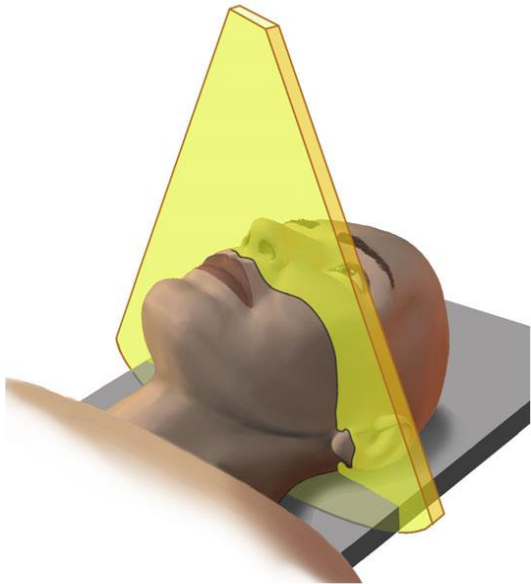

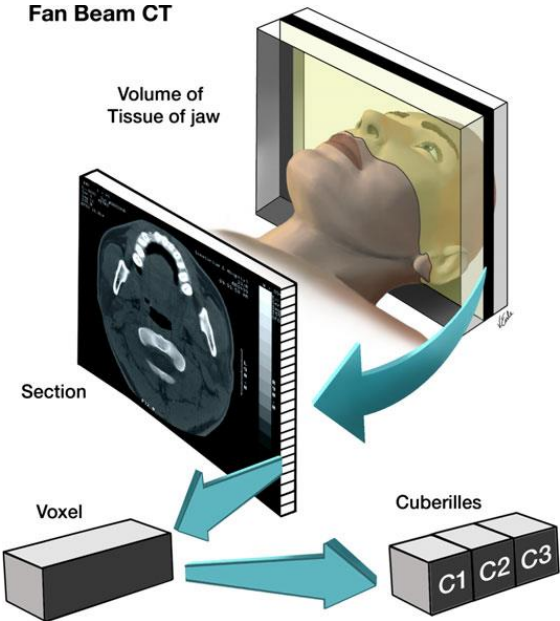
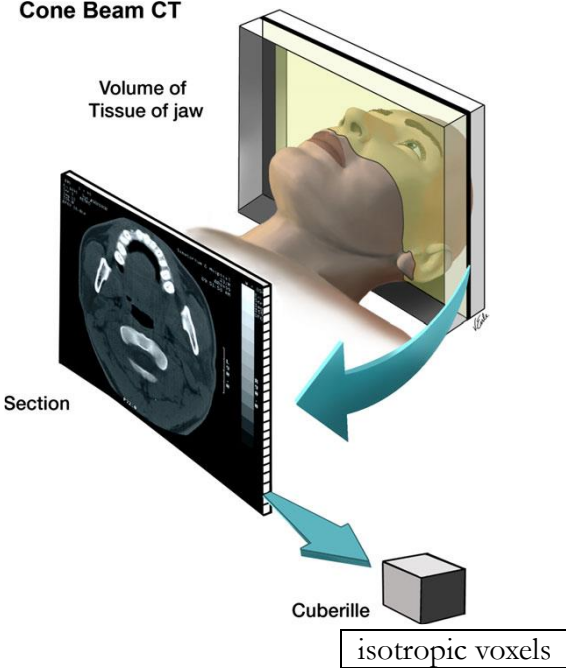


原文題目(出處)：	<b>Cone-beam computed tomography and the dentist</b> Journal of Investigative and Clinical Dentistry (2017), 8, e12178
原文作者姓名：	David Macdonald
通訊作者學校：	University of British Columbia
報告者姓名：	林宜瑾 (L 組)
報告日期：	2017/7/4

**Introduction**

Fan beam CT	Cone beam CT
	
<p><b>Fan Beam CT</b></p> 	<p><b>Cone Beam CT</b></p> 

**Why use CBCT ? Advantages**

- ✓ Since the cone irradiates a larger volume in a single rotation, the radiation dose imparted is much lower than that by a fan beam.
- ✓ CBCT's spatial resolution (image detail) is superior to that of MDCT, between twice and eight-times better and is just as good in all three planes

**When does cone-beam computed tomography properly complement the work of the dentist ?**

- ✓ **Osseointegrated implant**(pre-implant cross-sectional imaging)
  - inadequate bone height → graft considered
  - place the implant in sites → surgical stents
  - optimum restoration
  - five most frequent complications avoided:
    - ① permanent nerve injury
    - ② damage to teeth adjacent to the implant
    - ③ excessive bleeding in the floor of the mouth ( lingual canals & artery )
    - ④ mandibular fracture
    - ⑤ displacement of implants into the maxillary sinus

**Table 1.** Publications on "CBCT" and "Dental Implants"

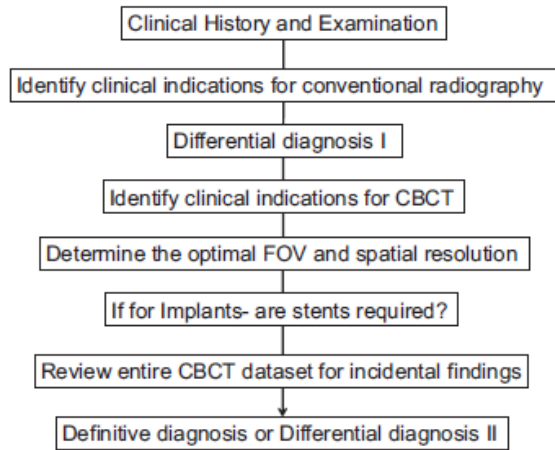
Year of publication†	Number of publications for that year
2003	1
2004	0
2005	0
2006	1
2007	6
2008	14
2009	15
2010	33
2011	44
2012	65
2013	46
2014	70

†Year of first publication, which could be electronic.

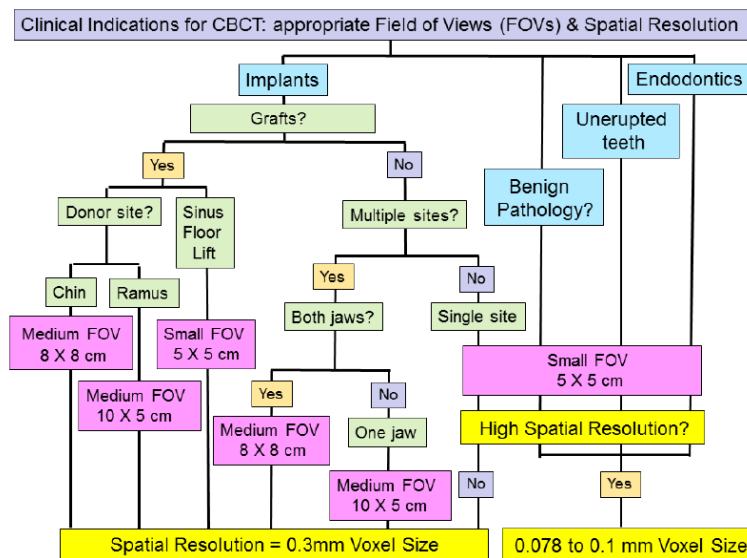
- ✓ **Endodontics**
  - find missing (unfilled) canals in previously treated (unsuccessfully) teeth
- ✓ **Presurgical assessment of unerupted teeth**
- ✓ **Intra-osseous pathology,**
  - fibro-osseous lesions affecting the face and jaws

**Downsides of CBCT**

- ✓ Higher radiation dose than conventional imaging
  - only supplement



- FOV (field of view) : small < 5x5 cm
  - medium 8x8 cm
  - large 10x10 cm → include extragnathic areas (eyes, brain, and neck)



- ✓ Greater cancer incidence (Children “are more sensitive to radiation”)
  - Future CT scans should be limited to situations where there is a definite clinical indication, with every scan optimised to provide a diagnostic CT image at the lowest possible radiation dose.

**Advices for dentists**

- ✓ An anatomical head phantom should be used for team training or practicing the technique of an unfamiliar program prior to exposing the patient.
- ✓ The nervous patient’s fears may be addressed by the use of “dry-run” rotations to develop the patient’s confidence prior to doing it for real
- ✓ “Scout view” at the beginning of the scan

題號	
1.	<p><b>What is the advantage of CBCT over HCT ?</b></p> <p>(A) Better spatial resolution                      (B) Lower radiation dose                      (C) Smaller footprint                      (D) Lower cost                      (E) All of the bove</p>
答案(E)	<p>出處：《Oral and maxillofacial Radiology》 Chapter.5 P.60</p> <p>The advantages of CBCT over HCT are better spatial resolution, lower radiation dose, smaller footprint, and lower cost.</p>
2.	<p><b>What is NOT the feature of CBCT ?</b></p> <p>(A) CBCT is very good for both bone and soft tissue structures.                      (B) CBCT 2-D lateral cephalograms are more accurate than conventional lateral cephalograms for most linear measurements in the sagittal plane.                      (C) The application of computational simulations can use CBCT (Mercuray) to simulate condylar growth, bone formation, and orthognathic surgery                      (D) The definitive assessment of malignant and locally invasive lesions such as ameloblastomas and myxomas when using CBCT requires the use of an intravenous contrast medium.</p>
答案(A)	<p>出處：《Oral and maxillofacial Radiology》 Chapter.5 P.61,62,64</p> <p>(A) CBCT is very good for intrinsically high-contrast structures such as bone but, although the soft tissue outlines can be silhouetted by the air-filled space outside and within them, differences within the soft tissue cannot be resolved.</p>