Form follows function as close collaboration with architects yields efficient office design

by Howard Larkin

There are no doors on the alcoves housing the topographers and other corneal diagnostics at Matthias Maus MD’s sehkraft laser eye surgery centre in Cologne, Germany. Patients gliding by in the corridors or relaxing to soft music in the lounge can see right in past a semi-transparent curtain of elegant beaded strings.

The arrangement is no accident. It is designed to prevent or alleviate any anxiety patients may feel about LASIK or other possible eye surgery, says designer Patrick CM Schalkwijk of the Cologne architectural firm hell und freundlich. The test equipment is not hidden and mysterious, it is visible and inviting. It is an integral feature of a soothing setting.

“You come in and it is like an oasis, you immediately feel calm. It is about making people feel well and at home,” Mr Schalkwijk says.

It also makes patients more likely to go forward with elective surgery, Dr Maus believes. His market research found that fear is by far the biggest obstacle to patients choosing LASIK, with 80 per cent of 1,500 respondents saying possible complications or quality issues are their biggest concern, compared with just 20 per cent concerned with cost.

So reducing fear was a major design goal when Dr Maus renovated his clinic a decade ago. Still, he resisted the curtain concept when it was first proposed by Mr Schalkwijk, whose background was mostly in high-end retail design without healthcare experience. After all, he had doors on the diagnostic rooms in his old office, and they were kept closed for privacy.

Except they weren’t, Mr Schalkwijk found. During days spent observing clinic operations before developing a design programme, he never saw the doors closed, and the technicians backed him up.

So Dr Maus accepted the change and many other unusual design features Mr Schalkwijk proposed. “The goal is to make the patients comfortable, not to design to the doctor’s taste. The patient is the customer, not the doctor,” Dr Maus says. A decade later, Dr Maus is still happy he followed his architect’s advice. His clinic charges some of the highest prices in Germany, yet easily weathered the financial collapse that pushed many out of the refractive market. His clinic has been celebrated in design and fashion magazines and visiting surgeons still rave about it. Mr Schalkwijk has gone on to build a thriving international healthcare design practice.

The case illustrates how close collaboration between doctor and architect can pay off. “You come in and it is like an oasis, you immediately feel calm. It is about making people feel well and at home,” Mr Schalkwijk says.

Basic planning When thinking about your dream office, it’s tempting to jump right to the real estate. But an effective ophthalmology office, surgery centre or hospital starts with a solid strategic business and service plan—one that’s based in realistic volume and revenue projections.

It’s especially important today as health budgets come under increasing pressure, leaving little room for error in planning, says architect Glenn Dean of Lillibridge Healthcare Services, a subsidiary of Ventas Inc based in Chicago, US, which owns or operates more than 400 medical office buildings. “You need a qualified consultant who is knowledgeable on reimbursement and what can be expected in the near future to develop a plan.”

Bill Cooler, of Cooler Design Inc, based in Indianapolis, US, agrees. “What doctors should come with is an operational model, a budget and a timeline. If they can present that, the architect can work to it,” says Mr Cooler, whose firm specialises in medical office, surgical centre and hospital design, as well as planning and management of facilities and real estate assets.
Mr Dean also advises appointing a strong project manager or champion to oversee architect hiring, design and construction – preferably a physician. “That individual has two roles, one is the authority to make design, budget and operating decisions, and the other is the liaison between the design team and the physicians, nurses, staff, business manager and anyone else who uses the facility. The key to the whole thing is collaboration.”

Licensure. Building codes, zoning rules, use permits and environmental regulations apply to all types of building projects. But medical facilities also must comply with a host of rules ranging from specialised licensing codes to community need-based permitting that may be enforced by local, state, regional or national governments, even public and private insurance plans.

For example, seven years ago Arthur Cummings MD, FRCS, moved his laser refractive clinic from the city centre of Dublin to a medical campus next to a new hospital in Sandyford, a predominantly industrial area a few kilometres away well served by roads, buses and trams. Since then, refractive lenses and other intraocular work have grown from about 15 per cent of his case load to nearly half.

While the hospital operating suite is just steps away, Dr Cummings, consultant ophthalmologist, UPMC Beacon Hospital, medical director, Wellington Eye Clinic, would like to build an operating suite in his office alongside the clinic’s two laser procedure rooms. But in Ireland, insurers won’t pay for new operating theatres, so Dr Cummings will wait. “There just aren’t enough self-paying patients to support an operating room in our office right now.”

An architect who understands the regulatory pitfalls, including payment issues, and how to bridge them can keep a project from falling before it starts, Mr Cooler says. “Just a few weeks ago a medical group director told me he was happy he hired us as opposed to the local guy who is not experienced in licensure. He thanked us for making it go so smoothly.”

Space planning and schematic flow. Designing a building requires first that its function be clearly stated so that spaces can be developed to achieve that function, says architect Jaap Dulfer of Architecten aan de Maas, Maastricht, The Netherlands.

Space planning involves identifying all the functions that will need to be supported in the proposed facility including all types of procedures as well as projected volume, and determining what space is needed to accommodate them. Both work and related logistics processes, such as turning around procedure and operating rooms and maintaining equipment, should be described in great detail, says Mr Dulfer, who designed the recently opened University Eye Clinic Maastricht. “They will have to be laid down in flow charts. Spatial requirements can be determined on the basis of these processes in a spatial schedule of requirements. It is important to arrange this in consultation with the architect.”

Flow chart information includes needs for adjacencies; what needs to be next to what. For example, reception should be near exam and procedure rooms, but exam rooms don’t need to be near recovery areas. Space and function plans give a good idea of how much room is needed, and how many rooms of what type are needed. This can lead directly to a preliminary floor plan, but additional information is required to determine all design parameters.

Mr Dean recommends kicking off the planning process with a visioning session that invites participants to talk about what they need and want from their jobs and the facility, and what would improve their performance. He analyses these functions at three levels; national identity, patient identity and facility identity. These provide additional design guidance.

At the national level are quality of care, cost containment and patient outcomes, and any design decisions must address these, Mr Dean says. The patient level covers demographics, what patients need and access to care and technology. This also is a strong driver of what services are appropriate and how much revenue they can reasonably be expected to produce. Facility identity has to do with how the project is positioned, roughly on a scale from hospital-like to commercial-like.

The physical requirements of intended procedures drive this, with laser refractive tending toward commercial, with carpets and open spaces suitable. On the other hand, operations that require fluid handling may be more appropriate following the hospital model, with tile floors, closed rooms, etc.

Layout and design. To get to a functional layout, doctors also need to think in detail about how they want to work and how they want patients and staff to move through the facility. For example, how should corridors be placed, one for both patients and staff, or separate? Should separate areas be designated for refractive patients and patients with more severe pathology? This can have a real impact on practice finances, Dr Cummings says. “Our conversion rates go down when LASIK patients are in the same waiting room with medical patients. They want to think about seeing better and talk to other refractive patients. Seeing someone with red eyes might scare them a little.”

Should exam or treatment rooms all be the same? Standardised rooms make design and construction more efficient, and can lead to better practice efficiency because they require less movement of patients, Mr Dean says. But Mr Cooler has seen a shift away from standardisation. “The feedback we are getting from practitioners is its okay if rooms are identical, but if it cost more it may not be worth the extra money.”

Saving steps can significantly affect practice finances, Mr Cooler says. “One
Element of a larger strategy

The Eye Tower’s design is directly related to a broader ophthalmology department strategy to bolster its three major missions – patient care, education and research, they said. Volume is essential for all three.

For patient care, the department has built a referral network by acquiring its own logistics and workflow. "With your own surgical theatres just two floors down, you can influence how they get out of reception and into exam rooms or treatment rooms, going from one room to another or doing multiple tasks in one room. They identify where there may be roadblocks or obstacles and share that with the architect," Dr. Cummings vouches for this approach, which he applied in designing his clinic.

However, bringing too many people into the design process can risk loss of focus or creating expectations about the new space that will not be realised, Mr Dean says. The physician-champion needs to keep the process in line.

Traditionally, 2-D floor plans and drawings were used in the review process, but increasingly, 3-D software provides large-scale renderings and animations that make it much easier for clients to visualise how a space flows and functions, Mr. Cooler says. "We had a group of hospital management students in the other day showing them a design project. One of them asked if they were looking at photos of a completed project – the renderings are that good."

However, Mr Schalkwijk finds that even 3-D isn’t always enough and sometimes builds scale models, which he says most physicians can easily understand. He starts by showing clients 2-D and 3-D drawings, but if they aren’t responding he’ll skip them in favour of models.

Construction review

Even so, there’s really no substitute for walking into a real space, Mr Cooler says. He typically schedules bi-weekly meetings with the client leaders during construction to review progress. They may bring along other staff to assess areas such as reception, waiting rooms, storage, IT or records that they will work in.

Mid-course corrections are the norm, but can be minimised with planning. On larger projects, a single exam or procedure room might be fitted and staff brought in to take a look. “They might ask why we mounted a counter or equipment so high. Let’s lower it before we install 10 more,” Mr Cooler says. On very large projects, mock-ups may even be made to test design ideas.

Mr Dean also schedules a series of walkthroughs throughout construction, beginning with an initial tour when studs,
converted to exam or procedure rooms. And storage spaces in sizes that can be easily expanded as needed. Mr Cummings used this approach to expand his laser infrastructure in first because most people are going to want to make changes sooner than they anticipate.

Mr Dean also recommends locating "soft space," such as storage and offices, next to areas that are most likely to require change, usually procedure rooms. That way they can be expanded as needed. Dr Cummings used this approach to expand his laser suites to accommodate femtosecond lasers. But building in extra space is expensive, Mr Cooler says. He suggests making offices and storage spaces in sizes that can be easily converted to exam or procedure rooms.

Future-proofing

The pace of technological change also changes needs, Mr Dean notes. Indeed, a project with a two-year timeline may schedule equipment that may be discontinued when it is due to be installed, he says. Therefore, offices should be designed to be flexible and "future-proof."

One way to do so is installing cabling, or conduits to accept a future cable standard in critical areas, Mr Dean says. Rooms that require hard ceilings, such as operating suites, should be next to rooms or corridors with panel ceilings that permit access to the space above the room, or with ceiling hatches. "It's better to put the infrastructure in first because most people are going to want to make changes sooner than they anticipate."

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But building in idle space is expensive and increases overhead. One solution for leased spaces in buildings not fully occupied is to negotiate rights to expand into adjacent spaces over a period of three to five years. Similarly, groups building new offices might lease out extra space for the first few years, and then move in as their practices grow.

What to look for in an architect

So building an effective office space is a tall and complex order requiring a great deal of insight into medical needs and expertise in design, construction, regulations and even local cultural norms. So what should you look for in an office architect?

"Experience," Mr Dean says. "Ask how many projects they have done and talk to peers about what their experience has been. It is a normal vetting process as for any person or service."

Mr Dean also recommends considering the value that building a good working relationship can add. You will need to work closely, even intimately, with an architect to get the best results. Select a few candidates who have the proper experience and who your project manager or champion feels they can work with and have them present based on your preliminary parameters. Then go with who you are comfortable with.

Mr Dulfer brings it all back to collaboration. "When working with doctors, it is vital to listen to and understand what is important to them. And if you are given the opportunity, designing a hospital is exciting and challenging."

COMING SOON IN JULY/AUGUST EUROTIMES...

New glaucoma treatments

Our Cover Story in July/August will focus on new surgical treatments for glaucoma, especially the new minimally or micro-invasive techniques employing implants such as the iStent, the Hydrus, the Cypass, the Aquasys and also the trabectome electrocautery device.

With perspectives offered by some of the world’s leading glaucoma specialists, the article will trace the evolution of surgical alternatives to trabeculectomy, in light of the latter techniques known risks for potentially devastating consequences. It will touch on blebless techniques such as selective laser trabeculoplasty, canaloplasty as well as reports from the landmark trab vs tubes study, leading ultimately to the latest findings obtained with MIGS techniques.

The article will also include discussion of modifications of trabeculectomy that have been developed over the last decade or so and which have been shown to greatly reduce the incidence of such side effects as hypotony, maculopathy and bleb-associated endophthalmitis. Through this perspective, the article will aim to put new minimally invasive glaucoma surgical techniques in their proper context and perhaps provide a window to the future of glaucoma surgery and other IOP-lowering techniques.