Cataract

Acknowledgements
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Overall summary
Cataract is opacity in the lens which progressively reduces visual functioning, rates of the condition increase with age [11]. Surgery is currently the only treatment option once the lens has opacified and vision is decreasing [1], the condition will not show spontaneous improvement [11]. Surgery involves surgical removal of the lens and insertion of an artificial lens. This is both a clinically and cost effective procedure [11]. Wirral is not currently carrying out a sufficient number of procedures to meet estimates of patient need.

Background
• Cataract is the leading cause of visual impairment in all regions of the world [1]. It is not currently preventable and rates are expected to rise due to an ageing population and increases in life expectancy [1]
• Patients with the greatest level of impairment prior to surgery show the greatest improvement [11]
• The target set out by the Government in 2000 was to increase the number of cataract operations to 3200 per 100,000 people aged over 65 in all areas of the UK by 2003/4 [2]. Wirral met and is meeting the national target, but now needs to exceed it if we are to meet the needs of our local population.
• Cataract extraction accounts for a significant proportion of the surgical workload of most ophthalmologists and cataract surgery continues to be the commonest elective surgical procedure performed in the UK [3]
• Although many advances have been made in the identification of risk factors for cataract, there is, as yet, no proven primary or medical treatment or preventative therapies for cataract [3]
• Risk factors for cataract are multi-factorial. Apart from age, a number of epidemiological studies have identified the following risk factors for cataract: gender; diabetes mellitus; sunlight; steroids; nutrition and socio-economic status; lifestyle (smoking & alcohol intake) and dehydration/diarrhoeal crises. Recent data suggest the heritability of age-related cataract to be in the region of 48%-59%
• Serious co-existing eye conditions such as glaucoma, age-related macular degeneration, diabetic retinopathy or amblyopia are present in 30% of patients having cataract surgery [3]
• There are 4 main types of surgery, but the most commonly performed in the developed world (including the UK) since the 1990’s is phacoemulsification as it is generally perceived to offer greater predictability of refractive outcomes, shorter recovery times and faster recovery of full visual function [1, 9]
• The type of lens inserted can be monofocal or more recently introduced, an IOL or intraocular lens which allows both distance and reading vision. There are 2 types of IOL’s, multifocal or accommodating, accommodating lenses move within the eye in a similar manner to a natural human lens, multifocal lenses enable near and distance vision because of their design [17].
• With the advent of phacoemulsification and the increasing use of local anaesthesia in cataract extraction, there has been a trend toward management of cataract patients as day cases in recent years [9]
• The commonest complication of cataract surgery is Posterior Capsule Opacification (PCO). It is caused by cells left behind after surgery, is a multi-factorial problem related to patient factors (age, existing ocular disease etc.) and is essentially a wound healing response to surgery and requires laser capsulotomy to correct.

Guidelines

National Guidelines

The Royal College of Ophthalmologists’ updated Cataract Surgery Guidelines 2004.3

| Diagnosis & Evaluation of visual impairment | A detailed visual history should be taken, in particular establishing near and distance vision and past history of eye disease, binocular function and amblyopia
• The impact of cataract on the patients lifestyle should be evaluated but it is important to realise that patients adapt to the visual impairment. There is no single test to assess the effect of cataract on a patient nor is there a test to decide threshold for surgery. Questionnaires can be helpful in eliciting symptoms and should be used in conjunction with history taking and examination when deciding on surgery |

| Ophthalmic Examination | A complete ophthalmic examination should include: measurement of visual acuity (an up to date refraction should be available as part of the optometrists report); pupil examination; external eye examination including lids and lashes; measurement of intraocular pressure; slit lamp examination; dilated examination of the cataract and fundus; biometry |

| Special Investigations | If view of the fundus is obscured, useful information may be gained from examination of pupil responses, the assessment of light perception or using entoptic tests (Purkinje effect). B-scan ultrasonography will establish that the retina is attached and identify any intraocular masses. Electrodiagnostic tests may sometimes be useful in the assessment of retinal or visual pathway dysfunction.
• Tests for contrast sensitivity, glare, laser interferometry and specular photography are not of proven value |

According to ‘Action on Cataracts’[2] referrals should be based on:
• Reduced visual acuity
• PLUS impairment of lifestyle
• PLUS willingness to have surgery, if appropriate

According to The National Eye Care Services Steering Group4, the basic principles underpinning a cataract service pathway should be:
• Only those who want, need and are suitable for cataract surgery should be referred to cataract clinics
• Direct referral for cataract surgery by community practitioners
Patients to be returned to their community practitioners as soon as possible after surgery for their continuing optometric care

Wirral Guidelines & Referral Criteria

Carla Sutton informed me there are 2 sets of guidelines for cataract procedures in Wirral, one used by the Hospital Trust (on Path.finder – found them, completely indecipherable – to me anyway) and one for the ISTC’s. (Martin Kent provided the Cataract Referral Assessment Form for the ISTC’s, but it doesn’t seem to say, when patient has tick in x,y, and z box, they are eligible, without this, they are not eligible for example).

Wirral information

Wirral’s rate of cataract extraction (using phakoemulsification) is below average for the North-West Strategic Health Authority area and is also below that which would be expected given our population’s age structure and levels of deprivation.

The graphs on the following pages show rates of extraction by GP practices in each of Wirral’s 3 Local Health Directorates.

The North London Eye Study provides prevalence data specifically for visually impairing cataract. 
30% of people aged over 65 were found to have visually impairing cataract in one or both eyes. A further 10% of people in the same age group had already had cataract surgery in one or both eyes. Prevalence of cataract increases steadily with age, see table below.

Table 1: Estimated prevalence of cataract in Wirral

<table>
<thead>
<tr>
<th>Age</th>
<th>Numbers of persons in Wirral in these age groups</th>
<th>% with visually impairing cataract</th>
<th>Likely numbers of Wirral population with visually impairing cataract</th>
</tr>
</thead>
<tbody>
<tr>
<td>65-69</td>
<td>15,780</td>
<td>16%</td>
<td>2,524.8</td>
</tr>
<tr>
<td>70-74</td>
<td>14,039</td>
<td>24%</td>
<td>3,369.36</td>
</tr>
<tr>
<td>75-79</td>
<td>12,280</td>
<td>42%</td>
<td>5,157.6</td>
</tr>
<tr>
<td>80-84</td>
<td>8,888</td>
<td>59%</td>
<td>5,243.92</td>
</tr>
<tr>
<td>85+</td>
<td>7,972</td>
<td>71%</td>
<td>5,660.12</td>
</tr>
<tr>
<td>Total</td>
<td>58,959</td>
<td></td>
<td>21,955.8</td>
</tr>
</tbody>
</table>

Table 2: Estimated numbers of people with visually impairing cataract by Wirral locality

<table>
<thead>
<tr>
<th>Age</th>
<th>BWW</th>
<th>BKW</th>
<th>Wallasey</th>
<th>Wirral</th>
</tr>
</thead>
<tbody>
<tr>
<td>65-69</td>
<td>949.12</td>
<td>1,087.36</td>
<td>488.32</td>
<td>2524.8</td>
</tr>
<tr>
<td>70-74</td>
<td>1,322.16</td>
<td>1,393.44</td>
<td>653.76</td>
<td>3369.36</td>
</tr>
<tr>
<td>75-79</td>
<td>2,026.08</td>
<td>2,113.44</td>
<td>1,018.08</td>
<td>5157.6</td>
</tr>
<tr>
<td>80-84</td>
<td>2,103.35</td>
<td>2,171.79</td>
<td>968.78</td>
<td>5243.92</td>
</tr>
<tr>
<td>85+</td>
<td>2,357.91</td>
<td>2,230.11</td>
<td>1,072.1</td>
<td>5660.12</td>
</tr>
<tr>
<td>Total</td>
<td>8,758.62</td>
<td>8,996.14</td>
<td>4,201.04</td>
<td>21,955.8</td>
</tr>
</tbody>
</table>
Research shows that approximately 88% of all those with cataract, will not be in touch with eye services 2. If we discount the 10% who will have already had surgery, this leaves a potential unmet need for cataract surgery in Wirral of approximately 17,389 people.

Financial Information

The National Tariff cost for phacoemulsification extraction of cataract is £702. Wirral carried out 1411 of these procedures in 2006/07 at a cost of £990,522. If Wirral were to carry out the number of procedures we were predicted to have performed over this period (1829), we would need to have performed an additional 418 procedures. This would require an additional £293,436, making a total per annum cost of £1,283,958 to meet current levels of demand.

Evidence

• Considering the vast number of cataract surgical procedures performed worldwide, there are few randomised, controlled trials comparing different surgical techniques [9]
• Surgical treatment of cataract is one of the most cost-effective interventions in health care [1] and considering that a high proportion of patients are elderly, the procedure has a very low mortality and systemic morbidity 10
• Second eye surgery confers significant additional gains in visual function and quality of life above and beyond those achieved after surgery to the 1st eye (e.g enables a greater proportion of patients to meet DVLA driving requirements). As such, its value should not be overlooked in management of cataract [3],
• Historically, about 20% of patients have needed laser treatment for opacification of the posterior capsule within 2 years of surgery. This should be taken into account by purchasers [11]
• Day surgery is as effective as inpatients surgery, but it is associated with 30% lower costs due to the savings in terms of surveillance in the hospital [9,12]
• Routine pre-operative medical testing (blood tests and ECG’s) for patients having local anaesthesia have not been found to reduce the incidence of intraoperative or post-operative medical complications [3]
• To date, the only effective prophylactic measure in infection prevention has been Povidone iodine 5% aqueous solution irrigated into the conjunctival sac immediately pre-operatively [3]
• The 2004 guidance from the Royal College of Ophthalmologists on IOL’s is that, ‘All intraocular lenses have their individual ‘pros’ and cons’ and there is no ‘best buy’ [3].
• With improvement in IOL design and surgical technique, laser capsulotomy rates have fallen from 30%-50% to less than 10% at 2 years post-operatively [3] and it has been shown that IOL’s with a square edge profile inhibit progression of PCO [3].
• A recent study (2005) also suggested the use of hydrophobic acrylic as an IOL material for implantation, may result in decreased future use of Nd:YAG laser therapy when compared with PMMA, silicone and hydrophilic acid, but further research is needed to confirm this finding [13].
• First eye cataract surgery reduces the rate of falling, risk of fractures and improves visual function and general health status. Rate of falling was reduced by 34% in the operated group (p=0.03) in one study [14]. The reduced rate of fracture among the operated group was also statistically significant (p=0.04). Additionally, anxiety,
activity, depression, confidence and visual disability all improved in the operated group at 12 month follow up [14]

- Cataract surgery was not associated with improved functional capacity and although waits for surgery concern patients and the public (waits are associated with anxiety, depression, and reduced perception of health). However waits not exceeding 9 months do not adversely affect clinical outcomes [15]

- Several South Asian communities in the UK have been studied and in every case, the prevalence of cataract has been found to be higher than the native population of European descent. A study in Leicester found cataract in 69% of over 60's of Asian descent, compared to 30% in those of European descent [16].

- People with diabetes have been found to be at increased risk of cataract in many studies. It has been hypothesised that this may be due to a bias in comparison due to people with diabetes having increased contact with health services. However the difference is apparent in too many studies to be dismissed and is backed up by laboratory studies showing lenses incubated in high sugar media will develop cataract [16].

- According to the First National Cataract Audit, the average age at surgery as 76 years. In the US, the average age at surgery is 72 years. A four year delay in surgery goes a long way to explaining why the rate of surgery in the US is nearly 3 times that in the UK as a proportion of patients will die in the interim. This indicates that earlier surgery and shorter waiting lists could have a dramatic impact on the amount of surgery that is required in the UK [16].

- Old age is not in itself a predictor of poor outcome unless associated with ocular co-morbidity [3]

**Recommendations**

- In order to better meet the needs of our population, Wirral needs to increase the current rate of cataract extraction.

- As cataract surgery is so safe and effective, there are very few issues of quality of care relevant to a developed country. Much more important is how to ensure that that people get surgery when they need it. The major problem in needs assessment for cataract is thus to define the point at which a person requires treatment [16].

- As the population ages and more importantly, patients demand earlier surgery, the UK is likely to see more and earlier referrals which will soak up any extra resources. Those involved in commissioning plans should acknowledge and plan for this [16].

- There may be value in local guidelines explicitly stipulating the level of visual disability which requires surgery. As it currently stands, patients do not know when they have a right to expect treatment and commissioners cannot be sure whether a service is meeting the needs of the community [16].

- More targeting of at-risk populations such as diabetics, people of South Asian origin and those with a family history of cataract is warranted.

- Action on Cataracts [2] and The Department of Health’s Eye Care Plan propose direct optometrist referral according to locally agreed protocols and there are now many such projects with audited outcomes and high conversion rates from referral to surgery. Wirral should adopt this as the preferred referral method (% that this happens in Wirral – awaiting reply)

- Because patients are discharged so soon after surgery it is essential to provide comprehensive and accessible patient information warning about eventualities such as PCO occurring. Ensuring patients understand the uncertainty about the procedures effectiveness and are given clear written information to take away is also recommended in the NICE guidance [17].


5 Dr. Foster Intelligence. www.da.drfoster.co.uk

6 Second Cataract Surgery. Bandolier Nov 1998; 57-4 www.jr2.ox.ac.uk/bandolier


8 Wirral Primary Care Trusts Public Health Department Data & Intelligence Team. http://www.wirralpct.nhs.uk/publichealthintelligence/demographic/sectionone.asp


