicectomy and washout for perforated appendicitis.

There was no mortality in the operative subgroup.

## Discussion

Health care system in Australia is a mixture of both public and private providers [5]. Acute care surgery is defined as the urgent assessment and treatment of non-trauma general surgical emergencies involving adult patients. The realistic delivery of an acute care surgery model requires a dedicated hospital-based service that provides comprehensive care for all general surgical emergencies over a defined period of time.

Acute Care Services are now an integral part of most central and some peripheral public hospitals in Australia and New Zealand. With increasing demands in the public hospital system on these services there is a potential delay in access to theatres thus leading to an increase in the length of hospital stays4.

This defeats the purpose of the acute care model. In order to tackle this issue, we set up a dedicated unit to evaluate the outcomes of acute care surgery in a private hospital setting. This is an attempt to evaluate outcomes of acute care surgery model in a private hospital setting.

The application of a dedicated roster made it easy for the emergency department to get access to acute care surgeons not only over a 24-hour period but also on the weekends.

As in the public hospital system this was a consultant driven process so there was minimal delay in patients being processed through the emergency department.

Theatre access which has been hurdle in the public system was not an issue in this study as all patients requiring intervention were managed within 24 hours of their admission.

In addition, two of the co investigators in this study had routine lists in the hospital almost every day of the week so it was easy to accommodate patients requiring intervention on the end of the routine list.

There was minimal morbidity and no mortality in this study.

## Drawbacks

The duration of the study is only for 6 months which is a short period and has small numbers to prove the efficacy of this model of care on a long-term basis in a private hospital setting.

The three investigators in this study have all been a part of the acute care unit at a public hospital and are well experienced in the management of emergency general surgical patients.

As all required services are being provided at consultant level there are minimal delays especially in terms of biochemical, radiological investigations, inpatient bed arrangements, theatre and discharge procedures. This does dilute the opportunity for education of the junior staff.

This study does suggest implementation of the Acute Care Surgery model at private hospital set up might lead to a better pathway for emergency general surgical patients.

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