

# Tooth decay and fluoride



Healthy teeth are important for smiling, eating, speaking and for your general wellbeing.

Tooth decay happens when plaque bacteria on the tooth change sugars in foods and drinks into acid. This acid dissolves the tooth over time and a cavity forms.

Tooth decay in children can cause pain, sleepless nights, difficulty eating, and days missed from school.

Having a filling or a tooth taken out because of tooth decay can be distressing for a child and their parents.



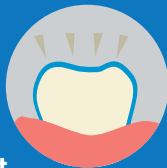
## Fluoride

Fluoride (F) is a mineral that is naturally present in water.

Fluoride strengthens teeth against tooth decay.

In Ireland, the fluoride levels of most large public water supplies are adjusted upwards to 0.6 to 0.8 parts per million fluoride (ppm F) with a target of 0.7ppm F to help prevent tooth decay.

This is called community water fluoridation.



How much is 0.7ppm fluoride in a litre of water?

It's like 1 cent in €14,000



# 71%

of people in Ireland have access to fluoridated water supplies.

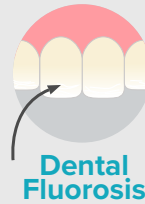


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# Dental fluorosis and fluoride



Having community water fluoridation and using fluoride toothpaste have helped reduce tooth decay levels in Ireland.



But having community water fluoridation and using fluoride toothpaste in the early years of life can increase the risk that children will develop dental fluorosis (white marks) on their permanent teeth.

The risk of developing dental fluorosis is only during the time that the permanent teeth are forming.



The permanent front teeth are forming up to about age 5 and are most at risk of developing dental fluorosis up to about age 3.

## Most dental fluorosis in Ireland:

- Does not weaken the teeth



- Does not need any dental treatment



- Is not noticeable when the person smiles



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For a summary of the scientific evidence about water fluoridation and general health see the report of the Health Research Board, Ireland: "Health Effects Of Water Fluoridation. An evidence review 2015" [www.tinyurl.com/y2lb8ps6](http://www.tinyurl.com/y2lb8ps6)

# Why is the FACCT study important?

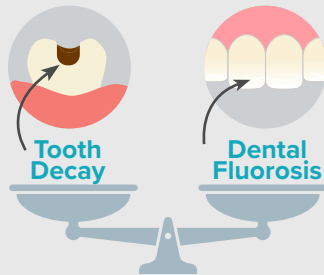
## Fluoride

### It's a balance

It is very important to balance the benefit of fluoride providing protection against tooth decay

with

the risk of some people developing dental fluorosis (white marks) on their permanent front teeth.



### Toothbrushing recommendations

## 2002

Parents are advised to:

Start using fluoride toothpaste when brushing their children's teeth from age 2



Use only a small, pea-sized amount of fluoride toothpaste



Supervise children aged 2 to 7 years when brushing their teeth

Make sure children avoid swallowing the toothpaste

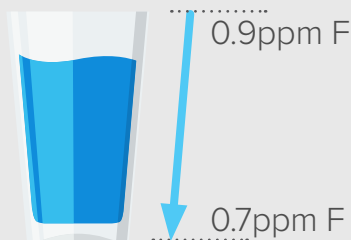
If a child is at high risk of developing tooth decay, parents may be advised by a healthcare professional to start using fluoride toothpaste for their child before age 2.

Brush their children's teeth with a toothbrush and tap water before age 2



## 2007

Fluoride in tap water was reduced.



To find out if the introduction of toothbrushing recommendations (2002) and the reduction of water fluoride levels from 0.9ppm to 0.7ppm fluoride (2007) have changed tooth decay and dental fluorosis in Ireland, we conducted the FACCT study.

# Tooth decay

## 2007

Fluoride in tap water was reduced

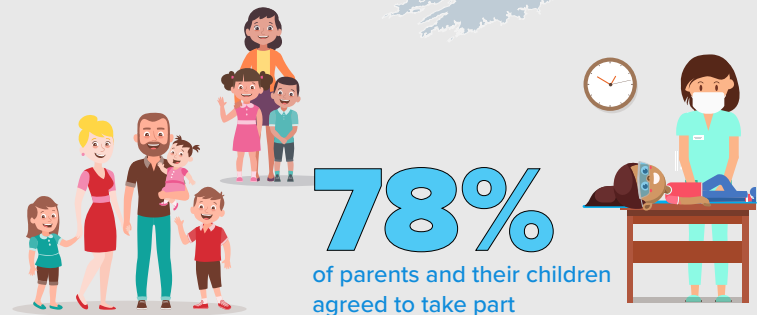
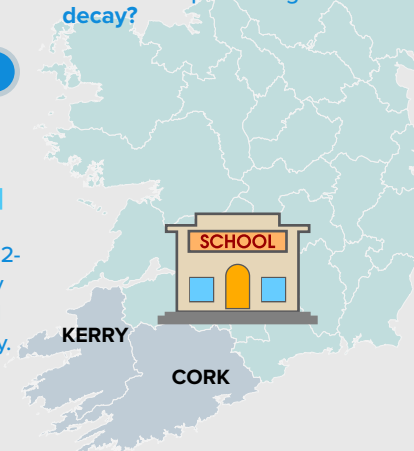
We wanted to find out:

Does water fluoridation at the new lower level of 0.7ppm fluoride still protect against tooth decay?

What did we do?

## 2014

We asked parents of 5- and 12-year-old children in randomly selected schools in Cork and Kerry to take part in our study.



Specially trained dentists helped by trained dental nurses measured the children's levels of tooth decay. They counted teeth with decay, teeth with fillings and teeth that had been taken out because of decay.

To find out if water fluoridation at the new lower level of 0.7ppm fluoride still protects against tooth decay we compared children always supplied by fluoridated water with children never supplied by fluoridated water.

### 5-Year-Olds Cork & Kerry - Baby Teeth

Children with tooth decay, fillings or teeth taken out because of decay



COMPARED WITH



### 12-Year-Olds Cork & Kerry - Permanent Teeth

Children with tooth decay, fillings or teeth taken out because of decay



COMPARED WITH



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For further information about toothbrushing recommendations and the reduction of the concentration of fluoride in tap water, see the report of the Forum on Fluoridation: [www.tinyurl.com/yye5sn5p](http://www.tinyurl.com/yye5sn5p)



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# Tooth decay

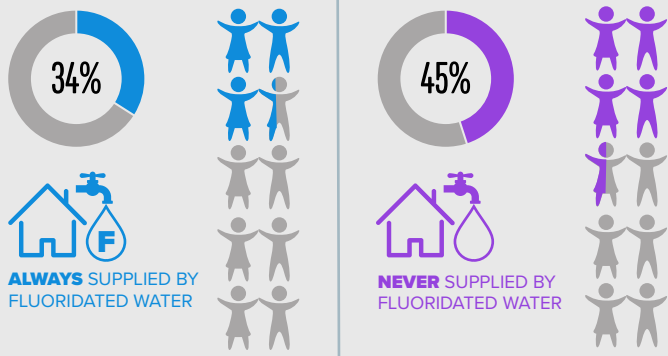
Does **water fluoridation** at the new lower level of 0.7ppm fluoride still protect against **tooth decay**?

## What did we find?

# 2014

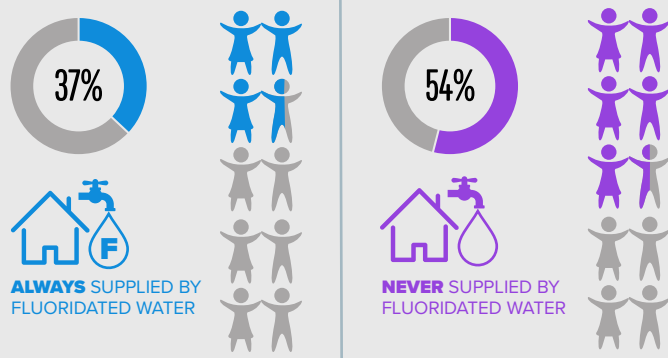
### 5-Year-Olds Cork & Kerry - Baby Teeth

Children with tooth decay, fillings or teeth taken out because of decay



### 12-Year-Olds Cork & Kerry - Permanent Teeth

Children with tooth decay, fillings or teeth taken out because of decay



We found that 5- and 12-year-old children always supplied by fluoridated water have lower levels of tooth decay compared to children never supplied by fluoridated water.

## Water fluoridation at 0.7ppm F is effective!

Water fluoridation at the lower level of 0.7ppm fluoride still protects baby teeth and permanent teeth against tooth decay.



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# Dental fluorosis

# 2002

Toothbrushing recommendations introduced

## We wanted to find out:

Has the level of dental fluorosis in permanent teeth changed since the introduction of toothbrushing recommendations and the reduction of water fluoride levels from 0.9ppm to 0.7ppm fluoride?

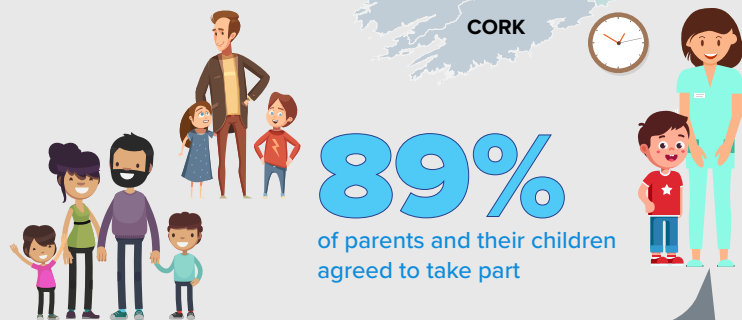
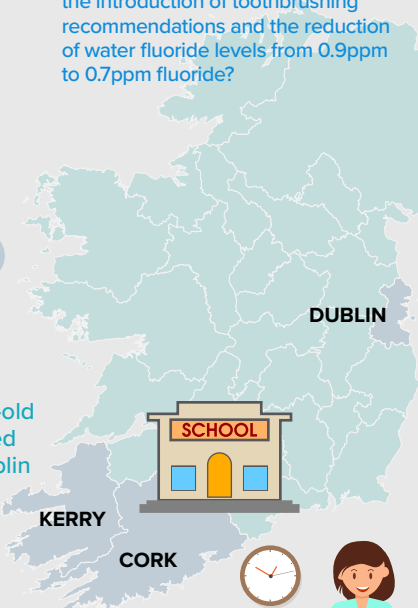
# 2007

Fluoride in tap water was reduced

## What did we do?

# 2017

We asked parents of 8-year-old children in randomly selected schools in Cork, Kerry & Dublin to take part in our study.



Specially trained dentists helped by trained dental nurses measured the children's levels of dental fluorosis.

Not all white marks on teeth are dental fluorosis. Dentists were trained to tell the difference between dental fluorosis and other white marks on teeth.

To find out if dental fluorosis has changed since the introduction of toothbrushing recommendations and the reduction of water fluoride, we compared our results with the results of the North South Survey of Children's Oral Health 2002. We also asked parents to tell us what age they started using toothpaste with their child.

### 8-Year-Olds - Permanent Teeth

2002 Children with dental fluorosis\* 2017



COMPARED WITH



COMPARED WITH



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\*Very mild, mild or moderate Dean's Index scores

For further information about the North South Survey of Children's Oral Health 2002 see:  
www.tinyurl.com/y5uvuzns

# Dental fluorosis

Has the level of **dental fluorosis** in permanent teeth changed since the introduction of toothbrushing recommendations and the reduction of water fluoride levels from 0.9ppm to 0.7ppm fluoride?

## What did we find?

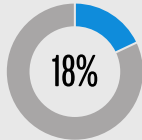
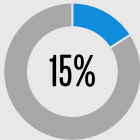
### 8-Year-Olds - Permanent Teeth

#### Children with dental fluorosis\*

2002

2017

#### Dublin

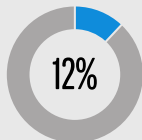
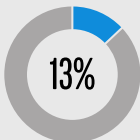


ALWAYS SUPPLIED BY FLUORIDATED WATER



ALWAYS SUPPLIED BY FLUORIDATED WATER

#### Cork & Kerry

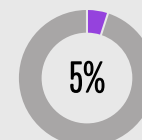
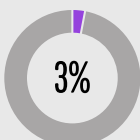


ALWAYS SUPPLIED BY FLUORIDATED WATER



ALWAYS SUPPLIED BY FLUORIDATED WATER

#### Cork & Kerry



NEVER SUPPLIED BY FLUORIDATED WATER



NEVER SUPPLIED BY FLUORIDATED WATER

We found that the level of dental fluorosis in permanent teeth of 8-year-olds always supplied by fluoridated water has not reduced since the introduction of toothbrushing recommendations and the reduction of water fluoride. More than 80% of parents told us that they started to use toothpaste with their child before age 2, which could help to explain why we did not find a reduction in dental fluorosis levels in 2017.

## Dental fluorosis has not reduced

The level of dental fluorosis in permanent teeth has not reduced since the introduction of toothbrushing recommendations and the reduction of water fluoride from 0.9ppm to 0.7ppm fluoride. More than 80% of parents told us that they started to use toothpaste with their child before age 2.

# Summary of FACCT study results

## We wanted to find out:

? Does **water fluoridation** at the new lower level of 0.7ppm fluoride still protect against **tooth decay**?

## What did we find?

### Water fluoridation at 0.7ppm F is effective!

Water fluoridation at the lower level of 0.7ppm fluoride still protects baby teeth & permanent teeth against tooth decay.

? Has the level of **dental fluorosis** in permanent teeth changed since the introduction of toothbrushing recommendations and the reduction of water fluoride levels from 0.9ppm to 0.7ppm fluoride?

### Dental fluorosis has not reduced

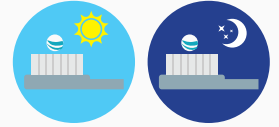
The level of dental fluorosis in permanent teeth has not reduced since the introduction of toothbrushing recommendations and the reduction of water fluoride from 0.9ppm to 0.7ppm fluoride. More than 80% of parents told us that they started to use toothpaste with their child before age 2.

## Achieve the right balance to reduce your child's risk of having tooth decay and dental fluorosis:

- From age 2, start using a small pea-sized amount of fluoride toothpaste. (Brush with a toothbrush and tap water before age 2)



- Brush at least twice a day.



- Brush your child's teeth or help your child with brushing.



- Ensure your child does not swallow the toothpaste.

- After brushing all of the teeth encourage your child to spit out the toothpaste. Don't rinse.



- Choose healthy snacks and drinks between meals.



- Visit the dentist and ask what's best for you and your family.



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For further information about the results of the FACCT study see: [www.tinyurl.com/tsz9cwu](http://www.tinyurl.com/tsz9cwu)

Funded by the Health Research Board (CARG 2012/34)



Fluoride And Caring for Children's Teeth

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