

UK Intraoperative Cell Salvage Action Group

Intra-Operative Cell Salvage Survey

UK Report

Joan Jones & Catherine Howell
On behalf of the UK Cell Salvage Action Group
June 2011

Contents

Page

	Background	1
	Methodology	2
	Participation	
Table 1	Participation rate by Country	3

Key Findings

Graph 1	ICS consumables used in the UK	4
Graph 2	Cell Salvage devices used across the UK	
Table 2	Equipment by manufacturer and Country	5
Graph 3	Type of anticoagulant used	
Graph 4	Use of ICS by specialty	6
Table 3	Comparison of replies 2007 v 2010	
Graph 5	Trusts/Divisions using ICS out of “core” hours	7
Graph 6	Provision of an out of hours service	
Table 4	Reasons why ICS is not available outside routine hours	8
Graph 7	Personnel operating the ICS equipment	
Table 5	Staff groups operating ICS equipment	9
Graph 8	house training for cell salvage machine operators	
Graph 9	Provision of ICS training in organisations	10
Graph 10	of UK Cell Salvage Action Group Education Workbook	
Table 6	Reasons why educational workbook not in use	11
Graph 11	Anaesthetic trainees receiving theory or practical training	
Graph 12	% of Organisations who undertake competency assessments	12
Graph 13	Use of competency assessment workbook	
Graph 14	Reasons for not using the UK CSAG	13
Graph 15	% of Organisations who have a policy for contra-indications	
Graph 16	Challenges for implementing ICS within your organisation	14
Graph 17	Funding within your Trust/Division	15
Graph 18	Quality control measures in place for ICS	
Table 7	Quality control machines & individual operators	16
Graph 19	Reported adverse events to SHOT	17

		18
	Conclusions	19
	References	
	Acknowledgements	

Appendices

Appendix 1	UK ICS Action Group Members	I
Appendix 2	Questionnaire	II

Background

This survey was undertaken by the UK Cell Salvage Action Group (UK CSAG) as a follow up to an initial survey conducted in 2007.

The questionnaire used in the 2010 survey was, where possible, based on the previous survey with additional questions inserted based on the supporting materials which have been developed as part of the UK Cell Salvage Action Group's toolkit.

The UK CSAG was established in 2006 to help support the wider implementation of cell salvage as an alternative to donor blood and to facilitate a UK approach to its use. In the intervening years a Toolkit, including a range of education materials, has been developed.

Methodology

The questionnaire was based on an initial survey conducted by the UK CSAG in 2007 survey to enable comparison of data. Additional questions were supplemented based on new materials developed as part of the UK Cell Salvage Action Group since the original survey was conducted.

The survey was conducted online and was only circulated to organisations where a contact name for cell salvage had previously been supplied, as opposed to the 2007 survey which was circulated to all UK Trusts/Divisions.

The aims of this survey were:

- To identify if further progress with the use of intraoperative cell salvage (ICS) has been made.
- To identify what challenges still remain to the implementation and provision of an ICS service
- To identify the success of the Toolkit supplied by the UK CSAG.
- To gain an overview of how training for ICS is being delivered and by whom.
- To compare the specialties where ICS is being in 2010 compared to in 2007.
- To help focus the future work priorities of the UK Cell Salvage Action Group.

Participation

Questionnaires were sent to named cell salvage contacts within the UK. These were identified from the UK CSAG contact database (which is managed by the NHS Blood and Transplant Better Blood Transfusion Team).

Table 1: Participation rates by country

Country	Number of NHS organisations invited to participate	Number and percentage response rate	
England	83	31	37%
Wales	17	10	59%
Scotland	19	10	53%
N Ireland	2	2	100%

The total number of returns is lower in the current survey than those returned in 2007. However, this is due to the fact that in 2010 the questionnaire was targeted to organisations known to provide an intraoperative cell salvage service.

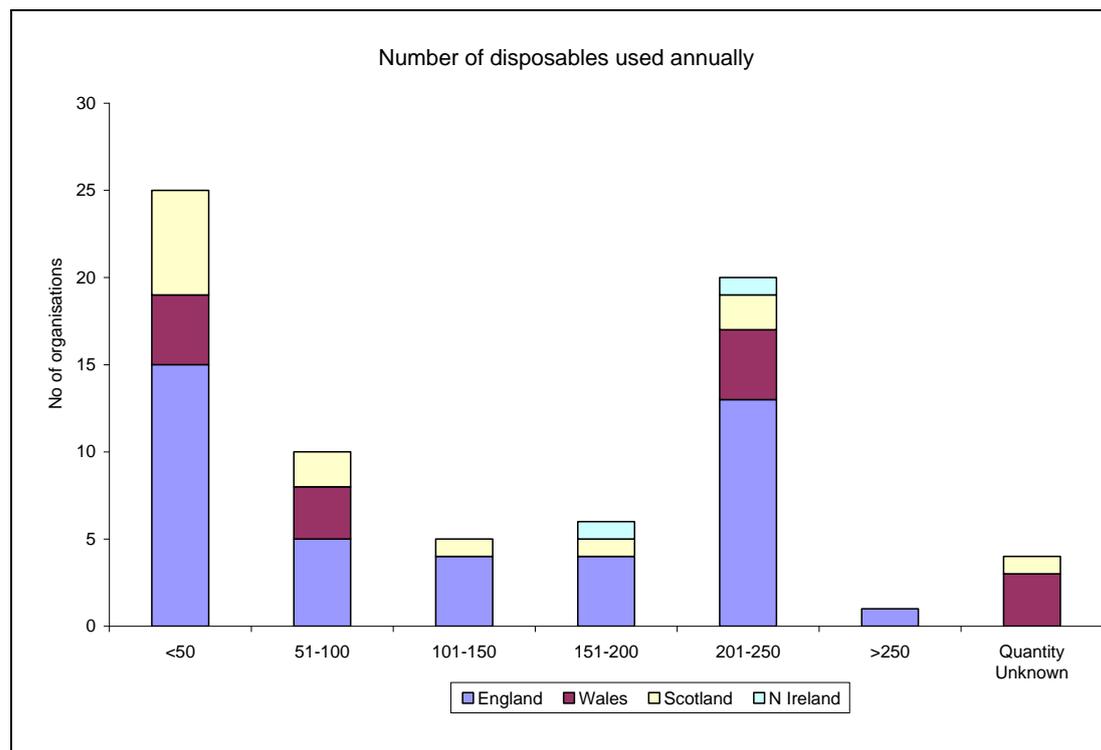
Key Findings

For ease of interpretation, results from the survey are predominantly resented as graphs and tables. Where applicable the data is sub-divided into information relating to the four UK countries.

Section 1. Usage figures and equipment

Question: What is the total number of consumables used annually?

Graph 1: ICS consumables used in the UK



Question: What equipment was used and how many machines are available?

Graph 2: ICS devices used across the UK

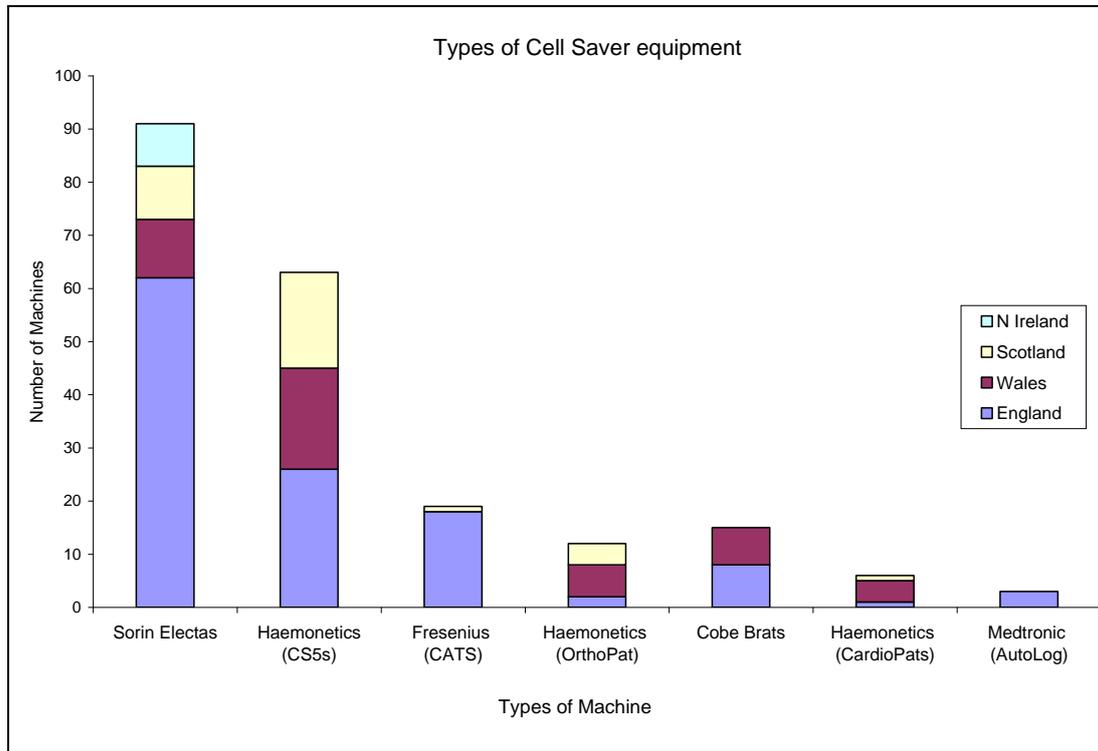


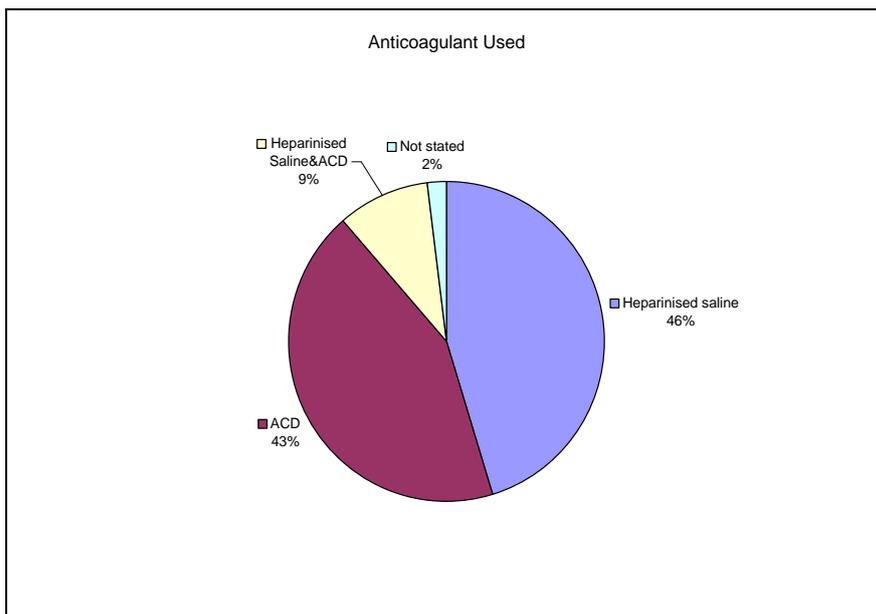
Table 2: Equipment by Manufacturer and Country

	Sorin Electas	Haemonetics (CS5s)	Fresenius (CATS)	Haemonetics OrthoPat	Cobe Brat	Haemonetics (CardioPats)	Medtronic (AutoLog)
England	62	26	18	2	8	1	3
Wales	11	19		6	7	4	
Scotland	10	18	1	4		1	
N Ireland	8						

This graph and table is for information only as comparisons between this survey and the one conducted in 2007 cannot be made.

Question: Which anticoagulant do you use?

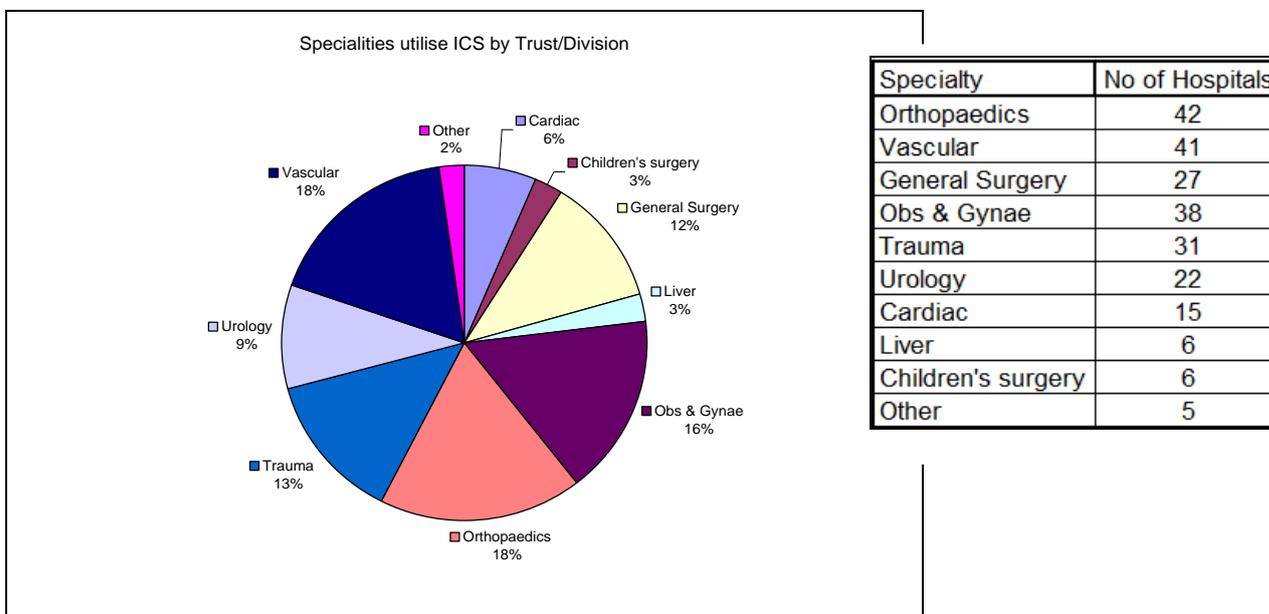
Graph 3: Type of anticoagulant used



It is worth noting that in this survey some organisations indicated that they use both ACD and heparinised saline whilst previously those who responded used either/or.

Question: Which specialities use ICS in your organisation?

Graph 4: Use of ICS by specialty within Trust/Division



Speciality	No of Hospitals
Orthopaedics	42
Vascular	41
General Surgery	27
Obs & Gynae	38
Trauma	31
Urology	22
Cardiac	15
Liver	6
Children's surgery	6
Other	5

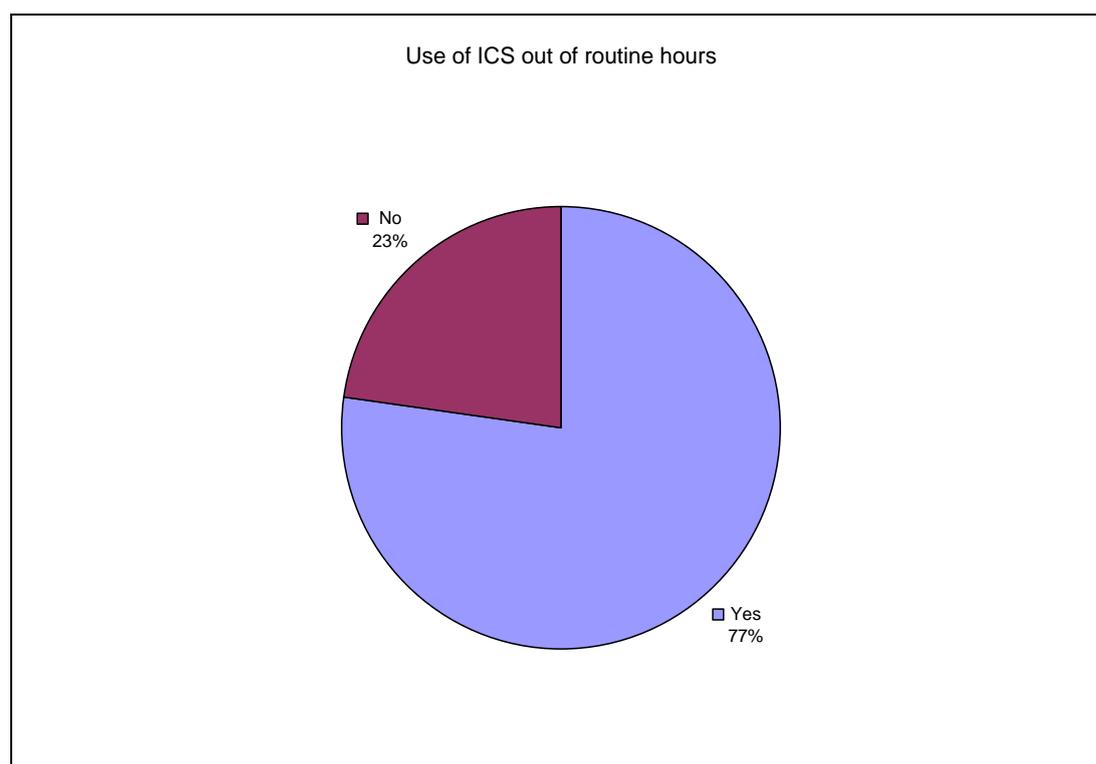
This is not a direct comparison but is interesting to note the differences in 2007 as identified in the Table 3.

Table 3: Comparison of replies 2007 v 2010 in use by clinical specialty

Clinical Specialty	2007	2010
Obstetrics/Gynaecology	13%	16%
Orthopaedic	23%	18%
Vascular	17%	18%
Urology	10%	9%
Trauma	10%	13%
General Surgery	17%	12%
Cardiac	7%	6%

Question: Is ICS used outside of “core” hours?

Graph 5: Trust/Division using ICS out of “core” hours

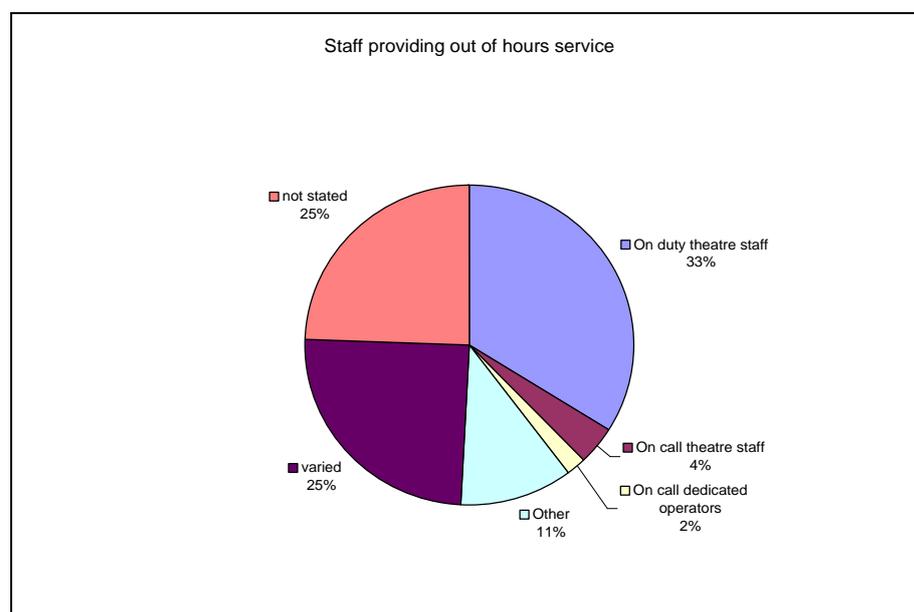


Figures in 2007 indicated 23% did not use ICS outside of routine hours.

Section 2. Staffing of ICS service

Question: How is the provision of the out of hours service provided?

Graph 6: Provision of “out of hours” service



In 2007 the figures were as follows:

• On Call staff	35%
• Dedicated operators	14%
• Varied	51%

23% of organisations stated they did not use ICS outside of routine hours.

Table 4 below indicates the reasons given where an “out of hours” service is not currently available.

Table 4: Reasons why ICS is not available outside of routine hours

Reason	Number of organisations
Lack of need	1
Lack of trained operators	9
Other	2
Not stated	41

Provision of an out of hours service is still not available in all organisations.

Question: Which staff groups operate ICS equipment in your hospital?

Graph 7: Personnel operating the ICS equipment

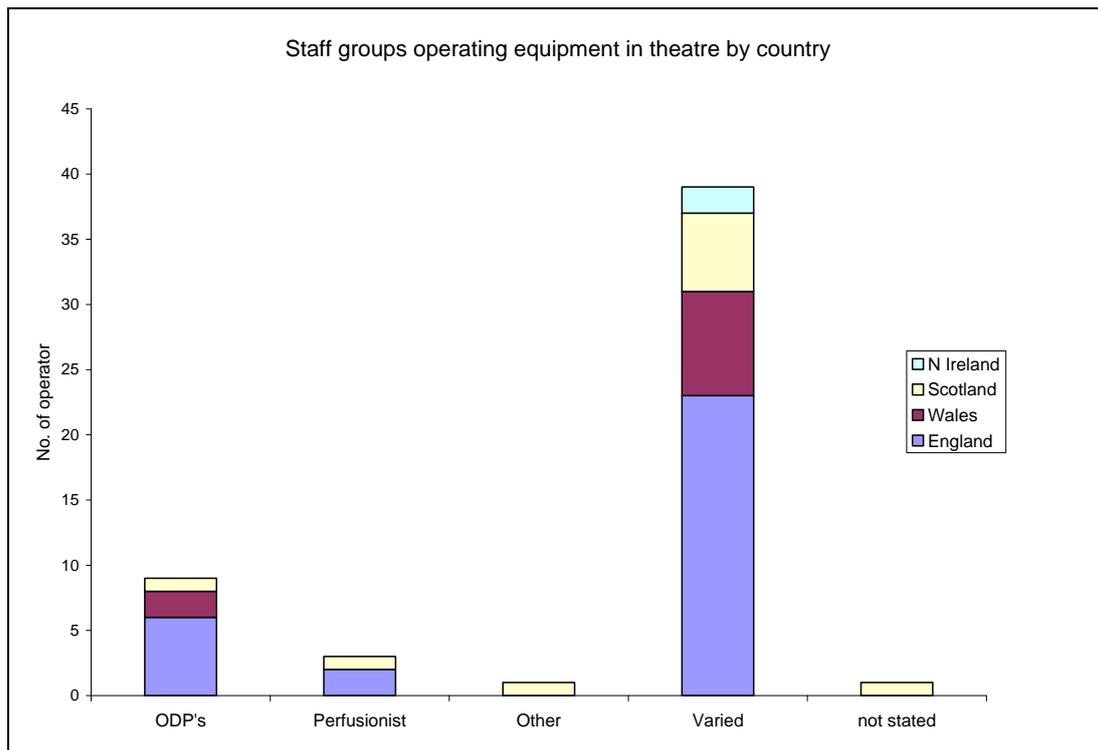


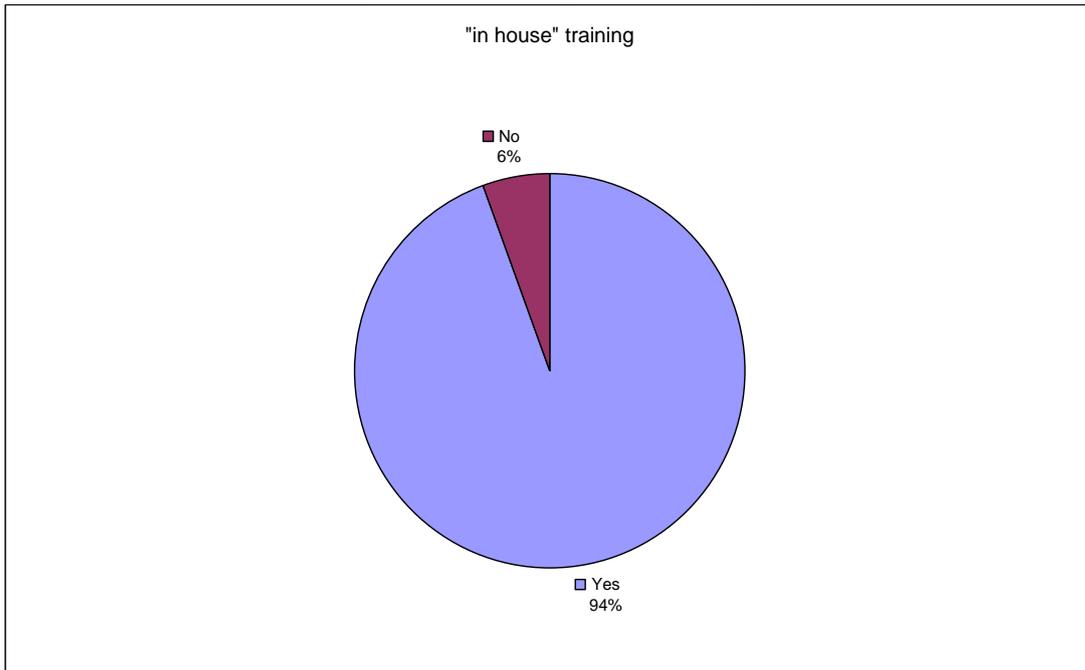
Table 5: Staff groups operating ICS equipment by country

	ODP's	Perfusionist	Other	Varied	Not Stated
England	6	2		23	
Wales	2			8	
Scotland	1	1	1	6	1
N Ireland	0			2	

Section 3. Training and assessment

Question: Do you provide "in house" training for cell salvage operators?

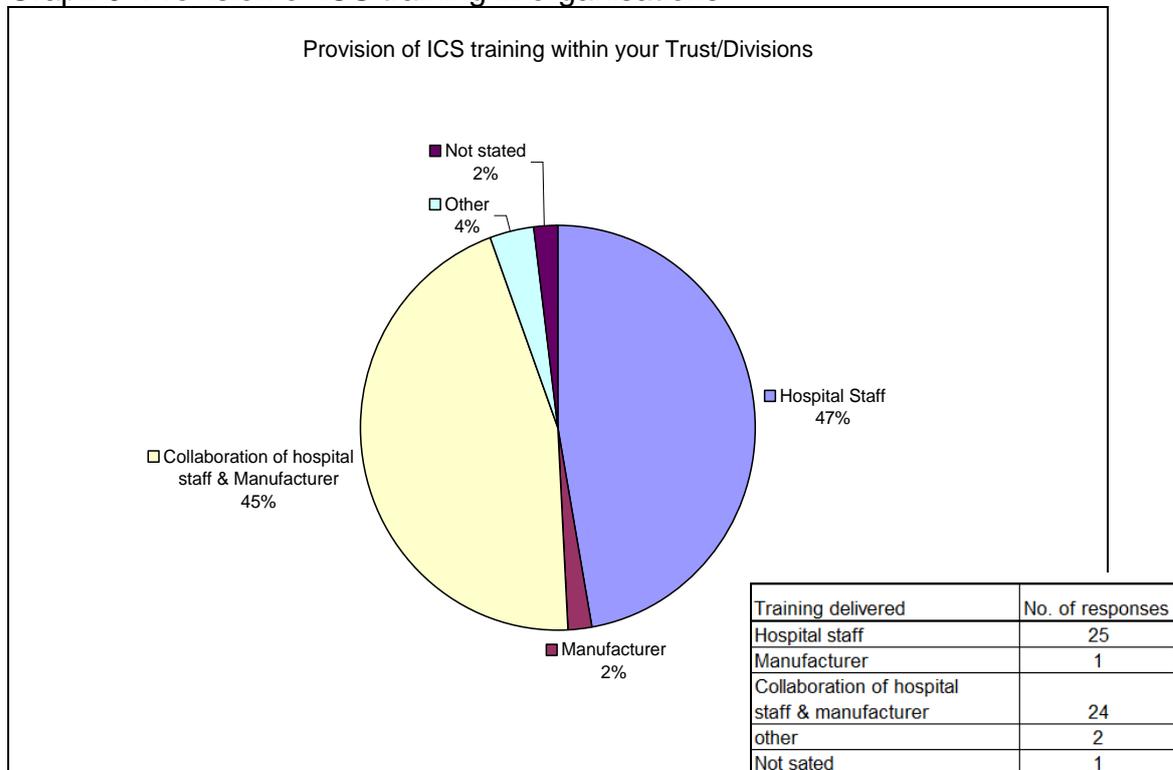
Graph 8: In house training for cell salvage machine operators



It is of concern that 6% responded that there was no "in house" training for operators.

Question: Who delivers cell salvage equipment training within your hospital?

Graph 9: Provision of ICS training in organisations



It is noted that in 2007 the response to Manufacturer training was 31% and collaboration of hospital staff and the Manufacturer was recorded as 18%.

Question: Do you use the UK Cell Salvage Action Group Education Workbook?

Graph 10: Use of UK Cell Salvage Action Group Education Workbook

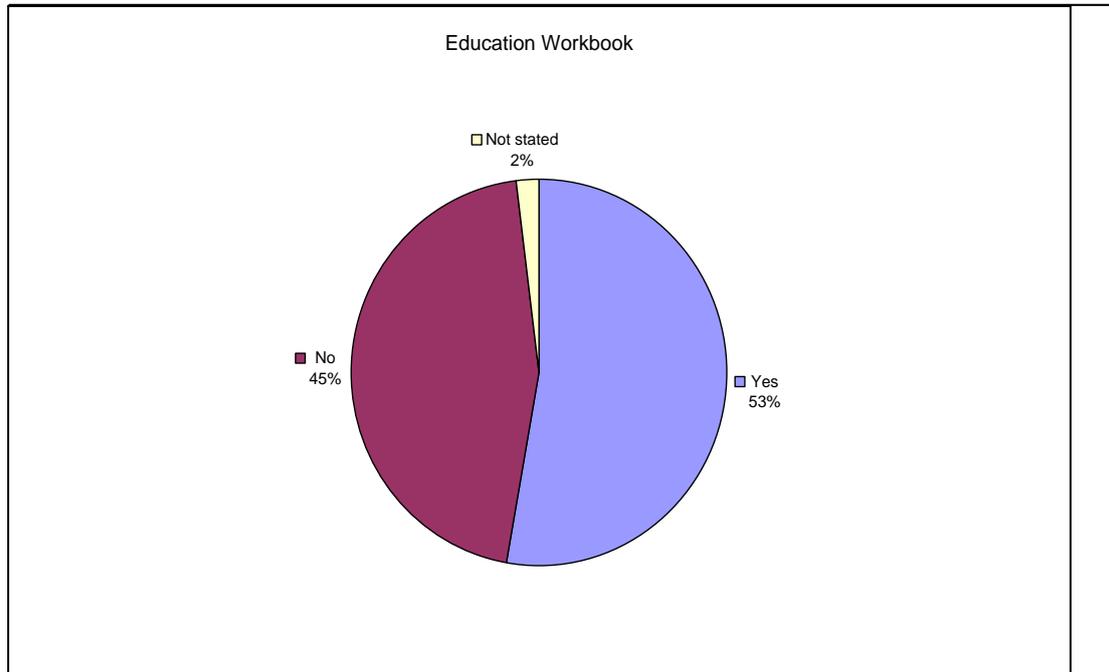
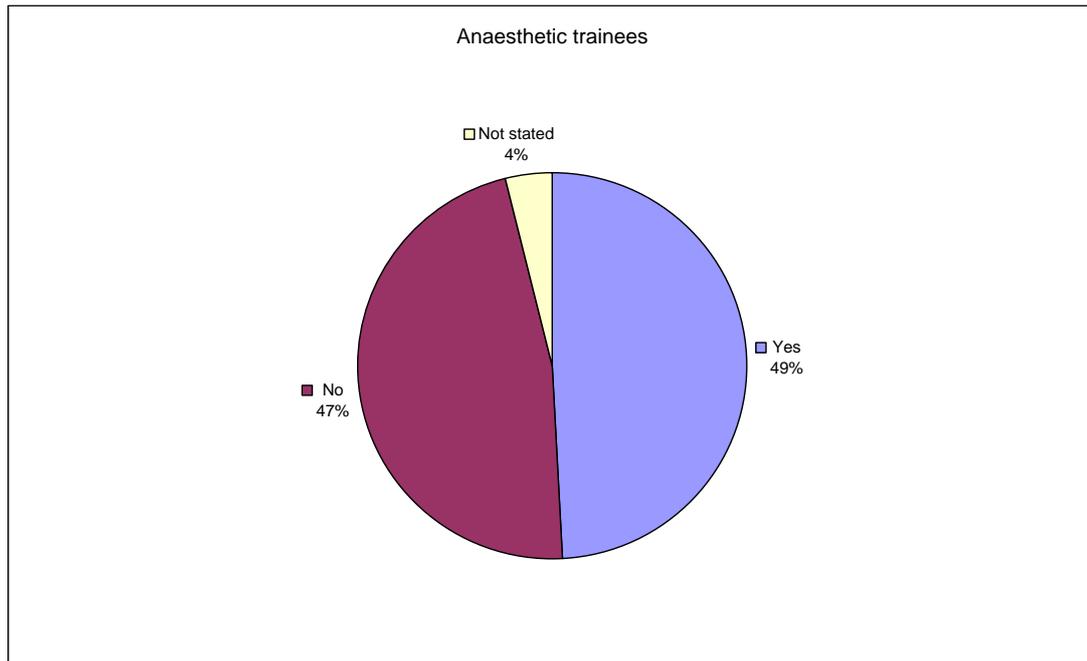


Table 6: Reasons why educational workbook not in use

	Reasons not using UK Cell Salvage Action Group Education Workbook (%)
Trust workbook used	8
Manufacturer's Workbook used	21
Not aware of Education Workbook	13
Other	4

It was disappointing to report that 13% of responders stated they were not aware of the Education Workbook. This is an area the action group must take into account to ensure further promotion of the workbook is undertaken.

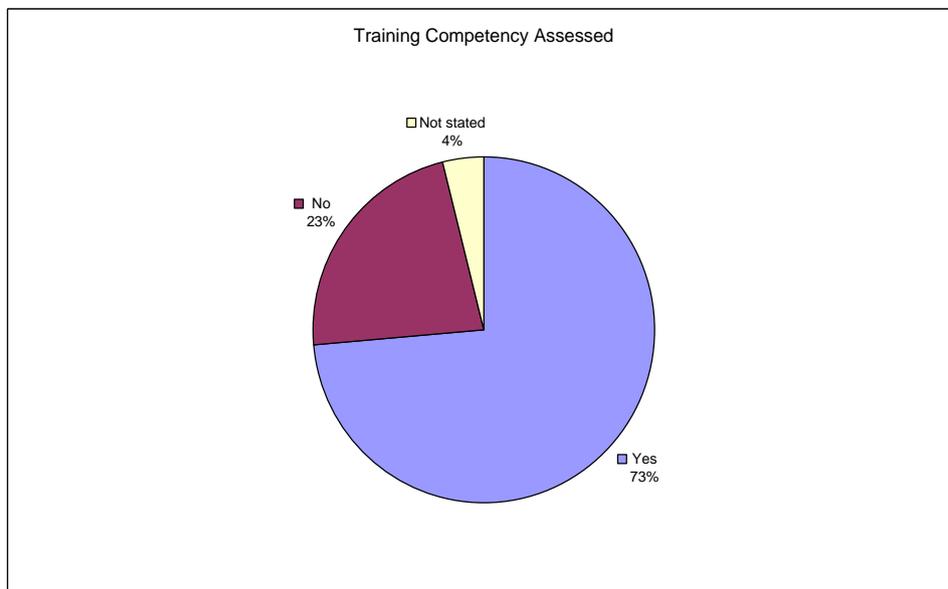
Graph 11: Anaesthetic trainees receiving theory or practical training



The training for Anaesthetic trainees may be something that could be considered by other organisations .

Question: Is the training competency assessed?

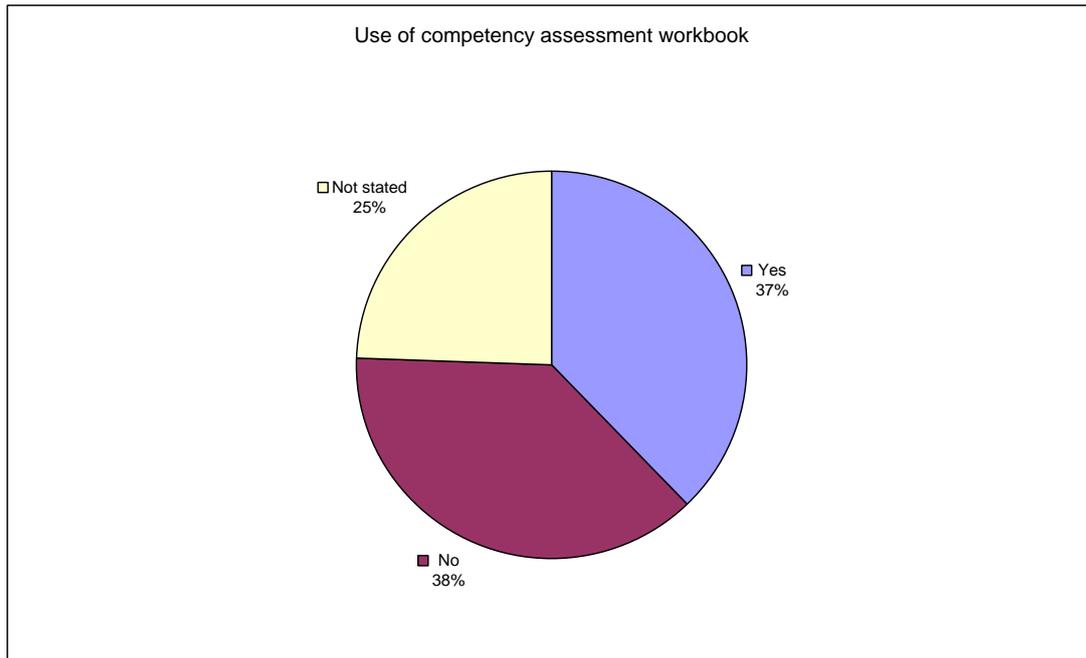
Graph 12: % of organisations who undertake competency assessments



It is encouraging to note that in this survey 73% responded they undertook competency assessments compared to only 46% in 2007. However it is worrying that competency assessment is not undertaken by 23% of respondents. The cell salvage machine is a medical device and it is expected that all operators should be competent to use such equipment.

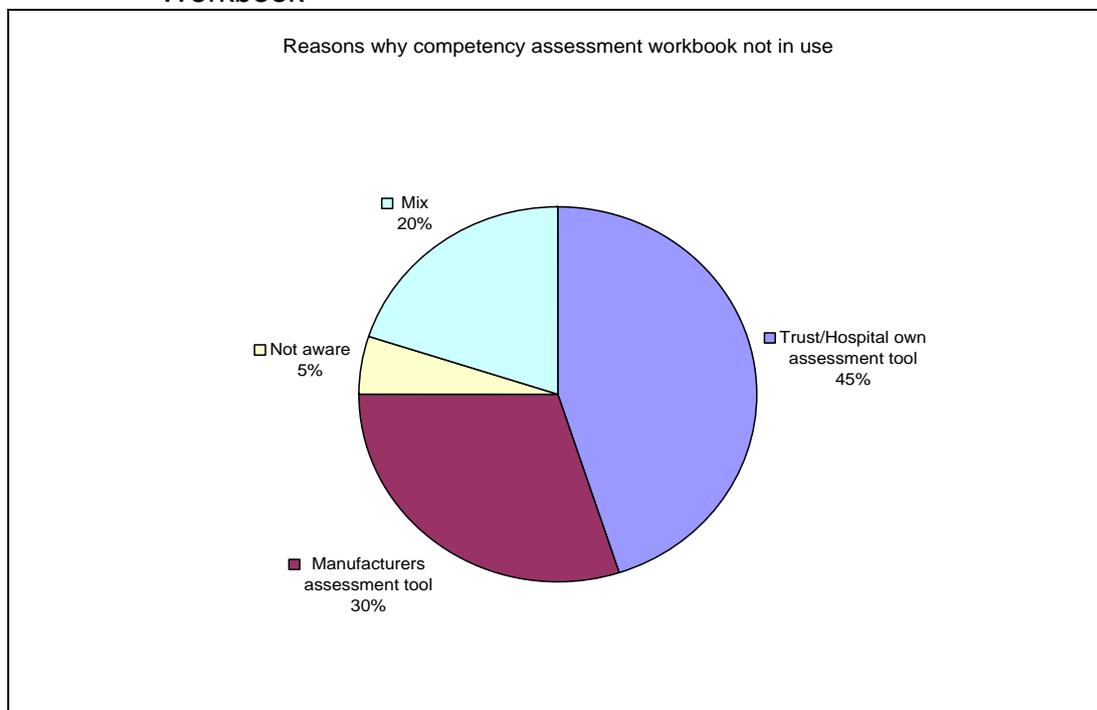
Question: Are you using the UK Cell Salvage Action Group Competence Assessment Workbook?

Graph 13: Use of competency assessment workbook



The UK CSAG is currently revising the competency assessment workbook, in line with the recently published National Occupational Standards (NOS) and it is intended the new version should be more user friendly.

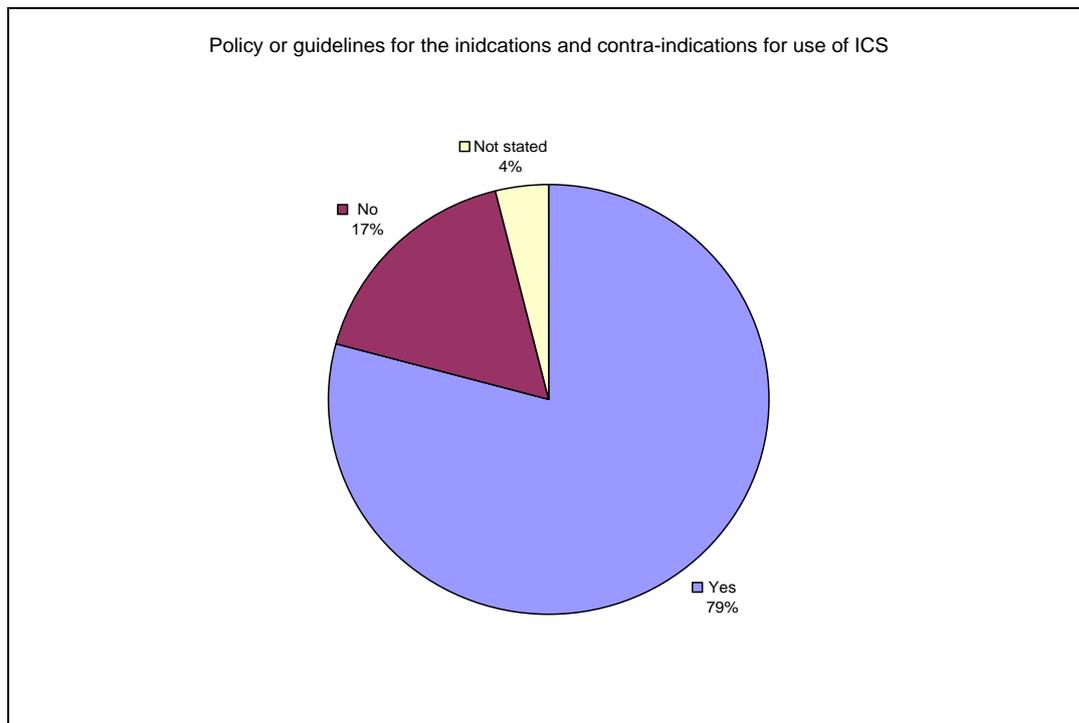
Graph 14: Reasons for not using the UK CSAG competency assessment Workbook



The UK CSAG are concerned that the manufacturers assessment tool is used by 30% of respondents as there is no guarantee this meets the NOS which are available.

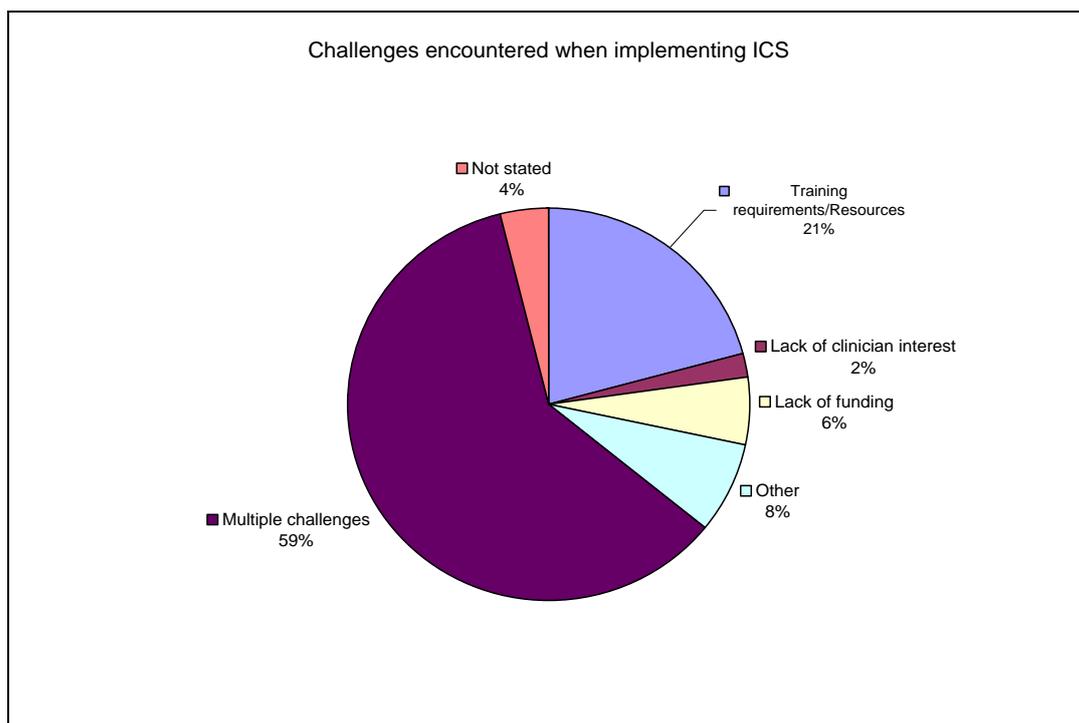
Section 4. Governance

Graph15: % of organisations who have a policy for contra-indications of ICS



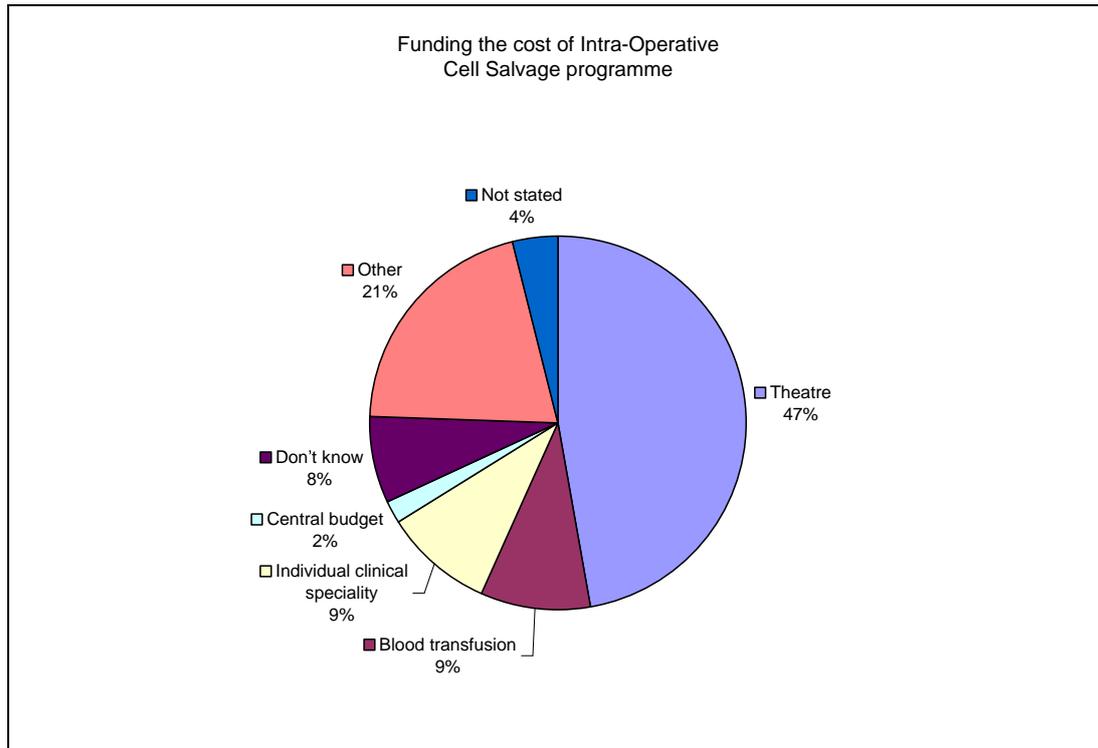
Again encouraging to note 79% of organisation have policy/guidelines for indications and contra-indications as compared to 58% in 2007, but still 17% of organizations who use ICS responded they do not have these in place.

Graph 16: Challenges for implementing ICS within your Organisation

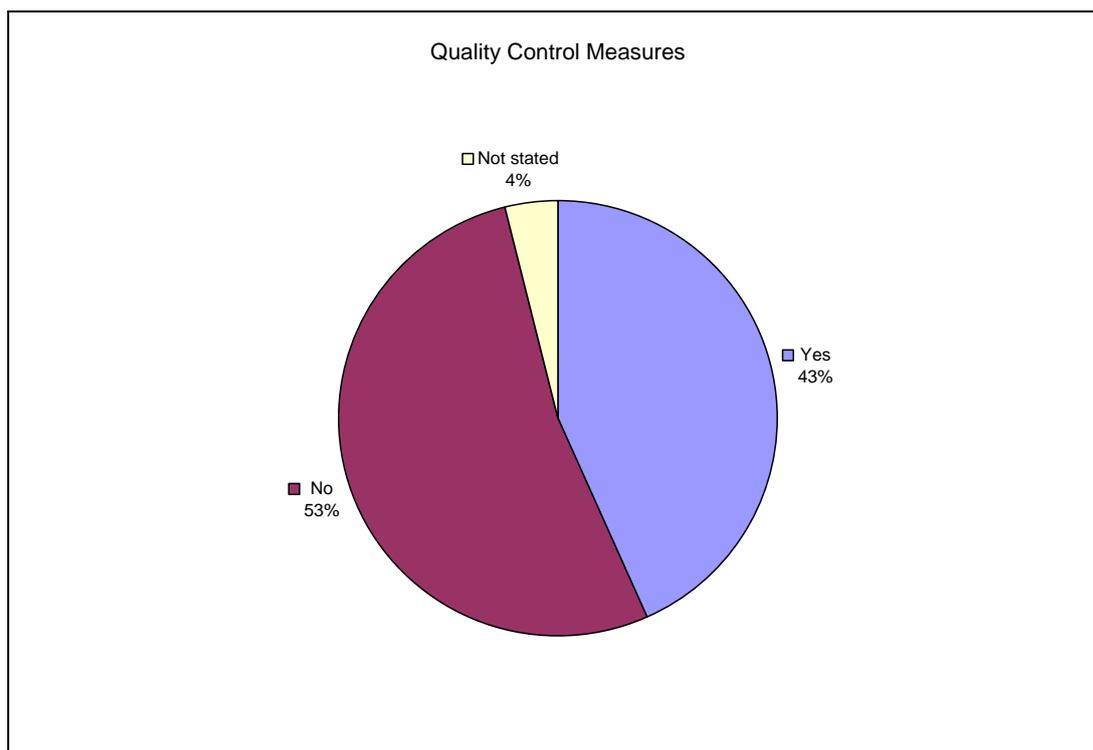


Question. How is Cell salvage funded within your organisation?

Graph 17: Funding within your Trust/Division



Graph 18: Trust/Divisions where quality control measures are in place for ICS



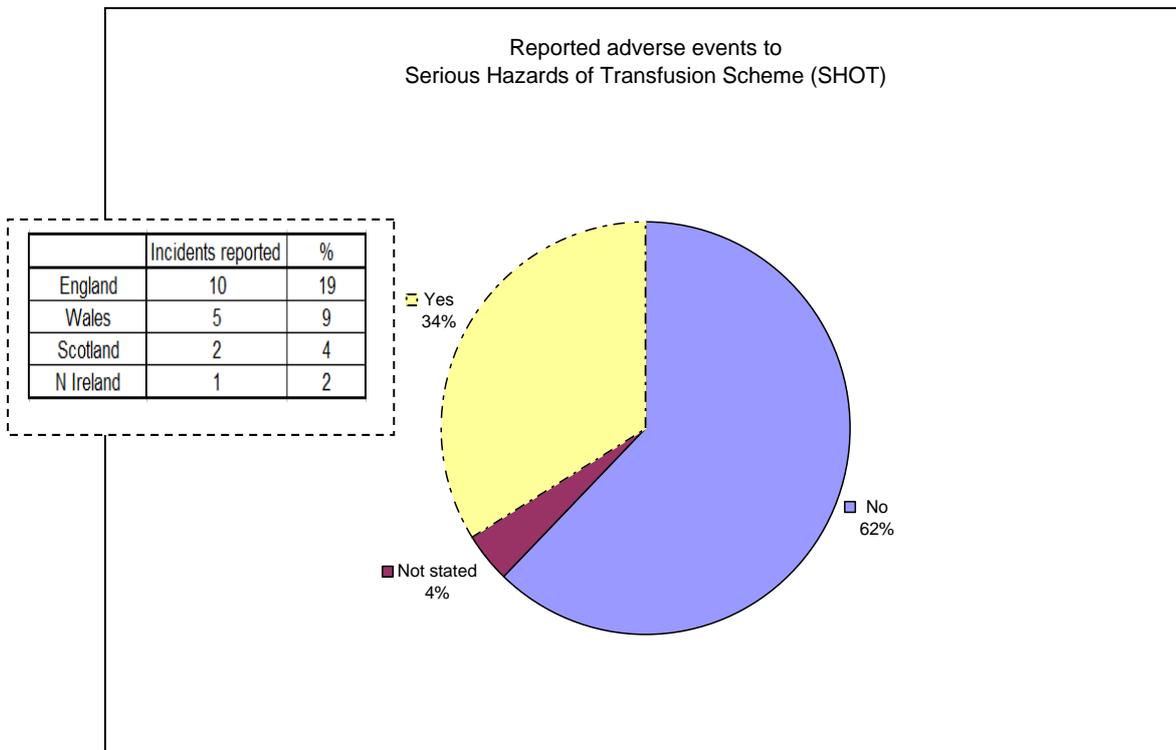
In 2010 43% responders have QC measures in place compared to 25% in 2007.

Table 7: Quality Control

	Quality Control	
	Machines (%)	Individual operators (%)
Yes	38	28
No	58	68
Not stated	4	4

The UK CSAG are aware that QC is a challenge for many hospitals and are in the process of undertaken a pilot scheme and it is hoped that a standardised process for QC can be developed.

Graph 19: Reported adverse events to SHOT



SHOT invited participation for ICS adverse events to the scheme in 2008 following a successful pilot of the reporting of adverse events the previous year. Where other had been stated, in one case the event had occurred prior to the SHOT collecting data. In the other this was due to ongoing issues between the organisation and the manufacturer.

Conclusions

The response to the 2007 questionnaire provided the UK Cell Salvage Action Group with baseline information on the use of ICS in the UK and helped to inform the ongoing work plan for the group. A specific outcome from the survey identified the need for an educational workbook which when produced was made available in a hardcopy format to all hospitals in the UK. A range of additional educational materials and policy templates were also produced as a result of feedback and made available to download from the Department of Health Better Blood Transfusion Toolkit www.transfusionguidelines.org.uk

The usage figures and equipment used provide no surprises in the current 2010 survey. Obstetrics, which is a growing speciality where ICS is used, has increased from 13 % to 16%; use in trauma has also increased.

In 2007 only 47% of responders stated they used competency assessments as a means of documenting that staff are trained and competent. It is encouraging to report that in the 2010 73% responded they undertook competency assessments. The competency assessment framework for cell salvage operators (developed in 2006) is currently being updated in line with the revised National Occupational Standards and it is important that Organisations and manufacturers continue to promote its use.

The development of a generic ICS policy by the Action Group is likely to have supported organisations who did not previously have a written policy/protocol in place. In this survey 79% of organisations indicated they had a policy for indications and contraindications as opposed to 58% in 2007.

Quality Control (QC) remains an issue for many hospitals with 58% of respondents reporting they do not currently QC machines and 68% do not currently QC the operators of ICS. A pilot is currently in progress, organised by the group, to allow recommendations to be developed. It is hoped to have these available in the next 6 months.

Findings from the 2010 survey have highlighted an ongoing role for the UK Cell Salvage Action Group in promoting the use of cell salvage as an alternative to allogeneic blood in the UK. There is more work to be done to promote the outputs from the group. There is a need to collect and benchmark activity data on the use of ICS in the UK. The Action Group intends to support a pilot of a centralised database for collection of this data as part of its 2011/12 work plan.

The questionnaire survey will be repeated in 2013.

References

UK Survey Report, November 2007, UK Intraoperative Cell Salvage Action Group

<http://www.shotuk.org/home/>

<http://www.transfusionguidelines.org.uk/index.aspx?Publication=BBT>

Acknowledgments

The group would like to acknowledge the support of John Grant Casey, National Comparative Audit Manager, NHS Blood and Transplant Better Blood Transfusion Team for his support in producing this survey as an online tool. The group are very grateful for the support given by Wafa El Hack, Welsh Blood Service Better Blood Transfusion Team in analysing the results and supporting the production of this report.

Contact Details for Members of the UK Cell Salvage Action Group

Name	Role	Organisation
Catherine Howell (Joint Chair)	Chief Nurse Patient Services	NHS Blood and Transplant
Joan Jones (Joint Chair)	Head of Quality & Regulatory Compliance	Welsh Blood Service
Michael Buffin	Chief Perfusionist	Northern General Hospital
Sue Catling	Consultant Anaesthetist	Abertawe BroMorgannwg University NHS Trust
Catriona Connolly	Consultant Anaesthetist	Ninewells Hospital, Dundee
Vicki Clark	Consultant Anaesthetist	Royal Infirmary, Edinburgh
John Faulds	Blood Conservation Co-ordinator	Royal Cornwall Hospitals NHS Trust
Hannah Grainger	Cell Salvage Co-ordinator	Welsh Blood Service
Sarah Haynes	Autologous Transfusion Co-ordinator	Wythenshawe Hospital Manchester
Kath Hearnshaw	Transfusion Liaison Nurse	NHS Blood and Transplant
Danny McGee	Specialist Practitioner in Operating Theatre Blood Conservation	Scottish National Blood Service
Alastair Nimmo	Consultant Anaesthetist	Royal Infirmary, Edinburgh
Sam Rawlinson	Consultant Haematologist	Scottish National Blood Service
Biddy Ridler	Blood Conservation Specialty Doctor	Royal Devon and Exeter NHS Foundation Trust
Dafydd Thomas	Consultant in Intensive Care and Anaesthesia	Abertawe BroMorgannwg University NHS Trust
Francesco Torella	Consultant. Vascular Surgeon	University Hospital Aintree
Neville Marshall	Clinical Perfusion Scientist	Kings College Hospital
Rebecca Gerrard	Head of Better Blood Transfusion	NHS Blood and Transplant
Malcolm Chambers	Transfusion Practitioner / Clinical Educator	University Hospitals Leicester

ICS Online Survey

Section One - About you

1 - What is your name?

265	4
-----	---

2 - What is your job title?

266	3
-----	---

Section Two - About the machines you use

Please tell us about the intra-operative cell salvage machines used in your Hospital by indicating which machines are used, how many of those machines you have and approximately how many disposables are used annually per type of machine

3. Do you use any of the following?

3a - Haemonetics Cell Saver 5 (CS5)

Yes

No

267	1
-----	---

3b - If yes, how many CS5s do you have?

-- Please select --	▼
---------------------	---

319	1
-----	---

3c - What is the total number of consumables used annually for these machines?

-- Please select --	▼
---------------------	---

320	3
-----	---

3d - Haemonetics OrthoPat

Yes

No

268	1
-----	---

3e - If yes, how many OrthoPats do you have?

-- Please select --	▼
---------------------	---

321	1
-----	---

3f - What is the total number of consumables used annually for these machines?

-- Please select --	▼
---------------------	---

322	3
-----	---

3g - Haemonetics CardioPat

Yes

No

323	1
-----	---

3h - If yes, how many CardioPats do you have?

-- Please select --	▼
---------------------	---

3i - What is the total number of consumables used annually for these machines?

-- Please select --	
325	3

3j - Sorin Electa

Yes

No

326	1
-----	---

3k - If yes, how many Electas do you have?

-- Please select --	
327	1

3l - What is the total number of consumables used annually for these machines?

-- Please select --	
328	3

3m - Cobe Brat

Yes

No

329	1
-----	---

3n - If yes, how many Brats do you have?

-- Please select --	
330	1

3o - What is the total number of consumables used annually for these machines?

-- Please select --	
331	3

3p - Fresenius C.A.T.S.

Yes

No

332	1
-----	---

3q - If yes, how many C.A.T.S. do you have?

-- Please select --	
333	1

3r - What is the total number of consumables used annually for these machines?

-- Please select --	
334	3

3s - Medtronic autoLog

Yes

No

335	1
-----	---

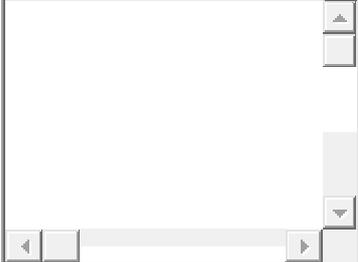
3t - If yes, How many autoLogs do you have?

-- Please select --	
336	1

3u - What is the total number of consumables used annually for these machines?

-- Please select --	
337	5

3v - Other (Please state name, number of machines and amount of consumables used)

	
338	2

Section Three - About using your intra-operative cell salvage machines

4 - Which anticoagulant do you use? (Tick as many as apply)

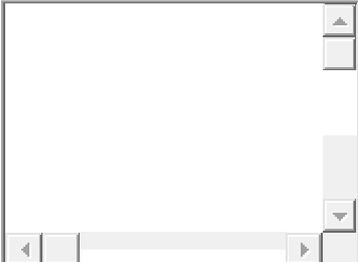
Heparinised saline

ACD

Other (please state)

339	5
-----	---

4a - Other (Please specify)

	
372	3

5 - Do you use leucodepletion filters when reinfusing:

5a - Blood salvaged from cancer surgery

Always

Sometimes

Never

373	3
-----	---

5b - Blood salvaged at Caesarean section

Always

Sometimes

Never

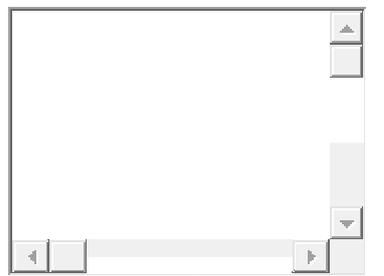
340	2
-----	---

6 - Which specialities in your hospital use Intra-Operative Cell Salvage? (Tick as many as apply)

- Cardiac
- Children's surgery
- General surgery
- Liver
- Obs & Gynae
- Orthopaedics
- Trauma
- Urology
- Vascular
- Other (please state)

341	5
-----	---

6a - Other (please state)



342	3
-----	---

7 - Is Intra-Operative Cell Salvage used both in and out of core (normal) working hours?

- Yes
- No

343	2
-----	---

7a - If yes, how is the out of hours service provided? (Tick as many as apply)

- On duty theatre staff
- On call theatre staff
- On call dedicated Intra-Operative Cell Salvage operators
- Other (please state)

344	5
-----	---

7b - Other (please state)



345	2
-----	---

7c - If Intra-Operative Cell Salvage is not used both in and out of core (normal) working hours, why not? (Tick as many as apply)

- Lack of need
- Lack of trained operators
- Other (please state)

346	5
-----	---

7d - Other (please state)



347	2
-----	---

8 - Which staff groups operate the intra-operative cell salvage equipment in your hospital? (Tick as many as apply)

- Anaesthetist
- Anaesthetic nurse
- Health Care Support Worker
- Midwife
- ODP
- Perfusionist
- Recovery nurse
- Scrub nurse
- Other (please specify)

348	5
-----	---

8a - Other (please state)



349	3
-----	---

Section Four - About training

9 - Do you provide "in house" training for cell salvage machine operators?

- Yes
- No

350	2
-----	---

10 - Who delivers cell salvage machine training within your hospital? (Tick as many as apply)

- Cell Salvage Co-ordinator
- ODP
- Perfusionist
- Transfusion Practitioner
- Machine manufacturer
- Other (please state)

351	5
-----	---

10a - Other (please state)



352	3
-----	---

11 - Do your anaesthetic trainees receive any theory or practical training in cell salvage as part of their training? (e.g. during the vascular block)

- Yes
- No

353	3
-----	---

12 - Do you use the UK Cell Salvage Action Group Education Workbook?

- Yes
- No

354	2
-----	---

12a - If no, why not? (Tick as many as apply)

- Trust workbook used
- Manufacturer's workbook used
- Not aware of Education Workbook
- Other (please state)

355	5
-----	---

12b - Other (please state)



356	3
-----	---

12c - Is the training competency assessed?

Yes

No

357	3
-----	---

12d - If yes, are you using the UK Cell Salvage Action Group Competence Assessment Workbook?

Yes

No

358	2
-----	---

12e - If no, why not? (Tick as many as apply)

Trust/Hospital own assessment tool used

Manufacturer's assessment tool used

Not aware of UK Competence Assessment Workbook

Other (please state)

359	5
-----	---

12f - Other (please state)



360	3
-----	---

Section Five - About implementation

13 - Is there a policy / guidelines in your hospital for indications and contra-indications for the use of Intra-Operative Cell Salvage?

Yes

No

361	2
-----	---

14 - What challenges have you encountered in your hospital when implementing Intra-Operative Cell Salvage? (Tick as many as apply)

Training requirements / Resources

Lack of clinician interest

Lack of clinician support

Lack of machines

Lack of funding

Other (please state)

362	5
-----	---

14a - Other (please state)

	
363	3

15 - Who in your hospital funds the cost of the Intra-Operative Cell Salvage programme (consumables, etc)?

Theatre

Blood transfusion

Individual clinical speciality

Central budget

Don't know

Other (please state)

364	5
-----	---

15a - Other (please state)

	
365	3

Section Six - About Quality Control

16 - Do you have quality control measures for Intra-Operative Cell Salvage in place in your hospital?

Yes

No

366	3
-----	---

17 - Do you regularly quality control your machines?

Yes

No

367	3
-----	---

17a - Do you regularly quality control your individual operators?

Yes

No

368	3
-----	---

18 - Have you reported any adverse events to the Serious Hazards of Transfusion Scheme (SHOT)?

Yes

No

369	3
-----	---

18a - If no, why not?

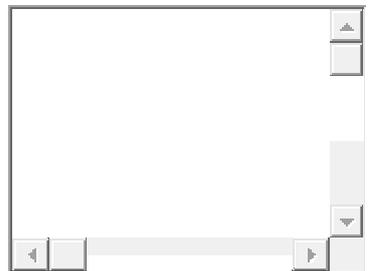
None has occurred

Unaware of SHOT reporting

Other (please state)

370	5
-----	---

18b - Other (please state)



371	5
-----	---

19 - Please use this box to give us any additional information you would like to provide

