Introducing the Whole Mouth Health Project: Oral health literacy, behaviour change, and empowering patients to improve their oral health

Proceedings of the Whole Mouth Health Summit

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Executive summary

- Oral disease remains a persistent public health challenge that requires a preventive care model to achieve sustainable optimal oral health.
- The Whole Mouth Health project is designed to improve oral hygiene and prevention through interventions to build patient oral health literacy, achieve behaviour change, and support oral health professionals in empowering their patients to improve their oral health.
- Behaviour change is, however, a complex issue influenced by a broad range of domains. Interventions must address individual-level factors, including motivation and habit formation, and the contextual factors that determine behaviour.
- By co-designing oral health literacy strategies, oral health and non-oral health professionals can work with patients and the public to create long lasting strategies to improve oral health and achieve a healthier life.
- Engagement and communication with oral health professionals, other healthcare providers and other stakeholders that shape people's health environments are also essential for a holistic approach to care to achieve the necessary positive changes in oral healthcare.
- Through the Whole Mouth Health project, FDI World Dental Federation (FDI) and Colgate have an excellent opportunity to work with key stakeholders to produce resources that are uniquely designed to be useable by different groups.

Summit overview

Oral diseases remain a persistent public health challenge: the number of people with untreated oral conditions reached 3.5 billion in 2015[1]. Lower health literacy has been linked to problems with the use of preventive services, delayed diagnoses of medical conditions and increased mortality risks[2].

FDI and Colgate are continuing their long-standing collaboration, building on the previous Caries Prevention Partnership, to address the challenge of oral diseases through the Whole Mouth Health project. The project is designed to improve oral hygiene and prevention through interventions to build patient oral health literacy, achieve behaviour change, and support oral health professionals in empowering their patients to improve their oral health.

On 5 and 7 September 2019, FDI hosted a two-day summit on oral health literacy, behaviour change and patient/clinician empowerment during the ADA FDI World Dental Congress in San Francisco. The purpose of the meeting was to introduce the concept of Whole Mouth Health and co-design principles, identify key contact points with patients and strategies for communication, and clinician and patient empowerment. These proceedings summarize the presentations and discussions that took place during the summit and describe how they will inform the future of the Whole Mouth Health project. The views expressed within are those of the participants, and do not necessarily reflect those of FDI or Colgate.

Participants

Whole Mouth Health Project experts and summit facilitators:

- Prof. Paul Brocklehurst (UK)
- Dr Sophie Dartevelle (France)
- Dr Marshall Gallant (USA)

Invited experts and guest speakers:

- Prof. Ihsane Ben Yahya (Morocco)
- Mr Enzo Bondioni (Switzerland)
- Dr Marsha Butler (USA)
- Dr Edoardo Cavalle (Italy)
- Dr Jack Cottrell (Canada)
- Dr Ashok Dhoble (India)
- Prof. Michael Glick (USA)
- Dr Alice Horowitz (USA)
- Prof. Takashi Inoue (Japan)
- Prof. Li-Jian Jin (Hong Kong)
- Dr Lisa Knowles (USA)
- Prof. Paulo Melo (Portugal)
- Dr Kathleen Roth (USA)
- Dr Susie Sanderson (UK)
- Dr Michael Sereny (Germany)
- Asst. Prof. Nikolai Sharkov (Bulgaria)
- Dr Barbara Shearer (New Zealand)
- Dr Ann Spolarich (USA)
- Prof. David Williams (UK)
- Dr James Zenk (USA)

Day 1: Plenary session

Welcome remarks

Mr Enzo Bondioni, FDI Executive Director, and Dr Marsha Butler, Colgate Vice-President Global Oral Care and Professional Relations

Mr Enzo Bondioni welcomed all participants to the official Whole Mouth Health project launch. He acknowledged the challenge of helping people safeguard their oral health in a world where over half the population is affected by oral diseases. To achieve behaviour change, it is important to ensure that patients understand oral health messages and can apply what they've learned to their own lives and routines.

Dr Marsha Butler stated that Colgate is pleased to partner with FDI on the Whole Mouth Health project and thanked participants for their input and support. The project aims to bring about a "next generation of prevention" by focusing on everyday routines and helping people understand the actions needed to achieve whole mouth health. This will require empowering all people, oral health professionals and the public with the right messaging. Information about the oral biofilm, how it is impacted by different behaviours and the relationship between the oral cavity and overall health and well-being can all play an important role in motivating behaviour change.

Introduction to the Whole Mouth Health project

Dr Marshall Gallant, Whole Mouth Health project appointed expert and FDI Public Health Committee member

Dr Marshall Gallant introduced the planned objectives and activities of the Whole Mouth Health project. Launched in April 2019, the project is designed to improve oral hygiene and prevention through interventions to build patient oral health literacy, achieve behaviour change, and support oral health professionals in empowering their patients to improve their oral health.

In pursuit of these objectives, three broad categories of resources will be developed:

Oral health professional guide and resources

Objective: To guide and assist oral health professionals in providing behaviour change support to their patients by leveraging oral health literacy principles.

Possible content and key considerations:

- Understanding and assessing oral health literacy.
- Providing tailored education and messages to patients to improve oral health literacy.
- Providing motivation and behaviour change strategies for patients.
- Resources to support clinician-to-patient communication.

Patient resources

Objective: Co-design information and strategies for patients to support behaviour change for improved oral-health.

Possible content and key considerations:

- Information/infographics on oral health and the oral microbiome to increase patient understanding and motivation for behaviour change.
- Strategies for behaviour change that can be personalized in collaboration with the patient's oral health professional.
- Home-care protocols (easy-to-follow guides for oral hygiene actions).

Educational webinar

Objective: Provide oral health professionals with knowledge about the relevant project concepts, including oral health literacy, behaviour change and collaborative care, and showcase actions that oral health professionals can take to empower behaviour change in their patients.

Core concepts: whole mouth health, oral health literacy, and behaviour change

Prof. Paul Brocklehurst, Whole Mouth Health appointed expert and professor in health services research, Bangor University

Prof. Paul Brocklehurst introduced concepts that provide the theoretical basis for the project. Oral health remains a significant problem. Over half the world's population suffer from untreated oral disease, and in the 28 countries of the European Union alone, oral disease costs an estimated €142 billion in treatment and productivity loss. Preventing the start of the disease process is essential, given the fact that caries commonly progresses once started. In many countries, population ageing presents the challenges of increasing disease levels, polypharmacy and the need to maintain the highest level of functionality and independence as capacity decreases.

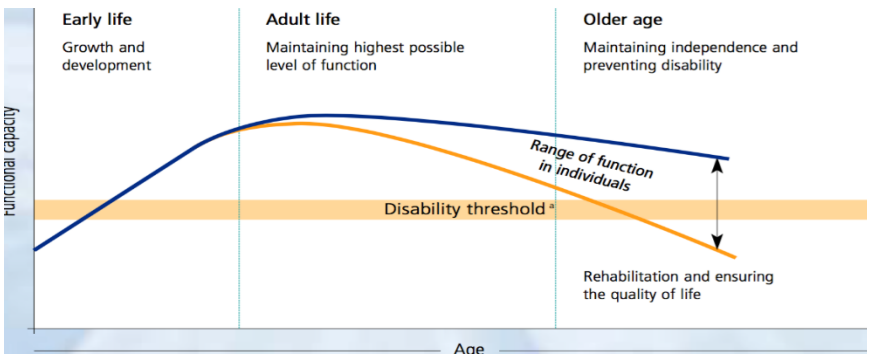

Figure 1: Change in functional capacity over the life-course[7]

Moving away from the traditional, interventionist approach of dentistry is necessary to overcome these challenges and establish a preventive care model that can achieve longer-term optimal oral health. This requires greater integration with mainstream medicine, healthcare system reform and action against the common risk factors of noncommunicable diseases. These actions are aligned with the concept of whole mouth health, which emphasizes the importance of clear information and healthy environments in empowering people to maintain a good standard of oral health and overall health. Along the oral health continuum, adequate self-care and avoidance of risk factors should be the most frequent types of care and are also the least costly.

Oral health literacy and behaviour change are challenging concepts. The underlying logic of health literacy suggests that health information, provided in an understandable format, allows individuals to make appropriate health decisions. However, health information alone is not sufficient to achieve behaviour change.

There are many behaviour change theories employed in dentistry. The Theoretical Domains Framework (TDF), for example, has been extensively applied in research on oral-health-related behaviour change [(2)]. TDF identifies 14 domains at the individual, social, environmental and resource levels that determine behaviour change, demonstrating the need for a comprehensive and broad approach to this issue[3]. These models are particularly useful to the Whole Mouth Health project to help guide the development, scope and content of the resources produced to ensure they can achieve a long-term, positive impact on oral health.

Motivation, for example, is an important element of behaviour change frameworks, and motivational interviewing is one technique used to improve this. However, this intervention should not be considered as a static process. Providing the patient with literature and a brief intervention is not sufficient. The discussion between patient and clinician must be dynamic and meaningful to the patient to create long-term engagement and habit formation. Adopting behaviour change is also not an issue only affecting patients. The Whole Mouth Health project seeks to uncover and address the barriers clinicians face in acting upon best evidence to provide health education and recommendations for behaviour modification to their patients.

The need for a comprehensive approach to behaviour change, addressing the needs of multiple stakeholders and diverse barriers in a way that is meaningful to all, calls for an inclusive approach to resource development. Using a co-design method and gaining the input of all stakeholders, including patients, families, policymakers and healthcare providers, create a ideal methodology to create this dynamic conversation and add cultural relevance.

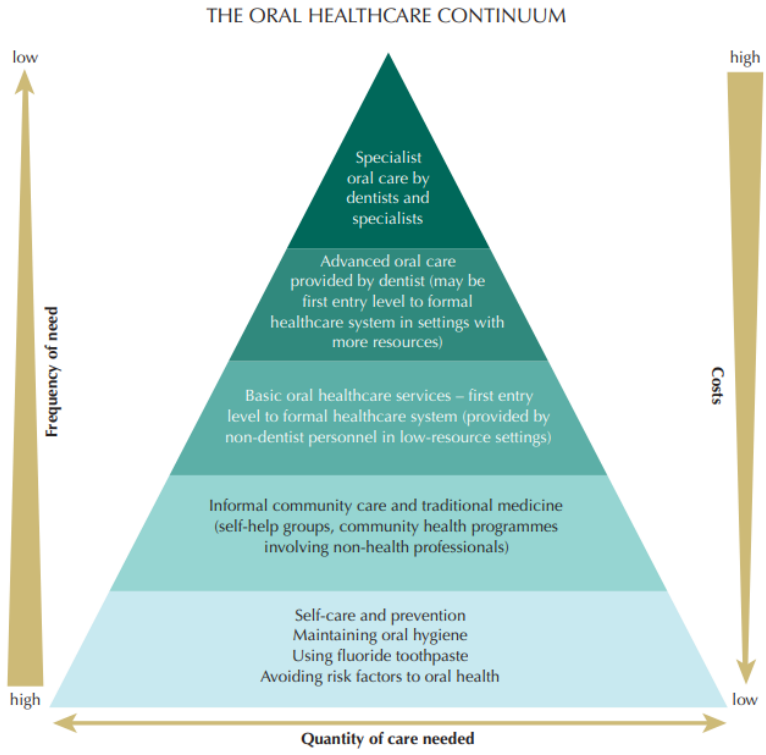

Figure 2: Oral health care in universal oral health coverage: a focus on providing essential care for the most common needs with a package of locally determined cost-effective interventions[8]

Co-design and whole mouth health

Co-design is about designing and delivering community services in a partnership – an equal and reciprocal relationship – involving all stakeholders: service providers, the people using the services and tools, and the patients' support networks should all be involved in the resources development to ensure these resources best meet the patient's needs.

For health education and behaviour change resources, this means a focus on the "How to improve health behaviours" as much as the "What is the health issue?" Co-design would therefore complement the health literacy element of the Whole Mouth Health resources that are to be developed with an understanding of the best media and modes of learning to help improve health literacy, and what additional tools can help patients achieve behaviour change.

Project statement of scope and purpose

Dr Sophie Dartevelle, Whole Mouth Health appointed expert and FDI Public Health Committee vice-chair

Dr Dartevelle presented FDI's official definition of oral health and reinforced that oral health is fundamental to a person's physical and mental well-being, affects a person's confidence in daily life, and is heavily influenced by his or her expectations, perceptions and ability to adapt to circumstances[4]. These elements are deeply embedded in the three elements of the Whole Mouth Health Statement below:

Whole Mouth Health Statement

Understanding the microbiome and disease

Maintaining a healthy microbiome plays a fundamental role in maintaining a healthy mouth and a healthy body. The microbiome exists on every surface of the oral cavity. When the microbiome becomes imbalanced, through actions, behaviours and habits such as sub-optimal oral hygiene, smoking or dehydration, this imbalance can lead to oral diseases, such as periodontal disease and caries, and is associated with systemic conditions such as diabetes, cardiovascular disease and pneumonia.

Patients' understanding of whole mouth health

Helping patients understand the importance of maintaining a healthy microbiome and a healthy mouth, and the changes needed to achieve this, is, therefore, an essential role for oral health professionals (AND non-oral health professionals).

The dentist's role in achieving a patient's whole mouth health

The mouth and its microbiome are highly variable both between and within individuals, so health messages need to be as individual as the patients are. By co-designing oral health literacy strategies, oral health and non-oral health professionals can work with patients and the public to create long lasting strategies to improve oral health and achieve a healthier life.

Group discussion

The experts recognized that the aim of the Whole Mouth Health project is embedded in the FDI definition of oral health, which acknowledges the psychosocial challenges of poor oral health and their impact on quality of life. They further identified synergies between the Whole Mouth Health project, FDI Vision 2030 and other projects that are evaluating person-centred oral health outcomes.

Creating resources through a co-design method and collaborating with all stakeholders including patients, the broader public in non-healthcare settings, families, other healthcare providers and those in the social care arena allows the Whole Mouth Health project to engage with difficult-to-reach target groups and create outputs that are culturally competent and appropriate for people with differing environments, health literacy levels and ages. This approach moves away from the traditional interventionist models that have contributed to the increasing inequalities in health.

By engaging with patients as equal partners and explaining the role of the microbiome in their oral health journey, patients can be introduced to recognizing good oral health as their reality, rather than accepting oral disease.

Day 2: Patient and dentist resources workshops

Workshop 1: Patient resources workshop

Prof. Paul Brocklehurst, Whole Mouth Health project appointed expert and professor in health services research, Bangor University

Workshop 1 was facilitated by Prof. Paul Brocklehurst, who provided a background of the Whole Mouth Health project and recalled the aims and objectives for the experts present in this workshop, explaining that the Whole Mouth Health concept aims to move away from traditional didactic health education models and engage with patients and oral health professionals through co-design methods instead. Co-design operates by engaging all stakeholders to understand their needs. It also provides a democratic arena that supplies resources tailored to the specific needs of the target group, which ultimately improves cooperation with behaviour change.

The participation of the experts present was required to stratify the project into geographical regions, patient groups and types of healthcare professionals; the experts also agreed that this session would be delivered in three group discussions.

Whole mouth health

The discussion opened with the question: “How understandable is the concept of whole mouth health?” Whole mouth health takes a holistic approach to oral health and considers: “Can you be healthy without oral health?” Although awareness of the microbiome is increasing among the public, the use of overly technical language is not appropriate for patient-focused resources, and these outputs should focus on overall health and wellness.

There are many health awareness campaigns that can be used as a vehicle to deliver oral health messages, such as those addressing smoking cessation, obesity and cancer. However, for individuals to change their behaviour, they have to first identify with the condition. Motivations for behaviour change will differ between people who regularly attend dental appointments and those who do not; therefore, oral health messages would have to be tailored to their perceived values. The experts discussed the application of psychosocial messaging, suggesting the emphasis should be on how oral health can have a positive impact, such as increased confidence and improved employment prospects. On the other hand, these positive impacts should be carefully constructed to avoid encouraging a purely cosmetic approach to oral health.

A recurrent theme in all discussions was the disconnect between the medical and dental profession, which must be addressed to ensure oral health is included in overall health and well-being strategies. The experts raised concerns that improvements to community oral health cannot succeed without simultaneous improvements in health literacy of the public, healthcare providers, health facilities and policymakers.

Key points of contact

The second group discussion opened with participants identifying key oral health messages and population groups who require intervention. It was agreed that messaging largely depends on the age group and life stage of the target population. The discussion identified several points in the life cycle when people may be more receptive to oral health messages:

- **The pre-natal period and pregnancy:** Evidence shows that mothers are susceptible to health messaging during pregnancy, including messages on smoking cessation and information on avoiding certain foods. Oral health messages communicated during pregnancy that can be applied practically in the early stages of infant life contribute to the formation of lifetime habits. The indication that a mother's microbiome can influence the health of her child, such as the transmission of *Streptococcus mutans*, is a key message within whole mouth health.
- **Primary and secondary school:** Children in this group spend approximately six hours per day at school for 40 weeks of the year, providing health educators and teachers the opportunity to introduce habits and health information. Poor oral health in school children is linked to poor concentration, absenteeism and lower educational attainment.
- **Emerging adulthood:** This period is considered to be the "volitional years"[5], as young people gain autonomy and develop characteristics to become self-sufficient, build committed relationships and enter either higher education or employment for the first time. Young adults are receptive to messages that will shape their healthy development into adulthood.
- **Adulthood (age 35+):** This has traditionally been described as the age of the onset of adult periodontitis. However, following the reclassification of periodontal diseases in 2018, it was acknowledged that periodontal disease, including bone loss, can be observed at any age.
- **The transition from independence to dependence in old age:** Changes in health status can lead to individuals requiring support for everyday living. The required level of support varies, but the ability to maintain their own oral health may be their final independent act.
- **Life events**: These can be defined as incidents that require an adjustment to habitual life, such as having a heart attack or a stroke. Research has shown patients are receptive to health messaging during the recovery period.

Existing resources

For the final group discussion, participants were asked to share resources, oral health campaigns and projects from their countries or networks.

Tunisia

- The Tunisian Ministry of Health has collaborated with Orange to develop "Orange Villages", connecting water and electricity supplies to Tunisian villages, providing healthcare services and improved educational facilities. ChildSmile is a national programme designed to improve the oral health of school children in Scotland to reduce inequalities in oral health and improve access to dental care.

United Kingdom

- The National Health Service Delivering Better Oral Health is an evidence-based toolkit to support dental teams in improving their patient's oral health and general health in the United Kingdom.
- Co-design is being trialed in the United Kingdom to develop a system for improved oral healthcare for patients in recovery from a cerebrovascular accident. Educating healthcare professionals to provide oral hygiene during this vulnerable phase will reduce the incidence of aspiration pneumonia and reduce mortality.

United States

- The Perinatal and Infant Oral Health Quality Improvement (PIOHQI) Project, launched in 2015 in the United States, produced *Oral Health Care During Pregnancy: Practice Guidance for Maryland's Prenatal and Dental Providers,* which includes the following to assist providers: state statistics on oral healthcare utilization during pregnancy; practice guidance for prenatal and dental providers; a visual guide of oral conditions that can occur during pregnancy; a dental pharmacological chart; a sample dental referral form; and educational resources to share with pregnant women[6].
- Tooth Wisdom®: Get Smart About Your Mouth (TWGSAYM) is one of the Wisdom Tooth Project's strategies dedicated to improving the oral health of older adults. TWGSAYM was designed specifically for community dwelling older adults, empowering them with the knowledge and a sense of self-efficacy to care for their oral health. The curriculum has been delivered in the United States by trained registered dental hygienists in locations where older adults naturally congregate, e.g. senior centres, churches, libraries and sheltered housing[4].

Global

- Child Health Passport is a process and a document being used globally that collects a child's essential health information including vaccines, visual and hearing screens, height and weight milestones and oral health assessments.
- Lift the Lip is a simple screening programme for parents and healthcare providers to identify early caries in babies and infants and encourages parents to take their child for a dental visit by his or her first birthday. This simple approach has been implemented in several countries including South Africa, U.K, United States, India and Canada.

Workshop 2: Clinician resources workshop

Dr Marshall Gallant, Whole Mouth Health project appointed expert and FDI Public Health Committee member

Dr Marshall Gallant opened Workshop 2 with an introduction to the Whole Mouth Health project scope and objectives. The participation of the experts was requested to discuss how to support clinicians in empowering their patients to adopt healthy behaviours, which would take place through three guided discussions.

The early discussion centered around the concept of oral health literacy. The experts agreed that although the term is widely used, oral health professionals do not fully understand health literacy or how low health literacy impacts their patients. This lack of understanding, combined with the perceived barriers to improving health literacy, limits health professionals' ability to improve their patients' health literacy skills. It may also limit patients' capacity to better understand their condition and/or follow instructions on how to manage their oral health.

How to assist oral health professionals in providing behaviour change support to patients

During group discussion 1, participants were asked to consider how behaviour change can be applied to oral health professionals and identify the potential barriers to change they face.

Several emergent themes were identified from the group discussion:

Education

- The dental school syllabus varies between countries, meaning clinicians have different experiences of health systems, professional roles and clinical management. Intervention should begin at dental school with a standard approach to defining the role and responsibilities of the oral health professional.
- Assessing the knowledge of an oral health professional's role in prevention should begin during the recruitment phase.
- During training to become an oral health professional, it should be mandatory for students to participate in community projects that place an emphasis on prevention.
- The curriculum must cover oral health and general health to ensure that students are aware of how the life cycle impacts their patients' health.
- Increasing the availability of mentoring to provide a person-centered approach to learning and to allow the mentee to become more self-aware and acquire skills in a sustainable way.

Remuneration

- Evidence shows that prevention is cost effective in reducing oral disease; however, preventive care is not always fully remunerated. This can pose a barrier to clinicians working in a fee-for-service payment method because they rely on continued attendance of patients with oral disease.
- The exclusion of dental care from health insurance plans remains a persistent barrier to preventive and restorative dental care.
- The movement to a value-based system of healthcare is perceived to reduce the independence of oral health professionals and potentially decrease their income. This movement may therefore be met with resistance.

Collaboration with other healthcare providers

- Collaboration with other health professionals is essential to ensure recognition of the impact of oral diseases on quality of life and morbidity in certain vulnerable patients.

Litigation

- Accountability for a patient's health lies between the patient, the clinician and the healthcare system. Should one of these fail, there may be a recourse to action.
- Educating oral health professionals to provide transparent and ethical patient-centered care will reduce the likelihood of clinicians facing litigation during their career.

Guidance and tools to assist oral health professionals in providing behaviour change support

Improving the health literacy of oral health professionals must be addressed during the Whole Mouth Health project. An example provided to support this claim was the reluctance of dentists to prescribe nicotine

replacement therapy to patients, despite having the ability to do so, due to the inaccessibility of smoking cessation training.

Financial incentives for providing preventive care could drive motivation more effectively than an intrinsic desire to improve the oral health of patients and communities. The perception that oral health professionals are goal orientated could be leveraged into achievable targets to reduce the incidence of dental caries and periodontal disease.

The education of other health professionals to recognize caries as a disease was identified as a pressing need. The view that oral disease is not a health problem must be corrected to ensure that a whole-body approach to health is adopted.

Attaching performance standards to the licensing process of oral health professionals could be used to establish consistency or uniformity across multiple individuals and organizations. These key performance indicators could include targets for caries reduction, the delivery of health promotion messages and continuing education credits.

Format of resources

Participants were unanimous in their suggestion that the resources should be in a digital format as a convenient and efficient way to communicate with oral health professionals and patients. The use of mobile technology can increase access to the resources, especially in low- and low-middle-income countries. These resources must be adaptable to the needs of the patient group and the geographical location. A strategy must be developed to measure and assess the impact and prevalence of the use of the outputs.

Conclusion

The impact of oral disease on a person's well-being is well documented. Prioritizing prevention requires a comprehensive approach to behaviour change that considers the multiple and varied drivers of oral-health-related behaviours, and the need for far reaching and sustained support to instill motivation and achieve positive habits. Through the Whole Mouth Health project, FDI and Colgate have an excellent opportunity to work with key stakeholders to produce resources that are uniquely designed to be useable by different groups. One of the key advantages of using a co-design process is receiving input directly from patients/the public and their support networks to create resources tailored to their needs and written in a way they can understand. Engagement and communication with oral health professionals, other healthcare providers and other stakeholders that shape people's health environments is also essential to achieve the necessary positive changes in oral healthcare.

Next steps

Building on the conclusions drawn from the summit, the Whole Mouth Health project will begin the process of developing oral health education and behaviour change resources in co-production with relevant stakeholders. The process will be run in multiple contexts, engaging the relevant stakeholders. This will ultimately produce a range of materials and provide insight into how oral health information and messages resonate with different populations.

Acknowledgements

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