

# How to maintain an anaesthetic logbook

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## What are the options available to me?

Like it or not, all anaesthetic trainees are now expected to produce a case-based summary of training and supervision at each annual appraisal. Increasingly, consultants are also finding that the data gleaned from a logbook in conjunction with an accurate work diary provide the evidence needed to present a robust case for appropriate recognition of sessions at job planning appraisals. The problem is how should one best collect and analyse the data?

### 1 The paper-based logbook

This is certainly the simplest method of data collection. Those more senior in years will remember their College Tutor supplying them with a blue, bound, paper version of the College logbook on their first day as a novice SHO with instructions to enter the details of every case anaesthetised. This highly portable version of the logbook was and is extremely easy to use, taking no more than 30 seconds to complete a case entry.

<b>Strengths</b>	Highly portable. Cheap – requires nothing more than a pen and paper! Requires no technical knowledge. Easy to photocopy.
<b>Weaknesses</b>	No reporting facilities. The cases are stored as a simple uncollated list. Easy to lose the original if carried around every day.

### 2 In-theatre hospital systems

This is the laziest and most uncontrolled method of maintaining a logbook and should really be considered only as a fallback option following irretrievable loss of a personal logbook. Unfortunately, hospital-based systems collect data in a variety of different ways primarily aimed at producing reports for the trust rather than the anaesthetist. 'Data in equal data out' in the sense that the quality of reports are dependent upon the accuracy of the information entered by the nurse in theatre. Frequently, there is no record of the detail of anaesthetic technique and it may be impossible to glean information later about the degree of supervision of the trainee in theatre. Sometimes Trusts may be reluctant to release data to anaesthetists in a form that is useful for appraisal purposes.

<b>Strengths</b>	Somebody else enters the data on your behalf.
<b>Weaknesses</b>	Somebody else enters the data on your behalf. Uncontrolled format.

### 3 PC/Mac FileMaker Pro desktop/laptop logbooks

The Royal College of Anaesthetists desktop computer electronic logbook was first released in 1996. It was bound to a freeware or 'runtime' version of FileMaker Pro (a database application), which made it capable of operating on both PC and Macintosh computers. The original version was released at a time when Microsoft had just produced its first icon-based operating system (Windows 95) and access to the Internet was limited for

Table 1 'Off-the-peg' logbooks available to UK anaesthetists in 2008

Available logbooks	RCoA-approved?	Hardware costs	Software costs	Portable?	Reporting facility?	Data safe?
Paper-based	Yes	–	–	++	–	++++
In-theatre hospital system	No	–	–	–	–	?
PC (FileMaker Pro)	Yes	£££	–	+	+++++	++
Mac (FileMaker Pro)	Yes	£££	–	+	+++++	+++
PDA (Psion)	Yes	Not available	–	+++	+++	+
PDA (HanDBase)	Yes	££	£	+++	+++	+
Smartphone (HanDBase)	Yes	££	£	++++	+++	+
On-line logbook	No	–	–	+++	++++	?
USB Memory stick (PC/Mac)	Yes	£	–	+++++	+++++	++

most to a 14.4Kb telephone modem! In 2003 the College Logbook Working Party distributed a second CD-ROM version of the logbook that matched the HanDBase PDA version, but most significantly the logbook portfolio of reports were set to match the format asked of trainees for Regional In-Training Assessments.

<b>Strengths</b>	Freeware. Wide range of customisable reports that match College requirements. Use of standardised picklists of terms makes reporting easier.
<b>Weaknesses</b>	Requires access to a PC or Macintosh computer.

#### 4 PDA-based (Personal Digital Assistant) logbooks

The first PDA that became commercially available was the Apple Newton; however, most will remember the Psion Organiser as the first to carry an Anaesthetic Logbook. In the mid-1990s SCATA (Society for Computing and Technology in Anaesthesia) produced a Psion logbook using a dataset proposed by Lack et al<sup>1</sup> in the *BJA*. Unfortunately, the Psion Organiser is no longer available but in 2002 this successful model was translated and expanded into a HanDBase template, for use on Palm and Pocket PC PDAs, that remains in use to this day. The current version of HanDBase (v4) is available for some but not all smartphones but there have been problems due to small screen size and variations in the way that some devices synchronise with a desktop computer.

<b>Strengths</b>	Highly portable. Use of standardised picklists of terms makes reporting easier. The information collected can be exchanged with other devices and programmes.
<b>Weaknesses</b>	Cost – PDAs range from £100–400; the HanDBase database utility costs \$30 (£15). Lifespan – the devices themselves tend to break down after two to three years use. Reliability – files stored in the machine's memory are easily lost if the internal battery drains completely. Reporting facilities are fairly limited. Several smartphones are unable to run the logbook due to small screen size or variants in operating system.

#### 5 On-line or web-based logbooks

Surgeons have had access to on-line logbooks for several years. Trainees are not permitted to use alternatives and are required to pay for access to the facility. There are definite advantages for trainers who can easily monitor the progress of trainees but there are untested data protection issues involved in the transmission and storage of on-line data that may prove problematic in the future.

In theory if the data are backed up on multiple servers then they are likely to be securely stored. In anaesthesia a number of trials have been undertaken, but most have fallen into abeyance. At the present time we know of only one active on-line anaesthetic logbook ([www.onlineanaesthesia.com](http://www.onlineanaesthesia.com)) although an on-line e-logbook is planned as part of the eLearning Anaesthesia project.

<b>Strengths</b>	Potentially free of charge to the user. Less reliance on the user to undertake essential housekeeping to prevent computer crashes. Cross-server backups possible.
<b>Weaknesses</b>	Requires on-line access although this may also be achieved by mobile phone. Susceptible to bandwidth restrictions and slow access due to on-line 'congestion'. Data protection? Charges for the use of the server on which data are stored.

#### 6 USB memory stick logbook

Whilst PDAs and laptop computers are still relatively expensive, the cost of solid-state memory sticks has fallen dramatically over the last five years. The PC/Mac logbook programme is a self-contained application that runs entirely from within a folder and does not actually require any components to be installed to the hard drive or system software of the host computer. It was always too big to be loaded to a 1.4Mb diskette but it will happily run from a USB memory stick with 20Mb of spare disk space. The logbook programme will load faster if the memory stick is plugged into a USB2 port (most likely found closest to the host computer motherboard) although it will perform satisfactorily via a USB1 port. Both the PC and Mac versions of the logbook work this way, but for those who 'hot-desk' between PC and Macintosh computers we have prepared a version of the logbook that uses the same data file but has both PC and Mac versions of the database application software already loaded to the same folder, so that it automatically runs on either platform. Those who use mainly a PC may also want to take advantage of the 'briefcase' utility in Windows. Right-click on the desktop to create a briefcase and then drop the logbook folder into it before copying the briefcase to the memory stick. Automatic synchronised backups of the memory stick logbook can then be made every time the device is plugged into the 'backup' computer. It is important to remember though that two different copies of the logbook will not be merged during the synchronisation process. The more recently used file will always overwrite the older one.

Figure 1 The home page of [www.logbook.org.uk](http://www.logbook.org.uk)



<b>Strengths</b>	Highly portable. Inexpensive hardware, free software. Works on both PC and Macintosh. Makes use of any available host computer with a USB port. Will drive a printer connected to the host computer to produce reports.
<b>Weaknesses</b>	USB sticks are small enough to lose easily!

### What are my colleagues doing?

A local survey conducted by Kelkar and Chelliah<sup>2</sup> in 2007 suggested that all trainees, all SAS grades, and 45% of consultants currently keep a logbook. Although 23% of consultants use a paper-based system, the vast majority of trainees (>90%) use one or more versions of the RCoA-approved logbook software. Most anaesthetists now download their logbooks as freeware from the voluntarily and independently maintained website [www.logbook.org.uk](http://www.logbook.org.uk).

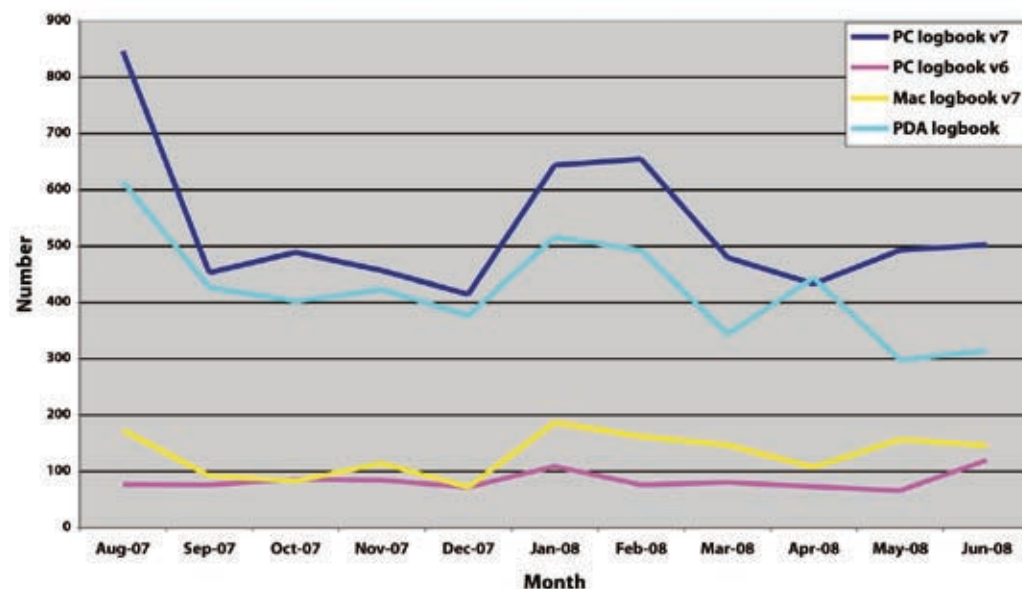


Figure 2 Number of copies of the logbook downloaded per month

The website provides access to current versions of the logbook software, a range of help files and on-line email assistance ([support@logbook.org.uk](mailto:support@logbook.org.uk)). It has been operational since 2000 and receives 150,000 'hits' each year from anaesthetists across the globe. The current logbook (version 7) was released in August 2007. Between August 2007 and June 2008, 12,885 copies of the logbook programmes were downloaded. A significant number of these downloads were made by international IP server addresses suggesting that the programme is now used throughout the wider anaesthetic community. Interestingly, however,

examination of the monthly statistics suggests that there were August and February peaks that would coincide with the traditional changeover times for UK junior trainee posts.

Logbook programme	Total number of downloads (August 2007 to June 2008)
PC v7 (released Aug 2007)	5867
Macintosh v7 (released Aug 2007)	1443
PC v6 (released 2003)	921
PDA logbook (released 2003)	4654

Further analysis of the operating systems used to access the logbook website suggest that 82% of anaesthetists are Windows PC users and 13% are Macintosh users. The remaining 5% use a variety of operating systems (predominantly Linux). Very few anaesthetists (<1%) are currently using mobile telephone Symbian operating systems to access the logbook website.

## What are the commonly encountered problems?

Any trainee who uses a paper-based logbook will need to set aside an evening (or two) to collate and count up the columns of information required for an annual appraisal. Moving on to electronic logbooks, Kelkar and Chelliah<sup>2</sup> identified loss of data as a significant problem locally. Although 38% had never lost data, 51% had suffered this problem 'one to two times' and 11% 'many times'. In 37% of cases this was compounded by failure to keep any form of back up. Complete battery failure will cause the memory of portable devices to be irreversibly wiped clean of data and this had been experienced by 24% of those who had lost data.

The authors of the desktop anaesthetic logbook have provided email support for users of the programme since its launch in 1996 ([support@logbook.org.uk](mailto:support@logbook.org.uk)). Although the support was established primarily for users of the PC/Macintosh logbook, we have been able to give informal advice to resolve difficulties encountered using other unsupported logbooks. Over the past 12 months (August 2007 to July 2008) the email support address received 750 communications. Many of these were requests for software updates to the logbook programme when they become available but 391 emails related to problems using the logbook. To help speed up resolution of common problems we have set up a self-help 'troubleshooting' area of the website so users can download specific help sheets addressing the more commonly encountered logbook problems. Support has been requested in five main areas (see Table 2).

The HandBase PDA logbook was intended as a portable solution to the problem of maintaining an up to date logbook when the only alternatives were either to collect operating lists on sheets of paper to transcribe later onto a desktop logbook programme or to lug a laptop from theatre to theatre. At the time the HandBase logbook template was released in 2003 there were two types of PDA on the market and they used either the Palm or Pocket PC operating system. HandBase was chosen because it was a database utility that worked on both types of PDA and it also allowed data to be exported to the more powerful desktop logbook programme providing access to the more detailed reports required for the RITA process. Since 2003, technology has advanced dramatically. There has been a proliferation in the number of available handheld computer devices

and a shift in the pattern of usage away from the PDA towards a plethora of smartphones, all slightly different. The original Palm and Pocket PC operating systems are now relatively obsolete and no longer appear on these smartphones.

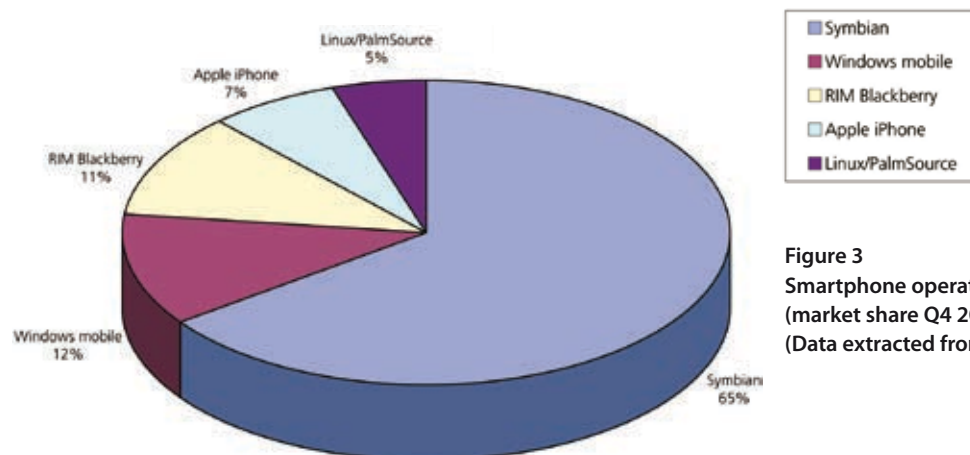
**Table 2 In the past 12 months 86% of problems related to the use of the HandBase PDA logbook and 14% to the use of the PC/Macintosh desktop logbook programme**

Logbook problem	Number
1 Setting HandBase preferences for the PDA logbook	450 (27%)
2 Difficulty exporting cases from the PDA to desktop logbook	753 (45%)
3 Incorrect date/time format after importing cases from a PDA	246 (14%)
4 Unable to produce a copy of the desktop logbook summary report	25 (1%)
5 Recovering data from the logbook file following a computer crash	223 (13%)

In response to these changes, DDH software has finally released different versions of HandBase for five more operating systems (Windows Mobile/Pocket PC, Windows Mobile Smartphone, Symbian Series 60, Symbian UIQ, and Blackberry) but reports filtering back already from logbook users suggest that differences in screen sizes are producing unpredictable variations in how the logbook appears and functions on different devices. The net result is that we are seeing an increase in the number of requests for assistance in managing logbooks on a wide range of different mobile phones. Clearly one solution is unlikely to satisfy the needs of so many different models and it is becoming increasingly likely that we will have to abandon the concept that a single logbook might be usable on all the available devices.

## A word about data protection

The 1998 Data Protection Act covers any information that can be used to identify a living person held on a computer or 'relevant filing system' (which may be paper-based). The question of what makes an individual identifiable is poorly defined by the act and is difficult to answer with certainty. The RCoA/AAGBI Joint Informatics Committee currently advise that it is reasonable for anaesthetists to continue to record a hospital number and date of birth with each case record because this allows an educational supervisor to confirm the accuracy of logbook data. On their own, these two items of data do not allow unique identification of an individual. Hospital numbers are



**Figure 3**  
**Smartphone operating systems**  
**(market share Q4 2007)**  
**(Data extracted from Wikipedia, July 2008)**

meaningless without access to a confidential hospital database, and it is estimated that 340,000 births occur globally each day. For those who remain unconvinced, the PC/Mac logbook allows the user to retrospectively replace all hospital ID numbers with a sequential numbering system if desired, and age in years can be entered instead of date of birth. Alternatively the user can opt to voluntarily data register for the sum of £35 per year. However, there remains a responsibility to safeguard any personal data collected. It is for this reason that the desktop logbook has always been distributed with an active password. Whilst to our knowledge, physical loss of computers is not a significant problem amongst anaesthetists (and no devices carrying anaesthetic logbooks have as yet been handed in to the BBC!), it might also be prudent to consider data encryption<sup>3-4</sup> of laptop hard drives or USB flash drives.

### Summary

The use of the RCoA electronic logbook is now almost ubiquitous amongst UK trainees. Although a logbook does not record competence, it does provide access to data about the nature and number of cases encountered and clinical procedures performed. This information is of value to trainees, trainers, and consultants who wish to support their arguments for changes in working patterns with objective and comparable evidence. Anaesthetists throughout the world downloaded 12,885 copies of the RCoA logbook programme during the last 12 months. During this period 86% of the problems encountered by users were related to the use of the PDA programme and

40% of anaesthetists are estimated to have lost data at some time. The most stable platform is the PC/Macintosh programme. All versions of this programme can be loaded to USB memory sticks with a minimum of 20Mb free space. The newest version of the software will work if plugged into either a PC or Macintosh host computer. Next year we hope to be able to announce the launch of a College-approved web-based e-logbook. Until then please bear in mind that no logbook either paper or computer based is entirely safe, secure or foolproof and for this reason backups should always be kept in multiple locations.

We would like to thank all those logbook users who have taken the time to feed back their comments (both positive and negative). For the most up to date versions of the RCoA-approved electronic logbook please direct your browser to [www.logbook.org.uk](http://www.logbook.org.uk).

### References

- 1 Lack JA et al. An anaesthetic minimum dataset and report format. *Br J Anaes* 1994;**73**(2):256–260.
- 2 Kelkar A, Chelliah S. Logbook keeping among anaesthetists. *RCoA Bulletin* 46;**November 2007**:2334–2337.
- 3 [http://en.wikipedia.org/wiki/USB\\_flash\\_drive](http://en.wikipedia.org/wiki/USB_flash_drive).
- 4 [www.truecrypt.org](http://www.truecrypt.org).