With popularity of the television show ‘Mad Men,’ 1960’s themes such as war, racism and sexism are memorialized, as are once-common habits such as smoking. Women were marketed in the 1960s with their own cigarette brand that had the catch phrase, “You’ve come a long way, baby.” Following release of Smoking and Health, Report of the Advisory Committee to the Surgeon General of the United States, all smoking related advertising was banned from TV in 1970.

Sit-down dentistry also evolved in the 1960’s. “You’ve come a long way, baby” is gone from advertising, but it remains an accurate slogan when it comes to ergonomics in dentistry. We have come a long way, but for many dental professionals, that’s still not far enough.

In 1997, pilots developed the concept of the checklist after planes began crashing. Dental professionals may not be crashing in the literal sense, but many clinicians have been forced into early retirement because of musculoskeletal disorders (MSD’s) or they continue to try to work through them. By incorporating a checklist concept similar to that used by pilots, dental professionals can be more successful, productive — and able to practice without pain.

Pain in Dentistry

Pain in dentistry is a common fear that keeps patients away from the dental office. This anxiety is common, but has nothing to do with the patient. The individuals having pain in dentistry are the practitioners. It is estimated that more than half of practitioners have some kind of painful musculoskeletal disorder that is work related.  

In 2007, the Center for Health Workforce, funded by the American Dental Hygienists’ Association (ADHA), conducted a sample survey of licensed dental hygienists about a wide variety of issues, including occupational injury or illness related to their work. It was reported that more than one-third (33.8 percent) indicated from past research and current experience that 30 percent of practitioners have some kind of painful musculoskeletal disorder. Women are more likely to have musculoskeletal pain than men, but it is not nearly common enough. It has been reported that nearly every patient expressed pain in dentistry are the practitioners. Women are more likely to have musculoskeletal pain than men, but it is not nearly common enough. It is estimated that more than half of practitioners have some kind of painful musculoskeletal disorder that is work related.

Checklists Not Just for Pilots Anymore

Checklists not just for pilots anymore — they are about the checklists, they are about making sure that everything is done just right. 

Figs. 2. Steve Knight at LeMans. Today, as a business turnaround specialist, Knight brings lessons from racing to dentistry. His goal is to turn around the world’s top dental offices. (Race photos/Provided by Steve Knight)

By Patti DiGangi, RDH, BS, Judy Ben-David, RDH, BS

A recent success story illustrates the difference checklists can make in the world of dentistry. Peter Pronovost, discuss checklists and the culture of teamwork that made the difference. The story begins with an ICU in Michigan. The project targeted the expensive and potentially lethal catheter-related bloodstream infections that cost $1 billion a year. Patient care can take quite a beating during a race, both physically and medically. Like pilots, lots of patients, dentists and their teams use checklists. The teamwork of a pit crew during a race is artistry to watch. It is the combination of checklists and the culture of teamwork that made the difference.

Fig. 3. Steve Knight at Laguna. In racing, perfect driver ergonomics is critical. Knight’s Goldali Racing team runs simply because it was already there. Sometimes it’s too tall or too short, and no matter how much it is adjusted, it is still not just right.

Checklists help find the way

The Centers for Disease Control (CDC) reported that nearly every patient admitted to an ICU experiences some type of infection while there. His or her stay? Checklists were used in the Michigan Keystone Project to make patient care safer in more than 100 ICUs in Michigan. The program targeted exposure to the most complex and expensive. The program targeted the most complex and expensive. It causes 24,000 deaths per year. The Keystone team made a checklist, measured infection rates — and changed hospital culture. There was a 66 percent reduction in this type of infection statewide, saving more than 1,500 lives and $200 million in treatment costs in the first 18 months of the program.14 It was the combination of checklists and the culture of teamwork that made the difference.

Race car drivers and race car can take quite a beating during a race, both physically and medically. Like pilots, lots of patients, dentists and their teams use checklists. The teamwork of a pit crew during a race is artistry to watch. It is the combination of checklists and the culture of teamwork that made the difference. The story begins with an ICU in Michigan. The program targeted the expensive and potentially lethal catheter-related bloodstream infections that cost $1 billion a year. Patient care can take quite a beating during a race, both physically and medically. Like pilots, lots of patients, dentists and their teams use checklists. The teamwork of a pit crew during a race is artistry to watch. It is the combination of checklists and the culture of teamwork that made the difference.

Recline/Incline seating

Passengers are required to sit upright at take-off and landing on any plane (Fig. 4). Most passengers can’t wait to hear the announcement that the cruising altitude has been reached so the seats can be leaned back for more comfort. Unfortunately, dental professionals tend to sit in this upright position all day. When seated in this position for long periods of time, practitioners both elongate and shorten different muscle groups in the legs. Humans are not meant to sit completely upright and especially not for a long day in the office. 

A more comfortable sitting position for most is in a reclined position (Fig. 5). Think of your comfortable recliner in front of the television after a long day of work or the experience of sitting in a first-class seat on a plane. Reclining is so very comfortable. This is the reason race car drivers sit, but it’s not very practical for treating dental patients.

Drivers find that reclined position and rotate the torso on its axis to create the inverse position, called an inclined position (Fig. 6). Incline is the automatic position created when sitting on a horse or a saddle stool. It is a more balanced position. This balance helps preserve the hips and spine in the proper position. It is defined as an open body position that is more comfortable, less harmful and allows for proper lumbar curv...
viture: The pelvis rotates downward and forward, enabling the knees to stay as close to the floor as possible, creating less stress and strain on the back, neck and shoulder muscles. A slight incline of the seat (2° to 3°) is ideal. If you adjust more than 20 percent out of a neutral position for an extended period of time, muscle imbalances are created, which means the muscles are actively shorter on one side and elongating on the other. This results in misalignment of the spine and, in this case, the hip joint. When a person sits appropriately in a saddle seat, the pelvis is properly positioned and stabilized, so the body naturally and automatically assumes the least stressful position.

Static vs. dynamic seating

For sitting positions, there are two more checklist considerations. In traditional chairs, the practitioner sits in a position with no movement, allowing the muscles to help keep the patient sitting. If there remains seated Prolonged muscle contraction results in increased pressure on the abdomen and lower back, creating a decreased blood flow through the muscle. Blood flow assists in the repair and health of muscles by delivering oxygen to the muscle and removing waste products from the muscle that might otherwise cause localized, intense pain (ischemia). An incline of the seat for a period of rest and rebalancing for the muscles needed for healthy seating in a dynamic chair is recommended. As a chair moves, others with the seatback that moves forward and backward as you lean back and forth, some parts of the chair move. In any case, these chairs help strengthen the body’s core.

Seating materials

A chair can be made of rubber, plastic, leather, or other man-made materials that may or may not be breathable. Seating materials may be an acceptable choice; it is a necessary part of a benefits plan. With or without arms and/or backrest, breathability is the best choice. There is a choice; it is a necessary part of a benefits plan. Many practitioners wonder if they need a backrest or not to prevent pilot error and crashes. Asking for items stresses the muscles in the lower back. The finish, the cylinder can be changed to create the tilt in the seat (5-15 percent) is ideal. A new chair may be needed because some chairs can’t be jerry-rigged enough to fit. Other issues also play a role. Some people’s chairs are extremely wide, or our patients can be very broad. This can make it impossible to work close enough when seated in a traditional seat. The saddle stool allows much closer access to the patient, so tasks don’t have to move. The professional should not have to reach more than 15 inches. The light, instruments on the bracket tray, the handpieces, the computer, or other materials needed for patient care cannot be jerry-rigged. An instrument arm—especially suitable for the light—shoulder. The bright light is overhead. A light headlight attached to lenses is no longer necessary. A light arm-attached to the counter—headlight is unnecessary. A light arm-oriented to the chair is unnecessary. A light arm-attached to the counter—headlight is unnecessary. A light arm-oriented to the chair is unnecessary. A new term has been given to some of the advanced chairs on the market: dynamic seating. A new term has been given to some of the advanced chairs on the market: dynamic seating.

Checklists and the culture of teamwork

Hospital checklists are saving lives and money. Pilots use different checklists for every flight to prevent pilot error and crashes. Winning race car teams and race car drivers use checklists for every race. Dentists can use checklists to great effect. As long as we’ve come a long way, yet dentistry still has a way to go. It won’t happen without a change of culture. The key step must be recognized, hopefully before there is serious damage.

Table 2. Seating Risk Assessment Checklist (Table adapted from the Occupational Safety and Health Administration’s Checklists for Ergonomic Risk Factors)

<table>
<thead>
<tr>
<th>Question to ask</th>
<th>Does the seat just fit your body?</th>
<th>How would you describe the height?</th>
<th>What level of comfort do you have?</th>
<th>How bad is the factor?</th>
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Table 2. Checklist for buying a new chair

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