Rate & Severity of Diabetic Retinopathy in End Stage Renal Disease in Central Australian Aboriginal People

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Prior research has shown high levels of severe diabetic retinopathy (DR) in patients on dialysis.[1, 3, 4] Discussions with Aboriginal dialysis patients & advocacy group Central Australia Renal Voices (CARV) showed support for further investigation into this relationship. This poster aims to illustrate the practical challenges of research designed to complement & enhance patient care & summarise project findings thus far.

Aim

To determine the rate of diabetic retinopathy & vision-threatening diabetic retinopathy in Central Australian Aboriginal people with dialysis-requiring end stage renal failure (ESRF).

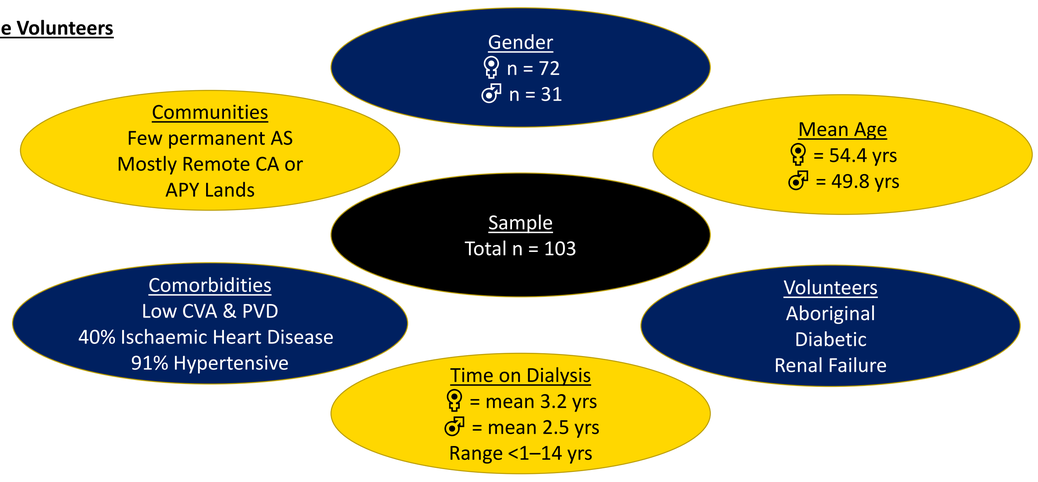
Brief Methodology

- Volunteers - ≥ 18 years, Aboriginal, diabetic with dialysis-dependent end stage renal failure (ESRF).
- Screening - VA (Snellen 'Tumbling E' at 3m), IOP (iCare Tonometer) & dilated retinal photographs.
- Data collected – Demographics, type of diabetes, co-morbidities, current medications & dialysis history.
- Ocular data collected - previous interventions, date of last visit to eye health professional, central macular thickness, year of development of sight-threatening DR & worst ever DR grading.
- Retinal photographs were de-identified & independently graded.

Logistics of Conducting Research in a Dialysis Unit

- Dialysis patients were generally more agreeable to screening prior to dialysing - once on dialysis their preference was to sleep & post-dialysis they were drowsy, sometimes nauseous & wanted to get home as soon as possible.
- Many patients with end stage renal failure experience neuropathic pain & evidence suggests heightened sensitivity following dialysis.[2]
- In an Aboriginal population who already have a tendency to eye sensitivity (anecdotal evidence from Ophthalmologists), instilling dilating drops & subjecting patient to flash of retinal camera following dialysis can be **particularly** unpleasant.
- Practical implications - window for active recruitment was limited to 2-3 hours per day (on average, we managed to recruit 2-3 volunteers per day per researcher).

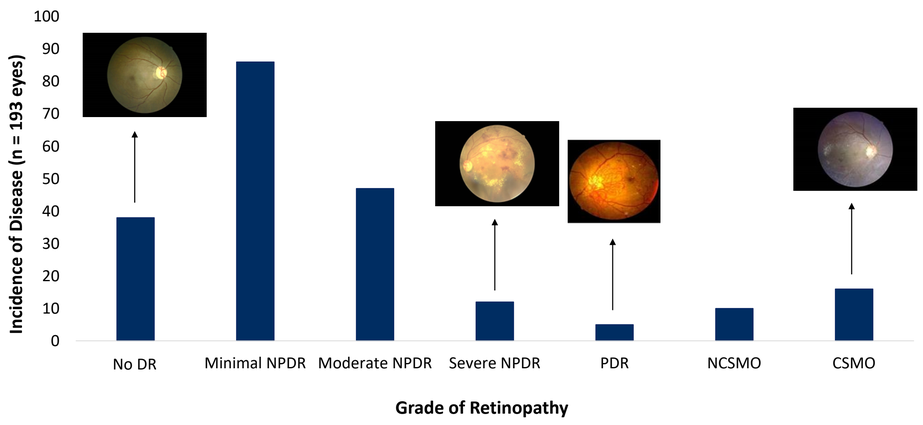
The Volunteers



Incidence of Diabetic Retinopathy

- Largest portion of volunteers had minimal (n = 86) or moderate (n = 46) non-proliferative diabetic retinopathy (NPDR).
- **Vision-threatening DR (severe NPDR, proliferative diabetic retinopathy - PDR & clinically significant macular oedema – CSMO) occurred twice as often (17%) in this population than has been observed in another Central Australian Aboriginal cohort (8%).[5]**
- Please note: Volunteers who had had infrequent diabetic eye checks or untreated vision-threatening maculopathy were referred to ASH for timely Ophthalmic review or treatment.

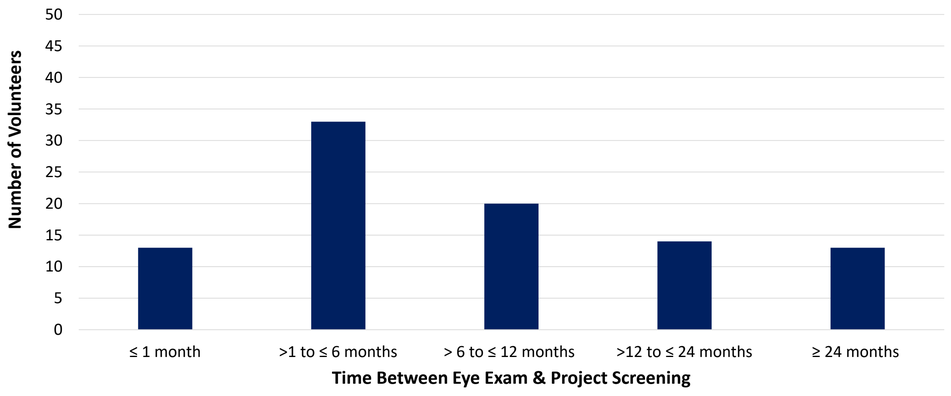
Graph 2: Severity of Diabetic Retinopathy



Recency of Eye Examination

- 49% of volunteers had their most recent eye exam at ASH Eye Clinic, 31% were conducted by a CAAC Optometrist, 17% were reviewed at an ASH Bush Clinic & 3% seen by a non-CAAC Optometrist.
- This graph indicates that a portion of volunteers were not having annual eye checks as is standard practice for people with diabetes.

Graph 4: Recency of Eye Examination



Priorities or Considerations that need be satisfied to attain Ethical Approval

- Must demonstrate that no unfair burden or exploitation is occurring - dialysis patients are considered a vulnerable population &, because they are considered convenient to recruit, are often over-researched.
- Research must provide tangible benefits – should eventually value-add to patient care.
- Engaging relevant community stakeholders essential for 'buy-in'.
- Logistics of seeking a waiver of consent from institutional head & data custodian.
- Addressing how an already under-resourced & overwhelmed public clinic would cope with the extra clinical load generated.

Observed Differences Between Units

Flynn Dr Dialysis	Fresenius Nephrocare
Public service (NT Health)	Private company (government funded to provide dialysis for public patients)
Greater number of unfilled chairs	To maintain commercially viable enterprise endeavours to fill all available chairs
Better resourced to deal with healthcare needs of sick patients	Healthier patients primarily referred here
Some patients attribute ill health to having displeased the spirits or having committed cultural faux pas	Large portion of patients attributed their ill health to genetic predisposition coupled with a long history of poor diet & lack of exercise
Higher rate of non-compliance (good health could be achieved by appeasing spirits, righting cultural wrongs or both)	Higher rate of compliance

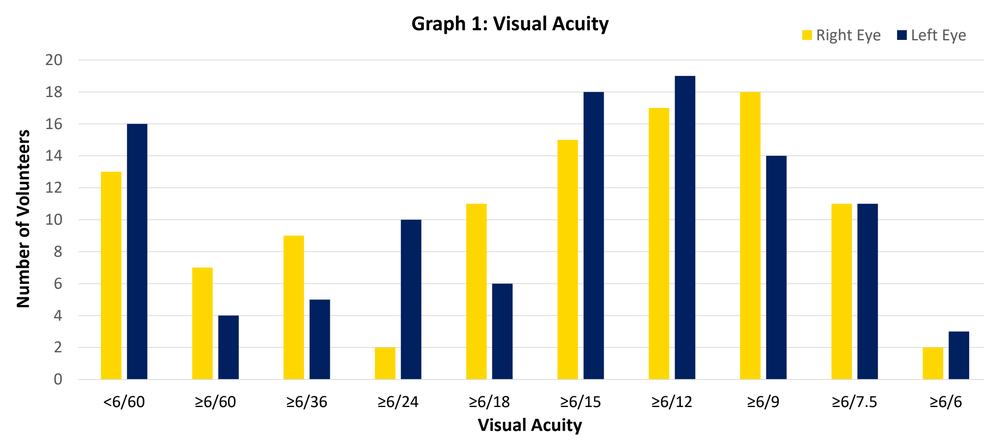
Comorbidities

- The vast majority (n = 94 or 91%) were hypertensive.
- Roughly 40% (n = 41) had ischaemic heart disease. Research has previously shown a strong association between diabetic nephropathy & cardiovascular disease.[3,4]

Visual Acuity

- 45% of volunteers had at least one eye with ≥ 6/12 vision, the legal level required to drive in NT.
- 36% of volunteers had at least one eye with between ≥6/36 & ≥6/15 vision.
- **19% of the cohort had at least one eye with very poor or blind-level (≤ 6/60) vision.**

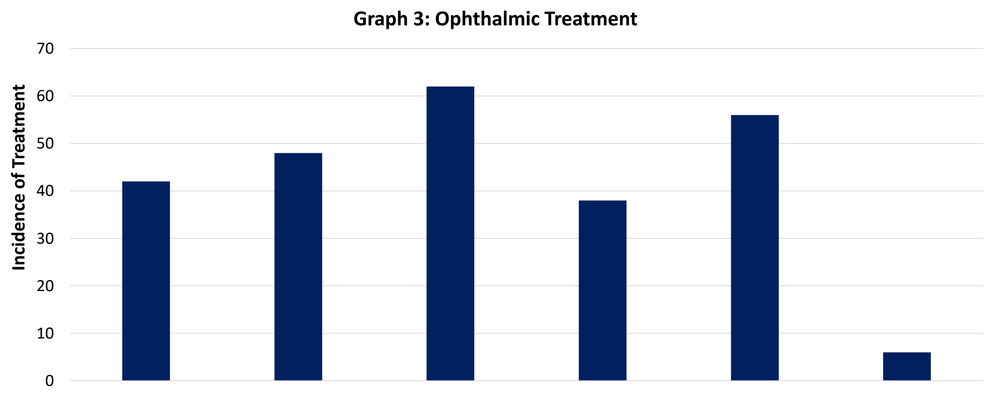
Graph 1: Visual Acuity



Types of Treatment

Macular laser (n = 62 or 38%), intravitreal injection (n = 56 or 35%) & panretinal photocoagulation (n = 38 or 23%) were the most frequent treatments patients underwent to stabilise their DR.

Graph 3: Ophthalmic Treatment



Summary

- Practical research into clinical conditions is vital to informing better patient care. There are many challenges to conducting relevant research in Central Australia but they are not insurmountable. Community engagement was important for patient buy-in and participation.
- Findings affirm the relationship between microvascular (DR) & macrovascular (IHD, Nephropathy) conditions.
- The rate of vision-threatening DR was significantly higher in a dialysis-dependent than a comparable non-dialysis population.
- Dialysis commitments were (rightly) prioritised over eyecare & standard practice annual (or more frequent) diabetic eye checks occurred infrequently
- The finding that those with renal failure are also shouldering the significant burden of ophthalmic disease lends support to providing ocular screening services in dialysis centres

INSPIRING ACHIEVEMENT

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