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# SDHA EDGE

WINTER ISSUE

NOVEMBER 2020

## COVID-19 Impact on the Dental Hygiene

Certainly, we can agree that COVID-19 has impacted all of us in many aspects of our lives, including the way in which we practice dental hygiene. I encourage you to find value in positive reflection by identifying ‘silver linings’ of the pandemic. While this may be perceived as a ‘pie in the sky’ mentality, it has been a resourceful strategy moving forward with strategic planning. Methods and processes developed prior to COVID-19 do not function at the level we expect and require change.

The SDHA has been pushed to become innovative by: delivering continuing education/ AGM virtually, re-structuring of oral health presentations to the public and liaising with stakeholders more frequently than ever. We are seeing innovation in professional regulation and education nationally in methods such as: tele-health, the delivery of high-stakes national exams (NDHCB) through online proctoring, and virtual education to name a few. I am hopeful that at some point we will appreciate the ‘fire’ this pandemic has ignited in those of us who were pushing for change and innovation.

The SDHA continues to stay abreast of the pandemic and the impact government restrictions may have on our current protocols. We encourage registrants to utilize reputable sources when determining risk and implementing protocols into practice.

### Cases & Risk of COVID-19 in Saskatchewan

The SDHA fields numerous questions related to the COVID-19 interim protocols. Recently, most inquiries are related to the resumption of power instrumentation. The SDHA values best practice and acknowledges the science supporting the benefits of ultrasonics however this should not be perceived as a green light. Ongoing assessment of risk and professional judgement are required. We are confident that SDHA registrants uphold the gold standard for infection and prevention control and we require you to be as diligent as always.



Best wishes,  
Shelby Hamm, RDH  
Deputy Registrar

## SDHA President Report - Leah Wells, RDH



As I write this, the snow has begun to fall upon the city of Regina. I hope this message finds you happy and healthy. The SDHA Council is about to begin another year’s work as we head into the cooler months of the year. 2020 has been full of surprises for everyone and we are looking forward to resuming our regular Council operations. The shift from in-person meetings to video conferencing has proved to have some increased efficiencies for Council, but we certainly miss meeting with one another and everyone in the office!

Over the summer months, the SDHA Council was pleased to offer financial aid to our members through application for the Emergency Relief Fund. With the licence renewal period having

passed, we are happy to see our membership is back to work and following the updated COVID-19 Pandemic IPC Interim Protocol. The SDHA staff have been working hard to answer all of your protocol questions in a timely and informative manner.

In personal news, my husband and I are expecting to welcome our twin babies sometime between late February and early March 2021. With this surprising news, and as a first-time parent, I have decided to resign from Council before my term end date of March 2021. Kaylen Anholt has graciously agreed to once again serve as your President until March 2021, marking the end of her second consecutive Council term. Thank you, Kaylen!

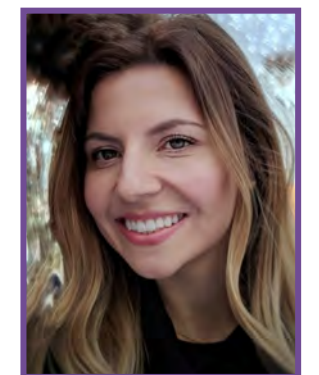
The SDHA Council is a revolving board of members who volunteer for a three-year term. Council meets three to four times in a calendar year. Council members may serve for a maximum of two consecutive terms. In the next few months, Council will be seeking additional SDHA members to volunteer. If you (or someone you know) possess strong leadership skills and

wish to engage in developing the profession of Dental Hygiene, please put your name forward when the nomination form is released early next year! As a first-time board member, I can assure you that the experience is rewarding both professionally and personally.

*“Volunteers don’t necessarily have the time; they just have the heart.”*

Sincerely,  
Leah Wells  
SDHA Council President

### Welcome SDHA President Kaylen Anholt



## Registrar Report - Catherine Folkersen



Hello Saskatchewan Registered Dental Hygienists,

Once again the period for licence renewal is complete. Our register shows over 660 registrants in 3 categories: full, non-practicing and conditional. The on-line process for renewal always has a few surprises and I would like to thank all members who completed the renewal process and are practising in Saskatchewan or other jurisdictions. The graph highlights that most registrants can navigate the process very quickly. Each year we hope to move that blue bar higher.

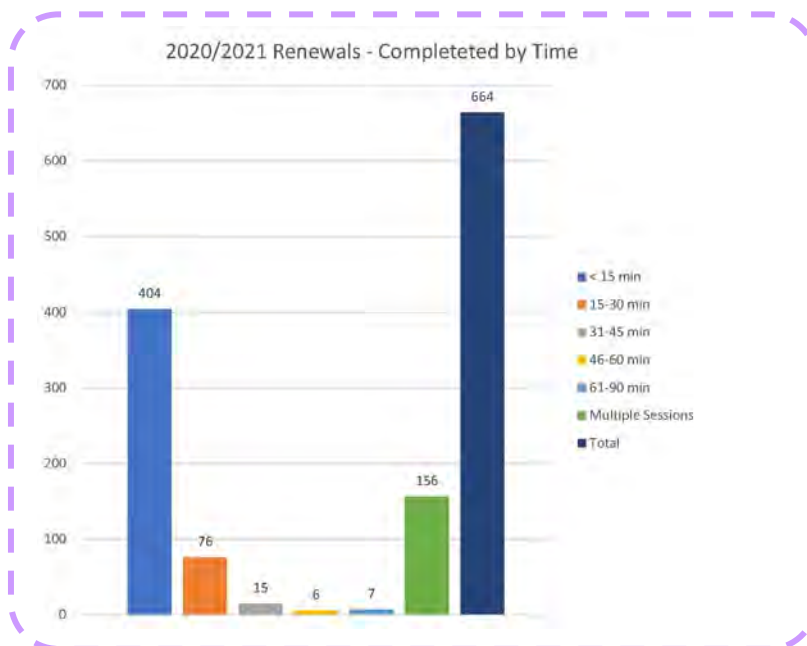
The SDHA continues to communicate with the provincial government about the *Dental Disciplines Act* and a desire to amend this legislation to allow RDH's to independently practice by removing the requirement to

work under contract or be employed by a dentist. Quebec most recently updated their legislation and now dental hygienists in this province may work independently providing their scope of practice in dental hygiene clinics.

Last March there was disappointment when COVID-19 required the SDHA annual conference to be cancelled days before it was scheduled. When the Government of Saskatchewan had to shut-down Saskatchewan we understood and supported this action and but were sad to see this event stopped. The 2021 SDHA annual conference will be different – we are going virtual. SDHA is in the early planning stages, save **March 20, 2021 for a one-day conference and AGM**. The Zoom format will see the SDHA host an AGM, provide speakers discussing current issues in

dental hygiene and allow members to virtually fulfill their CCP requirements. This will be a one-day meeting with plans to host a second one-day event in the autumn.

This is my last week as Registrar.CEO. On December 1, 2020 Shelby Hamm will assume the role of Registrar and I will remain as CEO. As many of you know Shelby is dedicated, hard working and committed to this organization and the profession of dental hygiene. Congratulations Shelby!



# Save the Date

SDHA Virtual Conference & AGM  
Saturday March 20th, 2021

Details Coming Soon

## Continuing Education Resources

### How to Enter CE on Learning Page

1. Log onto Member Portal
2. Click My Learning
3. Click > current reporting year
4. Scroll to bottom, click ADD
5. **Please note if you have more than one submission ADD them all before clicking submit. Once you submit the ADD button will disappear until the SDHA has reviewed your submission. You can make more than one submission at a time but click ADD for as many submissions as you have before submitting!**
6. Fill in appropriate fields. Refer to CCP Guidelines if uncertain of the category for your submission.
7. Upload the supporting document(s). Refer to the CCP guideline on what is appropriate.
8. SUBMIT or SAVE. Submit sends your file to SDHA to review. Save allows you to go back and make changes or additions before submitting.

- [CDHA](#)
- [Oral Heath](#)
- [Casey Hein](#)
- [RDHU](#)
- [Dentsply](#)
- [Crest Oral B / Procter and Gamble](#)
- [Colgate Oral Care](#)
- [Free Interactive & Self Study CE](#)
- [Dimensions of Dental Hygiene](#)
- [Hu-Friedy](#)
- [Dental Academy of CE](#)



## Mary Geddes Award Winner - Danielle Goodman



I was born and raised in Saskatoon. I moved to Regina for my Dental Hygiene education and have since moved back to Saskatoon to start my career.

I was part of the first graduating class for the new three-year program at Saskatchewan Polytechnic. Over those three years I learned so much from many different people.

With only a few months to go before graduation, the school was shut down due to the pandemic. Some of my classmates were able to finish early while many of us had to go back in August to finish our last few clinical requirements. Being able to finish up after a few quick days back at school was exciting, but also a bittersweet end to the year as we were not able to end with a graduation ceremony.

I have been working at Sutherland Dental in Saskatoon for the last month and have been enjoying my new career. My favourite part about work is meeting new people every day. I am eager to see where my career takes me and am excited to have every day be a learning experience.

## SDHA Updates

### SDHA contact information (December 1, 2020):

Shelby Hamm, Registrar  
sdharegistrar@sasktel.net

Catherine Folkersen, CEO  
sdhaceo@sasktel.net

### Holiday Hours

Closed December 23 at noon and reopen  
January 4, 2021.

From SDHA Council and Staff we wish you health, joy and merriment during this festive season. And have a happy new year!

**Please note: SDHA will be moving in late January and open the new office on February 1, 2021**



## Saskatchewan Dental Assistants Association

The SDHA welcomes Brenda Yungwirth, the new Executive Director/Registrar of the Saskatchewan Dental Assistants Association. The Council of SDAA welcomed Brenda Yungwirth to the position of Executive Director/Registrar. Brenda joined as the new organizational leader on October 15, 2020 and came with a wealth of experience. She held senior executive positions in a health region; provincial Ministry of Justice, Corrections and Policing, and Ministry of Social Services; and with a charitable non-profit health services organization. Ms Yungwirth has also served in numerous federal, provincial and local volunteer positions including as a Public Trustee with the Saskatchewan Association of Optometrists, and the Saskatchewan Midwives' Association Transitional Council. The SDHA looking forward to working with Ms Yungwirth and the SDAA for many years!

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## CDHA Representative - Leanne Huvenaars



Leanne Huvenaars has been the SDHA representative to the CDHA and her term will be complete October 2021. The CDHA will conduct an election seeking a SK RDH who would like to represent Saskatchewan dental hygienists at the national level. At this time the SDHA Council and Staff wishes to thank Leanne for her years of service on your behalf.



## The Politics of Disability

Please note: The following material is from a virtual education session that was provided by the Cdn Dental Assoc. to members. This information is as relevant to dental hygienists as it is to dentists. SDHA has reprinted the summary with permission and attached the link to the [online session](#).

### INTRODUCTION

Dr. Chantal Czerednikow hosts the latest education session from The Canadian Society for Disability and Oral Health. Six expert participants discuss key topics in the politics of disability including, use of language, the importance of building relationships with patients with intellectual disabilities, and barriers to care.

### PARTICIPANTS

Dr. Chantel Czerednikow General Dentist, Montreal, QC, Alison Anderson Special Olympics Canada, Erin Magee Special Olympics Athlete, Gerry Juzenas Advocate for the inclusion of people with disabilities, Brenda Blais Nesbitt Founder & CEO of Coaching for Caregivers Canada, Joan Rush Founder of Help Teeth Hurt Dental Clinic Project Recipient of Hidden Heroes Award Dr. Clive Friedman Pediatric Dentist, London, ON .

### LANGUAGE AND THE POLITICS OF DISABILITY

Language is central to any discussion on the politics of disability. How we communicate with people with disabilities and the language we use can have a profound impact on the relationship we build with them.

- Intellectual disability is the most widely used and acceptable term used today. Special needs is also an acceptable term, but should be used within an appropriate context. Individuals should not be referred to as "special". Although an individual may have special needs, they should not be referred to as being special needs.
- When in doubt, use a person's name. If it not essential to designate that an intellectual disability is present, then it is unnecessary to do so.



- Patient-centered care is essential in treating all patients with the same amount of respect and is key for anyone in a professional role.

### BUILDING RELATIONSHIPS

- Making patients feel safe in the dental office is paramount to developing a successful, lasting relationship
- Taking the time to explain what is happening from the very beginning can help to establish a relationship that will make the patient feel at ease. It can also important to inform the patient what they are covered for and how coverage works.
- It is important to read the patient's body language and pick up whether they are comfortable or not.

- Sometimes a patient may not be able to advocate for themselves. In this case a parent or guardian should be present to advocate for the patient.
- There are many tools that can be used to communicate effectively with individuals with intellectual disabilities and guide the dental practitioner. For example, the use of building blocks to rate pain or discomfort in a patient with autism spectrum disorder.
- It can be very valuable to give patients with intellectual disabilities a positive thought or a compliment. Lift them up and help them to focus on the positives. If you cannot find a positive, at least reassure them that you are there for them and that you have their back.
- It's about having respect and making patients feel safe. If they do not feel safe, patients will not want to come to the dental office. Every patient should be held Naturally Resourceful Creative and Whole.

### 3 PRIMARY BARRIERS TO CARE:

- Low fees
- Lack of suitable facilities
- Lack of training and experience in dental professionals

### LOW FEES

- The fees paid by Provincial governments for dental plans that cover adults with developmental disabilities are shockingly low.
- In BC, they are less than 50% of the rates typically recommended by the Dental Association.
- Many Provincial plans cover far too few treatments. Some only cover emergency care for adults with developmental disabilities.

## The Politics of Disability - Continued

### LACK OF ACCESS TO CARE

- Some patients with developmental disabilities require treatment at a hospital under general anesthetic. But because dental is not part of the medical care system, dental surgeries can only be accessed with great difficulty and via long waitlists.
- Occasional government coverage programs for private dental anesthesia pay poorly and clinics cannot afford the stay in them.

### LACK OF TRAINING AND EXPERIENCE AMONG DENTISTS

- The treatment of adults with developmental disabilities is not mandated by the Canadian Dental Accreditation Commission, which decides on the curriculum for dental training in dental schools. The idea of teaching students how to treat adults with developmental disabilities is only encouraged.
- Amendments to undergraduate dental school programs have been identified but they have not been incorporated into the curriculum.
- Dentists should be

practicing patient-centered care guidelines, but they may not know enough about the principles involved.

- Studies show that education and familiarity through clinical practice is key to increasing the comfort levels of dentists in treating people with developmental disabilities and other special needs.

### RECOMMENDATIONS

- CDA, Provincial Associations and Colleges to ask Provincial Governments that they use the same fee guide for adults with developmental disabilities as they do for everybody else.
- Ask that faculties include training for dentists in the treatment of patients with developmental disabilities.
- Dentists to adopt patient-centered care practices so as to ensure that patients with developmental disabilities are treated with the respect and dignity that they deserve.

### CONCLUSIONS

- The dental care of individuals with intellectual disability is a complex topic with respect to both environmental barriers and personal barriers.
- Dentists must ask themselves what they do

and why they are dentists in the first place.

- It is about having respect. Respect presumes equity.
- Encouraging safety is key. If a patient does not feel safe, they will not want to come to the dental office.
- Care is complicated by limitations in funding. Dentists should not be shy about talking about the impact of funding in care so that they can keep patients safe and give them choices.
- Must hold every individual Naturally Resourceful Creative and Whole.

*Do not help me, even if it does make you feel good.*

*Ask me if I need your help.*

*Let me show how you can best assist me.*

*Do not admire me.*

*A desire to live a full life does not warrant adoration.*

*Respect me, for respect presumes equity.*

*Do not tell, correct and lead.*

*Listen, support, and follow.*

*Do not work on me. Work with me.*

Norman Kunc, 1995,  
Dedicated to the memory of  
Tracy Latimer



## SK RDH Connection - Study Club

As dental professionals, we look to conferences, presentations and lunch & learn opportunities to obtain relevant dental hygiene related continuing education to meet the requirements to license as a registered dental hygienist in Saskatchewan

But more importantly, continuing education is an extremely valuable way to keep current with new information, research and technologies. As sciences' understanding of the role of inflammation evolves, the oral-systemic link is crucial, making dental hygienists' role essential to optimal overall health.

In my opinion, virtual meetings and presentations are the way of the future when it comes to continuing education; or at least until some type of vaccine becomes available for COVID19.

When Alyssa Boyer and I

started this study club, we had planned to keep it small and local to Saskatoon and surrounding area. However, Covid19 had different plans for all of us and the given situation made us think more innovatively. Thus, we made the decision to expand this study club and opportunity to the entire province of Saskatchewan.



This makes sense in many ways as everyone is given equal opportunity to access relevant dental hygiene continuing education. Whether you live in remote parts of Saskatchewan, are immuno-compromised or if you've simply decided you

enjoy learning from the comfort of your own home in your pajamas and a glass a wine, you have engaging, relevant continuing education opportunities at your fingertips.

The Sask RDH Connection is beyond excited to partner with the Saskatchewan Dental Hygienists' Association on this virtual study club platform. What this means for you – better access to speakers, increased promotion to all Saskatchewan dental hygienists and most importantly, greater opportunities to allow us to be the best dental hygienists we can be.

Please follow the [Sask RDH Connection](#) on Facebook for more information on upcoming presentations.

Sincerely,

Carla Ofstie, RDH



The SDHA 50<sup>th</sup> Anniversary celebrations will need to be rescheduled until we are allowed to gather again. I would like to thank everyone who has been an active member of this organization, a practicing hygienist in our province or in other jurisdictions and all past leaders of the Association that helped build this organization. I hope that you will reflect on the progress the profession has made in 50 years and consider how you can help it further develop. The Association always encourages member participation!

## Handheld vs Conventional Wall Mounted

### X-Ray Units - Windy Rothmund, MSDH, RDH

When Wilhelm Roentgen captured the first x-ray back in 1895, he probably never imagined the digital revolution that would lead to today's high-tech wall-mounted units and handheld x-ray devices.

Intraoral radiography is a long-standing and essential tool used to support the diagnosis, treatment, and management of dental conditions. When Wilhelm Roentgen captured the first x-ray back in 1895, he probably never imagined the digital revolution that would lead to today's high-tech wall-mounted units and handheld x-ray devices. Both wall-mounted units and handheld devices are sources of x-rays used to produce dental images with film, phosphor plates, or digital sensors.<sup>1</sup> Conventional intraoral x-ray equipment is designed to be fixed to the wall or ceiling, with the exposure button located behind a protective barrier to ensure the operator receives no exposure to x-rays. Handheld x-ray devices, developed in the early 1990s for military medicine and humanitarian missions, have increased in popularity over the past few years in dental practices,

challenging the concept of a "controlled area."<sup>2,3</sup>

When using conventional wall-mounted units, the operator has to leave the room and stand behind a shielded wall during exposure. Today, handheld battery-powered devices make it possible to stay in the room and hold the x-ray device. Various handheld devices are available on the market offering advantages and disadvantages over wall-mounted units. They come in two forms, a pistol design resembling a hairdryer, operated by a trigger on the handle, and a camera-like design operated by a push button.<sup>1</sup>

Basic components of a handheld device include an x-ray tube assembly, irradiation switch on the body, and a protective shield at the end of the cone to reduce backscatter radiation to the operator.<sup>1</sup> Handheld devices are an appealing solution for dental practices wanting to avoid the cost of purchasing wall-mounted units for every operator.

However, before making the decision to go "off the wall" and invest in a handheld device, it's critical to look at the entire picture by evaluating the benefits and pitfalls of these new devices.

#### Benefits of handheld devices

Handheld x-ray devices offer advantages compared to traditional wall-mounted units, including portability and flexibility in patient care. The patient may feel less intimidated about x-rays if the operator stays in the room instead of running out to stand behind a wall during exposure. The ability to stay in the room makes it ideal for use with any patient who has difficulty with x-rays, including pediatric, geriatric, special needs, or fearful patients.<sup>4</sup> In addition, staying in the room may reduce the number of retakes caused by patient movement and improve efficiency and workflow. In fact, the time needed to take radiographs is often reduced by half, saving approximately 120 hours annually.<sup>4</sup> The freedom to

## Handheld vs Conventional Wall Mounted X-Ray Units - Continued

position portable devices at any angle makes it possible to take x-rays while the patient is reclined or sitting upright.<sup>4</sup>

In terms of economics, one handheld device can service up to four operatories, eliminating the need for multiple wall-mounted units.<sup>4</sup> There is no need for installation, special cabinetry that takes up space, reinforced walls, or electrical work. In addition to saving on acquisition costs, maintenance costs associated with multiple wall-mounted units are eliminated. Moreover, bulky wall-mounted units have awkward arms to manipulate, which often drift during exposure or if the patient moves unexpectedly.

The most accepted handheld x-ray device cleared by the US Food and Drug Administration (FDA) is the pistol design, such as the KaVo Nomad Pro 2.<sup>2</sup> Weighing about six pounds, this cordless, lightweight device is easily transportable between operatories.<sup>4</sup> The ergonomic design makes the shape and weight dispersion more stable in the operator's palm.<sup>4</sup> The KaVo Nomad Pro 2 model utilizes a 0.4 mm focal spot that produces sharp, high-resolution exposures, and a 60 kV DC x-ray generator that helps to ensure clear images and can reduce the patient's radiation dose.<sup>2</sup> Hundreds of high quality diagnostic images can be taken on a single battery charge—up to 600 shots.<sup>4</sup> Images from newer

handheld units are often superior to older wall-mounted units.<sup>1</sup>

### Pitfalls of handheld devices

Despite the attractive benefits, there are disadvantages that come with handheld devices. First, there is the potential for the device to be knocked to the ground or dropped as it is being carried from operatory to operatory or when trying to adjust an x-ray. If the device becomes damaged it will have to be sent out for repair, leaving the office with no x-ray source to take radiographs. (Notably, the Nomad warranty includes overnight shipment of a loaner device.)

Second is the fatigue that may result from the entire weight of the unit being held and supported by the operator; a handheld device weighing between five and eight pounds is the equivalent of carrying a large bag of flour.<sup>5</sup> The degree of fatigue can be lessened if the device is designed more ergonomically. Productivity may be affected if the operator has to put the unit down to make adjustments. Some designs, such as the Nomad, are designed to be cradled and thus should normally not need to be set down.

Also, a depleted battery may disrupt operations if the operator grabs it while the patient is in the chair and finds it does not work.<sup>6</sup> Therefore,

someone must be in charge of monitoring the battery and maintaining a charged backup battery pack. There is also potential for image quality to be affected by reduced or inconsistent radiation output as the battery charge reduces.<sup>6</sup>

Frustration may be an issue if one device is being shared between many operators and the operator has to locate the unit and wait for it to be available. Next, there is the issue of disinfection. Handheld devices cannot be sterilized; however, a wipe down with a disinfectant cloth between patients or at another routine interval is needed to adhere to infection control standards. With the power off and the handset attached, a nonacetone cleaner containing less than 20% alcohol may be used to avoid damaging the housing and bezel area.<sup>4</sup> The risk of cross contamination may also be reduced by placing a disposable plastic barrier over the device.<sup>4</sup>

Another pitfall is the security procedures that must be in place to prevent unauthorized use or theft.<sup>7</sup> Anytime the device is not in the operator's direct supervision, it must be placed in a secure cabinet,

## Handheld vs Conventional Wall Mounted X-Ray Units - Continued

storage room, or work area.<sup>7</sup> When the dental office is closed, the device must be stored out of sight with the battery pack removed and, if possible, stored separately.<sup>7</sup> All users of the handheld device require proof of training regarding safe use, risks involved, and radiation protection measures.<sup>6</sup>

One of the biggest challenges associated with handheld devices is keeping the operator within the protection zone of the backscatter shield (figure 1). This is achieved by maintaining the device perpendicular to the sensor to keep the x-ray beam on the horizontal plane.<sup>3</sup> The position of the handheld x-ray device relative to the operator has a significant effect on the overall radiation exposure received by the operator.<sup>3</sup>

The height and inclination of the dental chair should be adjusted so that the x-ray tube is one inch away from the patient's face.<sup>4</sup> The operator should avoid adjusting his or her position to suit the patient, as this may result in part of the operator's body (head or feet) not being in the protection zone.<sup>4</sup> Rather than angling the device to take an x-ray, the operator must have the patient tilt his

or her head or change the position of the chair, which may be difficult or uncomfortable for the patient. If the device is angled, the operator must wear a lead apron of not less than 0.25 mm lead equivalent for protection against scatter radiation.<sup>4</sup> Because the cone of the handheld unit must be placed as close to the patient as possible without touching him or her, aiming devices with a shorter arm must be used on the image receptor holder.<sup>6</sup> The arm of longer image receptor holders may obstruct the backscatter shield and increase the distance between the x-ray source and the patient, thereby increasing the area that is irradiated and the radiation required to take a quality image.<sup>6</sup>

Finally, if the handheld device is used in an open area, a controlled perimeter must be established. A controlled perimeter assures dental personnel do not stand in the path of the x-ray beam, remain behind a protective barrier, or stand at least six feet away from the patient and between 90 to 135

degrees to the direction of the primary beam during exposure.<sup>4</sup>

### Possible health risks

Since the 1950s, radiation safety standards have followed the principles of ALARA (as low as reasonably achievable) to maintain radiation exposure well below the maximum permissible dose of 1 millisievert (mSv) annually.<sup>8</sup>

Commitment to ALARA principles is important because the long-term effects of low-dose radiation are unknown.<sup>8</sup>

In fact, ALARA is required by law, mandated by the United States Nuclear Regulatory Commission Title 10 Section 20.1003, and applicable to stationary, mobile, and handheld x-rays units.<sup>9</sup>

Although not legally binding, recommendations by the National Council on Radiation Protection and Measurements (NCRP), FDA, and the American Dental Association (ADA) help reduce radiation risks for operators and patients.<sup>7,10</sup> With both traditional wall-mounted units and handheld devices, the operator assumes



## Handheld vs Conventional Wall Mounted X-Ray Units - Continued

responsibility for following state and federal safety regulations.<sup>7</sup> This includes poor technique resulting in retakes, poorly serviced or damaged equipment, or danger to themselves or others.<sup>4</sup>

Time has shown the diagnostic benefits of x-rays outweigh the risks, making them a routine dental assessment, but what about newer handheld devices? With the introduction of handheld devices in dental practices, there is a need to evaluate if additional risks to the operator or patient exist when compared to traditional wall-mounted units. New safety challenges are introduced that may violate the principles of ALARA, such as angling the device or not maintaining a controlled perimeter. Also, because of the close proximity to the operator, handheld x-ray devices pose increased operator exposure concerns due to leakage radiation and backscatter radiation.<sup>11</sup> The operator using the device daily for routine care is at highest risk of long-term exposure. Also, longer exposure times are needed for handheld devices operating with a lower tube current (below 60 kV) than traditional wall-mounted units.<sup>2</sup>

Keeping this in mind, the inverse square law tells us that the effective dose of radiation 1 foot from a radiation source is 100 times greater than at 10 feet. Because of these concerns, state

Maximum protection (green area) from backscatter radiation (red area) occurs when the device is positioned near the patient, is perpendicular to the operator (with patient's head tilted if needed) and backscatter shield is fully extended toward the patient and parallel to the operator.

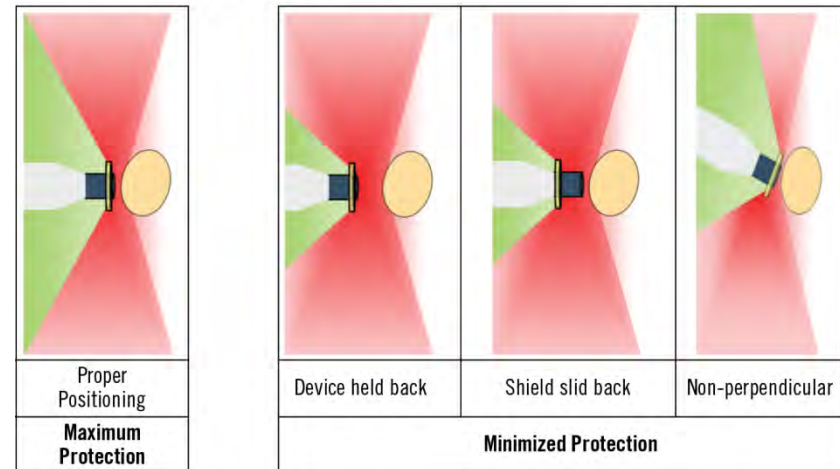


Figure 1: Example of manufacturer instructions on achieving maximum protection from x-rays through proper positioning of the handheld device. Image courtesy of KaVo Kerr

and federal agencies regulate handheld devices closely. Each state makes its own decisions about radiation monitoring programs, use of a lead apron by the operator, and which devices may be used, even if they have been cleared by the FDA.<sup>2,5</sup>

Numerous studies have shown handheld devices are safe for clinical use and do not present a significantly greater radiation risk than traditional wall-mounted units, leading to FDA approval of several handheld units.<sup>3</sup> Conversely, a 2019 study found handheld x-ray units have the potential to increase radiation risk to the operator when compared to wall-units.<sup>1</sup> In fact, the study found that scatter radiation dose from handheld units was above the expected

dose for conventional wall-mounted units of 0.1 mSv.<sup>1</sup> Based on ALARA principles, this recent study suggests using handheld devices only when use of a handheld device on a stand or wall-mounted unit is not feasible.<sup>1</sup>

Furthermore, the NCRP does not recommend the use of handheld x-ray devices when wall-mounted units are available.<sup>8</sup> It is the employer's responsibility to purchase a handheld device that is FDA and state approved in order to provide safe working conditions for dental personnel.<sup>7</sup> Even if there is an increase in exposure when using wall-mounted units, radiation levels associated with

## Handheld vs Conventional Wall Mounted X-Ray Units - Continued

handheld devices do not exceed regulation limits if an FDA-certified device is used.<sup>3</sup> Buyers should be aware that inexpensive devices marketed online lack the necessary safety measures and fail to meet FDA standards.<sup>2</sup> Operators should ensure the device is cleared by the FDA by checking for a certification label, warning label, and identification tag permanently attached on the housing, written in the English language.<sup>12</sup> Devices not approved by the FDA pose major safety hazards, including high doses of radiation to patients and operators, lack of shielding, low kV, and inadequate collimation.<sup>12</sup>

In the United States, there are no standard federal regulations regarding handheld x-ray devices. Therefore, individual states vary in their approval and requirements for handheld x-ray devices, including storage, use of protective apron, and radiation monitoring. It is important to note that states approve handheld units on a case-by-case basis, and not all FDA approved machines have been approved by every state. Regulations specify a minimum of E or F speed film or a digital sensor should be used.<sup>4</sup> While the



Image courtesy of KaVo Kerr

use of lead aprons with thyroid collars is not required for patients when optimal rectangular collimation is implemented, according to the NCRP and the ADA, their use is advised with handheld devices due to round collimation.<sup>7,8</sup> The FDA recommends that the lead-embedded acrylic shield is in place, has minimum specifications of 0.25 mm lead equivalent, is 15.2 cm in diameter, and capable of being positioned no farther than 1 cm from the end of the cone to sufficiently block backscatter radiation and create a protective zone for the operator.

### Conclusion

The face of intraoral radiography is changing as handheld x-ray devices

gain popularity in dental practices across the country. Whether a pistol design or camera-like design is utilized, there are advantages and disadvantages compared to conventional wall-mounted x-ray units. Advantages include portability, patient satisfaction, fewer retakes, and lower acquisition cost. Disadvantages include operator fatigue due to the weight of the device, no longer having free hands to adjust x-rays, having to share with multiple users, keeping the battery pack charged, disinfection, security concerns, and keeping the x-ray beam in the horizontal plane to avoid excessive radiation exposure. Even though

## Handheld vs Conventional Wall Mounted X-Ray Units - Continued

some studies show FDA-approved devices may expose the operator to more radiation than wall-mounted units, radiation levels are still well below the maximum permissible dose. Operators must receive proper training before using a handheld device and be aware of requirements specific to their state, including which devices are cleared for use.

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