



# Are retinal cameras essential equipment for remote Primary Health Care Centres?

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# Conflict Disclosure

This study was funded by the Australian Commonwealth Government via the Cooperative Research Centres program.

The Vision CRC is developing technology for real-time detection and assessment of common blinding eye disease and general health disorders.



# Scenario

- 70 year old female
- Presents to a remote clinic with sudden painless partial loss of vision in the left eye (back to 6/18 on the eye chart)
- Also reports changes to headaches, some pain with chewing and slight loss of weight



# What to do .??.

- Blood tests (ESR & CRP)
- Biopsy the temporal artery
- **BUT** by the time the results come back *it may be too late for the patient*, as a differential diagnosis is giant cell arteritis (GCA) also known as temporal arteritis.
- **Too late in GCA** cases means **irreversible blindness** in the first instance, **and death** in the second instance (not very long after the first).

Practitioners need to look inside the eye & view the optic nerve head (optic disc) to diagnose GCA



# Key Sign: Blurred Disc Margins

**Normal Optic Disc**



**Optic Disc with GCA**



# How best to see inside the eye?

Direct Ophthalmoscope or Retinal Camera ?



# Direct Ophthalmoscopy

Disadvantages of direct ophthalmoscopy include:

1. Need to know the refractive error of both practitioner and patient
2. The need to have your own face very close to the patient's face in order to see the retina clearly and to maximise the field of view
3. Small field of view



11.5%

Standard Retinal Camera Image

Direct Ophthalmoscope

0.1%



# Study Design

- April-October 2014
- In depth, semi structured interviews
- 12 primary health care practitioners &/or administrators involved in providing primary eye care services in remote primary health care centres.
- Interviews were recorded, transcribed, and subsequently analysed thematically.



## Quotes on using Direct Ophthalmoscopes

*“I think the quality of a retinal exam performed in general practice is really varied and it’s dependent on that user’s previous experience and their comfort, and I imagine that there’s a lot of GPs that are doing a pretty crappy job to be honest.”*

Participant 10



## Quotes on using Direct Ophthalmoscopes

*“... I actually think that I personally and that the majority of my colleagues would be prepared to do that [photographing eyes in the normal course of examining patients] much more than considering picking up the ophthalmoscope, which **many of us still find a bit challenging to use.**”*

Participant 8



# Telehealth

**A retinal camera without infrastructure is like a smart phone without reception!**

Having the camera networked in with the local health records and the internet enable the images to be sent to ophthalmologists for immediate feedback.



# Other Ocular Emergencies

- GCA is not the only sight- or life- threatening condition that primary health care practitioners are expected to diagnose by looking inside the eye:
  - **Sight threatening:** retinal venous and arterial occlusions, retinal detachments & diabetic retinopathy.
  - **Life threatening:** GCA, papilloedema, and retinoblastoma.



# Policy Recommendation

**All remote primary health care centres, particularly those requiring aerial evacuations for urgent ophthalmology care, should be equipped with a digital retinal camera and corresponding system for tele-ophthalmology to support referral decision-making.**

