Centre for Sustainable Delivery

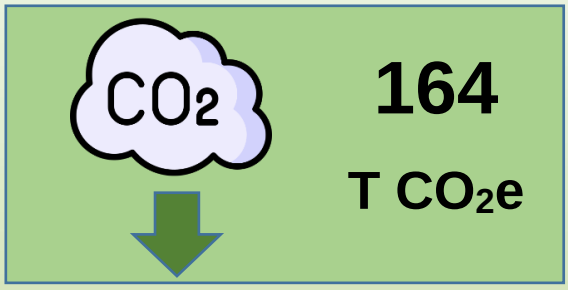
NHS SCOTLAND

National Green Theatres Programme

Pròg̀ram Nàiseanta Lannsaireachd Uaine

Embed immediate sequential bilateral cataract surgery

April 2025



1. Description of action

1.1 This action highlights the environmental and clinical benefits associated with immediate sequential bilateral cataract surgery (ISBCS). This document aims to provide the necessary evidence and support for clinical teams across Scotland to implement high volume cataract services by embedding the practice of ISBCS.

2. Background

2.1 A cataract is a cloudy area in the lens of the eye that can impair a person's vision and is very common in an aging population[1]. The condition can be treated by replacing the clouded lens with an artificial one. This is one of the most commonly performed operations in Scotland, from May 2023 to May 2024, a total of 45,976 cataract operations were performed across NHS Scotland[2].

2.2 Over 60% of patients who require cataract surgery require surgery in both eyes[3], yet less than 4% undergo bilateral surgery in NHS Scotland. When a patient has both eyes treated on the same day this is known as immediate sequential bilateral cataract surgery (ISBCS). The case to embed ISBCS within NHS Scotland gained momentum during the Covid-19 pandemic where considerations had to be put in place to reduce the spread of the virus. ISBCS was one avenue considered to mitigate the risk associated with multiple hospital visits and to optimise services[4].

2.3 Traditionally, there has been a low uptake of this practice due to the perceived risk of postoperative complications, the most concerning being postoperative endophthalmitis which can lead to permanent loss of vision[5]. This perceived risk (calculated as 1 in 28.5

[1] https://www.nei.nih.gov/learn-about-eye-health/eye-conditions-and-diseases/cataracts
[2] Public Health Scotland – Discovery site (accessed 30/07/2024)
[3] Hujanen P,Vaajanen A, Felin T, et al.Br J Ophthalmol Epub aheadof print: [please include DayMonth Year]. doi:10.1136/bjophthalmol-2021-320588
[4] https://www.rcophth.ac.uk/wp-content/uploads/2020/09/Immediate-Sequential-Bilateral-Cataract-Surgery-Guidance.pdf
[5] J Cataract Refract Surg 2022; 48:850–854 Copyright©2022 Published by Wolters Kluwer on behalf of ASCRS and ESCRS

million[6]) is being challenged with research supporting that there is currently no report in the literature of bilateral endophthalmitis when the principle of instrument separation is followed.

Tays Eye Centre in Finland published work in 2022 that covered a 13 year real life report of 56,700 cataract operations and found 0 cases of endophthalmitis associated with ISBCS[7].

Further work from India, published in 2023, covering 42,515 patients identified only 1 case of endophthalmitis, this equates to an incidence of 0.006%[8]. Identified cases of bilateral endophthalmitis in ISBCS can be attributed to faults in aseptic procedure and non-adherence to international principles for ISBCS[9].

Such studies highlight that infection rates in general are lower than often quoted, and ISBCS is much safer than is currently perceived.

2.4 Additionally, a rapid review of post-cataract endophthalmitis was conducted by the Scottish Antimicrobial Resistance and Healthcare Associated Infection (ARHAI) team who found no link between ISBCS and increased risk of endophthalmitis provided healthcare teams are following the correct cleaning and sterilisation procedures[10].

2.5 The practice is also supported within NICE guidance, recommending that patients at the preoperative appointment should be given information on ISBCS. The guidance states; consider bilateral simultaneous cataract surgery[11] for:

- people who are at low risk of ocular complications during and after surgery or
- people who need to have general anaesthesia for cataract surgery but for whom general anaesthesia carries an increased risk of complications or distress[12]

[6]https://journals.lww.com/jcrs/abstract/2022/07000/bilateral_simultaneous_postoperative.16.aspx#:~:text=Bilateral%20simultaneous%20postoperative%20endophthalmitis%20(BSPOE)%2C%20perhaps%20the%20most%20feared,cases%20reported%20in%20separate%20articles.
[7] https://bjo.bmj.com/content/bjophthalmol/early/2022/10/13/bjo-2021-320588.full.pdf
[8] https://bjo.bmj.com/content/107/6/78
[9] ISBCS Implementation manual published by BICAT-NL (Page 11)
[10] https://www.nhscfsd.co.uk/media/qpydymxl/2023-07-26-cataract-swlg-rr-v10.pdf
[11] Bilateral simultaneous cataract surgery = immediate sequential bilateral cataract surgery
[12] Recommendations | Cataracts in adults: management | Guidance | NICE

2.6 Further to the NICE guidance, Healthcare Improvement Scotland (HIS) published the Scottish Standards for Cataract Surgery in 2023. Within standard 5: Theatre Planning and Facilities, it states that each organisation should consider the environmental impact of cataract services and take appropriate measures to limit direct carbon emissions. Further stating that ISBCS should be offered in appropriate cases[13].

2.7 In response to the evidence in support of ISBCS the Centre for Sustainable Delivery published 'A Blueprint for Success'[14] that aims to help improve the delivery of cataract services across Scotland by offering health boards a blueprint to deliver high volume cataract services.

2.8 Although there is evidence in support of ISBCS the success of this action will be determined by the uptake of patients themselves. It is crucial that the patients are aware of the benefits of ISBCS. Figure 1 provides an overview of the key benefits:

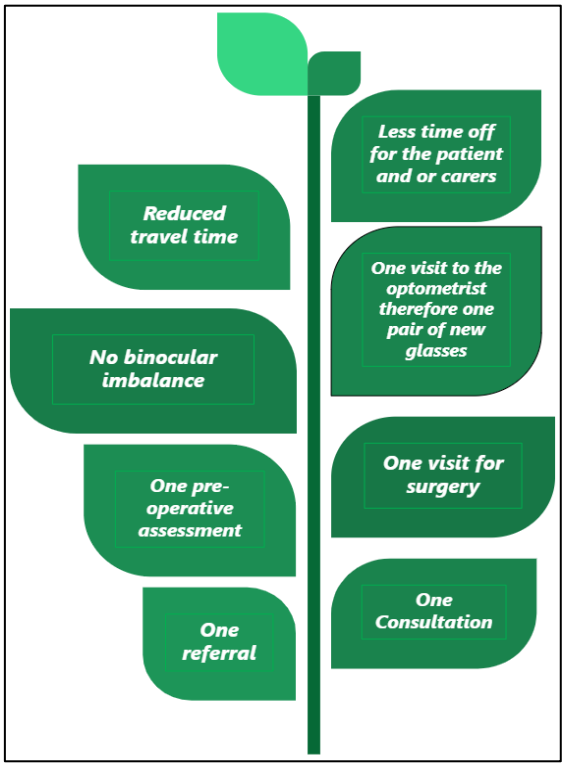


Figure 1

[13] Cataract surgery - Standards for all healthcare settings: December 2023 (healthcareimprovementscotland.org)
[14] https://www.nhscfsd.co.uk/media/5sofmknr/cataract-surgery-blueprint-2022.pdf

2.9 Alongside highlighting the benefits to the patient it is also pertinent that patients are made aware of the risks which include potential complications in both eyes during and/or after surgery that could cause long-term visual impairment and the likely need for additional support after the operation[15]. This allows the patient to make an informed decision about their care.

In the operating theatre, the surgeon will only operate on the second eye if the first eye was completed without any complications.

If no complications were identified the patient will be asked if they are happy and consent to operating on the second eye.

2.10 The patient benefits, outlined above, also feed into wider system benefits, including reduced wait lists and increased capacity across the clinical pathway. This has been demonstrated at Ninewells Hospital in NHS Tayside where ISBCS has been embedded as common practice since January 2022. The evidence demonstrates a strong link between ISBCS and shorter waiting lists.

1. In line with the research the team at Ninewells Hospital have identified that 60-65% of their patients are eligible for ISBCS and convert a high proportion of these patients to ISBCS. Using the lower estimate of 60% it can be quantified what a successful national programme of ISBCS would achieve in terms of carbon savings.

   If 60% of patients from the 2023/2024 Scottish activity data had been offered and accepted ISBCS, then 25,926[16] patients would have had both eyes operated on, thus lowering the 'second eye' referrals in the years following. This figure accounts for the current percentage of ISBCS performed across Scotland.

2. This equates to 25,926 less journeys taken by patients and/or their carers. Data published by Public Health Scotland has found that the median distance travelled for a face-to-face outpatient appointment is 13.8 miles for Scottish residents, although as appendix 1 shows, the distance travelled by patients varies significantly by health

[15] Recommendations | Cataracts in adults: management | Guidance | NICE
[16] See appendix 1

board[17]. Using this board level data it has been calculated that a successful programme of ISBCS has the potential to reduce car miles by 614,359 annually (see appendix 1).

3. The change in practice would see a first year reduction in travel associated carbon emissions of 164 tonnes (Co2e)[18].

2.11 A board by board breakdown outlining board level carbon savings is available in appendix 1.

3. Who needs to be involved in this change locally?

3.1 It is important that this change be clinically led. The appointed cataract leads within each health board should work closely with clinical teams to help delivery of this work locally. Key stakeholders are listed below, however, depending on the service offered it may be necessary to widen the scope of stakeholders involved.

- Clinicians
- Nursing teams
- Procurement
- Central Decontamination Unit Manager
- Infection Prevention Control

4. Boundaries

4.1 The table below identifies the boundaries for this action:

In scope	Out of scope
• Patients who are at low risk of ocular complications during and after surgery. • Patients who need to have general anaesthesia for cataract surgery but for whom general anaesthesia carries an increased risk of complications or distress.	• Patients at high risk of ocular complications during and after surgery.

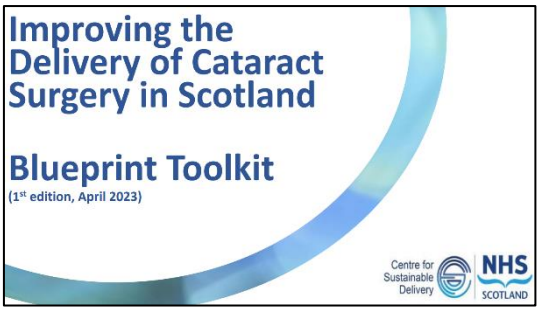
[17] PHS - Outpatient appointments - Median miles travelled (return trip)
[18] Figures based on medium sized car = 0.26791kg/co2e per mile. (https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023)

5. What is the change and how will it be implemented?

5.1 This document presents a clinical and environmental case for ISBCS. This is a move away from current practice where patients with bilateral cataracts undergo cataract surgery in both eyes on separate days, referred to as delayed sequential bilateral cataract surgery (DSBCS).

To support the implementation of this practice the Centre for Sustainable Delivery has published 'A Blueprint for Success' and a 'Blueprint Toolkit'. Both documents provide the necessary evidence and information to implement ISBCS within health boards. Please click on the images below to access the documents.

LINK TO ISBCS GUIDE WILL BE ADDED ONCE APPROVED BY ISBCS T&F GROUP.



6. What are the potential co-benefits of this change?

6.1

Outcome	Potential Benefits
Carbon Savings	164 tonnes Co2e annually

7. Risks and Issues

7.1 As part of the development of this action there has been one risk identified to date, outlined below:

Description of risk or issue	Mitigation / Action Plan
• Risk of post-operative endophthalmitis	Ensure healthcare teams are following the correct cleaning and sterilisation procedures.

• Risk of complications in both eyes during and/or after surgery that could cause long-term visual impairment	
• Risk that Health Boards do not input the correct coding pattern to capture the bilateral procedure.	New coding has been developed to capture ISBCS. The guidelines will instruct Health Boards on the steps required to capture the procedure correctly.

8. Implementation Guidance

8.1 The opportunity for change highlights the importance of implementing this action. This change will help your site and NHS Scotland achieve net-zero emissions by 2040 as stated in NHS Scotland's Climate Emergency & Sustainability Strategy 2022-2026.

8.2 Below the National Green Theatres Programme has provided guidance on how you can implement this change within your area. If you require any further information or guidance, please contact the National Green Theatres programme team on: cfsdgreentheatres@gjnh.scot.nhs.uk

Local Sustainability or Green Theatre Group:	
1.	Share this Opportunity for Change with relevant colleagues for review
2.	Cataract leads within each health board to coordinate this work
3.	Convene a discussion with the staff who need to implement it and those who are impacted by the action.
4.	Understand what the opportunity is for implementing the action locally: work already undertaken and challenges.
5.	Agree a local implementation plan.
6.	Implement local plan.
7.	Provide data as per measurement plan.
8.	Monitor implementation of action

9. Measurement

9.1 Progress of this action will be measured through data held on Public Health Scotland's Discovery website that measures the number of bilateral cataracts surgeries performed. Any support required with implementation will be led through the Cataract Sub-Specialty

Delivery Group. The NGTP will report only on progress but will not be involved in supporting implementation of this action.

Appendix 1

	Current State				Opportunity for increased cases			Carbon saving Opportunities		
Health Board	Total number of cases* May 23-May 24	Total number of single eyes operated on May 23-May 24	Number of bilateral cases May 23-May 24	Current percentage of ISBCS operation (%multiplied by 2)	Assumed 60% conversion rate to ISBCS (eyes) Total cases x0.6	Opportunity for increase from current percentage to 60 %	Opportunity for increase in number of cases current vs 60%	Median miles (return trip) for Face to Face Outpatient Appointments	Associated reduction in travel miles	Tonnes of Co2e saved by reduction in patient journeys
NHS Ayrshire & Arran	3,007	2,963	22	1.46	1,804	58.54	1,760	17.2	30,275	8.1
NHS Borders	1,061	1,061	0	0.00	637	60.00	637	31.3	19,926	5.3
NHS Dumfries & Galloway	1,294	1,294	0	0.00	776	60.00	776	30.4	23,603	6.3
NHS Fife	2,793	2,793	0	0.00	1,676	60.00	1,676	16.4	27,483	7.4
NHS Forth Valley	1,907	1,907	0	0.00	1,144	60.00	1,144	18.2	20,824	5.6
NHS Golden Jubilee	12,704	12,704	0	0.00	7,622	60.00	7,622	39.9	304,134	81.5
NHS Grampian	2,160	2,160	0	0.00	1,296	60.00	1,296	20.6	26,698	7.2
NHS Greater Glasgow & Clyde	6,127	6,127	0	0.00	3,676	60.00	3,676	11.7	43,012	11.5
NHS Highland	2,202	2,202	0	0.00	1,321	60.00	1,321	28.6	37,786	10.1
NHS Lanarkshire	2,358	2,358	0	0.00	1,415	60.00	1,415	15.0	21,222	5.7
NHS Lothian	4,897	4,821	38	1.55	2,893	58.45	2,862	10.4	29,767	8.0
NHS Orkney	135	135	0	0.00	81	60.00	81	15.7	1,272	0.3
NHS Shetland	94	94	0	0.00	56	60.00	56	20.0	1,128	0.3
NHS Tayside	4,983	3,443	770	30.91	2,066	29.09	1,450	17.1	24,792	6.6

NHS Western Isles	254	254	0	0.00	152	60.00	152	16.0	2,438	0.7
TOTAL	**45,976**	**44,316**	**830**	3.61	**26,616**		**25,926**		**614,359**	**164**

Due to coding issues the number of bilateral cases may not be reflected accurately at present
**bilateral cases counts as 2 towards the total number of cases*

Acknowledgements

This change has been written in collaboration with the Cataract Task and Finish group commissioned by the Cataract Sub Specialty Delivery Group.