From: Makyba Charles-Ayinde
Sent: Wed, 9 Jun 2021 13:08:51 +0000
To: Horsford, Jonathan (NIH/NIDCR) [E]
Subject: AADR NIDCR June Meeting Agenda
Attachments: June 2021 AADR NIDCR Agenda.pdf

Dear Jonathan,

Please see the attached agenda for our meeting this afternoon.

See you then.

Makyba

Makyba Charles-Ayinde, M.S., Ph.D.
Director of Science Policy
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NIDCR – AADR Monthly Meeting
Wednesday, June 9, 2021
4:00 p.m. ET

AGENDA

D'Souza, Horsford, Stredrick, Fox, and Charles-Ayinde

1. COVID-19-Related Updates
    a. Updates from NIDCR
    b. Updates from AADR
        i. Year of Funded Extension for Recipients of Two Year Awards – to cover personnel expenses.

2. Science Policy Update
    a. Community Water Fluoridation and Supplementary Dietary Fluoride Position Statements Updates
    b. USPSTF Draft Recommendation on Screening and Interventions to Prevent Dental Caries in Children Younger than 5 years old

3. Legislative Update

4. NIDCR Updates

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Alexandria, VA 22314-3406, USA
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From: Horsford, Jonathan (NIH/NIDCR) [E]
Sent: Thu, 11 Mar 2021 23:01:31 +0000
To: D'Souza, Rena (NIH/NIDCR) [E]; Fox, Christopher (IADR)
Subject: Re: Ppt for AADR Townhall

Sent from my mobile device
D. Jonathan Horsford, PhD
Acting Deputy Director
NIDCR/NIH
(b) (6)
From: D'Souza, Rena (NIH/NIDCR) [E] <(b) (6)
Sent: Thursday, March 11, 2021 5:58:49 PM
To: Fox, Christopher (IADR) <(b) (6) Horsford, Jonathan (NIH/NIDCR) [E] <(b) (6)
Subject: Re: Ppt for AADR Townhall

Jonathan edited this phrase for me so is the one to blame of course I could have noted myself

Thanks for the catch... we will change

Hope the info was useful to those who signed up Chris!

Sent from my iPhone

On Mar 11, 2021, at 5:20 PM, Christopher H. Fox <(b) (6) wrote:

Dear Rena,

Thanks again for presenting this morning.

I didn't notice this until you were presenting, but I'd suggest a slight modification to the fluoride slide 12, where it says:

- Fluoride
  - NIDCR and NIEHS are exploring future fluoride research opportunities; these will be informed by the final released fluoride study from the National Toxicology Program

In my view, it sounds like both NIDCR and NIEHS will not be "informed" by the NASEM peer-review. The NASEM logo is to the right of the slide and you verbalized that while you were presenting, but if someone is just reviewing the slides, they could have the mistaken impression the NASEM review was not important.

Maybe something like:

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(Respectfully submitted for your consideration.)

Chris

Christopher H. Fox, DMD, DMSc, Chief Executive Officer
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From: D'Souza, Rena (NIH/NIDCR) [E] (b) (6)
Sent: Wednesday, March 10, 2021 10:07 AM
To: Lindsey Horan < (b) (6) Christopher H. Fox < (b) (6)
Cc: Horsford, Jonathan (NIH/NIDCR) [E] < (b) (6) New, Suzanne (NIH/NIDCR) [E] < (b) (6)
Subject: Ppt for AADR Townhall

EXTERNAL EMAIL

Rena N. D'Souza, D.D.S., M.S., Ph.D.,
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National Institute of Dental and Craniofacial Research/NIH
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Bethesda, Maryland 20892
Email: (b) (6)
Phone: (b) (6)
Cell:

From: Horsford, Jonathan (NIH/NIDCR) [E]
Sent: Thu, 11 Mar 2021 23:00:59 +0000
To: D'Souza, Rena (NIH/NIDCR) [E]; Fox, Christopher (IADR)
Subject: Re: Ppt for AADR Townhall

I'm ok taking the blame! Thanks for the suggestion Chris.

Sent from my mobile device
D. Jonathan Horsford, PhD
Acting Deputy Director
NIDCR/NIH
(b) (6)
From: D'Souza, Rena (NIH/NIDCR) [E] <(b) (6)
Sent: Thursday, March 11, 2021 5:58:49 PM
To: Fox, Christopher (IADR) <(b) (6) Horsford, Jonathan (NIH/NIDCR) [E]
<(b) (6)
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To: Lindsey Horan < (b) (6) Christopher H. Fox < (b) (6)
Cc: Horsford, Jonathan (NIH/NIDCR) [E] < (b) (6) New, Suzanne (NIH/NIDCR) [E] < (b) (6)
Subject: Ppt for AADR Townhall

EXTERNAL EMAIL

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Director,
National Institute of Dental and Craniofacial Research/NIH
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Cell:

From: Christopher H. Fox
Sent: Wed, 10 Mar 2021 23:30:33 +0000
To: D'Souza, Rena (NIH/NIDCR) [E]; Horsford, Jonathan (NIH/NIDCR) [E]
Cc: Makyba Charles-Ayinde; Lindsey Horan
Subject: Article in Dentistry today

Dear Rena and Jonathan:

Wanted to make sure you saw this article in Dentistry Today:
https://www.dentistrytoday.com/news/todays-dental-news/item/7941-fluoride-science-and-the-ntp-s-agenda

It's a nice summary, although obviously not in the peer-review literature you normally peruse.

Still, there is great concern in the public health community about NTP's plan to still publish their twice-failed NASEM peer review monograph as a repackaged "State of the Science" without any peer-review.

Can we discuss at our next in-person meeting. Thanks.

Chris

Christopher H. Fox, DMD, DMSc, Chief Executive Officer
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IADR/AADR/CADR General Session & Exhibition	July 21-24, 2021	**Virtual Experience**
2022		
AADR/CADR Annual Meeting & Exhibition	March 23-26 2022	Atlanta, Ga., USA
IADR/APR General Session & Exhibition	June 22-25, 2022	Chengdu, CHINA

From: Christopher H. Fox
Sent: Wed, 3 Feb 2021 17:57:48 +0000
To: Horsford, Jonathan (NIH/NIDCR) [E]; D'Souza, Rena (NIH/NIDCR) [E]; Ricks, Tim DMD (IHS/HQ); Taylor James ((b) (6)
Subject: Swedish Study on the Effects of Fluoride in Drinking Water
Attachments: Aggeborn-JPoliticalEconomy-2021 .pdf

FYI, from the land of Volvos and ABBA. . . .

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NEW DATES in 2021 and 2022:

IADR/AADR/CADR General Session & Exhibition	July 21-24, 2021	Boston, Mass., USA
AADR/CADR Annual Meeting & Exhibition	March 23-26 2022	Atlanta, Ga., USA
IADR/APR General Session & Exhibition	June 22-25, 2022	Chengdu, CHINA

The Effects of Fluoride in Drinking Water

Linuz Aggeborn

Uppsala University

Mattias Öhman

Uppsala University

Water fluoridation is a common but debated public policy. In this paper, we use Swedish registry data to study the causal effects of fluoride in drinking water. We exploit exogenous variation in natural fluoride stemming from variation in geological characteristics at water sources to identify its effects. First, we reconfirm the long established positive effect of fluoride on dental health. Second, we estimate a zero effect on cognitive ability in contrast to several recent debated epidemiological studies. Third, fluoride is furthermore found to increase labor income. This effect is foremost driven by individuals from a lower socioeconomic background.

We thank Erik Grönqvist, Eva Mörk, Matz Dahlberg, Mikael Elinder, Caroline Hall, Ronny Freier, Kaisa Kotakorpi, Martin Karlsson, Melanie Luhrmann, Mattias Nordin, and Adrian Adermon for helpful discussions, comments, and suggestions as well as Robin Djursäter, Liselotte Tunemar, Tomas Byström, Gullvy Hedenberg, and Louise von Essen. Moreover, we thank seminar participants at the Department of Economics at Uppsala University, Geological Survey of Sweden, U-CARE, the 72th International Institute of Public Finance conference in Lake Tahoe, the European Economic Association-European Meeting of the Econometric Society 2016 conference in Geneva, Institute for Evaluation of Labour Market and Education Policy (IFAU), Essen Health Conference 2017, and the Health Economic Forum at Uppsala University workshop in 2017. Last, we thank the editor James J. Heckman and four anonymous reviewers for constructive comments on our manuscript. This research project is based at the IFAU. We gratefully acknowledge financial support from U-CARE, the European Research Council (grant 683214 CONPOL), and FORTE (Dnr 2013-2482). This study has been approved by the Regional Ethical Review Board in Uppsala (Dnr 2015/530). This published paper is a heavily revised and shortened version of the working paper Aggeborn and Öhman (2017). Do-files and instructions for data access for replication purposes are provided as supplementary material online.

Electronically published January 13, 2021
[*Journal of Political Economy*, 2021, vol. 129, no. 2]
 0022-3808/2021/12902-00XX$10.00

I. Introduction

It is well established that fluoride strengthens tooth enamel and that fluoride prevents caries, tooth decay, tooth loss, and cavities (e.g., Twetman et al. 2003; Neidell, Herzog, and Glied 2010; Medjedovic et al. 2015; O'Mullane et al. 2016). The use of fluoride in dental products is therefore viewed as an important mean to improve dental health. Furthermore, countries such as Brazil, Malaysia, the United Kingdom, and the United States artificially fluoridate drinking water for public health reasons so that people are continuously exposed (Mullen 2005). The Centers for Disease Control and Prevention (CDC 1999) considers water fluoridation as one of the ten great public health achievements during the 20th century.

However, several epidemiological studies in recent years have found negative associations between fluoride and cognitive development. Bashash et al. (2017) concluded that children in Mexico had a lower intelligence quotient (IQ) if their mothers consumed more fluoride during pregnancy. Green et al. (2019) reached a similar conclusion in their study on Canadian children if the mothers drank fluoridated water. An increase of 1 milligram of fluoride was associated with a decrease of almost 4 IQ points, where the overall association was driven by boys. These results have intensified the debate among scholars regarding whether fluoride is neurotoxic (see Bellinger 2019). After the publication of Green et al. (2019), the American Dental Association released a statement in which they welcome more studies on the issue (ADA 2019). These findings echo earlier results of a negative association between fluoride and IQ. A metastudy by Choi et al. (2012), based on data from China and Iran, concluded that exposure to high doses of fluoride in water was associated with a reduction of almost a half a standard deviation in IQ among children. Many of the reviewed papers considered levels that surpass the recommendation from the World Health Organization that fluoride should not exceed 1.5 milligrams/liter in drinking water (WHO 2011, 42). However, some of the reviewed studies reported negative associations with cognitive development for levels below the recommended level. This motivates more research, given that these levels are present naturally or artificially in drinking water in many parts of the world. Common problems with the studies reviewed in Choi et al. (2012) are that they were based on smaller data samples with potentially low data quality.[1]

[1] The US Public Health Service (2015) acknowledges the potential methodological obstacles of the reviewed studies in Choi et al. (2012). It is worth noting that several of the reviewed papers were not published in English. More recent papers, which may be argued have similar problems, have been published after 2012. Interestingly, almost all studies, which originate from several countries, have found a negative association between fluoride and IQ: Ding et al. (2011), Saxena, Sahay, and Goel (2012), Seraj et al. (2012), Nagarajappa et al. (2013), Choi et al. (2015), Khan et al. (2015), Kundu et al. (2015), Sebastian and Sunitha (2015), Aravind et al. (2016), Das and Mondal (2016), Mondal, Butta, and Gupta

Fluoride is known to be lethal in higher doses (Liteplo et al. 2002, 100), and intake of fluoride from water is absorbed and transmitted throughout the blood system (Fawell et al. 2006, 29–30). Furthermore, the negative link between fluoride and cognitive development has grounds in the experimental medical literature. Mullenix et al. (1995) conducted one of the first studies testing the hypothesis that fluoride has effects on the central nervous system. The researchers exposed rats to fluoride, including fluoridation of drinking water, and found that brain tissue stores fluoride and that it passes the blood-brain barrier. Higher concentrations in the brain induced behavioral changes, indicating that fluoride may function as a neurotoxin. The negative link between fluoride and cognition among rats has also been demonstrated in Liu et al. (2014). The question remains whether fluoride levels lower than those in the experiments may have a negative impact on humans when exposed for a longer time.

In light of these findings and the ongoing discussion among scholars, we study the long-term causal effects of fluoride in drinking water on cognitive ability. Our data originate from Sweden, where we have access to high-quality registry data. We exploit the fact that natural fluoride varies exogenously because of local geological characteristics at water sources. In addition to cognitive ability, we study the effects of fluoride on annual labor market income and dental health (and several related outcomes in the appendix, available online). Our paper focuses on the causal effects of fluoride in a large-scale setup with plausible exogenous variation in fluoride exposure. Sweden does not fluoridate water, but there is no evidence of differences between artificially fluoridated water and water with a natural occurrence of fluoride (John 2002; Harrison 2005; CDC 2014). Thus, our results have broad policy relevance. Sweden has a well-supervised water supply system, meaning that other drinking water hazards are not likely to be present. We argue that our empirical strategy and our data have advantages when studying the long-term effects of fluoride, and we therefore add to the epidemiological literature discussed above.

The effects of fluoride are of interest for two reasons. First, fluoridation of drinking water is a common public health program, and its effectiveness is important to evaluate. Given that fluoride is harmful in higher doses but improves dental health in lower ones, there is a trade-off. The optimal fluoride policy is where the marginal cost equals the marginal benefit; thus, for example, if the positive effect on dental health is large with only a small negative effect on cognitive ability, the net in a cost-benefit analysis could be positive in favor of fluoridation or in terms of not reducing the natural levels of fluoride.

(2016), Sharma et al. (2016), Jiménez et al. (2017), Razdan et al. (2017), Yu et al. (2018), Till et al. (2020), and Wang et al. (2020). Broadbent et al. (2015) and Barberio et al. (2017), however, found no negative association with IQ or learning disabilities from living in areas with artificial fluoridation.

Second, to an increasing degree, economists have modeled and empirically investigated determinants of human capital development. The model by Cunha and Heckman (2007) focuses on the accumulation of cognitive and noncognitive abilities, and Cunha and Heckman (2009) emphasize that there are critical and sensitive windows when these abilities are more affected by environmental factors. Cunha, Heckman, and Schennach (2010) conclude that interventions early in life are more effective than later ones. Childhood health has been linked to adult educational attainment and income (Case, Lubotsky, and Paxson 2002; Currie 2009; Almond and Currie 2011), and earlier studies have shown that cognitive ability is a reliable predictor for labor market status (e.g., Heckman, Stixrud, and Urzua 2006; Lindqvist and Vestman 2011). Thus, if fluoride has negative effects on cognitive development, it is an important environmental factor to consider when discussing human capital development.

There are some earlier studies by economists that have investigated hazards in drinking water.[2] Glied and Neidell (2010) found that women living in areas with fluoridated water in the United States had higher incomes and that this effect was stronger among those with a low socioeconomic background. Our paper adds to this literature as well as the general economic literature on human capital development.

II. Identification Strategy

The purpose of this paper is to estimate the long-term causal effects of fluoride exposure from drinking water. In this section we present our identification strategy, which is further elaborated in section B1 in the appendix.

The ideal empirical strategy would be to run a controlled experiment where fluoride is randomized on the individual level. However, it is obviously not feasible to randomly assign fluoride water intake from birth in a large-scale long-term setup. We argue instead that we can exploit a natural experiment.

The natural level of fluoride depends on local geological characteristics (SGU 2013, 81). Water sources are situated on different types of

[2] Galiani, Gertler, and Schargrodsky (2005) investigated water supply privatization in Argentina and found that child mortality decreased if an area had privately provided water. Zhang (2012) found that providing safe monitored drinking water increased the ratio of weight and height among adults and children and also found some evidence of less illness among adults when using water data from China. Ferrie, Rolf, and Troesken (2012) concluded that test scores from enlistment during World War II decreased by one-third of a standard deviation of the conscript if living in an area with lead water pipes in 1930. Currie et al. (2013) concluded that birth weight was negatively affected if mothers had consumed polluted drinking water during pregnancy, especially mothers with low education. Alsan and Goldin (2019) found that child mortality in Boston decreased when the city was provided with clean water and sewage systems around 1900.

bedrock, which yield different natural fluoride levels. Soil bedrock, for example, is associated with lower fluoride in comparison to granite bedrock (SGU 2013, 81, 84). Local veins of minerals and when water has been in contact with acidic igneous rocks especially increase the fluoride level (Edmunds and Smedley 2013, 314). Berger et al. (2016) found large spatial variation in the natural fluoride levels in groundwater within a small geographical area in Sweden, which suggests that fluoride may vary substantially depending on water source location. It is important to note that local geological characteristics at a water source do not necessarily map to the overall geology at the area of residence, given that drinking water is distributed to households by water treatment plants through water pipes managed by the municipalities. The large majority of Swedes drink municipality-provided water.[3]

Publicly provided drinking water in Sweden is monitored and purified according to regulations from the Swedish Food Agency (Livsmedelsverket 2001). The overall composition of drinking water is thus determined not only by local geological characteristics. One key element in our identification strategy is that water authorities normally do not consider fluoride levels of 0–1.5 milligrams/liter to be a problem, and they let the natural level remain during the water purification process. Many municipalities use several water sources, providing us with intramunicipality variation in fluoride due to different local geological characteristics underneath the water sources. The fluoride level is measured at the water treatment plants, and we map these levels to areas of residence on the small areas of market statistics (SAMS) district level. SAMS are nested within municipalities and include approximately 750 individuals in 2011. Additional information on the water data and the mapping are provided in section III.

In table 1, we demonstrate that the fluoride level is a function of the geological characteristics at the site of the water source, where we have grouped information on the bedrock for a subset in our water data. The bedrock is here classified into three categories: soil bedrock, mixed bedrock, and stone bedrock. The baseline in table 1 is soil bedrock, with dummy variables for the mixed and stone bedrock. Mixed bedrock and stone bedrock yield higher levels in comparison to soil bedrock, which is what we expect to find given the discussion above. These broader bedrock categories includes subtypes, meaning that there is variation in the fluoride within each category. Table 2 shows the variation in fluoride between and within the municipalities on the SAMS level. The levels range foremost between 0 and 1.5 milligrams/liter, with the maximum of 4.1 milligrams/liter.

[3] Some individuals have private wells for which we do not have data. Approximately 1.2 million people of Sweden's total population of approximately 10 million have private wells (Livsmedelsverket 2020).

TABLE 1
WATER SOURCE BEDROCK ANALYSIS

	F (.1 mg/L)
Mix stone/soil	2.983***
	(.526)
Stone	4.085***
	(.214)
Soil bedrock (constant)	3.057***
	(.129)
R^2	.1729
Observations	1,788

NOTE.—Standard errors are in parentheses. Observations are the number of water treatment plants in the entire SGU data set.
*** $p < .01$.

Fluoride is colorless, odorless, and tasteless for the levels we consider (WHO 2001), making self-selection into fluoride treatment unlikely. Given that there is variation in fluoride on the SAMS level within municipalities, we may control for unobservable characteristics at the municipal level. Since the geological characteristics at local water sources determine fluoride and not the overall geology at a larger area of residence, this means that fluoride is not part of a larger bundled geological treatment. Hence, we argue that the fluoride level is exogenous in relation to our outcomes and not endogenous to a policy choice for values below 1.5 milligrams/liter.

In addition to the spatial variation in fluoride, we exploit a second source of variation stemming from individuals' moving patterns. Moving is undoubtedly endogenous, but as long as the choice to move and the moving location are not dependent on fluoride or other variables correlated with fluoride, this yields an exogenous variation in the intensity of fluoride treatment, which depends on the number of years spent in a district. We show that the choice to move is not dependent on the fluoride level in table A1 (tables A1–A10, B1–B82 are available online).[4]

In conclusion, the natural experiment we exploit consists of determination of fluoride due to local geological characteristics at water sources in combination with moving patterns independent of the fluoride level. As a result, individuals will have an individual long-term fluoride treatment level in our data.

There are several potential threats to the identification strategy presented in this section. Section B1(a) in the appendix provides an extensive discussion on these threats. We address issues such as the problems of using geographical variation in the treatment variable (including bias because fluoride may be bundled with other characteristics), economic

[4] We also use data from Google Trends in table A2 and find no clear evidence that people overall search for more information about fluoride in areas where the fluoride level is higher.

TABLE 2
DECOMPOSITION OF FLUORIDE VARIATION

	Mean	Standard Deviation
Fluoride (.1 mg/L)	3.53	
Overall		3.25
Between		2.95
Within		1.89
Observations	8,597	

NOTE.—Between and within variations are at the municipal level. Observations are the number of SAMS.

specialization as a result of the bedrock, sorting into neighborhoods, endogenous provision of drinking water by the municipalities, compensating behavior given that individuals may observe their dental history, and geographical clustering of individuals as a result of heritability. Balance tests related to this discussion are presented in sections B2(a)–B2(c) in the appendix. Our overall conclusion from this discussion and the results from the balance tests is that the identification strategy we use is valid. Next, we explain how we map fluoride levels to the SAMS districts.

III. Data and Mapping

Our main data on the individual level originate from Swedish population-wide registers for those born between 1985 and 1992, which we map to drinking water data. This section provides an overview of the data material, and we provide a more extensive presentation in section B3 in the appendix.

We take our starting point in tracking place of residence on the SAMS level between birth until the year when we measure the outcome in accordance with figure 1. For years under age 16, we use mothers' yearly SAMS of residence as a proxy, since we cannot observe yearly place of residence under age 16 in our data. We exclude all individuals who have ever lived in a municipality for which we do not have fluoride data between birth and age 16, and we exclude individuals who have immigrated during childhood, since we want to assign a fluoride treatment level from birth.

A. Fluoride Data

We have fluoride data on outgoing drinking water from 1,726 water treatment plants, which originate from two sources: Geological Survey of Sweden (SGU) and the municipalities. The first observation year in the SGU data is 1998, and we therefore contacted the water authorities at each municipality to complement the SGU data set to provide us with drinking water data from 1985 (the birth year of the first cohort). In all, we have data for 261 out of 290 municipalities, but we do not have a full panel for all

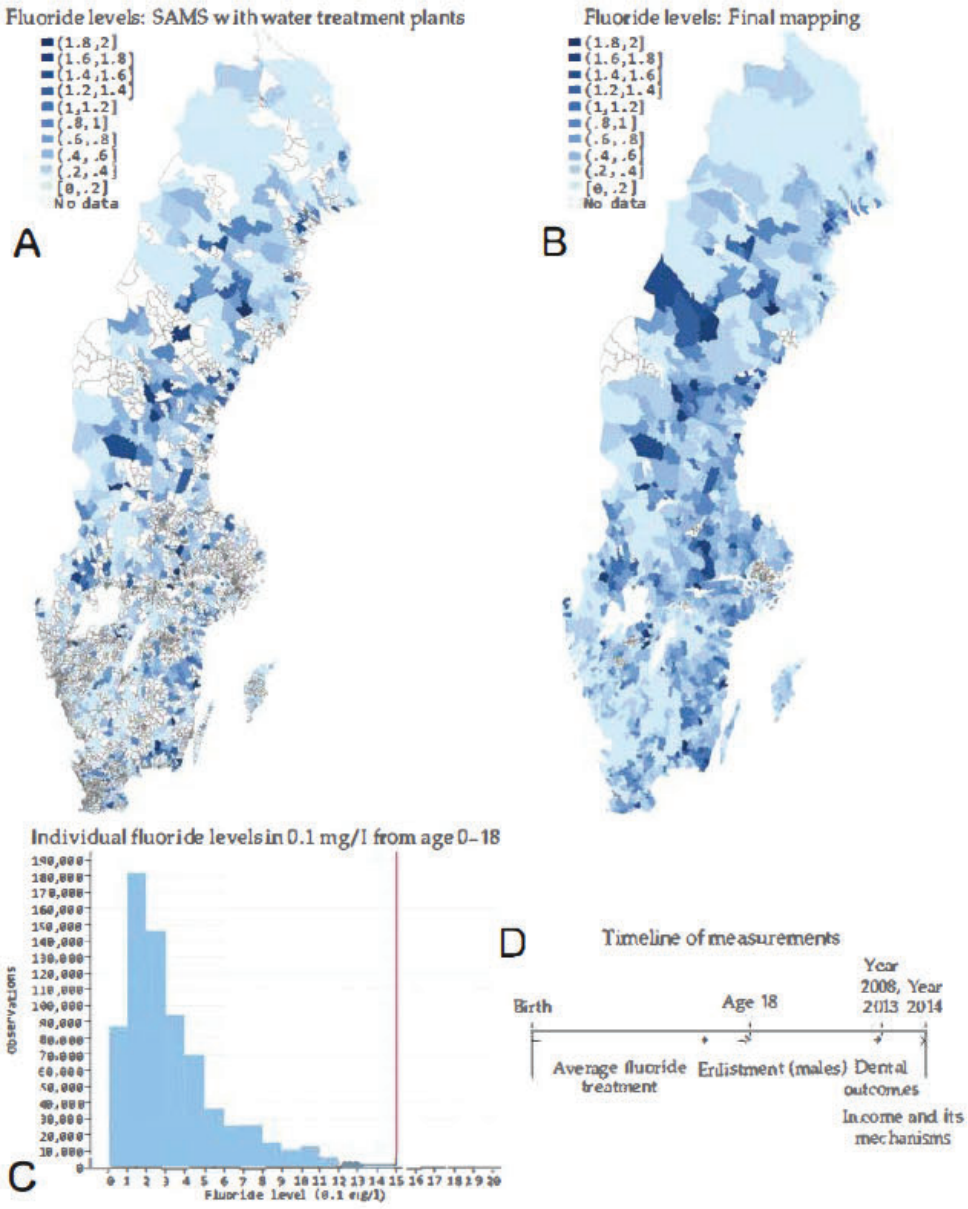

FIG. 1. Fluoride mapping, individual treatment levels, and timeline of outcomes.

water treatment plants and years. However, variation between the years and back in time is foremost due to measurement precision, and because local geological characteristics at water sources change slowly, we collapse the fluoride level into an average measure for each water treatment plant in the main analysis. In a robustness analysis, we make use of the available time variation in fluoride.

We do not have data on the exact location of the water treatment plants, but we do have information on their names and the municipality to which

they belong. Therefore, we have designated a proxy coordinate manually for each water treatment plant based on this information. Given that we observe place of residence for the individuals on the SAMS level, we map fluoride to entire SAMS districts. We have applied the following mapping protocol: if there is a single water treatment plant within the SAMS border, we assign the fluoride level of that water treatment plant to the entire SAMS (14% of all SAMS). If there are more than one water treatment plant, we take the average fluoride level (3% of all SAMS). If there are no water treatment plants within the border, we take a weighted average for the three closest water treatment plants within the municipality using the inverse distance to the center point of the SAMS as weight (84% of all SAMS). Figure 1 displays the fluoride levels for all SAMS districts before and after our mapping strategy was employed.[5] Together, this means that we have classical measurement error in our fluoride variable. We assess the mapping strategy by first investigating the effect of fluoride on dental outcomes for which we have a strong prior to find a positive effect of fluoride. This also investigate whether the variation in the fluoride treatment variable is sufficient for estimating any effects on other outcomes.

Individuals are assigned a fluoride level for each year, which depends on their yearly SAMS of residence, and we collapse this over-life exposure into a single treatment level from birth up until the year when we measure the outcome variable. The individual treatment level is thus an average, depending on the number of years within the specific SAMS districts. Figure 1 includes a histogram of the frequency of individuals who are treated with the corresponding level of fluoride. The level displayed in the histogram is the individual treatment level, taking into account moving patterns between different SAMS over time. As can be seen in figure 1, the overwhelming majority of individuals are treated with fluoride levels below 1.5 milligrams/liter.

B. Dental Health Data

The dental health data are aggregated on the SAMS level for each cohort for the years 2008 and 2013 and originate from the National Board of Health and Welfare in Sweden. In the main text, we focus on two categories of variables. The first category measures medical examinations and includes visits to dental health clinics, dental risk evaluation, and disease prevention measures. The second category includes variables measuring treatments, such as general treatment, dental repair, and root canal.[6]

[5] Some municipalities do not have a water treatment plant within their borders, and these have thus been dropped. This includes municipalities in the county of Stockholm.

[6] We also have access to other dental health outcomes. These variables are presented in table A3.

C. *Cognitive Ability and Annual Labor Income*

The cognitive ability measure originates from the Swedish military conscription. Conscription was mandatory for men ages 18–20 years in Sweden. Cognitive ability was measured by a test where the purpose was to measure the underlying intelligence, which we have standardized to mean 0 with a standard deviation of 1 for each cohort. We include only men born between 1985 and 1987 when estimating this outcome, since we have access to data for only those years. In order to broaden our analysis on cognitive development, we also study noncognitive ability, results from a national math test taken in ninth grade, and health outcomes (psychiatric and neurological diseases) in the appendix.

Regarding income, we have gross annual labor income measured in 2014 for those born between 1985 and 1992. The data originate from Statistics Sweden. We exclude all individuals who earned less than 1,000 Swedish kronor (about $110 in 2020) during a year. The reason is that we want to focus on those who have worked, but we also study employment status in the appendix.

IV. Econometric Setup

Cognitive ability and annual labor income are our main outcomes, whereas dental health outcomes are aggregated and used to investigate the first stage and to assess our mapping strategy.

In the empirical analysis for cognitive ability and labor income, we run regressions for both unconditional models and specifications where we include fixed effects and covariates. We include fixed effects for birth municipality, since there are differences between municipalities that might be determinants for our outcomes. To control for age, we include cohort fixed effects. We add municipality fixed effects for place of residence in 2014 when we measure labor income, since the income opportunities differ throughout Sweden. We add individual covariates (gender and marital status), parental covariates (income, years of education, and ability measures for fathers), and peer covariates (years of education in adulthood for those born in the same SAMS in a given year). The covariates and descriptive statistics are presented in table A4.[7]

[7] Most SAMS do not have a water treatment plant within the borders, meaning that the fluoride level is not independent of the other SAMS within the same municipality, given our mapping strategy. Therefore, we cluster standard errors by municipality of birth. This is the benchmark level that we use throughout the paper. In the main analysis, we also estimate standard errors clustered by SAMS. Moreover, we estimate spatial adjusted standard errors in line with Conley (2008) with the MATLAB code from Hsiang (2010), using 10 kilometers from the center point of the SAMS as a cutoff in the main analysis. In order to facilitate computation of the Conley standard errors, we have demeaned the data given that we have many fixed effects. Since we do not have a panel data set, we are not correcting

For dental health, there are different alternatives for the empirical setup, because dental health is not available on the individual level. In the main text, we present results from the simplest unweighted specification without fixed effects or covariates, where each observation is a cohort SAMS with a corresponding SAMS fluoride level for the youngest cohort available in our data. These 20-year-olds may visit the dentist for free, meaning that there are no monetary constraints. This cohort is also more likely to still reside in the SAMS area in which they have spent time during childhood, meaning that we capture a more long-term treatment effect. Section B4 in the appendix includes specifications for all cohorts and weighted regressions taking into account the number of individuals in each SAMS cohort, where each individual has a unique fluoride treatment but where the outcome is aggregated.

V. Results

We start this section by presenting the effect of fluoride on dental health and then present the results for our main outcomes, cognitive ability and annual labor income. Throughout this entire section, we are going to analyze an increase of 1 milligram/liter in fluoride, since this is the policy-relevant increase for countries considering fluoridation in water.

A. *Dental Health*

If our mapping strategy is adequate, we expect to find a positive effect of fluoride on dental health, which is what we find in table 3. An improvement in dental health corresponds to negative estimates for the outcomes given that we measure in dental health care consumption. Outcomes are expressed as shares in percentage points.

The results are negative and large across the board, with the exception of one coefficient (Disease Treatment 2008), and often statistically significant. The outcome that should be mostly related to fluoride is tooth repair, displayed in column 5. If fluoride increases to 1 milligram/liter, the share of 20-year-olds who had a tooth repaired decreases by 3.4 percentage points, considering the 2013 sample. On average, 20-year-olds have healthy teeth, but we still find effects from fluoride. The results both reconfirm the long-established positive effect of fluoride on dental health and provide credibility to the mapping of fluoride to the SAMS districts. Additional specifications are presented in section B4 in the appendix, which overall supports the findings presented here.

for temporal correlation. For annual labor income, we furthermore estimate standard errors clustered by local labor market region.

TABLE 3
DENTAL OUTCOMES

	DEPENDENT VARIABLE					
	Visit	Risk Evaluation	Disease Prevention	Disease Treatment	Repair	Root Canal
2013	−.6554	−.6882	−.8453	−.3506	−.3369	−.0292
	(.2987)**	(.3015)**	(.4309)*	(.1389)**	(.1103)***	(.0172)*
	<.0879>***	<.0906>***	<.0835>***	<.0757>***	<.0555>***	<.0156>*
2008	−.6356	−.6765	−.4337	.1093	−.2290	−.0300
	(.2935)**	(.3204)**	(.2238)*	(.1056)	(.0683)***	(.0197)
	<.0949>***	<.0974>***	<.0764>***	<.0646>*	<.0589>***	<.0168>*

NOTE.—Standard errors are clustered by municipality (in parentheses) and by SAMS (in angle brackets). There are 7,622 observations for 2013 and 7,606 for 2008. Fluoride (0.1 milligrams/liter) at the SAMS level is the independent variable.

* $p < .10$.

** $p < .05$.

*** $p < .01$.

B. Cognitive Ability and Annual Labor Income

Let us continue to our main results. We begin with cognitive ability for men born between 1985 and 1987. Our conclusion from table 4 is that fluoride does not affect cognitive ability.

Column 1 displays the unconditional treatment effect. In columns 2 and 3, we add fixed effects for cohort and municipality of birth. We then include parental covariates, which results in a reduced sample since we have data on fathers' cognitive ability only from 1969 and onward. To make the samples comparable with and without these covariates, we run column 4 for the same sample as in column 5. We also run two subsample analyses: in column 6, we run the analysis for those who have lived in the same SAMS in a municipality for the entire period from age 0 to 18, and in column 7 we restrict the sample to those who have moved only within a municipality.[8]

Looking at the estimates, they are very small and often not statistically significantly different from zero. Sometimes the estimates are negative and sometimes positive, but they are always close to zero. If we take the largest negative point estimates (0.0047, col. 1) and the largest standard error for that specification (0.0045), the 95% confidence interval would be 0.014 to 0.004. We may thus rule out negative effects larger than 0.14 standard deviations in cognitive ability if fluoride is increased by 1 milligram/liter (the level often considered when artificially fluoridating the water).

[8] We have tested whether the estimated coefficients in cols. 5–7 are statistically different from each other using clustering by municipality of birth. The coefficients in cols. 6 and 7 are not statistically different from each other, and neither are the coefficients in cols. 5 and 6. The estimates in cols. 5 and 7 are statistically different at the 10% level.

TABLE 4
COGNITIVE ABILITY

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Fluoride (age 18)	−.0047	−.0015	−.0015	−.0001	.0028	.0031	.0099
	(.0043)	(.0027)	(.0026)	(.0029)	(.0023)	(.0032)	(.0045)**
	<.0016>***	<.0020>	<.0020>	<.0024>	<.0022>	<.0031>	<.0047>**
	{.0045}	{.0024}	{.0024}	{.0028}	{.0023}	{.0031}	{.0048}**
Mean	.0015	.0015	.0015	.0233	.0233	.0531	−.0252
Birth cohort fixed effects	No	No	Yes	Yes	Yes	Yes	Yes
Municipality of birth fixed effects	No	Yes	Yes	Yes	Yes	Yes	Yes
Covariate group 2	No	No	No	No	Yes	Yes	Yes
Sample	All	All	All	Column 5	All	Stayers	Movers
R^2	.0002	.0216	.0216	.0262	.1512	.1530	.1565
Observations	81,776	81,776	81,776	47,242	47,242	18,894	17,865

NOTE.—Fluoride concentration is 0.1 milligrams/liter. Standard errors are clustered by municipality of birth (in parentheses) and by SAMS of birth (in angle brackets). Conley standard errors (in curly brackets) have a cutoff of 10 kilometers, centered on each SAMS.
** $p < .05$.
*** $p < .01$.

However, the effect of fluoride may not be linear. We have therefore run several specifications addressing nonlinearities, and the results are presented in the appendix. Figure A1 displays the effect for each 0.1 milligram/liter of fluoride, table A5 present results for quartile regressions, table A6 is a dose response analysis, and table A7 is an analysis where we have restricted the sample to 1 milligram/liter or higher. Figure A2 is a spline regression where we have predicted cognitive ability on a set of background characteristics. We then use the ranked predicted values to run regressions with fluoride as the independent variable in a flexible interaction model, where fluoride is interacted with a vector of cubic splines. The spline specification picks up nonlinear treatment heterogeneity over the predicted cognitive ability distribution. All in all, we conclude that fluoride does not have an effect on cognitive ability in these nonlinear specifications.

We have furthermore run analyses for noncognitive ability, math test scores, and health, which are presented in section B5 in the appendix. This analysis further strengthens our conclusion that fluoride does not have a negative impact on human capital development.[9]

[9] For math test score, we estimate negative and statistically significant coefficients. However, the magnitude of these coefficients are very small, and we judge them to be zero effects in terms of economic significance.

We now continue with the long-term outcome of annual labor income in 2014 for individuals born between 1985 and 1992. Given our results for cognitive ability, we do not expect negative effects of fluoride. However, positive effects are possible given the results found for dental health.

The results are presented in table 5. The point estimates are often statistically significant, and the coefficients are always positive. Taking column 6 as an example, where all covariates and fixed effects are included, we find that the point estimate equals 0.0044, meaning that income increases by 4.4% if fluoride is increased by 1 milligram/liter.[10] These reduced form estimates may be compared with Glied and Neidell (2010), who, by using American data, found that women who drink fluoridated water have on average 4% higher earnings.[11] Our estimated effect on income may also be compared with estimated education premiums. The return of one additional year of education yields an increase in income by 6%–10%, according to the instrumental variable estimates in the review in Card (1999). An increase in fluoride by 1 milligram/liter would thus yield a similar increase as roughly half a year of additional education. Nonlinear specifications are presented in figure A1 (figs. A1–A5, B1–B14 are available online) and tables A8–A10, which overall supports the findings presented here. In section B5 in the appendix, we present the result for employment status (another margin for labor market status), and we find that fluoride has a positive effect.

We have run several robustness checks for our main outcomes, which are presented and discussed in section B6 in the appendix. These include (1) analyses with older cohorts for income, (2) sensitivity tests to the mapping of the water data, (3) alternative income measures, (4) included interacted fixed effects, (5) an intention-to-treat model, (6) analyses using time variation in fluoride, (7) in utero treatment effects, (8) secondary dentition treatment analyses, (9) analyses including SAMS covariates, (10) specifications for various forms of family robustness, and (11) analyses including covariates for other water characteristics. All in all, after considering these robustness results, we remain with our conclusions presented here that fluoride improves dental health, that fluoride does not affect cognitive ability, and that fluoride has a positive effect on annual labor income. These robustness checks are numerous, and most of them are in line with the results presented here, but some specifications do not go in the expected direction. For a more detailed discussion, see the appendix.

[10] No pairwise comparison test between coefficients in cols. 6–8 are statistically significantly different from each other (clustering by municipality).

[11] Glied and Neidell (2010) use Armed Forces Qualification Test scores in a falsification test to assess the exogeneity of their water fluoridation measure for a sample in their data. They estimate a small negative but statistically insignificant coefficient when considering both males and females. This is not further developed in Glied and Neidell (2010).

TABLE 5
LOG ANNUAL LABOR INCOME

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Fluoride (2014)	.0053	.0035	.0040	.0053	.0041	.0044	.0034	.0015
	(.0031)*	(.0014)**	(.0014)***	(.0016)***	(.0015)***	(.0015)***	(.0024)	(.0044)
	[.0023]**	[.0026]	[.0028]	[.0015]***	[.0018]**	[.0019]**	[.0022]	[.0041]
	<.0007>***	<.0008>***	<.0008>***	<.0008>***	<.0010>***	<.0010>***	<.0010>***	<.0010>***
	{.0031}*	{.0010}***	{.0011}***	{.0012}***	{.0013}***	{.0013}***	{.0021}	{.0027}
Mean	11.9124	11.9124	11.9124	11.9124	11.9237	11.9237	11.8415	11.9555
Birth cohort fixed effects	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Municipality of birth fixed effects	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Municipality fixed effects (2014)	No	No	No	Yes	Yes	Yes	Yes	Yes
Covariate group 1	No	No	No	Yes	Yes	Yes	Yes	Yes
Covariate group 2	No	No	No	No	No	Yes	Yes	Yes
Sample	All	All	All	All	Column 6	All	Stayers	Movers
R^2	.0002	.0065	.0528	.0936	.0985	.1044	.1261	.1170
Observations	634,793	634,793	634,793	634,793	390,226	390,226	67,457	140,666

NOTE.—Fluoride concentration is 0.1 milligrams/liter. The outcome is measured as log annual income in Swedish kronor (SEK). Individuals with a yearly income below 1,000 SEK are excluded. Standard errors are clustered by municipality of birth (in parentheses), by local labor market area (in square brackets), and by SAMS of birth (in angle brackets). Conley standard errors (in curly brackets) have a cutoff of 10 kilometers, centered on each SAMS.

* $p < .10$.

** $p < .05$.

*** $p < .01$.

C. *Disentangling the Effect on Annual Labor Income*

To disentangle the positive effect on annual labor income, we first investigate heterogeneous treatment effects for socioeconomic status and, second, potential mechanisms that could explain our reduced form finding. Additional results are found in section B7 in the appendix.

To capture socioeconomic status, we run the same nonlinear analysis as we did when analyzing cognitive ability (fig. A2), where we predict individual income on a set of background characteristics. The distribution of predicted values is displayed in figure 2*A*.[12] The marginal effect of an extra 0.1 milligram/liter of fluoride on log annual labor income is plotted in figure 2*B*. We find that the positive effect is driven by individuals with a low socioeconomic background. This points us toward the conclusion that fluoride treatment has an equalizing effect in terms of income. Since the treatment is found to benefit those with a disadvantaged background, this collaborates with earlier findings regarding early interventions (Cunha et al. 2006).

Turning to the intermediate mechanisms, we hypothesize, on the basis of our earlier findings, that the effect of fluoride on labor income goes through dental health capital. The remaining question concerns the intermediate steps. Theoretically, in equilibrium, workers earn the same income if they and the firms they work at are assumed to be homogeneous, with free entry and exit in a competitive labor market. However, if workers and firms differ, this would result in differences in earned income. We illustrate potential channels for workers in figure 3.

Starting with workers' productivity, less dental pain should make an individual more productive. However, the impact of fluoride and, in turn, the impact of dental health on productivity could differ in terms of severity. If the impact is substantial, workers treated with fluoride could have a higher labor supply on the intensive margin, and earlier literature has highlighted that poor health reduces hours worked (Currie and Madrian 1999, 3319). In the main analysis, we study annual labor income, which roughly corresponds to wage times hours worked. Our first productivity channel focuses on hours worked as an intermediate step. We have data not on actual hours worked but on contracted hours for a representative sample.[13]

However, productivity can be affected in other less severe ways. Even if an individual does not reduce contracted hours worked on a more

[12] Birth year, gender, municipality of birth, and parental income, education, and immigration status are used to predict income. We use col. 1 specifications in table 5, given that covariates and fixed effects are used for the prediction.

[13] Data include all individuals working at public employers, all individuals working at private employers with over 500 employees, and a representative sample for smaller firms. We use survey weights in the regressions.

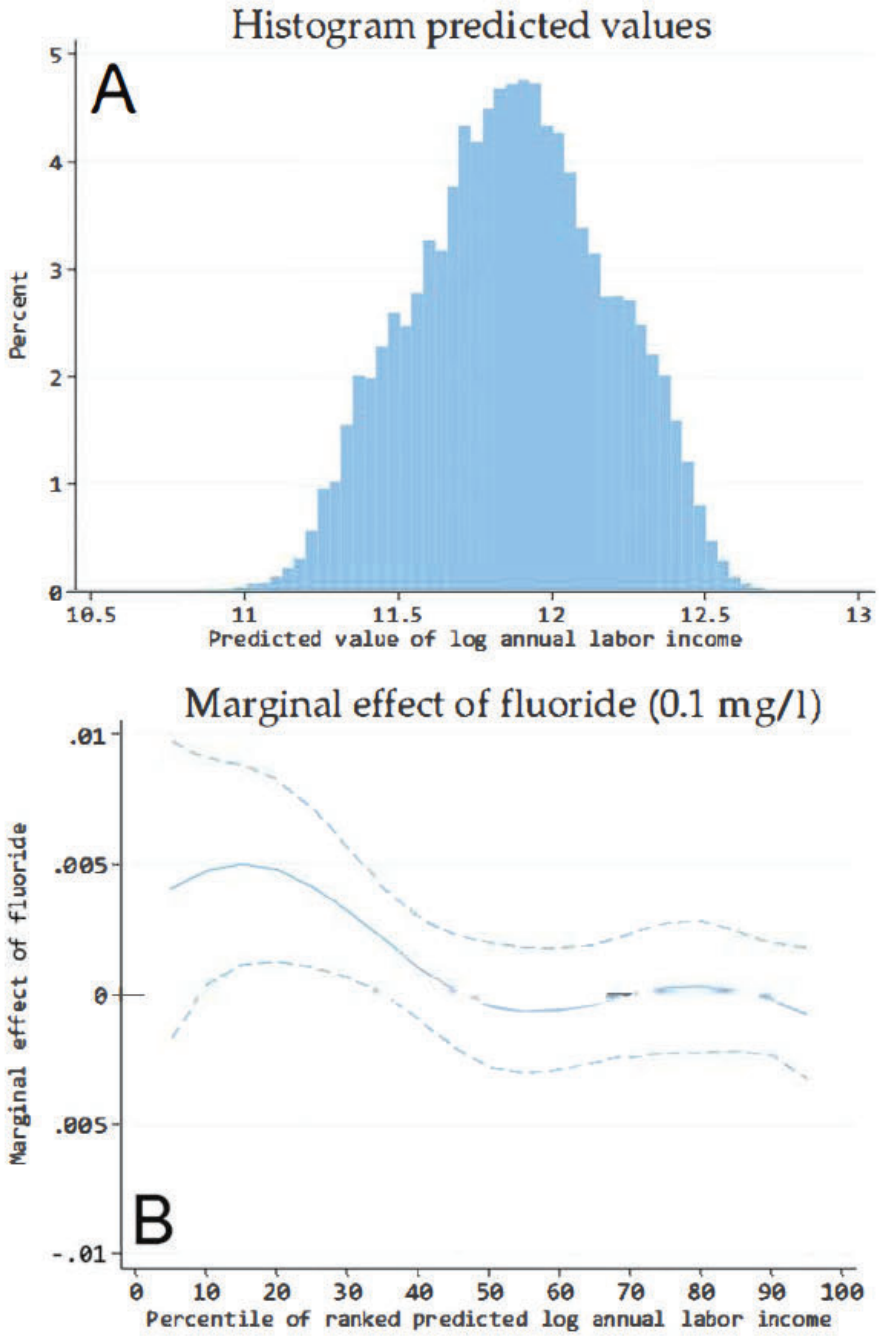

FIG. 2. Effect of fluoride on log annual labor income by predicted socioeconomic status.

permanent basis, an individual may be less absent from work because of health problems if treated with fluoride. We measure this second channel by constructing a proxy for annual sickness benefits if the individual is absent from work for more than 14 days during a sickness spell. We focus on

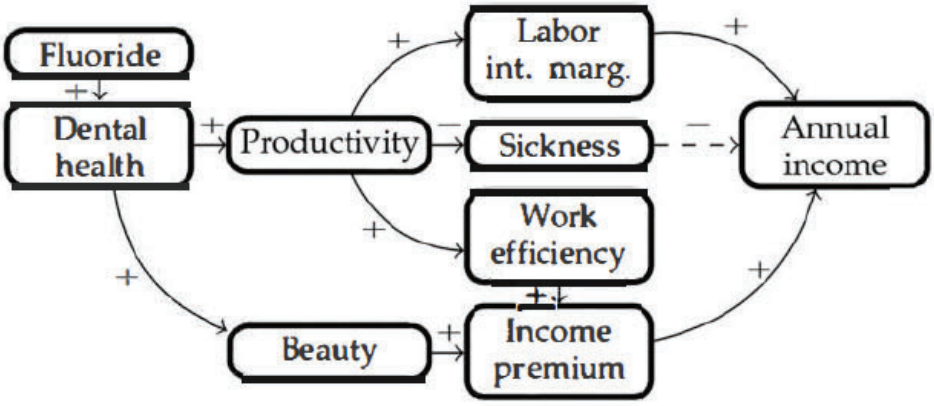

FIG. 3. Mechanism channels.

workers with positive values for this variable, which we interpret as a proxy for absence from work for longer periods.[14]

The third channel captures an even less severe impact on workers' productivity. In this case, the effect of fluoride on labor income is not due to contracted hours worked or sickness absence longer than 14 days but is instead due to worker output. For example, a worker could be more efficient at work if treated with fluoride (and, as a result, have better dental health). We cannot observe individual output, but we observe place of work, type of profession, and other worker characteristics, meaning that we can observe income differences for workers that are very similar. Ceteris paribus, these workers should earn similar incomes if being equally productive. This analysis further relates to firm differences. By investigating within-workplace effects of fluoride, we purge our reduced form effect in table 5 from firm compensating differentials.

In table 6, we focus on the two more severe productivity channels. We first display the association between the intermediate variables and annual labor income. As expected, an increase in contracted hours is associated with higher annual labor income, and more sickness benefits are associated with lower annual labor income. We then investigate how fluoride affects these intermediate variables. We find that contracted hours worked are not affected. If fluoride is increased by 1 milligram/liter, the hours worked share (expressed as share of full employment, 0%–100%) is decreased by 0.3 percentage points (equal to a 7-minute reduction in a 40-hour work week), and the coefficient is not statistically significant. However, we find that the sickness benefits for spells longer than 14 days are reduced by 6% if fluoride is increased by 1 milligram/liter, which may indicate that

[14] We do not have data on sickness benefits, so we use a modified version of the variable social income from Statistics Sweden. See sec. B3 in the appendix for more information on how this variable is constructed.

TABLE 6
LABOR-INTENSIVE MARGIN AND LOG SICKNESS PROXY AS MECHANISMS

	Labor Intensive	Sickness
Annual labor income (dependent)	.010	−.279
	(.000)***	(.003)***
Fluoride (.1 mg/L; independent)	−.027	−.006
	(.081)	(.002)**
Observations	246,411	95,598

NOTE.—Standard errors (in parentheses) are clustered by municipality of birth. Specification is col. 4 in table 5. Dependent and independent refer to the dependent and independent variable in the regression.

** $p < .05$.

*** $p < .01$.

workers have fewer absences. However, one should note that only one out of six individuals in the sample in table 5 have received such benefits. In section B7 in the appendix, we further demonstrate that the result for this intermediate step is driven by those with high predicted sickness benefits. One explanation is that these people, in general, have poor health, which is linked to dental health (Petersen 2003). Because of fluoride, they at least have better dental health, reducing their absences. However, it is unlikely that this could explain the overall effect on labor income.[15]

We therefore turn to the third and least severe productivity channel. In column 1 in table 7, we compare log annual labor income for individuals who work in the same municipality and the same sector (narrowly defined using the five digit code from the Swedish Standard Industrial Classification [SNI]) and are of the same cohort group. The individuals are grouped in 2-year cohorts to gain power. Although it is likely that some of these individuals work at the same workplace, we cannot know this with certainty. For columns 2–6, therefore, we focus on actual workplace indicators, but these data are available only for the same representative sample as used when investigating contracted hours worked. In column 2, we compare workers in the same workplace. In column 3, we further restrict the group of workers to the same occupation group (one-digit code from the International Standard Classification of Occupations [SSYK]). We add cohort group as a restriction in column 4 and gender in column 5. Column 6 is the same as column 5 but for workplaces with fewer than 20 employees among those in our sample.[16]

[15] The results for this mechanism channel are also sensitive to the model specification. See sec. B7 in the appendix for more details and additional results.

[16] The reason for not including fixed effects or additional covariates for municipality at birth and municipality of residence in 2014 is that the included interacted fixed effects capture almost all of the relevant between-individual variation, which the high R^2 indicates. Robustness analysis for this mechanism analysis is found in sec. B7 in the appendix. Here we present results for using two-, three-, and four-digit SSYK codes, and the results are similar to the ones presented here in the main text, although less precisely estimated.

TABLE 7
WITHIN WORKPLACE EFFECTS ON LOG ANNUAL LABOR INCOME

	(1)	(2)	(3)	(4)	(5)	(6)
Fluoride (2014)	.00522**	.00376**	.00362**	.00396*	.00435*	.00620
	(.00216)	(.00171)	(.00162)	(.00217)	(.00244)	(.00669)
Fixed effects	Municipality × sector × cohort group	Workplace	Workplace × occupation	Workplace × occupation × cohort group	Workplace × occupation × cohort group × gender	Workplace × occupation × cohort group × gender
Workplace sample		All	All	All	All	WP < 20
R^2	.3533	.4161	.5224	.6640	.7097	.8570
Observations	626,113	228,313	222,712	222,712	222,712	122,427

NOTE.—Fluoride concentration is 0.1 milligrams/liter. Standard errors (in parentheses) are clustered by municipality of birth. Column 1 is based on the data set used in table 5, where the main effects for income are presented. Columns 2–6 are based on a representative sample including all public employees and a sample of private employees. Survey weights are therefore included. In col. 6, we restrict the employees to fewer than 20 individuals within our sample (WP < 20).

* $p < .10$.

From table 7, we draw two conclusions. First, the estimated effect of fluoride on annual labor income in table 5 is similar when restricting the analysis to similar workers within the same workplace. This means that sorting and firm differentials cannot explain the overall reduced form effect on labor income. Instead, a likely explanation is differences in workers' human capital and productivity within workplaces. Second, the within-workplace effect on income is larger when considering smaller workplaces (col. 6), although the estimated coefficient is no longer statistically significant. One explanation may be that it is easier to monitor relative productivity differences in smaller firms. The exact mechanism at play depends on the firm, but one explanation would be related to a tournament wage schedule, where relative individual productivity within firms determines wages (e.g., Lazear and Rosen 1981) under the assumption that firms more easily observe relative rather than absolute productivity differences.[17]

Let us take this within-workplace analysis one step further. Are the results in table 7 driven by specific sectors in the labor market, or is it a general result? Figure A3 shows no indication of differences in average individual fluoride treatment between sectors. In figure A5, we run the same analysis corresponding to column 2 in table 7 but for the 66 labor market sectors represented in our data, defined by two-digit sector codes (SNI). Given that we now split the within-workplace analysis into sectors, some groups will include only a few individuals, meaning that the estimates become imprecise.

From figure A5, we may draw two conclusions. The within-workplace income premiums are found for many sectors in the labor market. This would be in line with an explanation where individuals become more efficient at work in general. Interestingly, the effect seems to be relatively large in sectors in which workers have customer contact, where good-looking teeth and good breath is important. This hypothesis originates from Blinder (1974), who provides an early analysis on teeth and income. The sectors where the within-workplace effect of fluoride is above the average effect includes, among others, hair dressers and beauty consultants, travel agents, creative arts and entertainment workers, and those working at hotels and those working with sales but also, for example, those working in manufacturing, hunting, and land transport.[18] We do not want to stress these results

[17] In the appendix, we have also run an analysis for monthly wages. Monthly wages are positively affected by fluoride but to a smaller degree than income, and the coefficients are not statistically significant for all specifications. This could indicate that a part of the effect of income is due to a wage premium for being more productive while at work and a part of being more productive in terms of being present at work. Sickness spells shorter than 14 days are paid out by the employer and hence part of the income measure. However, the reimbursement is not 100% of the wage, meaning that sickness spells decrease annual income.

[18] The results are sensitive on how survey weights are applied. Additional results are presented in sec. B7 in the appendix.

too far given their exploratory nature, but they provide weak indirect evidence that beauty due to dental health may be one salient mechanism.

The overall conclusion from our mechanism analyses is that the effect of fluoride is first and foremost due to less severe productivity differences between workers. The previously estimated reduced form effect on labor income is reproduced when we run a within-workplace analysis comparing similar workers. Fluoride has been found to have a positive impact on dental health, which points us toward the conclusion that dental health capital makes individuals more productive, yielding higher labor incomes. In addition, we found indirect indications that this within-workplace income premium is relatively large in sectors where workers have customer contact. We also found that for a small group of workers with high predicted sickness benefits, their received benefits decreased when the individuals were treated with fluoride. We do not find fluoride to have such a profound impact on productivity that it affects contracted hours worked. One explanation is that the Swedish labor market is not flexible on the intensive margin.

VI. Discussion and Conclusion

Let us now return to our findings on cognitive ability. We claim that we find no effect of fluoride on cognitive ability, but is the estimated effect effectively zero? Let us monetize the estimates by relating them to earlier published findings on the predicted power of cognitive ability. We then choose column 5 in table 4, where fixed effects and covariates are included. Our point estimate is 0.0028, with fixed effects and covariates included, for an increase of 0.1 milligrams/liter of fluoride on cognitive ability.

Lindqvist and Vestman (2011) estimate the return of cognitive ability on wages using Swedish registry data. Let us do a back-of-the-envelope calculation. Their results in table 1 indicate that a 1 standard deviation increase in cognitive ability yields an approximately 10.4% increase in wages. We multiply their return to cognitive ability with our results for the effect of fluoride on cognitive ability. The estimated effect of an increase of 1 milligram/liter of fluoride translates to an 0.29% increase in wages.[19] In conclusion, the close to zero and insignificant result that we estimate for the effect of fluoride on cognitive ability translates to a small impact on wages.

Another way to evaluate a zero result is to look at earlier studies that have found statistically significant results and compare the precision of the estimates. Our study includes more than 80,000 individuals when we do not include covariates or fixed effects and about 47,000 individuals

[19] This may be compared with our reduced form results of fluoride on income in table 5 (note that this is not exactly the equivalence of wages), which is much larger.

with covariates and fixed effects. This may be compared with Green et al. (2019), which included around 600 observations, and the reviewed studies in Choi et al. (2012), where the number of observations was less than 1,000 for the largest study. Our confidence intervals are tighter than the 95% confidence intervals in all earlier studies.[20]

The remaining question is why our results deviate from previous studies, such as Green et al. (2019), that have considered similar fluoride levels.[21] The main objection against Green et al. (2019) is that the choice of fluoridating water is an endogenous policy variable. Individuals do not exogenously live in fluoridated areas, making it likely that there are selection problems present. It is also noteworthy that Green et al. (2019) find a negative association only for boys and not for girls. However, we should note that Green et al. (2019) have access to urine data with actual fluoride measures within the body and several background variables that we do not have access to and that they also measured IQ at a younger age than we do.

Our results are policy relevant for developed countries with water fluoridation, given that water authorities seldom consider fluoridation above 1.5 milligrams/liter. How do our results relate to developing countries in terms of external validity? We have no reason to expect that the effect of fluoride on cognitive ability is dependent on the institutional setting. Fluoride is a chemical substance, and its effect on cognitive development should not be specific to Sweden. Choi et al. (2012) consider studies from China and Iran with fluoride levels similar to ours but also studies with higher levels, and they concluded an overall negative association. Although the mass of fluoride is within the range of 0--1.5 milligrams/liter in our data, we have some observations above the 1.5 milligrams/liter threshold set by the World Health Organization. The share of observations in this upper limit is still large in comparison to the studies reviewed in Choi et al. (2012). Figure A4 and table A7 focus on these high-level treatment effects and display no evidence of a negative effect of fluoride up to at least 3 milligrams/liter. These results should be interpreted with caution given that it is a selected sample, but it covers many of the papers in Choi et al. (2012) in terms of range. Given that our results deviate from studies reviewed in Choi et al. (2012), we believe that many of the studies capture other simultaneous hazardous treatments.

Our paper is about not only cognitive ability but also the effect of fluoride on dental health and income. Regarding dental health, we believe

[20] Broadbent et al. (2015) also concluded a zero finding, but their confidence intervals are much broader than ours.

[21] Bashash et al. (2017) is also related, but they have fluoride from urine samples and not water data. One objection against this study is that fluoride intake is likely to be endogenous. For example, Bashash et al. (2017) writes that salt is fluoridated in Mexico, and the intake of salt is likely to differ between groups.

that our results are generalizable. Fluoride does improve dental health, and our natural experiment confirms this well-established finding in a long-term setting. However, we should remember that we measure dental health indirectly through the dental health care system in Sweden, with a large supply of dental care. The outcome where we expect to have the least external validity is our income measure, where the mechanism channels previously discussed are dependent on the institutional setting. It is interesting to note that our estimates on income, derived from rich and detailed population-wide data, are in line with Glied and Neidell (2010), who used American data.

Our findings add to the literature on the effects of fluoride on cognitive ability, but we have also broadened the understanding of the effects of fluoride by studying dental health (the first-stage relationship) and income (the long-term outcome). On the basis of the results, fluoride exposure through drinking water seems to be a good mean of improving dental health without negative effects on cognitive development for the fluoride levels considered in this study.

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From: Christopher H. Fox
Sent: Tue, 26 Jan 2021 16:51:37 +0000
To: Horsford, Jonathan (NIH/NIDCR) [E]; Ricks, Tim DMD (IHS/HQ); Hannan, Casey J. (CDC/DDNID/NCCDPHP/DOH)
Cc: Iafolla, Timothy (NIH/NIDCR) [E]; Meister, Alissa (NIH/NIDCR) [E]
Subject: RE: CWF Benefits
Attachments: B148_R1-en Oral Helath Resolution as Adopted.pdf

Thanks Jonathan,

Keep us posted.

On a somewhat related note, I'm sure you've been following the WHO Executive Board and the Oral Health Resolution (attached). The dental public health community is a little concerned that the resolution did not include a full throated endorsement of CWF as a population measure. The last oral health resolution did (2007) and the WHO has always been vocal supporters of CWF, along with milk and salt fluoridation in certain countries.

The only two mentions of fluoride are with a caveat or no suggested intervention.

> Recognizing that adequate intake of fluoride plays an important role in the development of healthy teeth and in the prevention of dental caries; and recognizing the need to mitigate the adverse effects of excessive fluoride in water sources on the development of teeth

And

> (6) to map and track the concentration of fluoride in drinking water

Most in dental public health would have worded these differently in terms of "optimal levels of fluoride" and the benefit is not only just the developmental stage of teeth. "Mapping and tracking" without a call for intervention (fluoridation if close to 0 ppm or de-fluoridation if excessively high) doesn't do much good.

But these documents are political negotiations and the lead country was Sri Lanka whose population largely obtains it's drinking water from ground water sources. Several regions of Sri Lanka in the dry zones have excessively high levels of fluoride.
https://www.sciencedirect.com/science/article/abs/pii/S2352801X19303376

Anyway, not suggesting anything needs to be done (or can be done), but just for your background information. I am worried the anti-fluoridation crowd will pick up this subtlety.

Cheers,

Chris

Christopher H. Fox, DMD, DMSc, Chief Executive Officer

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Publishers of *Journal of Dental Research* and *JDR Clinical & Translational Research*

From: Horsford, Jonathan (NIH/NIDCR) [E] < (b) (6)
Sent: Tuesday, January 26, 2021 8:22 AM
To: Ricks, Tim DMD (IHS/HQ) < (b) (6) Hannan, Casey J. (CDC/DDNID/NCCDPHP/DOH) < (b) (6) Christopher H. Fox < (b) (6)
Cc: Iafolla, Timothy (NIH/NIDCR) [E] < (b) (6) Meister, Alissa (NIH/NIDCR) [E] < (b) (6)
Subject: RE: CWF Benefits

EXTERNAL EMAIL
Thanks to you all. Much appreciated.

I'll get back to you if I have any additional questions, thoughts.

And as of right now, no additional info on the NASEM report.

J

D. Jonathan Horsford, Ph.D.
Acting Deputy Director
NIDCR, NIH
Cell: (b) (6)

From: Ricks, Tim DMD (IHS/HQ) < (b) (6)
Sent: Monday, January 25, 2021 6:14 PM
To: Horsford, Jonathan (NIH/NIDCR) [E] < (b) (6)
Cc: Iafolla, Timothy (NIH/NIDCR) [E] < (b) (6) Meister, Alissa (NIH/NIDCR) [E] < (b) (6) Hannan, Casey J. (CDC/DDNID/NCCDPHP/DOH) < (b) (6) Fox, Christopher (IADR) < (b) (6)
Subject: RE: CWF Benefits

Jonathan,

I think Chris and Casey provided excellent edits, so I have nothing to specifically add in the way of edits. However, I did want to share with you the attached leadership briefing document that Casey and other members of the Oral Health Coordinating Committee reviewed and edited 10 months ago. It was never approved for release by the SG as he thought it was "controversial" (which, incidentally, was the same reason for OSG not approving briefing documents on mid-level providers [it was just factual, not opinionated] and depression screenings in dental [don't know how that is controversial]). Maybe you can get something out of this document. Otherwise, the information Casey and Chris gave is superb.

Thanks,
Tim

RADM Tim Ricks
Assistant Surgeon General
Chief Professional Officer, USPHS Dental Category

From: Christopher H. Fox < (b) (6)
Sent: Monday, January 25, 2021 2:24 PM
To: Hannan, Casey J. (CDC/DDNID/NCCDPHP/DOH) < (b) (6) Horsford, Jonathan (NIH/NIDCR) [E] < (b) (6) Ricks, Tim DMD (IHS/HQ) < (b) (6)
Cc: Iafolla, Timothy (NIH/NIDCR) [E] < (b) (6) Meister, Alissa (NIH/NIDCR) [E] < (b) (6)
Subject: RE: CWF Benefits

And here are my thoughts. Sorry for the delay.

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From: Hannan, Casey J. (CDC/DDNID/NCCDPHP/DOH) < (b) (6)
Sent: Monday, January 25, 2021 3:07 PM
To: Horsford, Jonathan (NIH/NIDCR) [E] < (b) (6) Ricks, Tim DMD (IHS/HQ) < (b) (6) Christopher H. Fox < (b) (6)
Cc: Iafolla, Timothy (NIH/NIDCR) [E] < (b) (6) Meister, Alissa (NIH/NIDCR) [E] < (b) (6)
Subject: RE: CWF Benefits

EXTERNAL EMAIL
Sending with the attachment this time. Sorry!

From: Hannan, Casey J. (CDC/DDNID/NCCDPHP/DOH)
Sent: Monday, January 25, 2021 12:50 PM
To: Horsford, Jonathan (NIH/NIDCR) [E] < (b) (6) Ricks, Tim DMD (IHS/HQ) < (b) (6) Fox, Christopher (IADR) < (b) (6)
Cc: Iafolla, Timothy (NIH/NIDCR) [E] < (b) (6) Meister, Alissa (NIH/NIDCR) [E] < (b) (6)
Subject: RE: CWF Benefits

Hi Jonathan –

Thanks for your patience – just needed a bit more time for one other person to review.

I'm sending the document in the track changes version so you can see our edits. Let me know if you have questions or concerns about the edits and we can setup a call to discuss.

I hope everyone is staying safe and well,

Casey

Casey Hannan, MPH
***Director**, Division of Oral Health*
Centers for Disease Control and Prevention
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http://www.cdc.gov/oralhealth/

DIVISION OF ORAL HEALTH
LEADERSHIP TO IMPROVE THE NATION'S ORAL HEALTH

From: Horsford, Jonathan (NIH/NIDCR) [E] < (b) (6)
Sent: Monday, January 25, 2021 9:50 AM
To: Ricks, Tim DMD (IHS/HQ) < (b) (6) Fox, Christopher (IADR) < (b) (6) Hannan, Casey J. (CDC/DDNID/NCCDPHP/DOH) < (b) (6)
Cc: Iafolla, Timothy (NIH/NIDCR) [E] < (b) (6) Meister, Alissa (NIH/NIDCR) [E] < (b) (6)
Subject: RE: CWF Benefits

All,

Just a friendly reminder to send me any edits to the CWF document.

And of course feel free to share any separate proposed talking points.

Thanks,

Jonathan

D. Jonathan Horsford, Ph.D.
Acting Deputy Director
NIDCR, NIH
Cell: (b) (6)

From: Ricks, Tim DMD (IHS/HQ) < (b) (6)
Sent: Tuesday, January 12, 2021 3:31 PM
To: Fox, Christopher (IADR) < (b) (6) Horsford, Jonathan (NIH/NIDCR) [E] < (b) (6) Hannan, Casey J. (CDC/DDNID/NCCDPHP/DOH) < (b) (6)
Cc: Iafolla, Timothy (NIH/NIDCR) [E] < (b) (6) Meister, Alissa (NIH/NIDCR) [E] < (b) (6)
Subject: RE: CWF Benefits

Ha! See, I learned something new today, even though I think the first time I saw NIDCR I pronounced it Nid-ker! I could have quite some fun with the acronyms now that I know the definition:

IHS Division of Urban Health DUH ("duh"....seems appropriate given what I know)
Bureau of Prisons BOP ("bop"...seems appropriate)
Surgeon General's Report on Oral Health SGROH ("S grow"....also seems appropriate!)

Assistant Secretary for Health ASH ("ash"....also seems kind of appropriate since he is retiring [but just retiring])

I could go on and on....once when I was a mid-level administrator in the IHS (Assistant Area Director), I was asked to define all acronyms IHS uses, and after 33 pages of tables with almost a thousand acronyms (if I remember correctly), I quit. The government certainly has a way with initialisms and acronyms!

Timothy L. Ricks, DMD, MPH, FICD
Rear Admiral (RADM), Assistant Surgeon General
Chief Dental Officer, U.S. Public Health Service
IHS Headquarters Division of Oral Health

- Continuing Dental Education Coordinator
- Oral Health Promotion/Disease Prevention Coordinator
- Expanded Function Dental Assistant Program Coordinator
- Dental Lead, Government Performance and Results Act
- Oral Health Surveillance Coordinator

From: Christopher H. Fox < (b) (6)
Sent: Tuesday, January 12, 2021 2:21 PM
To: Ricks, Tim DMD (IHS/HQ) < (b) (6) Horsford, Jonathan (NIH/NIDCR) [E] < (b) (6) Hannan, Casey J. (CDC/DDNID/NCCDPHP/DOH) < (b) (6)
Cc: Iafolla, Timothy (NIH/NIDCR) [E] < (b) (6) Meister, Alissa (NIH/NIDCR) [E] < (b) (6)
Subject: RE: CWF Benefits

Dear RADM Ricks,

No worries. I've lived inside the beltway long enough to have gotten all of those.
And technically most of those are all "initialisms" (abbreviations pronounced one letter at a time, like N-I-D-C-R) verses "acronyms" (abbreviations pronounced as words, like NASEM).
My favorite NIH abbreviation is for the Division of Program Coordination, Planning, and Strategic Initiatives (DPCPSI), obviously pronounced as "D-Poughkeepsie")

Chris

Christopher H. Fox, DMD, DMSc, Chief Executive Officer
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Publishers of *Journal of Dental Research* and *JDR Clinical & Translational Research*

From: Ricks, Tim DMD (IHS/HQ) < (b) (6)
Sent: Tuesday, January 12, 2021 2:09 PM
To: Horsford, Jonathan (NIH/NIDCR) [E] < (b) (6) Christopher H. Fox < (b) (6)

Hannan, Casey J. (CDC/DDNID/NCCDPHP/DOH) < (b) (6)
Cc: Iafolla, Timothy (NIH/NIDCR) [E] < (b) (6) Meister, Alissa (NIH/NIDCR) [E] < (b) (6)
Subject: RE: CWF Benefits

EXTERNAL EMAIL
Jonathan,

I will defer to Casey and his team at CDC. My suggestion is that since CDC is our lead agency on CWF, and even though this document looks great and the NTP is part of NIEHS, I think we should all use standard messaging developed by CDC regarding CWF. Chris Fox, sorry for all of the acronyms it's the government way, as you know.

Tim

Timothy L. Ricks, DMD, MPH, FICD
Rear Admiral (RADM), Assistant Surgeon General
Chief Dental Officer, U.S. Public Health Service

From: Horsford, Jonathan (NIH/NIDCR) [E] < (b) (6)
Sent: Tuesday, January 12, 2021 12:41 PM
To: Fox, Christopher (IADR) < (b) (6) Ricks, Tim DMD (IHS/HQ) < (b) (6) Hannan, Casey J. (CDC/DDNID/NCCDPHP/DOH) < (b) (6)
Cc: Iafolla, Timothy (NIH/NIDCR) [E] < (b) (6) Meister, Alissa (NIH/NIDCR) [E] < (b) (6)
Subject: CWF Benefits

Chris, Tim, and Casey,

As we prepare for the release of the NASEM NTP report Rena asked NIDCR staff to come up with the latest evidence to support the benefits of CWF. Tim Iafolla compiled this abbreviated document. We focused less on the history of CWF, but rather recent published evidence to serve as a counter point.

Action: Rena requested you give the document a look and let us know if anything is missing or you have any edits or concerns.

Due: Since we don't know the expected release of the report, we probably have a bit of time. How about COB next Friday January 22nd.

Thanks,

Jonathan

D. Jonathan Horsford, Ph.D.
Acting Deputy Director
National Institute of Dental and Craniofacial Research
National Institutes of Health
Cell: (b) (6)

148th session **EB148.R1**

Agenda item 6 **21 January 2021**

Oral health

The Executive Board,

Having considered the report on oral health: achieving better oral health as part of the universal health coverage and noncommunicable disease agendas towards 2030,[1]

RECOMMENDS to the Seventy-fourth World Health Assembly the adoption of the following resolution:

The Seventy-fourth World Health Assembly,

Having considered the report by the Director-General on oral health: achieving better oral health as part of the universal health coverage and noncommunicable disease agendas towards 2030;

Recalling resolutions WHA60.17 (2007) on oral health: action plan for promotion and integrated disease prevention, WHA69.3 (2016) on the global strategy and action plan on ageing and health 2016–2020: towards a world in which everyone can live a long and healthy life, WHA72.2 (2019) on primary health care; and decisions WHA72(11) (2019) on the follow-up to the political declaration of the third high-level meeting of the General Assembly on the prevention and control of non-communicable diseases and WHA73(12) (2020) on the Decade of Healthy Ageing 2020–2030;

Mindful of the 2030 Agenda for Sustainable Development, in particular Sustainable Development Goal 3 (Ensure healthy lives and promote well-being for all at all ages), and recognizing the important intersections between oral health and other Sustainable Development Goals, including Goal 1 (End poverty in all its forms and everywhere), Goal 2 (End hunger, achieve food security and improved nutrition and promote sustainable agriculture), Goal 4 (Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all) and Goal 12 (Ensure sustainable consumption and production patterns);

Recalling the Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases (2011), recognizing that oral diseases pose a major challenge and could benefit from common responses to noncommunicable diseases;

Recalling also the political declaration of the high-level meeting on universal health coverage (2019), including the commitment therein to strengthen efforts to address oral health as part of universal health coverage;

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[1] Document EB148/8.

Mindful of the Minamata Convention on Mercury (2013), a global treaty to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds, calling for phase-down of the use of dental amalgam taking into account domestic circumstances and relevant international guidance; and recognizing that a viable replacement material should be developed through focused research;

Recognizing that oral diseases are highly prevalent, with more than 3.5 billion people suffering from them, and that oral diseases are closely linked to noncommunicable diseases, leading to a considerable health, social and economic burden,[1] and that while there have been notable improvements in some countries, the burden of poor oral health remains, especially among the most vulnerable in society;

Noting that untreated dental caries (tooth decay) in permanent teeth occurs in 2.3 billion people, more than 530 million children suffer from untreated dental caries of primary teeth (milk teeth) and 796 million people are affected by periodontal diseases;[2] noting also that early rates of childhood caries are highest among those in vulnerable situations; and aware that these conditions are largely preventable;

Noting also that oral cancers are among the most prevalent cancers worldwide with 180 000 deaths each year,[3] and that in some countries they account for the most cancer-related deaths among men;

Noting further the economic burden due to poor oral health and that oral diseases worldwide account for US$ 545 billion in direct and indirect costs,[4] ranking poor oral health among the most costly health domains, like diabetes and cardiovascular diseases;

Also taking into account that poor oral health apart from pain, discomfort and lack of well-being and quality of life, leads to absenteeism at school and the workplace,[5] leading to shortfalls in learning and productivity losses;

Concerned about the effect of poor oral health on quality of life and healthy ageing in a physical and mental context; and noting that poor oral health is a regular cause for pneumonia for elderly people, particularly those living in care facilities, and for persons with disabilities;

---

[1] Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. Lancet 2018; 392: 1789–8583 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6227754/.

[2] Global Burden of Disease 2017 Oral Disorders Collaborators, Bernabe E, Marcenes W et. al. Global, regional, and national levels and trends in burden of oral conditions from 1990 to 2017: A systematic analysis for the Global Burden of Disease 2017 study. J Dent Res. 2020;99(4):362–373 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7088322/.

[3] https://gco.iarc.fr/today/data/factsheets/cancers/1-Lip oral-cavity-fact-s heet.pdf.

[4] Righolt AJ, Jevdjevic M, Marcenes W, Listl S. Global , regional-, and country-level economic impacts of dental diseases in 2015. J Dent Res. 2018;97(5):501–507.

[5] Peres MA, Macpherson LMD, Weyant RJ, Daly B, Venturelli R, Mathur MR, Listl S, Celeste RK, Guarnizo-Herreño CC, Kearns C, Benzian H, Allison P, Watt RG. Oral diseases: a global public health challenge. Lancet. 2019 Jul 20;394(10194):249–260 https://pubmed.ncbi.nlm.nih.gov/31327369/.

Aware that poor oral health is a major contributor to general health conditions, and noting that it has particular associations with cardiovascular diseases, diabetes, cancers, pneumonia, and premature birth;[1]

Noting that Noma, a necrotizing disease starting in the mouth, is fatal for 90% of affected children in poor communities, mostly in some regions in Africa, and leads to lifelong disability and often social exclusion;

Concerned that the burden of poor oral health reflects significant inequalities, between and within countries, disproportionally affecting low- and middle-income countries, mostly affecting people from lower socioeconomic backgrounds and other risk groups, such as persons who cannot maintain their oral hygiene on their own due to their age or disability;

Acknowledging the many risk factors that oral diseases share with noncommunicable diseases, such as tobacco use, harmful use of alcohol, a high intake of free sugars and poor hygiene, and therefore the necessity to integrate strategies on oral health promotion, prevention and treatment into overall noncommunicable disease policies;

Recognizing that adequate intake of fluoride plays an important role in the development of healthy teeth and in the prevention of dental caries; and recognizing the need to mitigate the adverse effects of excessive fluoride in water sources on the development of teeth;[2]

Concerned about the potential environmental impact caused by the use and disposal of mercury-containing dental amalgam, and the use of toxic chemicals for developing x-ray photographs;

Concerned also that oral health services are among the most affected essential health services because of the COVID-19 pandemic, with 77% of the countries reporting partial or complete disruption;

Highlighting the importance of oral health and interventions with a life course approach from the mother's gestation and the birth of the children and in addressing shared risk factors;

Noting that a number of oral and dental conditions can act as indicators of neglect and abuse, especially among children, and that oral health professionals can contribute to the detection of child abuse and neglect,

[1] Seitz MW, Listl S, Bartols A, Schubert I, Blaschke K, Haux C, et al. Current Knowledge on Correlations Between Highly Prevalent Dental Conditions and Chronic Diseases: An Umbrella Review. Prev Chronic Dis 2019; 16:180641 https://pubmed.ncbi.nlm.nih.gov/31560644/.

[2] Petersen PE, Lennon MA. Effective use of fluorides for the prevention of dental caries in the 21st century: the WHO approach. Community Dent Oral Epidemiol 2004; 32: 319–21 https://pubmed.ncbi.nlm.nih.gov/15341615/.

1. URGES Member States, taking into account their national circumstances:

(1) to understand and address the key risk factors for poor oral health and associated burden of disease;

(2) to foster the integration of oral health within their national policies, including through the promotion of articulated interministerial and intersectoral work;

(3) to reorient the traditional curative approach, which is basically pathogenic, and move towards a preventive promotional approach with risk identification for timely, comprehensive and inclusive care, taking into account all stakeholders in contributing to the improvement of the oral health of the population with a positive impact on overall health;

(4) to promote the development and implementation of policies to promote efficient workforce models for oral health services;

(5) to facilitate the development and implementation of effective surveillance and monitoring systems;

(6) to map and track the concentration of fluoride in drinking water;

(7) to strengthen the provision of oral health services delivery as part of the essential health services package that deliver universal health coverage;

(8) to improve oral health worldwide by creating an oral health-friendly environment, reducing risk factors, strengthening a quality-assured oral health care system and raising public awareness of the needs and benefits of a good dentition and a healthy mouth;

2. CALLS ON Member States:

(1) to frame oral health policies, plans and projects for the management of oral health care according to the vision and political agendas in health projected for 2030, in which oral health is considered as an integral part of general health, responding to the needs and demands of the public for good oral health;

(2) to strengthen cross-sectoral collaboration across key settings, such as schools, communities and workplaces to promote habits and healthy lifestyles, integrating teachers and the family;

(3) to enhance oral health professionals' capacities to detect potential cases of neglect and abuse, and provide them with the appropriate and effective means to report such cases to the relevant authority according to the national context;

3. REQUESTS the Director-General:

(1) to develop, by 2022 a draft global strategy, in consultation with Member States, on tackling oral diseases, aligned with the Global action plan for the prevention and control of noncommunicable diseases 201 3–2030 and pillars 1 and 3 of WHO's Thirteenth General Programme of Work, for consideration by the WHO governing bodies in 2022;

(2) to translate this global strategy, by 2023, into an action plan for public oral health, including a framework for tracking progress with clear measurable targets to be achieved by 2030, encompassing control of tobacco use, betel quid and areca nut chewing, and alcohol use and community dentistry, health promotion and education, prevention and basic curative care providing a basis for a healthy mouth, where no one is left behind; this action plan should also contain the use of provisions that modern digital technology provides in the field of telemedicine and teledentistry;

(3) to develop technical guidance on environmentally friendly and less-invasive dentistry to support countries with their implementation of the Minamata Convention on Mercury, including supporting preventative programmes;

(4) to continue to update technical guidance to ensure safe and uninterrupted dental services, including under circumstances of health emergencies;

(5) to develop "best buy" interventions on oral health, as part of an updated Appendix 3 of the WHO Global action plan on the prevention and control of noncommunicable diseases and integrated into the WHO UHC Intervention Compendium;

(6) to include noma in the planned WHO 2023 review process to consider the classification of additional diseases within the road map for neglected tropical diseases 2021–2030;

(7) to report back on progress and results until 2031 as part of the consolidated report on noncommunicable diseases, in accordance with paragraph 3(e) of decision WHA72(11).

Eighth meeting, 21 January 2021
EB148/SR/8

= = =

From: Christopher H. Fox
Sent: Mon, 25 Jan 2021 20:24:00 +0000
To: Hannan, Casey J. (CDC/DDNID/NCCDPHP/DOH); Horsford, Jonathan (NIH/NIDCR) [E]; Ricks, Tim DMD (IHS/HQ)
Cc: Iafolla, Timothy (NIH/NIDCR) [E]; Meister, Alissa (NIH/NIDCR) [E]
Subject: RE: CWF Benefits
Attachments: CWF Benefits for Stakeholders with CFOX comments.docx

And here are my thoughts. Sorry for the delay.

Christopher H. Fox, DMD, DMSc, Chief Executive Officer
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1619 Duke Street, Alexandria, VA 22314-3406, USA
T: + (b) (6) | F: + (b) (6) | E: (b) (6)
Publishers of *Journal of Dental Research* and *JDR Clinical & Translational Research*

From: Hannan, Casey J. (CDC/DDNID/NCCDPHP/DOH) < (b) (6)
Sent: Monday, January 25, 2021 3:07 PM
To: Horsford, Jonathan (NIH/NIDCR) [E] < (b) (6) Ricks, Tim DMD (IHS/HQ) < (b) (6) Christopher H. Fox < (b) (6)
Cc: Iafolla, Timothy (NIH/NIDCR) [E] < (b) (6) Meister, Alissa (NIH/NIDCR) [E] < (b) (6)
Subject: RE: CWF Benefits

EXTERNAL EMAIL
Sending with the attachment this time. Sorry!

From: Hannan, Casey J. (CDC/DDNID/NCCDPHP/DOH)
Sent: Monday, January 25, 2021 12:50 PM
To: Horsford, Jonathan (NIH/NIDCR) [E] < (b) (6) Ricks, Tim DMD (IHS/HQ) < (b) (6) Fox, Christopher (IADR) < (b) (6)
Cc: Iafolla, Timothy (NIH/NIDCR) [E] < (b) (6) Meister, Alissa (NIH/NIDCR) [E] < (b) (6)
Subject: RE: CWF Benefits

Hi Jonathan

Thanks for your patience just needed a bit more time for one other person to review.

I'm sending the document in the track changes version so you can see our edits. Let me know if you have questions or concerns about the edits and we can setup a call to discuss.

I hope everyone is staying safe and well,

Casey

Casey Hannan, MPH
***Director**, Division of Oral Health*
Centers for Disease Control and Prevention

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http://www.cdc.gov/oralhealth/

DIVISION OF ORAL HEALTH
LEADERSHIP TO IMPROVE THE NATION'S ORAL HEALTH

From: Horsford, Jonathan (NIH/NIDCR) [E] < (b) (6)
Sent: Monday, January 25, 2021 9:50 AM
To: Ricks, Tim DMD (IHS/HQ) < (b) (6) Fox, Christopher (IADR) < (b) (6) Hannan, Casey J. (CDC/DDNID/NCCDPHP/DOH) < (b) (6)
Cc: Iafolla, Timothy (NIH/NIDCR) [E] < (b) (6) Meister, Alissa (NIH/NIDCR) [E] < (b) (6)
Subject: RE: CWF Benefits

All,

Just a friendly reminder to send me any edits to the CWF document.

And of course feel free to share any separate proposed talking points.

Thanks,

Jonathan

D. Jonathan Horsford, Ph.D.
Acting Deputy Director
NIDCR, NIH
Cell: (b) (6)

From: Ricks, Tim DMD (IHS/HQ) < (b) (6)
Sent: Tuesday, January 12, 2021 3:31 PM
To: Fox, Christopher (IADR) < (b) (6) Horsford, Jonathan (NIH/NIDCR) [E] < (b) (6) Hannan, Casey J. (CDC/DDNID/NCCDPHP/DOH) < (b) (6)
Cc: Iafolla, Timothy (NIH/NIDCR) [E] < (b) (6) Meister, Alissa (NIH/NIDCR) [E] < (b) (6)
Subject: RE: CWF Benefits

Ha! See, I learned something new today, even though I think the first time I saw NIDCR I pronounced it Nid-ker! I could have quite some fun with the acronyms now that I know the definition:

IHS Division of Urban Health – DUH ("duh"....seems appropriate given what I know)
Bureau of Prisons BOP ("bop"...seems appropriate)
Surgeon General's Report on Oral Health –SGROH ("S grow"....also seems appropriate!)
Assistant Secretary for Health ASH ("ash"....also seems kind of appropriate since he is retiring [but just retiring])

I could go on and on....once when I was a mid-level administrator in the IHS (Assistant Area Director), I

was asked to define all acronyms IHS uses, and after 33 pages of tables with almost a thousand acronyms (if I remember correctly), I quit. The government certainly has a way with initialisms and acronyms!

Timothy L. Ricks, DMD, MPH, FICD
Rear Admiral (RADM), Assistant Surgeon General
Chief Dental Officer, U.S. Public Health Service
IHS Headquarters Division of Oral Health

- Continuing Dental Education Coordinator
- Oral Health Promotion/Disease Prevention Coordinator
- Expanded Function Dental Assistant Program Coordinator
- Dental Lead, Government Performance and Results Act
- Oral Health Surveillance Coordinator

From: Christopher H. Fox < (b) (6)
Sent: Tuesday, January 12, 2021 2:21 PM
To: Ricks, Tim DMD (IHS/HQ) < (b) (6) Horsford, Jonathan (NIH/NIDCR) [E] < (b) (6) Hannan, Casey J. (CDC/DDNID/NCCDPHP/DOH) < (b) (6)
Cc: Iafolla, Timothy (NIH/NIDCR) [E] < (b) (6) Meister, Alissa (NIH/NIDCR) [E] < (b) (6)
Subject: RE: CWF Benefits

Dear RADM Ricks,

No worries. I've lived inside the beltway long enough to have gotten all of those.
And technically most of those are all "initialisms" (abbreviations pronounced one letter at a time, like N-I-D-C-R) verses "acronyms" (abbreviations pronounced as words, like NASEM).
My favorite NIH abbreviation is for the Division of Program Coordination, Planning, and Strategic Initiatives (DPCPSI), obviously pronounced as "D-Poughkeepsie")

Chris

Christopher H. Fox, DMD, DMSc, Chief Executive Officer
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Publishers of *Journal of Dental Research* and *JDR Clinical & Translational Research*

From: Ricks, Tim DMD (IHS/HQ) < (b) (6)
Sent: Tuesday, January 12, 2021 2:09 PM
To: Horsford, Jonathan (NIH/NIDCR) [E] < (b) (6) Christopher H. Fox < (b) (6) Hannan, Casey J. (CDC/DDNID/NCCDPHP/DOH) < (b) (6)
Cc: Iafolla, Timothy (NIH/NIDCR) [E] < (b) (6) Meister, Alissa (NIH/NIDCR) [E] < (b) (6)
Subject: RE: CWF Benefits

EXTERNAL EMAIL
Jonathan,

I will defer to Casey and his team at CDC. My suggestion is that since CDC is our lead agency on CWF, and even though this document looks great and the NTP is part of NIEHS, I think we should all use standard messaging developed by CDC regarding CWF. Chris Fox, sorry for all of the acronyms – it's the government way, as you know.

Tim

Timothy L. Ricks, DMD, MPH, FICD
Rear Admiral (RADM), Assistant Surgeon General
Chief Dental Officer, U.S. Public Health Service

From: Horsford, Jonathan (NIH/NIDCR) [E] < (b) (6)
Sent: Tuesday, January 12, 2021 12:41 PM
To: Fox, Christopher (IADR) < (b) (6) Ricks, Tim DMD (IHS/HQ) < (b) (6) Hannan, Casey J. (CDC/DDNID/NCCDPHP/DOH) < (b) (6)
Cc: Iafolla, Timothy (NIH/NIDCR) [E] < (b) (6) Meister, Alissa (NIH/NIDCR) [E] < (b) (6)
Subject: CWF Benefits

Chris, Tim, and Casey,

As we prepare for the release of the NASEM NTP report Rena asked NIDCR staff to come up with the latest evidence to support the benefits of CWF. Tim Iafolla compiled this abbreviated document. We focused less on the history of CWF, but rather recent published evidence to serve as a counter point.

Action: Rena requested you give the document a look and let us know if anything is missing or you have any edits or concerns.

Due: Since we don't know the expected release of the report, we probably have a bit of time. How about COB next Friday January 22nd.

Thanks,

Jonathan

D. Jonathan Horsford, Ph.D.
Acting Deputy Director
National Institute of Dental and Craniofacial Research
National Institutes of Health
Cell: (b) (6)

Benefits of Community Water Fluoridation

Definition: Community water fluoridation (CWF) is the controlled adjustment of fluoride to a level that prevents tooth decay and minimizes dental fluorosis—currently set at 0.7mg/liter (or ppm) in the U.S.

Rationale: Caries is the most common chronic disease of childhood and is associated with a range of adverse outcomes including pain, sleep disturbances, decreased ability to eat some foods, social embarrassment, missed school, and lowered self-esteem. Fluoridation of community water supplies is the single most effective public health measure to prevent dental caries. Individual treatment for dental caries is effective but is expensive compared to preventive measures such as CWF.

CWF Effectiveness:

- Epidemiological studies of CWF began in 1945 and showed 50% to 75% caries reduction for the fluoridated cities compared to control cities over 5 years[1].
- Since then, there has been a steady decrease in the apparent measured effectiveness of CWF over the decades, because it has become increasingly difficult to find control groups that are unexposed to systemic or topical fluorides. This "halo effect" of fluoride exposure in control groups has caused a systematic bias toward the null.
- Recent studies show that CWF continues to be effective at reducing tooth decay by approximately 25% in children and adults, even in non-fluoridated communities receiving some level of fluoride from other sources.[2] Caries-reduction benefits are consistent whether measured in terms of prevalence or severity, and in primary or permanent teeth.
- Recent publications: A study of 275,843 New Zealand children with a median age of 4.3 years ~~shoed~~ showed that those living in areas without CWF had 21% higher odds of severe caries compared with children living in areas with CWF, after adjustment for age, sex, ethnicity, and economic situation (Schluter 2020). A before and after study compared caries and fluorosis in random samples of 8 y olds in Dublin (n = 707) and Cork Kerry (n = 1148) in 2017 with 8 y olds in the same cities (n = 679 and n = 565, respectively) in 2002. Caries experience in the CWF vs. non CWF groups was 47% lower in 2002, and was 26% lower in 2017, an illustration of the halo effect in non-CWF populations (James 2020).

Cost Effectiveness

- 73% of the U.S. population is served by public water systems that are optimally fluoridated (CDC).
- Water fluoridation provides benefits beyond what is gained from using other fluoride-containing products, regardless of age, educational attainment, or income level.
- The return on investment for CWF varies with size of the community, increasing as community size increases, but CWF is cost-saving even for small communities (US CPSTF 2016). The savings associated in communities of 1,000 or more people exceeded estimated program costs, resulting in an average savings of $24 per dollar invested. Other recent studies support or exceed this finding.[3]
- CWF benefits everyone, especially those without access to regular dental care. Fluoridation is a powerful tool in the fight for social justice and health equity. People can benefit from fluoridation's

[1] Four matched city pairs were chosen for prospective cohort studies of five years' duration. Baseline caries prevalence and severity were measured for approximately 5,000 school children in all paired cities. One city of each pair received fluoridated water at a concentration of 1ppm, followed by the caries measurements at the end of the study.

[2] Primarily food and drink processed with fluoridated water, naturally-fluoridated well water, or fluoride toothpaste.

[3] A 2018 study of 172 public water systems in Colorado found that annual exposure to fluoridated water produced an average savings of $60 per person (CDC 2005). Analyses of Medicaid claims data in 3 other states (Louisiana, New York, and Texas), have also found that children living in fluoridated communities have an average reduction in caries related treatment costs of $39 (CDC 2018).

Commented [CHF1]: You might add that this was a time well before the wide spread availability of fluoride toothpaste. I think the first fluoride toothpaste marketed was 1955-1956.

Commented [CHF2]: Might consider adding the recent study from Canada: Community water fluoridation exposure and dental caries experience in newly enrolled members of the Canadian Armed Forces 2006-20017 Canadian Journal of Public Health (2021)

Commented [CHF3]: The James et al study main objective was to compare these two time points when fluoride levels went from 0.8-1.0 ppm in 2002 to 0.6-0.8 ppm in 2017. To me the main conclusion was "CWF at 0.6 to 0.8 ppm fluoride is an effective caries-preventive measure. However, there are indications that downward adjustment of water fluoride concentration has reduced the caries-preventive effect of CWF"

benefits whether they are at home, work, or school. In addition, people who live in non-fluoridated areas receive 'halo' benefits when they consume food and beverages processed in fluoridated areas.

Safety

Commented [CHF4]: Don't you want a section on safety?

[seems odd, not to talk about safety] [From AADR Policy:]

https://www.iadr.org/aadr/fluoridation

Community water fluoridation is a safe method of delivering fluoride on a population level. There have been numerous systematic reviews on claims of the potential adverse health effects of water fluoridation. None has concluded that there is a significant or consistent association between water fluoridation and the outcomes examined, including neurologic conditions, cancer or osteoporosis.[19-23]

- McDonagh MS, Whiting PF, Wilson PM, Sutton AJ, Chestnutt I, Cooper J, Misso K, Bradley M, Treasure E, Kleijnen J. 2000. Systematic review of water fluoridation. BMJ. 321:855-859.
- Jones G, Riley M, Couper D, Dwyer T. 1999. Water fluoridation, bone mass and fracture: a quantitative overview of the literature. Australian and New Zealand Journal of Public Health. 23(1):34-40.
- Demos LL, Kazda H, Cicuttini FM, Sinclair MI, Fairley CK. 2001. Water fluoridation, osteoporosis, fractures—recent developments. Australian Dental Journal. 46(2):80-87.
- Whiting P, McDonagh M, Kleijnen J. 2001. Association of Down's syndrome and water fluoride level: a systematic review of the evidence. BMC Public Health. 1(1):6.
- Agency for Toxic Substances and Disease Registry (ATSDR). 2001. Toxicological profile for Fluorides, Hydrogen Fluoride, and Fluorine. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

See also Safety section of https://cbooks.ada.org/fluoridationfacts/38

From: Christopher H. Fox
Sent: Mon, 18 Jan 2021 14:13:10 +0000
To: D'Souza, Rena (NIH/NIDCR) [E]; Horsford, Jonathan (NIH/NIDCR) [E]; Iafolla, Timothy (NIH/NIDCR) [E]; Ricks, Tim DMD (IHS/HQ); Hannan, Casey J. (CDC/DDNID/NCCDPHP/DOH); Joskow, Renee (HRSA); Chalmers, Natalia (FDA/CDER)
Cc: Cohen, Lois (NIH/NIDCR) [C]
Subject: WHO 148th Executive Board
Attachments: 2021 - NCD Alliance Advocacy Briefing EB148_FINAL.pdf

Dear Federal Colleagues:

For those interested in global health, the World Health Organization 148th Executive Board is now in session. As many of you know, oral health is on the agenda for the first time in many years.

You can access all documents here:
https://apps.who.int/gb/e/e_eb148.html
You can follow the proceedings live here:
https://www.who.int/about/governance/executive-board/executive-board-148th-session

Oral Health is on the agenda and should come up sometime on Wednesday, January 20 between 10:00 – 13:00 or 14:00-17:00 Geneva Time (CET, UTC +1).
We are expecting a Member State Resolution on Oral Health to be posted soon in addition to the Director General's Report on Oral Health already posted.

You can find statements from other non-state actors here:
https://extranet.who.int/nonstateactorsstatements/meetingoutline/7
On the oral health agenda item, in addition to IADR's statement, you will see statements from the FDI, International Society of Nephrology, Médecins Sans Frontières International, and World Federation of Public Health Associations. (So far, check back to see if additional statements are posted)

Finally, please see the NCD Alliance Briefing document which also supports the DG oral health report and incorporates IADR's key messages, along with FDI's and others (page 9).

It's all very good news that oral health is on the agenda and is getting attention at the highest policy level!

Cheers,

Chris

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Publishers of *Journal of Dental Research* and *JDR Clinical & Translational Research*

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Upcoming Meetings:

NEW DATES in 2021 and 2022:

IADR/AADR/CADR General Session & Exhibition	July 21-24, 2021	Boston, Mass., USA
AADR/CADR Annual Meeting & Exhibition	March 23-26 2022	Atlanta, Ga., USA
IADR/APR General Session & Exhibition	June 22-25, 2022	Chengdu, CHINA

NCDAlliance

Updated 14/01/2021

NCD Alliance Advocacy Briefing

148th Session of WHO Executive Board, 18-26 January 2021

This briefing note provides background and key advocacy messages on the NCD Alliance's key priorities for the 148th session of the WHO Executive Board (EB148) in January 2021. The EB will take place in a virtual format due to the COVID-19 pandemic. A full list of documents, together with updated timetables for each day, can be found here. This note deals with key NCD-relevant items in the order of the provisional agenda of EB148.

Pillar 1: One billion more people benefiting from Universal Health Coverage (UHC)

Agenda item 6: Political declaration of the third high-level meeting of the General Assembly on the prevention and control of non-communicable diseases (Documents EB148/7, EB148/7 Add.1 and EB148/7 Add.2.)

The report is the first annual consolidated report from the Director-General on progress achieved in the prevention and control of NCDs and the promotion of mental health. The report notes that "Over the last 20 years, NCDs have changed the world". Indeed, 7 of the top 10 causes of premature death worldwide are now NCDs. shows wholly inadequate progress worldwide on prevention and control of NCDs. The vast majority of countries are not on track to meet the 2025 targets for NCDs, nor the 2030 target SDG3.4. It is particularly noteworthy that the risk of premature mortality from diabetes has *increased* by 5% since 2000, with a staggering 70% increase in premature diabetes mortality worldwide over the last 20 years. Increased diabetes prevalence and deaths is closely related to skyrocketing rates of obesity worldwide for both adults and children. Alarmingly, global consumption of alcohol is projected to increase. Air pollution is recognised as a major global cause of NCDs, and 90% of the global population live in areas with unsafe levels of air pollution. There has been almost no progress on inclusion of NCDs in UHC since 2000.

The report outlines the impacts of the pandemic on people living with NCDs (PLWNCDs) and mental health, which do not yet appear in the figures presented in the report. However, the impacts are likely to set progress back significantly, due to disproportionate impacts on PLWNCDs who are at significantly higher risk (e.g. diabetes, hypertension, kidney disease, obesity, people who are immunosuppressed due to health conditions or treatment, and people living in residential care); due to significantly delayed and disrupted NCD services; and due to increased exposure to major risk factors during the pandemic (e.g. alcohol, unhealthy food, lack of physical activity, tobacco, mental health stressors.) WHO is currently working on a forecast of the impact of disrupted NCD care on premature deaths of PLWNCDs - we appreciate their vital work in this area.

The report notes that "NCDs remain the largest, most internationally underfunded public health issue globally, where most lives could be saved or improved."

The DG's consolidated report includes ten annexes and 2 appendices reporting on implementation of NCD-relevant resolutions, action plans and strategies:

Annex 1: Reporting on implementation of cancer resolution. To note.

NCDA welcomes the progress WHO has made to date in fulfilling its obligations as laid out in WHA70.12(2017) and its close working relationships with key partners including IARC, IAEA and civil society. We highlight that

7.3 million lives could be saved by 2030 if Member States appropriately develop and invest in cancer prevention and care services and that every US$1 invested in cancer control yields a full social return of US$9.50 (based on direct productivity and societal gains).

For the resolution WHA70.12(2017) to be a success, we urge Member States to:

- *Use the resources developed by WHO and partners, particularly as they look to build back better after COVID-19 as there have been significant disruptions to cancer services which have threatened the lives of cancer patients worldwide.*
- *Capitalise on the guidance and support offered as part of the cancer resolution, cervical cancer elimination and childhood cancer initiatives to build momentum nationally. These programmes are relevant across the income spectrum, and the capacity to deliver core services at scale are key indicators of the strength, effectiveness and equity of health systems.*
- *Ensure the integration of cancer services into health systems as part of the COVID-19 recovery and the progressive realisation of UHC.*
- *Call on WHO secretariat to more meaningfully include people living with cancer in efforts to prevent, identify and address cancer prevention and control and support Member States to do the same.*

Annex 2: Physical activity. To note

Note WHO's commendable activities to strengthen technical support and guidance on promotion of physical activity for all populations. Yet we also note still insufficient levels of physical activity to protect and promote health across all age groups in most countries. We commend member states who have increasingly taken steps to support more active societies, however particularly note the impact of COVID-19 responses on physical activity and sedentary behaviour.

We urge Member States to

- prioritise and invest in physical activity monitoring, research and promotion across the lifecourse.
- ensure that COVID-19 response policies and 'build back better' strategies optimise opportunities for safe physical activity, else risk further dire chronic health consequences the longer term.
- take an integrated approach to supporting physical activity in communities, with many multiple-wins possibile when joined up and coherent measures are embraced such as through urban design and active transport policies.

Annex 3: Nutrition: Biennial report on the implementation of the commitments made in the Rome Declaration on Nutrition, adopted at the Second International Conference on Nutrition (2014)

The report again highlights that despite tracton in some areas, progress to end, halt or reverse the rise in all forms of malnutrition including diet related NCDs, obesity and diabetes, is off track and targets are unlikely to be met.

We commend WHO's leadership through the UN Decade of Action on Nutrition & related initiatives. However Member State policy responses to obesity & diet-related NCDs, such as with evidence based & effective Best Buys, are inadequately prioritised, implemented & resourced.

We are disturbed by the impact of COVID-19 on healthy diets & health outcomes for those living with NCDs & obesity, especially in low income & vulnerable populations. Long-neglected effective evidence based measures can reduce diet-related NCDs and obesity, which have been contributing to more severe outcomes for some contracting coronavirus. Meanwhile, we the responses of unhealthy food and beverage industries seeking to

leverage the pandemic has been alarming, and has affirmed the need for a mechanism similar to FCTC Article 5.3 preventing tobacco industry interference, for application to other commodity dietary risk factors of NCDs.

We urge Member States to:

- Accelerate efforts to develop & implement diet-related NCD policies particularly the NCD Best Buys, with a particular focus on efficient double duty actions which integrate evidence based measures to tackle multiple forms of malnutrition synergistically, such as food procurement standards, healthy school food programmes, healthy food procurement policies per WHO's new framework, fiscal policies combining taxes and healthy food subsidies, front of pack labelling, and promotion and protection of breastfeeding.
- Raise & allocate adequate resources to develop & implement policies to promote healthy diets & address overweight & obesity through domestic & donor funding sources.
- Include diet-related NCD policy in COVID-19 pandemic responses.
- Recognise and address actions by the food and beverage industry that undermine health. WHO should strengthen guidance on protecting health promoting policies, (especially those benefiting children) from conflict of interest in order to support implementation & enforcement.
- Engage civil society to help strengthen action networks & monitor progress towards NCD & malnutrition targets.

The UN Food Systems & Nutrition for Growth Summits provide vital opportunities to accelerate efforts to secure healthy diets for all. We urge all stakeholders to urgently scale up SMART actions & ensure no one is left behind with any form of malnutrition.

Annex 4: Air pollution. To note.

Air pollution has been recognised as a major NCD risk factor, as of the 3rd High Level Meeting of the UNGA on NCDs in 2018. The annex summarises progress in addressing health impacts of air pollution. WHO is preparing an update of the Air Quality Guidelines and has been working to update tools to assess health and economic impacts of air pollution and policy responses. Development of recommended policy interventions has however been repeatedly delayed.

- *We call on member states to increase resources to WHO to increase capacity to respond to air pollution, noting that 90% of people worldwide live in areas with unsafe levels of air pollution, putting them at risk of multiple NCDs, and a strong socio-economic gradient in exposure to air pollution both within and between countries exacerbating health inequalities.*
- *We call on WHO and member states to move ahead rapidly with recommendations for effective policy interventions to reduce exposure to both indoor and outdoor air pollution.*
- *We call on WHO and partners in the Interagency Taskforce on NCDs to step up technical support to countries to meet demand, including investment cases to support urgent policy action to tackle air pollution.*

Annex 5: Mental health

WHA74 will be invited to consider and adopt the updates proposed in Annex 5 to the appendices of WHO's comprehensive mental health action plan 2013–2030.

We encourage EB members to support the proposed objectives as a minimum and strongly support the clear focus on human rights and law. NCDA calls on Member States to meaningfully involve people with lived experience of mental health conditions in development and monitoring of mental health services. We encourage Member States to monitor and submit WHO data on the proposed updated Appendix 1 (voluntary)

indicators. Reiterate that mental health and social care, as with other NCD prevention and care services, should be fully integrated into UHC packages.

Annex 6: Health literacy. Process to provide guidance. To note.

Annex 7: Analysis of successful approaches to multisectoral action for prevention and control of NCDs. Process to review international experiences. To note.

This annex outlines the process for a (delayed) WHO review of international experiences and analyse successful approaches to multisectoral action. Approaches that address social, economic and environmental drivers of NCDs would also be covered:

In 2022, WHO will launch a publicly-accessible NCD multisectoral action repository. It will support governments to draw attention to national or local multi sectoral projects and especially best practices. WHO will also launch a first stocktaking report, including examples submitted by governments, to be updated annually based on submissions to the repository. Governments will be able update submissions on a continuous basis and those who seek to extend their networks or replicate best practices would be able to do so by contacting project owners directly in other countries. In 2023, WHO will submit an analysis of successful approaches to EB150.

- *NCDA welcomes the proposed call for examples of successful approaches to multisectoral action on NCDs, recognizing multisectoral approaches as a key strategy "to implement health-in-all-policies and whole-of government and whole-of-society approaches, and to monitor and act on the determinants of NCDs, including social, and environmental determinants". Resolution A/RES68/300.*
- *We ask that examples of best practices submitted by governments incorporate the views and voices of civil society and people living with NCDs, and that provision should be made for them to be included as project owners to be contacted for further discussions.*
- *We urge that reporting on multisectoral action for the prevention and control of NCDs be retained as an agenda item at the EB and WHA until 2025, and a major part of the commemoration of the 10th anniversary of the SDGs.*

Annex 8: School food best practices and guidance. To note.

Annex 9: People living with NCDs in emergencies. Process to provide guidance. To note.

We ask Member States to reiterate that NCDs are a growing issue in humanitarian settings. In 2017, NCDs accounted for between 24% 68% of mortality in the top five source countries for refugees and people living with NCDs have an excess in morbidity and mortality related to their NCDs during emergencies and disasters.

Annex 10: Update on work of the UN Inter-Agency Taskforce on NCDs

The Taskforce coordinates action across the UN to support countries to achieve the SDGs related to NCDs via high-quality technical support for multisectoral action in countries. 12 UN organizations have published briefs on NCDs. The report of the DG on the Task Force, submitted to the United Nations Economic and Social Council (ECOSOC) in March 2020 included updates on achievements.

In line with ECOSOC resolution which encouraged establishment of an NCD and mental health multi-partner trust fund, the Task Force Secretariat has drafted terms of reference with the UN Multi-Partner Trust Fund

Office as the administrative agent. The trust fund will support low- and middle-income countries accessing catalytic resources to tackle NCDs, as part of their national COVID-19 response and recovery plans.

Members of the Task Force continue to deliver joint programmes to support countries in advancing action on NCDs and are alignining activities with the United Nations' comprehensive response to COVID-19.

- *NCDA commends the efforts in ensuring coordinated action to support governments to take action on NCDs. The work of the Taskforce has become even more relevant in the light of the COVID-19 pandemic and its impact on people living with NCDs.*
- *We urge governments to prioritize the prevention and control of NCDs and mobilize resources for NCDs and mental health, including through the new multi-partner trust fund for NCDs and mental health.*
- *Call for an increased role for civil society and people living with NCDs in joint programming missions, joint programmes and initiatives of the Task Force, for which we offer our continued support.*

Appendix 1: Mid-term evaluation of WHO Global Action Plan for the prevention and control of NCDs 2013–2020 [extended to 2030] (Document - Executive summary of mid-term evaluation)

The heavily delayed mid-term evaluation of the Global Action Plan was undertaken during 2020 - due to be the expiry date of the original plan. However, as the duration of the plan has now been extended to 2030 by WHA72, conclusions of the evaluation can still be instructive for the coming years. The NCD Alliance CEO was included in the evaluation advisory group.

- *As the NCD-GAP centres on achievement of the nine voluntary global targets (including a 25% relative reduction in premature mortality from cardiovascular diseases, cancer, diabetes or chronic respiratory diseases by 2025), it is particularly disappointing that the evaluation does not focus sufficiently strongly on the lack of progress towards the targets and the 25 health outcome indicators within the global monitoring framework. This concern was raised by independent stakeholders in the advisory process.*
- *It is particularly important, at the end of the original timeframe of the action plan, to check progress against intended outcomes and impact. WHO reporting and the NCD Countdown 2030 collaboration makes painfully clear that the 2025 targets will be missed, with only a very small number of countries currently on track to meet the subsequent SDG3.4 target on NCDs for 2030. This evaluation is a missed opportunity. It should be a pivotal moment to recognise where the action plan is not delivering sufficient progress and to change course, ahead of 2025.*
- *The NCD Countdown 2030 report of September 2020 demonstrates that all countries can still feasibly meet the 2030 SDG3.4. target to reduce premature mortality from the 4 major NCDs by one-third, if they rapidly deploy tailored packages of policy measures to prevent and treat NCDs. Governments and WHO must not delay any further in recognising the lack of progress asking tough questions as to why the NCD action plan will fail to deliver the 2025 targets.*
- *The evaluation did not seek to cover strategic issues. It would be important for Member States to call on WHO to reflect on strategic issues as a matter of utmost urgency.*
- *The evaluation was not asked to consider the shift from '4x4' to '5x5' so does not address how to include mental health and air pollution as major considerations in the future NCD response. Member States should request WHO to redress this and consider how best to align and ensure synergies with recent WHA decisions, strategies and action plans on NCDs: Cervical Cancer, Epilepsy and Neurology, Eye Health, Oral Health, Childhood Cancer, etc. into the strategic framework for 2030.*

- *The evaluation correctly notes that lack of resources globally is a major barrier to progress on NCD prevention and care. Whilst NCDs are the major cause of premature death and disability worldwide, this is in stark contrast to NCDs being the focus of less than 2% of development assistance for health, equating to far less than US$1 per DALY, and a tiny fraction of the funding devoted to other global health priorities (HIV, TB, RMNCH). It is insufficiently recognised that people and health conditions do not exist in these programmatic funding siloes and that risk factors cut across communicable and NCDs: e.g. HIV commonly co-occurs with cardiovascular conditions as well as HPV/cervical cancer, there is a bi-drectional relationship between diabetes and TB. It is estimated that up to 95% of people living with NCDs also have at least one other chronic health condition. We urge Member States to raise this fundamental mismatch and limitations of the siloed approach in whole-of-government discussions and with global health funding bodies, agencies, and philanthropies.*
- *It is useful to note (lack of) progress on policy implementation to achieve health-promoting environments, to explain the lack of progress towards the 2025/2030 targets. We ask Member States to call for a follow-up study to draw these important strategic conclusions to guide the next phase of the action plan implementation.*
- *With the exception of the lack of resources available at international level, the evaluation does not identify the key barriers to NCD progress over the course of the NCD-GAP 2013-2020. We agree that the potential of civil society and expertise of people living with NCDs has not been sufficiently engaged to date. We call on Member States to identify these barriers, make proposals for stronger, formal engagement of civil society and PLWNCDs, and call on WHO to develop clearer guidance on identifying, managing and mitigating conflicts of interest in multisectoral engagements.*
- *The evaluation implies that progress in tobacco control is sufficient this is by far not the case and is a dangerously misleading message. Member States must not let up on action on tobacco as a killer of over 7 million people every year. More action and investment is also needed on tobacco control, implementation of proven cost-effective policies and support for the Framework Convention on Tobacco Control, its Secretariat and the Conference of Parties.*
- *NCDA looks forward to working with Member States on how the recommendations of the evaluation can be strengthened and taken forward, with the required urgency to achieve progress ahead of 2025 and to meet the 2030 target SDG3.4.*

Appendix 2: Final evaluation of the global coordination mechanism on the prevention and control of noncommunicable diseases

The final evaluation of the GCM built on the preliminary evaluation conducted in 2017 and was based on responses to 4 questions on the relevance of the work of the GCM/NCD, its effectiveness, the most important factors for the successful or failed delivery of the GCM/NCD work plan and the role of WHO in the implementation of the work plans of the GCM/NCD.

The 5 functions/objectives of the mechanism are as follows:

• advocating for and raising awareness of the urgency of implementing the NCD-GAP;

• disseminating knowledge and sharing information based on scientific evidence and/or best practices regarding the implementation of the NCD-GAP;

• encouraging innovation and identifying barriers by providing a forum to identify barriers and share innovative solutions and actions for the implementation of the NCD-GAP;

• advancing multisectoral action by identifying and promoting sustained actions across sectors that can contribute to and support the implementation of the NCD-GAP;

• advocating for the mobilization of resources by identifying and sharing information on existing and potential sources of finance and cooperation mechanisms at the local, national, regional and global levels for the implementation of the NCD-GAP.

The process: The evaluation of the GCM/NCD was conducted concurrently the mid-point evaluation of the NCD-GAP. 16 Member States and 18 organizations in official relations with WHO responded to the questions on the GCM/NCD. Key informant interviews were also organized with 46 key stakeholders such as Member State representatives who had leading roles in GCM processes, United Nations agencies, academia, civil society organizations, private sector associations, other development partners and WHO staff.

Overview of results: The survey results showed a clear agreement that the overall purpose and functions of the GCM/NCD continue to be relevant, and noted that the specification of the functions could be improved by tailoring them to the different needs and gaps identified at the global, regional and country levels.

Key recommendations from the GCM evaluation:

- *The functions originally envisaged for the GCM/NCD remain valid and relevant to the NCD-GAP, the Thirteenth General Programme of Work, 2019–2023 and the Sustainable Development Goal targets to 2030. However, going forward, it is clear that the status quo is not an option. The GCM/NCD must ensure:*
- *A strengthened, more focused approach to delivery of the vital functions currently assigned to the GCM/NCD;*
- *To discontinue the mechanism, and establish a new operating model within WHO to ensure the functions are effectively carried forward. This could involve the functions of the GCM/NCD and its external engagement/linkage dimensions being undertaken either by the Global NCD Platform, one of the NCD technical departments or the Health and Multilateral Partnerships Department.*

Additional recommendations: WHO should

- *Develop a medium-term strategic plan with clear allocation of responsibility for the delivery of the five functions in synergy with the broader WHO strategy for implementing the NCD-GAP*
- *Enhance the country reach of WHO's work in delivering the five functions, with a particular focus on reaching national NCD focal points and country stakeholders.*
- *Formulate a clear engagement strategy with all stakeholders, We ask Member States to request that this includes guidance on how to identify, manage and mitigate conflict of interest from health-harming commodity industries including alcohol and ultra-processed food.*
- *Take steps to rationalize approaches to resource mobilization for NCD-related efforts within WHO and among Member States.*

The Russian Federation has proposed the following decisions:

Following up on the mid-point evaluation of the WHO Global Action Plan for the Prevention and Control of NCDs 2013-2030 [extended from 2020] and in consultation with Member States, the decision would invite

WHO to make recommendations to reorient parts of the WHO Global NCD Action Plan 2013-2020, and submit an updated draft plan to the Seventy-fifth World Health Assembly in 2022. In addition, develop an options paper for the future of the WHO Global Coordination Mechanism, in response to the recommendations of the final evaluation of the GCM, in consultation with Member States. Submit a report to the Seventy-fourth World Health Assembly in 2021.

A separate Decision under item 6 is proposed to invite Member States to develop a Resolution for WHA74 (May 2021) to address diabetes as a public health problem as part of UHC. Noting: that diabetes is now in global Top 10 leading causes of death worldwide; deaths from diabetes have increased by 70% (80% for men) worldwide since 2000; the probability of dying from diabetes between the ages of 30 and 70 increased by 5% between 2000 and 2016 and that people living with diabetes are at higher risk from COVID-19. Globally, all regions are off track against the Global NCD target to halt the rise of diabetes by 2025, as adopted in 2013.

Key Messages:

We encourage Member States to emphasise the disproportionate impact of the COVID-19 pandemic on people living with NCDs (PLWNCDS) and the need to urgently step up policy action and investment in NCD prevention and care, for both recovery and future preparedness and health security.

COVID-19 has been recognised as a 'syndemic' with NCDs and inequality, with PLWNCDs at higher risk of worse outcomes of COVID-19, and major disruption of NCD care in almost all countries worldwide, which will multiply the toll of the virus itself. Please see NCDA briefing note on impact of COVID-19 on people living with NCDs and WHO assessment of NCD care and mental health care disruptions. Please also refer to UNGA omnibus resolution, with particular reference to NCDs and inclusion of people with lived experience in COVID-19 recovery and response plans.

- **Support the proposed decisions**, with addition of consultation of civil society and people living with NCDs. Call on WHO and Member States to include NCD prevention and control in security, preparedness and response.
- **Request Member States to work together to develop WHA74 Resolution on diabetes** including screening, diagnosis, care and type 2 diabetes prevention, including access to insulin and necessary devices and diagnostics. Include clear provisions on inclusion of PLWNCDs in decision-making at all levels. A forthcoming Cochrane review from WHO confirms obesity, a key risk factor for type 2 diabetes, is an independent prognostic factor in COVID-19 and patients are at increased risk of all adverse outcomes. Member States have an opportunity in a diabetes resolution to request global action on obesity, in both the context of COVID-19 and the Global Diabetes Compact.[1]
- **Mid-point evaluation of the Global NCD Action Plan: Strongly support the need to update the toolbox of policy options for Member States and to develop recommendations for cost-effective interventions. Emphasise the increased urgency of implementing policy responses at national level, to recover from COVID-19 and increase future health security and preparedness**, including to promote mental health and wellbeing and to reduce the burden of premature death and a range of NCDs caused and exacerbated by air pollution.
- **Recognise multimorbidity and co-morbidity with communicable diseases - including COVID-19 - and between NCDs, including mental health conditions** as a challenge to be considered in designing policy responses and UHC, and as an opportunity in addressing common risk factors and investing in affordable diagnostics, screening and early diagnosis of NCDs.

[1] NCDA member World Obesity Federation is working with WHO and interested Member States to advance action on obesity in the wake of COVID-19. A consultation to discuss a potential resolution on obesity is planned for Feb 2021.

• **Oral health (Document EB148/8 and proposed resolution)**

Additional point under item 6, proposed for inclusion by Sri Lanka. At the recommendation of the Executive Board, the report outlines the challenges to global public health posed by oral diseases, recent oral health activities of the Secretariat, and proposes actions towards better oral health by 2030 as part of the work on NCDs, UHC and the SDG agenda. The Board is invited to note the report, consider a draft resolution and provide guidance on the way forward.

The draft resolution, proposed by Sri Lanka, calls for a global strategy, action plan including 2030 targets, development of technical guidance on dental services and 'best buys' on oral health.

Key messages:

- NCDA and members strongly welcome the DG's report and the proposed resolution to increase political focus on oral health, noting shared risk factors (inter alia sugar, alcohol, tobacco consumption), a strong socio-economic gradient reflecting health inequalities from an early age, and comorbidities with other NCD conditions, such as head and neck cancers, type 2 diabetes, obesity and other diet-related NCDs, and major inequalities in access to oral health care. We particularly welcome the emphasis on prevention measures in the report and reiterate the untapped potential to prevent both oral health conditions and other NCDs with shared risk factors.
- Member States are encouraged to adopt the proposed resolution and to step up political commitment and action on oral health, recognising the widespread impact of oral diseases and high out-of pocket expenditures, globally and in particular in low- and middle-income countries and amongst marginalized populations.
- Member States are urged to take action on common risk factors, shared by other NCDs, including sugar, tobacco and alcohol consumption and underlying social and commercial determinants. These can be a basis for integrated strategies for prevention and control, noting that current WHO NCD 'Best Buys' in relation to tobacco, alcohol and diet are beneficial to oral health.
- With regard to the draft resolution, Member States are requested to emphasise the importance of dental research to strengthen the evidence-base for oral disease prevention and oral health promotion, including research into associations between oral diseases and other diseases. Member States are also asked to consider inclusion of cleft lip and palate as the second most common birth defect worldwide, and to consider recommending community-based methods for improved delivery of fluoride, i.e. community water fluoridation (as per resolution WHA60.17).
- Member States are urged to act on resolution WHA60.17, the 2011 Political Declaration of the first UN HLM on the Prevention and Control of Non-communicable Diseases, 2017 Minamata Convention on Mercury and Political Declaration of the 2019 UN HLM on UHC. In particular, Member States should:
    - Meaningfully engage people living with oral disease, oral health professionals and civil society organisations in planning, development, monitoring and evaluation of oral health care services.
    - Recognise that oral health conditions are estimated to affect 3.5 billion people worldwide, and integrate oral health into country level NCD strategies and legislation, focusing on shared risk factors such as tobacco and harmful alcohol use, unhealthy diets and poor hygiene through

measures to limit on availability, affordability and accessibility of unhealthy commodities, including taxation, and strengthening of health-promoting environments.

- Integrate NCDs, including oral health, into UHC programmes and primary health care to provide populations equitable access to oral health care including essential medical consumables, medication and equipment/supplies, financial protection against out-of-pocket health expenditure and orientation of the oral health workforce to ensure integrated, people-centered health services. This must include sufficient oral health budgets and improved oral health surveillance, data collection and monitoring.
- Integrate oral health, as well as other NCDs, into health and development priorities and programmes, including maternal, child and adolescent health, nutrition, education programmes, and healthy aging, to maximise potential for preventive action and equitable access to care for both oral health conditions and related NCDs / comorbidities.

Agenda item 7: Expanding access to effective treatments for cancer and rare and orphan diseases, including medicines, vaccines, medical devices, diagnostics, assistive products, cell- and gene-based therapies and other health technologies; and improving the transparency of markets for medicines, vaccines and other health products (Document EB148/9)

At the recommendation of the EB in 2019 and following resolutions WHA70.12 (2017) and WHA72.8 (2019), the progress report includes access to health products for rare and orphan diseases. The Board will be invited to note the progress made and to provide further guidance on optimizing access to cell- and gene-based therapeutics and other health products for rare and orphan diseases.

The report includes regional updates undertaken by the WHO to increase transparency (such as information exchange platforms in EURO and EMRO, and work to explore legislative barriers to transparency in EURO and PAHO) and renewed support for the continuation of the fair pricing forum as a platform to continue discussions and collaborative work on the topic.

Key Messages:

- Welcome the report as a next step in improving access to essential treatments for people living with cancer and other NCDs.
- Welcome recognition of the Fair Pricing Forum and encourage its further promotion and political commitment to carry forward discussions. Member States are strongly encouraged to call for inclusion of people living with NCDs in the 2021 Fair Pricing Forum as well as any regional or country level discussions on pricing transparency.
- Member States are strongly encouraged to use the MedsPaL database and engage in pricing transparency discussions as a method to reduce out-of-pocket payments for people living with NCDs.
- Welcome the increased awareness and use of patent databases in order to build capacity for the proper implementation of intellectual property laws in line with TRIPS and that make sure of its flexibilities to improve access. We encourage WHO and Member States to engage with organisations including Medicines Patent Pool to disseminate information on the status of patients and licenses.
- Encourage WHO to expand pre-qualification lists to support Member States in improving access and affordability of medicines.
- Recognise that work to improve access to essential treatments should be holistic and Member States should also consider the rational selection and procurement of essential diagnostics and assistive

products based on national needs. To support this we encourage WHO to harmonise the essential medicines and essential diagnostics lists.

- Support the principle of transparency as part of good governance and the sharing of information. We recognise that we still need more data on which specific actions lead to better access and would encourage Member States to utilise the policy options contained in WHO's 2018 Technical report pricing of cancer medicines and its impacts.
- While price transparency is one aspect of improving access, focus also needs to stay on other important aspects of improving health infrastructure and optimal use of health expenditure, policies to increase the uptake of quality assured generics and biosimilars, capacity building for local manufacturers and support to facilitate the transfer of technologies.
- Encourage Member States to engage non-government organisations as a key partner in taking these actions forwards, recognising the additional skills, expertise and resources which many NGOs are keen to contribute to national efforts to improve access to essential medicines, technologies and vaccines to prevent and treat cancer and other NCDs.

A draft resolution, "Strengthening Local Production of Medicines and Other Health Technologies to Improve Access", is proposed by Ethiopia. This resolution notes the challenges Member States face in promoting sustainable local production of quality, safe, effective and affordable medicines and other health technologies to benefit public health and health security. It urges Member States and WHO to strengthen local, regional and global policies and mechanisms to promote quality and sustainable local production of medicines and health technologies.

Key Messages:

- Welcome the proposed resolution to support local production of medicines and health technologies, where appropriate based on the national context, and call upon Member States to support the resolution. People living with NCDs require access to quality essential medicines and health technologies. However marginalised populations and those living in low- and middle- income countries currently experience difficulties in accessing safe, appropriate essential medicines and health technologies. Those that do source such products often experience large out-of-pocket payments.[2]
- Endorse the call to use holistic approaches to strengthening local production including South-South and North-South development cooperation, partnerships and networks, establishment of national/regional pooled funds and incentives as well as call for enhanced inter-ministerial policy coherence.
- The text needs to be strengthened related to Member States' technical ability and regulatory (legal) standards as the foundation for these efforts. Member States are requested to more strongly emphasise the pivotal role of regulatory frameworks alongside the development of evidence-based holistic national policies, strategies and plans of action to ensure safe, quality and sustainable local production. Support for development and monitoring of national regulatory frameworks could also be provided by subregional, regional and global networks.
    - WHO has developed guidance and also a global benchmarking tool.
- Member states should include text to
    - Ensure that medicines are quality-assured and follow GMP (Good Manufacturing Practices (GMP), which is a system for ensuring that products are consistently produced and controlled according to quality standards.)

[2]https://ncdalliance.org/resources/protecting-everyone-integration-of-noncommunicable-diseases-into-universal-health-coverage-in-the-era-of-covid-195

    - Address the problem of substandard medicines
    - Address problems related to supply chains. Local production will be susceptible to supply chain constraints which are not yet considered in the zero draft.
    - Address the need to strengthen national research as part of the holistic approach to strengthening local production.
- Advise Member States to remove reference to promotion of the local production of traditional medicines due to the limited available research on their efficacy or safety, and there is a lack of regulatory oversight. In many countries around the world, unproven traditional medicines are taken in place of proven treatments for conditions such as cancer, wasting valuable time in treatment pathways with the patient moving from curative to non-curative disease. Member States are instead advised to focus efforts on promotion of local production of allopathic medicines. If the reference to traditional medicines is included in the resolution, urge member states to include strict regulatory oversight.
- Request Member States include local production of assistive technologies alongside medicines and other health technologies within this resolution. Rehabilitation is an essential component of the continuum of care and assistive technologies, which Member States have resolved to improve access to through the resolution "Improving access to assistive technology" (WHA71.8), are vital for many people living with NCDs and disabilities. We remind Member States of the United Nations Convention on the Rights of Persons with Disabilities and that one billion people need assistive technology but that 90% of those do not have access to it. Local production of assistive technologies can be part of the solution to this problem.

Agenda item 9: Antimicrobial resistance (Document EB148/11)

Pursuant to resolution WHA72.5 (2019), the DG's report outlines progress in implementing the global action plan on antimicrobial resistance; provides an update on activities towards achieving the five strategic objectives of the global action plan, on progress in global coordination and tripartite partnership efforts; and highlights the main country-level and global challenges in programme implementation.

The EB is invited to note the report and provide guidance on accelerating Member States' implementation of national action plans on antimicrobial resistance and on enhancing feedback from health ministries on the process to review the Codex Code of Practice to Minimize and Contain Foodborne Antimicrobial Resistance.

Key Messages:

- Member States are urged to recognise the strong bilateral relationship between infectious diseases and noncommunicable diseases. 8.4% of global NCD disability adjusted life years (DALYs) are attributable to infection.[3] Many people living with NCDs are at increased risk of developing infectious disease due to disease or medication affecting their immune system e.g. people living with cancer. The growing threat from antimicrobial resistance further jeopardizes the health of people living with NCDs.
- Member States are strongly advised to increase provision of data through the Global Antimicrobial Resistance and Use Surveillance System (GLASS), adhere to the Minimum Requirements for infection prevention and control programmes and establish Antimicrobial stewardship programmes at national level. Partners such as WHO are encouraged to support countries' antimicrobial susceptibility testing.
- NCDA, UICC and partners, welcome the One Health approach and acknowledgement of the need for multi sectoral collaboration. We also welcome inclusion of indicator 3.d.2 on antimicrobial resistance

[3] https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(20)30358-2/fulltext

globally into the Sustainable Development Goals. Member States are called to meaningfully include people living with NCDs in multisectoral antimicrobial resistance working groups.

- Welcome the report and congratulate WHO on the development of valuable normative tools identified in the report.
- AMR has significant potential to undermine key advances made in the effectiveness of cancer and NCD care, undermining or eliminating the effective use of certain key treatment modalities (including surgery and certain chemotherapies).
- Encourage WHO and Member states to think beyond the usual partners in the national responses to AMR. In particular, to equip and engage with the cancer and NCD community in the development and implementation of AMR responses e.g. inclusion of oncology teams in national stewardship training programmes and guidance on AMR as a key group to support the roll-out of these measures.
- Encourage both WHO and Member States to collect and disaggregate data to better understand the impact of AMR on the successful treatment of cancer and other NCDs to better inform and refine national AMR strategies.

Agenda item 13: Integrated people-centred eye care, including preventable vision impairment and blindness (Document EB148/15)

In response to resolution WHA73.4 (2020) requesting the WHO DG to prepare recommendations on feasible global targets for 2030 on integrated people-centred eye care, focusing on effective coverage of refractive error and effective coverage of cataract surgery, the WHO Secretariat consulted Member States, experts and stakeholders from July to November 2020.

The Secretariat published a discussion paper in October with preliminary recommendations for targets, and received comments through a web-based consultation. The report includes recommendations for global targets for 2030 for effective coverage of both treatment of refractive error and cataract surgery, for consideration by WHA74.

The proposed global target for effective coverage of refractive error is a 40% increase by 2030: Countries with a baseline effective coverage rate of 60% or higher should strive for universal coverage. Countries should aim to achieve an equal increase in effective coverage of near and distance refractive error in all relevant population subgroups.

The recommended global target for effective coverage of cataract surgery is a 30% increase by 2030: Countries with a baseline effective coverage rate of 70% or higher should strive for universal coverage. Countries should aim to achieve an equal increase in effective coverage of cataract surgery in all relevant population subgroups.

EB148 is invited to consider the proposed draft global targets for 2030 and provide further guidance.

Key message:

- NCDA and partners commend the attention given to the global burden of refractive errors and cataract - the leading causes of blindness and vision impairment. This is an important step as global eye care needs, especially those for refractive errors and cataract, are expected to increase substantially in the coming decades, with the number of people living with blindness and severe vision impairment projected to double by 2050.
- NCDA and partners welcome the open and collaborative process which led to the development of the proposed global targets for 2030. Engaging communities, civil society and people with eye care needs

in policy discussions is a major pillar of Integrated People-centred Eye Care (IPCEC), and a sure way to ensure that services are planned to address unmet needs and marginalized populations.

- We urge Member States to adopt the targets and rapidly increase effective coverage of refractive error and cataract surgery to address as a strategy chronic inequalities in access to eye-care services, which further exacerbate socio-economic inequalities by impairing access to employment and learning. These indicators also reflect broader eye care and should focus on the strength of the overall eye care system which will address other eye health conditions and can also reflect broader health coverage such as health services for older persons.
- We call on governments to integrate eye care strategies into wider country-level NCD strategies, which in turn are integrated into UHC frameworks to ensure sustainable, person-centered responses. We urge Member States to meaningfully involve people living with eye conditions in all decision making and policy development processes.
- NCDA and partners urge the WHO Secretariat to facilitate effective, timely and transparent monitoring and evaluation of progress on these targets to promote accountability and learning opportunities amongst member States. We call for the disaggregation of data across groups such as women and girls, people with disabilities, Indigenous peoples and other disadvantaged groups; to ensure increases in coverage do not focus only on those easiest to reach, leaving marginalised people behind.

Pillar 2: One billion more people better protected from health emergencies

14. Public health emergencies: preparedness and response

COVID-19 has been recognised as a 'syndemic' with NCDs and inequality, with PLWNCDs at higher risk of worse outcomes of COVID-19, and major disruption of NCD care in almost all countries worldwide, which will multiply the toll of the virus itself. Please see NCDA briefing note on impact of COVID-19 on people living with NCDs and WHO assessment of NCD care and mental health care disruptions. Please also refer to UNGA omnibus resolution, with particular reference to NCDs and inclusion of people with lived experience in COVID-19 recovery and response plans.

14.1 COVID-19 response (Document EB148/16)

Further to the document submitted to the Executive Board at its fifth special session (on the COVID-19 response), the report updates the Board on the Secretariat's activities to combat the pandemic of coronavirus (COVID-19). An online COVID-19 Strategic Preparedness and Response monitoring framework is now online, which provides a global overview of resources made available by WHO and UN entities. The report notes that WHO is currently undertaking a second pulse survey to monitor the impact on essential health services - the first pulse survey in August 2020 demonstrated severe disruption of NCD services in almost all countries, including screening, diagnosis, rehabilitation, surgery and palliative care.

14.2 WHO's work in health emergencies (Document EB148/17 - scheduled 13 January)

Pursuant to requests in resolution EBSS3.R1 (2015), decision WHA68(10) (2015) and resolution WHA73.8 (2020), the Director-General will submit a report which will: provide updates on all public health emergencies of international concern, Grade 3 and United Nations Inter-Agency Standing Committee Level 3 emergencies in which WHO took action in 2020 (up to August) and on the progress made to improve research and development for potentially epidemic diseases; and describe the work WHO is undertaking at global, regional and country levels in order to prepare for, prevent, detect and respond to health emergencies, including its role as health cluster lead. The Board will be invited to note the report.

• **Strengthening WHO's global emergency preparedness and response (Document EB148/18 - to be scheduled)**

Proposed by the USA for inclusion under agenda item 14.2. At the recommendation of the Officers of the Executive Board, the Director-General will submit a report on strengthening WHO's global emergency preparedness and response. It is intended that the report will support a discussion on the opportunities for making progress on strengthening the capacity of the WHO Secretariat and Member States to fulfil their respective roles in preventing, detecting and responding to health emergencies, 1 Document EB145/2019/REC/1, summary record of the first meeting, section 5. 2 Document EBSS/5/2. EB148/1 (annotated) 4 including outbreaks, in order to protect and improve global public health by full implementation of the International Health Regulations (2005).

• **Strengthening preparedness for health emergencies: Implementation of the International Health Regulations (2005) (Document EB148/19 - to be scheduled)**

Pursuant to requests made by the Health Assembly in resolutions WHA73.1 (2020) and WHA73.8, on September 2020 the Director-General convened the Review Committee on the functioning of the International Health Regulations (2005) during the COVID-19 response. The Director-General will transmit the Review Committee's interim progress report to the Executive Board for its consideration.

14.3 Mental health [and neurology] preparedness and response for the COVID-19 pandemic (Document EB148/20)

A resolution on mental health preparedness and response has been proposed by Thailand. The DG's report emphasises the mental health dimension of the COVID-19 pandemic, noting that before the pandemic almost 1 billion people were living with a mental health condition, a further 50 million people have dementia and 250 million people live with alcohol or substance abuse disorders. The report notes that mental health conditions often occur alongside other chronic health conditions. It has been estimated that over 75% of people with mental health conditions in some LMICs cannot access mental health care. Furthermore, mental health services have been disrupted in 93% of countries during the pandemic.

The report highlights that mental health considerations are essential in all preparedness actions and responses to COVID-19, and that mental health must be included in universal health coverage as countries recover from the pandemic. Importantly, the report also observes the long-term neurological impacts of COVID-19, which will need to be reflected in health systems' capacity to provide care for people living with 'long COVID'. The Board is invited to note the report and consider the proposed resolution.

Key Messages

- **We ask Member States to request an NCD-specific subitem to this agenda item at WHA74 to examine the disproportionate impact of the COVID-19 pandemic on people living with NCDs (PLWNCDS).**

- **Recognise the need to urgently step up policy action and investment in NCD prevention and care, for both recovery and future preparedness and health security.**
- **Recognise multimorbidity and co-morbidity with communicable diseases - including COVID-19 - and between NCDs, including mental health conditions** as a challenge to be considered in designing policy responses and UHC, and as an opportunity in addressing common risk factors and investing in affordable diagnostics, screening and early diagnosis of NCDs.
- **Request technical guidance on how to mitigate increased population exposure to NCD risk factors during and beyond the pandemic**, particularly alcohol, tobacco and barriers to healthy diets and

physical activity, as well as mental health stressors. Policy action is needed to address prevention and treatment in the short- and long-term, including ensuring access to safe, nutritious and sustainable diets, stronger food systems and increased access to physical activity and improved mental health, to support a sustainable recovery and future resilience.

- **Strongly support the need to update the toolbox of policy options for Member States and to develop recommendations for cost-effective interventions. Emphasise the increased urgency of implementing policy responses at national level, to recover from COVID-19 and increase future health security and preparedness**, including to promote mental health and wellbeing and to reduce the burden of premature death and a range of NCDs caused and exacerbated by air pollution. These interventions should be implemented to reach SDG3.4 and contribute across Agenda 2030 more broadly, including poverty reduction, (gender) equity and environmental goals.

Pillar 3: One billion more people enjoying better health and wellbeing

Agenda item 16. Social determinants of health (Document EB148/24)

At the recommendation of the Officers of the Executive Board, the Director-General has submitted a report on addressing social determinants of health (SDoH), namely, the conditions in which people grow, learn, live, work and age. Negative consequences on many health outcomes and on health equity, are being further emphasised by the toll of COVID-19. The Board is invited to note the report and provide further guidance.

A **resolution** has been proposed by Peru, which aims to recognise the need to establish, strengthen and maintain monitoring systems, including observatories, to provide data to assess health inequalities and the impact of policies on SDoH at national, regional and global levels. Data on SDoH would serve to guide national decision-making processes for strategies, policies and plans to improve wellbeing for all and health equity.

Key Messages

- Strongly support a stronger focus on social, as well as *economic, environmental and commercial determinants* of health across all WHO activities and request increased technical support to member states to integrate into national and regional policies and responses.
- A stronger focus on SDoH and reducing health inequalities, explicitly including NCD prevention and treatment, is essential for recovery from the pandemic and to increase population resilience to future health threats.
- Broader SDoH are relevant across NCDs and mental health conditions. Member States are requested to highlight that COVID-19 has further revealed the uneven burden of NCDs, as people living with NCDs are at significantly higher risk of serious illness. Both NCD and COVID-19 impacts are inequitable across different communities and are further widening health inequalities (socio-economic gradient, people of colour, Indigenous communities, women, older people, youth, marginalised groups, etc.)
- As well as the examples provided in the report, Member States are asked to specifically consider the impact of unhealthy environments, in terms of barriers to access to health services and in relation to availability, affordability and attractiveness (via marketing, promotion) of health harming products, including tobacco, alcohol and ultra-processed, high fat sugar and salt foods. Whilst the report mentions food insecurity, unhealthy, obesogenic food environments merit more specific consideration.

- The COVID-19 pandemic doubly risks further widening health inequalities, because of inequitable access to health services as well as unequal exposure to major NCD risk factors: tobacco, alcohol, unhealthy food, physical inactivity and pollution, overlapping with poorer living and working conditions. The tobacco, alcohol and junk food industries in particular have been shown to be exploiting the pandemic to promote unhealthy products and promote weaker regulation, see for example, NCDA and Spectrum (2020) *Signalling Virtue, Promoting Harm.*
- Encourage Member States to reflect on SDoH within their own national contexts and to take an explicit focus within health planning, particularly for NCDs, in order to ensure policy coherence and that the unintended consequences of previous national health, trade, urban development, and energy strategies do not continue to undermine the health of populations in the future and stretch limited health resources even thinner.

Pillar 4: More effective and efficient WHO providing better support to countries

Agenda item 19.2: WHO reform: involvement of non-State actors in WHO's governing bodies (Document EB148/35)

In February 2020, EB146 noted the proposals for improving involvement of non-State actors in WHO governing bodies, and requested a revised report to the Board. The report provides further information and proposals for informal meetings between non-State actors, WHO technical units and Member States. The Board is invited to decide if the proposed new approach to non-State actor involvement and the informal meeting should be tested at WHA74. There is general consensus that current ways of operating are not satisfactory for Member States, nor for non-State Actors. Ways forward must better ensure that engagement is meaningful, relevant and efficient, and respects diversity of NSA perspectives. Recognition that NSA participation in WHA73 was 'less satisfactory than normal'. Dr Tedros has noted the benefits of engaging with civil society e.g. through the WHO Civil Society Working Group on NCDs.

Proposed changes: *in addition to NSA participation in governing body meetings*

- Informal virtual technical coordination meetings (3x 3hrs) for NSAs in WHO official relations with WHO technical units, 2-4 weeks ahead of WHA
- Additional (3x 3hr) meetings of Member States and NSAs regarding WHA agenda points, to allow exchange of views
- Opportunity to organise side events alongside the coordination meetings, in advance of WHA – implied this would be instead of side events during WHA itself.
- Online consultations
- Development of constituency statements and limit individual statements to 3 per organisation
- Potential limits to size of NSA delegation

Key messages

- Welcome opportunity for further collaboration and communication with Member States and WHO technical teams. We however reiterate our request that consultations should also take place early in the preparation of technical documents, in relation to Zero drafts, as well as in advance of WHA.
- In order to maximise participation and exchange, particularly from member states, these meetings must be timed not to clash with formal preparatory meetings, e.g. PBAC. We are concerned by the implication that side events would no longer take place during WHA itself, noting potential impacts on participation.

- Applaud WHO's thinking to use new technologies to broaden out participation, recognising that the voices of NSAs representing smaller constituencies and from low- and middle-income countries face multiple barriers to participating in the meetings of Governing Bodies. This could set an important precedent as well for civil society consultation in preparation of Regional Committee meetings.
- Would welcome greater clarity on the modalities of the actions confirmed in order to better understand their implications for the global NCD community including how agenda items for these discussions will be selected, representation by non-state actors, capacity to submit questions and additional resources in a timely manner, etc.
- Urge WHO to recognise that informal discussion are an excellent complement to, but *not a replacement for*, comprehensive consultations on key documents as the latter will facilitate the more effective consolidation of resources (including data) to support the work of WHO technical teams
- We also strongly encourage the WHO to invite constituency statements on a *voluntary basis*, with clearer information on the incentives provided to support this. Mandatory constituency statements run the risk of marginalising minority voices from discussions, while voluntary constituency statements enables the ah-hoc and agile development of groups around consensus messages without the risk of marginalising minority groups. Clear guidelines should be provided on additional time for constituency statement and the minimum number of organisations required to qualify as a constituency.

Agenda item 19.3: Global strategies and plans of action that are scheduled to expire within 1 year
The global health sector strategies on, respectively, HIV, viral hepatitis and sexually transmitted infections, for the period 2016–2021 (Document EB148/37)

The report describes progress made in tackling HIV, viral hepatitis and sexually transmitted infections, the challenges faced in achieving the 2030 goals, the lessons learned to date and makes a case for strategies from 2022-2030.

Key message: The report notes synergies between the strategies and HPV vaccination strategies for cervical cancer elimination. This is one important area of overlap between communicable disease communities and NCDs, but there are many other common comorbidities. The potential for synergies between communicable and NCDs should be more fully explored in a future consultation process on updating the strategies and aligning with strategic reviews of the Global Fund, UNAIDS and the Global Financing Facility. Please see NCDA (2020) briefing *Improving quality of life for communities living with HIV, TB and malaria*.

In case of questions or feedback, please contact info@ncdalliance.org.

From: Lindsey Horan
Sent: Mon, 4 Jan 2021 14:57:42 +0000
To: D'Souza, Rena (NIH/NIDCR) [E]; Horsford, Jonathan (NIH/NIDCR) [E]; Meister, Alissa (NIH/NIDCR) [E]; Stredrick, Denise (NIH/NIDCR) [E]
Cc: Fox, Christopher (IADR); Makyba Charles-Ayinde; Susan Douglas; New, Suzanne (NIH/NIDCR) [E]
Subject: NIDCR-AADR Meeting Agenda - January 5, 2021
Attachments: January 2021 AADR NIDCR Agenda.pdf, B148_1(annotated)-en.pdf, EB148_8-en Oral Health.pdf

Dear NIDCR Team,

Happy New Year!

We look forward to our first NIDCR/AADR monthly meeting of 2021 tomorrow. Please find attached the agenda for our discussion.

Speak with you soon!

Sincerely,

Lindsey Horan, M.A., Assistant Director of Government Affairs
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IADR CENTENNIAL

Upcoming Meetings:

NEW DATE		
IADR/AADR/CADR General Session & Exhibition	July 21-24, 2021	Boston, Mass., USA
AADR/CADR Annual Meeting & Exhibition	March 23-26, 2022	Atlanta, Ga., USA
IADR/APR General Session & Exhibition	June 22-25, 2022	Chengdu, CHINA

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NIDCR – AADR Monthly Meeting
Tuesday, January 5, 2021
4:00 p.m. ET

AGENDA

D'Souza, Horsford, Stredrick, Meister, Fox, Charles-Ayinde, and Horan

1. COVID-19-Related Updates
    a. Updates from NIDCR
    b. Updates from AADR

2. IADR Update
    a. "Oral Health" on World Health Organization Executive Board Agenda, January 2021

3. Science Policy Update
    a. FDA Modified Risk Tobacco Product Applications: Camel Snus Smokeless Tobacco Products
    b. Transfer of the Office of Nutrition to the Division of Program Coordination, Planning and Strategic Initiatives

4. Legislative Update

5. NIDCR Updates

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World Health Organization

EXECUTIVE BOARD
148th session
Geneva, 18–26 January 2021

EB148/1 (annotated)
14 December 2020

Provisional agenda (annotated)

1. Opening of the session and adoption of the agenda

During the opening of the session, Members of the Executive Board will be invited to also consider the adoption of special procedures to regulate the conduct of the virtual sessions of the Executive Board allowing it to pursue its work in a virtual format.

2. Report by the Director-General

3. Report of the regional committees to the Executive Board

In decision WHA65(9) (2012), the Health Assembly endorsed the proposal that the chairpersons of the regional committees routinely submit to the Board summary reports of the committees' deliberations. The Board will be invited to consider the recommendations and comments of the regional committees.

4. Report of the Programme, Budget and Administration Committee of the Executive Board

The Board will receive at the opening of its session the report of the thirty-third meeting of the Programme, Budget and Administration Committee, which is scheduled to be held from 13 to 15 January 2021.

Pillar 1: One billion more people benefitting from universal health coverage

5. Global action on patient safety

Patient safety is a growing global challenge and is a prerequisite for strengthening health care systems and making progress towards effective universal health coverage under Sustainable Development Goal 3. In response to the request in resolution WHA72.6 (2019), the Director-General will submit a draft global patient safety action plan. The report will outline the purpose, vision, guiding principles, framework for action with strategic objectives, and the global patient safety targets. The Board will be invited to consider a draft decision recommending that the Seventy-fourth World Health Assembly endorse the global action plan.

6. Political declaration of the third high-level meeting of the General Assembly on the prevention and control of non-communicable diseases

A report will be submitted in response to the request in decision WHA72(11) (2019) to the Director-General "to consolidate reporting on the progress achieved in the prevention and control of noncommunicable diseases and the promotion of mental health with an annual report …, annexing reports on implementation of relevant resolutions, action plans and strategies, in line with existing reporting mandates and timelines". The report will also include the biennial report on the implementation of the commitments made in the Rome Declaration on Nutrition, adopted at the Second International Conference on Nutrition (2014). The Board will be invited to note the report and its annexes, adopt the proposed updates to the appendices of WHO's comprehensive mental health action plan 2013–2030, and provide guidance on the continued relevance of WHO's global action plan for the prevention and control of noncommunicable diseases 2013–2020 and the global coordination mechanism on the prevention and

control of noncommunicable diseases. In this exercise, the Board will be able to take into account the outcomes of two evaluations, the executive summaries of which will be submitted by the Evaluation Office in separate reports.

- Oral health

At the recommendation of the Officers of the Executive Board, the Director-General will submit a report outlining the challenges to global public health posed by oral diseases, recent oral health activities of the Secretariat, and actions towards better oral health by 2030 as part of the work on noncommunicable diseases and universal health coverage. The Board will be invited to note the report and provide guidance on the way forward.

7. Expanding access to effective treatments for cancer and rare and orphan diseases, including medicines, vaccines, medical devices, diagnostics, assistive products, cell- and gene-based therapies and other health technologies; and improving the transparency of markets for medicines, vaccines and other health products

At the recommendation of the Officers of the Executive Board in 2019,[1] and pursuant to resolutions WHA70.12 (2017) and WHA72.8 (2019), the Director-General will submit a report on progress that includes access to health products for rare and orphan diseases. The Board will be invited to note the progress made and to provide further guidance on optimizing access to cell- and gene-based therapeutics and other health products for rare and orphan diseases.

8. Global strategy and plan of action on public health, innovation and intellectual property

In response to the request in decision WHA73(11) (2020), the Director General will submit a report on progress made in implementing the decision, including an update on the informal consultations referred to in paragraphs (2) and (3) of the decision. The Board will be invited to note the report.

9. Antimicrobial resistance

Pursuant to resolution WHA72.5 (2019), the Director-General will submit a report that: outlines progress in implementing the global action plan on antimicrobial resistance; provides an update on activities towards achieving the five strategic objectives of the global action plan, on progress in global coordination and tripartite partnership efforts; and highlights the main country level and global challenges in programme implementation. The Board will be invited to note the report and provide guidance on accelerating Member States' implementation of national action plans on antimicrobial resistance and on enhancing feedback from health ministries on the process to review the Codex Code of Practice to Minimize and Contain Foodborne Antimicrobial Resistance.

10. Substandard and falsified medical products

Pursuant to resolution WHA65.19 (2012) a report based on the outcomes of the eighth and ninth plenary meetings of the Member State mechanism on substandard and falsified medical products will be submitted to the Seventy-fourth World Health Assembly through the Board. It will include a review of the progress made in implementing the workplan (list of prioritized activities) for the period of 2020–2021. The Board will also receive information on the one-year extension of the current composition of the Steering Committee in order to align the term of office of the Steering Committee with the timespan of the workplan.

[1] See Note for the Record of the meeting of the Director General and the Officers of the Executive Board on 5 and 6 October 2019 (https://apps.who.int/gb/gov/assets/NFR_5-6-10-2019_en.pdf, accessed 14 December 2020).

11. Standardization of medical devices nomenclature

As agreed by the Board at its 145th session,[1] the Director-General will submit a report on further work undertaken and the outcome of consultations. It will include an analysis of existing systems and confirmation that WHO will neither develop a new nomenclature of medical devices nor adopt a proprietary system but will harmonize with the European Medical Device Nomenclature, which will support regulation, assessment and management of medical devices to improve access. The Board will be invited to note the progress made and provide further guidance, for instance on the next steps.

12. Immunization Agenda 2030

Following the request in decision WHA73(9) (2020), the Director-General will submit a report on the finalization of the operational elements outlined in the Immunization Agenda 2030. The Board will be invited to note the report and to provide guidance on the proposed frameworks for ownership and accountability and for monitoring and evaluation.

13. Integrated people-centred eye care, including preventable vision impairment and blindness

Pursuant to resolution WHA73.4 (2020), the Director General will submit a report with recommendations for feasible global targets for 2030 on effective coverage of both treatment of refractive error and cataract surgery, for consideration by the Seventy fourth World Health Assembly. The Board will be invited to note the report and provide further guidance.

Pillar 2: One billion more people better protected from health emergencies

14. Public health emergencies: preparedness and response

14.1 COVID-19 response

Further to the document submitted to the Executive Board at its fifth special session (on the COVID 19 response),[2] the Director-General will submit a report to provide the Board with an update on the Secretariat's activities to combat the pandemic of coronavirus (COVID 19).

14.2 WHO's work in health emergencies

Pursuant to requests in resolution EBSS3.R1 (2015), decision WHA68(10) (2015) and resolution WHA73.8 (2020), the Director General will submit a report which will: provide updates on all public health emergencies of international concern, Grade 3 and United Nations Inter Agency Standing Committee Level 3 emergencies in which WHO took action in 2020 (up to August) and on the progress made to improve research and development for potentially epidemic diseases; and describe the work WHO is undertaking at global, regional and country levels in order to prepare for, prevent, detect and respond to health emergencies, including its role as health cluster lead. The Board will be invited to note the report.

- Strengthening WHO's global emergency preparedness and response

At the recommendation of the Officers of the Executive Board, the Director-General will submit a report on strengthening WHO's global emergency preparedness and response. It is intended that the report will support a discussion on the opportunities for making progress on strengthening the capacity of the WHO Secretariat and Member States to fulfil their respective roles in preventing, detecting and responding to health emergencies,

[1] Document EB145/2019/REC/1, summary record of the first meeting, section 5

[2] Document EBSS/5/2.

including outbreaks, in order to protect and improve global public health by full implementation of the International Health Regulations (2005).

- Strengthening preparedness for health emergencies: implementation of the International Health Regulations (2005)

Pursuant to requests made by the Health Assembly in resolutions WHA73.1 (2020) and WHA73.8, on September 2020 the Director-General convened the Review Committee on the functioning of the International Health Regulations (2005) during the COVID-19 response. The Director-General will transmit the Review Committee's interim progress report to the Executive Board for its consideration.

14.3 Mental health preparedness and response for the COVID-19 pandemic

At the recommendation of the Officers of the Executive Board, the Director General will submit a report on addressing the mental health dimension of the COVID 19 pandemic, including the essential place that mental health should have in all preparedness actions and responses to COVID 19, and on ensuring that mental health is included in universal health coverage as countries recover from the pandemic. The Board will be invited to note the report and provide further guidance.

14.4 The public health implications of implementation of the Nagoya Protocol

Pursuant to decision WHA72(13) (2019), the Director-General will submit a report on current pathogen-sharing practices and arrangements, the implementation of access and benefit-sharing measures, and the potential public health outcomes and other implications of implementation of the Nagoya Protocol. The Board will be invited to note the report and consider recommending that the Health Assembly request the Secretariat to continue its work in this area.

15. Poliomyelitis

15.1 Poliomyelitis eradication

In line with the request in resolution WHA61.1 (2008), the Director-General will submit an update on: efforts to interrupt remaining wild poliovirus transmission; the responses to outbreaks due to circulating vaccine-derived poliovirus type 2 and the introduction of novel oral polio vaccine type 2; the impact of COVID 19 on the polio eradication programme; a review of the governance of the Global Polio Eradication Initiative and the process for developing a new strategy; and the financing situation at end 2020. The Board will be invited to note the report.

15.2 Polio transition planning and polio post-certification

Pursuant to decision WHA70.9 (2017), the Director-General will provide a status update on the implementation of WHO's Strategic Action Plan on Polio Transition for the period 2019–2023, with a focus on measures taken to address those COVID-19 restrictions that risk impeding its implementation, as well as a summary of progress with priority country action plans. The Board will be invited to note the report.

Pillar 3: One billion more people enjoying better health and well-being

16. Social determinants of health

At the recommendation of the Officers of the Executive Board,[1] the Director-General will submit a report on addressing social determinants of health, namely, the conditions in which people grow, learn, live, work and age

[1] See document EB146/1 (annotated).

that have negative consequences on many health outcomes and on health equity, as illustrated by COVID 19. The Board will be invited to note the report and provide further guidance.

Pillar 4: More effective and efficient WHO providing better support to countries

17. Budget and finance matters

17.1 Proposed programme budget 2022–2023

Using input provided by the regional committees, the draft Proposed programme budget 2022–2023 will be submitted for consideration by the Board. In response to requests made at recent meetings of the governing bodies, the Board will also receive information on progress towards achieving the United Nations System-wide Action Plan on Gender Equality and the Empowerment of Women (UN-SWAP).

- Sustainable financing

In response to comments made during the discussions at the thirty-second meeting of the Programme, Budget and Administration Committee of the Executive Board, and in Committee B of the Seventy-third World Health Assembly (resumed), the Director-General will submit a report to enable the Board to discuss the subject of sustainable funding.

17.2 Update on the financing and implementation of the Programme budget 2020–2021

The Director-General will submit a report on the financing and implementation of the Programme budget 2020–2021, which the Board will be invited to note.

17.3 Scale of assessments 2022–2023

The Board will be invited to consider the scale of assessments for 2022–2023, together with a draft resolution recommending adoption of the scale by the Seventy-fourth World Health Assembly.

17.4 Status of collection of assessed contributions, including Member States in arrears in the payment of their contributions to an extent that would justify invoking Article 7 of the Constitution

The Director-General will submit a report on status of collection of assessed contributions, including Member States in arrears in the payment of their contributions to an extent that would justify invoking Article 7 of the Constitution.

17.5 Amendments to the Financial Regulations and Financial Rules [if any]

18. Update on the Infrastructure Fund

18.1 Update on information management and technology

In response to comments made during discussions of the Programme, Budget and Administration Committee of the Executive Board at its thirty second meeting,[1] the Director General will submit a report on the Secretariat's management of cybersecurity.

[1] Document EB146/3.

18.2 Geneva buildings renovation strategy

In line with decisions WHA69(18) (2016) and WHA70(16) (2017), and as requested by the Programme, Budget and Administration Committee of the Executive Board,[1] the Director-General will submit a report to update the Board on the status of the construction and renovation projects, and will provide details of progress made against previously reported timelines and cost updates.

19. Governance matters

19.1 WHO transformation

In response to the recommendation made by the Programme, Budget and Administration Committee of the Executive Board,[1] with which the Executive Board had concurred at its 146th session,[2] the Director-General will submit a report to update the Board on progress made in implementing the transformation agenda.

19.2 WHO reform

- WHO reform: governance

Further to the Board's request in decision EB146(21) (2020), the Director-General will submit recommendations drawn up after informal consultations with Member States on governance reform, held on 26 November 2020 and 8 December 2020. Member States considered establishing end dates for reporting on resolutions and decisions that have unspecified reporting requirements, and consolidating and managing reporting requirements on similar subjects. The Board will be invited to note the report and consider a draft decision.

- WHO reform: World health days

In response to comments made during the deliberations of Committee B of the Seventy-third World Health Assembly (resumed), the Director-General will submit a report in order to enable the Board to discuss the subject of world health days in the context of WHO reform.

- WHO reform: involvement of non-State actors in WHO's governing bodies

In February 2020 the Executive Board at its 146th session, noted the proposals for improving involvement of non State actors in WHO governing bodies, and requested the Secretariat to submit a revised version of the report to the Board at its 148th session.[3] This report responds to that request, and in particular provides further information and proposals for the informal meeting between non-State actors, WHO technical units and Member States. The Board is invited to note the report and decide if the proposed new approach to non-State actor involvement and the informal meeting should be tested at the Seventy-fourth World Health Assembly.

19.3 Global strategies and plans of action that are scheduled to expire within one year

- WHO global disability action plan 2014–2021: better health for all people with disability

As requested in decision WHA73(15) (2020) regarding global strategies or action plans that are scheduled to expire within one year, the Director-General will submit a report on the WHO global disability action plan 2014–2021.

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[1] Document EB146/3.

[2] See document EB146/2020/REC/2, summary record of the second meeting, section 3.

[3] See document EB146/2020/REC/2, summary record of the fourteenth meeting, section 5.

It will describe the progress made in implementing resolution WHA67.7 (2014) and the lessons learned. The Board will be invited to take note of the report and provide further guidance.

- The global health sector strategies on, respectively, HIV, viral hepatitis and sexually transmitted infections, for the period 2016–2021

As requested in decision WHA73(15) (2020) regarding global strategies or action plans that are scheduled to expire within one year, the Director-General will submit a report on the implementation of resolution WHA69.22 (2016) describing progress made in tackling HIV, viral hepatitis and sexually transmitted infections, the challenges faced in achieving the 2030 goals, and the lessons learned to date. The Board will be invited to take note of the report and provide further guidance.

19.4 Process for the election of the Director-General of the World Health Organization

In the context of the relevant Rules of Procedure, resolutions and decisions, the Note by the Legal Counsel will provide additional details on: the proposal of candidates, leave status of internal candidates, electoral campaign activities at sessions of the regional committees, candidates' forums, support for nominated candidates in the period between the relevant sessions of the Executive Board and the Health Assembly. Additionally, the Board will receive information on the process from an information management and technology perspective. The Board will be invited to note the Note by the Legal Counsel and to consider requesting the Secretariat to conduct a study on optical scanners with a view to reporting to the Seventy-fourth Health Assembly, and recommending that nominated candidates address the Health Assembly before the vote and that financial support for travel be provided to all candidates participating in the candidates' forums.

19.5 Engagement with non-State actors

- Report on the implementation of the Framework of Engagement with Non-State Actors

In accordance with resolution WHA69.10 (2016) and the Framework of Engagement with Non-State Actors (subparagraph 68(a)), the Director-General will submit the annual report on WHO's implementation of the Framework of Engagement with Non-State Actors, illustrating engagements with entities and reporting on the different aspects of the implementation of the Framework at the three levels of the Organization. The Board will be invited to note the report.

- Non-State actors in official relations with WHO

In line with the provisions of the Framework of Engagement with Non State Actors, the Executive Board is mandated, through its Programme, Budget and Administration Committee, to consider applications for admittance of non-State actors into official relations and to review collaboration with one third of the non-State actors in official relations in order to decide whether to maintain, defer the review or discontinue their official relations. The Board will be invited to note the report and to consider a draft decision.

19.6 Provisional agenda of the Seventy-fourth World Health Assembly and date and place of the 149th session of the Executive Board

20. Committees of the Executive Board

20.1 Foundation committees and selection panels

The Director-General will submit reports summarizing the outcomes of the meetings of the selection panels and committees of the foundations for the prizes to be awarded in 2021, including the nominations received, recommendations of the panels and/or committees.

21. Staffing matters

21.1 Statement by the representative of the WHO staff associations

21.2 Report of the Ombudsman

21.3 Human resources: update

The Director-General will provide an update on the implementation of the Organization-wide human resources strategy and its three pillars (attracting talent, retaining talent and an enabling working environment), together with an analysis of workforce data. In response to requests made at recent meetings of the governing bodies, and in the context of its consideration of human resources matters, the Board will also receive information on progress towards achieving the relevant aspects of the United Nations System-wide Action Plan on Gender Equality and the Empowerment of Women (UN-SWAP).

21.4 Amendments to the Staff Regulations and Staff Rules

Amendments to the Staff Rules made by the Director-General will be submitted for confirmation by the Board in accordance with Staff Regulation 12.2. Proposed amendments to the Staff Regulations will be presented for consideration by the Board for submission to the Seventy-fourth World Health Assembly. The Board will be invited to note the report and consider three draft resolutions.

21.5 Report of the International Civil Service Commission

The Director-General will make the Commission's report and recommendations available to the Board. The Secretariat will provide the Board with a verbal summary of the salient points.

22. Report on meetings of expert committees and study groups

- Expert advisory panels and committees and their membership

In compliance with Regulation 4.23 of the Regulations for Expert Advisory Panels and Committees, the Director-General will submit a report on meetings of expert committees and study groups, including a summary of the recommendations contained in the reports of expert committees and observations on their significance for public health policies and implications for the Organization's programmes. The Board will be invited to note the report.

In addition, the Director-General will provide details of both meetings and membership in respect of expert committees that met in 2020.

23. Closure of the session

Note:

1. At their virtual meeting with the Director-General on 16 September 2020, convened in accordance with Rule 8 of the Rules of Procedure of the Executive Board, the Officers of the Executive Board discussed, among other things, the draft provisional agenda that had been transmitted to Member States for comment on 19 June 2020. They considered the implications for the agenda arising from the written silence procedure, together with a number of proposals for items to be added to the agenda, and agreed to make various recommendations.

2. The Secretariat explained that the written silence procedure, completed on 3 August 2020, had enabled four resolutions and eight decisions to be adopted. Of those, resolution WHA73.4 (on eye care) and decision WHA73(9) (on the Immunization Agenda 2030) requested the Director-General to take actions that were to be

considered by the Executive Board at its 148th session. A further decision thus adopted – WHA73(15) (on WHO reform: governance) – requested the Director-General to "systematically include as substantive items on the agendas of meetings of the WHO governing bodies any global strategies or action plans that are scheduled to expire within one year in order to allow Member States to consider whether global strategies or action plans have fulfilled their mandates, should be extended and/or need to be adjusted." As a result, the following needed to be considered by the Executive Board in January 2021:

- *WHO global disability action plan 2014–2021: better health for all people with disability (resolution WHA67.7) (2014). As one of the additional items, proposed by the Governments of Mexico, Israel and New Zealand, concerned dealing with challenges faced by persons with disabilities in times of emergency, this could be taken up on the Provisional agenda under either Pillar 1 or Pillar 4;*

- *The global health sector strategies on, respectively, HIV, viral hepatitis and sexually transmitted infections, for the period 2016–2021 (resolution WHA69.22) (2016).*

3. After discussing the outcome of the written silence procedure and the additional agenda items proposed by Member States, the Officers decided to recommend that the following items be included in the Provisional agenda, on the understanding that it was realistic and feasible for the Executive Board to deal with its agenda as amended:

- *following the written silence procedure:*

  (i) Immunization Agenda 2030, as new item 12

  (ii) Integrated people centred eye care, including preventable vision impairment and blindness, as new item 13

  (iii) the global instruments listed in paragraph 4 above, through the creation of a new item 19.3, entitled "Global strategies and plans of action that are scheduled to expire within one year";

- *the item on **oral health**, proposed by the Government of Sri Lanka, which would be added as a **bullet** under **existing item 6**;*

- *the item on **mental health preparedness and response for the COVID-19 pandemic**, proposed by the Government of Thailand, under **Pillar 2** in view of the strong links with emergency preparedness, with the Secretariat to decide on its exact positioning within **item 14**;*

- *the item on **strengthening WHO's global emergency preparedness and response**, proposed by the Government of the United States of America, which would be added as a **bullet** under **existing item 14.2**.*

4. Following an explanation from the Secretariat, the Officers also recommended that the following items be deleted from the Provisional agenda:

- ***Item 12.3** on **Pandemic influenza preparedness: sharing of influenza viruses and access to vaccines and other benefits** as the Secretariat had submitted a report to be considered by the Seventy third World Health Assembly at its resumed session,[1] in which the Secretariat explained that it had fully implemented the recommendations of the 2016 review to develop clear, harmonized and simplified reporting on implementation of the PIP Framework, and that all actions under resolution WHA64.5 and section 7.4.1 of the PIP Framework had been addressed;*

[1] Document A73/4 Add.1.

- ***Item 18.1** on **Membership of the Independent Expert Oversight Advisory Committee** as matters concerning membership needed to be discussed at the 149th session of the Executive Board.*

5. At a further virtual meeting with the Director General, convened on 27 November 2020, the Officers of the Bureau, among other things, reviewed an updated version of the draft Provisional agenda of the 148th session of the Executive Board, which had been prepared in order to indicate changes proposed to the draft Provisional agenda currently posted on the web. The proposed changes fell into two categories:

- *changes recommended by the Bureau at its previous meeting in September (including those mandated by resolutions and decisions adopted in August through the written silence procedure)[1]*

- *changes stemming from recommendations of the thirty-second meeting of the PBAC in October and resolutions and decisions adopted at the resumed sessions of the Health Assembly in November.*

6. The following changes were proposed, relating to mandates provided by the October and November sessions of the governing bodies:

- *following adoption of resolution WHA73.8, a second bullet point to be added under the subitem on WHO's work in health emergencies, entitled "Strengthening preparedness for health emergencies: implementation of the International Health Regulations (2005)";*

- *following the discussions at the thirty-second meeting of PBAC and in Committee B of the Seventy-third World Health Assembly (resumed), a bullet point to be added under the subitem on the Proposed programme budget 2022–2023, entitled "Sustainable financing";*

- *following the adoption of decision WHA73(31), under the item on Budget and finance matters, a new subitem 17.4 to be added, entitled "Status of collection of assessed contributions, including Member States in arrears in the payment of their contributions to an extent that would justify invoking Article 7 of the Constitution";*

- *following the PBAC's request to the Secretariat, at its thirty-second meeting, to submit a report on cybersecurity, the title of the item on Geneva buildings renovation strategy to be changed to read "Update on the Infrastructure Fund", with the old item title becoming the title of a second subitem; a new first subitem to be added, entitled "Update on information management and technology";*

- *following the discussion in Committee B of the Seventy-third World Health Assembly (resumed), under the item on Governance matters, a bullet point to be added below the subitem on WHO reform, entitled "WHO reform: World Health Days".*

*7. **United Nations System-wide Action Plan on Gender Equality and the Empowerment of Women (UN-SWAP).** In respect of requests made by PBAC and in Committee B of the Seventy-third World Health Assembly, the Secretariat did not propose to add an item on the UN-SWAP process, as the matter could be covered under the relevant section of the Proposed programme budget and under the subitem on the human resources update.*

*8. The Officers of the Board **agreed** that the Provisional agenda should be finalized by making the changes mentioned above.*

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[1] See the Note for the Record of the meeting of the Director General with the Officers of the Executive Board on 16 September 2020 (https://apps.who.int/gb/gov/en/chair-and-officers-of-the executive boar d_en.html).

World Health Organization

EXECUTIVE BOARD
148th session
Provisional agenda item 6

EB148/8
23 December 2020

Oral health

Achieving better oral health as part of the universal health coverage and noncommunicable disease agendas towards 2030

Report by the Director-General

1. Following a request from a Member State and the recommendation of the Officers of the Board and the Director-General in September 2020 to include an item on oral health in the provisional agenda of its 148th session, this report outlines the enduring global health challenges posed by oral diseases and details WHO's recent activities and regional and international initiatives to renew the political commitment to oral health. A set of actions is proposed, aimed at achieving better oral health as part of WHO's noncommunicable diseases and universal health coverage agendas, thus contributing to the achievement of the United Nations 2030 Agenda for Sustainable Development and its Sustainable Development Goals.

BURDEN AND IMPACT OF ORAL DISEASES

2. The most prevalent oral diseases include dental caries (tooth decay), periodontal (gum) disease, tooth loss, and cancers of the lips and oral cavity. Despite being largely preventable, these diseases are among the most prevalent noncommunicable diseases globally, with significant health, social and economic impacts. People are affected over their life course, from early childhood to adolescence, adulthood and later life.

3. More than 3.5 billion people suffer from oral diseases, without any notable improvement of the situation between 1990 and 2017. Untreated dental caries in permanent teeth is the single most prevalent condition globally, affecting 2.3 billion people. Severe periodontal disease, a major cause of total tooth loss, is estimated to affect 267 million people, particularly older people.

4. Cancers of the lip and oral cavity are among the top 15 most common cancers worldwide, with over 500 000 cases and nearly 180 000 deaths each year. In parts of the South-East Asia and Western Pacific regions, they are the leading cause of cancer-related deaths among males. Noma, a necrotizing disease starting in the mouth and fatal for 90% of the children affected, is a marker of extreme poverty. It leads to lifelong disability, affects learning opportunities and often results in social exclusion.

5. The burden of oral diseases shows significant inequalities, disproportionally affecting marginalized populations and those of lower economic status. Inequalities are found, as in other noncommunicable diseases, throughout the life course and across populations in low-, middle- and high-income countries. With limited resources for prevention and control, low- and middle-income countries face the highest burden of oral diseases.

6. Oral diseases are caused by a range of modifiable risk factors, including sugar consumption, tobacco use, alcohol use and poor hygiene, and their underlying social and commercial determinants. These determinants, together with common risk factors shared by noncommunicable diseases, provide the basis for integrated strategies for prevention and control.

7. Oral health is essential to good health and well-being. However, many people have untreated oral diseases, resulting in preventable pain, infection and reduced quality of life, in addition to missed school and productivity losses. Good oral health is also vital for healthy ageing, playing a crucial role with regard to nutrition, employment, self-esteem and continued social interaction.

8. Worldwide, oral diseases accounted in 2015 for US$ 357 billion in direct costs and US$ 188 billion in indirect costs. The same year, €90 billion was spent on treatment of oral diseases across the European Union, the third-highest total among noncommunicable diseases, behind diabetes and cardiovascular diseases. Oral health care is often not covered in primary health care, leading to considerable expense for individuals and society. High out-of-pocket expenditures particularly affect disadvantaged populations.

CHALLENGES TO MEETING THE ORAL HEALTH NEEDS OF POPULATIONS

9. Lack of political commitment and resources limit action on oral health. Opportunities to advocate for making essential oral health needs a higher priority, for example through integration with noncommunicable disease, maternal, child and adolescent health, and ageing and life course programmes, are often not utilized. Overall, the largely unchanging global burden of untreated oral diseases, the enduring lack of coverage of essential oral health care for large segments of the world's population, and increasing inequalities, are some of the symptoms of the continued low priority accorded to oral health.

10. Availability of technical capacity within ministries of health to develop, implement and evaluate cost-effective and integrated oral health action plans is often limited. Vertical disease-focused programming inhibits cross-sectoral collaboration and financing so that potential synergies are not leveraged.

11. Prevention of oral diseases is frequently not prioritized. Opportunities for oral health promotion in key settings – such as schools, communities and workplaces – are not systematically used. The use of fluorides for prevention of dental caries is limited, and essential prevention methods, such as use of fluoridated toothpaste, are often not affordable for many people. Moreover, oral health promotion is rarely integrated into other noncommunicable disease programmes that share major common risk factors and social determinants.

12. Current oral health systems have largely failed to reduce the burden and inequalities of oral diseases. Most countries rely on dentist-centred models with high technology and do not sufficiently encourage prevention. Low workforce numbers, especially in low- and middle-income countries, limit coverage and availability of essential oral health services that are usually not part of universal health coverage benefit packages. However, some countries have adopted workforce models that include primary health care and mid-level providers, such as dental therapists and hygienists, to improve access.

13. Adequate and up-to-date information about the burden of oral diseases is scarce, with indicators rarely included in national health information systems. Available oral health modules within existing WHO surveillance tools are not systematically used, and integration within national noncommunicable disease and risk factors surveillance is limited.

14. Monitoring and evaluation of existing programmes is generally weak, existing tools underutilized and results poorly documented. Oral health research output does not prioritize public health.

15. Awareness of the environmental impact of oral health care on planetary health, and of the challenges related to chemicals and management of waste (including mercury) need strengthening, in line with resolution WHA67.11 (2014) on implementation of the Minamata Convention on Mercury.

16. In the context of the COVID-19 pandemic, oral health services are among the most disrupted essential health services, with 60% of countries reporting partial and 17% severe/complete disruption of such services.[1] Oral health inequalities have been worsening as the COVID-19 pandemic evolves.

REGIONAL AND INTERNATIONAL COMMITMENT TO IMPROVING ORAL HEALTH

17. In 2007, resolution WHA60.17 set out effective oral disease prevention and control measures that need to be renewed and intensified as part of both the noncommunicable disease and universal health coverage agendas.

18. In 2011, the Political Declaration of the first High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases recognized that oral diseases pose a major challenge and could benefit from a common response.[2] This provided a strong policy basis for the integrated approach to the prevention and control of oral diseases.

19. The Minamata Convention on Mercury, which entered into force in 2017, obliges Parties to take selected measures to phase down the use of dental amalgam, a common mercury-containing dental filling material. Measures include the setting of national objectives aimed at dental caries prevention and oral health promotion, and encouraging insurance policies and programmes that favour the use of high-quality alternatives to dental amalgam for dental restoration.

20. The Political Declaration of the first High-level Meeting of the General Assembly on Universal Health Coverage (2019) included commitments to step up efforts to strengthen universal health coverage with the inclusion of oral health, providing a policy basis for accelerated action by Member States, the United Nations system and oral health stakeholders.[3]

21. The Lancet Commission on Oral Health, established in 2019 with WHO participation, aims to develop a new policy framework for ending the neglect of oral health in the global and national health agendas.

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[1] Pulse survey on continuity of essential health services during the COVID-19 pandemic: interim report, 27 August 2020. Geneva: World Health Organization; 2020 (https://apps.who.int/iris/rest/bitstreams/1297631/retrieve, accessed 29 October 2020).

[2] United Nations General Assembly resolution 66/2.

[3] United Nations General Assembly resolution 74/2.

PRIORITIES OF THE WHO GLOBAL ORAL HEALTH PROGRAMME

22. The priorities of the Global Oral Health Programme are as follows:

- implementing, in collaboration with WHO collaborating centres, academic partners and non-State actors, normative work and practical support to countries, with a focus on poor and marginalized populations, through a set of priority activities aligned with WHO's Thirteenth General Programme of Work;

- launching, in 2021, a global oral health report as a global public health good. Targeting policy- and decision-makers, the report will describe the burden, challenges and priority actions for renewing global commitment to improving oral health within the noncommunicable disease and universal health coverage agendas;

- ensuring the integration of oral health into other cross-cutting initiatives from different WHO programmes, including the Global Competency Framework for Universal Health Coverage and the UHC Intervention Compendium, as well as developing technical guidance, on topics such as ending childhood dental caries, tobacco cessation and oral health, and the provision of essential oral health services in the context of COVID-19;

- supporting implementation by Member States of the Minamata Convention as part of a broader environmental agenda, including through the road map for enhancing health sector engagement in the Strategic Approach to International Chemicals Management approved in decision WHA70(23) (2017), thus becoming a catalyst for reorienting dentistry and tackling the health, social and economic burden of oral diseases;

- developing, as part of the joint WHO-ITU BeHe@lthy, BeMobile initiative, an mOralHealth programme to improve oral health worldwide. Digital technologies can be used for health literacy, oral health behaviour change messaging, e-training, provider-to-provider telehealth and early detection and surveillance;

- strengthening oral health information systems and surveillance activities under integrated public health programmes through the development of standardized oral health indicators for population health surveys and facilitating their inclusion into national routine health information systems.

OPPORTUNITIES TO ADDRESS ORAL DISEASES IN NATIONAL AND INTERNATIONAL POLICY AGENDAS

23. Despite the efforts outlined above, access to prevention, early diagnosis and treatment of oral diseases is far from universal and remains unattainable for millions of people. Member States' commitment to strengthening and accelerating action on oral health, in their statement during the 146th session of the Executive Board, offers a firm basis for further action to boost national and international oral health policy agendas. Such action may include, but not be limited to:

- reducing common risk factors and promoting healthy environments by:

  – addressing the common risk factors of oral diseases and other noncommunicable diseases through an integrated approach, focusing on key risks, such as tobacco and harmful alcohol use, unhealthy diets and poor hygiene;

  - advocating for health taxes or bans on the sale and advertisement of unhealthy products, such as alcohol, tobacco and unhealthy food and sugary drinks, and counteracting the underlying commercial interests that drive key risks;

  - strengthening health-promoting environments in key settings, such as schools, workplaces and communities, through multisectoral action and a Health in All Policies approach;

  - promoting legislation to increase the affordability and accessibility of high-quality fluoride toothpaste and advocating for its recognition as an essential health product;

- strengthening health system capacities by:

  - focusing on integrated, population-wide prevention measures and access to primary oral health care as part of universal health coverage benefit packages;

  - accelerating the development of essential oral health care packages with evidence-based, cost-effective interventions to address population needs;

  - ensuring the affordability of essential medical consumables, generic drugs and other equipment or supplies for the management of oral diseases and other noncommunicable diseases;

  - supporting the development of digital health policy, legislation and infrastructure to expand the use of mobile technologies within (oral) health service provision;

  - reorienting the oral health workforce to foster integrated, people-centred health services by enabling interprofessional education and a wider team approach that involves mid-level and community health providers;

  - including communities in the planning, implementation and monitoring of programmes related to promotion, prevention and oral health care;

  - strengthening noma prevention and control within broader regional and global efforts, as part of neglected tropical diseases programmes;

- improving surveillance, data collection and monitoring by:

  - strengthening integrated disease surveillance, collection and analysis of health system and policy data to inform monitoring frameworks, evaluation of programmes and operational research;

  - promoting routine collection of oral disease data using digital technology and existing national health information systems to inform decision-making and advocacy;

- accelerating advocacy, leadership and partnership by:

  - facilitating collaboration among stakeholders, including non-State actors from different sectors, based on clear roles and responsibilities;

- fostering political leadership in relation to universal health coverage, with essential interventions for oral diseases and noncommunicable diseases as key components;

- establishing or enlarging oral health budgets based on intervention costing and investment cases, to increase population coverage.

ACTION BY THE EXECUTIVE BOARD

24. The Executive Board is invited to note the report and provide further guidance on action that could be taken by the Organization in response to the oral disease burden.

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From: Lindsey Horan
Sent: Thu, 17 Dec 2020 20:38:46 +0000
To: Ventura, Jeff (NIH/NIDCR) [E]; Horsford, Jonathan (NIH/NIDCR) [E]; Meister, Alissa (NIH/NIDCR) [E]; Stredrick, Denise (NIH/NIDCR) [E]
Subject: FW: IADR Global Research Update - December 2020

Good afternoon,

Please find the Global Research Update newsletter from IADR below.

Have a great rest of your week!

Sincerely,

Lindsey Horan, MA, Assistant Director of Government Affairs
International & American Associations for Dental Research

From: IADR Global Research Update <memberservice@iadr.org>
Sent: Thursday, December 17, 2020 1:08 PM
To: Lindsey Horan < (b) (6)
Subject: IADR Global Research Update - December 2020

EXTERNAL EMAIL

Click here for a Web version of this message.

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International Association for Dental Research

Global Research Updat
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Submit Your Abstract! Deadline: March 1, 2021

The 2021 IADR/AADR/CADR General Session & Exhibition will be a hybrid meeting, offering both a virtual and in-person meeting experience. No matter where you are, share your cutting-edge research with attendees in Boston, Mass., USA and online to a worldwide audience. Submit your abstract for peer review today!

Deadline for Abstract Submission: March 1, 2021

Submit Your Abstract

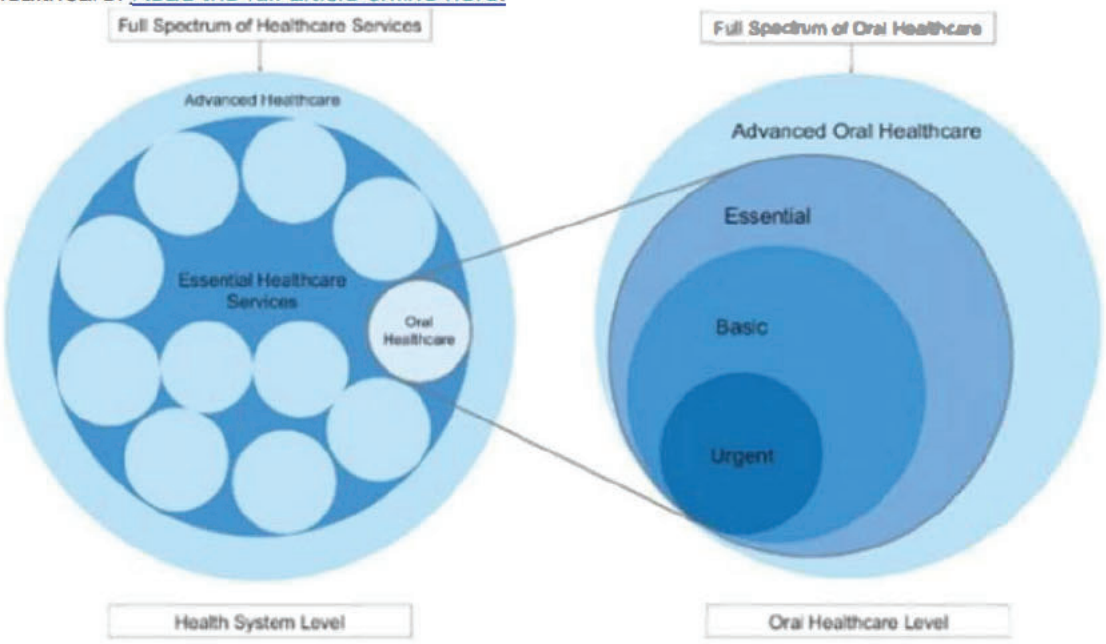
IN THIS ISSUE:

IADR PUBLICATIONS

Essential Oral Healthcare During the COVID-19 Pandemic

The COVID-19 pandemic has revealed the need for consensus on the definition of essential oral healthcare. The article " Pandemic considerations on essential oral healthcare" published in the Journal of Dental Research provides a layered model of essential oral healthcare,

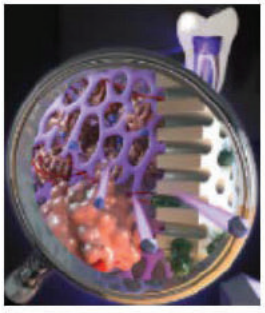
integrating urgent and basic oral healthcare, as well as advanced and specialist oral healthcare. Read the full article online here.



New Mechanisms to Control Dental Procedure Spray Emissions

Since the onset of COVID-19 the potential risk of dental procedure spray emissions for SARS-CoV-2 transmission has challenged care providers and policy makers alike. The study, "Mechanisms of atomization from rotary dental instruments and its mitigation," published in the *Journal of Dental Research* (*JDR*), found that there are multiple mechanisms for atomization of fluids from rotatory instruments and that parameters can be controlled to modify key spray characteristics during the current crisis. View a PDF of this press release.

JDR Special Issue Call for Papers: Interface Between Materials and Oral Biology



The *JDR* is excited to announce a call for papers for an upcoming publication of a special issue, anticipated for winter of 2021. This special issue will highlight the latest scientific advances in research on the interaction between materials and biological systems within the dental, oral and craniofacial complex. The deadline to submit papers for the special issue is **January 31, 2021**.

JDR and *JDR CTR* Seeking COVID-19 Manuscript Submissions

The *Journal of Dental Research (JDR)* and *JDR Clinical & Translational Research (JDR CTR)* are actively seeking manuscript submissions on COVID-19. Manuscripts on this topic will be prioritized for peer review. View the Editors-in-Chief discussion about submissions here. Manuscripts must be received through the online submission site for consideration and peer review.

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IADR NEWS & OPPORTUNITIES

IADR Elects Ophir David Klein as IADR Vice-president

Members of the International Association for Dental Research (IADR) have elected Ophir David Klein, University of California, San Francisco, USA, to serve as IADR Vice-president. His term will commence at the conclusion of the 99 th General Session of IADR, which will be held in conjunction with the 50 th Annual Meeting of the American Association for Dental Research (AADR) and the 45 th Annual Meeting of the Canadian Association for Dental Research (CADR), from July 21-24, 2021 in Boston, Mass, USA.

It's Time to Renew Your 2021 IADR Membership!

The IADR membership renewal site is open for 2021. Our extensive and valuable network of over 10,000 members worldwide provides a wealth of ways for you to discover, network and advance your career.
Renew your IADR membership for 2021 to continue receiving valuable benefits and services.

Submit a Webinar Proposal to IADR!

IADR welcomes submission of webinar proposals through the official webinar submission form. Proposed content should:

- Be organized around a cutting-edge topic
- Include multiple speakers
- Include a discussion period
- Provide 1-3 learning objectives
- Provide 2-3 multiple choice questions, including answers

Webinar proposals are subject to review and approval by the appropriate IADR committee. IADR will help with the hosting and promotion of approved webinars. For questions, please contact research@iadr.org.

Can You Serve on an IADR Committee? Deadline to Submit: January 11, 2021

Expand your connections by getting involved with IADR! Each year there are numerous opportunities to participate in the governance process and IADR seeks a wide variety of volunteers, representing as many geographic areas and scientific disciplines as possible, to fill committee vacancies.

Information on committee vacancies, descriptions of committee duties and instructions on how to submit your candidacy for a committee appointment is available at www.iadr.org/iacommappts. The deadline to submit your name for committee appointments has been extended to January 11, 2021. If you have any questions on the committee appointment process, please contact Riana Hays at rhays@iadr.org.

Call for IADR Award Applications and Nominations

Through numerous sponsorships and donations, IADR is able to fund and administer several awards, grants and fellowships. View the full listing of award, fellowship and grant application deadlines for the 2021 awards. For additional information or inquiries, please contact Awards, Fellowships & Grants Coordinator Anthony Jones at ajones@iadr.org.

IADR David B. Scott Fellowship: Nigerian Division

The David B. Scott Fellowship is awarded annually to a dental student in one IADR Division and will rotate alphabetically among the Divisions. The 2021 award recipient will come from the Nigerian Division. The recipient of the fellowship will be announced at each IADR General Session & Exhibition. The IADR expects to award the David B. Scott Fellowship in the amount of $2,500 USD. The Division shall propose how the award funds shall be used and criteria for selecting candidates, and this should be stated in the proposal.

IADR John Grey Fellowship January 15, 2021 Deadline

Awarded every two years, the purpose of this fellowship is to allow a dental or postgraduate student to obtain training and experience in dental or related research. This Fellowship is in tribute to John A. Gray, former Executive Director of IADR, and is funded out of donations from members and sponsors. The IADR expects to fund this Fellowship to the amount of $10,000 USD. The funds will be provided to the successful candidate through their supervisor or dean and an account of how the funds are expended will be provided to IADR/AADR Global Headquarters.

IADR Toshio Nakao Fellowship January 15, 2021 Deadline

Sponsored by GC Corporation

The goal of this Fellowship is to allow a young investigator to obtain training and experience in dental materials science at a center of excellence. The Fellow will receive funding for accommodation, subsistence and travel (up to $15,000 USD) following approval.

IADR E.W. Borrow Memorial Award January 15, 2021 Deadline

Sponsored by The Borrow Foundation

Nominations are invited for the IADR E.W. Borrow Memorial Award, which was established to recognize and stimulate research in oral health promotion for children, with a priority for caries prevention where fluoride in different formats is utilized.

The First IADR Saudi Arabian Division Research Symposium

Irish Division IADR Annual Research Meeting

The Irish Division of the IADR, invites Irish and other IADR members across all IADR Divisions, Regions and Sections to attend the virtual Irish Division IADR Annual Research Meeting, on Friday, February 5, 2021. During this meeting the Division welcome submissions for all prize competitions, as well as non-competition research presentations. The annual Seamus O'Hickey lecture will also be delivered at the meeting. The abstract submission site is now open at http://www.iadr.org/iadr/meetings/future-meetings. Please register online today at https://www.eventbrite.ie/e/129294582577.

NCI Global Health Fellowship Opportunity: Deadline January 20, 2021

The National Cancer Institute's (NCI) Center for Global Health (CGH) invites applications from qualified candidates for a global cancer research training fellowship. This full-time one-year paid fellowship is based in Rockville, Md., USA. Fellows work with NCI staff to develop and implement projects that aim to strengthen cancer research and control globally. Fellows will support programmatic aspects of CGH's research funding, training, dissemination and partnership initiatives. Depending on CGH needs and Fellow's interest and capabilities, fellows

may be placed in either the Research and Training Branch or the Partnerships and Dissemination Branch. The fellowship includes a capstone research project. Candidates with an interest in cancer research and control in low- and middle- income countries, preferred. The application deadline is January 20, 2021.

As this global pandemic continues, IADR is committed to keeping you informed of the latest information impacting dental, oral and craniofacial research, and we have created a COVID-19 Resource page. We will continue to add resources as they become available, and we encourage you to submit any questions, ideas or resources to the blog.

View IADR/AADR/CADR 2020 General Session Content Online!

IADR members have unlimited access to over 20 hours of content from the 2020 IADR/AADR/CADR General Session in IADR CE On Demand and can view over 750 oral, ePoster and poster sessions that were uploaded to the abstract archive.

Join your colleagues online to explore the content and share insights, ideas and reactions with your peers through the new IADR Community.

IADR/AADR General Session Fund

We regret that COVID-19 necessitated the cancellation of the General Session, but we recognize it was the only responsible course of action. In addition to the loss of the ability to share science, network with colleagues and hear the latest in dental, oral and craniofacial research, the cancellation of the General Session will be a significant financial loss to the Associations. As IADR has been contacted by members wishing to donate to assist defray these costs, IADR/AADR has set up a General Session Fund. We know this pandemic has caused great hardship across our community, and we appreciate you considering this option.

IN MEMORIAM

Marjorie K. Jeffcoat

Marjorie K. Jeffcoat, the 24 th President of the AADR (1995-96) and the 77 th President of IADR (2000-01), passed away on November 21, 2020. At the time of her passing, she was Professor Emeritus and Dean Emeritus at the University of Pennsylvania's School of Dental Medicine, Philadelphia, USA. With over 200 peer-reviewed publications, Jeffcoat specialized in clinical trials with a focus on the relationships between dentistry and medicine. Prior to joining the University of Pennsylvania, she was a professor and chair of the Department of Periodontics at the University of Alabama School of Dentistry, Birmingham, USA, and before that she was an Associate Professor at the Harvard School of Dental Medicine, Boston, Mass., USA, where she earned her dental degree. Among her most recent research included the discovery that relatively simple and inexpensive periodontal therapy can lead to substantial improvements in systemic health, notably in pregnancy outcomes, diabetes and cardiovascular disease. A periodontist by training, she also found a genetic marker that is strongly correlated with the success of such therapy in treating periodontitis.

FUTURE MEETINGS

July 21-24, 2021
99th General Session & Exhibition of the IADR
50th Annual Meeting & Exhibition of the AADR
45th Annual Meeting of the CADR
Boston, Mass., USA
March 1, 2021: Deadline for Abstract Submission

September 16-18, 2021
CED-IADR/NOF Oral Health Research Congress
Brussels, Belgium

November 11-13, 2021
VIII Meeting of the IADR Latin American Region
Buenos Aires, Argentina

March 23-26, 2022
51 st Annual Meeting & Exhibition of the AADR
46 th Annual Meeting of the CADR
Atlanta, Georgia, USA

June 22-25, 2022
100 th General Session & Exhibition of the IADR
5 th Meeting of the IADR Asia Pacific Region
Chengdu, China

Click here to see all future IADR Division/Region/Section meetings. Click here to see other scientific/dental meetings.

The Global Research Update is a monthly e-newsletter for IADR members. If you have items you would like to include, please forward them to gru@iadr.org by January 7, 2021 for the next issue.

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