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ORAL HEALTH



CONTENT

EDITORIAL - 2

ARTICLES

Oral diseases in low- and middle-income countries – a neglected public health challenge - 3

Complicated odontogenic infections in Tonkolili District, Sierra Leone - 6

CASE REPORT

A rapidly progressing and possibly fatal oral infection – a case report on Ludwig's Angina - 8

INTERVIEW

An attempt to stop the 'common' child diseases – promoting health in Malawi by tackling root causes - 11

OPINION

The needs and requirements of medical doctors preparing to work in the tropics - 13

CONSULT ONLINE

Oral cavity carcinoma - 16

BOOK REVIEW

The power of Women: A Doctor's Journey of Hope and Healing by Denis Mukwege - 18

ORAL HEALTH: A KEY INDICATOR OF OVERALL HEALTH, WELL-BEING AND QUALITY OF LIFE

This is how the World Health Organization (WHO) introduces the topic oral health on their webpage,^[1] an important but again neglected health topic. During my medical studies, I did not even have to do an exam in dental or oral health. In fact, we only had one lecture on dental physiology and pathophysiology during those six years of study. This is a shame, if you ask me. Dental and oral health are important for everyone, every day. The world's most common health condition, according to the Global Burden of Disease 2017, involves untreated dental caries in permanent teeth.^[2] And in the year 2016, almost 3.6 billion people were affected by an oral disease.^[1]

We all use our mouth and teeth every day. If it is not to eat or drink, it is to smile, talk and kiss. And if we have a problem with it 'we can miss it like a toothache'. Unfortunately, oral and dental health care are not part of universal health coverage (UHC), and treatment for related conditions are expensive. In most high-income countries, 5% of the total and 20% of out-of-pocket health expenditure is to cover the treatment of dental problems.^[1] Most low- and middle-income countries are unable to provide services to prevent and treat oral health conditions.^[1] Even in the Netherlands, we need an organization like *Dokters van de Wereld* to make a plan for the coverage of dental care services in the basic health insurance package, while almost 1.5 million people cannot afford a regular visit to their dentist.^[3] Recent good news, however, is the approval of the Human Papillomavirus (HPV) vaccination for boys (and not only girls) in the Netherlands, since HPV is known to be a leading cause of oropharyngeal cancers in the world.^[4]

This first edition of our *MTbulletin* 2022 is all about oral health. We learn about it as a public health challenge, about how our mouth tells us about our general mental and physical well-being, and we

present some interesting cases. Also, you will find an interview with Sytse Fluitsma, a role model in relation to neglected diseases in a neglected group of people. Before wishing you a pleasant read, I would like to thank all authors for their contribution to this edition of *MTb*. It was a pleasure to read and re-read the stories and articles you shared with us.

Maud Ariaans

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PHOTO BY SHARIF PUTRA - KOTA KINABALU, SABAH, MALAYSIA / AUGUST 23, 2019

Oral diseases in low- and middle-income countries – a neglected public health challenge

Oral diseases present a major public health challenge worldwide.^[1] Many people across the globe still suffer unnecessarily from the pain and discomfort associated with oral diseases. The two main oral diseases – dental caries and periodontal disease – are highly prevalent, despite being largely preventable. They have significant impact on individuals, health systems and the wider society. Pain, sleepless nights, malnutrition, low quality of life, school absenteeism and work productivity loss are all common effects of oral diseases. Oral treatment is also very costly to both individuals and healthcare systems.

Although oral health has significantly improved in high-income countries in recent decades, levels of oral disease appear to be increasing in low- and middle-income countries (LMICs) – in conjunction with economic development and consequent changes in nutrition and lifestyle, for example due to the higher availability of sugars. A second concern in LMICs is the persistent nature of oral health

inequalities. People from lower socioeconomic positions and marginalized groups are experiencing disproportionately higher levels of oral disease.^[2] There has been limited success thus far in generating political interest and action to address these oral health problems. Oral health is still characterized by neglect and low prioritization by governments and health systems, particularly in LMICs.^[3,4]

ORAL HEALTH AND GENERAL HEALTH – COMMON RISK FACTORS AND DETERMINANTS

Oral health is an integral element of general health. Poor oral health can adversely affect general health conditions and vice versa, through shared inflammatory pathways. For example, periodontal disease has been associated with a higher risk of developing diabetes, cardiovascular disease, preterm birth and dementia in adults^[5], while severe dental caries has been associated with stunted growth in children.^[6]

Most oral diseases share common risk factors with other non-communicable diseases (NCDs) such as smoking, alcohol use and sugar consumption. These behaviours are influenced by broader social determinants^[7]: the circumstances in which people are born, grow, live, work and age. In LMICs, determinants such as poverty, poor living conditions, low education, unemployment, inadequate water, sanitation and hygiene (WASH) and poor access to healthcare all contribute to a higher risk of oral diseases in the population. The unequal distribution of these determinants across the world accounts for the persisting inequalities in (oral) disease burden.

THE BURDEN OF ORAL DISEASES

DENTAL CARIES

Dental caries (tooth decay) is the most widespread human disease.^[8] It is a multifactorial disease caused by the

interaction between bacteria in dental plaque (biofilm), sugars and the tooth surface. Bacteria in dental plaque produce acids when metabolizing sugars, which dissolve the tooth enamel and causes cavities.^[9] Fluorides have been used since the 1940s to prevent tooth decay. There is overwhelming evidence that long-term exposure to low concentrations of fluorides is associated with clear reductions in dental caries.^[10] Hence, key measures to prevent dental caries include twice daily tooth brushing with fluoride toothpaste as soon as the first primary teeth erupt (around 6 months of age) and reducing the frequency of consuming sugary foods and drinks. It is important that these behaviours are introduced and shaped during early life, setting children on a path to good oral health in later life.

Most dental caries remain untreated, which can lead to infection of the pulp, abscesses, and subsequent pain and impacts on physical and psychological well-being. The Global Burden of Disease study revealed that untreated dental caries in the permanent dentition is the single most prevalent global condition out of 291 diseases studied.^[9] The age-standardized prevalence was 34.1% in 2015, affecting 2.5 billion people worldwide. The highest prevalence of dental caries is found in middle-income countries (MICs), particularly in South and Southeast Asia and South America.^[11] In low-income countries (LICs), dental caries levels are generally lower but almost all of the caries are left untreated (98%), indicating weak oral healthcare systems.^[11]

PERIODONTAL DISEASE

Periodontal disease (gum disease) is an inflammatory condition of the periodontium, the tissues supporting the teeth.^[12] Periodontitis initially presents as gingivitis, a reversible chronic inflammation of the gums. This can progress to (severe) periodontitis with irreversible tissue destruction, including bone loss





surrounding the teeth. Periodontal disease is caused by specific microbes in the dental plaque due to poor oral hygiene. Other risk factors include stress, smoking, excessive alcohol use, low fruit and vegetable consumption, genetic factors and diabetes mellitus.^[12]

According to the Global Burden of Disease study, severe periodontitis is the sixth most common disease worldwide, with a global prevalence of 10%.^[8] In 2015, it was estimated that 538 million people were affected by the disease. The prevalence is highest in South America and West Africa. Periodontitis is the main cause of tooth loss in adults, and has a negative impact on chewing ability, self-esteem, social functioning and employment opportunity.^[1,11,12] Globally, thirty percent of people between the age of 65 and 74 years have lost all their teeth, mainly due to periodontal disease.^[11] A total of 276 million people worldwide are edentulous.^[8]

ORAL CANCER

Oral cancer includes cancer of the lips, tongue, gum, floor of the mouth, palate, cheek mucosa and vestibule of the mouth. Tobacco use, especially when combined with alcohol consumption, is a major risk factor of oral cancer.^[1,11] In Asia, chewing tobacco with carcinogenic substances from betel nut poses an additional risk. Men are more commonly affected than women, as are people from lower socioeconomic backgrounds.^[11] Oral cancers generally present as an ulcer that does not heal, often preceded by precancerous lesions shown as red or white patches.

Oral cancer is among the 15 most common cancers, with an estimated 500,000 new cases and 180,000 deaths per year.^[1,8] Oral cancer rates vary greatly depending on the region; rates are highest in South and Southeast Asia, but the burden is also high in France, Eastern Europe and parts of Africa.^[12] Kaposi's sarcoma in particular is more prevalent in LMICs, as it is a relatively common condition in people with HIV/AIDS. Over 35% of people with AIDS are affected.^[13] The survival rate for oral cancers is among the lowest of all cancers; the mean

five-year-survival is only 50%.^[14] Late detection of oral cancers is one of the main reasons for the low survival rate.

OTHER ORAL DISEASES

Other oral diseases that affect the soft and hard tissues of the mouth include craniofacial disorders, congenital anomalies, trauma, dental erosion, and various infections. One neglected oral disease that is specifically observed in the least developed countries around the world is noma. Noma is a rapidly progressive infection with severe gangrenous destruction of the tissues of the mouth and face, affecting mainly two- to six-year-old children in Sub-Saharan Africa. Main causes are malnutrition and poor sanitation. It is estimated that 140,000 cases of noma are reported each year and, if left untreated, 70% to 90% of those affected die.^[11]

SYMPTOMS IN THE MOUTH RESULTING FROM SYSTEMIC AND/OR INFECTIOUS DISEASES

The mouth is a mirror of the body. Examination of symptoms in the mouth can reveal the presence of certain underlying diseases, including infectious diseases such as HIV, nutritional

deficiencies or eating disorders. There are over 30 million people across the globe with HIV infections. Over 50% of those affected with HIV develop oral manifestations at an early stage, such as bacterial, fungal or viral infections - often of the herpes family - but warts, lymphoma, Kaposi's sarcoma and hairy leukoplakia are also observed.^[15] Patients with HIV also have an increased susceptibility to periodontal breakdown. Other sexually transmitted diseases, such as syphilis and gonorrhoea, frequently produce lesions on the oral mucosa as they affect mucous membranes.^[16] Lesions associated with syphilis are chancre of the oral mucosa (primary syphilis), or oral ulcers, glistening patch or mucous patch, and an ulcerated plaque covered by a grey-white necrotic membrane (secondary syphilis).^[16] Patients with gonorrhoea may present with painful non-specific pharyngitis. Oral manifestations could also be indicative of nutritional deficiencies.^[16] Patients with anaemia for example have a higher prevalence of atrophic glossitis, angular cheilitis, burning sensation of the oral mucosa, dry mouth and oral lichen planus.^[17] The eating disorder bulimia can

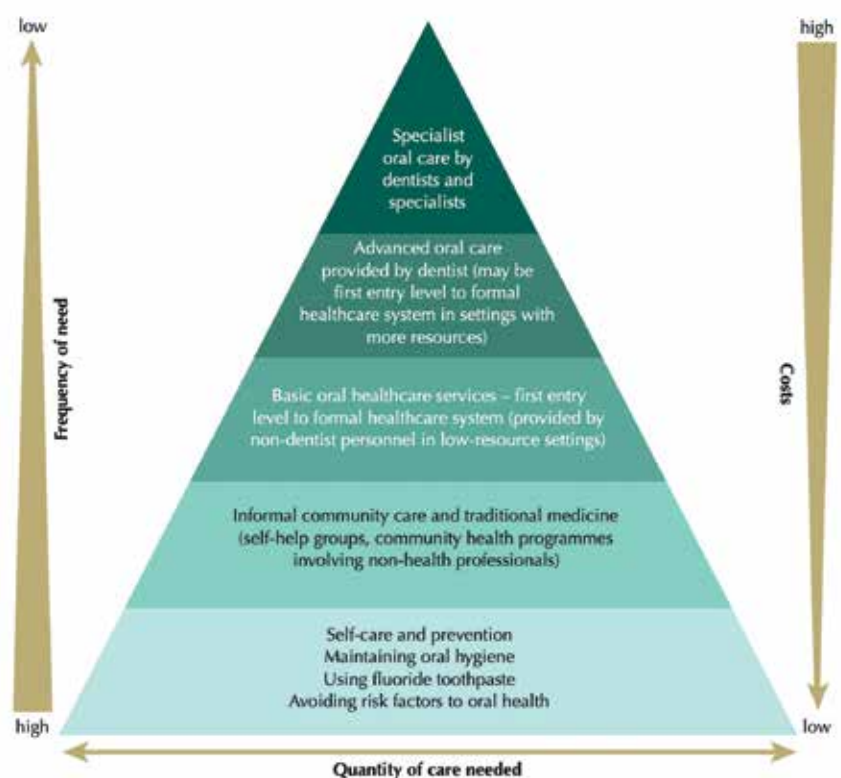


Figure 1. Oral healthcare in universal health coverage: the oral health continuum. From: Benzian & Williams, 2015.^[7]

lead to erosion of the teeth. (Oral) health professionals must be aware of the oral manifestations of underlying diseases, as they can play an important role in the early detection and referral of patients.^[18]

STRATEGIES TO PROMOTE ORAL HEALTH IN LMICS

ENSURING ACCESS TO BASIC ORAL HEALTHCARE

Historically, oral health promotion follows an ‘interventionist’ approach by providing curative and preventive care to individual patients in clinical dental settings. This approach is very costly in terms of financial and human resources, and therefore unaffordable for many LMICs - particularly in light of the high oral disease burden. The scarcity of resources, combined with the competing healthcare demands in LMICs, makes investment in oral healthcare very limited.^[4] Another problem is the low workforce numbers, which is reflected in the global density of dentists; most HICs have a density of one dentist per 1,000 to 3,000 people in the population (the “ideal ratio” according to Western norms), while this ratio is one to 100,000 to more than 200,000 people in most African countries.^[19] Another challenge is that dentists tend to be concentrated in affluent urban areas, leaving disadvantaged populations in rural areas underserved.^[11] As a result, many people in LMICs must rely on the care of illegal practitioners who lack professional training and/or the necessary equipment.

A fundamentally different approach is therefore needed. Access to basic oral healthcare should be integrated into the concept of Universal Health Coverage (UHC). UHC is defined by the World Health Organization (WHO) as a system in which “all people have access to primary health services and do not suffer financial hardship for paying them”.^[20] The Basic Package of Oral Care (Figure 1) aims to help countries to direct scarce resources for oral health to address essential and common needs.^[21] Ideally, the initial focus is on cost-effective and evidence-based interventions to promote self-care and prevention, including ensuring the availability of fluoride toothpaste.

A minimum requirement is to cover basic emergency oral care and pain relief (e.g. tooth extractions) at the entry levels of healthcare systems (provided by non-dentist personnel in low-resource settings). More costly curative and specialist care can be added and would be available at higher secondary levels of the healthcare system.

INTEGRATING ORAL HEALTH INTO HEALTH POLICIES

The close bi-directional relationship between oral and general health, and the shared risk factors and determinants provide a strong basis for the integration of oral health into general health promoting policies. Important steps are to increase inclusiveness and recognition of oral health in existing policies and programmes, and to align efforts to promote oral health with international frameworks such as the WHO global action plan on NCDs and the Sustainable Development Goals (SDGs).^[22] The global action plan on NCDs includes a road map of (upstream) policy actions to achieve targets to reduce the burden of NCDs by 2025. Many policies target modifiable risk factors such as tobacco use and sugar consumption and underlying social determinants, and are therefore also beneficial to oral health. The SDGs also provide opportunities for more inclusion and better prioritization of oral health, particularly under SDG 3, “healthy lives and well-being for all”. This global momentum for NCDs and global public health and development provides a window of opportunity to initiate progress to tackle the burden of oral disease across the globe, particularly in LMICs.



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Complicated odontogenic infections in Tonkolili District, Sierra Leone

Last month, we visited one of our surgical students (CapaCare surgical training programme)^[1] in a government district hospital here in the northern province of Sierra Leone and the atmosphere was grim. A woman in the third trimester of her pregnancy had just passed away. She suffocated due to the consequences of peri-mandibular cellulitis with airway compression (sometimes referred to as Ludwig Angina). The local medical team had tried their best with the limited local options available but their efforts were not successful. We present a similar case and the results of a case series showing that what happened to this woman is not an exception.

CASE PRESENTATION

A 21-year-old male with no past medical history presented with a large bilateral submandibular swelling (Fig. 1a). He had a toothache for one week and visited a traditional healer who had prescribed a topical herbal medication. On admission, the patient was alert, circulatory stable and afebrile but had difficulty breathing; there was a stridor on inspiration, and the maximum mouth opening was 30mm (inter-incisal distance), and pus was seen draining into the oral cavity. The Hb level was 15.3 g/dL.

A diagnosis of peri-mandibular cellulitis with airway compression was

made, and intravenous antibiotics were administered (ceftriaxone 2g od, metronidazole 500 mg tid and gentamicin 320 mg od). Because of the stridor, single-dose dexamethason 10 mg IV was administered, followed by 4 mg IV qid. In addition, the patient was nebulized with adrenaline in normal saline solution. The right-sided submandibular abscess was incised and drained.

One day after admission, the patient deteriorated, with O₂ saturation dropping to 69% and prolonged apnoea periods. During an emergency cricothyroidotomy, the previous incision on the right was extended to enhance drainage of pus (Figure 1b). Three days later, there were crepitations and swelling in the left supraclavicular region, and an incision and drainage as well as a necrotomy were performed. On day 6 after admission, the patient was stable and the tracheostoma was removed. He made an uneventful recovery, with the prominent complaint of excess of saliva in the mouth cavity and trismus, both improving over the next 3-4 weeks.

Three weeks after admission the mouth opening was sufficient for removal of an infected and decayed molar. Six weeks after admission, the patient was discharged with a mouth opening of 40 mm (Figure 1c). At that time, he received paracetamol for gum pain; his wounds were not fully granulated yet. Six weeks after discharge the

patient was consulted by phone, and no complications were reported.

CASE SERIES

Prevalence data on severe dental infections are scarce, particularly for low-income countries. We have collected data on patients presenting with complications of dental abscesses between September 2020 and December 2020 in Masanga Hospital and Lion Heart Medical Centre in Tonkolili District, Sierra Leone. A total of 20 patients were listed; the median age was 28 years, and 65 % were male. Thirty % showed evidence of sepsis, 24 % required a tracheostomy, and the mortality rate was 45 %. This case series illustrates the severity of the dire consequences of the absence of access to basic dental and oral hygiene care.

Dental caries and infiltration of bacteria in the dental root system can subsequently lead to dental abscesses.^[3-6] Well known risk factors for developing caries include a high sugar intake, bed-time infant feeding, smoking, lack of regular tooth cleaning and lack of access to fluoridated water and/or tooth paste.^[3,7] In this case series, 80-100 percent of participants reported brushing their teeth daily with toothpaste.^[2] The rise of sugar soda consumption and the lack of knowledge about the dangers of such drinks may be a contributing factor to developing caries and subsequently serious disease. In this case series, the majority of individuals did not report drinking soda regularly, but the timing of consuming sweet products (i.e. after toothbrushing) could have played a role.^[2,8,9] However, the high mortality rate warrants a look at the bigger picture here.

Socioeconomic status relates directly to prevalence and severity of oral diseases via multifactorial pathways (Figure 2).^[7,9-12] Suboptimal nutritional status to



Figure 1a. On admission; figure 1b. After initial surgery; figure 1c. On discharge

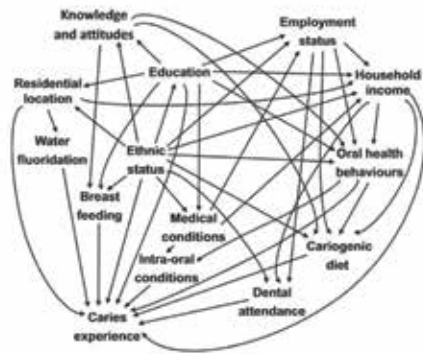


Figure 2. Associations between major socio-economic status variables (reported ethnic status, educational level, household income and residential location) and dental caries. From: Foley, M., Akers, H.F (2019) Does poverty cause dental caries? *Australian Dental Journal*, 64: 96–102. <https://doi.org/10.1111/adj.12666>

begin with, lack of knowledge of oral health and lack of dental care services all contribute to the poor state of oral health in Sierra Leone.^[9,10,12] Financial hardship makes people only seek healthcare when there is no alternative.^[2,10] With a potential fulminant disease such as caused by dental abscesses, having access to appropriate care is important. The so-called three-delay-model is a good tool to analyse this group (delay in decision to seek help, delay in arriving at a health facility, and delay in provision of adequate care).^[13] Health seeking behaviour in the ‘preventive period’ was influenced by unknown educational and financial factors; all patients were already experiencing tooth pain over several weeks before seeking help.^[2] When resources and geographical circumstances made it possible for people to seek help, 70% of the population studied here first visited the traditional healer.^[2] These traditional healers were therefore not the solution, but actually added to the delay.^[2,10,11]

DISCUSSION AND WAY FORWARD

There are few dentists in the country, who are mainly situated in the Western Peninsula and urban areas; the majority of the population does not have access to basic dental care.^[14] Dental Health International Netherlands (DHIN) started an initiative to train hospital dental workers to perform tooth extractions, and some hospitals are now providing these services. Nevertheless, only few patients are presenting. Some patients still believe pulling a tooth can cause

deafness or blindness, and neither patients nor traditional healers seem to be aware of the high incidence of catastrophic outcomes in case of a severe odontogenic infection.^[2] To tackle this silent catastrophe, the government of Sierra Leone and its partners should put oral health just as high on their agenda as maternal and child health. We support the WHO suggestion for settings as the one described here to include oral health in the Universal Health Coverage. This should help re-orient oral health policy away from a conventional model of dentistry towards a preventive model of care that promotes oral health and is integrated into health systems at all levels.^[12,15]

In Masanga hospital and Lion Heart Medical Centre, we will continue to look at this population closely. The prospective observational cohort study (DELAY)^[16] was constructed to get a better understanding of risk factors and/or contributing factors that increase the likelihood of developing severe odontogenic infections in the Tonkolili District population. It started with including patients that were admitted to Lion Heart Medical Centre or Masanga Hospital as of 4 September 2021. In DELAY, participants are asked about their soda drink consumption as well as their dietary intake and toothbrushing habits. Participants are asked whether they have visited a traditional healer and, if so, why they went there first. Treatment and outcome are registered, and follow-up takes place until three months after discharge. Data collection at both study sites is expected to continue until August 2022, after which data analysis will take place. We hope to gain insight into contributing factors leading to disease progression and possible interventions that can be established to prevent morbidity and fatal outcome. Current mortality rates for this preventable disease are unacceptable, and we hope that our studies will contribute to increased public

awareness and political willingness to integrate oral health into the Sierra Leonean health system at all levels.



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A rapidly progressing and possibly fatal oral infection – a case report on Ludwig's Angina

CASE

Late afternoon, at the end of outpatient clinic consultation hours in the Holy Mariam de Lourdes Hospital in Attat, Ethiopia, a 42-year-old male presented to our Ear-Nose-Throat (ENT) team with a large swelling of his tongue and floor of the mouth. We observed a sick, feverish patient with some shortness of breath who complained of difficulty swallowing and inability to move his tongue. ENT-examination revealed a large intra-oral swelling of the tongue, induration of the floor of the mouth and extensive dental caries (Figure 1).

Because of the limited resource setting, there was no access to radiodiagnostic equipment to help estimate the extent of the swelling, nor was mechanical ventilation available in case the airway would become further compromised and needed to be secured. Transferring the patient to the nearest hospital with these resources would mean an eight-hour drive to the capital city, which was not an option because of the risk of acute airway obstruction. Therefore, the ENT-team decided to locally drain the submental space in an attempt to reach adequate source control.

Before incision, fiberoptic laryngoscopy was performed which showed oedema of both the epiglottis tip and tongue base. Both vocal cords could be visualized, and the airway was sufficiently patent. The patient received ten milligrams of dexamethasone intravenously, while a surgical set for a cricothyrotomy was constituted from several available surgical instruments. After a median incision in the floor of the mouth a large collection of pus was evacuated. There was no sign of immediate respiratory distress after surgery and the patient was admitted to the male ward. Six hours after local drainage of the submental space, the patient had died, probably due to a cardiac arrest. Resuscitation was of no help.

For the ENT-team, this complication had an enormous impact and raised questions as to how this case could have been managed better. Should the airway have been secured first, maybe even with a tracheotomy, despite laryngoscopy before incision and in the absence of ventilation? This case report provides the clinical characteristics of Ludwig's angina, including key factors in diagnosis and treatment, and presents a differential diagnosis of (sub)acute lesions in the floor of the mouth – all in the perspective of low-resource settings.

BACKGROUND

Ludwig's angina (LA), first described by Karl Friedrich Wilhelm von Ludwig in 1836, is caused by a rapidly spreading infection in the floor of the mouth. In up to 90% of all cases, this infection is caused by odontogenic foci, especially peri-apical abscesses of the second and third mandibular molars. Non-odontogenic causes include peritonsillar abscess, mandibular fracture and sialoadenitis.^[1,2] In children, upper respiratory tract infections account for the majority of cases of LA.^[3] Factors predisposing an individual to a higher risk of developing LA are poor dental hygiene, malnutrition and conditions

that influence the immune system such as diabetes mellitus, acquired immune deficiency syndrome (AIDS) and the use of immunosuppressants.^[4,5] In low- and middle-income countries (LMICs), mortality is still high, with rates up to 50% if patients do not receive timely and appropriate treatment.^[2] Several complications can occur such as necrotizing fasciitis of the neck, mediastinitis, pericarditis, rupture of the carotid artery or jugular vein thrombosis, pneumonia or pleural empyema. Post-operative complications occur in about a quarter of all patients.^[5]

ANATOMY AND PATHOPHYSIOLOGY

The submandibular space is bound superiorly by the mucosal layer of the floor of the mouth and inferiorly by the superficial layer of the deep cervical fascia. The mylohyoid muscle divides the submandibular space in two spaces: (i) the sublingual space located superior to the muscle and (ii) the submylohyoid space inferior to the muscle and superior to the hyoid bone.^[6] Both spaces have a close relation with the roots of the mandibular molars and they communicate at the posterior margin of the mylohyoid muscle. Periapical infections of the roots of the second and third molars drain



Figure 1. Ludwig's angina with tongue enlargement and carious dentition in a 42-year-old Ethiopian male.



Figure 2. Characteristic sublingual ranula; note bluish appearance.

into the submylohyoid space; the first and premolars root apices drain into the sublingual space.^[3,7] Infection in the submylohyoid space can spread in a superior and posterior direction causing tongue enlargement to two or three times its original size with risk of hypopharyngeal obstruction.^[2,6] The infection can then spread along the fascial planes towards the parapharyngeal and retropharyngeal space, through which it can reach the mediastinum and cause e.g. mediastinitis.^[3,6]

Since LA mostly originates from an odontogenic source, the infection is mainly caused by polymicrobial, oral flora which consist of both aerobic and anaerobic species.^[3] The most common pathogens isolated from LA patients are *Streptococcus viridans* (40%), *Staphylococcus aureus* (27%) and *Staphylococcus epidermidis* (23%).^[2] *Klebsiella* species are more common in diabetic or immunocompromised patients.^[8] Together with improved oral hygiene, the global availability of antibiotics has led to a significant reduction in mortality from LA, which highlights antibiotic use as a cornerstone in the treatment of Ludwig's angina.^[4,8]

CLINICAL PRESENTATION

Patients typically present with systemic symptoms such as fever, malaise and

dehydration resulting from reduced oral intake.^[3] Frequent complaints include pain in the floor of the mouth and throat, dysphagia, dysphonia, trismus, and drooling.^[6] Physical examination may reveal a firmly indurated floor of the mouth, bilateral swelling of the neck and an oedematous tongue, which can be displaced towards the palate, and hypopharynx. More advanced symptoms are inspiratory stridor, cyanosis and dyspnoea, indicating airway obstruction.^[2,3]

DIAGNOSTIC TESTING

The diagnosis of Ludwig's angina is largely made upon clinical presentation.^[9] Laboratory testing has no additional value, but blood samples should be taken before starting antibiotic treatment. A CT-scan with intravenously administered contrast may help in estimating the extent of infection^[2] but is usually not available in limited resource settings.

Ultrasound is widely available and, in contrast to computed tomography, can be used in an upright position, which is more favourable in case of respiratory distress.^[2] Ultrasonography can be used to screen for hypo-echoic lesions that may suggest abscess formation.^[10] Furthermore, it can localize swelling to deeper tissue planes, thereby detecting early oedema and infection, assessing airway involvement,

and estimating the diameter of the subglottic upper airway.^[10,11]

TREATMENT

Assessing and securing the airway is the first and most important step in the treatment of LA. Especially since airway oedema can rapidly develop with spreading infection, the clinician should be prepared for immediate airway intervention by means of endotracheal intubation or tracheostomy.^[2,9] An ENT-surgeon should be consulted in an early phase to determine whether surgical decompression is indicated for primary source control.^[3,9]

As mentioned before, administration of antibiotics is key in treating LA. Specific regimens vary widely in the literature, but it is advised to use broad-spectrum antibiotics covering both aerobic and anaerobic pathogens, such as penicillin combined with clindamycin or metronidazole.^[3,5] The role of corticosteroids in the treatment of LA is still debated, but they may reduce airway oedema^[9] and enhance antibiotic penetration^[2], thereby decreasing the need for an artificial airway as well as the length of hospital stay.^[12]

DIFFERENTIAL CONSIDERATIONS

Table 1 presents an overview of the most common lesions in the floor of the mouth. Cystic lesions are usually slow-growing and benign and arise from salivary glands, mostly the sublingual gland. Most cystic lesions are ranulas, which are mucous retention cysts with a bluish appearance (Figure 2). Plunging, or diving, ranulas present as a large submandibular swelling due to a defect in the mylohyoid muscle through which the cyst can enter the submandibular space. Dermoid cysts usually contain skin appendages and, as opposed to ranulas, do not have a bluish appearance. Other cystic lesions present lower down in the neck, generally below the level of the hyoid bone, and are related to branchial arch anomalies or thyroglossal duct remnants.

Inflammatory lesions, of which the above discussed Ludwig's angina is one, constitute another group of lesions within the submandibular or sublingual



TABLE 1. Most common lesions in the sublingual and submandibular space.

CYSTIC LESIONS
Ranulas (simple or plunging)
Dermoid cyst
Thyroglossal duct
Branchial cleft cysts
INFLAMMATORY
Cellulitis/abscess
Ludwig's angina
Obstruction submandibular duct
Systemic disorders
NEOPLASTIC LESIONS
Benign lesions (lipoma; pleomorphic adenoma)
Malignant lesions (squamous cell carcinomas; lymphoma)
VASCULAR LESIONS

space. The submandibular gland drains inferior to the tongue via the submandibular duct (Wharton duct). Calculi formed within the gland may obstruct the duct, thereby leading to enlargement and inflammation of the submandibular gland, a condition referred to as sialadenitis. In 85% off the cases of submandibular gland enlargement, calculi are present in the duct. When calculi are not found, especially in older patients, a malignancy should be considered.

Generally, neoplastic lesions in the floor of the mouth are benign, with pleomorphic adenomas, especially of the submandibular gland, being the most frequently encountered. However, in a smaller gland such as the sublingual gland, enlargement is more likely resulting from a malignancy. Squamous cell carcinomas (SSCA) constitute up to 90% of all malignant lesions. It usually affects men over the age of 45 years and is related to tobacco

and alcohol use. These lesions are in general ulcerated and infiltrative.

CONCLUSION

Ludwig's angina is an acute and potentially life-threatening infection of the floor of the mouth that can rapidly spread, thereby being able to compromise a patient's airway. Diagnosis is usually through history taking and clinical examination. Early recognition of Ludwig's angina is crucial, and airway protection is vital in the treatment of LA. In LMICs, where otorhinolaryngology and anaesthesia are often not readily available for consultation and intensive care units are not widely present, quick referral to a hospital with abovementioned services should be considered. In the presented case of Ludwig's angina, the clinical course was fatal both as a result of the limited resource setting as well as the high rate of severe postoperative complications known to be related to LA.



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figure 2

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An attempt to stop the 'common' child diseases – promoting health in Malawi by tackling root causes

Sytse Fluitsma graduated in dentistry at University of Amsterdam in 1979.^[1] While practicing dentistry in the Netherlands for more than 40 years, he also dedicated time to promoting good oral health abroad. It started with the opportunity to work for Memisa Medicus Mundi in Malawi, which was the start of a lifelong commitment to improving (oral) health in children through the promotion of healthy practices and conditions for children, preferably at a young age.

In this interview, we talk about his devotion to the work in Malawi and also learn about his continued drive to care for the neglected closer to home. In the Netherlands, he addresses the needs of those whose access to dental services is challenged, including asylum seekers, drug users, and squatters. Throughout his career at home and abroad, Fluitsma has practiced dentistry as a two-way street, as more than treating tooth decay, and has remained curious about "the person behind the rotten tooth."

PREVENTION FOR BETTER HEALTH

In 1994 Sytse had the opportunity to work as a dentist in Malawi for three years. In those days, Malawi was a poor country, and it still is. *"After working for 15 years in Amsterdam, I felt it was time for an adventure. I was contracted by Memisa to work as dentist in a small referring hospital in the North of Malawi, St John's Hospital in Mzuzu. During those first years, I noticed the difficulties of working as a dentist in a low-income country. The treatment is mainly focused on curation instead of prevention, and the lack of manpower and supplies is evident. This hasn't changed that much over the past decades. A strong focus on prevention and encouragement of healthy practices at the primary school level will give these future adults a good start in life."*



Photo 1 - Sytse Fluitsma, Thandeka Nkhone, Education Project Manager World Vision Malawi Shanaver Chamba, Project manager School Health and Nutrition, HIV/Aids (SHN) Oliver Ndhlovu, Project Director, FFLA, Maureen Banda, Director SHN.

A meeting with dr. Wim van Palenstein Helderman – professor of Preventive Health Care at the University of Nijmegen – during the 2008 congress on 'Dental Aid in Underdeveloped Countries' led to a longstanding collaboration. At this congress, Helderman presented the *Fit for School* programme in the Philippines, a childhood disease prevention programme consisting of three main elements: hand washing with soap, tooth brushing with fluoride toothpaste and bi-annual deworming. Stimulated by the success of this approach in the Philippines, Helderman and Fluitsma looked at possibilities to adapt the programme for Malawi. Fluitsma: *"For a low-income country like Malawi, the focus on prevention of diseases is very important. Though the vaccination coverage for preventable diseases like polio and smallpox is relatively high, the access to clean water and sanitation facilities is extremely poor. Children continue to suffer from generally preventable diseases that challenge their physical, mental and social development. Ignorance of this problem contributes to a stagnation of the country's progress in all fields. Information and practical approaches that can improve*

schoolchildren's health is lacking. One way to handle this problem is to inform all levels of society and collaborate with local communities to stimulate and enable them to take matters into their own hands."

ENGAGING THE GOVERNMENT AND LOCAL COMMUNITIES

From the outset, it was clear that involvement of the government was vital, so in 2012/2013 a taskforce with government officials was formed to join with the Ministry of Health to introduce Fit For Learning Africa and develop a pilot programme called Wash Brush Smile (WBS), a joint partnership between the Malawian Government, UNICEF, World Vision Malawi and Fit For Learning Africa (FFLA). Fluitsma: *"In order to increase the sustainability of interventions tackling common avoidable diseases, it was necessary to integrate the WASH (water, sanitation, hygiene) activities, as promoted by Unicef, World Vision and FFLA, into the School Health and Nutrition and WASH programme of the Malawian government. This helped to focus in a more holistic way on the prevention of common childhood diseases caused by inadequate personal hygiene habits."*^[2]



In addition to securing support from all levels of society and local communities, the core programme stresses safe water and hygiene practices at the schools themselves. Fluitsma: *“Children are taught to wash their hands each time they visit the toilet and each time before and after they eat food or play in soil and water environments. This concept deliberately targets junior standards 1 and 2 children, following the principle that learning habits like hand washing and brushing teeth at a young age increases the chance that this will become a lifelong practice. The Wash Brush Smile (WBS) programme is conceptualized on the idea that children learn better when they are healthy. It therefore focuses on the prevention of common (child) diseases such as diarrhoea, pulmonary infections, soil transmitted helminth (STH) infections and tooth decay. It is an attempt to stop ‘common’ childhood diseases by tackling root causes. Additionally, we promote “Keep girls in school”, an advocacy programme encouraging girls to stay in school during their monthly period and facilitating the provision of sanitary rooms where they can hygienically change sanitary pads. In this context, Mother Groups are encouraged to start the production of pads for their own children and for girls in other schools.”*

The goals of the WBS programme are twofold: preventing common child diseases and promoting a good learning environment at primary school level, thereby enabling children to concentrate better in class, improve their academic performance, and achieve their education potential while also reducing the school dropout of girls and boys. Therefore, the WBS programme also works with local communities, parents and teachers of primary schools. *“This enables local stakeholders to achieve control over improving conditions, which in turn encourages them to sustain their activities and obtain ownership of their school health programme and ultimately achieve the full potential of their children’s education.”* In addition, the programme also aligns with other WASH activities in the environment such as the construction of protected water sources and hygiene facilities (implemented by UNICEF).

SUSTAINABILITY OF PRACTICES

The programme experienced some setbacks as a result of the Covid-19 pandemic. However, an assessment of the 20 schools involved in the pilot showed the benefits to date. *“The project beneficiaries presented success stories. They wished they could continue with the project in order to be fully equipped with WASH skills and knowledge including brushing teeth the right way. The knowledge and skills acquired by primary beneficiaries (learners) have gone beyond them as initially planned.”* Fluitsma mentions that there is, besides the direct effect on the learners, a trickle-down effect on their parents and siblings: *“This is very important for the sustainability of gains realised from the project, including changing attitudes and practices. The level of community participation was reported to be very high. This was also demonstrated in the contribution by local communities of labour and locally available resources such as bricks for construction of hand washing stands. The enthusiasm and demand-driven approach involving learners, teachers and parents generate confidence to recommend further replication of the interventions.”*

ORAL HEALTH IN THE NETHERLANDS: UNSEEN NEEDS

It was during his study of dentistry that Fluitsma started to care for the underserved. He volunteered in youth clubs and in his dentist practice focused on clients without private insurance. Not long after he returned home, he discovered ‘the third world’ in the Netherlands, as he started to work for those with limited or no access to dental

care, namely people with an addiction. For Fluitsma this was his rehab from Africa. Treating drug addicts with terrible tooth decay and crumbling teeth proved fulfilling, as a good set of teeth reduced shame, enabled them to (re) gain a sense of self-esteem and take part in society again. Though the circumstances in the Netherlands differ vastly – as here we have everything, including high-tech equipment in the dental practices and hospitals – Fluitsma recognizes *“similarities when it comes to accessing essential health care for certain groups in the Netherlands and how we value prevention. Good health care starts with prevention, hence the focus on this essential part in the health care system in the project in Malawi. This lesson learned may also be quite useful in the Netherlands”*. In the Netherlands, dentistry is also not included in the basic health care package (only for children up to 18 years), and fewer and fewer people are opting for an additional insurance covering basic oral health care.^[3]

FUTURE OUTLOOK

Most oral diseases are preventable, according to Fischer et al in *The Lancet* (2018).^[4] This is where the oral health workforce plays an important role. But there is also more to gain from making better use of oral health and other healthcare workers: *“A fit for purpose oral health workforce can enable equitable and improved health outcomes and could have an important role in addressing differential health outcomes. Dentists are generally underused in the management of other NCDs and are well placed to assume an enhanced role. Where there are*



Photo 2 - Sytse Fluitsma with Minister of Health, Mr Enock Phale (co-founder of Fit For Learning Africa, FFLA)



no dentists, the health workforce might be more fully used to expand and extend oral health.”^[4] According to the authors, the use of other healthcare workers in oral health is one of the three proposed areas for integrating oral health in universal health coverage (UHC).^[5] To help reinforce oral health services in Africa, the WHO and the Harvard School of Dental Medicine started rolling out oral health training for primary care workers, including community health workers.^[6] Besides giving due attention to prevention, such initiatives are important steps in meeting the needs for oral care services in Africa.

For more than two years during the height of the Covid pandemic, Fluitsma did not return to Malawi. Schools were closed and there was little room to restart the programme. In March, he went back to sign a memorandum of understanding (MOU) with World Vision and to continue the work. The WHO promotes an essential oral health package for low-resource settings in Africa as part of the WHO package of essential NCD interventions.^[7] The WBS programme, containing oral health interventions developed for school and community settings in Malawi, can be seen as an example of how people can take control of their oral health.



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NOTES AND REFERENCES

1. Fluitsma is also board member of Dental Health International Nederland; Friend of St John's Mzuzu, Kawiwale Nederland; and founder and CEO of Fit For Learning Africa.
2. For more information on the programme and the organisation: <https://fitforlearningafrica.com>
3. <https://doktersvandewereld.org/campagnes/mondzorg/>
4. Strengthening oral health for universal health coverage, see: www.thelancet.com Vol 392 September 15, 2018. [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(18\)31707-0/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(18)31707-0/fulltext)
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The needs and requirements of medical doctors preparing to work in the tropics

The role of internal medicine with focus on the Physician Global Health and Tropical medicine (PGHTM) training programme

Many doctors from high-income countries (HIC) work in low- and middle-income countries (LMICs) for a limited period of time. The duration may vary from weeks in targeted and specialized missions, such as teams of ophthalmologists or plastic surgeons, to months for others who are at registrar level to become, for example, a specialist in internal medicine or paediatrics in HICs. For those in training for infectious diseases, this may lead to accreditation in tropical medicine; others e.g., in chest medicine focus on one disease such as tuberculosis. Finally, young doctors such as the Dutch Physician Global Health and Tropical Medicine (PGHTM) work for some years in rural or district hospitals in various capacities.

The training programme of the PGHTM is unique as it aims to train doctors in clinical medicine and public health with a particular focus on LMICs. It is a professional career step, not an added-on training. It requires 2 ¼ years of training after which doctors usually serve for a minimum of 2-3 years in LMICs before returning home and continuing their career. The baseline clinical training in the Netherlands is well structured and focuses on surgery and obstetrics & gynaecology (O&G) (9 months residency each, “classical profile”); a minority train in O&G and paediatrics (9 months

residency each, “mother-and-child profile”). A 3-month national tropical course (NTC) is mandatory and includes clinical medicine, public health, health finance, health systems, and ethical aspects, among other components.^[1] Throughout the curriculum, 10 compulsory training days need to be attended, which focus on special topics such as transcultural rehabilitation, ophthalmology, and dental health. Lastly, a non-standardized 6-month residency in an LMIC setting follows with variable exposure and duties; the aim is to be better practically prepared before taking up a position in an LMIC.

WHAT IS THE NEED FOR THE PGHTM - MALAWI AS AN EXAMPLE

In Malawi, medical education leads to an MBBS degree (Medical Bachelor and Bachelor of Surgery), after a five-year curriculum at an accredited School of Medicine such as of the Kamuzu University of Health Sciences (KUHeS), formerly the College of Medicine, in Blantyre. After graduation, an internship (15 months) follows with rotations in internal medicine, paediatrics, surgery, and obstetrics & gynaecology, each for 3 months. The last 3 months is mainly spent on public health. The intern is responsible for day-to-day care of patients in the wards and outpatient clinics and works under supervision of consultants and registrars (doctors in training to become consultants). After successful completion of the



programme, the medical officer may be registered with the Medical Council and is allowed to practice independently.

WHAT IS REQUIRED – TROPICAL MEDICINE: DEFINITION AND CHANGES SINCE THE YEAR 2000

Tropical medicine traditionally referred to exotic, mainly vector-borne conditions, caused by parasites and occurring in warm climates. Examples are malaria, filarial diseases, sleeping sickness and helminthic infections.^[2]

The HIV/AIDS epidemic, which started in the 1980s and that hit Africa disproportionately, completely changed priorities. Classical tropical diseases were overshadowed, and tropical medicine became, in the view of some, the medicine of immunosuppression.

^[3] A devastating tuberculosis (TB) epidemic followed in the wake of HIV/AIDS. The HIV/AIDS epidemic not only required training doctors and nurses in antiretroviral treatment, but also brought about new and severe infections associated with HIV/AIDS such as bacterial meningitis, pneumocystis jirovecii pneumonia (PCP), and sepsis (pneumococcal, non-typhi salmonellae) as well as new or previously less common cancers such as Kaposi's sarcoma and cervical carcinoma.

As world-wide most resources for research went to the big three (HIV/AIDS, TB, and malaria), advocacy brought other groups of diseases to the forefront. The neglected tropical diseases (NTDs) are associated with poverty and lack proper diagnosis and treatment; there is a huge gap in research.^[4] Other emerging infections include epidemics of dengue or chikungunya, while other outbreaks were more focal such as the Middle East respiratory syndrome (MERS), the severe acute respiratory syndrome (SARS – caused by SARS CoV-1), and Ebola. Antibiotic resistance has become a major problem for the already limited choice of antibiotics in LMICs.

The COVID-19 (caused by SARS CoV-2) pandemic demonstrated the potential of rapidly spreading viral infections; other examples include influenza and

avian flu with similar challenges in management and control. The COVID-19 pandemic showed how world-wide health systems may become overwhelmed by a new infection that hits LMICs hard and that uses up resources at the expense of other regular care.

Since 2010, the non-communicable diseases (NCDs) have been elevated onto national and global health and development agendas.^[5] These include asthma, diabetes mellitus, hypertension, heart failure, and cancer, among others. NCDs cause 71% of all deaths, of which 77% are in LMICs.^[6] While NCDs have been common in LMICs for decades, their importance was overshadowed by tropical diseases that needed proper diagnosis and treatment, while the (poor) management options for NCDs were taken for granted. Lately, western diet and lifestyle have become important additional risk factors. There is an overlap between infectious diseases and NCDs; for example, heart failure may be caused by HIV related infections (HIV, CMV) that cause myocarditis, or by rheumatic fever that causes valvular heart disease. Conversely, diabetes mellitus is a risk factor for severe COVID-19 and melioidosis, among other; patients with cancer or malnutrition are at risk of various infections.

All the conditions mentioned above (classical tropical diseases, emerging infections, NTDS, NCDs) are in the domain of internal medicine (and paediatrics) and require supervised clinical training for those who manage these patients. (Figure 1) In LMICs, clinical expertise is provided in the central hospitals at the level of a specialist in internal medicine (UK: consultant physician; USA and Europe: internist). At the level of a district or mission hospital, adequate general training in curative medicine is required that includes internal medicine (as well as surgery, O&G and paediatrics – the “big four”); this applies to the locally trained doctor (as in Malawi) as well as the expat doctor. Figure 2 shows the level of knowledge required in internal medicine.

ETHICAL AND PROFESSIONAL ASPECTS – IMPLICATIONS FOR THOSE PREPARING TO WORK IN THE TROPICS

The medical profession is well regulated in the Netherlands and other high-income countries; in the Netherlands (NL), the doctor is registered with the Royal Dutch Medical Association and the registration needs to be renewed after 5 years. The registration allows medical practice only in the specialty or special profile (e.g., PGHTM) for which one is registered; this touches on professional aspects as well as ethics. This is also becoming the norm in LMICs. It follows that any expat doctor should have the same competencies in the 4 major specialties with adequate and sufficient clinical exposure and supervision (*broad baseline training*).

Alternatively, one could consider a single specialization such as O&G and working as a specialist (*specialist training*). Another option would be training in e.g., the surgical specialties (surgery and O&G) or the medical specialties (internal medicine and paediatrics); this would require extended training that does not reach the specialist level (*dual limited specialist training*).

THE ADDED VALUE OF THE PGHTM AFTER RETURNING TO THE NETHERLANDS

The question arises whether the PGHTM doctors are contributing to health care in NL after returning. This is difficult to assess both from a quantitative and qualitative point of view. While some continue to work in this field, others chose to continue their

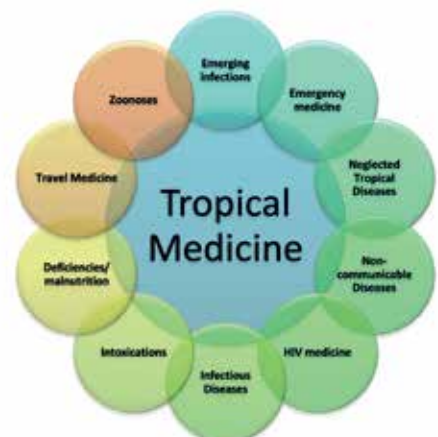
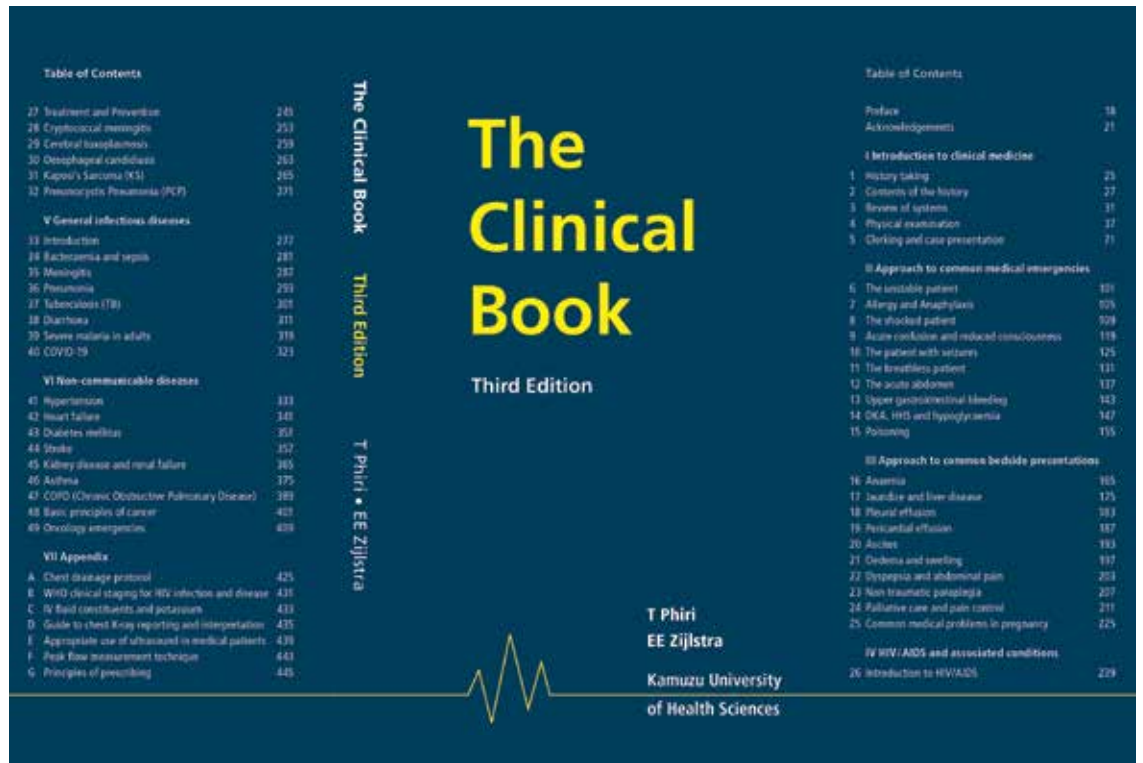


Figure 1. The changing scope of tropical medicine since the year 2000^[1]



career in a new area and become general practitioners or clinical specialists, or work in public health, e.g. in the municipal health service or other governmental organizations, non-governmental organizations, the WHO, or research. Their contribution may depend on their clinical training (homogenous, but restricted to surgery/O&G, or O&G/paediatrics – see above), the experience gained (heterogenous), and the scope of their current position.



It may be easier to define an optimal profile for the PGHTM aiming to

work in LMICs and after returning to the Netherlands (Table 1). In conclusion, while surgical and obstetric skills

remain important for the general medical doctor in many settings, tropical medicine or medicine in the tropics has changed to include a dominant role for internal medicine, starting in the late 1980s with the HIV/AIDS epidemic (Figure 1). It follows that baseline training should be broader and integrate adequate clinical training in internal medicine in the curriculum of the PGHTM, for an optimal contribution to health care in LMICs as well as health care in the Netherlands after returning.



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TABLE 1. Optimal profile for the Physician Global Health and Tropical Medicine, for working in LMICs and after returning to the Netherlands

CLINICAL
· broad postgraduate clinical experience, at least in the 4 major basic specialties (in HICs and LMICs)
· wide understanding of the differences in the scope of medicine between HICs and LMICs
PUBLIC HEALTH
· wide understanding of determinants of health; prevention and control of disease in HICs and LMICs – Global Health
SPECIAL FOCUS ON
· current priorities in Tropical Medicine and Global Health
· epidemiology of disease, world-wide, and regional priorities
· vulnerable populations: migrants, ethnic minorities, refugees, women, children, LGTB+
· antibiotic resistance
· diagnostic tools and treatment, in LMICs
· One Health
· health systems
· climate change and other human impacts on natural systems, affecting life and health (planetary health)
· understanding cultural and social determinants of health care in HICs and LMICs
SPECIAL SKILLS
· medical leadership
· management skills
· epidemic preparedness; outbreak management
· emergency medicine, including triage
· research methodology and understanding of major gaps in disease, control, and prevention, with priority on research in LMICs
· teaching skills
HICs: high income countries - LMICs: low- and middle-income countries - LGBTB+: lesbian, gay, transgender, bisexual and other

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- Noncommunicable diseases (who.int)



Oral cavity carcinoma

CASE

A 26-year-old man, non-smoker and incidental user of beetle nut (also known as Areca nut, the seed of the Areca palm) with no prior history of disease, presents with a swelling in the mouth that existed for 1.5 years and is slowly increasing in size. He lost his ability to talk and can only drink fluids. In addition, in the last month he developed a progressive painful swelling of 10 by 10 centimetres on the left side of the neck, making it almost impossible to move his head. He has lost an unspecified amount of weight; there was no history of fever or night sweats. He has visited various health centres for this problem and received antibiotics without any improvement. On physical examination, there is an ulcerating tumorous mass in the oral cavity. Large parts of the tongue and the floor of the mouth are destroyed. The dental area looks normal (Figures 1,2).

An ultrasound of the neck showed a fluid collection on the left and enlarged lymph nodes. A fine needle aspiration of the swelling of the neck showed mixed pink, straw-coloured fluid. Ziehl-Neelsen examination of the mouth ulcer and the lymph node aspirate for acid-fast bacilli (AFBs) was negative.

The medical doctor in charge made a differential diagnosis of a malignancy, cancer, noma (also known as necrotizing ulcerative stomatitis), tuberculosis or any (dentogenic) infectious problem and consulted the Consult Online panel for help.

SETTING

This case is from Kikori, a rural village in Papua New Guinea and is set in a small jungle hospital. Two Physicians Global Health and Tropical Medicine (PGHTM) are running the hospital, which has 100 beds. The infrastructure in the province is poor as roads and electricity are non-existent or unreliable. Most transportation is by boat, and twice a week a small airplane connects to the capital, where there are more healthcare facilities; the airfare is too expensive for the majority of the population.

SPECIALIST ADVICE

The specialists of the Consult Online panel diagnosed this as a primary mouth floor carcinoma with regional metastases. Further distant metastases could not be ruled out because of lack of facilities. The swelling of the neck could not be clearly diagnosed with this scarce information but could be a (necrotizing) metastatic lesion or an abscess.

The specialists' advice was to perform a biopsy. Functionally and technically an operation seemed impossible. In a high-income setting, combined chemotherapy and radiotherapy would be considered after proper histological diagnosis (see below). In a setting with limited resources, palliative care seemed the only option.

For the differential diagnosis, noma would probably not cause lymph node enlargement such as in this case. Tuberculosis may have unusual clinical presentations, but the patient did not have fever and repeated diagnostic tests for AFBs were negative. A dental focus seems unlikely since the dental area looked normal on examination.

ORAL CAVITY CARCINOMA

The oral cavity extends from the vermilion border of the lips anterior to the border of the hard to soft palate cranially and circumvallate papilla of the tongue caudally. Cancer of the oral cavity can therefore involve any of these anatomic structures.^[1]

The most common malignancy that occurs in the oral cavity is squamous cell carcinoma (SCC), accounting for 90-95% of such cases. Squamous cell carcinoma is the sixth most

common form of cancer worldwide.^[2] Less common are cancers of the salivary glands, sarcomas, or osteosarcomas originating from the mandible.^[1] SCC of the oral cavity has a high incidence in Southeast Asia, Europe, and the United States (Figure 3). Common risk factors are the use of tobacco, alcohol, exposure to environmental pollutants, immune deficiency, and infections of the oropharyngeal cavity, for example with human papillomavirus (HPV) or Epstein-Barr virus (EBV). The high prevalence in the United States and Europa is increasingly associated with infections of the oropharyngeal cavity with HPV, whereas the prevalence of oral SCC in Southeast Asia seems associated with a specific cultural habit.^[3] Here, a specific risk factor is the use of beetle quid, a local mixture of areca nut, beetle leaf, slaked lime and tobacco that is often chewed on and has mild stimulating effects. The carcinogen source in this mixture is Areca catechur.^[1,2,3]

Oral SCC usually presents with invasion followed by destruction of local tissue. Lymph node metastases are common, but a presentation with distant metastases is unusual. A biopsy or fine needle aspiration is needed for diagnosis. After the diagnosis is made, TNM staging of the tumour is necessary to choose the right treatment. Early-stage oral SCC can, depending on resources, be treated by surgery or definitive radiation therapy, with or without concurrent chemotherapy, depending on tumour margins and risk of locoregional relapse. Because of common lymph node metastases, early staging and (elective) treatment should be done through sentinel lymph node biopsy, (elective) lymph node dissection or radiation therapy.^[1]

FOLLOW UP

Microscopic examination of fine needle aspiration stained with Giemsa stain was suggestive of squamous cell carcinoma. The painful swelling in the neck was most likely a necrotizing



Figure 1. A large ulcerating lesion in the oral cavity with local tissue destruction.



Figure 2. Large swelling on the right side of the neck, probably a metastatic lesion.



Figure 3. Global incidence of head and neck squamous cell carcinoma. Adapted from^[3]

lymph node. The patient in this case had inadequate financial resources for optimal treatment in the capital; palliative care was given. The swelling in the neck was aspirated several times for pain relief; this was repeated multiple times. Finally, based on local experience, he was discharged home with a short course of methotrexate and painkillers, after which he did not return to the hospital.



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The power of Women: A Doctor's Journey of Hope and Healing by Denis Mukwege

*Flatiron Books, New York,
ISBN 978 94 031 54817*

It is difficult to describe what happens between the first paragraph of the book, in which Denis Mukwege (Congolese gynaecologist and 2018 Nobel Peace Prize laureate) starts by saying “It is not too often a man is a champion of women rights”, and the last sentence, “I believe in the power of women.” He describes his life and career in which he becomes increasingly overwhelmed (physically while working in a hospital in Bukavu, DRC, as well as emotionally) by sexual violence against women. This happens mainly in the context of the 1st and 2nd Congolese war (1996-1997 and 1998-2003, respectively) that involved East Congo and neighbouring countries Rwanda, Burundi and Uganda.

He tells the stories of individual victims of (mass) rape by soldiers (among others), who are often shot afterwards in the genital area and are then dumped somewhere, bleeding and in excruciating pain. Those who could be saved by multiple sequential surgeries continue to struggle with serious psychological and social problems. Some of the women who become pregnant refuse to accept the baby after delivery saying it is Interahamwe (a Hutu paramilitary organization). Yet, some of them, with the help of Mukwege and his team, manage to regain their self-esteem and become role models for other victims. All this refers to the context of male dominance in which women are considered second-rate individuals, powerless and without a voice of their own.

Mukwege places this in a wider context, makes the link with the #MeToo movement, and discusses other atrocities such as those against the Jezidi in

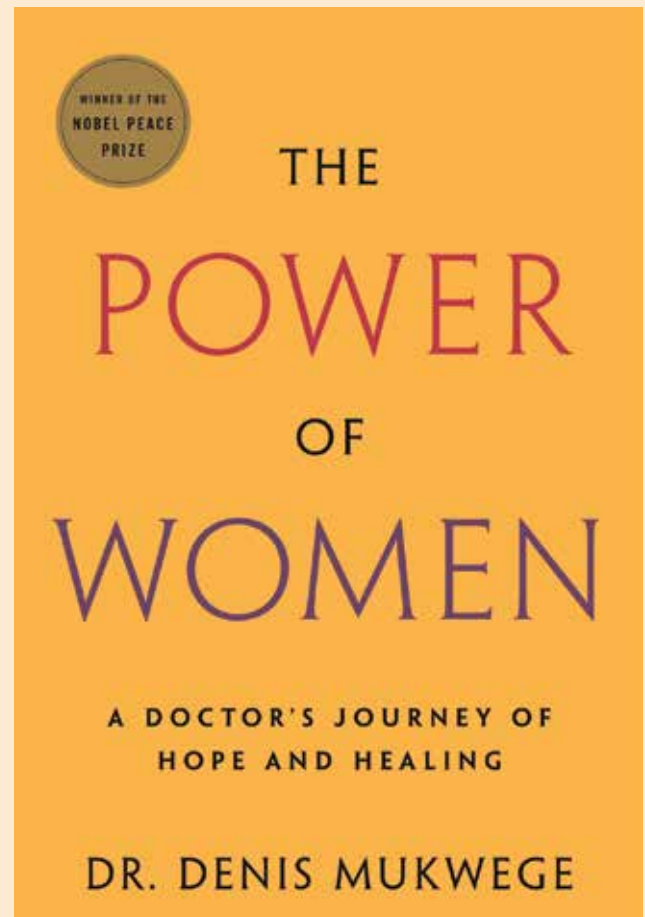
Iraq, the Rohingya in Myanmar, and the missing school-girls in Nigeria.

Mukwege emphasizes that men and women must tackle this problem together. He becomes an international advocate for women's rights, speaks at high-level international meetings such as the UN Assembly, and meets numerous heads of state. This high moral position comes at a price; not everybody, particularly in the DRC, appreciated his openness and accusations against the rapists. He received serious threats to his own and his family's safety. After surviving a murder attempt, he flees with his family to the USA, but returns to the DRC to continue his mission after a heart-warming show of support from the local women of Bukavu. He is now back at work, with armed guards to protect him and his family, but with an unbroken spirit and exceptionally high moral leadership.

One cannot think of a more suitable recipient of the 2018 Nobel Peace Prize, an award which he shares with Nadia Murad, a Jezidi victim, both awarded for their efforts to end the use of sexual violence as a weapon of war and armed conflict.

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