

Case Study for ScopeControl® – Automated Rigid Endoscope Testing Unit

In partnership with



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Introduction

ScopeControl is an automated testing unit that checks and records 6 key optical parameters that are critical to the fitness for use and functionality of rigid endoscopes.

Bolton Surgical were invited to perform a trial of ScopeControl at County Durham and Darlington NHS Foundation Trust, to determine whether it could assist in resolving and/or improving key problems and issues associated with the use, processing and inventory management of rigid endoscopes.

Decontamination Services Manager, James Brown highlighted the key problem areas as;

- Lack of traceability for individual rigid scopes
- Limited testing log maintained
- Absence of a consistent means of identifying faulty rigid scopes
- No accurate data available on the condition of rigid scopes in circulation
- No single source of data available, such as inventory types, serial numbers etc.
- Theatre time wasted when a scope is opened and found to be unfit for use
- Last minute scope and/or procedure changes resulting in additional costs
- Risk that an open procedure may present difficulties for the patient

This case study uses the live data gained during the trial to examine how ScopeControl performed in a live environment, and to demonstrate how using ScopeControl successfully helped to address the key problems identified by the Trust.

Executive Summary

The successful completion of the ScopeControl trial enabled the Trust to fulfil its initial objectives and answer the key problems identified.

As a result of the trial, the Trust were able to take a 'snap-shot in time' of their current inventory, which gave access to valuable information that they could now use in various ways to make significant improvements to the overall quality and cost effectiveness of their rigid endoscope inventory.

In addition, the trial provided a more detailed understanding of the costs and potential savings the Trust could make by using ScopeControl within their workflow every day.

It was concluded that using ScopeControl could save an average Trust over £100,000 per year on saved Theatre time alone. In addition to this, the intangible benefits include patient safety benefits, provision of information to procurement, enabling them to make purchasing decisions based on real time performance data and much improved traceability throughout the lifecycle of the device.

"The ScopeControls ability to provide technical staff responsible for processing these devices with the assurance that they are processing a rigid telescope which will be fit for purpose when next required in an operational setting is unquestionable. This is the most significant step forward in Sterile Services field of the processing of rigid telescopes since the introduction of Minimal Invasive Surgery. Never before has there been a tangible method of monitoring scopes through each process cycle, information and data which is retained for auditing, analysis and reporting.

The ScopeControl provides a tool for those people responsible for the management and maintenance of these high value assets, ensuring that not only are they maintained in service within an optimal condition but when they are returned form repair or maintenance that that work has been undertaken in line with the specification.

Although money is tight within the NHS, equipment of this nature can help to ensure a consistency of service, improve productivity and enhance patient safety I feel that these are core elements of the NHS and I intend to submit a business case to secure a ScopeControl for our Trust."

*Jim Brown
Decontamination Services Manger
County Durham and Darlington NHS Foundation Trust*

Background

County Durham and Darlington NHS Foundation Trust is a large integrated care provider in the North East of England, employing around 8,000 staff. The Trust serves a population of around 600,000 people.

On average the Trust processes 500 scopes per month from a pool of over 270 devices.

Rigid Endoscope stock, and its reliability, is vitally important to organisations performing minimally invasive surgery and represents a significant investment for the Trust. The need was therefore identified to understand the condition of the stock. By doing this, the Trust hoped to be able to fulfil the following objectives;

- Increase Patient Safety, by ensuring only rigid endoscopes that were fit for use entered the Operating Theatre environment
- Aid budgetary planning, to identify the scopes that need repairing or replacing and plan ahead with a timeline for scope maintenance, by means of a reliably repeatable testing system.
- Have complete visibility and full traceability of the scopes in circulation, enabling better management, reduced operating costs, improved return on investment.

The only testing method currently being undertaken on rigid endoscopes during processing is a visual check, this is subjective, and relies only on what the SSD Technician sees when looking into an endoscope and, how they translate this into a result that is either a 'pass' or 'fail'.

Prior to the development and introduction of ScopeControl, there has been no set standard to which the functionality of the light fibres could be assessed. If a scope reaches theatres and is not performing adequately, it is common practice for the surgical team to attempt to improve illumination by turning the light source up during surgery. Whilst providing a short-term improvement, the overall effect of doing this can damage the fibres irreversibly, meaning a costly new fibre bundle is needed to restore the scope to a useable condition again.

The Trial

It was agreed that ScopeControl should be used for a period of time within each of the Trusts two Decontamination units, sufficient to enable maximum repeated testing of the rigid scope inventory before and after use, at the pre-determined parameter thresholds recommended following extensive research by the manufacturer of ScopeControl, Dovidex Medical.

Delivery, installation and training took place on the day of installation at both sites. ScopeControl was located within the clean room, and in-situ training was rolled out to technicians on their different shift patterns throughout the day. The operation of the ScopeControl unit is easy to understand and staff quickly became proficient in its use.

The trial commenced at the Darlington Memorial Hospital site initially, and lasted for a period of 35 Days. ScopeControl was then installed at the University North Durham site for 15 Days.

Table A below shows the actual numbers of rigid endoscopes tested during the trial period at each site;

Table A - Trial Numbers

Site	Days Trialled	Total Tests	No. of Individual Scopes	Avg. Per Day
Darlington	35	316	110	9
Durham	15	113	63	8

Table B below shows the average time taken per test, and the total average time taken per day to test the scopes;

Table B - Time Taken

Site	Avg. Number Per day	Avg. Time Taken for Each Test (incl. loading and unloading)	Total Avg. Time Per day
Darlington	9	3 min 40 sec	33 min
Durham	8	3 min 40 sec	29 min

Results and Findings

Information derived from the trial, enabled the Trust to address all their key problem areas, as well as other beneficial information which could be used in a number of different ways.

Table C below shows the %age of rigid endoscopes tested during the trial period that 'passed', were 'advisories' (indicating one or more inspection parameter is approaching minimum requirement), or 'failed' to meet the minimum requirement for use.

Table C - Results

Site	%age failure	%age advisory	%age pass
Darlington	48	16	36
Durham	54	13	33
Both Sites Combined	50	15	35

Costs and Potential Savings

We have established the following potential cost savings on a 'worst case scenario' basis, and indicated wherever we have made an assumption, and wherever the values are actual/researched.

The actual live trial results show an average of 50% failure rate across both sites, the actual number of failed tests being 214. We assume that typically 25% of the faulty scopes would have been picked up by SSD staff, and 25% of these failures would have been flagged by clinicians within the theatre environment, this equates to a possible risk of approximately 53 instances of faulty scopes reaching theatre and needing 'back up' or 'replacement' equipment to be made available over the combined trial period of 50 days.

The time taken to find replacement devices within the department (or elsewhere) was estimated to take at the very least 15 minutes per occasion, therefore at least 15 minutes per day could be saved. This equates to more than 12 hours of wasted theatre time over the trial period alone spent on finding replacement scopes, most likely whilst the patient is under anaesthesia.

Based on average Operating Theatre running costs of £1,176 per hour (2016 researched data, details available by request), we can calculate **potential cost savings for a typical Trust using ScopeControl to be in excess of £100,000 per annum.**

The cost to test each scope very much depends on the number of scopes tested within a day/week, higher number of scopes tested = lower cost per scope to test

Based on a ScopeControl unit with a 5 year lifecycle, testing 20 scopes per day, the cost per test is £1.14 (not including applied labour cost)

Technical Test Data

We have created a separate 'Technical Test Data' document to accompany this Case Study showing a selection of the test results from the trial.

These test results contain the actual test data available from ScopeControl and include the actual internal images of the optical paths of the scopes tested, a table of results for each of the 6 parameters checked with graphical illustration, together with an interpretation of what the images show on the failed results.*

To gain further technical information about this trial, and view the 'Technical Test Data' document, please contact your Sales Consultant.

Outcomes and Recommendations resulting from the trials

The data produced from the 50 day trial has allowed the Trust to take a 'snapshot' view of current inventory, which has given access to valuable information that provides the means to plan improvements to the overall quality and cost effectiveness of their rigid endoscope inventory.

The trial assisted in addressing the key problems initially identified;

- Lack of traceability for individual rigid scopes

ScopeControl has enabled the Trust to map its rigid endoscope inventory (providing all inventory was tested during the trial period) after each test, a record is kept for each scope, so a detailed 'picture' will start to be created of the lifecycle of the scope, should the Trust continue to use ScopeControl.

- Limited testing log maintained

A full log now exists of all tests against each of the 6 testing parameters, for each individual scope, after each use, during the period of time the Trust trialed ScopeControl.

- Absence of a consistent method or process for identifying faulty rigid scopes

ScopeControl provided a consistent, clinically validated testing method for all scopes, with adjustable threshold levels if preferred, across 6 different parameters, including internal snapshots along of the optical path on each individual test.

- No accurate data available on the condition of rigid endoscopes in circulation

All test results stored against each individual endoscope, results can also be analysed together across the whole inventory for 'Pass', 'Advisory' and 'Fail' test results, enabling fully informed decisions to be taken when procuring new endoscopes or having them repaired.

- No single source of data available, such as inventory types, serial numbers etc.

With ScopeControl, all data is available in one place, which can be exported, and formulated into reports for other stakeholders. Extra fields allow customers to add information such as 'sent for repair' or 'repaired DATE' etc.

- Theatre time wasted when a scope is opened and unfit for use

Only scopes achieving a 'Pass' and those with an 'Advisory' notice are allowed back into circulation, effectively reducing instances of broken/damaged scopes entering the operating environment.

- Quality assurance of scopes which have been returned from repair

Not only does the ScopeControl ensure that expensive scope repairs are undertaken to the highest possible standard but it also enables the hospital to dispatch a scope in need of repair with a detailed report, enabling the repairer to focus their attention on the areas needing repair and not adding additional unrequired repairs.

Special thanks go to James Brown, Decontamination Service Manager, County Durham and Darlington NHS Foundation Trust and his team.

**DISCLAIMER - The selection of scopes referred to in the 'Technical Test Data' document was on the basis of best factual example only, and that the test results do not give any indication of the quality of the individual scopes when new or provide any comparison between brands.*