

# ORAL CANCER

## FACTS AND FIGURES

### SYMPTOMS INCLUDE<sup>1</sup>

NON-HEALING MOUTH ULCER

LOOSE TEETH

DIFFICULT OR PAINFUL SWALLOWING

LUMP IN THE NECK

WHITE OR RED PATCHES ON THE MOUTH

CHANGES IN SPEECH

BLEEDING OR NUMBNESS IN THE MOUTH



**16<sup>th</sup>** most  
common cancer  
in the world<sup>2</sup>



Global incidence of  
lip & oral cavity cancer  
4 per 100,000 people<sup>3</sup>

### RISK FACTORS<sup>4</sup>

- HIV infection
- Betel nut chewing<sup>5</sup>
- Tobacco use
- Alcohol use
- Poor oral hygiene
- Gum disease



Men are more  
than twice as  
likely as women  
to be affected  
with oral cancer<sup>3</sup>



Highly frequent in  
South Central Asia and  
Melanesia, reflecting  
the popularity of betel  
nut chewing<sup>6</sup>

Oral cancer rates  
increase with age.

Most diagnosed  
at age **63**  
in the US<sup>7</sup>

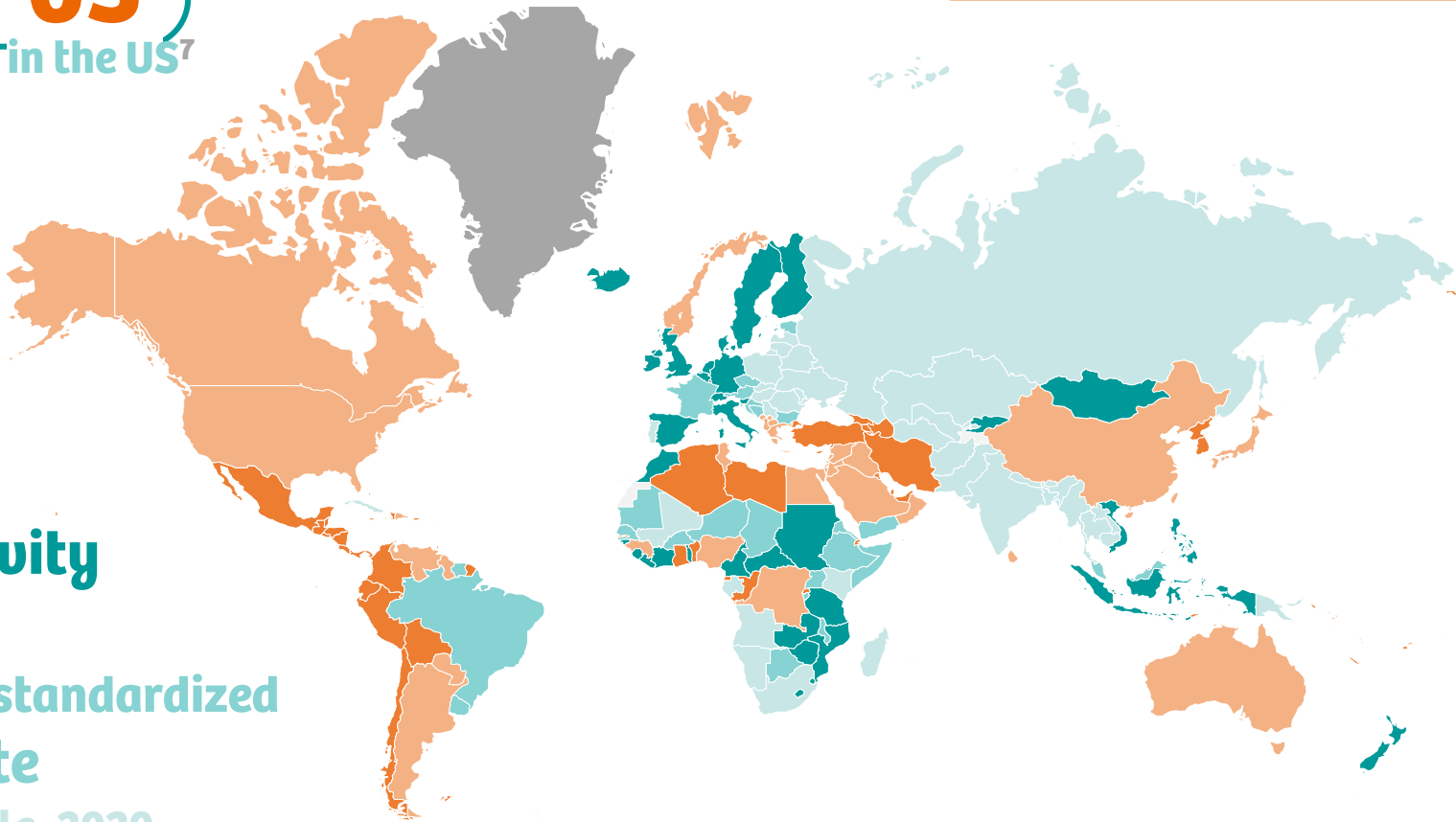
~54,000 new cases &  
11,230 deaths  
estimated from  
oropharyngeal cancer in  
the US in 2022<sup>8</sup>



In the UK, **90%** with  
an early diagnosis  
survive, with a late  
diagnosis just **50%**<sup>9</sup>

### Lip & oral cavity cancer<sup>10</sup>

Estimated age-standardized  
mortality rate  
per 100,000 people, 2020



0 – 0.63



0.87 – 1.2



> 1.6



0.63 – 0.87



1.2 – 1.6



Unavailable

**Disclaimer:**

This publication on the oral cancer pathway framework was updated on 08.09.2022. It cannot be taken as a recommendation for the readers, especially not as a guideline for treatment, and it is not a medical document. There is no guarantee for completeness or global correctness, the various pain points, solutions, and statistical data are examples only. Sources are multiple, such as public statistics, expert opinions, open innovation workshops, research, own data and many more (see references).

The products and features mentioned may not be available in all countries and their future availability cannot be guaranteed. Some products mentioned are planned and under development.

1. Cancer Council. *Mouth Cancer Symptoms*. Retrieved September 07, 2022, from <https://www.cancer.org.au/cancer-information/types-of-cancer/mouth-cancer>
2. World Cancer Research Fund International. (2022, March 23). *Mouth and Oral Cancer Statistics*. Retrieved September 07, 2022, from <https://www.wcrf.org/cancer-trends/mouth-and-oral-cancer-statistics/>
3. Salehiniya, H., & Raeli, M. (2020). Oral cavity and lip cancer in the world: An epidemiological review. *Biomedical Research and Therapy*, 7(8), 3898–3905. <https://doi.org/10.15419/bmrat.v7i8.619>
4. Mayo Clinic. *Mouth Cancer*. Risk factors. Retrieved September 07, 2022, from <https://www.mayoclinic.org/diseases-conditions/mouth-cancer/symptoms-causes/syc-20350997>
5. Shi, L. L., Bradford, E., Depalo, D. K., & Chen, A. Y. (2018). Abstract B12: Betel Nut use and oral cancer in a high-risk refugee community in the United States: The effectiveness of an awareness initiative. *Cancer Epidemiology, Biomarkers & Prevention*, 27(7\_Supplement). <https://doi.org/10.1158/1538-7755.disp17-b12>
6. Sung, H., Ferlay, J., Siegel, R. L., Laversanne, M., Soerjomataram, I., Jemal, A., & Bray, F. (2021). Global cancer statistics 2020: Globocan estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: A Cancer Journal for Clinicians*, 71(3), 209–249. <https://doi.org/10.3322/caac.21660>
7. Cancer.Net. (2022, March). Oral and Oropharyngeal Cancer: Statistics. Retrieved September 07, 2022, from <https://www.cancer.net/cancer-types/oral-and-oropharyngeal-cancer/statistics>
8. The American Cancer Society. (2022, January 12). *Key Statistics for Oral Cavity and Oropharyngeal Cancers*. Retrieved September 07, 2022, from <https://www.cancer.org/cancer/oral-cavity-and-oropharyngeal-cancer/about/key-statistics.html>
9. Oral Health Foundation. State of Mouth Cancer UK Report 2020/2021. Retrieved September 07, 2022, from <https://www.dentalhealth.org/Handlers/Download.ashx?IDMF=33f0d4c5-aa47-4e06-9a54-9914e2476614>
10. World Health Organization. GLOBOCAN (2020) . Oral Cancer Mortality Rate per 100,000 people. Retrieved September 07, 2022, from <https://gco.iarc.fr/today/online-analysis-map?>

Website: <https://www.siemens-healthineers.com/careers/innovation-think-tank>



## Disease pathway analysis with painpoints and solution examples

An extensive research-based analysis from 40+ scientific articles and journals in combination with hospital workflow experience allowed the identification of pain points and solutions.

These solutions were proposed based on AI, IoMT, AR/VR, biosensors, nanorobotics and smart wearable technologies.

THROUGH THIS CAREPLAN WE HIGHLIGHT DATA FROM A COLLECTION OF

42  
painpoints

63  
solutions

16  
connected to  
different stakeholders

### Solution categories

- Existing in healthcare sector
- Ongoing research in healthcare
- Futuristic solution (may or may not be implemented)

**Disclaimer:** This publication on the oral cancer pathway framework was updated on 08.09.2022. It cannot be taken as a recommendation for the readers, especially not as a guideline for treatment, and it is not a medical document. There is no guarantee for completeness or global correctness, the various pain points, solutions, and statistical data are examples only. Sources are multiple, such as public statistics, expert opinions, open innovation workshops, research, own data and many more (see references). The products and features mentioned may not be available in all countries and their future availability cannot be guaranteed. Some products mentioned are planned and under development.

\*Digital twin (SHS): The functionality described herein is solely futuristic and not current product/functionality. Its future availability cannot be guaranteed.

