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Clinical Zone

Especially with operatories or clinical exam/treatment rooms, form follows function because active movement and treatment occurs in these rooms. ‘Form follows function’ is a time honored phrase in any design process, but most dental and medical offices are designed so that function follows form. Who would argue that traditionally the doctor is encouraged to purchase the desired equipment and cabinetry before planning and designing the facility, and the office is then designed around the equipment?

Hold the phone!

_The staff, not the equipment, is the most important thing in the room. The design should revolve around the people and only then should a decision be made as to how to implement the equipment and cabinetry._ This process is the true meaning of form follows function. Any surgical or dental bur was not designed because the designer wanted to create a pretty shape, but rather because it will create a chamfer, reduce an occlusal surface, open a contact, or perform an osteotomy. The rotary bur is designed to perform a specific function and it is shaped accordingly. Able designers insist that form must follow function and this principle produces truly beautiful finished products. This principle should also be observed when considering the integration of high tech components into the design of the office. Often, high tech equipment clutters operatories and offices because no thought has been given as to how or when it will function and whether it requires storage in the clinical treatment room or a separate parking space(see Chapter VII for more information on technology planning).

Clinical treatment room or dental operatory circulation must be considered, that is, movement of the doctor, staff, and patient. In terms of design for the medical and dental office, everything that will be described complies with the Health Insurance Portability and Accountability Act or HIPAA. Generally, there is no need to soundproof the operatories or clinical treatment rooms. The key elements of HIPAA include a patient’s right to a private conversation (not every conversation, but a private conversation
when it is needed), the need for a secure an electronic database, and a need to secure/lock patient file cabinets.

**Operatory ergonomics and design**

When operatory circulation was initially evaluated ergonomically, dental chairs were placed in a large empty room and the doctors and assistants were requested to approach the chairs, and then their traffic patterns were charted. When the dental personnel were totally unhindered or unobstructed in their movement, they chose the path of least resistance and least distance; a pattern was established that was parallel to the long axis of the dental chair. The subjects tended to travel along these lines or paths parallel to the dental chair over 90% of the time. If this is the pattern in which staff travel, it suggests that people will always choose the path that offers the least resistance and the path that reduces physical stress. This information indicates that walls may be constructed for privacy where people do not travel and where there is no equipment. *Therefore, the logical configuration of the dental operatory is dual rear entry with easy ingress and egress for the individual doctor and assistant* (Fig.3-1).

In order to achieve a non physically damaging work environment, i.e. an ergonomically
favorable environment, the dental operatory must be designed with doctor, patient, and assistant in the seated position. That is, the patient is reclined, the doctor is seated at the nine to twelve o’clock position relative to the head of the patient, and the assistant is situated so that her left hip is adjacent to the patient’s left shoulder and her eye level is eight inches higher than that of the doctor (Fig.3-2). With this positioning the assistant can visualize the operating field and efficiently pass all instrumentation to the doctor. Instrumentation and materials should be managed and controlled by the assistant with the doctor receiving, using, and referring all equipment and materials to the assistant with “four handed instrument” passing technique. Employing “four handed dentistry” should result in minimal class I, II, and III movements for the doctor during the treatment procedure.

There are five ergonomic classes of movement designed to communicate which movements are desirable and which movements are damaging to the skeleton and musculature. Class one movement is finger only movement. Class two movement involves the wrist and hand. Class three involves the elbow in adduction. Class four involves abduction or elevation of the elbow and shoulder which, on a repetitive basis, can be very damaging and lead to inflammatory joint disease. Class five movements involve rotation of the trunk at the waist and are to be avoided whenever possible.

With the assistant managing and passing all instruments and materials, the operatory should necessarily be designed around physical dimensions and functional movements of the assistant. The

Fig. 3-3

Fig. 3-4
objective is to achieve a doctor’s range of motion that goes no further than class III movement and an assistant’s range of motion goes no further than class IV during eighty percent of the procedure time. Therefore, the 27 inch reach of the average female, from the shoulder girdle to the tip of the fingers, is a key element in operatory dimensions. This dimension will indicate the placement of instrumentation and materials that are primary and secondary in usage during the dental procedure. With the dental assistant in position beside the patient, two circles can be drawn with a 27 inch radius with the circle centers placed at the assistant’s shoulders (Fig.3-3). Any area within the frontal hemispheres of these circles can be reached with a class IV movement; this is the desirable location for all procedures, specific equipment, and materials which the dental or surgical assistant will access.

The position of the assistant is important. The assistant is not facing the patient. Instead, the assistant is facing the back of the operatory so that the left hip is adjacent to the patient’s left shoulder (when assisting a right-handed doctor…see Fig. 3-2). This is important for ergonomics in terms of working around the vicinity of the chair. Of course, the left-handed doctor would employ a mirror image seating configuration. However, if the assistant’s left hip is at the patient’s left elbow, the dental assistant must lean to reach the oral cavity; an elbow of the assistant will invariably be placed on the
bar of the stool for balance while the assistant leans. As a result, the assistant’s spine is rotated and the assistant may or will incur lower back pain and perhaps problems with internal organ displacement over many years. Also, in this position the assistant will not have a clear view to keep the operating field clear, and as a result, the assistant will not be able to anticipate the doctor’s needs. However, with the assistant positioned properly relative to the patient and with the assistant’s eye level preferably six to eight inches above the doctor’s eye level, the assistant will be able to fully participate in the procedure without compromising their physical health.

The primary workspace is the area encompassed by the two semi-circles in front of the assistant (Fig 3-4). Instrument transfer as well as static and dynamic storage of instruments occurs in this area because instruments are easily retrievable and replaceable. There is drawer access for consumables but not for instruments; they belong on trays or cassettes. Consumables may also be on a tray but supplies are readily available. During the course of the treatment, if a consumable from the primary instrument tray is depleted, the assistant can retrieve additional supplies from a drawer either by pickup forceps or the use of a barrier on the drawer pull (such as a 4” x 4” gauge), which is very simple. Therefore, it is desirable to install drawer pulls (Fig. 3-5) for operatory drawers. Metal drawer pulls are easy to disinfect as opposed to heavy routed ledges underneath the drawer which cannot be disinfected easily. In retrieving supplies from a drawer, the assistant can either use pickup forceps, over-glove, or glove
when necessary. Do not risk cross contamination of instrumentation or puncture wounds by storing instruments in operatory drawers; all instruments should be in trays, tubs, or cassettes and stored in the central sterilization area.

The secondary workspace (Fig. 3-6) is intended for mixing and temporary storage of backup tubs or additional procedure trays if more than two procedures will be performed with the same patient. Once the assistant rotates her stool, the secondary workspace functions just as the primary space. Tertiary areas (Fig. 3-7) should never be used because access requires a severe class five movement to retrieve anything in this area. Do not place anything in tertiary space that the dental assistant must retrieve, replace, or access during the procedure.

**Operatory design**

Now that we are aware of the functional dimensions associated with the assistant, we can ergonomically construct the dimensions of the dental operatory. The distance from the back wall, separating the operatory from the clinical treatment hallway and otherwise known as the utility or power wall, to the head of the reclined chair should be 27 inches (Fig. 3-8). All small equipment usually used in the operatory should be stored on and in the utility or power wall (Fig. 3-9).
The utility wall also facilitates the mounting and placement of the x-ray tube head behind the head of the patient. This tube-head placement is a recommendation of dental radiologists simply due to the consistency of quality films generated when the x-ray tube-head is placed behind the head of the patient. There are significantly fewer retakes because overlapping, elongations, and cone cuts are avoided with the centralized positioning of the tube-head. This does not imply that good radiographs cannot be obtained from side or swing through cabinet delivery; it does mean that consistently more films will be retaken because of tube-head drift or difficulty in aligning the patient, film, and tube-head due to the complete extension of the radiographic unit.

It is a common misconception that you will save money with pass through cabinetry and a stored side delivery tube-head that services two operatories. In fact, the cabinetry required to store the tube-head frequently costs more than another tube-head! Additionally, with the side cabinet stored periapical unit approximately 10 square feet of very expensive real estate is permanently occupied and the counter

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**Fig. 3-10**

**Fig. 3-11**
tops associated with the cabinet cannot be used for any equipment placement or storage because the cabinet doors must be free to open! There should be a 27 inch space from the vertical wall of the side cabinet to the arm of the dental chair so that the dental assistant can reach all functional ergonomic space (Fig. 3-8).

The majority of dental chairs are approximately six feet four inches long and 24 to 27 inches wide. Some manufacturers are now manufacturing chairs that are up to 30 inches wide with a thick back rest. Be wary of those chairs particularly at the head of the chair because the chair width starts to affect the width of the room and that will adversely impact the healthy ergonomics of the operatory. When selecting a chair design for the operatory, it is desirable to use a narrow (24-27 inches wide), thin back chair that allows the doctor to come close to the patient and maintain a posture with the doctor’s elbows at his side.

Of course, this positioning leads to the stool design that will put the doctor in the ergonomically correct seated position. The thighs should be at approximately a 10° slope relative to the floor and the pelvis should be canted downward toward the floor; this requires a stool that has a seat which will tilt forward (Fig.3-10). Additionally, the front edge or tip of the stool should be beveled to prevent the embarrassment of the circulation to the legs and lower body. So, purchase the dental chair or...
surgical table based on your ability to move very close to the patient; patients will be in the chair or on a surgical table a maximum of two hours, but you are going to be there your entire practice life. This ergonomic advice is applicable in any dental or medical practice in which the patient is surgically treated.

Continuing to consider the reach of the assistant and safe ergonomic movement, the operatory side cabinets will have 18 inch deep counters, which is as far as the seated assistants can reach. Also, the counter is deep enough to hold an adequate hand washing sink. There is no point in making the cabinet any wider because the additional space is not ergonomically accessible (Fig.3-11).

A key dimension of the operatory is the six and a half feet which is optimal for the width of the operatory from the vertical surface edge of one side cabinet to the other cabinet (Fig.3-12). If the operatory space is wider than this distance, either the doctor or the assistant will not be able to reach the side cabinets without rising from the stool or attempting to slide the stool. This additional movement, of course, begets stress. Also, this is a critical dimension because anything less than this will impede movement while any greater dimension will not allow the seated assistant to reach all areas of the side cabinet. The side cabinetry must have drawers and room for trash receptacles underneath the two trash drops for bio-hazardous materials and for non contaminated trash. Additionally, there must be plumbing under the sink. These functional items require four and one-half to five feet lineal counter feet for the side cabinet.

The side cabinet should be 18 inches deep and, therefore, the wall to wall width of the operatory will be nine and one-half feet. In order to completely achieve an ergonomic working environment, the dental chair should not exceed a 27 inch width.

The operatory should have a length of 10 feet from the back windowed wall to the opening at the front and the inside surface of the utility or power wall (Fig. 3-13). With a six foot-four inch reclined chair in place, this dimension would provide one and a half feet of space at the foot of the chair and 27 inches from the head of the reclined chair to the inside surface of the utility or power wall.

When designing the operatory, be certain to design it around the size of the average assistant and not physical characteristics of any one of the staff… including the doctor. Altering the dimensions from the chair to the side cabinets or to the power/utility wall (at the head of the reclined chair) will impede the motion of and efficiency of the assistant and or any other hygienist or doctor working in the operatory. If a staff member or doctor is very large, accommodations may be made for them with an oversized operatory, but the cabinets will be out of ergonomic reach for the rest of the staff or future
staff. Mobile cabinets can be an optional correction for the average size assistant in an oversized operatory, but the cabinets frequently become so heavy with instruments and materials that they are difficult to maneuver.

In designing a floor plan, codes such as the American with Disabilities Act must be considered which dictates handicap minimum access. Compliance with the Code is achieved with the cited dimensions for the operatory in this book. For example, this code is one of the factors that determine the position of the head of the chair. The head of the reclined chair should be 27 inches from the utility wall and the vertical surface of the side cabinets are both 27 inches from the armrests of the chair. With this configuration, then a distance of two feet-eight inches is created from the corner of the utility wall to the side cabinet. This ‘entrance dimension’ is necessary and sufficient to meet the ADA Code for handicap access, but as the wheelchair moves toward the chair, there is only twenty-seven inches between the side cabinet and chair. However, two feet eight inches are required for handicap access… resolve this dilemma by purchasing a chair with a foot release so that the chair can be rotated 30 degrees to easily achieve handicap/ wheelchair access (Fig.3-14).

*Having carefully planned for code, it is suggested that the dental chairs are not drawn or indicated on the floor plan submitted to the municipal permitting/building office.* The bureaucrat at the building department will measure the distance from the chair to the cabinet and determine that it is not two feet, eight inches. The plans will be rejected and will need to be redrawn; this is very, very expensive. Explanations and discussion with the planning/permitting department are not very effective, so avoid the need for such discussion. No chairs, no problem.

The difficulty created by flared, thick-backed chairs is the displacement of the dental assistant and the doctor such that ergonomic positioning of either person is very difficult. The doctor cannot place his legs sufficiently under the chair for close proximity to the patient, and the assistant cannot
be positioned for clear visualization of the oral cavity because her left hip cannot be immediately next
to the patient’s left shoulder. The desired shape of the dental chair which will facilitate comfortable
ergonomic staff movement is thin and narrow (24-27 inches). With the head and shoulder portion of the
chair especially narrow, this will allow ergonomic access to the patient from the nine or three o’clock to
the twelve o’clock positions. The Dental EZ J and the Midmark Ultratrim chairs are good examples that
permits ergonomic staff movement (Fig.3-15).

**Specialty operatory design**

Oral surgery operatories tend to be designed somewhat differently. Most surgeons stand during
patient treatment, there can be a greater need for privacy during treatment especially with sedation,
there may be an additional third party such as an anesthesiologist or care-giver in the operatory during
treatment, and there are generally fewer patients scheduled necessitating fewer operatory turnovers and
less staff movement through the operatory. In general, oral surgery operatories utilize a single side entry
with cabinetry and equipment centered around the head of the chair (Fig. 3-16). The operatories are
oversized to accommodate the factors mentioned above with varying dimensions tailored to the needs
of the surgeon. If there are less than seven operatory changes or turn-overs a day, staff and patient flow
will not be impeded with only one opening to the operatory. Additionally, many surgery operatories
utilize two operatory lights mounted on a single ceiling track.

In addition to the surgical suite, most surgeons have exam rooms that also serve as post
operative treatment rooms. These spaces can utilize the dual rear entry design for easy and efficient
doctor and assistant movement in and out of the room (Fig. 3-17 a & b). Post operative care generally
requires more movement on the part of the assistant due to the particular equipment and instrument
needs in caring for the post operative patient; the convenient entry and exit afforded by dual rear entry
dramatically enhances efficiency.

The design of the surgical recovery area can be addressed in two different manners. A smaller
recovery area can be created with the space of a standard clinical treatment room or dental operatory.
A room of 10 feet by 10 feet can be divided with a ceiling suspended curtain to create two 10 feet
by 5 feet spaces which will accommodate two recovery gurneys or beds. Also, with the dual rear
entry design, each space has its own portal. Conveniently, this space offers the option of becoming a
treatment room if necessary. Alternatively, a larger recovery area can be created in a larger room, but
the space requirement increases to approximately 70 square feet per individual patient recovery area in
accommodating walking space and a observation or nurse’s station (Fig. 3-18).

Pediatric and orthodontic operators share similar design characteristics, but they may diverge with individual preferences for things such as side cabinets. With either specialty, the doctor, or assistant, should be able to view all chairs at all times for children misbehaving or in distress. Particularly for the orthodontist, a bay configuration is recommended such that, with a six-chair bay, the diagonal distance from chair number one to number six is 20 feet (Fig. 3-19a). Alternatively, six chairs arranged in a single line would require 40 feet; that is a great deal of extra travel everyday! With the heads of the chairs back to back, counters are recommended at the
Fig. 3-18

Fig. 3-19a

Fig. 3-19b

PARENT BENCH
SEATING

OPEN BAY

ON-DECK
SEATING

BRUSH-UP

PARTIAL WALL

DELIVERY UNITS

PARTIAL HEIGHT POWER WALLS

STERILIZATION

PAINT
head of each chair along with flexible rear delivery dual function carts.

Circular bays and pin-wheel bays have been popularized over the past few decades but they create terrible, chaotic patient and staff flow. Patients approaching the circle do not know whether to proceed clockwise or counterclockwise, while children will pass through the interior of the circle or pinwheel and disturb the staff or staff flow. Ten minutes of this traffic confusion is immaterial, but a lifetime of low-level ‘hub-bub’ confusion is very stressful to you and the staff (Fig. 3-19b).

**Delivery Systems**

There are three basic delivery systems in dentistry: the single unit trans-thorax (over the patient) system designed to serve the doctor and assistant, the dual unit or split system with separate carts or platforms for the doctor and assistant, and the rear delivery system positioned at the head of the chair (Fig.3-20). The single unit trans-thorax system is designed to serve both doctor and assistant but, in reality, it serves neither. Class IV and V movements must be executed by the doctor and assistant to utilize this system during patient treatment. The genius of this system was employed with the solo practitioner sans assistant who desired a delivery platform connected to the chair as a space saving
device. Whether or not an assistant is employed for patient care, this delivery system may cause injury with repeated class IV and V movements. This configuration is not recommended by this author.

The dual or split system is an improvement in that each of the two delivery platforms serves its user. The assistant’s delivery platform is usually a cart and the doctor’s delivery platform can be a free standing or wall mounted cart, or a chair mounted tray. Of course, this system supposes that the doctor has a desire to act as his or her own assistant during portions of the procedure. While each doctor has individual preferences, the type of delivery system employed defines the tenor of the practice; the clinical treatment rooms or dental operatories will be “right or left handed” and will not be suitable for doctors or hygienists of the opposite hand. This system limits operational flexibility, “sale-ability” of the practice, leads to a crowded operatory, and costs approximately 60% more than a single unit delivery system. Therefore, the dual or split delivery system is not recommended by this author.

With an objective of providing adequate working space for trays and cassettes, facilitating class I to III movements of the doctor and occasionally class IV movements for the assistant, and an ambidextrous operatory capability, it is recommended that a flexible rear delivery system be employed in the operatory. The working surface of the delivery cart would be 34 inches above the floor and is positioned between the utility wall and the assistant facing the utility wall (Fig.3-21). Positioning the assistant for ergonomic movement and efficient patient care/ instrument transfer is discussed earlier in this Chapter. The electrical/computer umbilical and water/air umbilical connections, from the utility/power wall to the dual function cart, should provide a five to six foot travel arc around the head of the
chair. The term ‘dual function’ refers to the fact that the assistant and doctor are served by the cart, i.e. handpieces, suction, and other utilities are provided by the cart. In order to keep the floor clear and allow uniform, unimpeded movement of the cart, the umbilical connection from the power wall to the mobile dental cart should be mounted in the power wall 28 inches above the floor. The tubing of the dual function cart should be trimmed after the cart (working surface) height is established at 34 inches to prevent the tubing from interfering with cart movement (Fig.3-22).

The dual function cart contains the doctor’s module, the handpiece module, the vacuum, and the three-way module are on arms that rotate and wing around the head of the cart. Greater flexibility is more desirable, so the operative portion of the unit should swing around 360 degrees rather than only 180 degrees. With the cart located behind the dental chair with the ability to travel to the left or right, this configuration can be termed flexible rear delivery. Fixed rear delivery, on the other hand, would be described as a delivery system built into the rear power/utility wall that does not permit any left to right travel about the head of the chair. Ideally, the delivery system will be able to travel from the “eight o’clock” position (twelve o’clock position is the absolute head of the reclined chair) to the four
o’clock position. This travel arc will permit a left or right handed doctor or hygienist to treat patients with or without an assistant. The unassisted right handed doctor would place the cart to their right, and the opposite configuration would be used for the left handed doctor. Flexible rear delivery can also be achieved with a rear wall mounted cart, but the arc of the travel will be limited to approximately 2.5 feet or the ten o’clock to two o’clock position around the head of the chair (Fig. 3-23). The flexible rear delivery system is strongly recommended for reasons cited earlier in this section of this Chapter.

A few more words about the trans-thoracic or over the patient system mentioned earlier are in order; the most common form of this system today is the “whip” or continental model which places all of the threatening and frightening devices to be used immediately in front of the patient (Fig. 3-24). Creating a fearful environment does not engender patient trust. Think about it; as a patient enters the operating room, the surgical instruments are not out in full view for examination by the patient! So, why would dentistry intentionally confront the patient with instrumentation in front of them? Flexible rear

Fig. 3-24
delivery systems allow instrumentation to be unobtrusively positioned so that the patient can pass by the instrumentation in one to two steps. The rear delivery configuration creates a less threatening and much calmer treatment environment. The trans thoracic delivery system was designed for use without the employment of an assistant, but if you are working alone, it is recommended that the flexible rear delivery system be used with cart placement by the side of the dominant hand. This will result in fewer class IV and V movements than with the use of the trans thoracic delivery system.

Positioning the treatment team and ergonomics

A philosophical decision needs to be considered as a doctor determines how the team should be positioned during patient treatment. If the objective of the doctor is preservation of the musculoskeletal health of the treatment team and staff, then proven ergonomic principles in dentistry should be employed. The ergonomic objective is to minimize class IV and V movement while employing class I-III movements: finger, wrist, and elbow movement with occasional shoulder rotation, but not elevation, is the objective. In order to achieve this objective it is necessary to begin with proper positioning of the doctor or hygienist. The seated operator should have their feet flat on the floor with the pelvis and thighs at approximately a ten-degree angle to the plane of the floor. This positioning will permit and position the operator’s back upright without the active use of back muscles. The operator should then address the reclined patient such that the operator’s elbows are at his side and hands “drop” to the patient’s head and mouth (Fig.3-25). Of course, this requires the patient to be in a fully reclined position with the back of the chair completely horizontal or in a trendelenberg position (the patient’s head is lower than the horizontal plane). Remember, the patient will be in this position for a relatively short period, but the doctor and assistant are in a “treatment position” daily, so place the patient in a position that is ergonomically convenient for the treatment team. The assistant’s positioning has been previously discussed in detail, and because of the assistant’s seated height, the feet should be resting on a foot ring. The assistant’s pelvis and thighs should also be at a ten-degree angle to the horizontal plane so that the back is straight throughout the procedure without requiring the active use of back musculature. This pelvic positioning precludes or negates the perceived need for an abdominal bar on the assistant’s stool; the abdominal bar usually results in one arm resting on the bar for body support thereby converting the concept of four handed dentistry into a three handed procedure! The position of the assistant’s dual function cart is at the one-thirty to two o’clock position (relative to the head of the chair), and the left corner of the cart is over the assistant’s right knee and thigh. The tubing of the handpiece should be
straight “dead” (not coiled) silicone that lays over the patient’s left shoulder (for a right handed doctor); the patient will not even sense the presence of the tubing. With the handpiece tubing in this position, the handpieces can be passed between the doctor and assistant with only hand movement by the doctor. If the tubing is behind or under the chair, the doctor will be required to move, i.e. push back from the chair, in order to pass the handpiece to the assistant.

Many of the staff spend a significant part of each working day sitting on a stool, yet little though or consideration is given to the desired features of these stools to facilitate ergonomic posture and movement. First and foremost, the stool seat should have a positive and negative cant of five to ten degrees (from the horizontal plane). This feature provides the pelvic tilt necessary to maintain the back and vertebrae in an effortless upright position during patient treatment (positive tilt) or during non treatment rest (negative tilt). Ideally, the stool seat edge will be beveled to allow unrestricted blood flow to the lower legs; this feature is especially important in longer procedures. The most effective design for
seating to accomplish this is a triangular shaped seat with the legs of the doctor, assistant, or hygienist straddling the apex of the triangular seat. (Fig.3-26). Additionally, there should be a backrest that will engage the lumbar portion of the user’s back when in the “resting” or non treatment position.

Other considerations for the ideal stool include five legs with double casters and, be aware, different casters are made for carpeted floor and hard finished floors. Selecting the wrong casters may make movement on carpet very difficult, or the stool may catapult across a room on a hard floor! Armrests are unnecessary if proper ergonomic positioning of the patient, doctor, assistant, and equipment is observed because armrests are designed to blunt the effect of repeated class IV movement, i.e. shoulder elevation.

**Cabinetry is critical**

Cabinetry for any office is expensive and it can easily equal fifty percent of the equipment cost for a new office. Accordingly, this subject deserves attention to be certain that value and the anticipated style are obtained by the buyer. When considering a supplier for cabinetry, remember to include all areas of the office which will require cabinetry: the operatory, sterilization/ tray-prep area, laboratory, staff room, consultation room, and appointment/reception desk all require cabinetry; even the restrooms may require cabinets.

Cabinets may be factory prefabricated or made by a cabinet maker. If the former alternative is selected, the operatory, sterilization, and perhaps some laboratory cabinetry can be purchased, but all other areas will require cabinetry supplied by a cabinet maker. Some cabinetry shops will design and draw cabinet elevations while others will require architectural drawings of the cabinets. Regardless of the cabinetry source, it is important that the office project architect be informed of the decision early in the design process so that the selected option can be incorporated into the design.

Selecting prefabricated cabinetry with standardized dimensions will permit the buyer to know the quality and features of the cabinetry; the disadvantages can include increased cost and possible inability of the standard design (in the sterilization area, operatory, and laboratory) to meet the individual needs of the office. For example, a five operatory dental office requires approximately sixteen to eighteen lineal counter feet in the sterilization rooms for adequate “flow” of instrumentation, while a three or seven operatory office has different sterilization room size requirements. Additionally, the cost of prefabricated standardized cabinetry can be three times greater than custom made cabinetry. Regardless of the origins of the cabinetry, it is extremely important to note that any cabinetry that is bolted (not
nailed) in place can be declared equipment for tax purposes. This arcane detail allows the application of a five-year tax depreciation schedule to the cost of the cabinetry rather than a much longer 15 to 39 year depreciation schedule. This tactic can have a very positive effect on the cash flow of your practice; in a practice with a $750,000 facility, the cash flow will be positively affected by $6,000 to $30,000 annually utilizing the cost analysis technique term cost segregation.

Flooring

Flooring can be a dilemma for the medical or dental office; most people view the choice as one between comfort or cleanliness. However, closer examination of the facts about modern flooring materials reveals that comfort and cleanliness can be obtained in a single source: carpet. Currently, nylon carpet (not acrylic or acrylic/wool blend) can be produced which is very bacterio-static; the surface of the nylon strand can be fabricated so that bacterial adherence and colonization is very difficult and unlikely. This fact, coupled with the periodic maintenance schedule of the carpet manufacturer, can produce a clean, comfortable and attractive walking surface for the staff and patients. While not documented, anecdotal experience with private offices maintaining non-carpeted flooring has revealed that fewer than 5% of the offices will clean the floors daily. Additionally, maintaining the finish of most hard flooring is rather expensive and time consuming.

Carpet is desirable for the sound attenuation feature, the cushion it provides for the knees of the staff, and the esthetic value it provides. The Occupational Safety and Health Administration does not restrict the use of the carpet in private medical and dental facilities, but has recommended hard flooring in the past because of a perceived, but not researched, problem with mercury spills in dental operatories. Free mercury (liquid) is almost never used in dental offices today, so this factor is no longer a practical consideration.

If carpet is selected for use in the office, there are several guidelines that should be observed for longevity and a fresh appearance. Commercial grade, not residential or contractor grade, carpet should be used…with no padding in order to prevent stretching of the carpet. In high traffic areas, looped (not cut) pile is preferred so the carpet does not appear “crushed”. Also, the carpet should be “solution dyed” to prevent discoloration from caustic items such as sodium hypochlorite. Finally, the carpet should have a face weight of approximately 30 ounces. These guidelines should be followed throughout the office, i.e., treatment and non-treatment areas. However, carpet is not recommended in bathrooms or darkrooms…but yes, it is great in the dental laboratory. Following these guidelines, carpet life can be
expected to be a minimum of 10 years. In fact, many office staff change the carpet not because it is worn but because they are weary of the color after so many years!