1. **Application for new medication: fluoride varnish**

This submission proposes the inclusion of a new medicine to Section 30 *Dental Preparations* of the 22nd EML (2021)/8th EMLc (2021). The new medicine is **fluoride varnish** and further specifies the existing entry for fluoride “In other appropriate topical formulations” as requested by the EML’s Expert Committee in their final review report in 2021.¹

Fluoride varnish prevents new caries and can arrest existing carious lesions. It is applied topically by health care workers and stays on teeth for several hours. Fluoride varnish is safe, simple to use and cost-effective. It is applied on tooth surfaces without complex or specialized equipment, making it suitable for use in oral health care services, primary care facilities or community settings, such as schools. It can be used for all age groups, including small children and people with special needs.² These features make fluoride varnish an essential dental medicine in addressing the very high burden of untreated dental caries worldwide.

**The application is submitted by:**

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**The application is supported by:**

WHO Collaborating Center Quality Improvement & Evidence-based Dentistry (WHO CC USA-429), College of Dentistry, New York University, New York, USA

2. **Summary statement (inclusion)**

This submission proposes the inclusion of a new medicine to Section 30 *Dental Preparations* of the 22nd EML (2021)/8th EMLc (2021). The new medicine is **fluoride varnish** (in 5% NaF/22,500 ppm) for use as a highly-effective caries preventive agent in, oral health care services, primary care facilities and community settings (i.e. schools and other education settings). A large and robust body of evidence indicates that fluoride varnish is very effective and safe in preventing caries across all ages, including small children and older adults, as well as people with special needs.

Caries of primary (deciduous) and permanent teeth is among the most common diseases of mankind, affecting 2.5 billion people according to latest available estimations.³ Caries of primary teeth affects an estimated 514 million children (43% average global prevalence) and caries of permanent teeth affects an estimated 2 billion people (29% average global prevalence). The highest burden of caries is reported from low- and middle-income countries where access to prevention and oral health care is challenging, particularly for disadvantaged population groups. Effective caries prevention and treatment strategies are therefore of high public health importance and the application of fluoride varnish is among the most cost-effective and evidence-based interventions available.
Fluoride varnish is also used to treat dental hypersensitivity which has an estimated global prevalence of 25-30%.

The World Health Assembly resolution on oral health (WHA74/A74.R5, 2021) and the WHO Global Strategy on Oral Health (A75/10 Add.1, 2022) emphasize the urgent need to intensify preventive efforts for all oral diseases and especially dental caries. The Global Strategy states that “millions of people do not have access to oral health promotion and oral disease prevention programmes. The use of fluorides for the prevention of dental caries is limited. Frequently, essential prevention methods, such as fluoridation of the water supply and other community-based methods, topical fluoride applications or the use of quality, fluoride toothpaste, are not available or affordable.” A draft Global Oral Health Action Plan will be proposed at EB152 in January 2023, proposing (among others) a global target related to optimal fluoride for population oral health (global target 2.2) and several actions related to improving availability and affordability of fluoride medicines for oral health.

Application context

This application proposal to include fluoride varnish in the EML/EMLc, as well as the separate application proposals for fluoride gel and fluoride mouth rinse, are responding to a request by the EML Expert Committee in their review report in 2021 to further specify the newly created entry for fluoride “in other appropriate topical formulations”.

3. Consultation with WHO technical departments

The submission is made by the WHO Oral Health Programme, Noncommunicable Diseases Department, Division of UHC/Communicable and Noncommunicable Diseases, WHO HQ. The regional focal points for oral health at WHO AFRO (Dr Yuka Makino), WHO EMRO (Dr Huda Abdul Ghaffar), WHO EURO (Ms Carina Ferreira-Borges), WHO PAHO (Dr Carolina Hommes), and WHO SEARO (Dr Nalika Gunawardena) were consulted and provided input.

4. Other organization consulted and/or supporting the submission

The WHO Collaborating Center Quality Improvement & Evidence-based Dentistry (WHO CC USA-429), College of Dentistry, New York University, New York, USA, was consulted and supported the development of the application documents (Dr Habib Benzian/Dr Eugenio Beltrán).

5. Key information for the proposed medicine

5.1 International non-proprietary name (INN) of the proposed medicine
N/A

5.2 Anatomical therapeutic chemical (ATC) code of the proposed medicine
A01A: Stomatological preparations
A01AA: Caries prophylactic agents (this group comprises all types of fluoride preparations)

5.3 Dosage form(s) and strength(s) of the proposed medicine

Strength: \(^8^9\) 5% Sodium Fluoride (NaF) (equals 22,600 ppm Fluoride or 2.26% Fluoride ion)

Dosage: \(^8\) Semi-liquid solution to paint on tooth surfaces; application at least 2x/year; uniform dosage for all age groups (>6 months of age)

Fluoride varnish is available as disposable single-application unit, as well as in tubes or bottles for multiple use.

5.4 Indication(s)

The primary indication is the prevention and treatment of dental caries, including early stages (incipient lesions) and root caries. A secondary indication is the treatment of hypersensitive teeth resulting from exposed tooth neck/roots.

ICD-11 Codes:
- DA08.0 Dental caries
- DA0A.Y Other specified disorders of teeth and supporting structures (hypersensitivity)

6. Proposal for an individual medicine or representative of a pharmacological class / therapeutic group

This proposal is for an individual medicine. Fluoride varnish is one of many fluoride vehicles in a topical application that has a characteristic concentration and unique properties compared to other fluoride vehicles.

All topical fluoride therapies promote remineralization of previously demineralized hard tissue, especially carious lesions in the tooth enamel, dentine and cementum (roots). Fluoride in these products promotes the deposit of calcium and phosphate in the demineralized tissue and improves the stability of fluorapatite crystals once formed. The efficacy requires the frequent release of soluble fluoride from deposits in the biofilm. To our knowledge there are no other current therapeutic use of fluorides.

7. Information supporting the public health relevance

7.1 New medicine

Fluoride varnish is an evidence-based tool to prevent and arrest dental caries in all age groups, including children over 6 months old, and people with special needs. In view of the significant global burden of oral diseases and especially caries, the simplicity, safety, efficacy and cost-effectiveness of fluoride varnish make it a medicine with high public health relevance.

Epidemiological information on disease burden

The WHO Global Oral Health Status Report,\(^3\) using the latest available data of the Global Burden of Disease Study 2019, estimates that oral diseases affect close to 3.5 billion people...
worldwide, the most common disease group of all diseases and conditions studied. Dental caries is the most widespread oral disease with more than 2.5 billion cases of untreated disease. This includes more than 2 billion estimated cases of caries in permanent teeth (global average prevalence of 29%) and 514 million estimated cases of caries in primary (deciduous) teeth (global average prevalence of 43%). Among the 194 Member States, 134 have prevalence figures greater than 40% for caries in primary teeth. More than three-quarters of cases of untreated caries teeth are found in middle-income countries. Over the last 30 years there has been an increase of cases that is surpassing the demographic population growth during the same period.\(^3\)

The prevalence of tooth hypersensitivity has been variably reported in the literature. A 2014 narrative review report prevalence between 8% and 30% of adults.\(^4\)\(^10\) Dental hypersensitivity is frequently reported by individuals in their 20s to 40s.\(^4\) While not considered a public health problem, the high prevalence of tooth hypersensitivity makes it a common patient complaint and reason for visiting an oral health professional.

**Target population(s)**

The caries burden is hugely unequal across populations within and between countries, with a clear socio-economic gradient showing higher disease burden in deprived and disadvantaged populations who at the same time have less access to prevention and oral care services.\(^3\)\(^11\) Caries is a disease affecting people across the entire life course. All age groups are affected with different trajectories of burden - an onset in early childhood, generally significant prevalence increases in adolescent age groups and continued increase in adulthood.\(^12\)

Untreated dental caries causes pain, infection, and may lead to systemic infections requiring hospitalization and complex treatment. Also, a high prevalence and severity of untreated dental caries is a co-factor for low BMI and stunting in children;\(^13\)\(^14\) it also leads to significant absenteeism in school and workplaces.\(^15\)\(^16\) Good oral health is also vital for healthy ageing, playing a crucial role with regard to nutrition.\(^17\)\(^18\)

**Alternative medicines currently listed on the EML for the proposed indication**

ISO Standard 17730:2020 defines fluoride varnishes and their indication as follows: “Fluoride varnishes are used in dentistry primarily for caries prevention and reduction of dentine hypersensitivity. Fluoride varnishes are applied in the oral cavity directly on the outer surfaces of teeth and fillings.”\(^19\) Fluoride varnish is part of intensified caries prevention programmes and is applied in clinical settings by oral health professionals, or in community settings such as schools by trained education/non-health personnel in the context of oral health promotion programmes. In many countries fluoride varnishes are applied by primary care providers during routine well-baby visits. The effectiveness of fluoride varnish makes it particularly suitable for such contexts since it only needs to be applied twice-yearly.

The EML/EMLc currently lists fluoride in two forms in relation to caries prevention: *fluoride toothpaste* (paste, cream or gel – 1000-1500ppm F concentration) and *fluoride* (in any topical formulation). Fluoride toothpaste has a different indication compared to fluoride varnish – it is intended to be used as part of daily toothbrushing in the context of self-care, daily grooming and oral hygiene behaviour. Given that the listing of fluoride “in any topical formulation” is
rather broad and unspecified, the expert committee requested “WHO to identify and define the alternative fluoride-containing formulations that are recommended for use in the prevention of dental caries so that these can be specifically indicated in the Model Lists in 2023 to provide clear guidance to countries.” This application proposal for fluoride varnish, together with the separate application proposals for fluoride gel and fluoride mouth rinse are responding to this request.

8. Treatment details

8.1 Dosage regimen and duration of treatment

Fluoride varnish is generally available in a standard dosage of 1ml of application-ready suspension containing 50mg of sodium fluoride (equivalent to 22.6mg of fluoride/22.600 ppm)

Fluoride varnish has two main indications with different treatment approaches:

- **Prevention of dental caries:** Application frequency should not be less than 2x/year; can be increased to 4x/year depending on individual caries risk of the patient/existing dental caries severity. Varnish is applied on tooth surfaces with an application syringe attached to the tube or small cotton swab (i.e. Q-tip). High-risk teeth (such as the erupting permanent molars) should be prioritized. The products dry over the tooth forming a pellicle which facilitates deposits of CaF on the biofilm and tooth surfaces. There is no limitation to the overall treatment duration.

- **Hypersensitivity of teeth:** 2-3 applications within a couple of days on the sensitive tooth surfaces (usually exposed tooth necks/roots) until symptoms subside.

8.2 Requirements to ensure appropriate use of the medicine

Before application of fluoride varnish, tooth surfaces should be cleaned from any deposits or debris and dried with a cotton pellet or blower. This improves adherence to the tooth surface. The adhesive and water-resistant formulation of the medicine ensures that it sets to a soft coating that remains on the tooth surface for a few hours. Brushing and eating that requires chewing are discouraged for four hours after application. The fissures of molars and approximal surfaces between teeth are particularly important when applying fluoride varnish because they are predilected locations for caries formation and hence require remineralization of incipient lesions.

There are no further specific requirements for the application of the medicine other than the medical contraindications (see 10.1). Fluoride varnish is available in tubes or similar dispensing form, as well as in standard injection cartridge systems. In this case special blunt cannula are used to place the varnish on the tooth surface.

The medicine is not intended for patient use and should only be applied by trained oral health personnel or other health professionals, including nursing staff, community health care workers and caretakers trained in its application. Application should be documented in the patient records to ensure the appropriate frequency of application.
8.3 Recommendations in existing WHO guidelines

A WHO technical report from 1994 and a WHO technical review summarize and comprehensively review the role of fluorides, including fluoride varnish.\textsuperscript{20, 21} The two documents synthesize the knowledge at the time, including history, pharmacology, caries preventive effects, risks and side-effects, and many other aspects. Since then, additional and better quality studies/reviews have confirmed the relevance of fluoride varnish as an important tool to prevent dental caries, yet the key recommendations of the guideline are still consistent with current recommendations more than 25 years later.

A more recent WHO briefing note on \textit{Prevention and treatment of dental caries with mercury-free products and minimal intervention} in the context of the Minamata Convention on the Elimination of Mercury\textsuperscript{2} provides updated guidance on fluoride varnish, stating that “application of fluoride varnish is suitable for use with urban, rural, remote and otherwise vulnerable populations (including people with special needs) because it is simple to use, well-accepted, effective and does not require extensive dental training.”\textsuperscript{2}

Another recent WHO implementation manual on \textit{Ending Childhood Dental Caries}\textsuperscript{22} highlights the role of fluoride varnish in prevention and treatment of early childhood caries because of its effectiveness, safety, ease of use and universal applicability in different populations and settings, including children with special needs. The document also emphasizes the capability of fluoride varnish to reverse incipient (initial) carious lesions by reversing the demineralization process (see also section 9.3).

The use of fluoride varnish in the context of school-based topical fluoride applications is recommended in the WHO/UNESCO Information Series on School Health (WHO/NMH/NPH/ORH/School/03.3, 2003).\textsuperscript{23}

8.4 Recommendations in other current clinical guidelines

Numerous other clinical guidelines from public health and professional organizations are recommending the use of fluoride varnish in different population groups across the life course and in various settings. Selected examples are:

A rapid review by Douglas et al (2016)\textsuperscript{28} provides an overview of other international guidelines related to the clinical use of fluoride varnish:

<table>
<thead>
<tr>
<th>Guideline</th>
<th>Age</th>
<th>Fluoride concentration</th>
<th>Other process (e.g. 2/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Academy of Pediatric Dentistry [2014]</td>
<td>Primary teeth</td>
<td>NaF 22,500 ppm</td>
<td>2/year</td>
</tr>
<tr>
<td></td>
<td>Permanent teeth</td>
<td>NaF 22,500 ppm</td>
<td>2–3/year</td>
</tr>
<tr>
<td>American Academy of Pediatric Dentistry [2014c]</td>
<td>By age 12 months</td>
<td>Not specified</td>
<td>Initial visit if indicated</td>
</tr>
<tr>
<td>HealthPartners Dental Group [2013]</td>
<td>Permanent dentition</td>
<td>Not specified</td>
<td>Consider fluoride varnish for lesions at all visits</td>
</tr>
<tr>
<td>Academy of Nutrition and Dietetics [2012]</td>
<td>&lt;6 years</td>
<td>Not specified</td>
<td>2/year (moderate or high caries risk)</td>
</tr>
<tr>
<td></td>
<td>6–18 years</td>
<td>Not specified</td>
<td>2/year (moderate caries risk)</td>
</tr>
<tr>
<td></td>
<td>18+ years</td>
<td>Not specified</td>
<td>2–4/year (high caries risk)</td>
</tr>
<tr>
<td>Australian Research Centre for Population Oral Health [2006]</td>
<td>0–10 years</td>
<td>22.6 mg/ml fluoride ion</td>
<td>Where other forms of professionally applied fluoride are contra-indicated</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Where other professionally applied fluoride vehicles may be unavailable or impractical</td>
</tr>
<tr>
<td>Weyant et al. [2013]</td>
<td>All</td>
<td>2.26%</td>
<td>2–4/year</td>
</tr>
</tbody>
</table>

All these clinical guidelines are largely similar in their recommendations.


9.1 New medicine(s) / indication(s)

A number of authoritative systematic reviews from the last ten years regarding the clinical evidence of effectiveness and comparative effectiveness of fluoride varnish are available, including several Cochrane reviews.

9.2 Systematic literature search

Information used in application relies on available systematic literature reviews, meta-analyses, and other quality studies. No additional systematic reviews were undertaken.

Literature used was searched on Medline and Scopus using the following search syntax:

\(((\text{caries}) \text{ OR } (\text{dental cavity})) \text{ OR } (\text{tooth decay})) \text{ AND (fluoride varnish*) AND ((comparative AND (effective* OR analysis)) OR ((effective*) OR (efficacy)))) \text{ NOT (dental fluorosis OR chew* OR Orthod*)}\)

Filter: review/systematic review/meta analysis – sort by: most recent

9.3 Summary of available evidence for comparative effectiveness

A Cochrane review (2016, update from a first Cochrane review in 2002) evaluated fluoride varnish for caries prevention in children and adolescents,\textsuperscript{29} while two Cochrane reviews examined the effect of combinations of topical fluoride application in children and adolescents.\textsuperscript{30}\textsuperscript{31} In addition, several systematic and summary reviews included fluoride varnish and some comparative aspects with other topical fluoride interventions.\textsuperscript{8}\textsuperscript{22}\textsuperscript{32}–\textsuperscript{36}

A number of reviews focus on the particular comparative effectiveness of fluoride varnish application and dental sealants,\textsuperscript{37}–\textsuperscript{39} including one Cochrane review.\textsuperscript{40}

The summary findings of these studies indicate that:
• Topical application of fluoride varnish two to four times a year has a large effect on caries reduction – 43% reduction in carious surfaces in permanent teeth, and 37% in carious surfaces in primary teeth (moderate certainty of effect size).

• These effects showed no significant relation to baseline caries severity, background exposure to fluoridated water, background exposure to fluoride toothpaste, or background exposure to any reported fluoride source, concentration of fluoride, length of follow-up (duration of study), prior prophylaxis or frequency of application – this indicates that fluoride varnish has a substantial effect irrespective of the patient’s or population’s situation regarding other sources of fluoride and other confounding factors.

• Fluoride varnish can reverse incipient carious lesions in primary and permanent teeth.41

• There is evidence that combining fluoride varnish (or other topical fluoridation methods) in addition to fluoride toothpaste provides some additional benefit.

• There is evidence that a general application irrespective of caries risk status only provides a minimal additional population-level benefit over using fluoride toothpaste as basic prevention approach.

• Analysis of comparative effectiveness between fluoride varnish and dental sealants (resin-based and glass ionomer cement-based) show that both interventions are highly effective in preventing dental caries, but there is no conclusive evidence for superiority of either approach.

• There is low-certainty evidence that a combination of fluoride varnish and dental sealants provides a small additional benefit.

Moreover, there is evidence treating tooth hypersensitivity with fluoride varnish with similar effectiveness as compared to fluoride mouthrinse.43 44

9.4 Assessment of applicability of the available evidence across diverse populations and settings

Ample evidence and data on using fluoride varnish across diverse populations and settings is available, demonstrating the wide applicability of the medicine.

Applicability across diverse populations

Extensive evidence for application of fluoride varnish across diverse populations exists. Selected examples include, but are not limited to: patients with high, moderate or low caries risk,45 indigenous and remote populations,27 46–48, refugee and immigrant populations,49 older adults,50 children with early childhood caries,50 school and preschool children,29 51 populations with disabilities,52 53 and drug users.54

Applicability across diverse settings

Fluoride varnish is used globally in a multitude of clinical and community settings across all income levels. Evidence of effectiveness is available from high-, middle- and low-income contexts, though evidence from high-income contexts dominates. A World Bank publication (Disease Priorities, Volume 4/42015) endorses fluoride varnish use in resource-poor settings for children and adolescents, based on evidence reviews.55 56
Selected country studies of applying fluoride varnish in primary health care, school and education settings, include, but are not limited to: the United States, Canada, United Kingdom, Taiwan, Brazil, South Africa, Hong Kong, China, Grenada, various countries in Latin America, Myanmar, and countries of the Middle-East region.

10. Review of harms and toxicity: summary of evidence of comparative safety

10.1 New medicine

Harms and side-effects of fluoride varnish have been analyzed in several high-quality Cochrane and other reviews. Due to the topical application, systemic effects like the risk of enamel fluorosis is only theoretical for fluoride varnish, even when combining multiple topical fluoridation methods. Fluoride varnish, when applied and used as recommended, is not ingested in significant amounts over an extended period of time. Considering the general side-effects of topical fluoride applications, Weyant at al. (2013) summarize that “potential harm of topical fluorides includes, but may not be limited to, nausea and vomiting associated with the ingestion of topical fluorides and dental fluorosis (an aesthetic concern) while tooth enamel is developing (until about age 6 years) due to daily ingestion of topical fluoride, such as from toothpaste or from prescription-strength, home-use gels. There is less of a concern about professionally applied topical fluorides for which there are longer intervals between applications. Fluoride varnish dispensed in unit doses has lower potential for harm than do other forms of high-concentration topical fluoride agents, because the amount of fluoride that is placed in the mouth by means of fluoride varnish is approximately one-tenth that of other professionally applied products.”

Duffin et al. (2022) reviewed safety considerations for fluoride as a caries-preventive substance in general. They conclude that current guidelines are ensuring a safe and effective use of fluoride in various forms. Milgrom et al. (2014) confirm safety after analyzing plasma fluoride levels subsequent to fluoride varnish application in toddlers (6-12 months old). A prospective study in the U.S. comprising more than 10,000 fluoride varnish applications in children aged 0-5 years observed zero adverse events. Sixty-five adverse events have been reported to the US FDA over a ten-year period. Most of these were hypersensitive reactions probably to the natural resin used in the formulation.

Lastly, fluoride varnish should not be used when a clear contraindication such as ulcerative gingivitis is present (increased risk of systemic fluoride absorption) or any known allergies against one or several of the product ingredients. Should any allergic reactions or local irritations after using fluoride varnish occur, the fluoride layer can be easily removed through brushing or with professional help.

11. Summary of available data on comparative cost and cost-effectiveness

11.1 New medicine

Cost and cost-effectiveness are dependent on a broad range of contextual factors, including the setting, equipment used, workforce cost, treatment duration, and many more. Since fluoride
varnish can be applied in a wide variety of contexts, the literature on cost and cost-effectiveness is difficult to compare, also because of a lack of uniform reporting requirements or standardization.

Many studies investigating cost and cost-effectiveness of fluoride varnish are analyzing school-based programmes because they provide a more formalized costing environment. A recent scoping review identified 15 studies that met inclusion criteria, 11 originated from high-income countries.73 “The findings in the reviewed articles indicate that school-based caries preventive methods [fluoride varnish, supervised toothbrushing and fluoride mouthrinse] are likely to be cost-effective, and potentially cost-saving. Reporting quality differed and improved standardization is required in future studies. Inter-study comparisons of relative cost-effectiveness between interventions or settings are limited due to the use of incomparable outcome measures. Future studies should consider adopting a generic outcome measure such as QALYs to improve comparability of results.”73

A number of other studies address cost and cost-effectiveness in different settings and countries.59,73–80 Due to the heterogeneity of settings and intervention designs it is not possible to compare the respective costs of different programmes. The majority of studies, however, report or estimate good cost-effectiveness of fluoride varnish application, though one study from South Africa found the opposite because of high upfront cost and other contextual factors.62

One study compared cost of a fluoride varnish programmes with dental sealant programmes and concluded that sealant application was more costly than fluoride varnish, mainly because of labor costs (30min of time of a dentist or dental hygienist vs. 5min of time of a school health nurse).81 The authors conclude “that the expertise needed for application [of dental sealants] imposes a much higher cost such that varnish appears more cost-effective. This suggests that varnish will yield a greater reduction in caries for a fixed budget in the school-based setting examined here, though allowing for different contexts will have important implications for this conclusion.”

There is no summarized information on international market prices of fluoride varnish. The Canadian Agency for Drugs and Technologies in Health lists a range of common fluoride varnish brand names in their 2016 review59. These include: Duraphat(Colgate), Fluorniz, Fluoridin, Lawefluorid, Fluor Protector, Cavity Shield, Duroflor, DuraShield, Fluorophat, and Duofluorid. Some of these products and many others are widely available via global distributors of dental supplies. A random, non-representative check of supplier catalogue websites from the US, Brazil, South Africa and the Philippines show that prices for the most common products are around or lower than $1 USD per application.

Since fluoride varnish is a professionally applied medicine, direct patient costs generally include the costs for the product and the professional service fee. Some health systems using fee-for-service payments have dedicated dental billing codes for the application of topical fluorides in the context of caries prevention, though reimbursements depend on coverage rules, inclusion of age groups and several other factors. Other health systems use a capitation approach to cover caries preventive interventions which then also includes fluoride varnish as a required medicine.
For community settings such as school oral health programmes, procurement of supplies such as fluoride varnish is generally undertaken by the programme organizers (Ministry of Health, Ministry of Education, other health agencies or commissioned organizations). For such situations bulk purchasing agreements may be negotiated, but related information is not most of the time not publicly available. (See example for fluoride varnish procurement from the Philippines with a unit price of around 13€/tube https://doh.gov.ph/node/18536)

12. Regulatory status, market availability and pharmacopoieal standards

12.1 New medicine

Fluoride varnish products are available in pharmacies with a prescription, or via medical/dental distributors for professional use only. The two indications are:

- Prevention of dental caries
- Treatment of hypersensitive teeth

12.2 Regulatory status of the proposed medicine

ISO Standard 17730:2020 specifies “requirements and test methods for total digestible fluoride content and a minimum soluble fluoride release potential in dental varnishes containing fluoride, intended for use in the oral cavity directly on the outer surfaces of teeth and fillings. It also specifies packaging and labelling requirements, including the instructions for use.”

“The U.S. Food and Drug Administration (FDA) regulates clinical fluoride varnish use as a Class II medical device. After FDA’s 510(k) premarket notification process, fluoride varnish was cleared as a cavity liner and desensitizer, or cavity varnish. Using fluoride varnish for caries prevention in children or adults is considered an off-label use, because anticaries agents are considered drugs, not devices.”

12.3 Market availability of the proposed medicine

Comprehensive or authoritative Information on market availability of fluoride varnish is not readily available. Private market research companies provide costly analysis reports for corporate use. An abridged free version of a report provided by such a private market research company (Future Market Insights) is available online (https://www.futuremarketinsights.com/reports/dental-fluoride-varnish-market). The report indicates that fluoride varnish sales have a share of 4.7% of the total volume of the dental prevention market, equaling a global volume of $156 million USD in 2022.

Taking into account that fluoride varnish is a standard product for any dental retailer/distributor it can be assumed that widespread availability for private oral health professionals is ensured. In contrast, availability of essential supplies and medicines is oftentimes limited in public oral health services.

12.4 Pharmacopoieal standards

The International Pharmacopoeia 2019: Sodium fluoride


13. References


