

PERSPECTIVE RURAL AND REGIONAL

The ASPS Darwin workforce project: past, present and future

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Introduction

The Royal Darwin Hospital is the primary referral centre for plastic and reconstructive surgery in the Northern Territory, Australia. Led by the Australian Society of Plastic Surgeons (ASPS), the Darwin workforce project began in August 2020 and has since recruited visiting doctors (specialists, registrars and residents) to support the ever-growing need for plastic surgery in the Northern Territory. We present an overview of this evolving service with the hope of inspiring doctors to contribute to the program and, more importantly, build a permanent base in Darwin.

Pre-workforce project Darwin

There exists a great disparity in the distribution of specialist plastic surgeons across Australia. Almost 30 per cent of Australians live in regional or rural areas but only 9.9 per cent of specialist plastic surgeons work in these areas.¹ Specifically, 90.1 per cent of specialist plastic surgeons work in metropolitan areas versus 9.9 per cent in non-metropolitan areas. Darwin is classified as a regional centre (MM 2) within the non-metropolitan category according to the Modified Monash Model.

Previous research has posited that an 'ideal' plastic surgeon to population ratio across Australia and New Zealand is 1:60,000.^{2,3} The national average for Australia has shown that there is one specialist plastic surgeon for every 57,118 people. However, in the Northern Territory there is only one specialist plastic surgeon for every 82,048 people.⁴ At the time of the ASPS publication on rural and regional services, the Northern Territory was recognised as a region that requires additional plastic surgeons to reach the ideal ratio.⁴ Recognising the disparity, the Royal Australasian College of Surgeons' strategy of 'select-train-retain for rural' is one of a long-term vision for a sustainable workforce across the country.^{5,6}

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Origins of the workforce project

The lack of an ongoing and sustainable plastic surgery workforce in Darwin culminated in an initiative by the ASPS led by Associate Professor Nicola Dean, Top End Health and Royal Darwin Hospital whereby two visiting medical officer plastic surgery consultants would be employed for 4–16 week periods for two years.⁵ What began in August 2020 has now carried on and forms an integral part of the workforce that provides a bespoke plastic surgery service in the Northern Territory.

Current workforce structure

The current unit structure consists of a minimum of two full-time specialist plastic surgeons at Royal Darwin Hospital at any one time. The unit's Head of Department is Associate Professor Gillian Farrell, a senior plastic and reconstructive surgeon based in Melbourne at Peter MacCallum Cancer Centre, who visits regularly. Local senior staff specialist Dr Sharad Ramdas fulfils a 1.0 full-time equivalent (FTE) role and Dr Ravi Mahajani a 0.1 FTE role. Doctors Ramdas and Mahajani are supported by a rotating roster of visiting surgeons (**Figure 1** and **Table 1**). Raised in Darwin, Dr Mahajani has seen the growth of Darwin's healthcare since the 1970s when his father, Dr Mahajani Senior, formed the backbone of broad general surgical care in the Northern Territory. The unit also benefits greatly from the expertise of two subspecialty surgeons from Adelaide, Dr Mark Moore, with cleft and craniofacial expertise, and Dr Darren Molony, who has an interest in burns and paediatric hand conditions.

Table 1. Specialist plastic surgeons who have visited Darwin as part of the workforce project

Name	State
Russell Aldred	New South Wales
Will Alexander	Victoria
Anthony Barker	New South Wales
William Blake	Victoria
Alex Cameron	Victoria
Patrick Chan	South Australia
Felicity Connon	Victoria
Douglas Copson	South Australia
Catharine Darcy	Queensland
Nicola Dean	South Australia
Lachlan Farmer	South Australia
Gillian Farrell	Victoria
Damien Grinsell	Victoria
Jessica Kierath	Western Australia
Anna Loch-Wilkinson	Queensland
Kirstie MacGill	Victoria
Darren Molony	South Australia
Mark Moore	South Australia
Wayne Morrison	Victoria
Danielle Nizzero	Victoria
Alexandra O'Neill	Western Australia
Puvash Punj	New South Wales
Andrew Raymond	New South Wales
Peter Riddell	South Australia
Emily Ryan	Tasmania
David Syme	Victoria
Conor Sugrue	South Australia
Alaina Taylor	New South Wales
Simon Thomson	Tasmania
Fiona Wood	Western Australia
Shahriar Raj Zaman	Western Australia



Fig 1. Members of Royal Darwin Hospital Department of Plastic and Reconstructive Surgery in 2023. Left to right: Dr Mona Alatrash, Dr Thomas Whitton, Dr Lauren Middleton, A/Prof Nicola Dean, Dr Sharad Ramdas, Dr Robert Marriott, A/Prof Gillian Farrell, Dr Ravi Mahajani

Junior doctor staffing within the unit is composed of an experienced specialist international medical graduate (SIMG) fellow/senior registrar, three service registrars and two surgical resident medical officers. There is a dedicated clinical nurse consultant who helps manage day-to-day issues within the unit, liaises with the wards and allied health staff, and assists with complex dressings and wound care.

Unit workload

Case mix

Combined consultant and registrar clinics run on Tuesday, Wednesday and Thursday mornings divided into hand, skin and general presentations. The bulk of elective presentations are skin cancers, melanomas and hand cases, including carpal tunnel syndrome, trigger finger, hand osteoarthritis and Dupuytren's disease. Approximately 70 per cent of theatre cases are classed as emergencies and 30 per cent as elective.

There are three multidisciplinary team meetings conducted each week—head and neck, orthopaedic and burns—that occasionally result in major reconstructive work in the form of free flaps.

The emergency work predominantly comprises open and closed hand injuries (fractures, tendons, nerves, arteries, human and animal bite wounds and infections, and general trauma). There is also an ever-increasing push to do facial fracture work in a shared roster with the oral and maxillofacial surgeons.

Inpatient workload

The unit has a busy inpatient workload predominantly consisting of hand and upper limb injuries and infections. Since the introduction of the workforce project we have observed a steady growth in admissions from between 1000–1100 in 2020, to 1400–1600 per year up to the end of 2023. This equates to approximately 30–35 admissions each week.

Outpatient workload

Similarly, the outpatient clinic numbers have steadily increased, with daily clinic loads in excess of 40 patients per half-day clinic. This is a mix of local area patients and patients from the greater Northern Territory who have flown in for plastic surgery assessment and management. Furthermore, the department is making use of ever-improving telehealth services to help deliver care to regional and remote patients.

Depending on the clinical presentation, every effort is made to minimise transfers to Darwin for minor injuries with the help of local medical staff. Nurse practitioners or visiting doctors in remote communities are often willing to do minor procedures and manipulations under local anaesthetic for stable fractures with the support and guidance of a specialist plastic surgeon. This is greatly appreciated and not only does it save costs to the health system, but from a cultural perspective it avoids temporary displacement to a completely new and unfamiliar place for the patient.

Outreach service

The unit is involved in providing outreach services to regional hospitals within the Northern Territory. At present, outreach trips are regularly undertaken to Gove District Hospital in Nhulunbuy, North-East Arnhem Land, a little over an hour's flight from Darwin, and Katherine District Hospital, a short flight or about a three-hour drive from Darwin. These visits typically combine clinic and theatre sessions as well as the occasional ward or emergency consult.

There are evolving plans to increase both the frequency and number of outreach locations visited as the unit grows into the future.

Teaching and training

Senior staff have fostered a strong teaching culture within the unit. Due to the presence of two full-time consultants, there is a high degree of support, supervision and teaching in both the clinics and operating theatres, with an emphasis on rapidly upskilling registrars and residents. Registrars are allocated to specific theatre lists to facilitate their preparation and maximise their involvement in each case.

There is a formal consultant-led teaching program consisting of weekly tutorials in anatomy, basic surgical sciences and plastic surgery topics. The teaching topics vary widely and harness the vast experience of visiting consultants to the unit.

Participation in research activities is actively encouraged within the unit at all levels. To this end, registrars regularly present their research at local and national conferences and publish their work in academic journals.

Life in Darwin

Accommodation and travel

Darwin International Airport is serviced by all major airlines including Qantas, Jetstar, Virgin

and Singapore Airlines. There are multiple flights running daily to other Australian capital cities with average flight times of 3 hour 40 minutes to Adelaide, 4 hours to Perth and 4 hour 20 minutes to Melbourne, Sydney and Brisbane.

Additionally regular flights run to the popular holiday destinations of Bali (2 hour 40 minutes) and Singapore (4 hour 30 minutes), which is a hub for onward travel within Asia or further abroad.

A staff accommodation village is located on the Royal Darwin Hospital campus with options for short or long stays for singles, couples or families. Offsite, the ASPS has access to two fully-furnished apartments for visiting consultants and their families to stay in. Visiting consultants are also provided with a car to get around the city. The Royal Darwin Hospital provides free undercover staff parking in an onsite multistorey car park.

There are several free staff-only facilities on the Royal Darwin Hospital campus accessible with a hospital swipe card. Directly across the road from the main entrance to the hospital is an outdoor 25 m swimming pool, air-conditioned gym and indoor squash courts (**Figure 2**).

Activities in Darwin and surrounds

Darwin has a lively nightlife with something for everyone. It is well known for its restaurants including that of previous *MasterChef Australia* contestant Minoli De Silva, Ella by Minoli, among many other notable Asian, modern Australian and seafood restaurants. An annual laksa festival is another highlight, as well as the annual Darwin festival usually held in early August in the city grounds.

The Darwin Waterfront precinct is a favourite among tourists with the famous Wave Lagoon, Recreation Lagoon and Aqua Park nestled among excellent restaurants and bars.

The Mindil Beach Sunset Market runs throughout the dry season and offers local wares and fresh food best enjoyed on the beach. Other markets at Parap, Nightcliff and Rapid Creek operate every weekend and are stocked with tasty laksa, fresh fruit, vegetables, flowers and coffee, as well as locally produced artworks and clothing.

There are usually several small pop-up restaurants along the Nightcliff foreshore, including the best pizza in Darwin according to one author, as well as fish and chips and other tasty offerings.

For those who like to get out into nature, there are amazing national parks a little over an hour's drive from Darwin. Popular weekend trips include Litchfield National Park, Berry Springs, Katherine and nearby Nitmiluk National Park, Kakadu National Park, and Uluru and its surrounds. Each location offers camping facilities and pristine freshwater pools to cool off in, which are regularly patrolled by rangers to ensure they are free of crocodiles.

A crocodile tour is a must for all visitors to the Northern Territory with several cruises running out of Adelaide River, a one-hour drive from Darwin.

For people who enjoy fishing, there are many fishing spots dotted about Darwin as well as charter operators that can take you fishing offshore, and you could even try your luck in the 'Million Dollar Barra' competition.



Fig 2. Royal Darwin Hospital

The Museum and Art Gallery of the Northern Territory located in Darwin provides visitors with exhibits on local history, native wildlife, maritime history, Cyclone Tracy and artworks from various Aboriginal and Torres Strait Islander peoples.

In the community of Yirrkala in Northeast Arnhem Land, just near Nhulunbuy and Gove District Hospital, lies the Buku-Larrngay Mulka Centre, a world-famous community-run arts centre that regularly attracts the attention of international galleries, celebrities and art collectors.

The future

With the expanding and ageing population in Darwin, plastic and reconstructive surgery is here to stay, and we expect the unit will continue to prosper.

The goal is to have more Darwin-based plastic and reconstructive surgeons and to reinstate Royal Darwin Hospital as a training post for plastic surgery surgical trainees. Certainly, much work is being done behind the scenes to make this a reality and already there is keen interest from potential candidates to make Darwin a home. One-on-one operative and clinic time with consultants has been marked as a highlight for learning and growth for trainee surgeons.

There are also plans to extend the current outreach services to more regional hospitals more regularly, not only within the Northern Territory but also into northern Western Australia and far north Queensland. This would need the involvement of more plastic surgeons, with one avenue being the introduction of similar workforce programs at more sites.

There is an exciting pilot project working to develop virtual resources to help assist remote medical practitioners manage minor hand injuries and infections in regional and remote communities.

The success that the ASPS and Royal Darwin Hospital have had in rolling out the Darwin workforce project provides proof that the concept

works. With a well-documented shortage of specialist surgeons in regional and remote centres, this workforce project model may prove useful for other centres and specialties with areas of need, to help attract surgeons to restore a steady workforce.

Conflict of interest

The authors have no conflicts of interest to disclose.

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