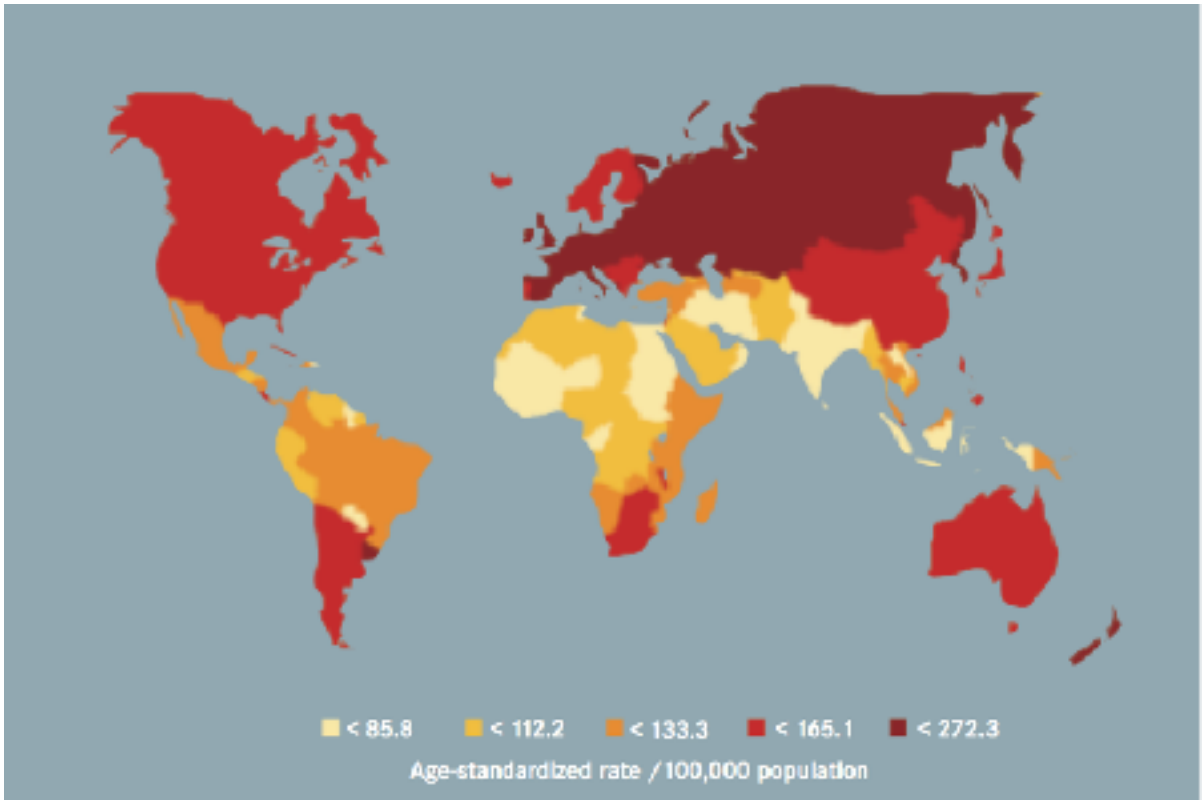
Oral neoplasia and pre-neoplasia

Dr. Suhail Al-Amad

3/11/2019

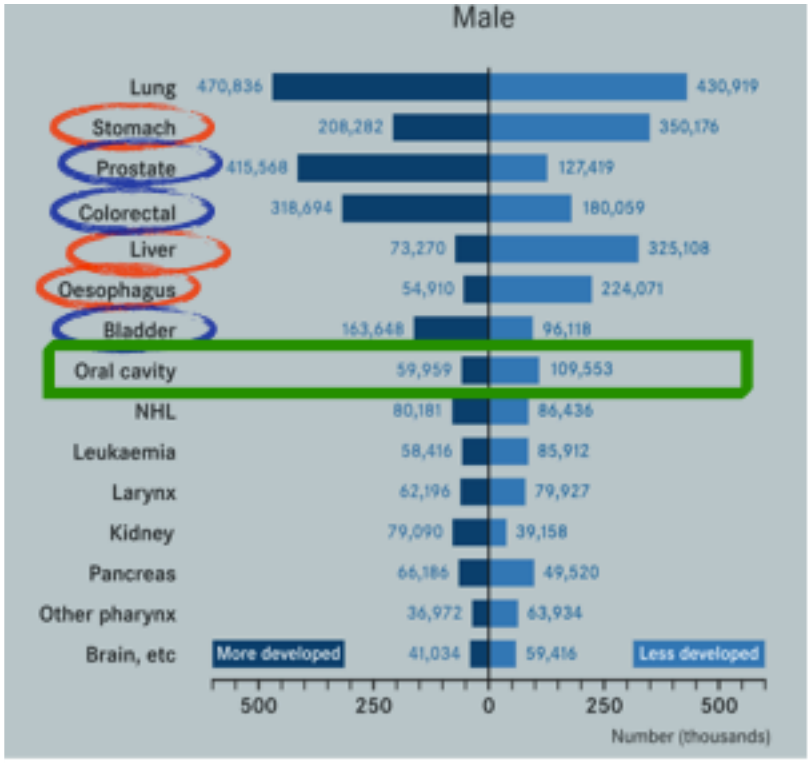
7/11/2019

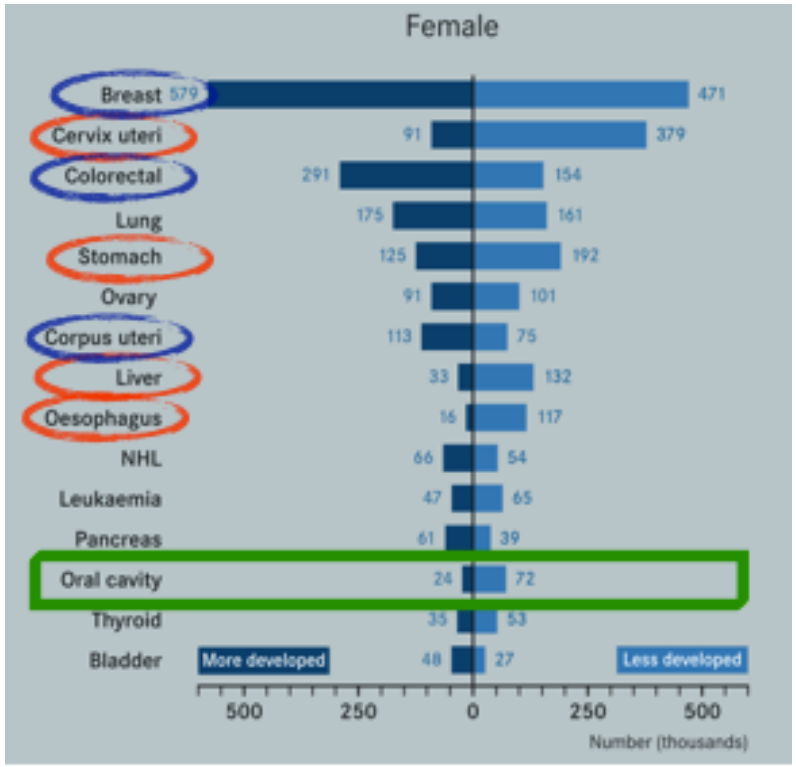
Global Burden of Cancer



Mortality rates of all cancers in men

10 million people are diagnosed with cancer every year.
6 million people die of cancer every year.
There is a marked regional diversity in incidence.



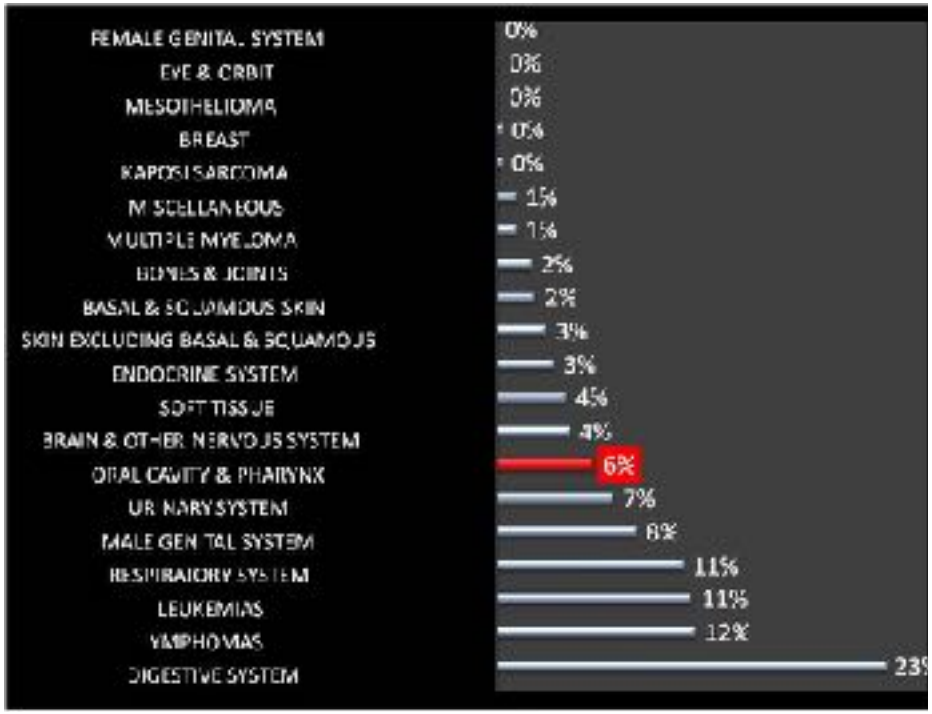


Oral Cancer ranks 8th in males and 13th in females worldwide.
It is more common in less developed countries

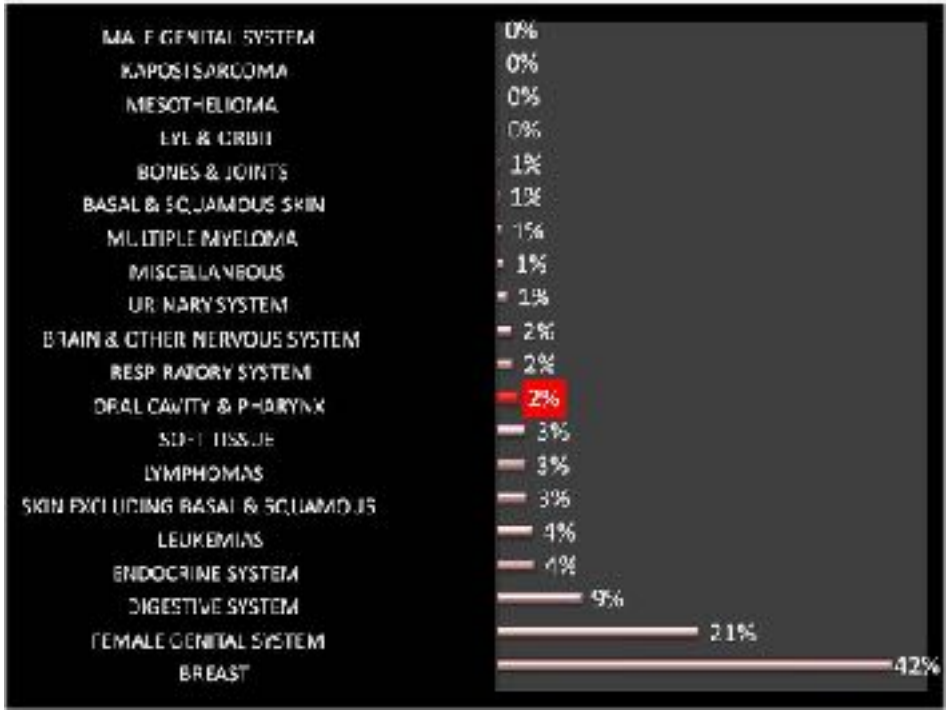
Oral Cancer in the World
Data from the UAE

Oral and Pharyngeal cancer represent 6% of all body cancers in males and 2% in females.

Male

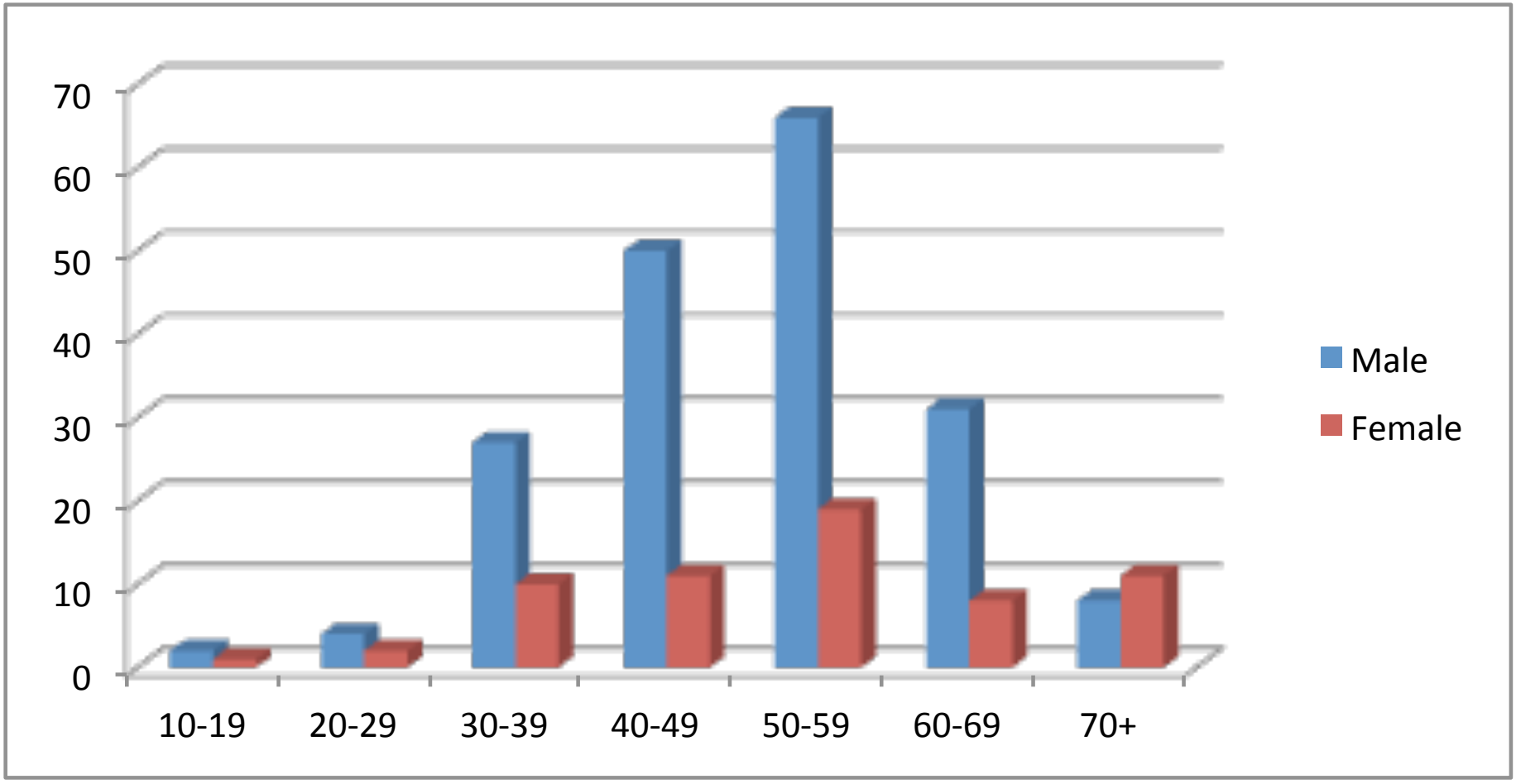


Female



Al-Amad SH, Jaloudi M. Oral Diseases (Supp) 2010. 16, 516–572

Oral Cancer in the UAE



Male : Female ratio = 3:1

Al-Amad SH, Jaloudi M. Oral Diseases (Supp) 2010. 16, 516–572

Oral Cancer

- More than 90% of cancers in the oral cavity are Squamous Cell Carcinoma SCC.
- Among the ten most common cancers worldwide.
- Around 300,000 new cases are seen every year.
- Males : female = 2:1
- 95% of patients are above 40 years, but this epidemiological finding is shifting towards younger age.

Oral Cancer

- Incidence of oral SCC is highly variable among different countries, and different regions within the same country →

  3% of cancers in UK and USA vs 40% in India.

- Chances for a second primary SCC in the first 3 years is 25% and 40% if smoking habit persisted.

Oral Cancer Risk Factors

Risk factors for oral cancer are different according to location;

Lip SCC

Oral cavity SCC

Oro-pharyngeal SCC

Oral Cancer Risk Factors

- Tobacco
  - Smoked
  - Chewed
- Alcohol
- Paan, Betel Quid
- Human Papilloma virus

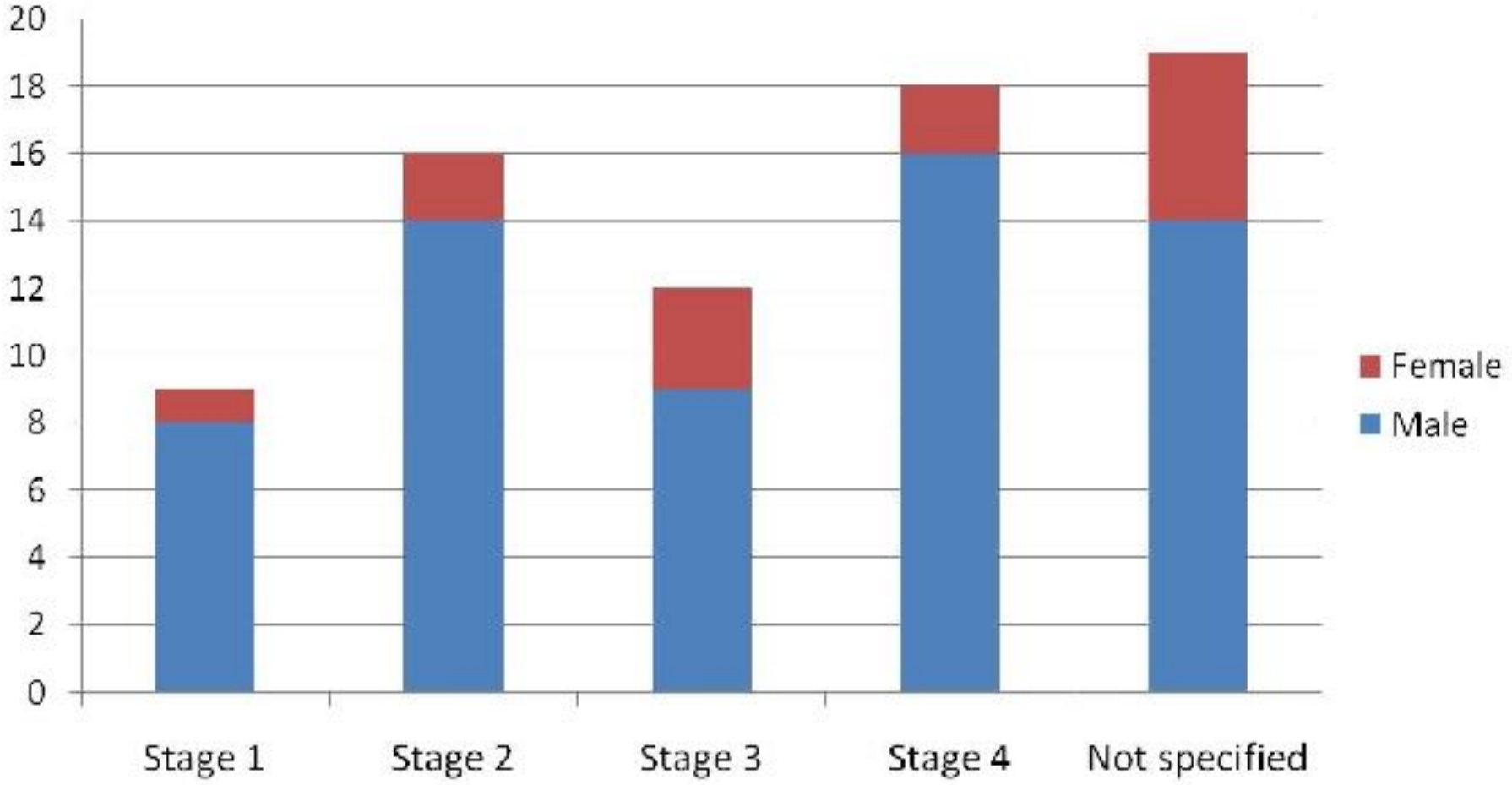
Relation with anatomical location

Tongue, floor of mouth, retro-molar pad area

Buccal mucosa and vestibules

Oro-pharynx

Stage at diagnosis



Al-Amad SH, Jaloudi M. Oral Diseases (Supp) 2010. 16, 516–572

Potentially malignant lesions should
IDENTIFIED

Malignant lesions should be
DETECTED EARLY

Potentially malignant lesions can be recognized by;

Color changes
- White patches
- Red patches
- White/red patches

Changes in consistency
- Ulcer
- Lump
- Fibrosis

Potentially malignant disorders

Lesion
Erythroplasia/Erythroplakia
Leukoplakia
Erythro-leukoplakia
Proliferative verrucous leukoplakia
Sublingual keratosis
Oral Lichen Planus
Submucous fibrosis
Chronic candidosis
Paterson-Kelly syndrome

Potentially malignant disorders

Leukoplakia;

- Most recent definition: “a white plaque of questionable risk having excluded (other) known diseases or disorders that carry no increased risk for cancer” (van der Waal, Oral Oncology 2008).
- It is a diagnosis by exclusion with different levels of certainty (C-factor)…

Potentially malignant disorders

Leukoplakia;

C-1 provisional clinical diagnosis

C-2 definite clinical diagnosis by eliminating aeitiological factors and follow up

C-3 provisional histopathological diagnosis by an incisional biopsy

C-4 definitive diagnosis after complete excision

van der Waal, Oral Oncology 2008

Potentially malignant disorders

Leukoplakia;

- There are risk factors that increase the chances of malignant transformation. Those can be divided into;
- Risk factors on the clinical level
- Risk factors on the histopathological level
- Risk factors on the molecular level
- Risk factors on the genetic level

Potentially malignant disorders

Leukoplakia;

- Risk factors on the clinical level;
  - ➢Female gender
  - ➢Duration
  - ➢Not smoking-associated
  - ➢Location (tongue and FOM in the West; buccal mucosa in India)
  - ➢Non-homogenous

Potentially malignant disorders

Leukoplakia;

- Risk factors on the histopathological level;
  - ➢Presence of C.albicans
  - ➢Presences of dysplasia (regarded as the most important factor)

Potentially malignant disorders

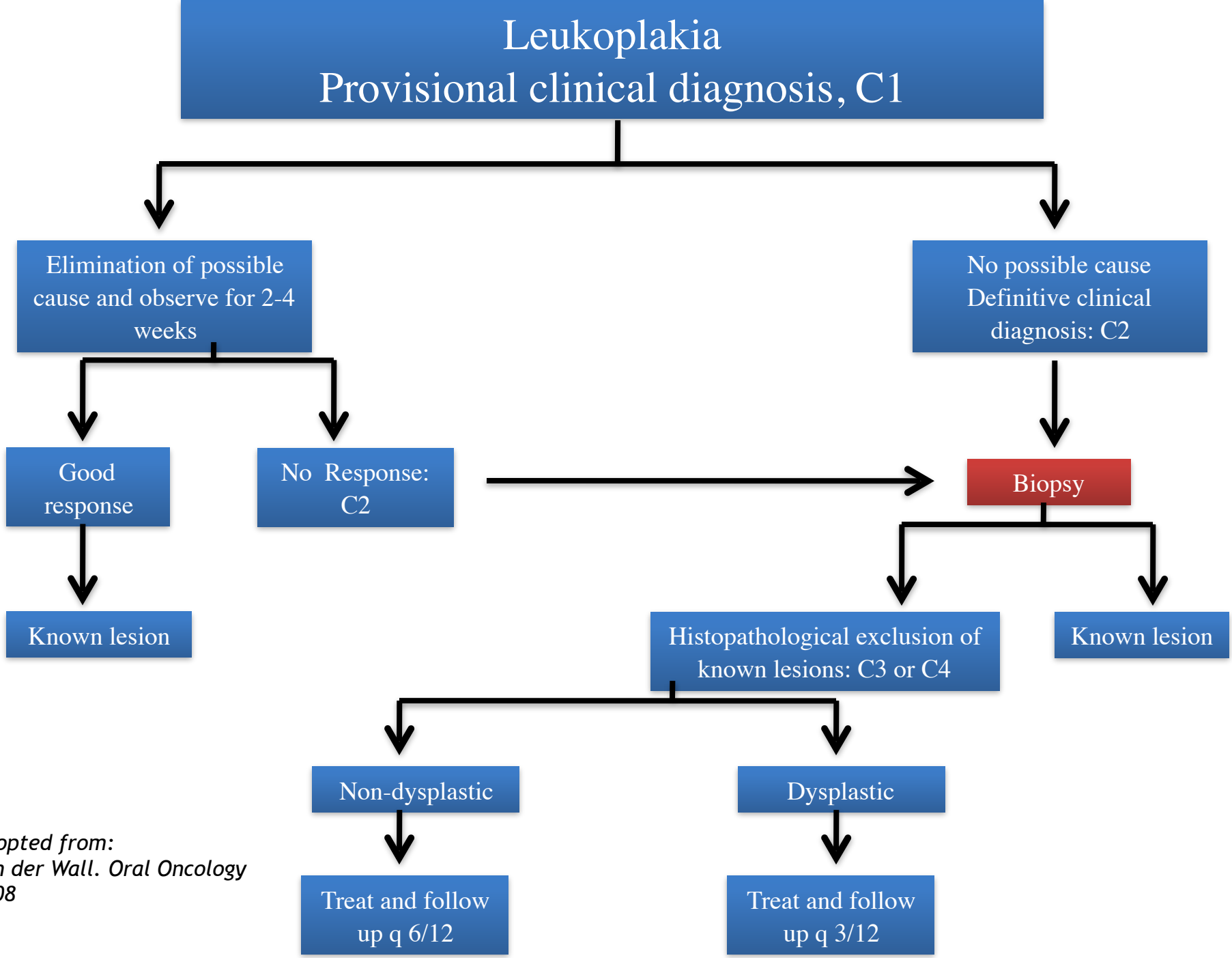
Leukoplakia;

- Other predictive factors at the molecular level;
  - p53
  - p27
  - p63
  - Angiogenesis
  - Cytokeratin 8
  - HPV types 16 and 18

Potentially malignant disorders

Leukoplakia;

- Other predictive factors at the genetic level;
  - ➢DNA ploidy
  - ➢Loss of heterozygosity at chromosomes;
    - 9p → early transformation
    - 3p, 17p → pre-malignant stage (dyplasia)
    - 4q, 6p, 8p, 11q, 13q, 14q → Carcinoma in situ or SCC



Adopted from:
Van der Wall. Oral Oncology 2008

Potentially malignant disorders

Erythroplakia;

- Clinical term → red patch
- Clinically not suggestive of any known mucosal disorder.
- Histopathologically →
  - ➢Severly dysplasia (40%)
  - ➢Neoplasia (SCC) (50%)
- Linked to tobacco and alcohol.

Potentially malignant disorders

Submucous fibrosis;

- Common in SE Asia and India, typically between 20-40.
- Clinically;
  - ➢whitish-yellow change → loss of elasticity → trismus and limited mouth opening.
  - ➢Presence of fibrous bands is a good clinical indicator.
  - ➢Linked to chewing areca (betel) nut (mainly) or dietry habits (chili peper) or nutritional defeciencies (Fe, B12 and folic acid).

- Histopathologically;
  - ➢Atrophy of epithelium + fibrosis and hyalinization of subjacent connective tissue + ↓ fibroblasts +↓ bld ves.
  - ➢Occasional dysplasia.
  - ➢Malignant transformation → 1/3 of patients.
  - ➢Impaired degradation of collagen.

Dentist's Role in the Management of Head and Neck Cancer

Dentist's role

- Detection of oral cancer
  - new and recurrent lesions
  - good clinical examination
- Management during treatment
  - surgery
  - radiotherapy
  - chemotherapy
  - palliation
- Education and awareness

Challenges related to detection and diagnosis

- Variable appearance
- Potentially malignant disorders are of great controversy

Common clinical presentations

- Ulceration or erosion
- Erythema
- White patch
- A lump
- Pain (but uncommon in early lesions)
- Dysphagia
- Lymphadenopathy

Treatment of oral cancer

- Surgery
- Radiotherapy
- Chemotherapy

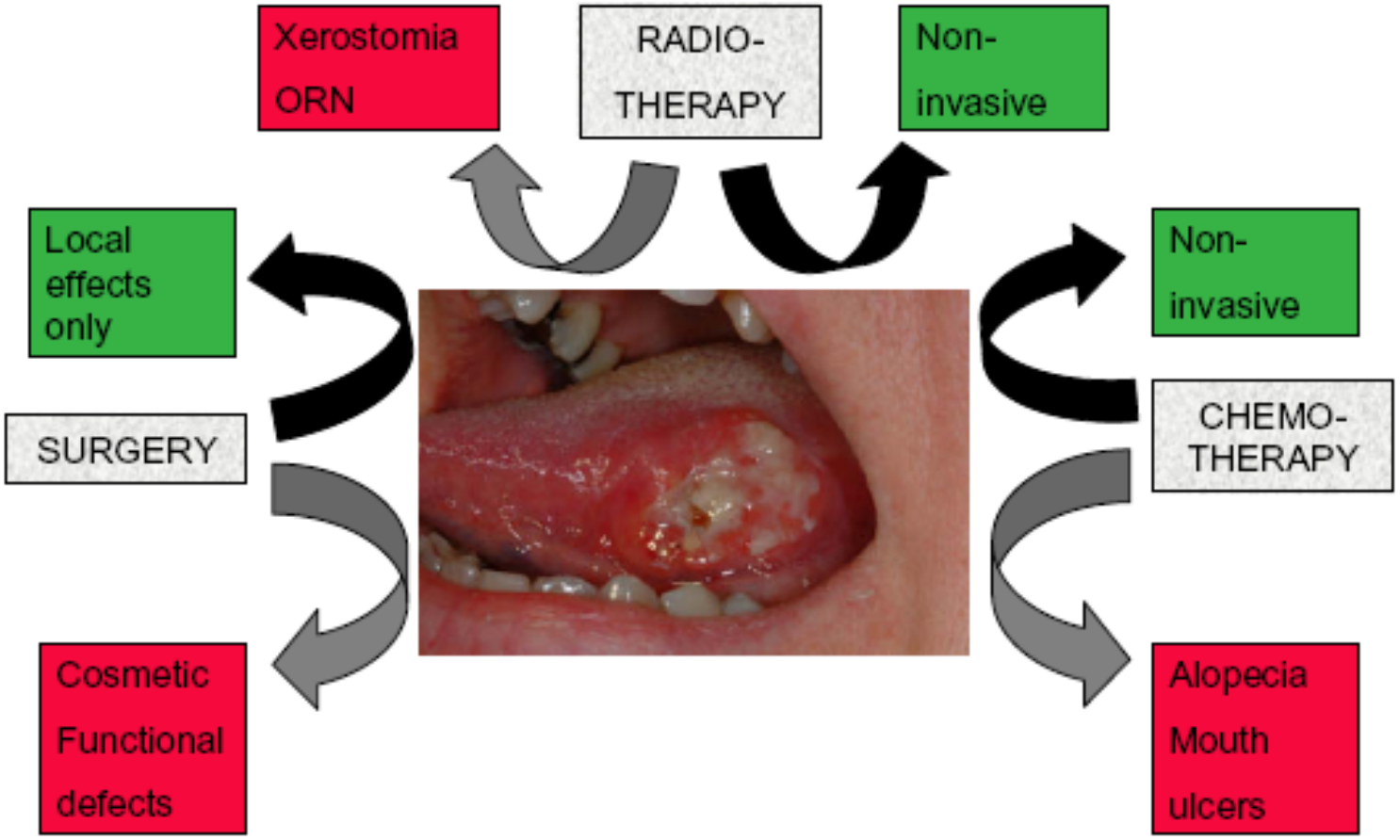


Figure 2 Treatment of oral squamous cell carcinoma, and main complications. (ORN; Osteoradionecrosis).

Source: Scully C. & Bagan J. Oral Oncol 2009

Surgery;

- Extent of surgery is determined by the size of tumour (T) and extent of nodal involvement (N).
- Safety margins of clinically normal tissue is between 1.0-1.5 cm
- Bone resection can be marginal (ID canal preserved), segmental (full height of mandible) or disarticulation (including the TMJ).
- Neck dissection is determined by clinically palpable LN, radiological findings of hypodense LN or elective dissection (occult LN spread).

Surgery

- Defects
  - aesthetics
  - function
- Psychological effects
- Inadequate margins
  - recurrences

- Rehabilitation
- Reconstruction
  - surgical
  - prosthetic

Image source: the University of Adelaide

Radiotherapy

- Radiation affects the ability of rapidly dividing cells to replicate
- Other cells in the body also divide rapidly and are also susceptible to radiation
  - salivary glands
  - hair
  - mucosa

Radiotherapy;

- There are three modalities of RT;
  - External Beam RT (EBRT)
  - Intensity Modulating RT (IMRT)
  - Brachytherapy
- Patients are positioned for RT by a custom-made face-neck mask
- Normal necks are also irradiated. Occult nodal involvement is up to 50%.
- Radiation dose (Gray or Gy) is fractioned over **6.5 - 7** weeks, with **1.8 - 2.2** fractions per day (5 days per week)

Radiotherapy

- Localised effect
- Side effects depend on location
- Used in combination with surgery or with chemotherapy or on its own

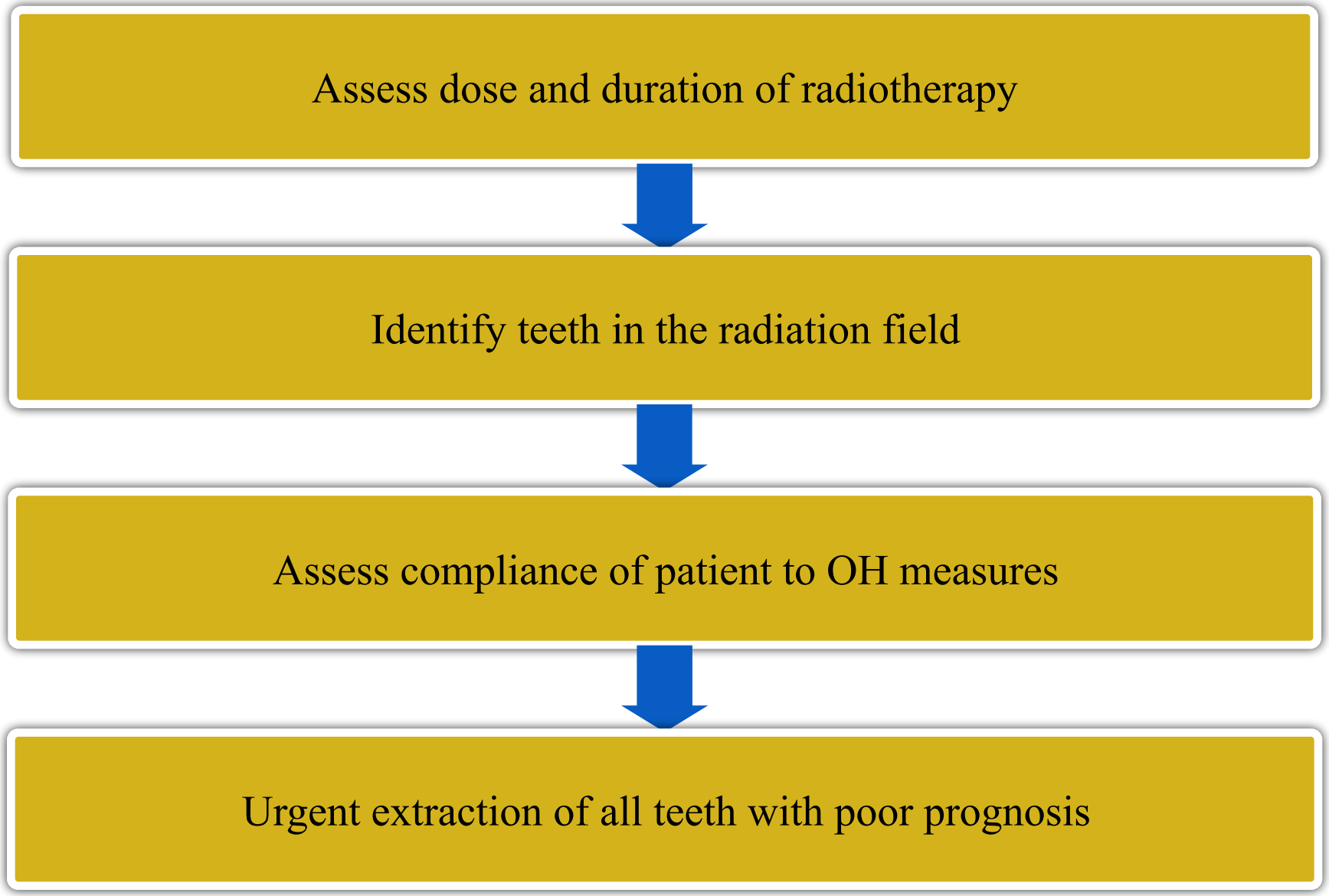
Radiotherapy – side effects

- Skin inflammation
- Mucositis
- Xerostomia
  - infections
  - caries
- Taste changes
  - direct effects of radiotherapy
  - xerostomia
- Osteoradionecrosis

Image source: the University of Adelaide

Management of side effects related to radiotherapy

- Pre-radiotherapy;
  - Adequate pre-treatment assessment;
  - to establish a stable oral state that is able to be maintained without future interventive oral surgery
  - to prevent the development of radiation caries


Assess dose and duration of radiotherapy
Identify teeth in the radiation field
Assess compliance of patient to OH measures
Urgent extraction of all teeth with poor prognosis

Management of side effects related to radiotherapy

- Post radiotherapy;
  - Fluoride treatment
  - Saliva substitutes
  - Regular examination
    - hard tissues
    - soft tissues

Image source: the University of Adelaide

Chemotherapy

- Not effective as sole treatment for oral cancer
- Indicated in case of distant metastasis
- Affects normal cell populations
- Acute effects
- Contributes to treatment morbidity

Chemotherapy

- Oral epithelium
- Salivary glands
- Taste

- Oral ulceration
  - direct cytotoxicity
  - increased susceptibility to infections
  - increased susceptibility to trauma

- Mucositis is the most common reason for reducing or terminating CT treatment

Image source: the University of Adelaide

Chemotherapy

- **Infections**
- Candidiasis
- Herpes simplex
- Rare opportunistic bacterial infections
  - *Klebsiella*
  - *Pseudomonas*

Image source: the University of Adelaide

Management of side effects related to chemotherapy