

# Report of the informal global WHO consultation with policymakers in dental public health, 2021

*Monitoring country progress in phasing  
down the use of dental amalgam*



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# Informal global WHO consultation with policymakers in dental public health, 2021



## Objectives

1. to understand the extent of country implementation of the nine phase-down measures;
2. to gather knowledge of the use of mercury-free alternatives to dental amalgam; and
3. to identify additional measures being implemented to phase down the use of dental amalgam.

## Topics covered

- ❑ Use of dental amalgam & mercury-free alternatives
- ❑ Challenges and barriers to phasing down the use of dental amalgam
- ❑ Insurance policies and programmes
- ❑ Regulations
- ❑ Dental education and training
- ❑ Mercury / hazardous waste management
- ❑ Knowledge sharing and information exchange

## Characteristics of informal consultation participants and countries

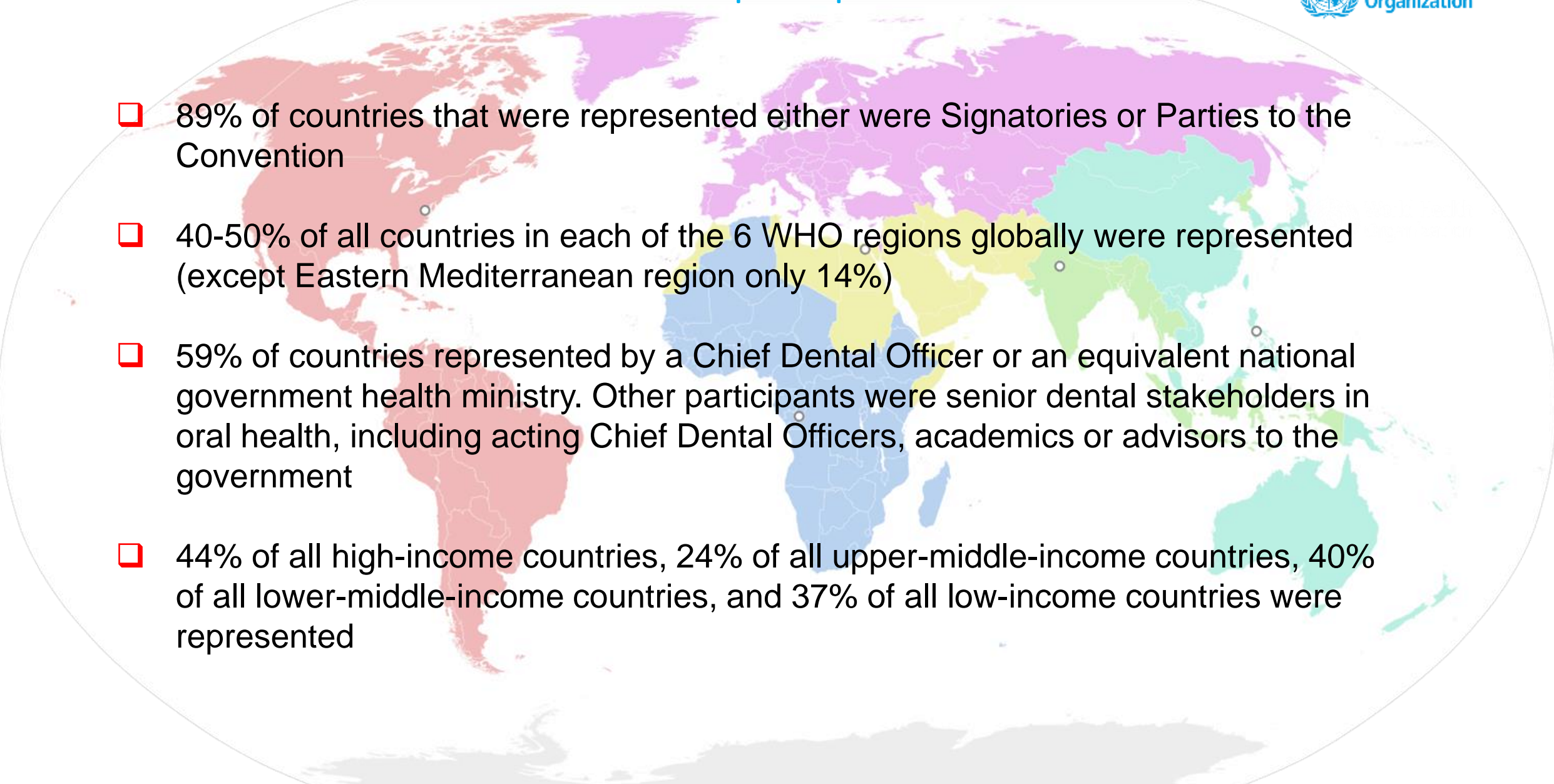
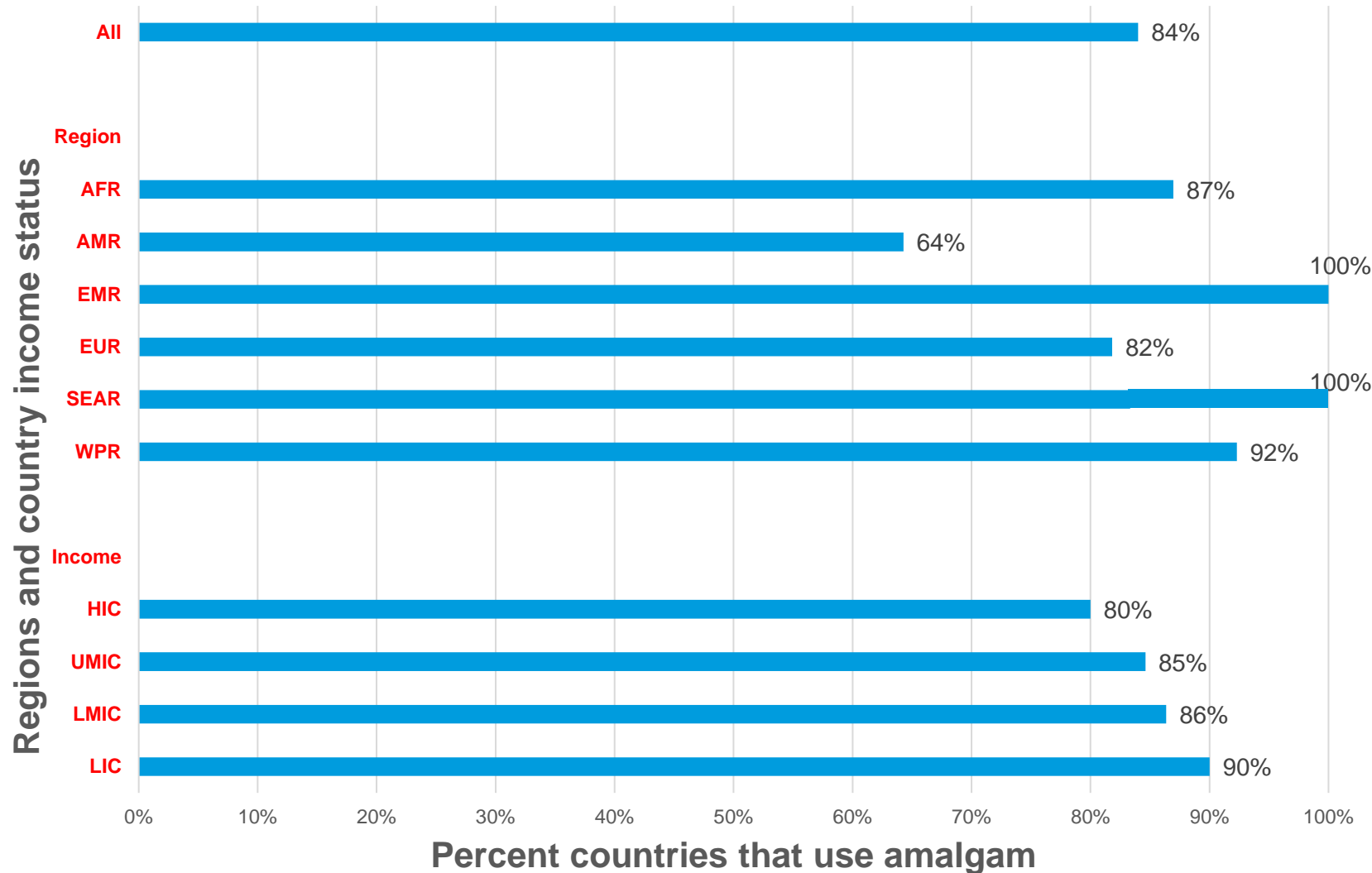
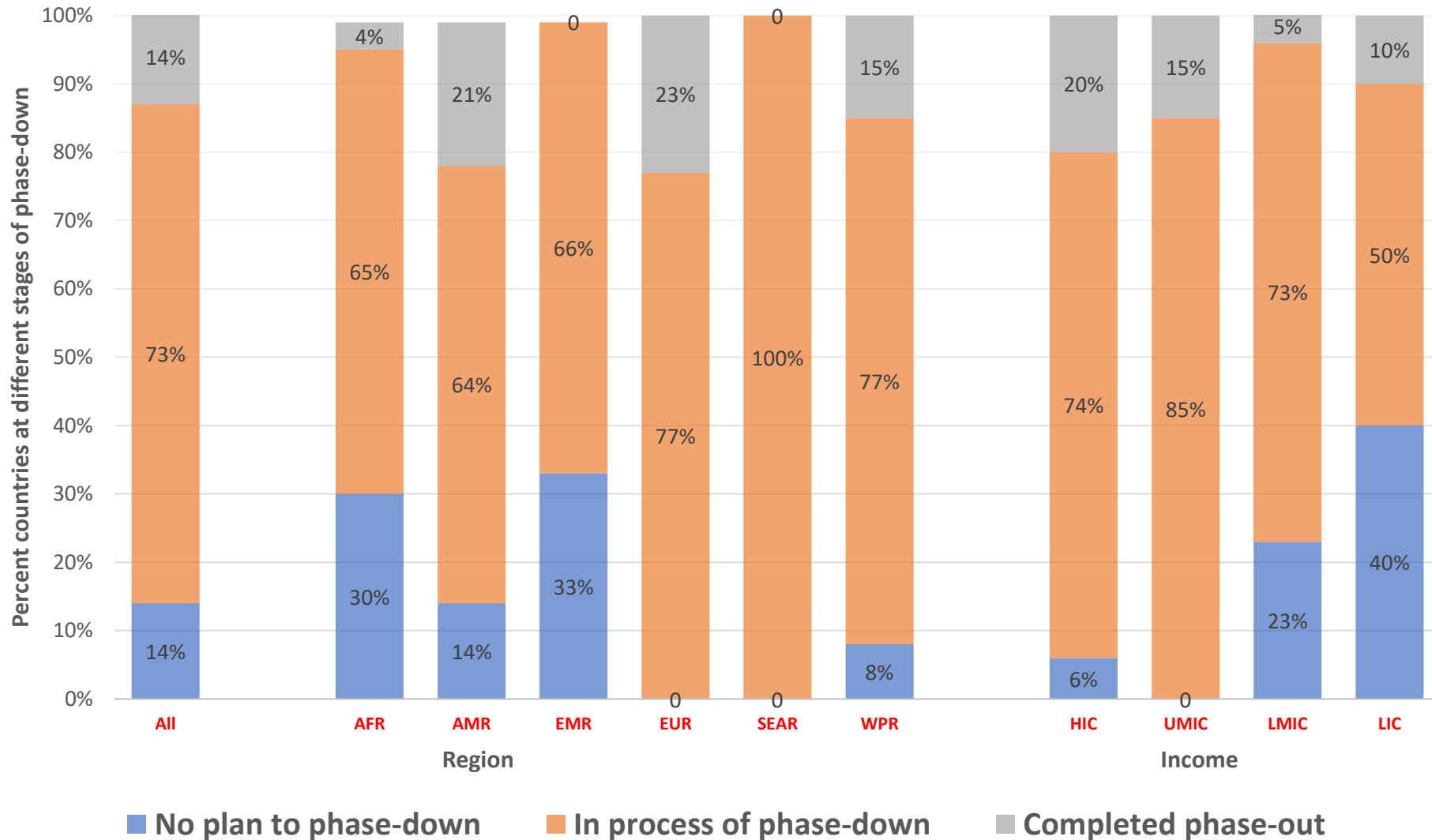
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- ❑ 89% of countries that were represented either were Signatories or Parties to the Convention
  - ❑ 40-50% of all countries in each of the 6 WHO regions globally were represented (except Eastern Mediterranean region only 14%)
  - ❑ 59% of countries represented by a Chief Dental Officer or an equivalent national government health ministry. Other participants were senior dental stakeholders in oral health, including acting Chief Dental Officers, academics or advisors to the government
  - ❑ 44% of all high-income countries, 24% of all upper-middle-income countries, 40% of all lower-middle-income countries, and 37% of all low-income countries were represented

Fig. 1 “Is dental amalgam used in your country?” by region and country income status



- ❑ Large majority of countries still use dental amalgam (84%)
- ❑ Least frequently reported in the region of the Americas (64%).
- ❑ Most common in low-income countries (90%)
- ❑ Higher use in the public sector

Fig. 2 “In your opinion, where would you place your country regarding phasing down the use of dental amalgam?”



- 73% of countries were in the process of phasing down
- 14% completed phase-out
- 14% had no plan to phase down – mostly in LICs & LMICs

# Additional measures to phase down use of dental amalgam

## ❑ Governance

- Stakeholder engagement
- Phasing out plan

## ❑ Limits on use of dental amalgam

- Use of dental amalgam was banned for specific population subgroups
- National law prohibiting the export and use of products containing mercury

## ❑ Incentives to use alternatives to amalgam

- Social insurance scheme no longer covers dental amalgam treatment
- National list of dental products and materials include mercury-free alternative materials

## ❑ Dental amalgam waste management

- National guideline specific to dental amalgam waste management
- Applying for mandatory waste discharge certification
- Obligatory use of dental amalgam separators in all dental facilities
- Recalling dental amalgam materials stored in public facilities and practices.

# Challenges and barriers to phasing down the use of dental amalgam



## ❑ For patients

Insufficient knowledge and awareness; greater affordability of dental amalgam; and better coverage of dental amalgam under insurance plans.

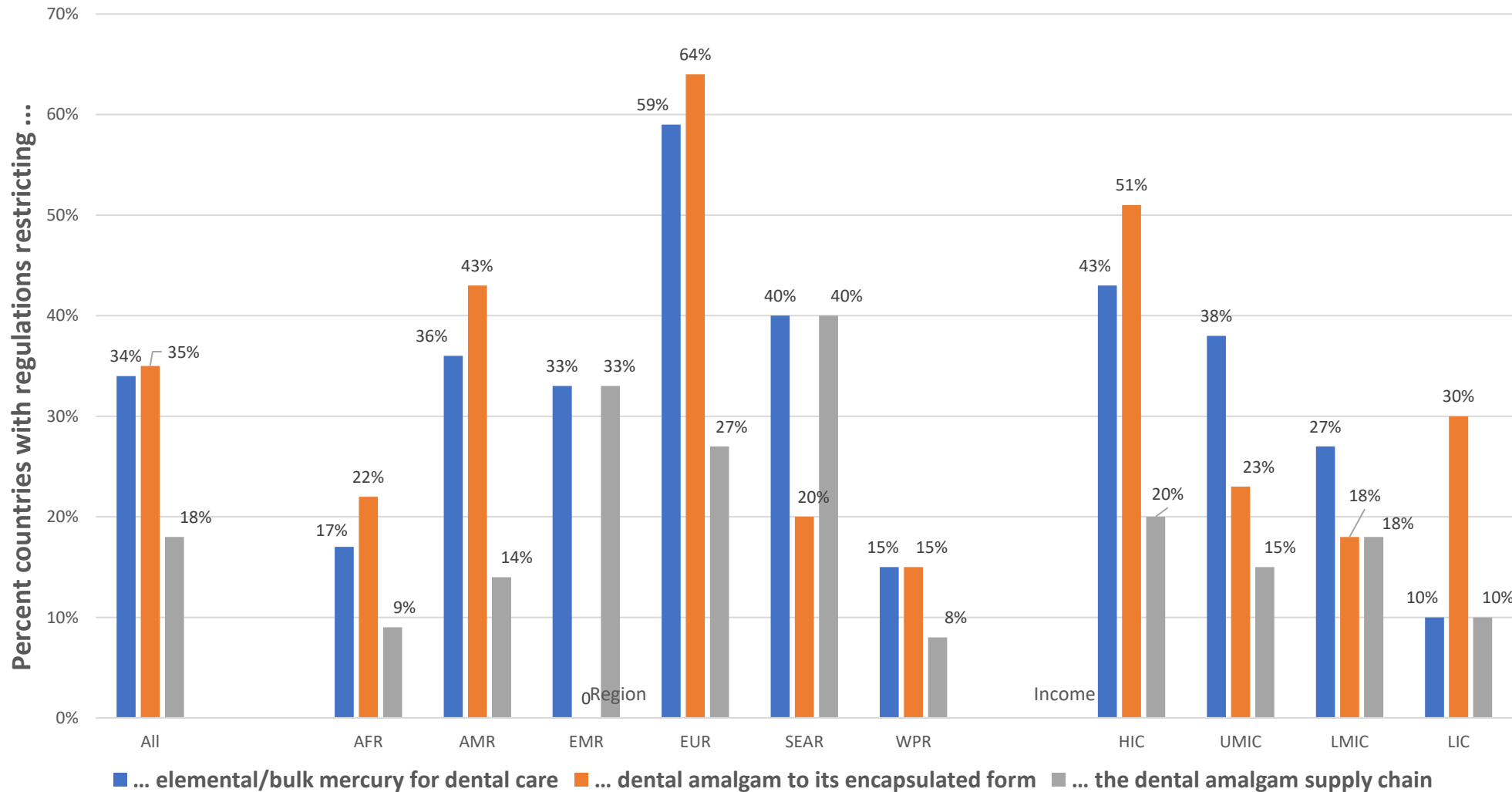
## ❑ For oral healthcare providers

Preference for dental amalgam due to its perceived ease of handling, durability, familiarity, and emphasis within dental training. Familiarity was reported to be a particular challenge for oral health personnel who did not want to change their established practices.

## ❑ For policymakers

Lack of a national plan for phase-down; insufficient inter-ministerial coordination; inadequate funding; long processes to develop statutory instruments; lobbying by some non-state-actors and the dental industry and difficulty in convincing patients to use relatively costly mercury-free alternatives.

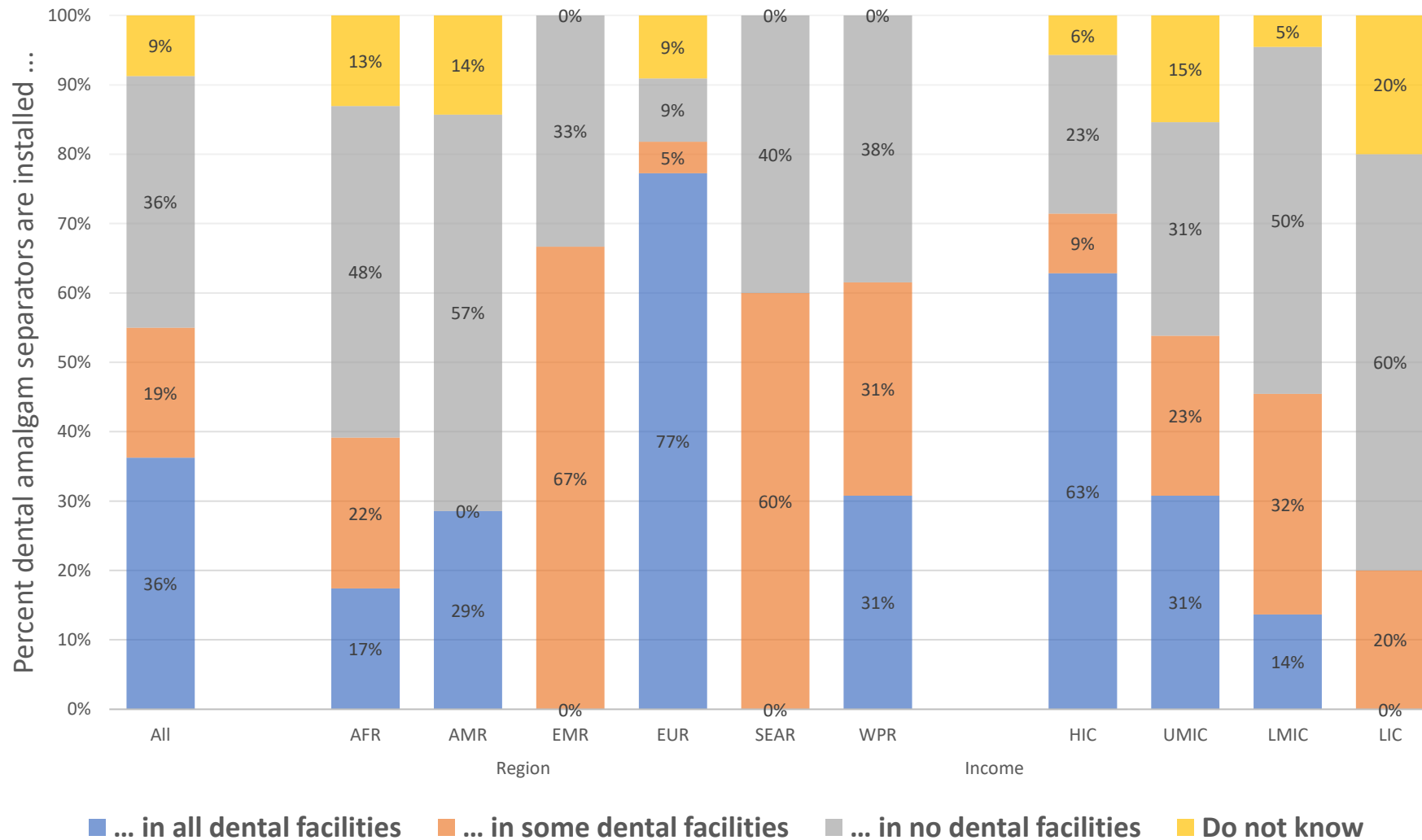
Fig. 3. “are there any regulations: to restrict the use of elemental/bulk mercury for dental care; to restrict dental amalgam to its encapsulated form; or with regards to dental amalgam supply chain management in your country?”



- ▣ High-income countries had the highest frequency of regulation in all categories (43%, 51%, and 20%, respectively)
  
- ▣ Differences by country income status followed a clear gradient

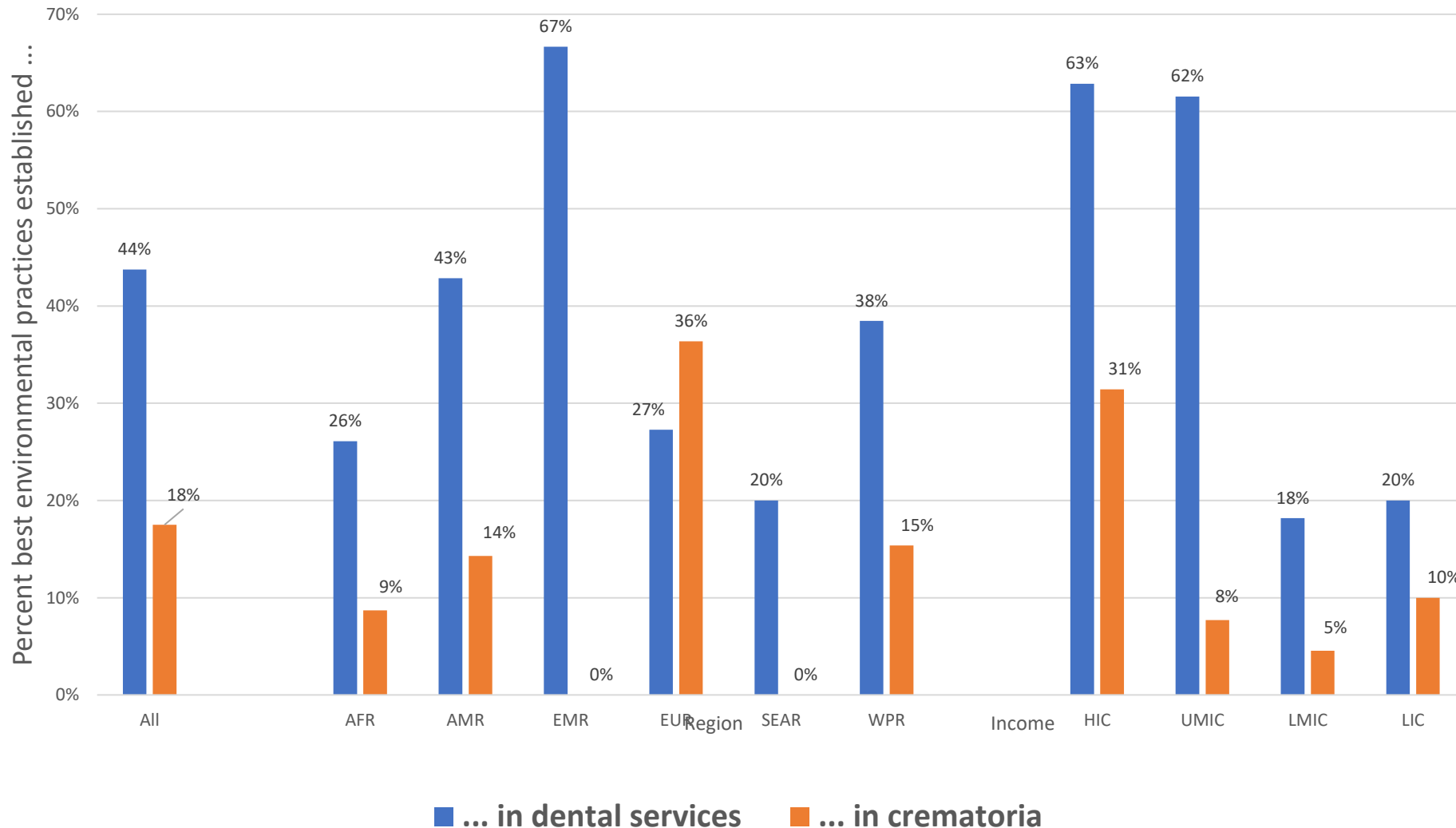


Fig. 4 “Are dental amalgam separators installed at dental facilities in your country?”



- ❑ 36% countries had dental amalgam separators in all dental facilities
- ❑ 36% countries had no separators installed in all dental facilities
- ❑ Differences by country income status followed a clear gradient.

Fig 5. “Do you know about the best environmental practices established in your country to reduce and monitor emissions and releases of dental amalgam waste into air, land, soil, and water?”



- 44% of countries had best environmental practices in dental services
- 18% of countries had best environmental practices in crematoria
- 54% of participants not informed about measures in crematoria

# Key highlights of the global informal consultation

1. Substantial variation in progress in implementing the measures within and between regions
2. A strong and consistent gradient related to country income status
3. Remaining challenges:
  - Regulations for **restricting** dental amalgam to its **encapsulated form**
  - Dental amalgam **separators installed** in dental facilities
  - **Public sector** may face greater challenges than the private sector
4. Promising signs of progress:
  - **Insurance policies** and programmes that cover costs of mercury-free alternatives;
  - **Regulations for dental amalgam waste and disposal** in dental facilities and schools; and/or best environmental practices established in dental services.
  - **Teaching programme** about mercury-free alternatives than about dental amalgam in dental schools

# Conclusion and the way forward

The phase-down process has the potential to be accelerated in countries by:

- strengthening **multisectoral leadership and collaboration** in particular between the ministries of health, education and environment
- increasing **affordability of** cost-effective and simple-to-use **mercury-free alternatives**
- promoting **Universal Health Coverage** for oral health
- encouraging **public-private research programmes** in dental public health
- establishing **clear timelines to achieve the 9 phase-down measures** including a global **monitoring framework** to measure progress
- increasing **support to low-income countries** and other countries which have severe funding and resource limitations



<https://www.mercuryconvention.org/en/documents/dental-amalgam-information-world-health-organization>



**COP-4 INDONESIA**  
ONLINE 1-5 NOVEMBER 2021  
BALI 21-25 MARCH 2022  
**MAKE MERCURY HISTORY**



**MINAMATA  
CONVENTION  
ON MERCURY**

Side Event - Webinar on March 11, 2020

# Prevention and treatment of dental caries with mercury-free products and minimal intervention

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# Use of mercury in dentistry

## - amalgam dental filling



Decayed molar



Treated with  
amalgam filling

Amalgam is an alloy of mercury with other metals (mainly silver).

# Presentation outline

Effective ways to reduce amalgam dental filling

## 1) Prevention of dental caries (tooth decay)

- Fluoride toothpaste
- Fluoride varnish
- Glass ionomer cement dental sealant

## 2) Alternative treatment of decayed teeth

- Silver diamine fluoride caries arrest treatment
- Glass ionomer cement dental filling
- Resin composite dental filling



# Reduce use of mercury in dentistry - prevent dental caries (tooth decay)



Healthy teeth



Decayed teeth

Prevent dental caries = reduce need for filling

The most cost-effective method is use of fluoride.

# 1) Use fluoride toothpaste in brushing teeth



Place toothpaste  
on toothbrush



Brush all tooth  
surfaces

## Daily tooth brushing with fluoride toothpaste

- safe and simple to use
- suitable for self-care in all settings and populations
- can expect to reduce dental caries by 25%

## 2) Apply fluoride varnish on teeth



Put fluoride varnish  
on micro-brush



Paint on tooth  
surfaces

Apply fluoride varnish on teeth 2 to 4 times a year

- a thick liquid that set rapidly and adhere on tooth
- safe and simple to apply by professionals
- can prevent new caries and arrest (stop) early caries
- can expect to reduce dental caries by 40%

### 3) Glass ionomer cement as dental sealant



Occlusal surface  
of a molar



Tooth surface  
sealed

#### Glass ionomer cement (GIC) as dental sealant

- mix a mild acidic liquid with a powder containing fluoride, aluminum oxide and silicate
- safe and easy to apply with hand instruments only
- can expect to prevent new caries and arrest (stop) early caries in treated tooth surfaces by 70%

# Reduce use of mercury in dentistry

## - alternative treatments for decayed teeth



Decayed tooth



Treatment with  
~~amalgam filling~~

### Alternative treatments

- non-restorative treatment
- use adhesive tooth-colour mercury-free filling materials

# 1) Caries arrest treatment by applying silver diamine fluoride (SDF) solution



SDF solution and materials for its application on teeth



Decayed tooth



SDF applied on surface



Decay arrested after some time

## Silver diamine fluoride (SDF) solution

- a colorless aqueous solution containing high concentration of silver and fluoride ions



# Non-restorative treatment - arrest dental caries with SDF



Primary teeth  
in children



Permanent teeth  
in adults

Many clinical studies found that

- with repeated applications (usually 1-2 times a year), most (around 80%) of the treated active carious lesions will become arrested, hard and symptomless

# 1) Caries arrest treatment by applying SDF solution

## Silver diamine fluoride applications on teeth

- safe, quick and simple to apply by professionals
- a painless non-invasive treatment
- can prevent new caries and arrest carious lesions
- restoring the treated cavities may not be necessary



## 2) Glass ionomer cement for dental filling



Decayed molar with  
cavity cleaned

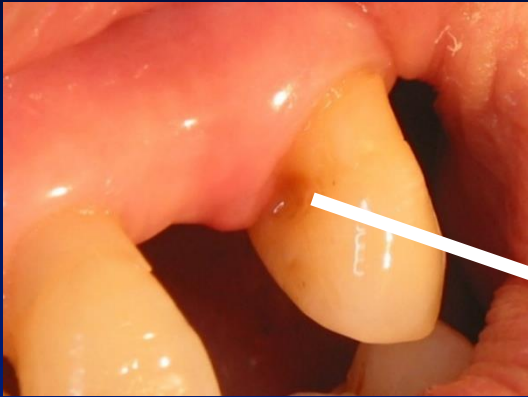


Cavity filled with glass  
ionomer cement

### Glass ionomer cement (GIC) for dental filling

- can use in minimal intervention (tooth tissue removal) and atraumatic restorative treatment
- can be easy to apply using hand instruments only
- high restoration survival rate in permanent teeth (around 80% after 5 years)

# Restoring decayed tooth root with GIC



Dental root caries (cavity)



Restored with glass ionomer cement

### 3) Composite resin for dental filling



Small decay  
in premolars



Minimal  
intervention



Cavity filled with  
composite resin

### Composite resin as dental restorative material

- a mixture of resin, fillers (such as silica) and other components
- good physical properties (such as strength and wear-resistance) and tooth-colored
- adhere to tooth through chemical etching and bonding

### 3) Composite resin for dental filling



Small decay  
in premolars



Minimal  
intervention



Cavity filled with  
composite resin

### Composite resin for dental filling

- can be placed with minimal intervention (tooth tissue removal)
- good alternative for amalgam filling
- training for dental operator is needed as the treatment involves a series of carefully administered steps

**Thanks for your attention**



**Welcome to visit Hong Kong**