

The Canary System – Accurate Caries Diagnosis with No Aerosol Production

The COVID 19 Pandemic has impacted dental care in Canada, Europe and the US. As dental practices start to open up to treat patients, the various regulatory bodies have provided rules and guidelines for oral health care. The focus is on eliminating and or reducing aerosols during dental procedures. The regulatory bodies have identified dental x-rays as a procedure that creates aerosols due to increased saliva flow and possible coughing or gagging.

On April 22, 2020, Nebraska made the following recommendation for use of radiographs:

“Dental Health Care Providers may use “extraoral dental radiographs, such as panoramic radiographs or cone beam CT, [and] are appropriate alternatives” to intraoral dental radiographs during the outbreak of COVID-19, as the latter can stimulate saliva secretion and coughing.” This mirrored the interim guidance from the ADA.

In early May, the regulatory bodies in British Columbia, Manitoba, Ontario and Saskatchewan provided the following advice:

“Recommend extraoral radiographs. Minimize the use of intraoral radiographs to prevent the possible formation of aerosols”.

There are major issues with this recommendation:

1. **Cone Beam CT scans are expensive and increase radiation exposure.**
2. **The head, thyroid, and brain are exposed to radiation.**
3. **Extra-oral films do not have the resolution or ability to accurately detect and measure caries.**

The Canary System More Accurate Than X-Rays in Detecting Interproximal Caries Beneath Restorations

	Sensitivity	Specificity
The Canary System	0.89	0.83
Bitewing Radiographs	0.38	0.80
Cone Beam CT	0.40	0.70

Sensitivity is the ability of a test to correctly identify those with the disease.
Specificity is the ability of the test to correctly identify those without the disease.

Dayo AF, Amaechi BT, Noujeim M, et al. Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology May 2020
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The Canary System does not use radiation and provides an accurate solution for detection and management of caries. A recent study found that The Canary System is more accurate than Bitewing Radiographs and Cone Beam CT in detecting caries on the gingival floor beneath composite restorations in interproximal regions (<https://doi.org/10.1016/j.oooo.2019.09.006>). The sensitivity and specificity data (table on the right) indicates that The Canary System could find 89% of the caries where the other devices found 40% of the lesions.

This study replicates findings from other studies by Dr. Amaechi’s group at the University of Texas at San Antonio. One clinical trial found The Canary System detected 92% of proximal caries while bitewing radiographs found only 67%.

The Canary System provides an accurate solution for the detection, measurement, monitoring and recording of changes in tooth structure.

sales@thecanarysystem.com Phone: 866-993-9910

748 Briar Hill Avenue, Toronto Ontario M6B 1L3