Planning & Designing the Dental Office of Your Dreams

by Glenn W. Crow, PhD, M.Arch., AIA

Educational objectives:

Upon completion of this course, participants should be able to achieve the following:

• Understand how to get started in planning a new office.
• Learn to spot some of the critical language of a lease agreement.
• Plan the layout of an office with zoning principals and critical relationships.
• Cover the critical issues of operatory and clinical space design for the general dentist.
• Become familiar with some of the language of architecture, interior design, and lighting design.
• Avoid very expensive mistakes and develop a clear vision of how to proceed.

Planning the Dream Office

If you have dreams of building a new dental office, then you need a clear vision of where you are going, and you must understand the pitfalls. Building a new office is one of the major professional practice transitions of your life. To develop a good master plan you should document everything. First, determine your niche and set yourself apart from the crowd. Next, determine what technologies will best serve your needs both business and dental. Start forming your team, i.e.: staff and other professionals. Critically study the potential locations and the patient base you desire to attract. Next, formulate a budget of the costs involved and then start arranging your financing.
When you talk to professionals in architecture or real estate, you need to understand the following terms. **Gross square footage** is all of the area inside the building including the thickness of the exterior walls. The **net square footage** is the area inside the walls that make up your office. And finally, the **rentable area** has a common area load factor, which will increase your net square footage to include a portion of the common hallways, restrooms, and lobbies. If you use square footage for cost comparisons, as in $/sq.ft., then make sure which square footage you are talking about. Also know what is included in the costs or you will never get apples to apples. Many times those quoting the costs will not really understand what is included.

Now let’s take a look at rule-of-thumb area requirements. I should warn you that there are many variables that can change the outcome, so only use these numbers for initial planning. We estimate the square footage as area per operatory with the area decreasing as you add operatories. Ideally you will need approximately 475 net square feet per operatory for a four-op office or less and 425 for an eight-op or more facility. These numbers are rough and can change depending on many variables. Handicapped accessibility requirements are not the least. Other factors are the style of the operatories, size of private space and the geometrical efficiency of the space.

Next, and perhaps the most important thing, is to develop a mathematical model of this undertaking. Start with approximations of all the costs and then refine these as you go to form a more accurate budget. Hard costs are defined as land, the building shell, landscaping and finish-out costs of the space that is interior to the outer building shell. Soft costs include professional fees, building permits, finance charges and a cost segregation study. Next, estimate dental equipment, computer gear, phone system, security, sound, fire protection systems, business equipment and appliances. Then allow for the important finishing touches such as furniture, artwork and accessories. Once all the numbers are at least approximated, start to put together an annual cash flow model that will include all your expenses, such as loan payments, taxes, insurance, utilities, payroll, etc. Against these expenses estimate the amount of gross billings. First, look at what you will need to provide a break-even condition, and then look at what you expect to be able to bill. Consider the addition of operatories that you do not currently have and their potential. If you show a positive cash flow, this analysis will give you the confidence to proceed. If the numbers are not good, then find a good practice management consultant. Most doctors show growth in their patient base with a new office. As the “buzz” gets out about your new office, and if you have chosen a new location wisely with good exposure, you will see your patient base expand.

Next, anticipate gap financing. This will be the difference between the true cost of the project and the appraised cost. For example: if the land, building and improvements cost $1,000,000; but the appraised value is only $850,000, then the gap is $150,000. The lender might require 20 percent of the appraised value down which would be $170,000. This would make you responsible for $320,000, which could be a large pill to swallow. In the end you must find creative lenders that understand dental offices, and you might need two lenders for the project.

**Leasing Nightmares**

The biggest misunderstanding of this process is thinking that the only important thing is the monthly rental rate.

Pitfall #1: the **Option to Renew**. For example, often the language states that you must not have been in default. Being one day late on the rent is a default, and is common reason for the owner not extending a lease. Look for the time period prior to the end of the lease that you must submit your request for extending the lease.
The owner would like this time period to be as short as possible, because this gives you less time to negotiate or find another option. So begin two years before the end of the lease; this gives you more leverage and options.

Pitfall #2: Assignment. If you want to sell your practice, and eventually you will, you want to do it smoothly with no strings attached. However, the terms of the lease might give the owner the power to terminate the lease if you request an assignment. This could make it impossible to sell your practice, and could jeopardize your retirement.

Pitfall #3: Owner’s Right to Relocate. The owner has the right to relocate you within the development, but the time, method and location might be up to him. The owner is typically responsible for the cost of the relocation. The relocation costs might be very specific and what remains are “incidental” costs for which you alone are responsible. You could have significant down time and the incidentals could cost you far more than you might think.

So what do you do? Easy – hire an experienced lease negotiator. Look beyond the basic rental rate. Keeping and transferring the lease are far more important than the rental rate in the long run, and remember the three “L’s” in real estate: location, location, location.

The Architectural Zones and Flow

I am using three colors to define the three zones (see Figure 1). Yellow is the public zone, red the clinical, and blue/green is the private zone.

Zone control and flow principals are the most critical issues for floor plan development. If you get this right, you can improve efficiency, reduce stress and keep your sanity. Keeping the zones separate especially in regard to patient flow and interference with clinical activities is major. Separate the public and clinical zones by a buffer space. Also do not break these two zones internally. Within a zone be aware of circulation nodes, for example, provide ample space at the appointment desk to prevent patients stacking up or from being tempted to enter the clinical zone.

Public Zone

The entry to your office should be as appealing as possible. This is your “curb appeal.” The entry door should have an easy connection to the greeting side of the front desk. The greeting side of the front desk should not be too large and might be required to be handicapped accessible. The furniture and finishes in the reception room should be durable, commercial grade to project the right image. This space should have a “wow” factor that you will be proud of (see Figure 2).

Contract furniture generally means commercial grade furniture. It is constructed to much higher specifications than residential furniture. It is tested for durability and is safer. This helps insure that no one will fall out of a broken chair and cause a lawsuit. A residential chair may hold up fine in your home for a generation, but in a commercial setting will typically not last anywhere that long.

The appointment side of the front desk is typically separated from the greeting side by a wall with a door for added acoustical privacy. It should be sized for the correct number of workstations. The business area should be adjacent to the front desk to allow business personnel to quickly access the front desk (see Figure 3). It is also possible to take a front-deskless approach and eliminate or modify the classic front desk altogether.
A consultation room is primarily used for financial discussions, but can also be used for presentation of complex treatment plans. In plan, it is typically located such that it can provide a buffer between the public and clinical zone. Ideally, the consult room should have an entry for the doctor that is removed from the patient flow.

The restroom should be in eyesight of the front desk staff for monitoring. Staff must monitor this space to make sure no one has gone in, but not come back out within a reasonable period of time. If you want your patients to feel that it is private, it should not open directly into the reception room. The design and finishes in this space are very important. Avoid the service station restroom look.

**Clinical Zone**

We could easily spend a lot of time on different styles and sizes of operatories, but this is beyond this article. If you would like more information, please see the online version of this course. One of the most important factors for operatory design is flow for the staff. You want your staff to have easy and quick access.

The operatory design should be HIPAA compatible. All that is required is that you make a good effort not to broadcast patient information, and with a good sound system you can provide adequate sound masking between operatories. To satisfy HIPAA, you need to control the intelligibility of speech, not reduce the sound to zero.

From the doctor’s perspective, the operatories should be zoned to avoid the highest patient flow so the doctor does not get trapped in unscheduled conversations with patients. They should promote a calm atmosphere, have adequate workspace and storage and support good ergonomics.

Poor ergonomics can break a dental career (see Figure 4). The health-care professional should have good lumbar support. The doctor’s elbows should not be elevated and the neck should be straight (loupes will help). Operatory chairs should not be bought based on just how they feel to the patient. You should try one out based on how ergonomic they are for the professionals. Thin and narrow backed chairs help doctors get their knees under the chair. For the best ergonomic posture, the patient should be as supine as possible.

Now let’s turn to the rest of the clinical zone. Sterilization is the highest staff traffic area in the office. It must be central to all the operatories, it should be designed to support process flow from dirty to clean and have “on-deck” storage within or adjacent. The lab should be near the doctor’s operatories and have good acoustic isolation. It can have features like an integrated dust drawer and additional storage. Different counter heights may also be desired. The pan alcove should be sized correctly for the equipment. It should be located to keep the patient flow away from the doctor’s operatories.

The final topic for the clinical zone is disease transmission control. The CDC recommends that carpet should not be used in sterilization, the lab and the operatories. Surfaces such as floors, walls and sinks do not support disease transmission, but cleaning with detergents is critical. Floors should be cleaned regularly and spills should be cleaned up promptly. Another tip, is to have the patient rinse with a chlorhexidine solution for 30 seconds before clinical procedures to decrease microorganism in the aerosol coming out of the mouth.

In review see Figure 1 on page 90. In this plan the hygiene operatories are located on the upper part of the diagram, and the doctor’s operatories are on the right and bottom of the plan. Note the following: the location of the sterilization right in the center of the plan with a double entry to the north and south operatories; next, the placement of the pan adjacent to the hygiene operatories as the
patient flow enters this area; the location of the doctor’s operatories away from the bulk of the hygiene and pan alcove patient flow; the location of the lab near the doctor’s ops; the placement of the cart barn near the doctor’s ops, and finally the integration of an on-deck storage into the sterilization area. This layout creates a highly efficient and productive clinical zone.

**Private Zone**
Our last zone is the private zone. It should be just that – private and removed as much as possible from patient flow. This zone does not need to be contiguous like the others. In fact, it might be better to have the doctor’s office separated from the staff lounge. It must be possible to allow a private staff entry into this area. The private zone can have modest finishes, but not too spartan to keep it attractive for staff retention.

**Lighting and Aesthetics**
Spectrophotometry is a great technology, but one still needs to check the work with good color corrected lighting. The meter can get out of calibration and good color discrimination depends on full spectrum lighting. I recommend a fluorescent lamp with a color-rendering index of at least 98 and a color temperature of around 5,000 degrees Kelvin. This lamp can have its intensity enhanced by a fixture with a ballast factor of 1.2.

Lighting design can make a dramatic difference. The goal is impact, warmth, trust, comfort, drama and enhanced professional image. Spaces are not flooded with light which is impossible with today’s lighting codes, but are enhanced and accented with well-placed, energy-efficient fixtures and lamps (see Figure 2 on page 50). Now, see Figure 5. We do not want the “dead man walking” image for the clinical corridor. This design utilizes decorative sconces high on the left wall. The center of the ceiling has recessed fluorescent cans, and the top of the utility walls have indirect lighting shining up on the ceiling, but is not overdone.

**Summary**
What you need to proceed is the confidence that comes from a clear vision of how to move forward. So if you have a dream, don’t let it die; look out for some of the pitfalls presented in this article, develop a rational and quantified vision, and then design your office.

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**Author’s Bio**

Glenn Crow received a B.A. from the University of Texas at Austin in 1971 in Zoology, a Ph.D. in 1978 from the University of Texas at Dallas in Communication Disorders (Auditory Neurophysiology), and a Master’s of Architecture in 1984 from the University of Texas at Austin (Concentration in Energy Efficient Architectural Design). He became a Certified Construction Specifier from the C.S.I., 1991. Crow has performed energy analysis and design recommendations for more than 75 schools and numerous multi-family projects. He served as a project manager and has design experience on a variety of general, commercial, medical, educational and housing projects.

Crow has more than 23 years of experience in the architecture and engineering professions, eight years experience designing dental offices, and lectured for T.H.e Design at its workshops. He designed three projects that won design awards in the Matsco/Dental Economics annual competition with two of the awards being Dental Office of the Year. Crow is a registered architect in the state of Texas and a member of the American Institute of Architects. He lives in Austin, Texas. You can visit his Web site: www.thearchslipstream.com or contact him at g.w.crow.arch@gmail.com.

Disclosure: Dr. Crow declares that neither he nor any member of his family have a financial arrangement or affiliation with any corporate organization offering financial support or grant monies for this continuing dental education program, nor does he have a financial interest in any commercial product(s) or service(s) he will discuss in the presentation.

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CE-office design:Layout 1  3/19/09  10:53 AM  Page 53 continuing education

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Post-test

1. What square footage includes the common area load factor?
   A. Net square footage
   B. Gross square footage
   C. Rentable square footage
   D. All of the above

2. What is the gap in financing a project?
   A. The difference between the true cost and the appraised cost
   B. The difference between the true cost and the loan amount from the financial institution
   C. The total out-of-pocket expense
   D. All of the above

3. What is a critical topic in a lease agreement?
   A. Option to renew
   B. Assignment
   C. Owner’s right to relocate
   D. All of the above

4. What is a critical principal in zoning your floor plan?
   A. Breaking up the private zone
   B. Separating the public from the clinical zone by a buffer
   C. Separating the private zone from all other zones by a buffer
   D. Blending and overlapping of all zones interlacing staff and patient flow

5. What is a critical principal of public space design?
   A. A direct connection between the public entry door and the front desk
   B. Correctly sized greeting and appointment desks
   C. A private and easily monitored public restroom
   D. All of the above

6. The ideal operatory from the doctor’s point of view would have?
   A. A location adjacent to the highest patient flow
   B. Orient the patient where they can see all the corridor traffic
   C. Easy access for the doctor only
   D. An ergonomic dental chair, stool, and cabinetry

7. What space should be central to all operatories for optimum efficiency?
   A. Lab
   B. Sterilization
   C. Pan niche
   D. Bulk storage

8. What does the CDC recommend for good infection control?
   A. Using carpet throughout the office
   B. Washing all housekeeping surfaces with strong disinfectants daily
   C. Not using carpet in the operatories
   D. Having lots of medical clutter in the operatories

9. What is involved in picking a fluorescent lamp for shade guide matching?
   A. A color rendering index of 98 or higher providing full spectrum lighting
   B. A color temperature of 3500 degrees Kelvin
   C. A lighting level meter
   D. A ballast factor of 0.9

10. For HIPAA compliance you must do which of the following?
    A. Eliminate all acoustic exchange between rooms
    B. Control intelligibility of personal information
    C. Talk only behind closed doors
    D. All of the above

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