With popularity of the television show "Mad Men," 1960s’ 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 1960s. “You 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) 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. Pain in dentistry is common, but has nothing to do with the patient. The individuals having pain in dentistry are the practition- ers. 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 had experienced an occupational injury or illness. Figure 1 shows the types and percentages of occupational injury or illness experienced. More than half (53 percent) used medication to control the discomfort, and nearly half (49 percent) indicated they had shortened their work hours as a result of their injury or illness.

Ergonomics evolved as a recognized field during World War II. It is the science of adjusting the work environment to the worker’s needs. The Occupational Safety and Health Administration (OSHA) has links to ergonomic information. The American Dental Association (ADA) published a book on Ergonomics to suggest interventions and in 2011 published Ergonomics for Dental Students. The ADA website has an ergonomics section with links to articles about specific problems. Even with numerous articles and CE courses (both in-person and online) on ergonomics in the five years since the ADHA survey, MDHs continue to escalate. Much of this is because of a hand-me-down mentality in many dental offices. For the safest flight, pilots use many checklists. In dentistry, a one-size-fits-all checklist is not enough to evaluate how we do things because of the wide variety of body types, shapes and preferred work styles. This article will develop checklists for dental-operator seating, just one of the many parts creating a healthy ergonomic environment.

Checklists help find the way

In the days of early aviation, pilots were crashing because they could not reach the controls. Investigators found it was pilot error as the cause. Pilot error doesn’t necessarily mean the pilot did something wrong; it can mean the pilot wasn’t familiar with the equipment or the equipment didn’t match the pilot’s needs. For those who work in a temporary dental situation at multiple offices, ergonomic challenges are huge. When such practitioners walk into a new office, trying to match their individual needs to the available equipment is nearly impossible.

Pilot checklists were developed to match the steps needed for the job. Making sure that everything is done and nothing is overlooked. Check- lists have become fundamental to the aviation industry. In a similar way, checklists should become fundamental to the dental industry.

Two books, “The Checklist Manifesto: How to Get Things Right” by Dr. Atul Gawande, a surgeon, and “Safe Patients, Smart Hospitals” by Dr. Peter Pronovost, discuss checklists as an effective way to reduce medical errors. These books are not just about the checklist; they are about the culture of medicine and how the checklist can foster better teamwork. Checklists have started to become common in some hospital settings, but not nearly common enough. It takes a change of culture to adopt something that on the surface can seem simple — as a core strategy for enhancing care.

A recent success story illustrates the difference checklists can make in medicine. The intensive care unit (ICU) at a hospital is a crucial part of health care delivery and one of the most complex and expensive. The Centers for Disease Control (CDC) reported that nearly every patient admitted to an ICU experiences some type of infection during his or her stay. Checklists were used in the Michigan Keystone Project to make patient care safer in more than 1,500 lives and $200 million. The project targeted the expensive and potentially lethal catheter-related bloodstream infections that cost $18,000 to a patient and $24,000 per death. 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 the first four months of the program. It was the combination of checklists and the culture of teamwork that made the difference.

Race car drivers and race cars take quite a beating during a race, both physically and mechanically. Like pilots, race car drivers and their teams use checklists. The teamwork of a pit crew during a race is art to watch that is fostered by checklists. Steve Knight, once a professional Le Mans race car driver (Figs. 2 and 3) and business turnaround specialist, has taken lessons from racing and brought them to dentistry. His goal is to turn around the world of seating for dental hygienists and all dental profes- sionals.

Seating risk factor checklist

Before Knight got into a Le Mans car there were many considerations to be addressed. An impression of the driver’s body is taken to ensure a perfect fit into the seat of the race car for optimal performance. This molding created proper leg-stretch to reach the clutch, accelerator and brake, comfort in reaching and holding the steering wheel, and most important, the ability to sit comfortably for long periods of time while driving around the race course. Success for a top-level race car driver is driven by a strict regimen for eating, exercise andNeal all vitally important things so they can be in top shape physically. It is the total package, including the racing team and pit crew all using checklists that creates this success. The idea of a form-fitting chair for dental practitioners might not be practical, yet think of the possibili- ties. Patients needing dental care might be fitted into the treatment rooms with the “Seating Risk Assessment Checklists” shown in Table 1. This checklist helps to evaluate overall balance. Many professionals have damaged them- selves by repeatedly sitting, leaning, stretching and twisting for so many years. As Cindy Purdy, RDH, BS, con- sulting with Crown Seating recently said to an online group, “Changing seats alone will not treat medical issues, but it can certainly offer ben- efits for the future.”

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 up-right 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 time in the office. A more comfortable sitting position for most is in a reclined position (Fig. 5). Think of your comfortable reclin- er 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 way race car drivers sit, but it’s not very practical for treating dental patients.

No one expects that reclined position and rotate the torso on its axis to create the inverse position, called an in- clined 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 de- signed as an open body position that is more comfortable, less harmful and allows for proper lumbar cur-
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The one-of-a-kind program includes topics such as electronic health records, risk assessment, instrumentation and ergonomics to name a few. They are presenting “Flight Plan: Checklist” in its new format during the upcoming Yankee Dental Congress, www. YankeeDental Congress.com, in January 2014.

Judy Benjy, RDM, KS, Netti DiGangi, RDM, BS. They are national speakers who created and present Creating a Flight Plan Beyond the Routine. The one-of-a-kind program includes topics such as electro- nemic health records, risk assessment, instrumenta- tion and ergonomics to name a few. They are presenting “Flight Plan: Checklist” in its new format during the upcoming Yankee Dental Congress, www.YankeeDentalCongress.com, in January 2014.

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