

Alpins' ASSORT affords high-tech outcomes analysis

In a quest to refine astigmatic surgery, Australian ophthalmologist Noel Alpins, MD, developed a technique for targeting induced astigmatism (TIA), which further evolved into Alpins Statistical System for Ophthalmic Refractive Surgery Techniques or ASSORT, an outcomes analysis computer program.

ASSORT organizes and reports on the results of cataract, refractive and glaucoma surgery. The system includes data-entry screens, an analysis section that allows viewing and editing of individual patient records, a process for selection and grouping of patients to compare a test group of patients to a control group, a report generator and a graphical analysis function that provides several graphs that are designed specifically to review surgical results over time.

The system is designed to review surgical results for the purposes of quality control and improvement to provide information for negotiation of managed-care contracts, and to track and record results for the purpose of presenting research results.

ASSORT is a DOS-based product developed using Paradox version 4.5. It is capable of running on a 386 DX2 processor with 8 Mb of RAM, but runs most efficiently on a 486 DX2 processor. It can operate as a stand-alone PC, or on a Novell local area network and the database can be used by multiple users. ASSORT won the Borland award for the best Paradox-based application developed in 1993. The product was demonstrated at the 1993 American Academy of Ophthalmology meeting by Alcon Systems, which will market the system throughout the United States upon completion of Beta testing.

OCULAR SURGERY NEWS Staff Writer Rochelle Nataloni spoke with Dr. Alpins shortly after ASSORT's U.S. debut at the AAO meeting.

OCULAR SURGERY NEWS: How did ASSORT originate?

Noel Alpins, MD: I was planning to speak at an American meeting, and I wanted to make the presentation using my own data, that I'd analyzed myself, and be able to present it in a statistically valid way. When I looked at the computer programs that were on the market, there was nothing available that suited my needs, or what I see as the needs of other ophthalmologists. I wanted ASSORT to be a personal research tool so that surgeons could track their own results. When you ship out your raw data to an external agency for analysis, you don't necessarily get it back in the format that you want, so you lose control of your data.

I knew what I needed the program to do for my purposes, but I knew that it would have to be much more sophisticated for it to be able to offer

significant applications to a wide range of ophthalmologists. I got together with a computer programmer, a statistician and an educator to design ASSORT, and as its applications expanded, the program evolved into an outcomes analysis tool.

ASSORT was designed as a research tool to help you look at your own surgery and be able to analyze it for publishing or presentation purposes. Results can be shown both pictorially and numerically. For example, you can easily show RK results by scatter plot or line graph each with standard deviation bars.

OSN: Is ASSORT a user-friendly system?

Alpins: The screens are designed for ease of use so that data entry can readily be mastered by office or technical staff after less than two hours of instruction. There is enormous flexibility in how reports and graphs are structured, and when any screen is required for display or lecture purposes, a capture program within ASSORT can take the file for color slide or print purposes.

A scatter plot can be used to show the amount of residual refractive error of each patient. If all of the patients are grouped around the zero mark, it shows that most of the patients are within ± 1 D of emmetropia. Alternately, the scatter may be wide, but the mean may still be close to zero.

Anything that has a recordable value, whether it be numerical data or text data, can be analyzed with ASSORT. Visual acuities with and without glasses, eye pressures, eye drops, surgical notes, complications, preoperative conditions, post-operative conditions—anything at all that has a recordable value is analyzable. So that information such as personalized A constants, implant models and supplier for any selected time period can be reported from the database.

OSN: How can the analyzed data be used?

Alpins: I can use the information myself, present it to a local group of doctors, present it in an international forum or even use it in a statistically valid way for publication in peer review journals. It can also be used for technique improvement purposes. A surgeon can store technique and outcomes information on two series of patients—those operated on before a technique change and those undergoing the same procedure after the modification—and then use the program to evaluate the differences. ASSORT can show whether the new technique affords significant improvement; whether

there's no change; or even if it has made the operation less successful.

OSN: What differentiates ASSORT from other outcomes analysis programs?

Alpins: A major strength of ASSORT is the number of different astigmatism analyses that are possible. Various modes analyze astigmatism with cataract surgery, astigmatic surgery by RK or excimer sur-

gery. What differentiates these analyses from others, is that they have very specific goals. I think what has been missing in people's astigmatism analysis is specific goals. If you have a goal, you can know where your target is. If you don't have a target, then how do you know how much you missed it by? If you have a specific target, then you can calculate the errors.

The surgical planning modules for refractive and cataract surgery are a

unique and novel feature of ASSORT. These enable both topography and refraction to be incorporated into the surgical plan, to determine the optimal procedure for each individual patient.

By shifting our treatment paradigm to the target astigmatism instead of either of the preoperative astigmatism, then all astigmatism surgeons are likely to be operating on the same axis, attempting to target the same amount of astigmatism change in any one patient's eye.

OSN: What other specific areas can the program highlight?

Alpins: By controlling your own data, you are able to highlight your surgical strengths, rather than having all of your data lumped together in one generic analysis. Some surgeons might have a priority where they want to highlight the quick recovery of visual acuity; others may have a special interest in lowering ocular pressures from glaucoma surgery; other surgeons may have a special interest in reducing astigmatism, which is what my special area of interest is.

OSN: Isn't it true that the better your outcomes documentation the better your chances of competing for managed care contracts?

Alpins: ASSORT is going to be an extremely positive marketing tool because its users can promote the fact that they use a sophisticated analysis system to track their patients' results.

OSN: So ASSORT is a value-added product?

Alpins: Yes, it benefits potential outcomes by determining past successes and failures, and it is a positive marketing tool that shows managed-care contractors that special care is being tendered and constantly improved upon through data analysis.

The system is inexpensive to run and easy to operate. The information goes in easily, and it comes out easily in a statistically valid way. All it requires is data entry, and effectively utilizes staff downtime. It's much more expensive, less efficient and much less confidential to send out all your raw material to a third-party analyzing group.

You can make it as simple or as complicated as you want. This is where the greatest advantage in maintaining control of your own data lies. You can put in every bit of information that you want about anything you do to an eye, or you can just put in one course of events that you have a particular interest in following. It's not necessary to answer every question in the analysis form; you can just pick and choose what you are interested in.

OSN: What are some other benefits of using the program?

Alpins: If you have many difficult cases—and the better surgeons are probably referred more difficult cases—then it might cause a bias in your results, and maybe cause a general lowering of your average patient. With the ASSORT program, average cases can be kept separate from the more challenging cases to get a more accurate representation of their outcomes. If all of the results are lumped together in one lot, the better surgeon's average result might give the appearance of a less successful outcomes level.

By being able to separate the data, you can show your good results for all of your standard cases, as well as show your good results on your more challenging cases in your special area of expertise.

When other ophthalmologists refer patients to you who have special difficulties, you might want to be able to analyze the data from those patients separately. The flexibility is enormous with the potential applications for groups, sub-groups and special groups.

Also, you can use the program to document that your surgery is of a level that offers cost savings by resulting in fewer corrective spectacles, patients' speedier return to the workplace, fewer readmissions for complications—which all mean lower costs for hospitals and insurers.

ASSORT affords surgeons who take pride in their work the ability to demonstrate objectively that their surgery is achieving a high standard of care. ASSORT can help ophthalmologists to adapt in this current climate of managed care and outcomes analysis. ■