

EMedInfo: A powerful new tool for eye care professionals

'What is it? And why should I use it?' you may well ask. **Professor David Thomson** and **Professor John Lawrenson** explain

Another CD to put on that growing pile which one day I might get round to looking at. If this was your reaction when EMedInfo dropped through your letterbox towards the end of April, we would urge you to reconsider. Those who have taken the trouble to install it are reporting that it is a resource that they 'wonder how they lived without'. EMedInfo is a database containing information about virtually all the medicines currently available in the UK. The database includes general information about each medicine but majors on their ocular adverse reactions. EMedInfo also includes a wide range of resources to support therapeutic prescribers: including enhanced data sheets for the preparations that optometrists may use and supply.

As optometrists, we take a medication history from all of our patients and need to be aware of the potential for each drug to interact with any of the diagnostic or therapeutic agents that we routinely use in our professional practice. More significantly, we need to identify whether each prescribed drug carries a risk of an ocular adverse reaction. The rich blood supply and relatively small mass of the eye makes it particularly susceptible to drug-induced adverse reactions. Approximately 3-4 per cent of all adverse reactions reported via the Committee on the Safety of Medicines (CSM) 'Yellow Card Scheme' refer directly to the eye. However, this is probably an underestimate of the true prevalence as many ocular adverse reactions go undetected or unreported.

Adverse ocular reactions to drugs are many and varied. Following systemic absorption, drug molecules may become selectively deposited in specialised ocular tissues, eg cornea, lens and retina, which may therefore show individual susceptibilities to drug toxicity. Fortunately, most adverse reactions induced by systemic medication are reversible if detected early. However, if undetected, toxic effects may progress to cause irreversible ocular damage with an associated reduction in visual function.



However, with approximately 30-40 per cent of patients attending for an eye examination taking some form of systemic medicine and over 3,000 pharmaceutical preparations currently available in the UK, identifying the risk of an ocular adverse reaction is impossible without a suitable up-to-date reference source.

Several sources providing information about adverse reactions are available including: the *British National Formulary (BNF)*, the *Monthly Index for Medical Specialties (MIMS)*, and the *ABPI Medicines Compendium* (a collection of monographs (*Summary of Product Characteristics*) provided by the pharmaceutical industry on their products). There are also a number of textbooks, notably *Drug-induced ocular side effects*, (Fraunfelder, 2000) and a daunting array of scientific papers.

However, none of these sources are particularly well suited to use by optometrists in the consulting room. In general, the *BNF* and *MIMS* contain little information about ocular adverse reactions while the *Summary of Product Characteristics* contains so much information that searching for ocular adverse reactions is a time consuming process.

EMedInfo is the product of over eight years' research and development at City University. The program currently contains information about

all licensed medicines available in the UK. A number of powerful search tools are provided to help practitioners find information about specific drugs and the information is displayed in a simple and user-friendly data sheet.

Recent changes to medicines legislation (Titcomb and Lawrenson, 2006) have expanded the range of therapeutic drugs available to optometrists and recent evidence suggests that the majority of the profession have some involvement in therapeutic practice (Needle *et al* 2008). To support practitioners in this role, EMedInfo contains a series of expanded data sheets that provide prescribing information on all drugs currently available to optometrists.

The data sheet

Data sheets are displayed in the preview window on the right of the screen (Figure 1). Every effort has been made to keep the layout as clear and uncluttered as possible.

The main headings on the data sheet are as follow:

- Drug name. This is the generic (non-proprietary) name of the drug
- Legal category
- Drug type. This is the major category for the drug, eg anti-infective
- Classification. This is the minor category for the drug, eg anti-bacterial
- Trade names. This is a list of trade names of the drug and respective manufacturers. All of the drugs listed include the main drug type but often in different formulations and sometimes in combination with other drugs.
- Indications/Use. This gives a simple description of the conditions that the drug is used to treat.
- Ocular side effects. This is a list of the ocular adverse reactions that have been reported for the drug. Where possible, these have been listed in order of incidence/importance. However, in many cases, information about the relative incidence of the adverse reactions is not available.
- Ocular side effects – Notes. This section includes additional notes about the ocular adverse reactions where appropriate.



Figure 1 Go to opticianonline.net for an enlarged view of the figures



Figure 2

● General side-effects. This is a list of the general adverse reactions that have been reported for the drug. The program has been designed primarily as a database of ocular adverse reactions. Information about general adverse reactions is less comprehensive and mainly relates to adverse reactions that may be detected or reported during an eye examination.

● General side-effects – Notes. This section includes additional notes about general adverse reactions where appropriate.

Enhanced data sheets

Selecting Formulary in the Category pull down list, filters the list of medicines displayed to show those that optometrists may now supply or prescribe (both prescription only medicines and numerous over the counter medicines). These medicines are denoted by a * suffix in the list. An enhanced data sheet is available for each of these drugs giving additional information such as contraindications, cautions, safety in pregnancy and lactation, interactions, dose and information regarding storage (Figure 2)

Searching the database

Patients often have incomplete information about the name of the medication they are taking and frequently mispronounce or misspell the names of drugs. To help overcome this problem, the program provides three methods for searching for drugs.

Searching by drug name

By default, the entire database of drug names (generic and trade) is shown in an alphabetically sorted list. If the name of the drug is known, it can be selected directly from the list. The data sheet for the drug will then be displayed in the preview window (Figure 3).



Figure 3



Figure 4

As the list contains almost 3,000 drugs, it may be quicker to use the search facility. To find a specific drug, the first few letters of the drug name are entered in the Drug name box. The list below is then updated automatically to show just those drugs that match the search criterion. For example: entering pro will show a list of all the drugs that begin with pro.

If the patient is uncertain of the spell-

ing of a drug, wildcards may be used. The # symbol is used as a wildcard for a single letter and the * is used to represent one or more unknown letters. For example: Entering p#o will display all the drugs that have a first letter of p and a third letter of o. Entering *se will display all the drugs that have se somewhere in the name. This search facility makes it very easy to track down the name of a drug when the full name or spelling is not known.

Searching by manufacturer

The program also allows the database to be searched by the name of the manufacturer.

A list of all the drugs produced by each manufacturer can be shown by clicking on the corresponding name in the list of manufacturers. This works in conjunction with the Drug name search. This means that the database can be searched by Drug name AND Manufacturer. (Figure 4).

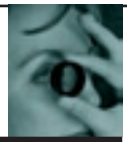
Searching by classification

If a patient cannot remember the name of a drug that they are taking but know what it is for (eg blood pressure) it may be possible to find it by searching by classification. The program divides drugs into two main groups; ophthalmic and systemic.

The different categories of ophthalmic and systemic drugs may be displayed in two formats; as a sorted list or as an outline control.

If the drug category is known (eg lipid lowering drug), it can be selected directly from the alphabetical list (Figure 5).

The outline control displays a hierarchical list, starting with the major categories and expanding all the way to generic name then trade name. This



is useful for finding drug names from knowledge of the type of drug. For example if a patient says that they are on 'cholesterol tablets', clicking on the + beside Systemic Drugs then the + beside Lipid lowering drugs will display a list of the main types of lipid lowering drugs.

By selecting the type of lipid lowering drug, then the generic name for the drug, the tree can be expanded all the way to the trade names. The data sheet for the drug can then be displayed by clicking on either the generic name or the trade name (Figure 6).

Searching by adverse reaction

A unique feature of the Ocular Adverse Reactions to Drugs database is the ability to search by adverse reaction. For example if a patient is found to have corneal deposits, the program can rapidly identify all the drugs in the database that have been reported to produce corneal deposits.

The program divides adverse reactions into Ocular/Visual symptoms, Ocular signs and General symptoms and signs (Figure 7).

A list of adverse reactions is presented in two formats. The list boxes labelled Ocular and General contain an alphabetical listing of ocular and general side effects respectively. Clicking on an adverse reaction in one of these lists produces a list of all the drugs that may cause this reaction in the list box below. The data sheet for any of the drugs displayed in this second list can then be displayed by clicking on the name of the drug.

The outline control gives a hierarchical display of adverse reactions, starting with the major categories and expanding all the way to specific symptoms and signs. The outline control is useful for finding a specific symptom or sign from a knowledge of the general nature of the problem. For example if a patient has conjunctival hyperaemia, clicking on the + beside Ocular Signs then the + beside Conjunctiva will display a list of adverse reactions affecting the conjunctiva. Clicking on Conjunctival hyperaemia will produce a list of all the drugs in the database that have been reported to produce the condition, in the window below. The data sheet for any of the listed drugs is displayed by clicking on the corresponding name in the list (Figure 8).

Resources

The resources pages provide up to date information about all aspects of the supply of medicines by optometrists including the law, guidelines, training

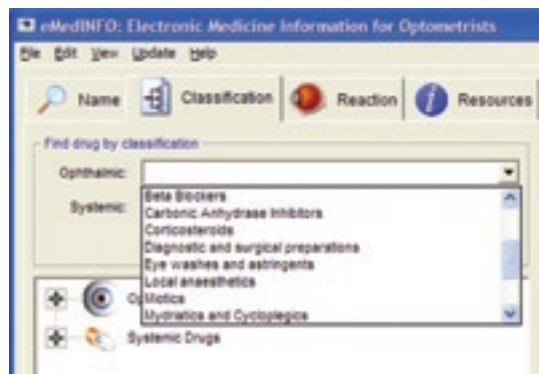


Figure 5

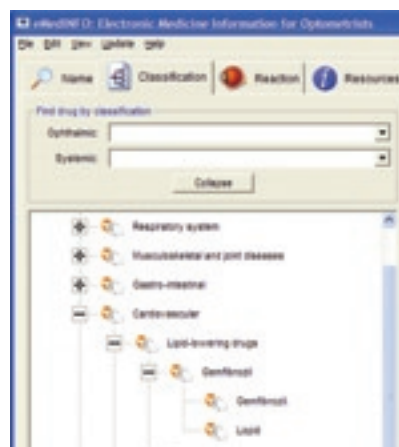


Figure 6

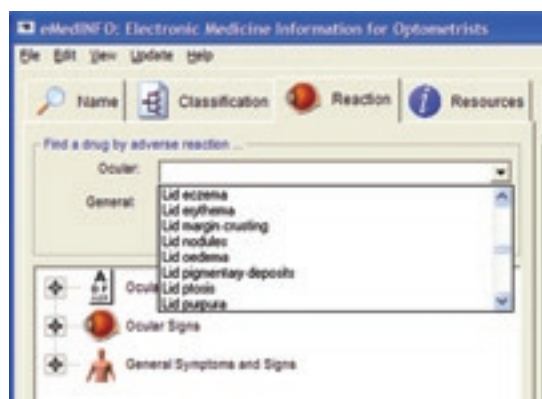


Figure 7



Figure 8 Go to opticianonline.net for an enlarged view

and logistics.

The Website section provides instant access to a range of related websites such as the BNF, National Prescribing Centre and the MHRA.

Updating the database over the internet

The list of drugs available in the UK is constantly changing as new drugs are introduced and others are withdrawn. Information about the adverse reactions of drugs is also changing rapidly as are the laws and guidelines relating to the supply of medicines by optometrists. It is vital therefore, that the database is kept up to date. By employing a unique structure for the database, the size of the database files have been kept to a minimum allowing a completely updated database to be downloaded over the internet in just a few seconds.

Further information

EMedInfo is available free of charge to all members of the College of Optometrists until April 2009. After this time access to the formulary continues but a small annual license fee will be payable to retain access to information about all other drugs. Additional copies of the CD are available from the College of Optometrists. Further information about the program is available at www.thomson-software-solutions.com or by emailing support@thomson-software-solutions.com.

Further reading

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