

SOPHIEs made easy: Part 1



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The launch of the Graphical SOPHIE Editor at last year's user group conference suddenly brought guideline development within reach of the majority. In the first of a series of articles Robert Treharne Jones takes users step-by-step through the whole principles of SOPHIE and guideline development.

SOPHIE is an application which allows users to run guidelines or protocols—which are themselves often referred to as SOPHIEs! Confused? No need to be; a SOPHIE is a special program which is created, imported or amended by a user who therefore has complete control of how that SOPHIE will behave.

SOPHIEs typically can interrogate the medical database, ask questions, receive answers, and carry out activities on the database or send information to the printer. In effect, SOPHIEs are medical macros. Strictly speaking, SOPHIE is the name of the control program while 'a SOPHIE' is a macro which utilises this program.

A little history

It's now more than ten years since SOPHIE first made its first public appearance at Meditel, with a presentation at conference by Mike Bainbridge and Cheryl Cowley. Since that time guidelines and protocols (call them what you will) have become an accepted part of general practice and SOPHIE has been tailor-made to suit the needs of many aspects of clinical governance.

But while the power-users charge off ahead of the pack it might be useful to start at the very beginning. What is SOPHIE? Why do people seem so keen on something which seems to involve programming skills? How can you make it a more useful part of your practice?

SOPHIE stands for Screening Of Patient Health in an Interactive Environment, which like many acronyms appears somewhat contrived. Users with very long memories indeed may remember TRUDIE and MICKIE, a couple of similar ideas which never really got off the ground. At least you can see how the names evolved to become more sophisticated, as did the programming!

SOPHIE was written by Peter Johnson, one of our GP colleagues

who practised near Milton Keynes. Peter rapidly proved his IT skills in a number of areas, and went off to further his knowledge at Stanford University in the USA before returning to the UK where his responsibilities include development of the eBNF, as well as a role as one of the medical consultants at Torex. In recent years Torex has taken over responsibility for development of SOPHIE as well as the intellectual rights.

But what does it all mean?

OK, I hear you say, these acronyms are all very well, but what can SOPHIE do for me? In a nutshell, what SOPHIE does is to allow users to structure their approach to clinical care and administrative tasks via a series of guidelines. Not just any old guidelines, mind you, but ones which can be configured by each practice, taking

SOPHIE allows practices to develop their own computerised guidelines

as much or as little notice of national and local guidance as may be necessary. In other words you don't have to take a guideline as law; SOPHIE gives flexibility which allows practices either to develop their own guidelines, or to change generic off-the-shelf ones to take account of local factors and the way their team wants to work.

The front-end¹ of each SOPHIE is written in plain English, with not a Read code in sight, although Read codes are written to the patient's record on finishing the guideline. If two different people answer a question in the same way then that information will be stored using the same Read code on each occasion. How many times does that hold true when users are left to their own devices with the coding hierarchy? Exactly!

As a result, not only does this mean that everyone in the practice should be able to understand what is going on—because on screen the SOPHIE is in English, not Read codes—and it also means information is recorded in a consistent fashion, so when the time comes to report on that data for audit purposes it should be a simple matter to report on those specific codes used by the SOPHIE, rather than the hundred and one other ways that users may have found to code that same information.

Flexibility and consistency

It doesn't stop there. The whole point about SOPHIE, when compared with the templates offered by some com-

petitor software, is that a well-written guideline interacts with the patient's electronic record. This means that instead of dragging the user screaming and kicking through a long list of questions which may have no particular relevance to that patient, the guideline can be written to offer up to the user only those questions which are relevant to that situation. In other words the guideline will assess that patient's age, sex, previous history, medication, and any other factors in the electronic record, and will offer up only those questions which are relevant according to those factors. This avoids male patients being offered a smear, for example, or hypertensives being prompted for another BP check when it was only done last week. If that sounds too good to be true you need to know that SOPHIE has been judged as being far in advance of any template program offered by any of the other GP systems.

Which systems for SOPHIE?

System 5 and System 6000 can use SOPHIEs already. There's good news for Premiere users, because SOPHIE will shortly be made available for them as well. Premiere users already have their own template builder, known as ISIS, but this doesn't have the same sort of interactive potential as SOPHIE. Unfortunately the remaining systems will not be able to run SOPHIE.

Let's now find out the ways in which SOPHIE can work for you.

Practical applications

Many users rapidly cottoned on to the way in which SOPHIE could help with chronic disease management by providing a customised way of acquiring information—for example, by asking all the appropriate questions relating to health promotion—and that is still the main purpose for the majority. As well as chronic diseases SOPHIE also offers scope for hooked² messages—such as the ones which were useful in the days before our software offered formulary options, as a means of scaring the senior partner away from his favourite expensive placebo!

Other small hooks were useful for clinical reasons, for instance checking for the presence of asthma before prescribing a beta-blocker, or looking for previous scripts for Stemetil before prescribing medication for Parkinsonism.

Chronic diseases like hypertension, diabetes, and asthma have all been prime targets for guideline development, and the only reason that prac-

¹ What you see on-screen when the SOPHIE is running.

² A hook is a program of activity which is triggered by a particular event—e.g. by entering a certain type of information

tices have not refined their own guidelines is because of the time necessary to master SOPHIE programming.

Take this example question which converts height to metric:

```
#29/
$CALC/Converting.../
$MATH/H/" H = (F*30.5
+I*2.54)/100 "/
$VAL/10/20/
$LTE/37/@1 229. //
$MID/37/@1 229. //
$GTE/37/@1 229. //
$NV/30///
```

Yeuk! It is because of the complexities of writing SOPHIE programs that the graphical editor has been so eagerly awaited. The function of the graphical editor is to present the user with a more obvious, visually-based, way of writing a SOPHIE. It won't solve the world's problems in a day, but at least it takes away much of the headache involved with the old text-based guideline.

So now sit back and take a gentle stroll through the stepwise approach to the brave new world.

However...

It's like learning to drive. You've waited for your 17th birthday, you've persuaded your parents to fork out some heavy duty dosh for driving lessons and insurance, and you can't wait to tear a strip up the Miracle Mile and impress the chicks in a burst of controlled power and a blue haze of exhaust smoke.

But wait! There's all these pedals and switches and buttons and things, and you need to know what they all do before you can conquer the world. The Graphical SOPHIE Editor is a bit like that; before you can develop your own guidelines that will take clinical governance by storm, you need to know what it's all about.

Protocol or guideline?

Just a few words about terminology before we begin. System 5 users used to talk about SOPHIEs and protocols, as if they were the same thing, but with the coming of System 6000 we've had to get used to talking about guidelines instead. *For the purposes of this series the words SOPHIE, protocol and guideline are generally interchangeable.*

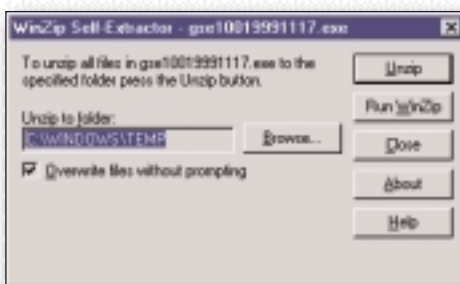
Installing the Graphical SOPHIE Editor

The Graphical SOPHIE Editor comes on a single floppy disk, available from Torex, either by writing to the Medical Department, or else e-mail to gse@torex.com stating your PIC code, name, position, and practice address. (It will also be issued as part of the System 6000 v3.0 release.) The first issue of the SOPHIE Graphical Editor was in November 1999 and the upgraded version (with the bugs removed) is due out soon.

Before installing the Graphical SOPHIE Editor, read the information in `readme.txt` or `readme.doc` on the floppy disk, it contains important information about installation, documentation and support.

To install the Graphical SOPHIE Editor from disk, insert the disk into the A: drive, click *Start / Run* and then the Browse button. You will then see an incomprehensibly named .exe file called something like

`gse10019991117.exe` (in fact it's the only one on the disk). Click on this, then on the box marked 'Open' and you will now see that the Run-box command line has been filled in with that incomprehensible set of characters, so at least you won't have transcription errors! Hit 'OK' and you will then see a box headed 'Win-Zip self-extractor'



If you'd rather place your Graphical SOPHIE Editor files in a directory other than `C:\Windows\temp` (and who wouldn't?), now's the time to choose, and to put the new location in the text box.

Tip: if you want the editor available from any workstation, place it on a network drive, but not in the S: drive as otherwise it may be overwritten in a subsequent upgrade. If you have a P: drive, use that, perhaps creating a new directory called GSE (for Graphical SOPHIE Editor) in which to place it. If you don't need it on a shared drive, it can go on your own C: drive.

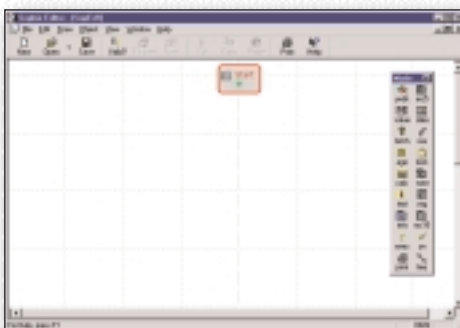
And, belt and braces man that I am, I'd uncheck the 'Overwrite files without prompting' box, just in case...

Now click on the 'Unzip' box and the files will be extracted to the selected drive and directory. Hit the 'OK' and then the 'Close' buttons.

Now start Windows' Explorer, change to the drive and directory you chose for the editor, find the file called `winsoped.exe`, right-click on it and select 'Create shortcut'. A new file labelled 'Shortcut to winsoped.exe' will appear in the Explorer directory listing. Drag this file to the desktop. Do the same with `winsoped.hlp`. Rename them to 'Graphical SOPHIE Editor' and 'GSE Help' respectively. Now we're ready to begin.

Starting the editor

So let's fire up the Editor by clicking on the Desktop icon 'Graphical SOPHIE editor' and see what happens:

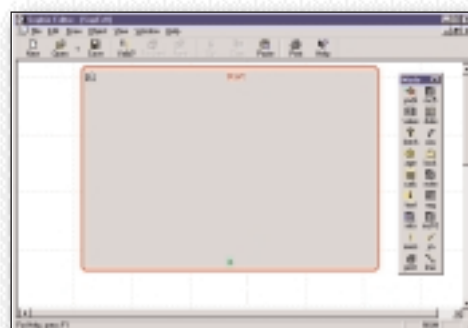


This is the drawing board, and thankfully it tells you a couple of things. There's the Start box—that's the very beginning, and as Julie Andrews once told us, that's a very good place to start.

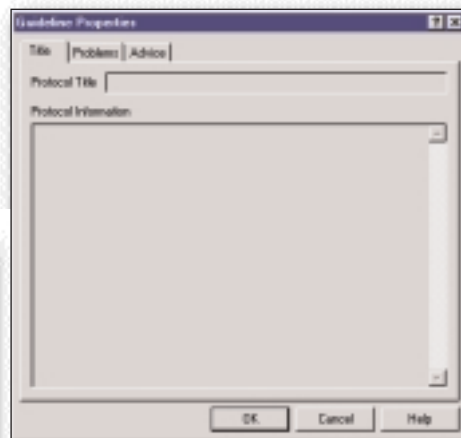
More of the Start box in a moment, but first a few words about the Palette, which is that oblong bit on the right. It's exactly like a painter's palette, but unlike artists' colours this palette consists of the building blocks—individual 'questions'—as well as other tools that you will use in constructing your guideline.

If you want to, you can change the position of your palette by holding down the left mouse button with the cursor positioned on the blue Mode Palette bar at the top. Move it around your drawing board as you please. Some of the time it will obscure your work area, so feel free to move it to where you want. You can even change its shape; position the cursor over the side or bottom edge of the palette and watch it change into a double headed arrow \longleftrightarrow . Now hold down the left mouse button and drag the palette across to make it shorter, fatter, longer, thinner, or whatever. Fun, isn't it?

Let's move on. Left-click on the Start box, which will then highlight to a box which you can drag and enlarge.



The Start box has two parts. Clicking on the little green arrow (just above the bottom red line in the middle) asks to connect to the first real question, but clicking on either the word Start or the icon at the top left of the box will bring up a box containing the guideline properties:



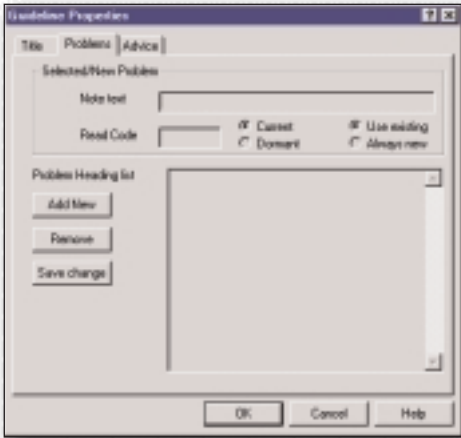
At the top, the first tab is the Title: click on it and enter a meaningful title for your guideline in the box at the top. The behaviour of the Title varies

according to whether a practice is System 5 or System 6000:-

- In System 5 the Title is the rubric string the user will see in the SOPHIE picking list, either in SOC—the SOPHIE contents list—or in the picking list accessed by using <F7>.
- In System 6000 the user sees only a filename, not the Title, in the picking list. The Title will appear in full, as written, in the Windows header bar during the time that SOPHIE is running.

Now use the Protocol Information box to enter any information you would like to flash up for user's information as they fire up your guideline to use in real life. (Users of the old text-based SOPHIES will realise that this section is the equivalent of the old \$INSTRUCT section.)

Now let's move on to the much more exciting Problems tab:



This is where you define a list of the problem headings that you want your guideline to use when Read codes are eventually written back to the patient record as the final step in running the guideline. It's a good idea to list on paper the codes you want to use as your headings before you even enter the Editor—but then there is a lot to be done on paper before you develop a SOPHIE, as we shall see in the next article.

To add a new problem heading, enter the rubric¹ in the Note text box, and the Read code in the Read code box (yeah, I know, you were one step ahead of me on that one!). A word of warning here—RFA requirements say that the rubric attached to a code cannot be altered, so if the text you use to go with your code is different from that determined by the code itself, then your different wording will not replace the set rubric, it will simply appear as free text underneath.

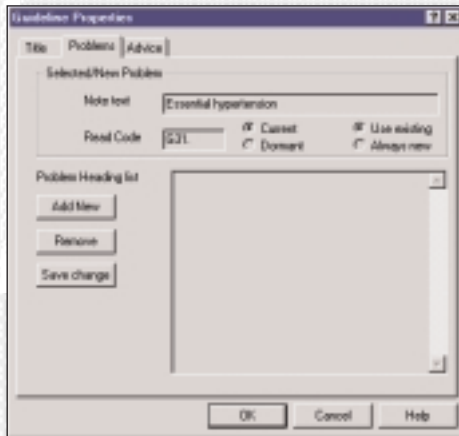
For instance, if you wanted to use the code 5... as a heading for X-Ray Results, the software will require the rubric 'Radiology/Physics in Medicine' to be used, and your wording 'X-Ray Results' will appear in free text underneath it. As a general rule it is neater to use the rubric that the code expects e.g. G31. Essential hypertension. When you enter the Read code you will need to pad out the code with full stops: if

you have a 4-byte Read code set this means padding it with enough trailing full stops to expand it to 4 characters; if you have the 5-byte set, pad it to 5 character length. You can't just leave it as G31, for instance.

You need now to decide a couple of things before adding your new problem header, and you have a choice of radio buttons to click. **You can determine whether your new problem will be Current or Dormant, and you can choose whether to generate a new header every time the SOPHIE is run, or whether to add new notes under an existing problem header of that name.** (Old SOPHIE die-hards will recognise the New/Exist option at this point).

For chronic diseases you are likely to want only one header saying 'Asthma' or 'Diabetes' in the notes, but for other situations you might want to generate a new title every time, a visit by the rota doctor or a casualty attendance being obvious examples.

Our hypertension example is going to look something like this, if we want the problem to appear in the Current page, and we don't want to add a new title every time we run the thing with any one patient:



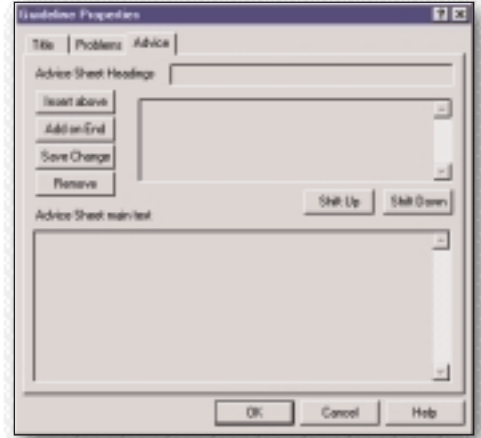
Now click on the *Add New* button to add your new problem header to the list. You can do this as many times as you want to generate a choice of headers; you need a minimum of one header, and I'm not sure if there is a maximum, although I have never seen a SOPHIE with more than about ten headers!

The Save Change button is used only when editing a problem header that you've already added to the list. Click on the item you want to edit: the details appear in the Note Text and Read code boxes. Now edit the text or the code and click Save Change to put the edited item back in the list. Don't worry about keeping a record of the problem headers as you will be able to open a pop-up list at stages of the development later on.

The final tab on the Start box is the Advice tab (see top of next column).

The advice sheet is the piece of paper that is handed to the patient at the end of the consultation and commonly includes items such as:

- These are the important things we have tested today



- These are the areas which we are hoping to change

The advice sheet is an entirely optional extra for any SOPHIE. Many developers don't include an advice sheet option, often because they don't consider it necessary for their purpose; or because it's a whole lot of extra work to add to the SOPHIE development; but often for the very practical reason that it requires a plain paper printer close at hand to generate the advice sheet!

Advice sheet headings are added in much the same way as problem headers in the previous section, but of course they don't require Read codes and can be written in plain language (which doesn't have to be English), to be read by the patient.

Type in the wording you want to use as your first advice sheet header and then click on the 'Add on End' button. The new header appears in the list below, and other headers can be added or taken away as you wish. With something like an advice sheet the order and wording of the headers can be important, hence the need for all the other buttons, which allow you to add your new header at the top of your list, or at some intermediate position, while the 'Shift Up' and 'Shift Down' buttons allow you to juggle the order to your heart's content (maybe after the guideline has already been used in earnest several times).

The final area of the advice tab is the 'Advice Sheet main text' which is a free text area which you can use to act as the introduction to your patient-friendly advice sheet (and is the equivalent of the old \$ADVICE section under the previous administration).

And that's the Start box! Not very sexy, admittedly, but you need to get it right to set up the guideline in the right way.

Next time we'll be moving on to the key area of the right question to use in the right situation, and that's a lot more fun!

¹ The definition in words of the chosen Read code