

Reporting by location—measuring health needs in NT rural and remote communities

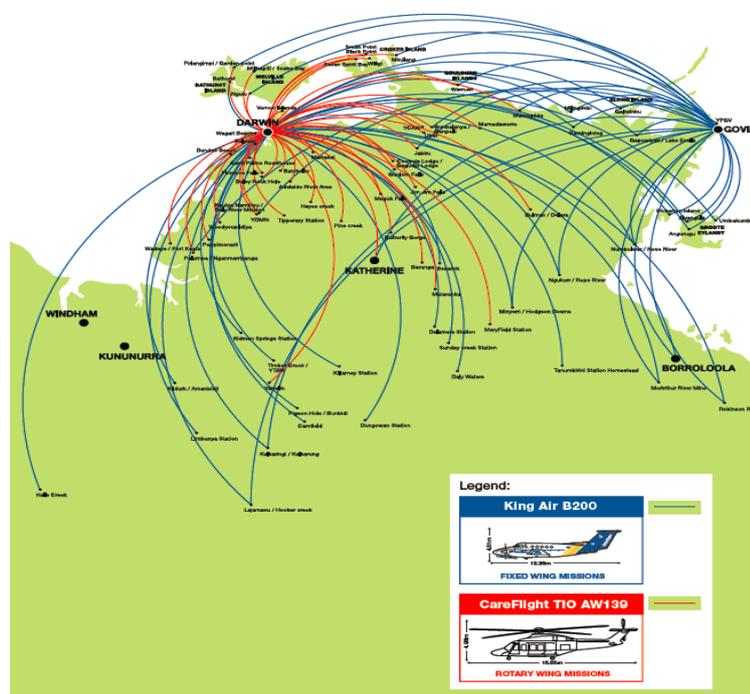
Penny Parker

CareFlight Northern Operations, NT

Introduction

CareFlight is an Australian aero-medical charity first established in 1986. CareFlight doctors and nurses are specially trained in pre-hospital and transport medicine. They care for severely injured patients who need emergency treatment at the scene of an incident and transport seriously ill patients who need to be moved from remote health clinics and between hospitals. CareFlight uses helicopters, aeroplanes and medi-jets to bring a hospital level of care to the patient. CareFlight's Northern Operation provides the Top End Medical Retrieval Service (TEMRS) on behalf of the Northern Territory Government (NTG).

The top end of the Northern Territory (NT) encompasses a vast area with a low population density. Of the approximately 230,000 people who reside in the NT, most live in the greater Darwin area. CareFlight's area of operations is 600 square kilometres, almost equivalent to the whole of NSW. The top end encompasses the Melville Islands off the northern coast, Gove and Borroloola in the east, as far as Elliott in the south, and to the state border in the west. CareFlight operates 24 hours a day, 365 days a year from a purpose built hangar facility that incorporates medical, logistical coordination, aviation, engineering and administrative functions under one roof. The TEMRS hangar facility is located on the grounds of the Darwin International Airport (DIA).



Retrieval reports

CareFlight continuously researches ways to improve patient care and safety, enhance the effectiveness of the chain of survival and, ultimately, achieve the best possible patient outcomes. In early 2014, CareFlight Northern Operations developed a suite of retrieval reports using key Diagnosis Related Groups (DRG's) and their associated sub groups to articulate our patient profile and enhance our understanding of the patient population that we serve. These retrieval reports are also used to inform the NT Department of Health's 'Joint Aero-Medical Services Operations Committee' or JAMOSC (of which CareFlight is a member) about the nature and frequency of aero-medical retrievals in the top end, on a quarterly basis.

The DRG classification system provides a simple but useful way to group patients with like diagnoses. This kind of system is commonly used in Australian hospitals for purposes such as casemix reporting.

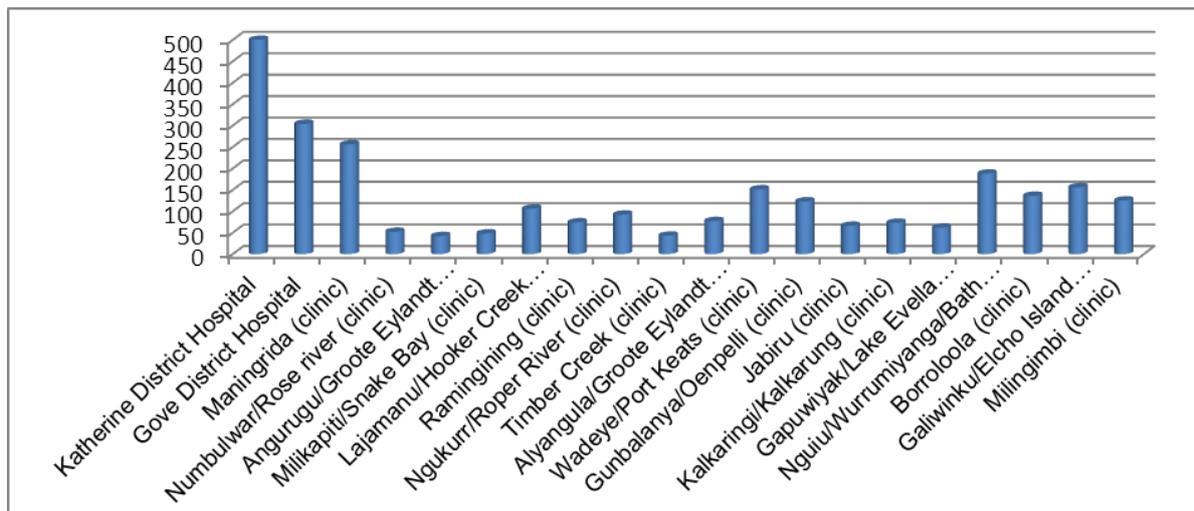
CareFlight's retrieval database or RDB documents all retrievals, inter-facility and clinic transfers and is used for the assessment of service quality, research, medical billing and other administrative reporting purposes. It has been developed so that patient information can easily be sorted and grouped by DRG and associated sub groups.

It is important to be clear that the information in these reports is based on patient retrieval numbers classified under a DRG, that's based on a provisional diagnosis in the field - not on population health or any other external data source.

Retrieval, location and clinical reporting

This graph shows a sample of CareFlight Northern Operations main referring centers for the period 1st January 2014 to 31st December 2014. As you can see, most of these referrals come from Katherine and Gove Hospitals and from those remote health clinics where there is a larger local population.

Sample of referring Centres – 2014 to 2015

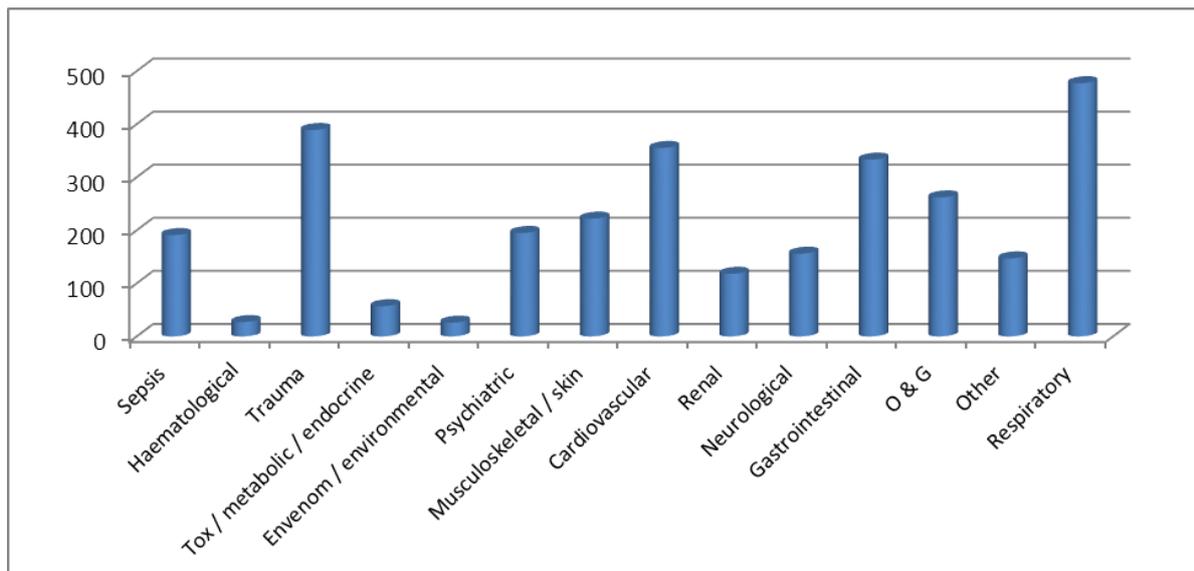


CareFlight works closely with the NTG Department of Health. By way of example, CareFlight learnt that the departments Chronic Conditions Prevention & Management Strategy 2010-2022, has a key focus on *cardiovascular disease, rheumatic heart disease, type 2 diabetes, chronic airways disease, chronic kidney disease, chronic mental illness and cancers (associated with common risk factors for other chronic conditions)*. (http://health.nt.gov.au/Chronic_Conditions/NT_CCPMS/index.aspx)

Arguably, the nature of the retrievals that CareFlight carries out reflects the chronic disease picture across the top end.

The next graph shows the main DRGs across all referring centres from 2014 to 2015.

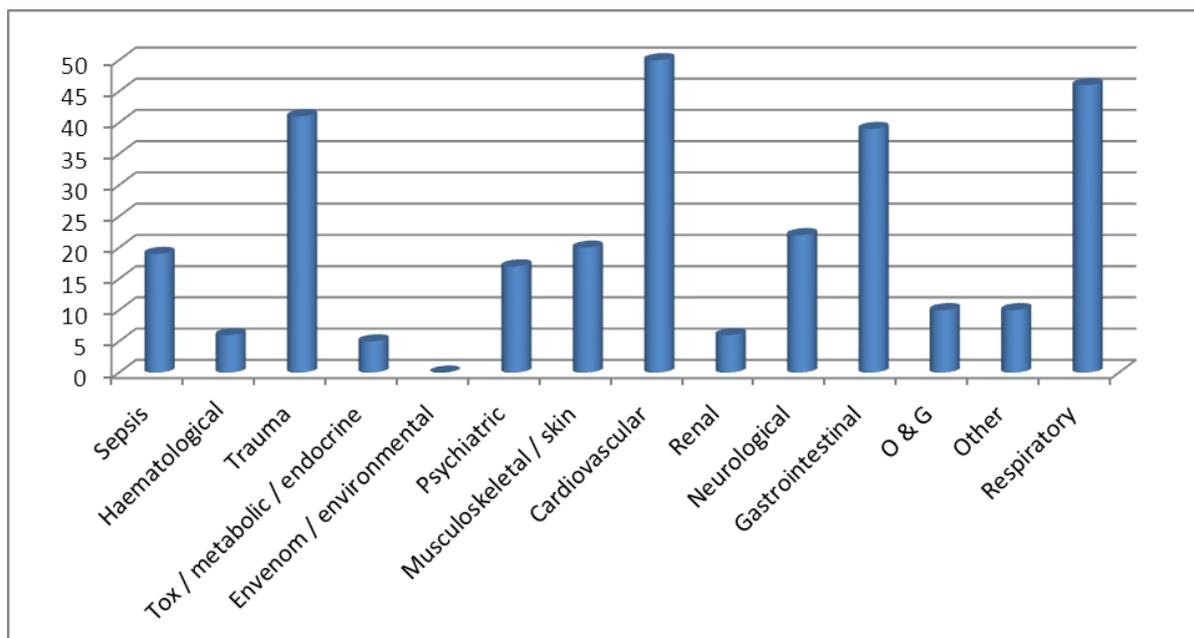
Top DRGs Retrieved - All Referring Centres – 2014 - 2015



Although not all of the patients included in the data have chronic illness, you will note that the respiratory and cardiovascular DRGs are significantly higher than the other groups. In fact there were 477 patients with respiratory disease (or approximately 40 retrievals a month) and 355 patients with cardiovascular disease (approximately 29 retrievals per month). The number of retrievals for patients with mental health or mental disturbance is also significant with an average of 16 patients per month during the same period.

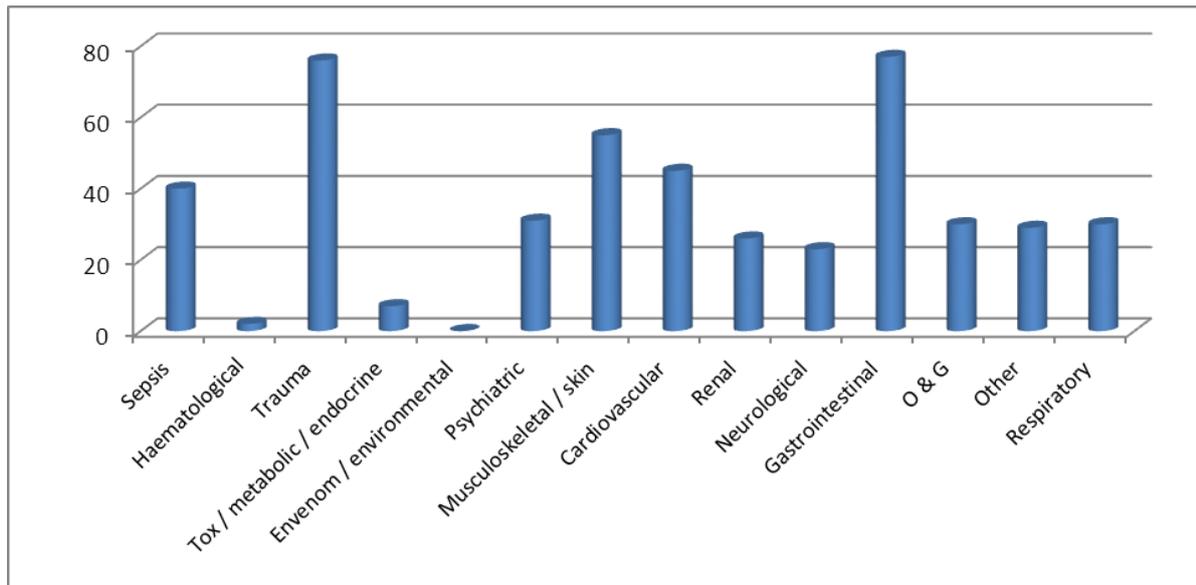
This is the data for the Gove Hospital for 2014 to 2015. The high rate of retrievals for respiratory related illness is probably associated with a high indigenous population and high smoking rates in the East Arnhem region.

Top DRGs Retrieved Gove Hospital – 2014-2015



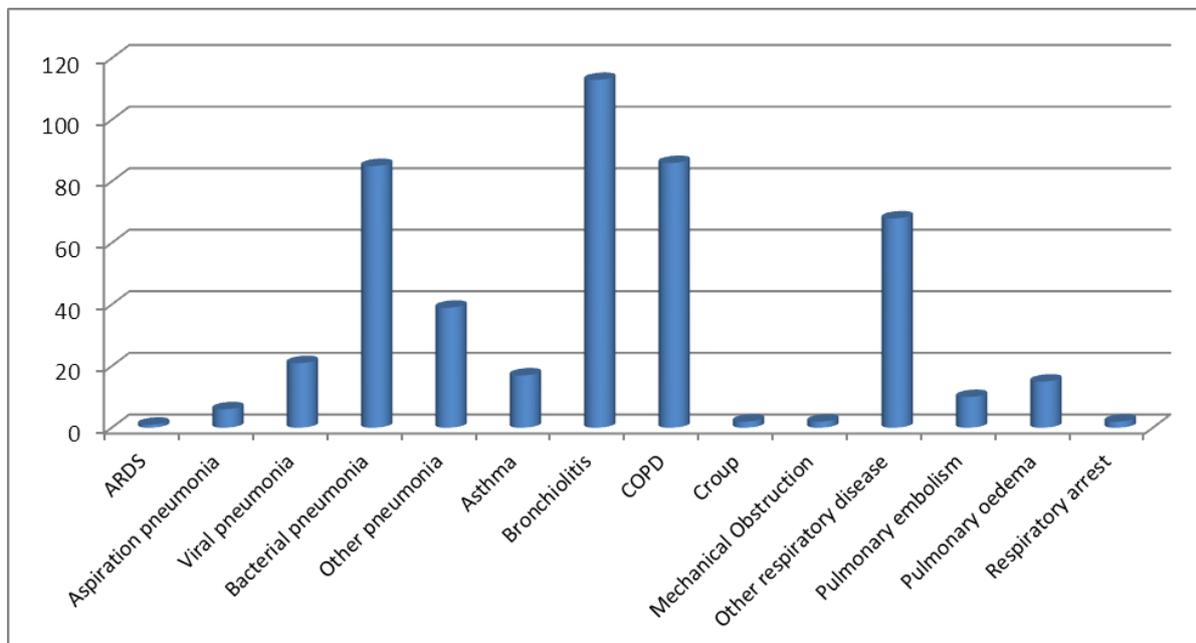
These are the top DRGs for Katherine Hospital, CareFlight's largest referring centre. In contrast to Gove, Katherine has a larger population with more non-indigenous people, lower smoking rates and a lower respiratory retrieval rate. The high trauma rate reflects Katherine's location along the Victoria Highway.

Top DRGs Retrieved Katherine Hospital – 2014 - 2015



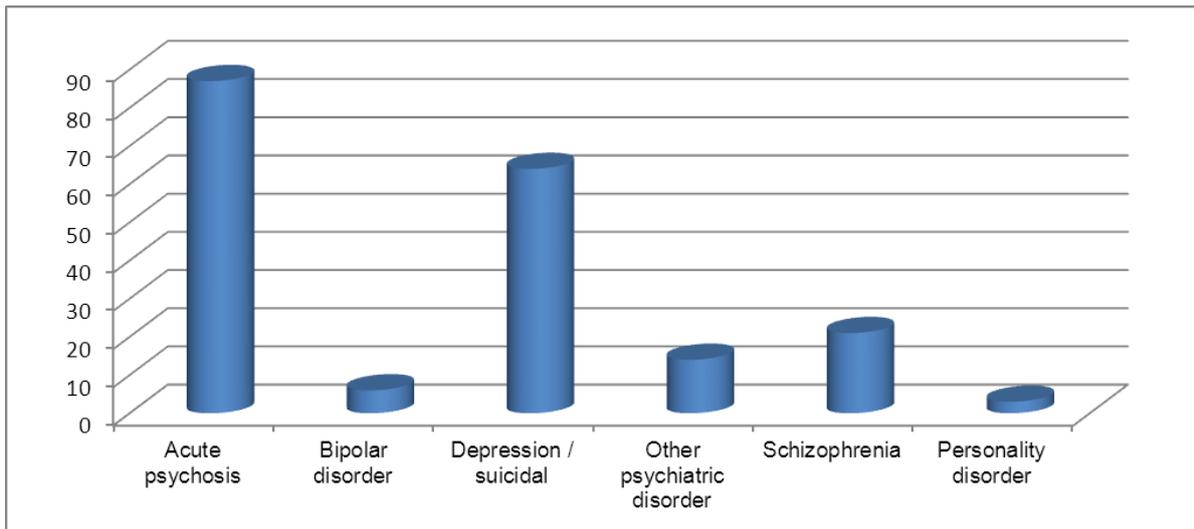
A breakdown of the respiratory DRG into its sub groups demonstrates there were more missions to retrieve patients with a provisional diagnosis of bronchiolitis, COPD and pneumonia than any other respiratory conditions.

All Centres - Respiratory Breakdown – 2014-2015

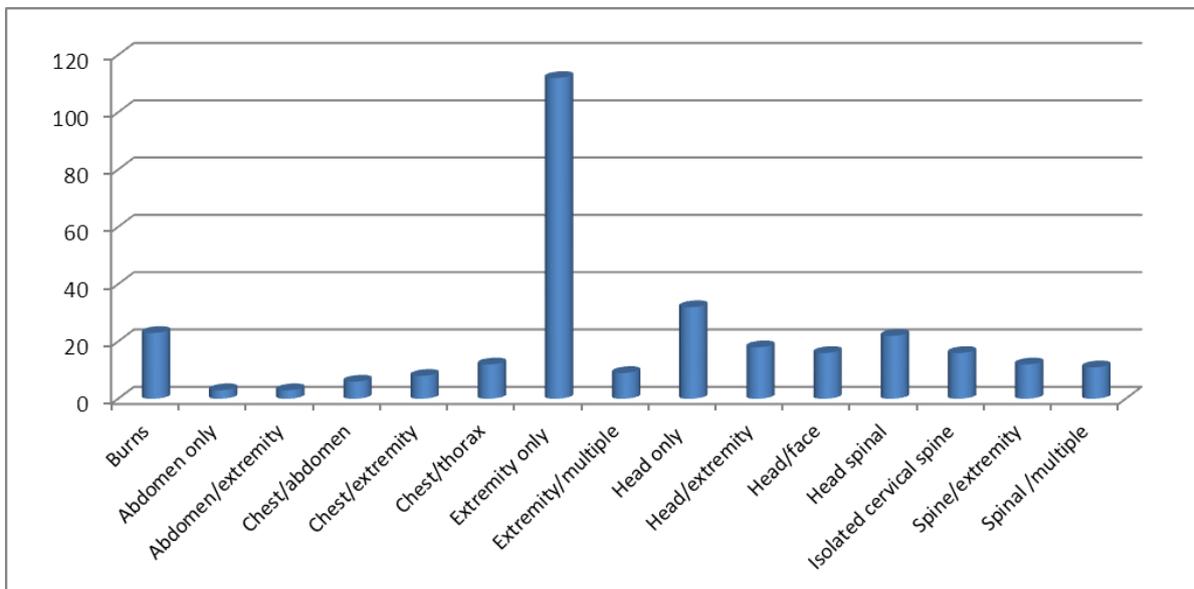


These are the psychiatric sub groups. There were 87 patients with acute psychosis, 6 with bipolar disorder, 64 with depression and suicidal ideation and 21 patients with schizophrenia.

All Centres - Psychiatric Breakdown – 2014-2015

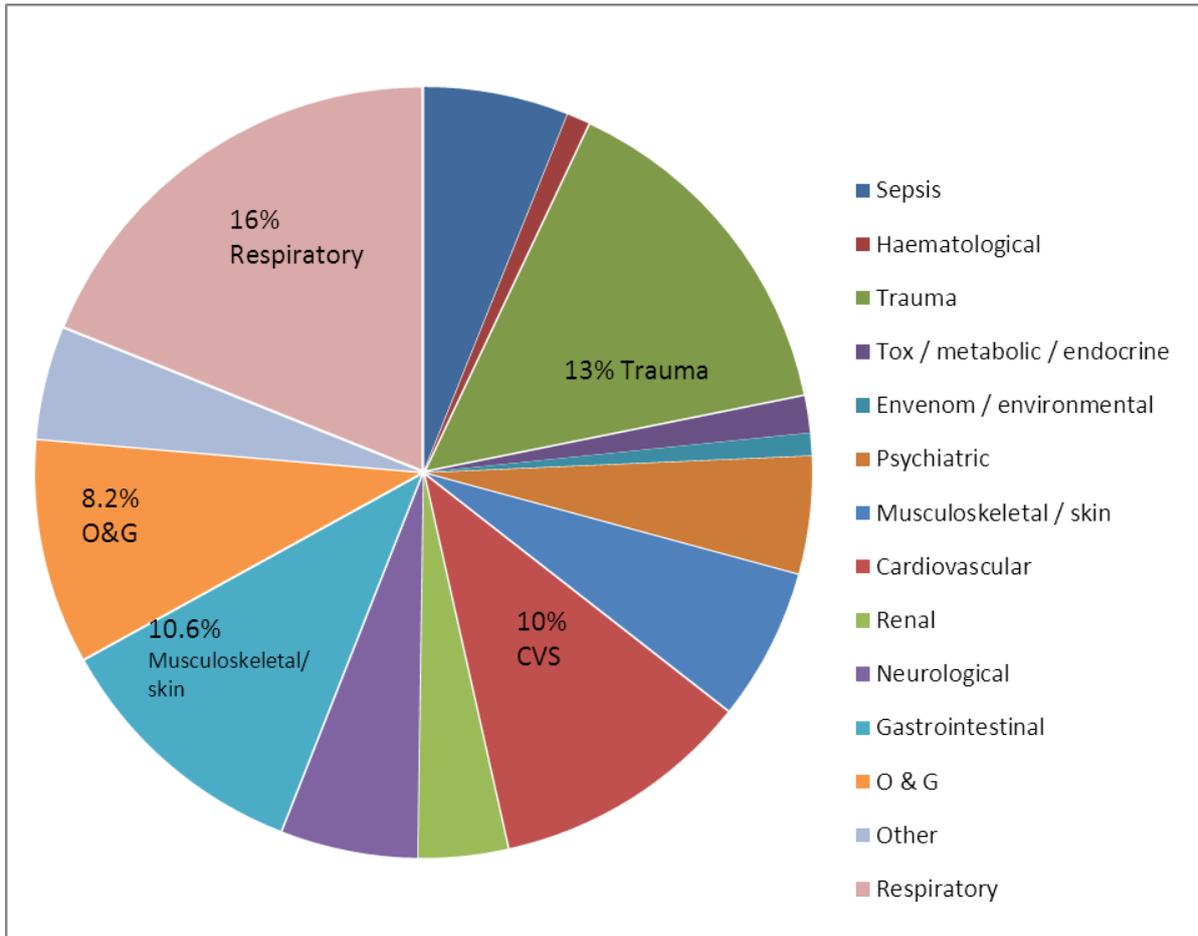


All Centres - Trauma Breakdown – 2014-2015



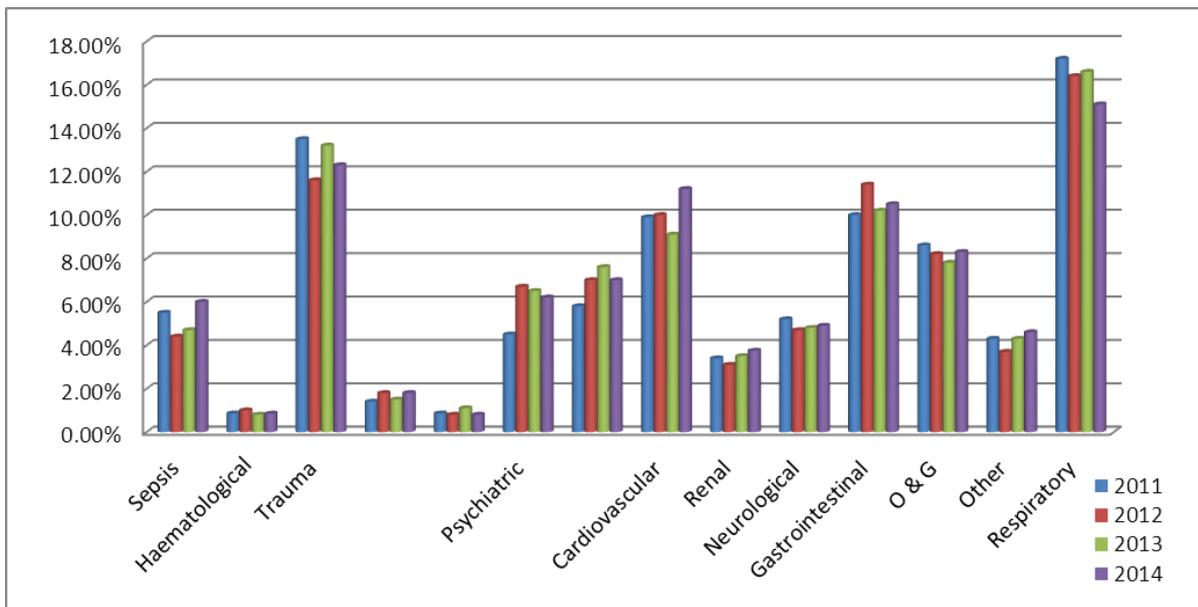
There are multiple trauma classifications in CareFlight’s retrieval database. This is a sample of some of the trauma subgroups from 2014 to 2015. The ‘extremity only’ sub group includes retrievals for lacerations, dislocations, fractures and crush injuries, just to highlight a few.

This chart represents the main retrieval DRGs for all referring centres 2011 - 2015



The sub groups under the musculoskeletal/skin DRG include abscess and cellulitis, septic arthritis and crusted scabies, and for renal include acute renal failure, renal infection and missed dialysis.

Top Diagnosis Related Groups Retrieved: 2011 - 2015



This year by year comparison from 2011 to 2015 demonstrates a consistent theme of higher rates of retrievals for patients with respiratory, cardiovascular, gastrointestinal, musculoskeletal and psychiatric illness.

Summary

CareFlight has three (3) data sources to match the TEMRS integrated service delivery model. That is, logistics data, aviation data and retrieval medical data from the RDB. These systems provide a simple but consistent data collection, classification and validation process that support regular reporting and data analysis and allow retrieval outcomes to be quantified.

CareFlight's Logistics Coordination Unit (LCU) inputs patient referral details into a system called NT Mission Control. This system enables the LCU team to coordinate medical interventions and to dispatch aviation assets to retrieve patients.

A system called Air Maestro is used for the control of core aviation operational information and achieving CASA regulatory compliance. It also provides activity and efficiency data such as take-off and landing times, the number of flying hours we use and records of currency. A purpose built, in-house reporting engine known as Pentaho, pulls all of the data together and provides a suite of tools for creating reports from all three data sources.

Understanding the top end patient profile is essential to ensure that CareFlight Northern Operations operates within a continuous improvement framework. While all of CareFlight's Flight Doctors and Nurses have critical care backgrounds and many years of retrieval experience, the information that is collected enables opportunities for targeted training, clinical audit and research projects to be identified. For example, in light of the high percentage of aboriginal patients that CareFlight retrieves and transports, cross cultural awareness training for staff across all levels is being implemented.

Efficiency measures enable reporting on how quickly crews respond and the length of time it takes to retrieve and transport patients in a particular DRG. It is essential that CareFlight collects and analyses this kind of information because flying hours and the time spent in the field have impacts on how aircraft and crews are allocated, how maintenance is scheduled and how our crews (particularly pilots) manage fatigue.

Activity measures such as the number of inter-hospital transfers versus medical evacuations, and trends in the time of day that retrievals/transfers are notified to CareFlight (by regional hospitals and community health clinics) may be used to inform service delivery. The DRG reports provide clinical visibility and a unique 'side view' of the chronic disease picture across the top end for the JAMSOC. In view of the number of retrievals for respiratory conditions, an audit of respiratory management through the JAMSOC could be considered to inform change of practice.

These simple performance measures assist CareFlight Northern Operation's day to day operational decision making and provide a simple but valuable tool for improving patient outcomes.

Presenter

Penny Parker spent her early career working as a Registered Nurse in both South Australia and the Northern Territory (NT) and held a number of positions including Clinical Nurse Consultant at the Royal Adelaide Hospital. Her experience covers both the public and private sectors and working with both urban and rural health services. In 1996, she was appointed as the Quality Manager for the Darwin Private Hospital until her appointment to the public sector in 2002 where she was responsible for quality improvement programs across a broad range of health and community services. Ms Parker held this position until 2003 when she was appointed as the Quality Manager for the NT Hospital Network which comprised the NT's five regional hospitals. From 2012–2014, Ms Parker was the Manager Audit and Risk Management Services for the NTG Department of Infrastructure gaining contract governance skills and assisting the department to improve the effectiveness of governance, risk management, and control processes. In January 2014, she left the public sector and is currently the Contract and Performance Manager for CareFlight Northern Operations. Ms Parker has a key role in relation to, contract management, performance review and continuous improvement across the Operation.