

# The efficacy of a nurse-led preoperative cataract assessment and postoperative care clinic

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Cataract surgery is one of the most frequently performed surgical procedures in Australia.<sup>1,2</sup> While the private health system shoulders much of the burden for those who can afford it, many people access health care in public hospitals, where patients may have to wait long periods for clinic appointments and surgery.

In an attempt to improve access to care, a specialist nurse-led cataract clinic was introduced in the Department of Ophthalmology at Flinders Medical Centre in 2003. It was proposed that an ophthalmic nurse practitioner could assess patients for visually disabling cataract and provide specialist postoperative care for cataract surgery patients, as has occurred elsewhere.<sup>3,4</sup> The intention of the clinic was twofold. Firstly, it would expedite direct transfer to the surgeon of patients who would benefit from cataract surgery, thus reducing waiting times and freeing up ophthalmology clinic appointments for other patients. Secondly, it would provide continuity of care for public cataract patients.

The purpose of our study was to describe the implementation of a nurse-led preoperative cataract assessment and postoperative care clinic and to evaluate the model in terms of access to care (reduced waiting times), safety (correct identification of the need for surgery and the presence of comorbidity), outcomes (visual acuity [VA] and degree of visual disability) and patient satisfaction.

## METHODS

An ophthalmic nurse practitioner is an advanced clinician who has received authorisation from the state nursing board and the place of employment to work in an autonomous practice role. The clinic structure and protocols were designed in conjunction with senior ophthalmologists in the Department.

## ABSTRACT

**Objective:** To describe the implementation of a nurse-led preoperative cataract assessment and postoperative care clinic and to assess the safety, efficacy and outcomes.

**Design, setting and participants:** A prospective study involving 185 public patients (221 eyes) referred to the Department of Ophthalmology at Flinders Medical Centre for cataract surgery. The study was conducted between February 2003 and August 2004.

**Interventions:** Patients were assessed in the nurse-led preoperative assessment clinic. Those deemed suitable for cataract surgery were also assessed by an ophthalmologist and underwent cataract surgery if appropriate. The nurse managed postoperative care.

**Main outcome measures:** Concordance between nurse practitioner and ophthalmologist assessments; waiting times for first clinic appointment and surgery; visual acuity and degree of visual disability; patient satisfaction.

**Results:** 114 patients (61.6%) were assigned to see the ophthalmologist for cataract surgery. Median waiting times fell from 115 days (range, 23–268 days) to 21 days (range, 9–43 days) for initial clinic appointment, and from 44 days (range, 5–148 days) to 29 days (range, 14–154 days) for surgery. All 114 patients were listed for cataract surgery, and surgery had been performed on 121 eyes by the end of the study. After surgery, visual acuity improved by a mean of 0.45 logMAR (logarithm of the minimal angle of resolution) (SD, 0.24; range, 0.08–1.32). All patients had improved visual ability and high levels of satisfaction. Three quality assurance evaluations demonstrated full concordance between nurse and ophthalmologist assessments.

**Conclusions:** Implementing a nurse-led cataract assessment clinic improved access to care for public patients with cataracts. The safety and efficacy of the program and its excellent visual and patient-centred outcomes commend its adaptation and implementation to other ophthalmology departments.

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The preoperative management protocol is summarised in Box 1. (Details of the postoperative management protocol are available from the authors on request.) All patients were under the care of one consultant, with surgery performed by the consultant or his fellow. Specific protocols formulated included the preoperative assessment, postoperative assessment and quality assurance mechanisms. Vicarious liability was covered by the institution of employment and under the Department of Health Professional Indemnity and Insurance Program while working within the scope of practice as a nurse practitioner. Our study was approved

by the Flinders Medical Centre Ethics Committee.

## Preoperative assessment

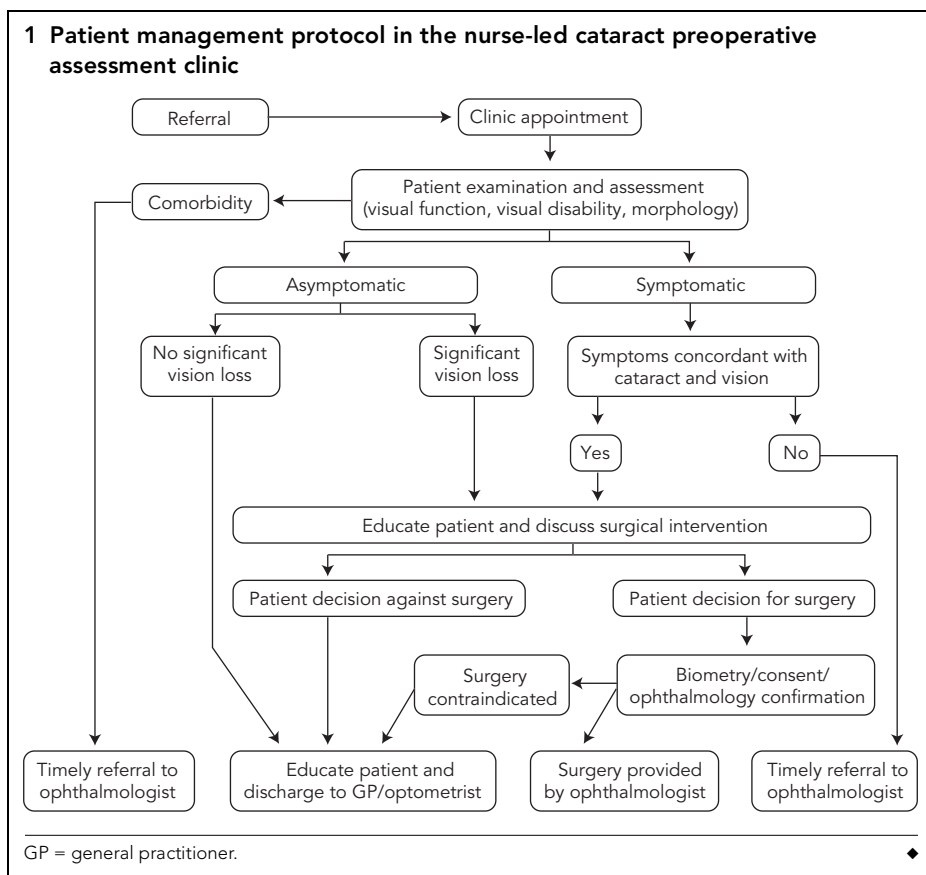
Our study was conducted between February 2003 and August 2004. Over this period, patients referred to the Flinders Medical Centre Department of Ophthalmology but not to any specific doctor were allocated to the nurse-led clinic if cataract was thought to be the main cause of reduced vision. The ophthalmic nurse practitioner assessed the suitability of these patients for the cataract clinic. On the basis of information supplied by the referring doctor, patients suspected of having ocular comorbidities were excluded from the nurse-led clinic.

At the clinic appointment, patients were given a full ocular examination and answered a cataract-specific visual disability questionnaire. Informed consent was obtained. Included in the assessment was a full medical history and VA evaluation. VA

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## 2 Visual disability screening questionnaire\*

1. Do you think you have a problem with your vision?
2. Do you have difficulty reading the newspaper?
3. Do you have difficulty reading the telephone book?
4. Do you find it difficult to see the TV?
5. Do you find it difficult to see the TV subtitles?
6. Have you had any falls in the street or at your home (eg, stairs, kerbs, uneven ground)?
7. Do you have any problems with driving during the day?
8. Do you have any problems with night-time driving?
9. Do you have any difficulty recognising faces?
10. Are there any hobbies that are made difficult by your poor vision?
11. Any other difficulties experienced in regards to your vision?

\*Patients were asked to answer "yes" or "no" to each question. ◆

was tested on logMAR (logarithm of the minimal angle of resolution) charts using a forced-choice paradigm, five-error termination rule and by-letter scoring. A complete ocular examination, including slit-lamp and fundal check with 90D lens and binocular indirect ophthalmoscopy, was performed (essentially screening for ocular comorbidity). The Lens Opacities Classification System III was used on every patient to quantify cataract.<sup>5</sup> The level of cataract was compared with visual performance and visual disability to determine whether the pattern was consistent.

The cataract-specific visual disability screening questionnaire (Box 2) was designed to provide a rapid qualitative assessment of the presence or absence of visual disability. The questions were drawn from the Visual Disability Assessment.<sup>6</sup> Two broad questions (1 and 11) were included to tap any patient-specific issues. The purpose of the questionnaire was not to provide a visual disability score but to compile a checklist of potential visual difficulties. The questions were repeated after cataract surgery to determine whether disability had been reversed.

A standard form compiled by the ophthalmologist was read to patients to inform

them about the risks and benefits of cataract surgery. If cataract surgery was considered warranted, biometry was performed and patients received preoperative counselling at the time of the initial clinic visit.

A letter reporting the findings and outcomes was sent to the patient's general practitioner and referring practitioner. Patients recommended for cataract surgery were given a priority appointment to see the ophthalmologist. Patients not requiring cataract surgery were referred back to their GP and/or optometrist for monitoring of vision and symptoms. Patients found to have ocular comorbidity were referred to the appropriate subspecialist ophthalmologist.

### Postoperative assessment

Patients who received cataract surgery were assessed at Day 1 postoperatively by the ophthalmic nurse practitioner. They were either referred for an ophthalmologist's opinion (if any complication was noted) or commenced on topical antibiotics and corticosteroids according to the ophthalmologist's preferences. If no complications were noted on Day 1, they were examined again 4 weeks later. At the Week 4 visit, the best-corrected VA was determined. If the patient

returned for an unscheduled appointment during the first 4 weeks after surgery, the ophthalmologist reviewed the patient and provided feedback to the ophthalmic nurse practitioner for education.

### Quality assurance

Quality assurance mechanisms, including an education and feedback loop, were established to identify and monitor safe practices and to detect suboptimal management. Patients referred to the ophthalmologist for cataract surgery were examined to establish the accuracy of the nurse practitioner's diagnosis, documentation and assessment of suitability for surgery.

A masked diagnosis and management comparison between the ophthalmic nurse practitioner and the ophthalmologist was made at the commencement of the clinic for 1 month, then at 6-monthly intervals, again for a period of 1 month. The results from months 1, 7 and 13 are shown in Box 3.

A patient satisfaction survey was performed on the first 50 consecutive patients receiving cataract surgery. The survey was conducted by telephone 2 months postoperatively. The questions assessed patients' degree of satisfaction with:

- the quality of care provided by the clinician;

### 3 Patient assessment by ophthalmic nurse practitioner and ophthalmologist during three preoperative and three postoperative assessment periods

Preoperative assessment periods						
Diagnosis	Period 1* (n = 16)		Period 2* (n = 13)		Period 3* (n = 13)	
	NP	OP	NP	OP	NP	OP
For cataract surgery	10	10	8	8	7	7
Not for cataract surgery	4	4	4	4	4	4
Referral for comorbidity	2	2	1	1	2	2
Postoperative assessment periods						
Diagnosis	Period 1 (n = 5)		Period 2 (n = 8)		Period 3 (n = 5)	
	NP	OP	NP	OP	NP	OP
Management of first day and 4 weeks postoperative cataract patient	5	5	8	8	5	5
Concordance in management	100%		100%		100%	

NP = nurse practitioner. OP = ophthalmologist. \*Period 1 = Feb 2003; Period 2 = Aug 2003; Period 3 = Feb 2004.

- explanations given by the clinician;
- waiting times for the clinic appointment and surgery;
- the visual outcome after surgery; and
- the overall service provided by the clinic.

Respondents were asked to rate each item on a five-point scale from "very satisfied" to "very dissatisfied".

## RESULTS

### Preoperative assessment

Over the 18-month period, 185 consecutive patients (221 eyes) were assessed in the nurse-led cataract assessment clinic. The mean age of cataract patients was 75.4 years (SD, 7.9; range, 50–96 years), and 119 patients (64%) were women. Ninety-seven out of 185 patients (52%) were referred by GPs, 61 (33%) by optometrists, 21 (11%) by ophthalmologists, and six (3%) by other medical specialists at Flinders Medical Centre.

Of these 185 patients, 114 (62%) were booked for an appointment with the ophthalmologist for confirmation of cataract surgery. Forty-six patients (47%) referred by GPs, 43 (71%) referred by optometrists, 20 (95%) referred by ophthalmologists and five (83%) referred by other medical specialists were recommended for cataract surgery. Twenty patients (11%) were referred for ocular comorbidity assessment and 51 patients (28%) were discharged from the clinic. Of these 51 patients, 46 had insufficient visual disability to require cataract surgery and five declined surgery.

### Surgery

All 114 patients recommended for surgery by the nurse practitioner were listed for surgery by the ophthalmologist. After 18 months, 121 cataract operations had been performed on this group, representing 11% of the cataract surgery throughput at Flinders Medical Centre during that period. Eighty-five patients had received surgery on the first eye only, 18 had received surgery on both eyes, and the 11 most recently listed patients had not yet received surgery or complete follow-up. No surgical complications were recorded.

### Visual outcomes

The best-corrected preoperative VA and best-corrected postoperative VA of the 121 operated eyes were 0.54 logMAR (SD, 0.32) and 0.07 logMAR (SD, 0.06), respectively. VA improved in all patients, with an average change of 0.45 logMAR (SD, 0.2; range, 0.08–1.32 logMAR). No unscheduled postoperative appointment visits were noted during the 18-month period.

On preoperative assessment, patients had visual disability on a mean of 4.8 (SD, 2.4) of the 11 items. The mean for bilateral cataract patients was 5.7 (SD, 2.1), compared with 1.8 (SD, 0.9) for unilateral cataract patients. The most common disabilities noted were difficulty reading the telephone book (64%), the newspaper (53%) and television subtitles (51%). After surgery, all patients had less visual disability (mean, 1.0 items; SD, 0.5).

### Waiting times

Public patient waiting times for clinic appointments were considerably reduced,

from a median of 115 days (range, 23–268 days) in the first 3 months of the nurse-led clinic to a median of 21 days (range, 9–43 days) in the last 3 months of the nurse-led clinic included in our study. Twenty-three patients were rescheduled to an earlier clinic appointment when the nurse-led clinic commenced. Public patient elective surgical waiting times among the nurse-led clinic patients also fell from a median of 44 days (range, 5–148 days) in the first 3 months to a median of 29 days (range, 14–154 days) in the last 3 months.

### Quality assurance

The results of pre- and postoperative quality assurance assessments are shown in Box 3. There was complete concordance between nurse practitioner and ophthalmologist assessments. No patients had undetected ocular comorbidity, and all 20 patients referred for comorbidity were correctly diagnosed and appropriately referred.

The patient satisfaction survey revealed that all patients were "very satisfied" with the care and service provided and with the visual outcome; 80% were "very satisfied" and 20% "satisfied" with clinic waiting times; and 94% were "very satisfied" and 6% "satisfied" with surgical waiting times. No patients reported dissatisfaction on any of the items.

## DISCUSSION

Our results show that a nurse-led cataract clinic can function safely and efficiently and lead to good visual and patient satisfaction outcomes. Although responsible for the care of only a small proportion of the cataract surgery patients at Flinders Medical Centre, the nurse-led cataract clinic made a strong impact on the access to care for public patients. This is demonstrated by the reduction in waiting times for the initial clinic appointment and for surgery. The total waiting time for surgery was below the suggested target of Dunn and colleagues based on a survey of English cataract patients, who considered that a waiting time of 3 months or less for cataract surgery was "acceptable" and waits of over 6 months were "excessive".<sup>7</sup> This definition of acceptable and excessive waiting time has been adopted in the United Kingdom.<sup>8</sup>

One of the causes of clinic appointment waiting lists is referrals of patients who do not require surgery. A quarter of all patients attending the nurse-led cataract clinic were discharged from the clinic, usually because

of lack of visual disability. As has been reported previously, some patients who are not yet visually debilitated are referred early to the public health system on the assumption that the wait for an appointment will be so long that they will be debilitated by the time they are seen.<sup>9</sup> However, this often does not transpire. Lash<sup>10</sup> suggests that improving the communication with primary care providers should increase awareness and reduce the amount of referrals of patients not requiring surgical intervention.

The results of our audit show that all patients attained 0.2 logMAR (6/9.5) or better postoperative VA and reduced visual disability. However, as the visual disability screening questionnaire elicits only the presence or absence of disability, low levels of disability may have been under-reported.<sup>11</sup> Our results are better than cataract surgery outcomes in other studies: typically, 85% of eyes have a best-corrected acuity of 6/12 after surgery.<sup>12</sup> This is a reflection of our selection process, which removed all patients with ocular comorbidity from the nurse-led clinic.

Our satisfaction survey revealed overwhelming patient satisfaction with the quality of care and visual outcomes, consistent with other studies of nurse-led clinics.<sup>13-15</sup> However, satisfaction rates reflect factors not related to the clinic and are readily confounded by many factors (eg, clinician gender, patient age and health status).<sup>16,17</sup> Reports of patient satisfaction with cataract surgery outcomes are consistently high, and driven by visual disability outcomes.<sup>18,19</sup> However, other factors such as the adequacy of information given pre- and postoperatively are also important.<sup>20</sup>

With any change in the method of service delivery, there is a need to demonstrate that there is no reduction in quality of the clinical services. Our quality assurance surveys in both the pre- and postoperative phases showed complete concordance between nurse practitioner and ophthalmologist in the management of cataract patients.

An additional attraction of nurse-led clinics is their potential cost-effectiveness compared with medical-practitioner-led clinics. Key determinants of cost effectiveness are the years of training required,<sup>21</sup> practitioner's salary, time taken when consulting, costs of further clinical investigations and the cost of consumables. An ophthalmology registrar would gain competence after approximately 11 years (assuming efficient progression): basic degree (3 years), post-graduate medical degree (4 years), intern-

ship (2 years) and ophthalmology training (2 years, assuming he or she would be competent in cataract care halfway through training). An ophthalmic nurse practitioner would gain competence after approximately 8 years: Bachelor of Nursing (3 years), practical nursing experience (2 years), Ophthalmic Nursing Certificate (6 months), Master of Nursing (2 years) and setting up a hospital appointment (6 months). The salary for the nurse practitioner (\$29 per hour) might be more than the junior registrar (junior to senior range \$27-\$35 per hour) who would otherwise perform the same role. However, a nurse practitioner might be more familiar with the specific clinic environment and more experienced in managing patients with ophthalmic conditions. Therefore, the average time for a consultation might be shorter without sacrificing quality of care. Similarly, the experienced nurse practitioner might be more efficient in use of consumables and investigations. On balance, it is likely that the nurse-led and registrar-led models would run at a similar cost and both might be considerably cheaper than a consultant-led clinic. There might be cost-effectiveness gains for the nurse practitioner model because of differences in length of training. However, for this to be assessed fully an additional specific study would be required.

## CONCLUSIONS

With specialist training and concise protocols, ophthalmic nurse practitioners can contribute to the management of cataract patients and help to deal with the increasing public demand for cataract surgery. The nurse-led model and other alternative pathways to care should be considered for implementation in other ophthalmology settings.

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## COMPETING INTERESTS

None identified.

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