The Gold Standard: pulling it all together

Over the past two years *Torus* has printed many articles about elements of the paperless practice. It's time now to pull them all together to show the practical steps needed to transform a practice from paper-heavy to paper-light.

For obvious reasons there isn't space to reprint all the details of each subject, so to see all the ramifications you will need to refer back to the original articles. If you don't have the back numbers of *Torus*, don't worry! All the articles are available on the TUG website at www.tug.uk.com

A word of encouragement is in order here. If you're not yet paperless, everything written below may at first seem terrifying! There seems so much of it: how can anyone possibly cope? In fact the reverse is true. The process of going paperless is really about performing a number of steps, each of which is often quite small—and indeed, some can be missed out altogether if that suits you: for example you don't have to have a practice intranet if you don't want to.

Although these instructions may at first sound confusing and overwhelming, in practice it's amazing how quickly it all starts to make sense and fit together. Lots of practices have found that it smoothes the path enormously to divide it into small, easily managed, and progressive sections.

If you are planning to go paperless and want advice from others who've already gone down this route then one of the best places to find help and support is on the TUG discussion lists (which work via e-mail). If you're not a member of the TUG list then you should be! Full information on how the lists work and how you can become involved with them is available on the TUG website at www.tug.uk.com

Dr John Lockley
and the Torex User Group Committee

Planning

So you want to take the plunge and go paperless? Great! There are some wonderful benefits ahead, (see 'Electronic paperless consulting?' in *Torus*, September 2000) but quite a few hoops to jump through before you get there. As I said in the introduction, although going paperless can seem a heavy load, it can easily be broken down into smaller, more manageable segments. In other words the process of going paperless is progressive, rather than a 'big bang'.

The first thing is to realise that this all needs planning—lots of it. Going paperless is something that can't be done without an overall master plan and also a good deal of training for various members of staff (to say nothing of your partners!)

- **Get the whole practice to sign up to this goal.** You won't be able to achieve it if one or more of the partners is acting like a twenty-first century Luddite and refuses to cooperate. Nor will you be able to proceed easily if you have members of staff who adamantly refuse to learn to use the keyboard, or cling to paper-based systems as if they were lifebelts. *Everyone* must be on board: and if you have members of staff who won't or can't retrain, their existing paper-based post may have to be made redundant—and because their talents no longer fit into the new paperless environment, the person who used to fill that post can then legitimately be laid off. (It is important to do this strictly according to the procedures laid down in law.)
- Get permission to go paperless. You will need two things for this:
  - an RFA 99 accredited computer system
  - permission from your HA or Strategic Health Authority (SHA),[1] which will have specific requirements that you will need to sign up to, such as robust backup mechanisms, conformity to certain standards, and so on. These will differ from SHA to SHA so ask what your local requirements are. (See 'Legal aspects of record-keeping', *Torus* June 2001.)
- You may wish to **amend your practice mission statement.** (I'm quite serious about this!) Your mission statement should reflect your core beliefs and goals, and everything you do should be tested against it. This is one of those occasions where the mission statement may need altering subtly.
- **Read thoroughly the Guidelines of the Joint Computing Group**[2] which will give an excellent overall 'feel' for good electronic record-keeping http://www.doh.gov.uk/gpepr/guidelines.pdf (At least one SHA is insisting on adherence to this as one of the requirements for permission to go paperless.)
- **Have a core planning group** to see the project through, and make sure you identify an IT manager through whom all problems and changes are routed. (See the four articles on the duties and functions of the IT Manager In the March 2002 edition of *Torus.*)
- **Make sure you have a realistic timescale.** Don't transfer to a new system of working until you've had ample time to bed down all the individual parts—firstly, removing the software glitches and incompatibilities; secondly, training the staff to use it properly; and thirdly, *training the staff how to think about utilising it within the practice.* Computerisation sometimes means that staff have to go about a particular job in a completely different way from their previous approach, and they may need guidance in thinking through the implications of this, with perhaps some retraining in the new methods. For example, with minor surgery claims, in the past doctors may have sent patients' paper notes, with post-it notes attached, out to the staff for them to fill in the claim forms. With a paperless system it's quicker and easier if the practitioners themselves initiate the whole of the claim (which in any case is done more or less automatically for them by the computer).

  On the other hand, this doesn't mean that the practice has to bow to the needs of the computer ('It who must be obeyed', to misquote Rider-Haggard). It will be important for the practice itself to make up its own mind over whether it wishes to work in a particular way, never mind whether the computing side of it is easier!

The Torex system

The first law of selecting a computer system is 'pick the software you need—then select the hardware to run it on.' *Never* do it the other way round.

For legal reasons, as a paperless practice you will have to have an RFA99 accredited system, or System 5[3], and you will want to run registration, item of service and laboratory links on it. Immediately this tells you something about the hardware you will need to have in place.

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[1] *It isn't yet certain who will hold responsibility for this in the future.*

[2] *The Joint Computing Group of the GPC, RCGP and PHCSG.*

[3] *System 5 has been accorded special dispensation for paperless working. See 'News', June 2001.*

In practice, as a Torex Health system user you have the choice of four different RFA99 systems: Premiere Synergy, System 6000, Premiere and Visual Phenix.[1] Bear in mind, however that all these systems are to converge onto Premiere Synergy, so it makes sense to plan your ultimate system as Premiere Synergy, make sure you get hardware that will run it, and then switch to Premiere Synergy at the right time for you. (This may well mean earlier rather than later, because the sooner you and your staff are on the final system, the less time they will have to spend learning the finer points of two different systems.)

If you're planning to upgrade to a different system it may be advisable to do this first, and get fully accustomed to it, before trying to go completely paperless. It is possible to do a 'big bang' to a new system and immediately run it in a paperless fashion (the next-door practice to me has just done this very thing with Premiere) but the learning curve is steep. Simply changing computer system can put a practice back eighteen months while staff learn the new system's foibles, so do be aware of this if you have to change systems. (System 6000 and Premiere users won't have this problem when changing to Premiere Synergy because Premiere Synergy can be run in a very similar way to each of the two 'parent' systems.)

Choosing the hardware

So what about the hardware? Obviously you need hardware which will run the Torex Health clinical system efficiently; but don't forget the extra load put on it through running other software such as e-mail systems, CD's, word processing and so on. You will need a non-clinical server for the NHSnet connection, together with the ISDN connection itself. If you have a branch surgery you will need to pay special attention to the hardware needed to communicate with the branch (See 'Branch surgeries—connecting your computers' in *Torus*, March 2002.) If you're intending to use laptops with pcAnywhere and SecureIT on to access the clinical database directly from home or branch surgery then you will need dedicated modem lines at the surgery (one per laptop used concurrently). You may well want to use hand-held computers for visits so you will need these, plus the connection mechanisms to pass information to and from the clinical server. Then there's the scanner for incoming mail, and probably a fast central laser printer for printing off the whole patient record, prior to sending it back to the SHA when the patient moves to a different practice. (Slow inkjets aren't really up to the job here.) Finally, you may wish to have an electronic patient call board, such as that produced by Jayex (*Torus*, December 2001.)

Next you have to think about the unthinkable. What about system crashes? If you're truly paperless you will need swift access to backups which access patient information. There are several methods; the one I favour is having dual servers (preferably in separate rooms), because if one gets stolen or destroyed in a localised fire then the second is still available; whereas a RAID server (with dual hard disks) comes in the one box.

A fully paperless practice is also vulnerable to workstation crashes or theft and you are wise to have at least one workstation as a backup, fully configured and ready to run: then if a workstation goes down all you need to do is plug in the spare one and change the IP address. (For information about backing up the servers see 'Electronic paperless consulting' in *Torus* of September 2000; and 'IT management: safeguarding the hardware' in the March 2002 edition, which also deals with spare workstations and other equipment.)

Backing up

The first law of computing is 'Take backups'. The second law of computing is, 'Take backups'. The third law is…

Ignore backups at your peril. They are *vital* in a paperless practice (and your SHA will probably insist upon them as a prerequisite for going paperless anyway.) You will need to back up both the clinical server and the ConnX one; make sure also that any information which is being stored on local C drives is also backed up properly. The best method is for users never to store information on their C drives, placing it instead on the central server: but there are occasions where confidentiality needs suggest that information be kept on a local drive: just make sure you back these up!

Take the backup tapes out of the building! There's no point in assiduously backing up every day if you leave the tapes on top of the server, and have a burglary or a fire!

(Backup routines are discussed in detail 'IT management: backups and shutdowns' in *Torus* March 2002.)

Finally, backup routines are not complete unless you have verified that the backup has been recorded adequately. This means testing it from time to time by doing a complete restore to a different server (*not* to your own server, in case you replace live files with duff ones, thus ruining the only valid copy of your clinical data.) Torex Health are in the process of setting up this service—*use it!*

Planning for disaster

Sooner or later it's going to happen: the server goes down; or you have a theft, a fire, or a lightning strike. You need to plan for the very worst scenario—then when/if it occurs you won't be taken by surprise. (See 'Safeguarding the hardware', *Torus* March 2002.)

It's not just large-scale disasters that can cause difficulties: you need to make plans and know what to do if a workstation fails, a printer goes down, or the ConnX box won't work. Some of the remedies will be simple—rebooting the server or workstation, for example—but staff need to know what to do and when to do it. It's no use having a disaster plan if it all centres on the IT manager (who just happens to be on honeymoon in Fuertoventura at that moment). It's just as bad if she's on her half-day, shopping, with her mobile switched off. (She might as well be in Fuertoventura—she's just as uncontactable.) Moral: make sure you've backed up the *people* as well as the *data*. In a paperless practice you should *always* have a member of senior IT management on duty (or contactable) at all times; that means someone who has access to administrator passwords if the helpdesk needs to dial in, and who has had a modicum of training in computer troubleshooting. If not, sooner or later something will go down at an awkward time and large parts (or even the whole) of your system will become paralysed.

The IT manager

In a paperless practice the IT manager is *vital*. It is he (or she) who is there to look after the system, performing preventive maintenance, planning, installing upgrades, teaching, troubleshooting, contacting the helpdesk, reading e-mails on the TUG discussion lists, and so on. (See all articles about IT managers in *Torus* March 2002, but especially 'IT management: preventive system maintenance'.)

It is the IT manager who should be responsible for maintaining and developing the system, thinking ahead to ensure that future needs are catered for, making sure that the practice has at its disposal the right type of SOPHIEs, reports and customised macros, and ensuring that the right sort of teaching has been carried out both to staff and partners.

Centralising the system

There is no point in setting out to have a paperless practice if it's done in a higgledy-piggledy way. People don't just stay at the same desk all week, they move around. Even if doctors have their own surgery, they will probably need to access information when in the administration area.

It makes sense therefore to have a very centralised approach to customisation of the computer system, so that most macros are the same on each desk (with perhaps an area reserved for individual macro choices). Then a practitioner or secretary can respond to, say, an incoming phone call, at any desk, with the quick functionality of practice-wide macros at his or her fingertips.

A similar problem relates to the storing of confidential files. It is tempting to place really confidential information on the C: drive of your workstation (or even on your own floppy disks) so others can't access them. On the other hand, this may well not be the right way to go about things, because they won't be backed up properly. It is probably better to keep all information on the practice server, but use confidentiality tools to make sure that only specified people can access this information.

These tools fall into two groups:

- Encryption
- Access controls

[1] *System 5 should be going through RFA99 testing shortly.*

Many software packages now contain encrypting facilities—Microsoft Outlook and Info Select for example. Others, such as Microsoft Word prevent the accessing of sensitive documents by requiring a password before they can be opened.

Tools are also available which prevent specific directories being available to users.

Setting up the software

It's not just the Torex Health system that needs selecting. You have to decide which e-mail client you need, as well as many ancillary software/information systems. These might include:

- e-mail (Outlook comes as standard with ConnX but you might want to use something different)
- Anti-virus software
- Macro system—ANTHEM for System 5, and probably Macro Express (or alternatively Macro Magic) for the others (see 'Macros: make your computer do the work' December 2000, and 'Macro Corner' in March, June, and September 2001)
- PRODIGY (which may need to be enabled within your system)
- eBNF
- CDSS (still in beta test). See 'Coping with the NSF—CDSS for System 6000' (March 2001).
- Word processor (most choose Microsoft Word but there are others)
- Spell checker—there are a variety (see 'Medical legal spellcheck', *Torus* June 2001)
- Internet client (most use Internet Explorer but there are alternatives)
- Document management system, such as DocMan or Adobe Acrobat (see 'Document management using DocMan Enterprise', December 2000).
- Information management system, such as Info Select (page 19)
- Financial software for accountancy and wages (e.g. Maclean and McNicholl; Ferguson Payroll; Sage)
- Generic spreadsheet (often Excel); database (perhaps Access); and presentation software (Powerpoint)
- Medical information on CDs (e.g. the Merck Manual, dermatology CDs, eMIMS, etc)
- ECG software ('The ECG goes digital' December 2001.)
- You might even want to consider setting up Internet banking

(See 'Comfortable computing: Part 2' March 2001 for details of customising your workstation so as to start the programs you need, automatically when you switch on.)

Servicing the system

All IT systems need servicing. Although servers appear to run on their own, gradually they are likely to 'lose' bits of memory to rogue processes that haven't been shut down or completed properly. Shutting down and rebooting the system on a regular basis is a useful way to clear out these processes. ('IT management: backups and shutdowns', March 2001). A structured approach to maintaining, upgrading and servicing the system is of great help in minimising problems and maximising the smooth running of the system ('IT management: Preventive system maintenance, March 2002). Training is also of prime importance: this needs to be done in a structured way, allowing those who are already competent users of the system to go on to greater things, whilst also initiating new users into the conventions the practice has decided upon.

Laying out the record

Laying out the computer record needs discipline, attention to detail and a common approach throughout the practice. There is a lot to learn here, and it is important that all members of the practice team know the ground rules.

Surprisingly, this also includes the receptionists, if they write to the record, as they probably will be doing if you're going really paperless (otherwise where do you put telephone messages?). A common, agreed, consistent, structured approach to laying out the record is essential here, to avoid clutter, and to make sure that the next person to view the record knows exactly where to look for a particular bit of information (or, more tellingly, knows where to look to see if a particular piece of information has been recorded or *not*).

No-one in the practice is exempt from this, unless they never touch the computer (which in a paperless practice is unlikely). Therefore nurses, secretaries and receptionists will also need to know how to handle record layout: and don't forget new partners and locums in your training program. (For a really in-depth, TUG-approved description of the approach to this subject, see the whole sequence of articles on 'Laying out the record' in *Torus* of June 2001.)

Customisation

Although the Torex RFA99 systems are very powerful, they can be made even more user-friendly by suitable customisation. It's well worth doing this in an organised way, because it saves everyone a lot of time. Here are some of the things you can do:

- Make sure that workstations are ergonomically set up ('The ergonomics of workstation set-up' December 2001).
- Customise individual workstations according to the user's preferences (See 'Comfortable computing' Part 1 in the September 2000 edition, Part 2 in March 2001).
- If appropriate, set up roving profiles so that users find their own files move with them when they change desks ('Internal messaging in General Practice' December 2001).
- Set up standard reports, to search for exactly the things you want, presenting their results to you in a way that is conducive to good practice and easy to assimilate.
- Set up keywords/synonyms (*Torus* December 2000 'Electronic paperless consulting part 2: speedy input' and 'CUL8R: Synonyms/Keywords' in June 2001), and also see below.
- Clinically it can be helpful to set up a practice drug formulary; and your system may also allow you to set up a Read code formulary (as a list that can be browsed) to ensure consistent use of recommended Read codes.
- Set up macros—for System 5 using ANTHEM (*Torus* June 2001), and for the other systems using third-party programs using Macro Express or similar ('Macros: make your computer do the work' December 2000, and 'Macro Corner' in March, June, and September 2001) as well as the inbuilt macro systems available with applications such as Microsoft Word.
- Customise the word processing templates so that practice headed notepaper is automatically produced when starting a letter, that standard mail-merges are set up ready to go and that standard, customisable letters are ready in template or final letter form.
- Set up alternative templates for the appointments system so as to minimise the necessity for manual changes when one of the practitioners goes on holiday.
- Set up any Premiere add-ins that are needed ('Premiere Add-ins' September 2001).
- Agree on a practice-wide use of SOPHIEs or ISIS, where available for your system—either those supplied with your Torex system, taken from the TUG website, or written yourself. Then you will have standardisation of input of clinical material, with the right tools ready to hand.
- Many customisation principles, including hooks, are discussed in 'The changing face of System 6000', *Torus*, June 2001 and also on page 22.

Reporting

It always amazes me how inefficiently most people use their systems. You might think that, having spent many tens of thousands of pounds on their medical system they might want to get the best use out of it! But no—many practices use it simply for recording information, with the minimum of reporting. Yet reporting is one of the ways in which the computer can help you improve the quality of the medicine that you carry out, because it allows the practitioner to spot what's happening before it gets out of control, and find where information (or medical activity) is missing. The computer is the best aid to audit that there has ever been; and in case audit is a dirty word with you, let me point out that it's only through auditing your activities that you can see what is happening and correct what you find you're doing inefficiently or incompletely.

Such is our tunnel vision over reports that we often don't think about what reporting can do for us in the wider sense. For example, if you'd like to get rid of all those insurance reports, for ever, read 'Automated PMAs!' in *Torus,* September 2000. And if you want to be able to home in on patients and do some real proactive medicine, look at 'Excel output formats for System 6000 reports', December 2001.

'Premiere and SQL' (March 2002) shows how to go one step further with Premiere and *really* make it fly!

SOPHIEs

SOPHIE™ is one of the most powerful features of System 6000 and Premiere Synergy. Supremely among all other medical software it has the ability to interact with the existing computer record, alerting the user to information that should be there (and isn't), prompting for input, warning of problems that might be encountered, and allowing speedy input of information, particularly in the more structured settings of clinics.

SOPHIEs save time because they automatically select the correct Read code from among several possible choices that may be available—and because all this happens behind the scenes, the user is presented with input into the computer in a 'Medical English' form, rather that as a somewhat abstruse set of computer-related codes.

As well as having an *interactive* relationship with the data in the medical record, SOPHIE is programmable—either directly, or by using the Graphical SOPHIE Editor. This encourages the democratisation of medical computing! Users don't have to depend upon the programmers at Torex Health to create a system which works for their practice. *Anyone* can write a SOPHIE, making it possible for each user or practice to create inputs and interactions with the computer which are tailor-made for that particular practice.

Having said that, there's little point in reinventing the wheel, and it is far more sensible to use existing off-the-peg SOPHIEs rather than trying to create your own (if only because an off-the-peg SOPHIE is likely to have been debugged already, whereas any new SOPHIE has to go through this process to start with.)

A number of SOPHIEs are included with Premiere Synergy and System 6000, and more custom-built SOPHIEs can be found on the TUG website.

Premiere has a similar but less versatile system called ISIS.

(For information on writing your own SOPHIEs, see the series 'SOPHIEs made easy' which started in September 2000 and is still continuing.)

Hooks

It's possible to attach messages and SOPHIEs to certain Read codes and on first loading a record. This is called 'hooking'.[1] (See page 22, and also 'The changing face of System 6000, June 2001) and is only available in Premiere Synergy and System 6000. Some hooks are preset by Torex, but hooking can easily be used to display personalised practice information. For example, you could set up a hook to place a message on-screen whenever a user tries to prescribe a particular drug, saying 'Don't forget that the practice policy is to use XYZ wherever possible.'

For a more complex approach, you could start a SOPHIE from a hook, so that, say, entering an adult's weight always triggered off a SOPHIE to place the BMI in the record.

Another type of hooking is the 'load patient' hook, in which a SOPHIE is called into play as soon as a patient is loaded. Such a SOPHIE could, for example, report on whether the record contained enough basic information—height, weight, blood pressure, and so on—and prompt the user if elements of this were missing. In this way the computer is used, entirely unobtrusively and automatically, constantly to check that screening processes are up to date—which means the user doesn't have to think actively about checking for this information.

A similar system is CDSS, from the pharmaceutical company MSD. This currently still being beta-tested, but will eventually be able to act as a very efficient screening device. (See Coping with the NSF—CDSS for System 6000' in Torus of March 2001.)

Read code shortcuts (Synonyms/Keywords)

Read codes don't come intuitively to most users, and anything that enables users to pick the right code quickly is to be welcomed, firstly because it means that the correct code will be selected, and secondly, for ease, speed of use, and reduction in stress on the user. Shortcuts (synonyms/keywords) are of help here.

The time when these are most useful is where it is difficult getting through the pick lists to a particular, frequently-used code in the Read code hierarchy. The index term used by the Read codes may be one that doesn't come readily to mind, or else produces a large picking list, and the ability to attach a synonym to the individual Read code makes it that much easier to select immediately (e.g. 'OTMR' for 'Otitis media Right'.)

Sometimes synonyms are words or abbreviations we all wish had been put in the Read code index in the first place (e.g. 'Wt' for 'weight'). It is also helpful to use this facility to pick out specific Read codes that the practice has agreed to use in preference to others that may be available. (See *Torus* December 2000 'Electronic paperless consulting Part 2: speedy input' and 'CUL8R: Synonyms/Keywords' in June 2001.)

Macros

Macros are collections of keystrokes that can be called up with one specific key combination. Vast numbers of stored keystrokes and mouse clicks can be called up in this way, allowing the speedy and reliable addition of notes, text, problem headers… You name it, if it can be done with an identical pattern of key or mouse strokes, macros can do it. With a single key combination you could put in a note saying that 'flu immunisation has been carried out, issue a prescription (which includes the batch number and expiry date) and issue a reminder for next year. It can save ages in the clinic, and is a good example of how the computer can maximise practitioner time with the patient while still recording fully everything that is needed.

Appointments

Electronic appointment systems have the supreme advantage that several staff can make appointments simultaneously, allowing the practice to deal more effectively with times of high demand (Monday mornings and the Tuesday after a Bank Holiday, for example). There's a choice of systems; the text-based Unix ones, as supplied by Torex; Windows-based Torex ones, as supplied for Premiere Synergy, Premiere and System 6000; and FrontDesk, which exists in its original incarnation as a text-based system as well as FrontDesk for Windows, which has recently been released. (See 'Computerised appointments using FrontDesk for Windows', Torus September 2001.) FrontDesk for Windows also includes web-enabled appointments and has a messaging system incorporated into it.

Whatever system you use, do make sure that you create templates for all routine occasions (such as a partner being on holiday). The ability to bring previously prepared templates into action can save a *lot* of time and stress. ('Here's one I prepared earlier…')

E-mail

E-mail is important in a paperless practice because it helps staff keep in touch quickly, reliably and accurately, not just with those outside the practice but within the practice as well ('Getting the most from ConnX: Part 2', *Torus*, September 2000). Because e-mail is asynchronous communication (i.e. both parties don't have to be present at the same time for the communication to occur) it's particularly useful when leaving messages for part-time workers. (See 'Internal messaging in general practice' *Torus*, December 2001.)

As staff don't always occupy the same workstations throughout the week, in a paperless practice it is important that they should always be able to access their own e-mails. Roving profiles are the answer: set these up using the instructions in the article just mentioned.

Keeping control of incoming e-mails is also important (see 'Managing your e-mails' *Torus*, December 2000). This is particularly important when the amount of e-mail traffic you receive is high, as happens in paperless practices.

There is a medicolegal problem with e-mailing patient details. Never mind e-mailing to someone outside the NHSnet, even NHSnet itself isn't considered secure as far as confidentiality is concerned. If you're e-mailing patient details within the practice then there's no problem, because the e-mails don't go outside the ConnX server (that is, assuming you don't have a branch surgery), but if you are contacting others outside the practice then it's essential to make sure that patient details aren't disclosed. There are several ways to get round this (see 'IT management: Security and confidentiality', *Torus*, March 2002).

Alternatively, encrypt the message.

[1] *The official Torex Health title for this is 'Intelligent data handling'.*

Encryption is already happening on a country-wide basis for laboratory messaging (see 'Cryptology and the pathology messaging enabling project', March 2001) but for e-mail messaging there are no national solutions yet and you will need to use a locally-agreed method, such as encryption using PGP or ZeroClick (see 'News' December 2000).

Don't forget the wider abilities of e-mail which allow you to e-mail other users, and specifically, to get in contact with e-mail discussion groups to air those very topics that you find a problem. In particular, think about joining the TUG discussion lists (See 'Using the TUG listserver', September 2000, for general information, though the actual listserver addresses have now changed.) If you aren't a member of the discussion lists then you should be! You'll save a lot of time and effort if you can ask other TUG members about specific problems, rather than trying yourself to reinvent the wheel (or mend it). Register through the TUG website at www.tug.uk.com to become a member of the TUG discussion list.

Messaging

Various messaging systems can be used in General Practice (see 'Internal messaging in General Practice', *Torus* December 2001). Standard e-mail is the most obvious, but there are messaging facilities within Info Select, FrontDesk and FrontDesk for Windows. The latter allows messages and requests for visits to be sent to users—a useful addition to the armamentarium required to run a practice in as paperless a manner as possible, and a significantly different way of messaging than that done through e-mail (see 'Dealing with messages in General Practice', on page 15).

Document management

Document management is at the very heart of the paperless practice. There are two aspects to document management.

- Physically scanning incoming mail and attaching the scanned document either to a patient's notes, or else placing it in an administrative folder.
- Workflow management to pass these documents (or, strictly speaking, references to these documents) around the practice, so that they are viewed by those who need to see them, allowing users to indicate to others what action (if any) needs to be taken.

Just scanning documents isn't enough in a paperless situation. Workflow management is essential.

Several systems are available: DocMan (see 'Document management using DocMan Enterprise', *Torus*, December 2000) and Adobe Acrobat (note, *not* just the free reader).

Internet

The internet is potentially one of the most useful sources of information available to the practice. The only problem is its vast size. Where do you find relevant, accurate information?

One answer is through the Primary Care National Electronic Library for Health, NeLH-PC, at nww.nelh-pc.nhs.uk (NHSnet address) or www.nelh-pc.nhs.uk (Internet address); (see NeLH-PC:information for primary care, *Torus*, September 2001).

NeLH-PC has a search engine, but many TUG members say that the Internet search engine Google is the quickest and most thorough one that they've come across, even for a specialised area such as medicine. (It won't index or list sites that are solely within NHSnet, though.) Find it at www.google.com

Another useful site that can act as a starting-point for useful links is the TUG website www.tug.uk.com which not only contains direct links but also a list of useful medical sites contributed by Dr Richard Johnson.

Intranet

It's important to remember that there are two types of information that are important to a practice: the first is patient-centred information (which is what your Torex Health system is all about). The other is general medical and administrative information, and it is this that is often neglected. A paperless practice has a golden opportunity to tidy up its management information, making much of it available via a practice intranet.

These are easy to set up (see 'Sharing information in the practice—intranets demystified', Torus, September 2001) and allow communal access to information throughout the practice. It's also possible to have a practice home page for your web browser with links to local sites of importance (local hospitals, PCOs, search engines, NeLH-PC and the like) so that all members of the practice can have speedy access to commonly requested information.[1]

One commonly overlooked source of information is that gleaned by practitioners during their day-to-day work. So you've spent a quarter of an hour finding the contact name and telephone number of a local medical herbalist? *Put it on your intranet*—so that next time you need the information it's there ready for you, at the touch of a just a few keys. Info Select is useful here: it's a handy freeform database which allows you to throw just about anything in, with blisteringly fast searches (see 'Info Select—organising non-clinical data, page 19).

Another aspect of managerial information concerns rotas and diaries: it is *so* helpful to have a centralised diary, accessible from anywhere within the practice, so that any member of the practice can check the availability of personnel/rooms on a particular date before confirming a meeting. There are a number of ways in which this can be carried out: using Info Select; with shared netfolders on Microsoft Outlook; or by using FrontDesk for Windows (see 'Dealing with messages in General Practice' on page 15).

Medical information

We've already seen that general medical information is available through the Internet. It's also available on CD, such as the Merck Manual, dermatology CDs and eMIMS. One distributor of these is Focus 77—contact them on Freephone 0500 947177.

Various commercial organisations have their own web sites (many of the major free medical magazines, for example) and Clinnix (contact www.clinnix.net) is also a useful free resource which has news and patient advice sheets instantly on tap.

It may be worth putting important self-generated information on your Intranet—perhaps articles that you've scanned in, or digests of information that you've created in text form, say in Info Select (see above, and page 19).

Accounts

There are a number of accounts and payroll programs that are worth looking at; Maclean McNicholl software (www.gpacc.co.uk) is specifically written for GP practices, and there are more general packages available (Sage especially).

It's worth using a spreadsheet for financial predictions, and Microsoft's Excel is more or less standard here. It also has the advantage that under the Microsoft-NHS deal it is free to NHS GPs in England (see 'News', December 2001 for details of how to acquire it.)

Word processing

Most people will be using Word, though they don't have to (some still use Lyrix, though strictly speaking this is just a text processor) and there are many others available. (To make a new word processor available to System 6000 follow the instructions in the box on page 10 of *Torus*, March 2002.)

Word processors are a lot more than fancy ways to type letters! They can accept pictures, link to information in other programs (spreadsheets, for example) and do mail-merges, which make it easy to convey the same information to a wide number of people, automatically and personally addressed.

You can save even more of your secretary's time if you make sure that commonly used documents are stored as customised templates, and boilerplate text is stored as glossary items, or else available by using macros. You can even save on secretaries by using voice processing, such as IBM's ViaVoice, or Dragon Dictate, though these are still prone to error and not many practices are yet using them routinely.

Training

Don't forget training! (See Editorial, *Torus*, March 2002 and 'Training—the essential (missing) ingredient to NHSnet success', September 2001). It's

[1] *For those paperless practices without the expertise or time or energy to set up a local practice intranet, but who have scanning facilities, a workaround has been devised by Dr David Wright in his System 5 practice. He has created a fictional patient (which he's called PROT) and scans all protocols / communal information into its record. The information can be structured using (for instance) PCTI's Docman folder system and accessed via the clinical system simply by pulling up PROT's record.*

amazing how carefully people will vet new software before purchasing it, spend many thousands of pounds on a new system—and then forget to train their staff how to use it! Training is very cost- and time-effective and will increase productivity hugely. It will also result in fewer disruptions caused by staff having to take time out to ring the helpdesk in order to work out what should be a routine task, or when panic ensues because the system has crashed because it's been asked to do the wrong things—or else the right things in the wrong way.

In the commercial world, firms will plan to spend between 12.5% and 25% of their project budgets on training. *They* think it's cost-effective! We need to learn from them.

Using the system for all its worth

OK, now you have all the components of a paperless practice in place. But having them available isn't the same as using them; using them isn't the same as using them efficiently; and using them individually isn't the same as using them smoothly in combination.

At this point it's worth stepping back and reflecting for a moment on the way in which your practice plans to use the system. There's no one set way, but there are a number of general paths you may wish to follow: precisely which of these you choose is up to you.

You're going to be sitting at the computer a lot more—and so are your staff. Make sure you're all sitting comfortably and don't give yourself neck-ache or eyestrain! (see 'The ergonomics of workstation set-up', December 2001)

It will probably help to have quite a number of programs running concurrently on your workstations—your Torex Health medical suite, of course, with your e-mail program constantly running in the background, set to alert you when new e-mail arrives. You may want to have eMIMS running all the time as well—handy for a speedy lookup of a dosage regime and far quicker than the paper version. You can switch easily between programs by clicking on the appropriate icon on the Windows task bar which is usually at the bottom of the screen. You can customise each desk, not just for personal preferences but also for security purposes. ('Comfortable computing: Part 1' in September 2000, with 'Part 2' in the March 2001 issue.)

You will need to make sure that you can enter medical information very quickly ('Fast and painless data entry', 'Electronic paperless consulting: Part 2—speedy input', and 'Macros: make your computer do the work', all in *Torus* of December 2000; and 'Keyboard shortcuts in System 6000', and 'CUL8R: synonyms/keywords', both in the June 2001 edition); you may also need to make sure that the way you use the computer doesn't get in the way of the practitioner-patient interaction ('Including the computer in the consultation', June 2001).

Velocity coding will be important, too, to make sure that you have your most frequently-used Read codes at the very top of each picking list ('Fast and painless data entry', December 2000).

Don't forget all those add-ons and add-ins that allow you to input, manipulate and analyse information more speedily (Premiere Add-ins', September 2001); and remember that many of the Torex systems allow you to attach external data to them—pictures, sounds, photographs, ECGs—all of which make for a much richer data set for each individual patient. (see 'Premiere, images and pictures', September 2000 and 'The ECG goes digital', December 2001).

Going paperless

All the above are the basic building blocks of the paperless practice. But how do we fit it all together, bearing in mind that the practice has to continue providing medical care at a highly pressurised rate during the whole of the changeover process?

Let me give you my thoughts, but please bear in mind that this isn't a 'do-it-by-numbers' approach. Instead, what I want to do is to teach you how to think about performing the changeover in your practice. It's a starting-point for discussion, not a recipe!

You need to rethink the operation of the whole practice. Yes, that's right…*all* of it. Why? Because there's no point in simply trying to reproduce the paper flow of the existing practice with the same flow of information, but done electronically! Once you're freed from the constraints of paper, you can start to think about things in a completely different way.

At heart what we are considering is the flow of *information* rather than the flow of *paper*.

There are four big differences between paper and electronic information.

1. Paper can only be in one place at a time, whereas information held electronically can be viewed by a number of people at once: what's more, these people can be far away from each other.
2. Updating paper information is difficult and can result in large numbers of out-of-date copies which have to be collected and destroyed. With IT there should be only one copy to be updated: after that there is no chance of people referring to out-of date information
3. Large amounts of electronic information can be copied (i.e. backed up) regularly.
4. Printer/screen output is easier to read than doctors' handwriting!

Because of these profound differences it's worth looking at the practice's information handling from scratch. There's simply no point in duplicating a paper-based system action by action if an electronic system works better when configured entirely differently.

However, let's be clear about something: I'm *not* saying that everything should be done differently, just to suit the computer, because that would entirely be the wrong way round. The underlying principle is that the computer may well offer you alternative ways of working, but you should only change your working habits and procedures if it's obvious that the new way will be easier or more efficient—*and convenient and pleasant for you* to work in this new manner. Computerisation brings opportunities: but it's up to you to choose whether these opportunities fit in with what you want to do.

Back to the new opportunities themselves. As far as the purely technical aspects of computerisation are concerned what I'm talking about is *customising the IT to fit the practice, and the practice to fit the IT—in other words, integration.*

Who does this apply to?

Everyone! You need to re-think your practice… *completely!* (as otherwise you're wasting money and time.)

If you don't go through this initial process you'll continue as before, with irritating inefficiency.

Having a leader

As I've said earlier, you need someone to oversee the change. This could be the computer manager, the practice manager, or the IT lead partner. You don't want it to be *everyone*, on the grounds that too many cooks spoil the broth, but if you don't choose a specific person the danger is that no-one will do it, and everyone will expect everyone else to take the lead.

Overall plan

Most importantly, you need an overall plan in which the whole practice moves progressively towards its stated goal.

This plan involves not just the computer system, not just the paper, not just the people, not just the office layout but everything together. It includes workstations, desking, telephony, message taking…

Why? Isn't paperlessness simply about converting from paper to IT? The answer is a resounding 'No'! Conversion to IT allows all sorts of changes to occur that wouldn't otherwise be possible. For example, consider your appointments system. An electronic appointments system allows more than one secretary to look at the appointments book at the same time. Moreover, these secretaries don't need to be in the same place—there's no reason why some shouldn't be in a back office somewhere. The result of this is that you may need to change the telephony to accommodate this new plan, and maybe the desking too.

In making an overall plan like this it's useful to adopt what is commonly called the 'Man from Mars' approach. What would a Man from Mars say if he were to come to your practice, with no previous experience of anything to do with general practice? Would he find glaring anomalies, things that by custom and practice have wormed their way into the habits of the practice, but which on reflection are completely anachronistic? If you can manage to 'step outside' your practice for a while and view it in this 'Man from Mars' manner then you may see many ways in which your organisation can be tightened up.

Back to analysing your practice prior to going paperless. You need to assess the following:

- Use of the computer (by whom, how,

why and where?)
- Current paper flow
- Information flow (which is different to paper flow)
- The physical layout of the offices (should it change?)
- Telephony—is it malleable enough; are there enough receivers at the right locations; should the staff be given headsets because that would leave both hands free for typing?
- Use of the Fax
- Use of scanners

You will need to take into account the following functions:
- Recording of clinical information, not just in the surgery but from visits, from messages given over the desk, from attached staff, and from telephone conversations
- Dispensing
- Repeat prescribing (perhaps requested now by e-mail and fax as well as by telephone and over the reception desk)
- Clinics
- Appointments
- Payroll
- Accounts

You will need to consider your *people*:
- Doctors
- Practice nurses
- Secretaries
- Receptionists
- Dispensers
- Practice managers
- Attached staff such as Health visitors and District nurses.

With all these considerations in mind, now is the time to devise an overall plan of action which is right for your practice.

Here are some further areas for you to consider in more detail.

Paper/information flow

The first thing here is to analyse your existing paper and information flow (the two things aren't quite the same—information flow includes things like telephone conversations and e-mails as well as looking up general medical information on the Internet and in the practice library).

Now start to think how you might rationalise this. The easiest method is to scan incoming paper, then pass it round electronically wherever possible. In this way there's only one electronic copy (so everyone knows where to find it) and you can shred all incoming mail (having first waited a couple of days to make sure that the backups have gone through properly). You've now saved a lot of time because the secretaries don't have to do all that filing!

There are two forms of information flow:
- Patient-related (notes, incoming letters, telephone calls)
- Non-patient (information from the PCT, CMO, NICE etc.)

The great advantage of electronic storage of information is that there's no need to file away the paper, and no need to get the paper files out. The need for staff to pull notes drops precipitously as a practice scans incoming mail. For the first few months there will still be some need to pull the notes (and re-file them again) because the more recent letters from the hospital won't yet be on the electronic system, but as time goes on the need to access the paper files gets less and less until they are only being pulled for truly historical information.

Fig. 1 (opposite page) is a diagram of a typical practice's paper flow before a document management system is introduced. Fig. 2 shows what it looks like afterwards.

Quite a difference! However, simply scanning notes is only half the answer. It's important to have a robust method of sending the information round the practice electronically, so that the right people see the information it contains, and the right instructions are given to the right people as a result ('Needs to be seen in surgery', 'Put down for a house call', 'Show to practice nurse' etc.) This is where a good document management system comes in. (See 'Document management using DocMan Enterprise' in *Torus* December 2000.)

Non-patient filing

Non-patient filing is subtly different, because this sometimes comes in a form totally unsuited for scanning (i.e. as a book!) What you need here is a librarian! There should be a single central repository (physical *and* electronic) where one copy only of each document is stored, and which is always kept up to date. When information is stored in a physical library it will help to have an entry about it on your electronic information system, so that instead of bringing up an on-screen document when the relevant index word is sought, the system finds the reference, then points you to the physical library.

Sometimes a reference needn't be stored, especially if its contents are available on the Internet (e.g. the latest version of the DVLC regulations). The librarian will also concern him/herself with the acquisition of suitable medical CDs, and the development of the practice intranet, containing local information.

Fig. 3 (overleaf) is a representation of the storage of non-patient information in a paper-based practice (the size of the triangles illustrates the amount of information stored). Fig. 4 shows it in a paperless practice.

Secretarial

You can make life easier for your secretaries by creating headed practice paper templates and logos etc., by customising specific letter templates (e.g. invitation to the diabetic clinic) and by organising mail-merges on appropriate lists. The use of macros and glossary entries for boilerplate text will make the secretaries' lives easier, and more productive.

Communication

Communication within a paperless practice is of the utmost importance. It's all too easy to end up in a so-called paperless situation, but actually have lots of messages passed around on bits of paper, or stuck on the VDU in the form of post-it notes. It pays carefully to think through how the practice is going to handle telephone messages, messages handed in over reception, e-mails, calendars, rotas, diaries, and *aide-memoires*.

Appointments

I've already mentioned appointments as an object lesson of how IT allows a complete revolution in the way in which a particular function is handled by the practice. Ask yourselves where appointments can best be taken, how many staff you need to deal with this, and how this changes with time over the week; then integrate this information with the staff and the telephony.

Receptionists

Computers allow the instant presentation of on-line advice. To have a database of information that receptionists can read out may be a great help (e.g. standard advice on 'is shingles infectious?' etc.) The ability to access on-line advice, pathology results and the practice intranet will all help receptionists to do their jobs more efficiently.

The practice will need to develop its own messaging systems: this could be by the use of e-mail, which also has the useful attribute of being filed so that people can see later what answers have been given. There is also a messaging system in FrontDesk for Windows.

Finally, the use of a Jayex board allows the receptionists more time to concentrate on other things while patients are called in automatically. ('Using the Jayex call display', *Torus*, December 2001.)

Management

We've already touched on most of the aspects of management that come into the realm of going paperless. Management is all about handling information and acting upon it—but in this case the information is *practice*-centric rather than patient-centric.

All these can be computerised to good effect:-
- Accounts
- Rotas
- Diaries and planners.
- Information handling (using DocMan or Adobe Acrobat and if needed, Info Select (see page 19))

Paper filing is *out*. With paper files you can never find them (or else they're locked away because it's the manager's half day). It's *much* better to have everything available electronically—and there are ways to ensure that confidential information is kept away from others in the practice who shouldn't be viewing it.
- The practice Intranet is a useful management tool here, allowing organised access to shared documents
- Connections to the Internet are important too, to access PCO, CMO and SHA information, as well as many other topics.

Customisation

Once you have an overall idea of the best way to lay out the practice to make it maximally efficient in your new

paperless era you will need to consider ways of customising your software, as explained above, to fit most neatly into this grand plan. In addition, don't forget that the greater emphasis on electronic information may necessitate the need for extra facilities—extra printers for advice sheets and labels, extra e-mail facilities, maybe extra workstations.

Teaching

Teaching is essential during this period. Staff will have to learn how to access information that's on-screen as opposed to in the library or in a file; and they will have to learn new techniques such as scanning and electronic workflow management. Make sure they are taught all the techniques they'll need, as otherwise you'll have a very panicked set of staff who won't be using the system effectively.

What are the benefits of paperlessness?

Paperlessness brings better use of the resources at your disposal, chiefly staff time. Time is wasted by the bucketful when staff have to pull notes and re-file them, or chase results or letters that have just come in and are doing the paper trail round practitioners' desks prior to being filed. Everyone who has gone paperless remarks on how much staff time they save.

In addition, the quality of medicine goes up, because practitioners can find results immediately when they need them, there's a much more reliable system for actioning events, and notes simply *can't* get lost (provided you do backups properly, that is.)

But there's a trade-off.

You won't save as much time if you don't prepare properly for paperlessness. Time and patience is needed to set up templates for word processing and appointments, for customising the software and the workstations to the individual's satisfaction, and for training the staff in the new routines, but *time spent in preparation will ultimately be recouped many times over.*

Effects on staff

Throughout this article I've mentioned how staff may need to adopt new working practices, and how the demands upon them change enormously. It is important that these changes are handled with sensitivity, with progressive teaching of new skills, and with encouragement for the changes that they are going through. Patience on all sides is essential! The benefits to all are tremendous, but will only be achieved if thought, care and consideration are given to the process of change.

After going paperless the work of filing drops dramatically, as does the time taken in chasing up 'lost' paperwork which is in the system...somewhere! The reduction in staff needs can be truly amazing, to the extent that some practices have reported that staff can be bored a lot of the time. (This can be a reflection on practices failing properly to plan this part of the process.)

It isn't necessarily just a matter of reducing numbers of staff, as there are times when numbers of people are

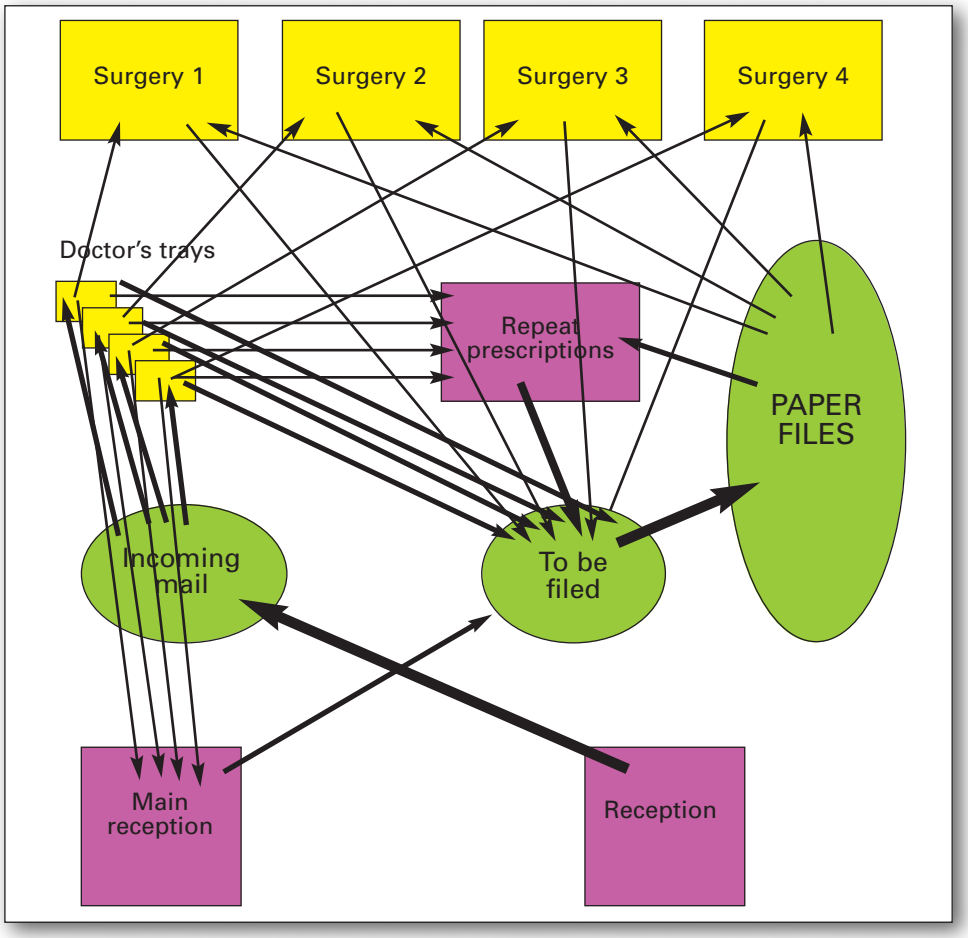

Fig. 1 Simplified representation of movement of mail within a practice without scanning. (The thickness of the arrows represents volume of transactions.)

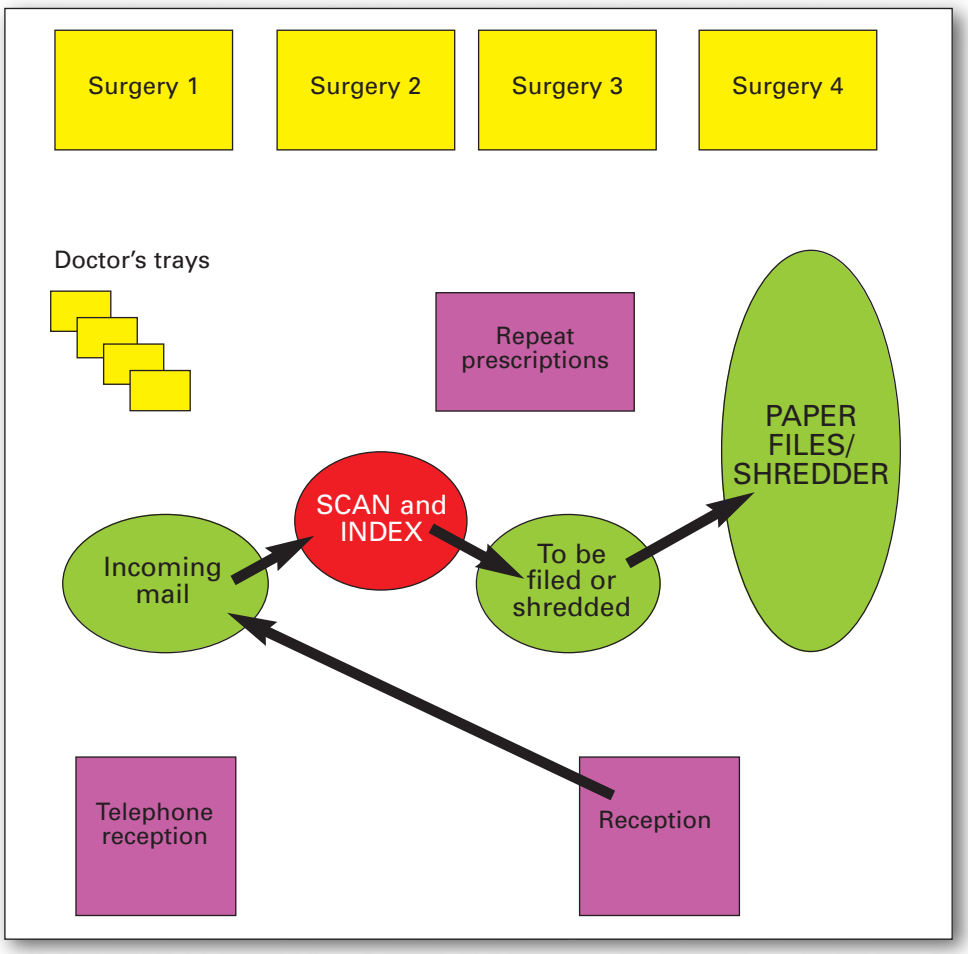

Fig. 2 Movement of mail in a practice with scanning and full electronic document management implemented.

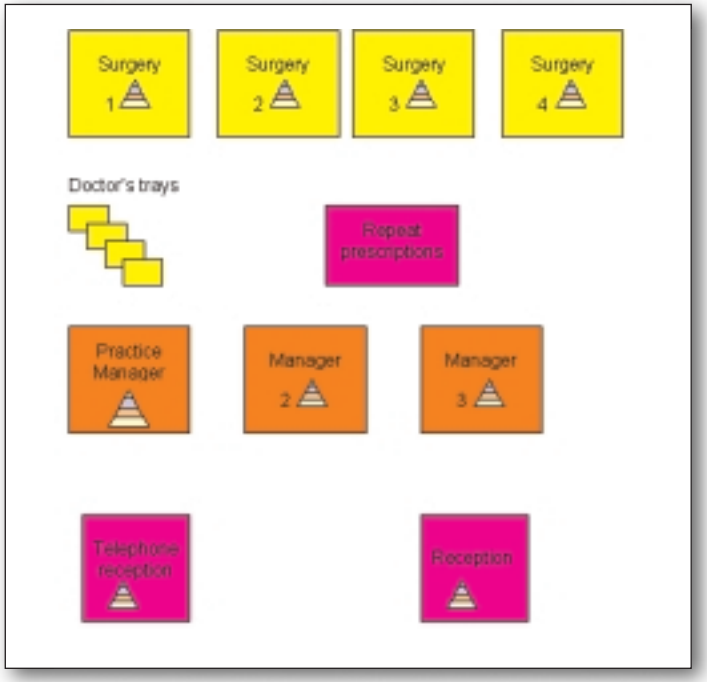

Fig. 3 The storage of non-patient information in a paper-heavy practice

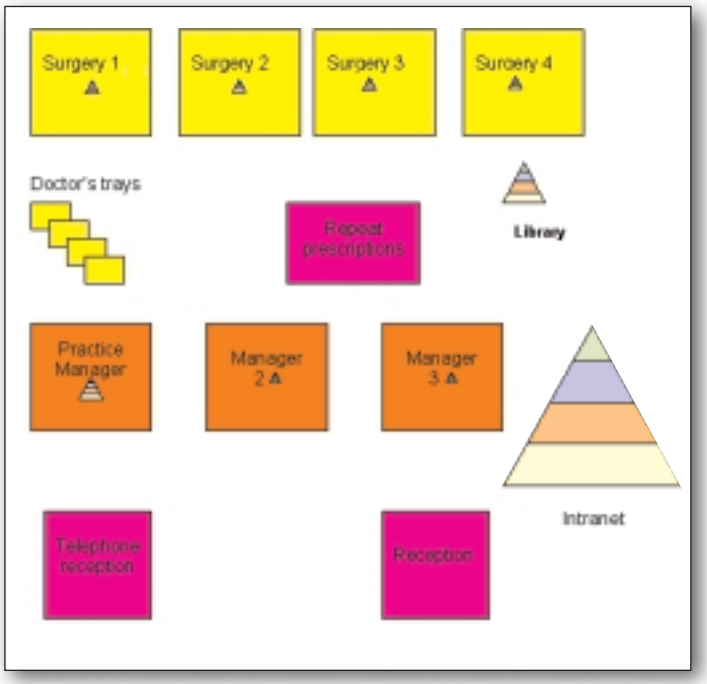

Fig. 4 The storage of non-patient information in a paper-light practice

needed—to meet and greet, answer the phone, pull the occasional record, cover for colleagues on coffee breaks etc. One possible solution is consciously to change the duties of staff so that they are more proactive in the management of incoming problems. One practice, for example, has initiated as system whereby most incoming forms are filled in *by the staff* leaving the doctors simply to sign at the bottom. It is amazing how much work can be transferred this way—disability documents, Med 5's and so on. Of course, if you do choose to take this approach, you will have be very certain of the competence and integrity of your staff, have clear protocols for carrying out this work, and be very clear also that the legal responsibility for all actions performed by the

practice rests with the doctors (as indeed it always did).

This method of working, whilst not being to everyone's taste, certainly frees up practitioners' time, making them more directly available for clinical issues while delegating increasingly intrusive 'paperwork' to those in the office.

What are the problems of going paperless?

- It's yet another change.
- You need time at the beginning to think it through, implement the plan and learn the techniques involved
- Some duplicate systems will inevitably be in place during the changeover period, doubling effort and increasing the possibility of confusion. (Note: *don't* try and run paper and electronic appointments systems in parallel. They'll get out of sync within four hours! On this particular occasion it's better to ignore the general principle of running an electronic system in parallel with a paper system until you are sure that the IT system has all the glitches removed.)
- As a result of all these factors (duplicate systems, uncertainty, planning needs) there's undoubtedly a dip before efficiency rises.
- Attitudes *have* to change. 'We've always done it like that' is a phrase that has, forcibly, to be banned, to be replaced by 'We are ultimately moving to a more efficient, higher-quality future.'
- Finally, with the best will in the world, you'll never get to be fully paperless. People will still hand in their prescription requests on paper; hospitals will still ask for referral proformas to be completed on the paper forms they provide, and the regional postgraduate centre will still want its forms filled in by typewriter. The very best you can hope for is to be paper-light. Just don't get disappointed if you can't get fully paperless, that's all.

Who's involved?

Everyone! Obviously the IT manager has overall responsibility, but this has to be a *practice* responsibility, with everyone pulling his or her weight. The IT manager has to have a clear overview of information handling, together with practical input such as changing/installing macros, etc. There has to be adequate teaching, and an appropriately supportive atmosphere for staff who may be struggling as individuals.

The practice has also to be inventive in the way it tackles problems that arise.

But it's worth it. Afterwards you will find that the practice is:

- More efficient
- More reliable
- Cheaper to run
- A happier and less stressed place to work
- One that makes better use of each individual's time.
- Is more pliable and can accept future change more readily.

One warning—you won't get it right immediately. You will *have* to have a plan which is iterative—i.e. you will have to keep going back to it, refining it and refining it until you get it just right. Don't stint on the time you spend on this. It may seem as if you're going backwards some of the time, but keep going and you'll win through in the end.

Don't persevere with a particular part of your plan, even when you've spent a lot of time or money on it, if it's obvious that it's not going to work. You're planning this for the next ten years, remember? So think long, and be prepared to experiment until you get things right for the long term. It may take time, but it will be well worth it in the end!