Computers in clinical research

This chapter is divided into five major sections starting with an attempt to dispel some of the misconceptions that many people have about computers. Next, you will be given some guidelines on how to plan for the automation of your own research environment. Before going into detail about computer hardware, we will focus on the software programs you may need as a clinical researcher. Finally we will discuss the management of your computer system.

- Misconceptions
- Planning
- Software
- Hardware
- Managing your system

This chapter will not deal with large computer systems based on mini or mainframe computers. These installations require specialised skills to install and maintain and are mainly used in large organisations. Smaller companies and academic researchers mostly use Personal Computers (PCs), which may or may not be connected to others through a network.

Computers have played a major role in clinical research for many years but they remain shrouded in a certain mystery. Initially, people are often afraid of them and even after having worked with a computer for some time they still retain a basic fear about things you should or should not do. Let’s try to get rid of some of the misconceptions.

- Computers are intelligent. They are not! A computer is not capable of doing anything by itself. It has to be told exactly what to do and remember, you are the one who will have to tell it what to do. In general, you could say that a computer is as smart (or dumb) as the one sitting at its keyboard.
• Computers make things easy. Eventually they might but it requires a lot of patience and initial effort to get to know a computer. Moreover, individual programs work in different ways, sometimes forcing you to relearn how to use it at an elementary level.

• A computer will solve all of your problems. It never will! Stop believing in the global system that sales persons (and computer departments!) promise you. At best, a good piece of software may give you a 90% solution to a particular problem.

• Computers structure your organisation. They do not. In fact they will reflect your own level of organisation. If you are poorly organised, a computer won’t do you any good. Take a look at someone’s desk and you’ll probably know what you’ll find on the hard disk of his computer.

• Computers have spiritual qualities. There’s nothing divine about them. They are a part of your desk like the phone, a pencil and a notebook. Think of a computer as a piece of paper more than as a sophisticated piece of electronic equipment.

• You simply have to have one. At least everybody tells you so. If you are satisfied with the way you are working now, you might be better off without one.

Planning

Before you rush out to the shop to buy a computer, devise your automation plan. Think about what you expect from a computer system. What are your minimum requirements? What would be extras? Write down your ideas and expectations. Such a list will be helpful in making a decision when you are standing in a computer shop facing numerous options. Here is a checklist with some of the issues you should think about. Use this list as a starting point but feel free to modify it to suit your own situation.

• Quantity of data
  How much data do you expect to process?

• Type of programs you will need
  What type of programs are you planning to use on your computer? What do you expect from each individual program? How are you going to manage your clinical trial data? Are you just going to do some wordprocessing or are you planning to write and develop software programs yourself?