



Broj: S-02-02-1-1083-1/24
Sarajevo, 02.08.2024.g.

FEDERACIJA BOSNE I HERCEGOVINE
PARLAMENT FEDERACIJE
PREDSTAVNIČKI/ZASTUPNIČKI DOM
n/r Dragan Mioković, zastupnik

FEDERALNO MINISTARSTVO ZDRAVSTVA
n/r Dr. Nediljko Rimac, ministar

Bosna i Hercegovina
Federacija Bosne i Hercegovine
PARLAMENT FEDERACIJE
SARAJEVO

Prilježeno: 02-08-2024

Org. jed.	Broj	Priloga	Vrijednost
051	- 02-	426	24

Predmet: Zastupničko pitanje, odgovor na dopis broj 03-33-4147/24 zaprimljen 01.08.2024.g.

Poštovani,

Obuhvati imunizacijom cjepivom protiv morbila, rubeole i pertusisa posljednjih godina su ispod ciljnih vrijednosti od 95%, potrebnih za zaštitu od obolijevanja od ovih bolesti. Registrirane epidemije morbila u kantonima na području Federacije BiH rezultat su nedovoljnih obuhvata imunizacijom zabilježenih najvećim dijelom tijekom pandemije COVID-19.

Obuhvat prvom dozom cjepiva protiv morbila, rubeole i parotitisa u Federaciji BiH, u 2023. godini iznosio je 51,5%, tj. od planiranih 16.931 cijepljeno je 8.724 dojenčadi. Obuhvat preko 95% zabilježen je samo u Posavskom kantonu (98,1%). U protekloj godini, 3.605 djece je cijepljeno prvom dozom MRP cjepiva u dobi starijoj od 24 mjeseca. Cijepljenje drugom dozom MRP cjepiva vrši se u 6 godini. U Federaciji BiH, u 2023. godini obuhvat je iznosio 56,3%. Također, dodatno je cijepljeno 2.885 djece drugih dobnih skupina drugom dozom MRP cjepiva.

U prvoj polovici 2024. godine od planiranog broja djece ciljne dobne skupine 37,6 % je primilo prvu dozu MRP, i 38,0 % drugu dozu MRP cjepiva. Pojačanim aktivnostima imunizacije uslijed epidemije morbila u ovom razdoblju dodatno je cijepljeno 5.284 djece drugih dobnih skupina prvom dozom i 2.849 drugom dozom MRP cjepiva.

U tablici u prilogu obuhvat ciljne dobne skupine djece cjepivom protiv morbila, rubeole i parotitisa za petogodišnji period od 2019. do 2023. godine i prvu polovicu 2024. godine po kantonima u Federaciji BiH.

Tablica: Obuhvat (%) imunizacijom MRP cjepivom ciljne dobne skupine (prvom i drugom dozom) po kantonima u Federaciji BiH, podaci za period 2019. do 2023. godine i od 01.01. do 30.06.2024. godine

Kanton		USK	PK	TK	ZDK	BPK	SBK	HNK	ZHK	KS	K10	FBiH
1.1.-30.06.2024.	MRP 1	38,8	56,5	38,4	37,1	56	45,4	28,3	13,3	39,7	45,2	37,6
	MRP 2	40,8	35,4	41,1	39,1	50,3	41,5	38,5	24,4	33,7	50,7	38
2023.	MRP 1	68,3	98,1	62,2	55,1	72	84,3	45	24,5	27,9	85,7	51,5
	MRP 2	72,5	100	59,6	72,7	93,7	65,8	50,7	49,7	34,6	83	56,3
2022.	MRP 1	62,2	63,1	60,9	56,5	97,4	79,4	44,1	38	30,6	81,9	52,7
	MRP 2	66,8	42,9	59,3	77,5	95,3	68,9	57,3	55,9	27,6	70,3	53,1
2021.	MRP 1	58,7	66,9	68	60,5	72,9	52,6	56,1	31,9	40,3	84,7	55,1
	MRP 2	67,2	68,2	60,4	76	77,1	52	61,1	46,2	34,6	61,3	55,1
2020.	MRP 1	54,4	98,6	64	55,1	90	51,2	65,6	45,5	32,4	85,3	52,3
	MRP 2	63,1	65,1	49	72,8	100	55,3	39,6	63,9	24,1	87	49
2019.	MRP 1	89,8	96,2	87,5	72,1	76,7	98,7	79,7	73,6	62,1	98,9	79
	MRP 2	78,4	62,3	74,7	78,5	99	80,9	70,8	70,1	44,7	81,7	68,5



Od prosinca 2023. godine u Federaciji BiH registrira se obolijevanje od morbila u epidemijskom obliku. Zavod za javno zdravstvo Federacije BiH, 08.01.2024. dostavio je informaciju o pogoršanoj epidemiološkoj situaciji vezanoj za prijave slučajeva morbila, kao i niže vrijednosti obuhvata imunizacijom ostvarene u prethodnim godinama te smjernice za pojačan nadzor, svim kantonima na području Federacije BiH. Također, objavljene su preporuke za prevenciju infekcije i kontrolu morbila u zdravstvenim ustanovama (2/2024).

Stručno savjetodavno tijelo za imunizaciju Federalnog ministarstva zdravstva objavilo je 04.03.2024. preporuke vezane za odgovor na epidemiju morbila u Federaciji BiH.

Od početka epidemije morbila, Služba za epidemiologiju zaraznih bolesti Zavoda na web stranici Zavoda za javno zdravstvo Federacije BiH objavljuje dnevne i tjedne izvještaje o pregledu epidemiološke situacije (Dostupno na : <https://www.zzjzfbih.ba/morbili2024/>).

Imunizacija djece u Federaciji BiH, regulirana je Zakonom o zaštiti stanovništva od zaraznih bolesti („Službene novine Federacije BiH, br. 29/05), Pravilnikom o načinu provođenja obvezne imunizacije, imunoprofilakse i kemoprofilakse protiv zaraznih bolesti te o osobama koje se podvrgavaju toj obvezi („Službene novine Federacije BiH, br. 22/19, 12/21, 47/21 i 69/21) i Naredbom o programu obveznih imunizacija pučanstva protiv zaraznih bolesti u 2024. godini („Službene novine Federacije BiH, br. 8/24).

Prema Članku 60. navedenog Pravilnika provjera cijepnog statusa obvezno se obavlja:

- prilikom upisa u sve vrste predškolskih ustanova;
- prilikom upisa u sve vrste škola, od osnovnih do visokih;
- prije izvođenja imunizacije po epidemiološkim indikacijama;
- prilikom prijema djece i mladeži na bolničko liječenje;
- prilikom prijema u radni odnos;
- prilikom svake posjete liječniku (novorođenčadi, male djece, predškolske i školske djece i mladeži);
- prilikom prijema djece u đačke i studentske domove;
- prilikom prijema osoba u kolektivne smještaje.

Provjera se sastoji u pružanju dokaza o cijepljenju odgovornoj osobi, podnošenjem odgovarajuće dokumentacije o svim prethodnim imunizacijama.

Ukoliko osoba/roditelj ili staratelj odbije dodatnu vakcinaciju/revakcinaciju djeteta, doktor medicine izdaje potvrdu o nekompletnom vakcinalnom statusu, a zdravstvena ustanova obavještava nadležnog sanitarnog/zdravstvenog inspektora.

Zavod za javno zdravstvo Federacije BiH nema podatke o broju i vrsti provedenih sankcija koje su u nadležnosti sanitarnog/zdravstvenog inspektorata.

U sklopu zakonom definiranih ingerencija, Zavod za javno zdravstvo Federacije BiH kontinuirano provodi aktivnosti na jačanju kapaciteta zdravstvenih ustanova uključenih u program redovite imunizacije. Također, Zavod aktivno učestvuje u radu Stručno savjetodavnog tijela za imunizaciju Federalnog ministarstva zdravstva koje daje stručne smjernice za program redovite imunizacije u Federaciji BiH.



Zavod za javno zdravstvo FBiH je proveo projekt Svjetske zdravstvene organizacije „Prilagođeni programi imunizacije (TIP - *Tailoring Immunization Programs*) u Federaciji Bosne i Hercegovine, s ciljem identifikacije čimbenika koji se odnose na opadanje i neoptimalno rutinsko cijepljenje u FBiH, a koji je napravljen kako bi se donijela dugoročna strategija za povećanje cijepljenja i izbjegavanje budućih epidemija bolesti. U projektu su kao ključni sudionici Savjetodavne skupine za TIP sudjelovali članovi Federalnog ministarstva zdravstva, UNICEF-a Bosne i Hercegovine, Doma zdravlja Kantona Sarajevo i Društva za zagovaranje znanosti „Znanost i svijet“. Završni izvještaj projekta je objavljen 2022. godine i dostupan na linku: <https://iris.who.int/bitstream/handle/10665/351994/WHO-EURO-2022-4774-44537-63060-eng.pdf?sequence=1>.

Zavod za javno zdravstvo Federacije Bosne i Hercegovine uz podršku ureda SZO u BiH, inicirao je izradu Vodiča za najbolje prakse i sigurnost imunizacije u Federaciji Bosne i Hercegovine. Urednik Vodiča je prof. dr. sc. prim. Sanjin Musa, dr. med., voditelj Službe za epidemiologiju zaraznih bolesti Zavoda za javno zdravstvo Federacije Bosne i Hercegovine, a radnu skupinu koja učestvuje u pripremi Vodiča čine ugledni stručnjaci iz Stručnog savjetodavnog tijela za imunizaciju Federalnog ministarstva zdravstva, Komisije za sigurnost imunizacije i Komisije za zarazne bolesti. Vodič za najbolje prakse i sigurnost imunizacije u Federaciji Bosne i Hercegovine namijenjen je koordinatorima programa imunizacije, osoblju državnog regulatornog tijela, pružateljima zdravstvenih usluga napose usluga imunizacije u ustanovama i na terenu, osoblju i drugim dionicima u službama imunizacije, apotekama i školama. (Dostupno na : <https://www.zzjzfbih.ba/sastanak-radne-skupine-za-izradu-vodica-za-najbolje-prakse-i-sigurnost-imunizacije-u-federaciji-bosne-i-hercegovine/>)

U organizaciji Zavoda za javno zdravstvo Federacije BiH, održavaju se redoviti koordinacijski sastanci predstavnika zavoda za javno zdravstvo u Federaciji BiH i Federalnog ministarstva zdravstva s međunarodnim partnerima i donatorima i drugima koji pružaju potporu imunizaciji u Federaciji BiH, što uključuje predstavnike UNICEF BiH, Svjetske zdravstvene organizacije u BiH i predstavnike Crvenog križa Federacije BiH. Tijekom sastanka analizira se aktuelna epidemiološka situacija, zajedničke aktivnosti provedene u prethodnom razdoblju i ostvareni rezultati te definiraju se prioritete u provedbi redovite imunizacije djece i mladeži u Federaciji Bosne i Hercegovine.

Svake godine u zadnjem tjednu mjeseca travnja, od strane Zavoda za javno zdravstvo Federacije BiH u suradnji sa Federalnim ministarstvom zdravstva i međunarodnim partnerima organiziraju se stručne konferencije povodom Svjetskog/Europskog tjedna imunizacije s ciljem podizanja svijesti o važnosti imunizacije te promicanja cijepljenja kao načina sprječavanja i suzbijanja zaraznih bolesti. (Dostupno na : <https://www.zzjzfbih.ba/obilježena-europska-sedmica-tjedan-imunizacije-2021/><https://www.zzjzfbih.ba/europski-tjedan-imunizacije-2023/><https://www.zzjzfbih.ba/null/>)

Smatrajući da je edukacija zdravstvenih djelatnika važna za jačanje programa redovite imunizacije, tokom 2022 god. od strane Zavoda za javno zdravstvo Federacije BiH održano je 17 edukativnih radionica o stručno tehničkim aspektima redovite imunizacije i učinkovite komunikacije sa roditeljima, javnošću i medijima. Radionice su održane na lokacijama: Sarajevo, Mostar, Tuzla, Zenica, Travnik i Bihać, za 290 polaznika iz reda zdravstvenih djelatnika kantonalnih zavoda za javno zdravstvo, liječnika i medicinskih sestara koji direktno rade na vakcinalnim punktovima zdravstvenih ustanova kao i volonteri Crvenog križa Federacije BiH.



U sklopu svojih ingerencija, Zavod za javno zdravstvo Federacije BiH kontinuirano provodi aktivnosti na jačanju svijesti javnosti o značaju održanja redovite imunizacije u cilju zaštite zdravlja djece i cijele zajednice. Na web stranici Zavoda za javno zdravstvo Federacije BiH kontinuirano se objavljuju informacije o imunizaciji koje su bazirane na dokazima, kako bi se osigurala znanstvena ispravnost i sukladnost važećim zakonskim propisima. Informacije se redovito monitoriraju i ažuriraju od strane Službe za epidemiologiju zaraznih bolesti Zavoda. Pripremljen je kalendar imunizacije za 2024. god. koji je tiskan i distribuiran u zdravstvene ustanove. Na web stranici Zavoda za javno zdravstvo Federacije BiH dostupni su promotivni materijali o redovitoj imunizaciji urađeni u suradnji sa UNICEF-om i USAID, pismo roditeljima kao poruke roditelja koji redovno cijepe svoju djecu. (Dostupno na : <https://www.zzjzfbih.ba/imunizacija>)

Od strane UNICEF BiH, u partnerstvu sa USAID BiH, tijekom 2022. i 2023. godine donirano je Zavodu za javno zdravstvo Federacije Bosne i Hercegovine 43 promotivna LCD ekrana i jedan totem s LCD ekranom, koje je Zavod za javno zdravstvo Federacije BiH distribuirao na sve kantone u Federaciji BiH. LCD uređaji su namjeni za informiranje građana i javnosti, vezano za promociju redovite imunizacije kao i za emitiranje promotivnih materijala o vakcinaciji djece koje smo pripremili u partnerstvu i uz podršku kancelarije UNICEF-a u BiH. LCD uređaji su raspoređeni na frekventnim lokacijama kao što su zdravstvene ustanove, šalter sale općina, tržni centri, međunarodni aerodrom Sarajevo a sadržaji se od strane Zavoda za javno zdravstvo kontinuirano pripremaju i ažuriraju. (Dostupno na : <https://www.zzjzfbih.ba/?s=lcd+unicef>)

Tijekom 2023. god. Zavod za javno zdravstvo Federacije Bosne i Hercegovine provodio je kampanju za redovitu imunizaciju, cijepjenje protiv HPV-a i cijepjenje protiv COVID-19. Jedna od ključnih segmenata kampanje je bio između ostalog bio informiranje roditelja/staratelja o važnosti i svim aspektima redovite imunizacije djece i mladeži prema Kalendaru imunizacije u Federaciji BiH, sa porukom osigurajmo djeci zaštitu uz redovito cijepjenje – Za zdravlje od početka. Kampanja je imala za cilj educirati roditelje i javnost da je imunizacija jedno od najvećih dostignuća u medicini općenito te da je cijepjenje najbolja mjera kojom se utječe na smanjenje obolijevanja i umiranja od zaraznih bolesti. Kampanja je bila društveno odgovorna i nekomercijalnog karaktera, a provodila se u partnerstvu sa Federalnim ministarstvom zdravstva, UNICEF-om BiH, USAID-om, Europskom unijom i Uredom Svjetske zdravstvene organizacije u BiH. (Dostupno na : <https://www.zzjzfbih.ba/mostar-najavljena-kampanja-za-redovitu-imunizaciju-cijepjenje-protiv-hpv-a-i-covid-19/>).

Promotivni materijali kao dio kampanje bili su pripremljeni u formi spotova, emitirani su u medijima (BHTV, FTV, RTV HB, RTV TK, RSG, Radio Mix, Radio Arena) uz pismo podrške kampanji promidžbe cijepjenja medijima koje je uputila Regulatorna agencija za komunikacije Bosne i Hercegovine (RAK BiH). (Dostupni materijali na : <https://www.zzjzfbih.ba/promotivni-materijali-za-kampanju-imunizacije-u-federaciji-bih/>). Kao dio kampanje, promotivni materijali su objavljeni i putem društvenih mreža (Facebook, Instagram, LinkedIn, YouTube). Promotivni materijali su također tiskani nakon čega su distribuirani u zdravstvene ustanove a organizirano je više promotivnih akcija kojom prigodom su promotivni materijali bili dostupni roditeljima. (Dostupno na : <https://www.zzjzfbih.ba/kampanja-imunizacije-na-trgovima-i-ulicama-gradova-u-federaciji-bosne-i-hercegovine/>)



ZAVOD ZA JAVNO ZDRAVSTVO FBiH
INSTITUTE FOR PUBLIC HEALTH FB&H

Zavod za javno zdravstvo Federacije BiH obilježava respektabilan broj međunarodno važnih datuma za zdravlje, putem promotivnih događaja na kojima se prema stručnoj javnosti i građanima redovito distribuiraju tematski promotivni materijali vezani za imunizaciju a djelatnici Zavoda daju građanima informacije o značaju redovite imunizacije za zaštitu zdravlja djece.

Neki od važnijih događaja dostupni na :

<https://www.zzjzfbih.ba/kampanja-imunizacije-na-trgovima-i-ulicama-gradova-u-federaciji-bosne-i-hercegovine/>

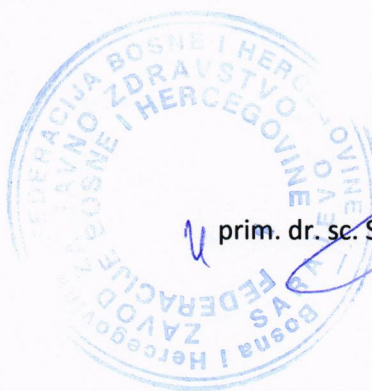
<https://www.zzjzfbih.ba/odrzan-obiteljski-dan-zdravo-svima-radost-i-puno-veselja-uz-razgovor-o-vaznosti-redovite-imunizacije-zdrave-ishrane-i-ranog-rasta-i-razvoja/>

<https://www.zzjzfbih.ba/zavod-za-javno-zdravstvo-federacije-bosne-i-hercegovine-na-obiljezavanju-svjetskog-dana-mladih-i-festivalu-sarajevo-fusion-fiesta/>

<https://www.zzjzfbih.ba/svjetski-dan-dobrovoljnih-darivalaca-krvi-2024/>

<https://www.zzjzfbih.ba/predstavnice-zavoda-za-javno-zdravstvo-federacije-bosne-i-hercegovine-sudjelovale-na-debatnom-kampu-o-imunizaciji/>

S poštovanjem!

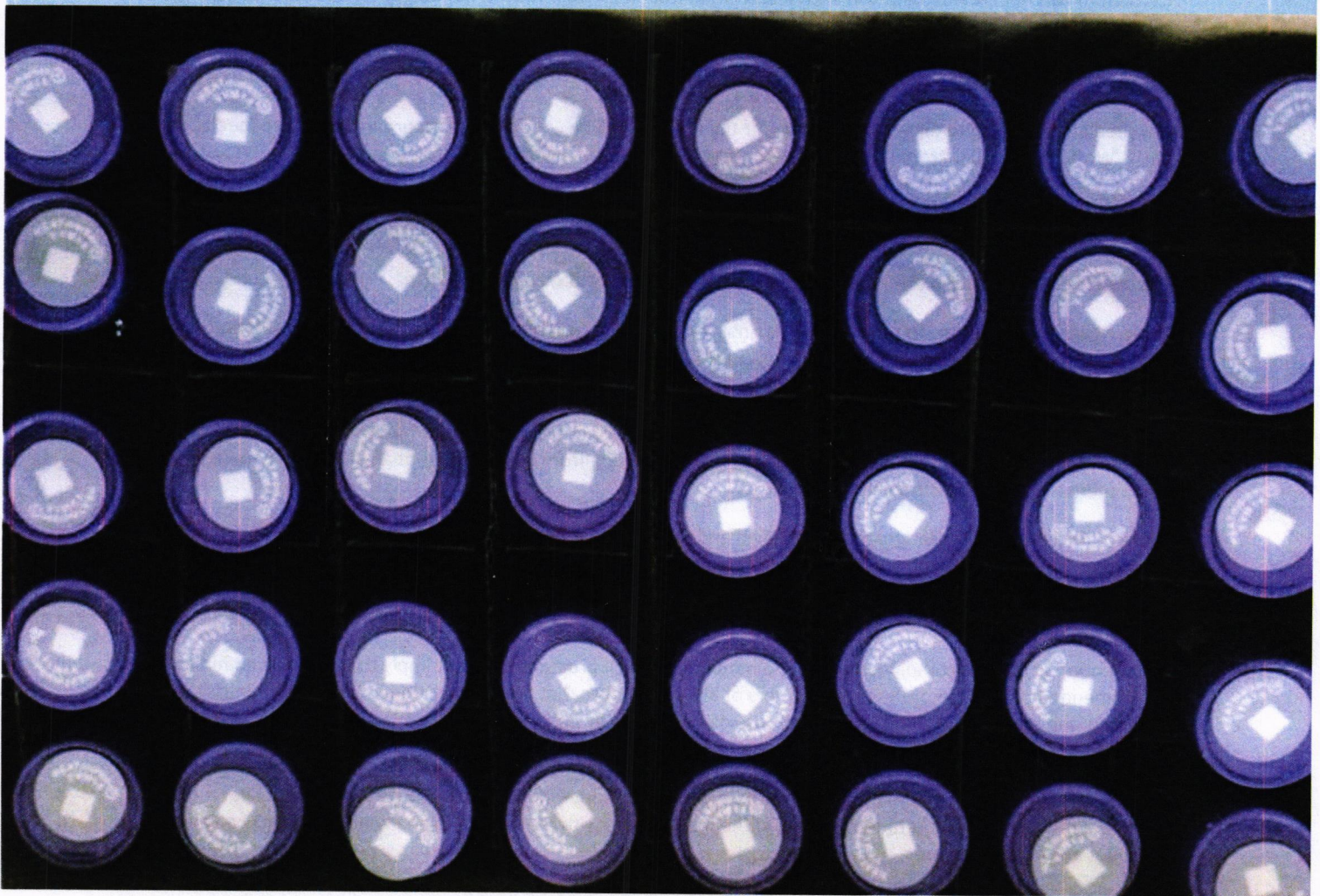


DIREKTOR

[Signature]
prim. dr. sc. Siniša Skočibušić, dr. med.

TAILORING IMMUNIZATION PROGRAMMES (TIP) in the Federation of Bosnia and Herzegovina, Bosnia and Herzegovina

FINAL REPORT



Document number: WHO/EURO:2022-4774-44537-63060

© World Health Organization 2022

Some rights reserved. This work is available under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO; <https://creativecommons.org/licenses/by-nc-sa/3.0/igo>).

Under the terms of this licence, you may copy, redistribute and adapt the work for non-commercial purposes, provided the work is appropriately cited, as indicated below. In any use of this work, there should be no suggestion that WHO endorses any specific organization, products or services. The use of the WHO logo is not permitted. If you adapt the work, then you must license your work under the same or equivalent Creative Commons licence. If you create a translation of this work, you should add the following disclaimer along with the suggested citation: "This translation was not created by the World Health Organization (WHO). WHO is not responsible for the content or accuracy of this translation. The original English edition shall be the binding and authentic edition: Tailoring Immunization Programmes (TIP) in the Federation of Bosnia and Herzegovina, Bosnia and Herzegovina (BiH). Final report. Copenhagen: WHO Regional Office for Europe; 2022".

Any mediation relating to disputes arising under the licence shall be conducted in accordance with the mediation rules of the World Intellectual Property Organization. (<http://www.wipo.int/amc/en/mediation/rules/>)

Suggested citation. Tailoring Immunization Programmes (TIP) in the Federation of Bosnia and Herzegovina, BiH. Final report. Copenhagen: WHO Regional Office for Europe; 2022. Licence: CC BY-NC-SA 3.0 IGO.

Cataloguing-in-Publication (CIP) data. CIP data are available at <http://apps.who.int/iris>.

Sales, rights and licensing. To purchase WHO publications, see <http://apps.who.int/bookorders>. To submit requests for commercial use and queries on rights and licensing, see <http://www.who.int/about/licensing>.

Third-party materials. If you wish to reuse material from this work that is attributed to a third party, such as tables, figures or images, it is your responsibility to determine whether permission is needed for that reuse and to obtain permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user.

General disclaimers. The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of WHO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by WHO in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by WHO to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either expressed or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall WHO be liable for damages arising from its use.

Cover photo and images on pages 2 and 4: ©WHO

Photos and images on pages 10, 13 and 14: ©IPH of Federation BiH, BiH

CONTENTS

Acknowledgements	iii
Introduction	1
Tailoring Immunization Programmes (TIP)	1
TIP in FBiH.....	1
PRE-TIP: Planning	3
PHASE 1: Situational analysis	5
Review of data and existing studies	5
Consulting stakeholders	5
SWOT analysis	5
PHASE 2: Research	6
Prioritizing target groups.....	6
Planning and conducting research	7
<i>Interview study with health workers</i>	7
<i>Patient file study</i>	8
<i>Interview study with parents</i>	9
<i>Summarizing</i>	9
PHASE 3: Intervention design	10
Translating outcomes into interventions	10
Engaging stakeholders.....	10
PHASE 4: Post TIP	13
Implementation, monitoring and evaluation.....	13
<i>Interpersonal communication for immunization training</i>	13
<i>Distribution of educational materials to health workers in primary care centres</i>	14
<i>Mobile application “My Calendar of Immunization”</i>	14
Impact of the interventions.....	15
Next steps.....	16
References	17

ACKNOWLEDGEMENTS

The TIP project in the Federation of Bosnia and Herzegovina, Bosnia and Herzegovina (BIH), was funded by WHO Regional Office for Europe. UNICEF Country Office in Bosnia and Herzegovina, in collaboration with UNICEF Regional Office supported the immunization interventions and their evaluation, including the training of trainers for interpersonal communication, local trainings for health workers on interpersonal communication and the mobile app.

This report has been produced by Sanjin Musa (Institute of Public Health of FBiH), Cath Jackson and Katrine Bach Habersaat (WHO Regional Office for Europe). Colleagues from the TIP Core Group commented on earlier drafts: Mirsad Smjecanin (Institute of Public Health of FBiH), Aida Kulo and Venesa Skrijelj (the Medical Faculty, University of Sarajevo).

INTRODUCTION

Routine vaccination uptake in the Federation of Bosnia and Herzegovina (FBiH) (one of two entities in Bosnia and Herzegovina (BiH) with the Republika Srpska, and Brčko District of BiH), has been steadily declining since 2014. In 2018 reported coverage for the third dose of the diphtheria-tetanus-pertussis containing vaccine (DTP3) was 72.8%, and for the first dose of the measles-mumps-rubella vaccine (MMR 1) was 68.4% (1) – below the 95% target for national coverage stipulated in the European Vaccine Action Plan (2). In 2019 a measles outbreak reported 1332 cases in FBiH. Alongside outbreaks in nearby countries, including Germany, Italy, Romania and Serbia, these data serve as constant reminders of the consequences of low vaccination uptake (3). Furthermore, Bosnia and Herzegovina is considered at high risk of sustained polio transmission following importation due to its sub-optimal vaccination coverage (4).

A growing body of global evidence has shown that the underlying causes of suboptimal vaccination uptake are complex, context-specific and vary by time, place and vaccine (5-7). This means that local evidence is needed to develop an effective response (8). Back in 2017, little was known about the reasons for the suboptimal vaccination uptake in FBiH to inform strategies. To address this, the Institute for Public Health of the FBiH commenced a World Health Organization (WHO) Tailoring Immunization Programmes (TIP) project (9,10).

TAILORING IMMUNIZATION PROGRAMMES (TIP)

Drawing on proven behavioural and community insight approaches and social science research techniques, the TIP approach (9,10) offers a structured process through which to

- 1) define and describe sub-optimally vaccinated population groups and prioritize between them;
- 2) diagnose barriers and drivers to vaccination through social science research and stakeholder engagement to obtain behavioural and community insights; and
- 3) develop effective and cost-effective strategies to increase vaccination coverage.

A generic process is illustrated in Figure 1; however, each process is shaped according to the need and the context where it is applied.

The TIP approach applies a broad perspective on barriers and drivers to vaccination, drawing upon a modified COM-B system (10,11) (Capability–Opportunity–Motivation–Behaviour) as a framework for changing behaviour. This system identifies the inter-linked factors of capability, opportunity (social and physical) and motivation as influencing vaccination behaviours. See Figure 2 for a description of the COM factors.

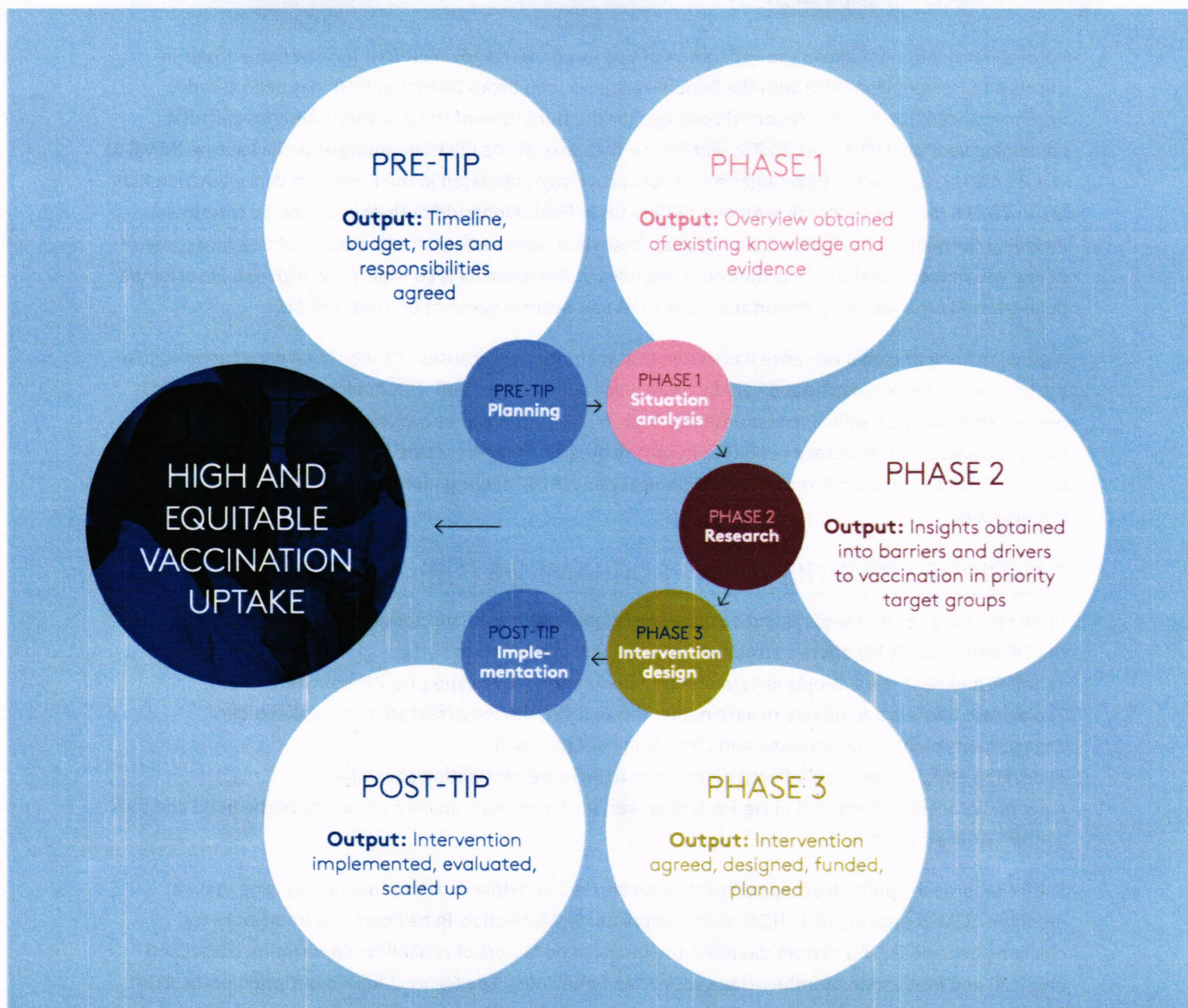
TIP IN FBiH

The aim of this TIP project was to identify the factors related to the declining and sub-optimal routine vaccination uptake in FBiH to inform a long-term strategy to increase vaccination uptake and avoid future disease outbreaks. The objectives were to:

1. identify, describe, segment and prioritize between the population groups who are sub-optimally vaccinated;
2. understand the capability, opportunity and motivation barriers and drivers to positive vaccination behaviours among priority target groups;
3. use insights to develop tailored, effective and cost-effective strategies to increase vaccination uptake.

The phases of the FBiH TIP are described in this report.

Figure 1. TIP process (9)



PRE-TIP: PLANNING

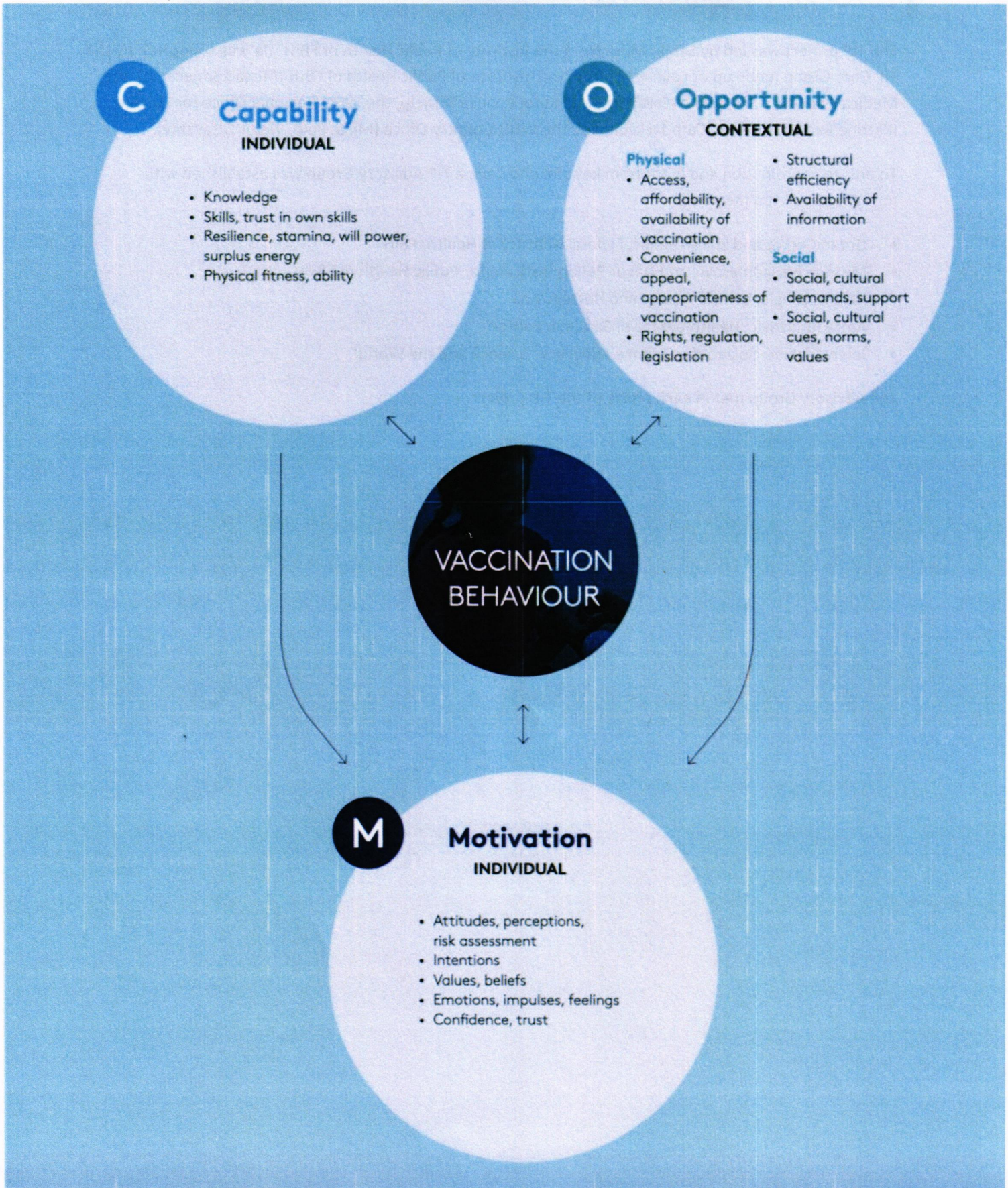
The TIP project was led by Sanjin Musa from the Institute of Public Health of FBiH. He was supported by the TIP Core Group made up of colleagues from the Institute of Public Health of FBiH (Mirsad Smjecanin), the Medical Faculty, University of Sarajevo (Aida Kulo, Venesa Skrijelj), the WHO Regional Office for Europe (Katrine Bach Habersaat, Cath Jackson) and the WHO Country Office (Mirza Palo, Victor Olsavszky).

To ensure coordination and input from key stakeholders, a TIP Advisory Group was established with formally appointed members:

- Goran Čerkez and Zlatan Peršić, Federal Ministry of Health, FBiH
- Mirsada Mulaomerović and Davor Pehar, Institute for Public Health of FBiH
- Fatima Čengić, UNICEF Bosnia and Herzegovina
- Amra Junuzović, Health Centre of Sarajevo Canton
- Jelena Kalinić, Society for Science Advocacy “Science and the World”

The Advisory Group met in each phase of the TIP project.

Figure 2. Modified COM-B system – a framework for understanding vaccination behaviour (9,10)



PHASE 1: SITUATIONAL ANALYSIS

The objectives of this phase were to 1. obtain an overview of existing evidence regarding vaccination in FBiH and in specific population groups; and 2. obtain stakeholder input and support.

REVIEW OF DATA AND EXISTING STUDIES

Recent (2016) vaccination coverage and disease outbreak data and published papers on measles, mumps and rubella outbreaks were reviewed (12-14). Other relevant reports and published papers were also examined (15-22). These explored the situation of women and children, the status of Roma families, bottlenecks of routine vaccination, the impact and effectiveness of immunization on vaccine-preventable diseases, vaccine confidence and anti-vaccination sentiment.

CONSULTING STAKEHOLDERS

Two workshop discussions were held with stakeholders attending European Immunization Week 2017 events. Discussions focused on the coverage data - susceptible areas and populations; and ideas about barriers and drivers to positive vaccination behaviours for parents and health workers in FBiH.

Workshop 1 was held on 24 April 2017, with 24 participants from the following organizations: Federal Ministry of Health, Public Health Institute of FBiH, WHO, UNICEF, NITAG, Committee for Communicable Diseases, Medical Faculty University of Sarajevo and the Agency for Quality Improvement and Accreditation in Healthcare in FBiH.

Workshop 2 was held on 25 April 2017 with 87 participants from: primary health care centers, public health institutes and services (pediatricians, nurses, epidemiologists and other public health staff).

SWOT ANALYSIS

Based on the review of data and stakeholder consultation, a preliminary SWOT analysis (strengths, weaknesses, opportunities and threats) of the vaccination programme in FBiH was conducted (see Table 1).

The clear conclusion from the review of data, stakeholder consultation and SWOT analysis was that more knowledge was needed to understand:

- which children are sub-optimally vaccinated;
- the reasons why they are sub-optimally vaccinated;
- which barriers and drivers affect parents' childhood vaccination behaviours;
- which barriers and drivers affect health workers' childhood vaccination behaviours.

PHASE 2: RESEARCH

The objectives of this phase were 1. to prioritize target groups, and 2. plan and conduct one or more research studies.

PRIORITIZING TARGET GROUPS

Given the lack of the available data available, the decision was taken to not select specific target groups at this time. Instead, to conduct research with a mix of parents and health workers.

Table 1. SWOT analysis

<p>STRENGTHS</p> <ul style="list-style-type: none"> • Childhood vaccinations are provided free of charge • Centralized procurement and distribution of vaccines • Regulatory practices (e.g., NRA, NITAG) are harmonized with EU/EEA standards • Increased budget secured for vaccine procurement in 2016/17 • Vaccine delivery costs are integrated with pediatric/family medicine services sharing uncertainty of financing 	<p>WEAKNESSES</p> <ul style="list-style-type: none"> • Low and declining coverage rates • Lack of understanding of who the sub-optimally vaccinated groups are and their reasons • Health workers may not be routinely vaccinating children • Shortage of pediatricians • Low knowledge of immunization, vaccine safety and AEFIs among health workers. • Lack of unified follow-up mechanisms and institutional barriers to vaccination of teenagers and adults (no clear role for GPs, no vaccination data) • Mandatory system is not being imposed, and no formal mechanisms exist for recording refusals. • Weak infrastructure, lack of staff and a decentralized health system • Lack of co-ordination among different administrative levels to implement the law • Limited procurement power due to small contracted amounts of vaccine doses
<p>OPPORTUNITIES</p> <ul style="list-style-type: none"> • Good level of political will and collaboration between key stakeholders at entity level • Enthusiasm for research capacity building • UNICEF and WHO will support (re) introduction of a vaccine planning process (vaccine needs, vaccine forecasting, budgeting) • Planned introduction of computerized monitoring and evaluation system • Build on existing programme that works with Roma communities • Commitment to delivering routine vaccination training for health workers 	<p>THREATS</p> <ul style="list-style-type: none"> • Risk of costly disease outbreaks and of circulation of poliovirus following importation. • Monitoring and evaluation system needs improving • Lack of legislation in the private sector regarding data reporting • Health Insurance Funds are limited • Vaccine supplier's base is "narrow" • Hesitancy related to safety concerns and growing anti-vaccination communication and online presence

PLANNING AND CONDUCTING RESEARCH

Three research studies were conducted May 2017 to October 2019. Ethics approval for each study was secured from the Federal Institute of Public Health Ethics Committee.

1. Interview study with 38 primary care health workers to identify barriers and drivers to positive childhood vaccination behaviours
2. Patient file study of children's records in primary care centres (1800 children aged 24-35 months, 1800 children aged 12-23 months) to assess vaccination coverage, timeliness and drop-out and compare these with official administrative coverage estimates; and to identify associations between child/parent characteristics and vaccination uptake
3. Interview study with 22 parents (from the patient file study) to identify barriers and drivers to positive childhood vaccination behaviours

Full reports and executive summaries are available from Sanjin Musa (s.musa@zzjzFBiH.ba).

All three studies have been published (23-25). Findings of the two interview studies were presented by Sanjin Musa at the Bosnian-Herzegovinian American Academy of Arts and Sciences Conference in June 2018, the Global Immunization Meeting in Kigali (Rwanda) in June 2018 and the Rotavirus symposium in Minsk (Belarus) in August 2018.

A summary of each of the study findings and conclusion is presented below. The barriers and drivers to positive vaccination behaviours identified in the two interview studies are organized by the modified COM factors (Figure 2) (9,10).

Interview study with health workers (23)

Significant, complex and inter-related capability, opportunity and motivation drivers and barriers to health workers' positive childhood vaccination behaviours were uncovered. Very few differences were evident between high and low coverage primary care centres or across different professional roles (doctors/nurses).

CAPABILITY: Drivers included awareness of the risks of low vaccination coverage, regular use of the Rulebook and Order, knowledge of how to advise parents on mild side effects and recognition of the importance of good communication with parents. Key barriers were the use of false contraindications to postpone vaccination and poor skills in tailoring vaccination communication with parents.

PHYSICAL OPPORTUNITY: Drivers were having sufficient time for administering vaccination and good availability of vaccines. Several barriers were evident: lack of implementation of mandatory vaccination meaning health workers did not routinely report refusals, no uniform recall and reminder system or system for detecting under-vaccinated children, staff shortages and lack of time to discuss vaccination with parents.

SOCIAL OPPORTUNITY: A driver for health workers was feeling supported by the federal and cantonal system in case of an adverse event. A barrier was the pressure from some parents who believe they can choose if their child is vaccinated because this is time of social change, with the doctor-patient/parent relationship moving away from a paternalistic approach.

MOTIVATION: Drivers were a belief in the value, safety and effectiveness of childhood vaccination and seeing that as health workers they have an important role to play. Barriers were a fear of being blamed for

adverse events (hence agreeing to using false contraindications to postpone vaccination) and a tendency to blame low vaccination coverage on external factors e.g. anti-vax movement.

CONCLUSION: These multifaceted barriers potentially contribute to the suboptimal vaccination coverage in FBiH. Important new, detailed insight was captured from this study to inform the tailoring of interventions in the next intervention development phase.

Patient file study (24)

VACCINATION COVERAGE, TIMELINESS AND DROP-OUT: Vaccination coverage calculated from the patient files was consistent with administrative coverage levels for BCG, DTP and MMR, and lower for HepB (range 64% to 90% excluding vaccinations administered at birth). All were considerably lower than regional targets thus confirming suboptimal vaccination coverage.

Just over half the children aged 12-23 months (59%) were fully vaccinated (excluding MMR).

An assumption that anti-vaccination sentiment prevails among parents was not confirmed; only 2% of children were not vaccinated at all. Only 8% of children were unvaccinated except for BCG and HepB1 (administered at birth).

An assumption of parent concerns for the MMR vaccine was confirmed with low uptake, MMR1 vaccine compared to DTP1 vaccine was less accepted (65% versus 86%) and more delayed (4 months versus 2 months).

Significant challenges related to delays (three doses of DTP and HepB completed at 8-9 months instead of 6 months) and drop-out before three doses completed (26% DTP, 34% HepB).

ASSOCIATIONS BETWEEN THE CHILD/PARENT CHARACTERISTICS AND VACCINATION UPTAKE: The odds of being fully vaccinated were three times higher for a child living in a rural area compared to an urban area. A child of Roma affiliation was less likely to be fully vaccinated although this should be viewed with caution as based on a small sample (36/3600). No other child/parent characteristics (child's gender, child's birth order, mother's/father's age, and education) were significantly associated with vaccination coverage.

CONCLUSION: This study provided new detailed data on childhood vaccination patterns and revealed important vaccine and urban/rural differences. This insight is vital for targeting interventions in the next intervention development phase.

The two qualitative studies offer potential health worker and parent explanations for the suboptimal coverage, delays and drop-out. Another potential explanation relates to the global shortage of acellular pertussis vaccine from 2014-16 when whole-cell pertussis vaccine was temporarily reintroduced. A debate at that time related to DTP safety concerns may have had wider impact on health workers and parent vaccine confidence, with the change in the immunization schedule (temporary postponing DTP3) leading to delays.

Interview study with parents (25)

Parents were classified according to their child's record in the patient file study as parents of a fully vaccinated child (n=6), a delayed/partially vaccinated child (n=9) or an unvaccinated child (n=7).

As with the health worker study, significant, complex and inter-related capability, opportunity and motivation drivers and barriers to parents' positive childhood vaccination behaviours were uncovered. Some differences were evident across different parent groups and urban/rural settings.

CAPABILITY: Drivers were a basic knowledge of vaccine-preventable diseases and the purpose of vaccination as well as awareness of the vaccination schedule. Barriers were specific to each parent group. Parents with unvaccinated children seemed less aware of risk information (risk of catching a disease, the seriousness of the diseases) or their risk interpretation was different. Some parents of partially/delayed children acknowledged their own poor skills in organizing their child's vaccination.

PHYSICAL OPPORTUNITY: Location of the health facility, travel costs and waiting time were not perceived as influencing attendance for vaccination. Mandatory vaccination was supported by parents of fully and delayed/partially vaccinated children. A key barrier was not receiving a reminder to bring the child for vaccination. Barriers specific to urban parents were a lack of "official" information from their health facility and a perceived occasional shortage of vaccines. Urban parents with partially/delayed vaccinated children were frustrated with inflexible appointment times. Accessing credible information on the internet was a driver.

SOCIAL OPPORTUNITY: Discussing vaccination with a trusted health worker was a driver for parents with fully partially/delayed vaccinated children. Whilst those with unvaccinated children were more likely to be unhappy with their child's pediatrician. Most parents discussed vaccination with friends and family, those with unvaccinated children were more selective in who they did this with. Circulating rumours about adverse events were a barrier to vaccination.

MOTIVATION: Parents of fully vaccinated children and most with partially/delayed vaccinated children held positive attitudes to vaccination, trusted their health workers and intended to vaccinate in the future. Negative attitudes and lack of trust on health workers were barriers for parents with unvaccinated children. Only two were adamant they would never vaccinate their child.

CONCLUSION: These barriers and drivers offer new detailed insight to inform the tailoring of interventions to different parent groups in the next intervention development phase.

Summarizing

The research identified important patterns in vaccination coverage as well as complex and inter-related barriers and drivers to health workers' and parents' positive childhood vaccination behaviours. This insight was then taken into Phase 3 to inform the targeting and tailoring of interventions.

PHASE 3: INTERVENTION DESIGN

The objectives of this phase were 1. to design and plan an intervention, 2. to develop a monitoring and evaluation framework, and 3. to consult stakeholders to obtain their input and support.

TRANSLATING OUTCOMES INTO INTERVENTIONS

Following completion of the health worker interview study, the TIP core team attended 4-day workshop from 23-26 April 2018. The purpose of this workshop was to complete a series of TIP exercises (9) to translate the research findings into potential interventions. The exercises are designed to ensure that ideas for interventions are grounded in the research evidence and informed by theory. In short, the key barriers and drivers to positive childhood vaccination behaviours identified from the health worker interviews were agreed by the team and linked to their corresponding COM factor (10,11). Types of interventions that are known to be effective for each COM factor (10,11) were then presented to the team who came up with ideas for the health workers. These ideas were prioritized according to their potential impact on vaccination coverage and feasibility of implementation.

The same process was undertaken with the findings of the parent interview study in a 3-day workshop (27-29 November 2018) with the TIP core team.

The final list of key barriers and drivers to positive vaccination behaviours for health workers and parents and associated ideas for interventions are presented in Table 2.

ENGAGING STAKEHOLDERS

The study findings and the ideas for interventions were presented and discussed with stakeholders at an event organized for European Immunization Week (25 April 2018). Approximately 40-50 people attended from the following organizations: the WHO Country Office, UNICEF, the Federal Ministry of Health, NITAG members, Federal and Cantonal public health institutes, Committee for Infectious Diseases, International Organization for Migration, World Bank in FBiH, two embassies; and pediatricians from primary care centres. The members of the TIP Advisory Group were present at this event.



European Immunization Week event 2018

Table 2. Key barriers to positive vaccination behaviours and associated Intervention ideas

	Key barriers and drivers	Intervention ideas
1	<p>Parents (particularly those with partially vaccinated children who are vaccine hesitant and those with unvaccinated children) have concerns and questions about vaccination e.g., safety and quality of vaccines, contraindications, motives of the pharmaceutical industry.</p> <p>They want skilled communication by trusted health workers to address their concerns, strengthen their confidence in vaccination and develop resilience to negative media, social media and social network messaging.</p> <p>However, some health workers lack good knowledge of vaccinology and safety, and have poor vaccination communication skills, finding conversations with refusing parents particularly challenging.</p>	<p>Educate and train health workers on vaccinology and communication skills</p> <ul style="list-style-type: none"> • Prepare a course with standalone modules • Offer face-to-face and online delivery • Link to accreditation system and license renewal • Consider adapting existing training programmes e.g., WHO and ESPID (European Society For Paediatric Infectious Diseases) <i>Wiser Immunizer Course</i>, John Hopkins Center for Communication programs <i>Interpersonal Communication for Immunization Package</i>
2	<p>There is no uniform and effective system for inviting children for vaccination, scheduling appointments and sending out reminders; or for detecting and following up with children who miss vaccination</p> <p>Parents would value a formal reminder about their children’s vaccination. This is particularly important for a sub-group of the parents with partially vaccinated children who struggle with scheduling vaccination appointments.</p>	<p>Implement a consistent system across primary care centres</p> <ul style="list-style-type: none"> • Update the vaccination checklist for health workers to include a prompt to write the date of next vaccination including follow-up on postponed vaccinations in a child’s vaccination/health insurance card • Introduce a vaccination card for parents in a form of a nicely illustrated baby book with vaccination calendar, vaccination dates, child’s weight, height, teething, feeding etc. • Streamline paper-based systems • Move to an IT based system in the future which can send SMS reminders, i.e. develop a unique vaccine software for the FBiH in a long run (ensuring the use of the same IT systems in different cantons) • Develop, promote and regularly update an app for parents which includes reminders and other services to address the needs

3	<p>A sub-group of the parents with partially vaccinated children, mostly in urban areas, are frustrated with limited appointment times for vaccination.</p>	<ul style="list-style-type: none"> • Encourage primary care centres to increase the convenience of vaccination services by offering extended opening hours with early morning/late afternoon appointments, drop-in vaccination sessions and whole days allocated to vaccination • Have specialist primary care vaccination centres with specialist staff and extended opening hours
4	<p>Some health workers use false contraindications to postpone vaccinations. This is prompted by pressure from parents and perceptions of a lack of support, supervision and monitoring at Cantonal and Federal level for AEFIs.</p> <p>Some health workers also lack knowledge of the law, order and rulebook.</p>	<p>Provide support to health workers for AEFIs and communicate this support</p> <ul style="list-style-type: none"> • Strengthen risk communication mechanism (identify who, what and how will they communicate) • Develop written procedures for the protection of health workers in the case of AEFIs • Engage key organizations e.g., Chamber of Physicians, Society of Pediatrics, Trade Unions to give support in case of AEFI <p>Improve accessibility of legal documents</p> <ul style="list-style-type: none"> • Shorten and simplify • Send documents and updates via email as well as making it available on the internet

PHASE 4: POST TIP

IMPLEMENTATION, MONITORING AND EVALUATION

Since the workshops in 2018, three interventions have been implemented with some preliminary evaluation. Further information on these interventions and evaluation is available from Sanjin Musa: s.musa@zzjzFBiH.ba.

Interpersonal communication for immunization training

To improve vaccination conversations between health workers and parents (Barrier 1, Table 2), the UNICEF Country Office in Bosnia and Herzegovina and Serbia, in collaboration with UNICEF Regional Office and relevant ministries and institutes in Bosnia and Herzegovina and Serbia, developed a set of training modules and materials on inter-personal communication and communication for immunization (IPC/I). These built on a training package developed by UNICEF and Johns Hopkins Center for Communication Programs (<https://ccp.jhu.edu/projects/interpersonal-communication-for-immunization-package/>) and other training packages developed in Europe and the Central Asia region.

The training package comprised six modules: professional and technical aspects of immunization, understanding behaviours and barriers, active listening for a better understanding of parents, responding to health workers' and parents' needs, communication during immunization and interpersonal communication with communities. The training techniques were PowerPoint presentations, exercises, work in small groups, role-plays, and lecture discussions. A handbook was also distributed.

A five-day training of trainers on IPC/I was delivered on September 2018 in Belgrade, with participants from Bosnia and Herzegovina and Serbia. IPC/I trainers from FBiH were Dr Sanjin Musa, Dr Blaško Topalović, Dr Merima Nokić-Čolaković, Dr Amra Junuzović, Dr Belma Krdžalić-Zečević, Dr Jadranka Mumin and Dr Borko Rajič. One and half day trainings were delivered nine times in six cities in FBiH in 2018/19. A total of 219 health workers, pediatricians, doctors (residents) and nurses working in primary care centres, from all cantons of FBiH attended.



IPC trainings in Sarajevo and Fojnica, 2019

Participants of the training completed pre- and post-tests anonymously, originally designed for the training (not validated) by the John Hopkins Center for Communication Programs. The questionnaires included 19 close-ended questions and 4 open-ended questions to assess knowledge and attitudes on vaccination and interpersonal communication. After completion of the training, participants showed improvement in knowledge on 4/4 questions and positive changes in attitude on 14/19 questions.

A sub-sample of 10 participants from the first three trainings were randomly selected for a short interview a year after attending the training. Most agreed that the training had been useful for their everyday practice, particularly for guiding conversations with hesitant parents. They felt less stressed and more confident although conversations and relationships with refusing parents remained challenging.

Distribution of educational materials to health workers in primary care centres

To update health workers' technical knowledge and so improve vaccination conversations between health workers and parents (Barrier 1, Table 2), educational material on vaccine-preventable diseases and vaccination was distributed in 2019 via routine meetings/workshops to 175 doctors including pediatricians working on immunization in primary care centres. The material was produced by the European Society for Paediatric Infectious Diseases and translated into the local language. Further distribution is currently on hold due to the COVID-19 pandemic.

Mobile application "My Calendar of Immunization"

In May 2019, the Institutes for Public Health of FBiH and the Republic of Srpska in collaboration with UNICEF BiH launched a mobile application "My Calendar of Immunization" for parents. This app provides the immunization schedule, tracks a child's vaccination status and sends notifications for immunization (seven days before the appointment) and a reminder 30 days later if the appointment is missed. It therefore addresses Barrier 2 (Table 2). To date the app has been downloaded by 8870 users.



Images from the "My Calendar of Immunization" app

IMPACT OF THE INTERVENTIONS

While no definite causal inference can be made between the new insights, the subsequent interventions and the vaccination uptake, some vaccination rates developed positively in 2019, breaking a steady trend with declining rates (see Figures 3 and 4) (1).

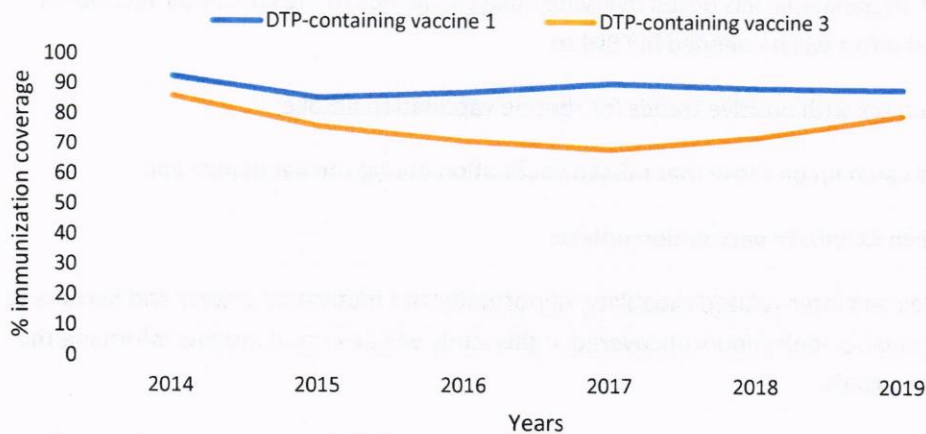


Figure 3. Coverage for DTP1 and DTP3 2014-2019

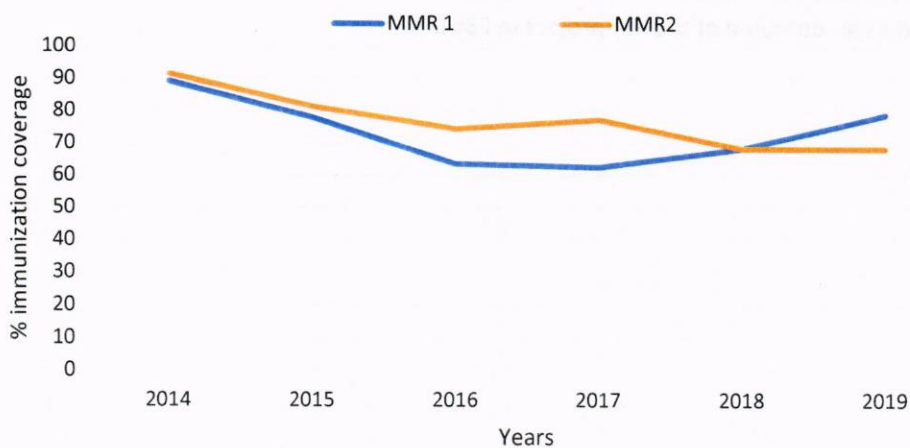


Figure 4. Coverage for MMR1 and MMR2 2014-2019

Unfortunately, all TIP project activities stopped in 2020 due to the global COVID-19 pandemic, and as a secondary effect of this, a decrease in routine immunization coverage was seen. A testament to the impact of the pandemic on routine vaccination behaviours can be found in a behavioural insights survey (26) conducted in FBiH in June 2020 with a representative sample of the population: 49% indicated that they had avoided going to the doctor with issues that could be postponed, e.g. vaccination or a check-up.

NEXT STEPS

Before the TIP project in FBiH, very limited local data on which children were vaccinated, and on barriers and drivers to childhood vaccination behaviours were available to inform strategies, interventions and communications.

Since then, the COVID-19 pandemic has posed overwhelming challenges to the childhood vaccination programme. Concerted effort will be needed in FBiH to:

- 1) get back on track with positive trends for routine vaccination uptake;
- 2) recover and catch up on those that missed vaccination during the pandemic; and
- 3) to ensure high COVID-19 vaccination uptake.

The significant, complex and inter-related capability, opportunity and motivation drivers and barriers to positive childhood vaccination behaviours uncovered in this study will be critical insights informing the strategies to reach these goals.

Targeted and tailored strategies are now being developed to ensure COVID-19 vaccination demand and acceptance. Post-pandemic, the same will be done for routine vaccination. The intervention ideas listed above are still valid and can be tailored to the new situation if and when resources are available. As part of this, partners and a broad stakeholder group will be engaged and consulted, and a resource mobilization effort will be initiated to ensure sufficient funds for the realization of the theory and evidence-informed interventions suggested as an outcome of the TIP project in FBiH.

REFERENCES

1. Annual Report on Infectious Diseases and Immunization in the Federation of Bosnia and Herzegovina in 2019. Sarajevo/Mostar: Institute for Public Health of Federation BiH; 2020.
2. European Vaccine Action Plan 2015-2020. World Health Organization. Regional Office for Europe, 2014 (<https://apps.who.int/iris/handle/10665/340400>, accessed 24 January 2022).
3. WHO EpiData, No. 10/2019, October 2018—September 2019. WHO Regional Office for Europe, 2019 (<http://www.euro.who.int/en/health-topics/disease-prevention/vaccines-and-immunization/publications/surveillance-and-data/who-epidata/who-epidata,-no.-102019>, accessed 4 December 2020).
4. 31st meeting of the Regional Certification Commission for Poliomyelitis Eradication: Copenhagen, Denmark, 31 May–1 June 2017 (<https://apps.who.int/iris/handle/10665/351444> accessed 7 February 2022).
5. Cobos Munoz D, Monzon Llamas L, Bosch-Capblanch X. Exposing concerns about vaccination in low- and middle-income countries: a systematic review. *Int J Public Health*. 2015; 60:767-780.
6. Smith LE, Amlot R, Weinman J, Yiend J, Rubin GJ. A systematic review of factors affecting vaccine uptake in young children. *Vaccine*. 2017; 35:6059-6069.
7. Tauil M de C, Dato AP, Waldman EA. Factors associated with incomplete or delayed vaccination across countries: A systematic review. *Vaccine*. 2016; 34:2635-2643.
8. Strategic Advisory Group of Experts on Immunization (SAGE) Working Group on Vaccine Hesitancy Report. World Health Organization, 2014 (https://www.who.int/immunization/sage/meetings/2014/october/1_Report_WORKING_GROUP_vaccine_hesitancy_final.pdf, accessed 4 December 2020).
9. Tailoring immunization programmes to reach underserved groups – the TIP approach. World Health Organization Regional Office for Europe. Copenhagen, 2019. <http://www.euro.who.int/tip> (accessed 12 November 2020).
10. Bach Habersaat K, Jackson C. Understanding vaccine acceptance and demand—and ways to increase them. *Bundesgesundheitsblatt*. 2020; 63:32–39.
11. Michie S, Atkins L, West R. *The Behaviour Change Wheel. A Guide to Designing Interventions*. Bream, UK: Silverback Publishing; 2014.
12. Hukic M, Hubschen JM, Seremt M et al. An outbreak of rubella in the Federation of Bosnia and Herzegovina between December 2009 and May 2010 indicates failure to vaccinate during wartime (1992-1995). *Epidemiol Infect*. 2012; 140:447-453.
13. Hukic M, Hajdarpasic A, Ravlija J et al. Mumps outbreak in the Federation of Bosnia and Herzegovina with large cohorts of susceptibles and genetically diverse strains of genotype G. Bosnia and Herzegovina, December 2010 to September 2012. *Euro Surveill*. 2014; 19:ii=20879.
14. Hukic M, Ravlija R, Karakas S, et al. An ongoing measles outbreak in the Federation of Bosnia and Herzegovina, 2014-2015. *Euro Surveill*. 2015; 20:ii=21047.
15. The status of Roma children families in Bosnia and Herzegovina. UNICEF. UNICEF Office for Bosnia and Herzegovina 2013 (<https://www.unicef.org/bih/en/reports/status-roma-children-and-families-bosnia-and-herzegovina>, accessed 12 November 2020).
16. Bosnia and Herzegovina Monitoring the Situation of Women and Children. Multiple Indicator Cluster Survey 2011-2012. UNICEF. UNICEF Office for Bosnia and Herzegovina, 2013.

17. Rapid Programme Review Report (not published). Assessing the bottlenecks for routine immunization in Bosnia and Herzegovina. UNICEF. UNICEF Office for Bosnia and Herzegovina, 2016.
18. Musa S, Mulaomerović M. Impact of immunization on epidemiology of vaccine-preventable diseases in the Federation of Bosnia and Herzegovina. *Cent Eur J Paed.* 2017, 13:46-54.
19. Musa S, Topalović B, Čatić S, Smajlagić Z. Assessment of vaccine effectiveness during measles outbreak in the Federation of Bosnia and Herzegovina, 2014-2015. *Cent Eur J Public Health.* 2018; 26:79-82.
20. Junuzović A, Musa S, Pilav A. Pertussis-like syndrome in primary care practice. *Cent Eur J Paed.* 2017; 13:73-77.
21. Radovanic Z. Anti-vaccinationists and their arguments in the Balkan countries that share the same language. *Srp Arh Celok Lek* 2017; 145:199-204.
22. Larson HJ, de Figueiredo A, Xiahong Z et al. The State of Vaccine Confidence 2016: Global Insights Through a 67-Country Survey. *EBioMedicine* 2016; 12:295-301.
23. Musa S, Skrijelj V, Kulo A, Bach Habersaat K, Smjecanin M, Primorac E, Becirovic D, Jackson C. Identifying barriers and drivers to vaccination: a qualitative interview study with health workers in the Federation of Bosnia and Herzegovina. *Vaccine.* 2020; 38:1906-1914.
24. Musa S, Habersaat KB, Jackson C, Kulo A, Primorac E, Smjecanin M, Funk S. Tailoring Immunization Programmes: Using patient file data to explore vaccination uptake and associated factors. *Hum Vaccines Immunother.* 2020;23:1-9.
25. Musa S, Kulo A, Bach Habersaat K, Skrijelj V, Smjecanin M, Jackson C. A qualitative interview study with parents to identify barriers and drivers to childhood. *Hum Vaccines Immunother.* 2021;17:3023-3033.
26. Survey tool and guidance: rapid, simple, flexible behavioural insights on COVID-19: 29 July 2020. World Health Organization. Regional Office for Europe, 2020 (<https://apps.who.int/iris/handle/10665/333549>, accessed 24 January 2022).

The WHO Regional Office for Europe

The World Health Organization (WHO) is a specialized agency of the United Nations created in 1948 with the primary responsibility for international health matters and public health. The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health conditions of the countries it serves.

Member States

Albania
Andorra
Armenia
Austria
Azerbaijan
Belarus
Belgium
Bosnia and Herzegovina
Bulgaria
Croatia
Cyprus
Czechia
Denmark
Estonia
Finland
France
Georgia
Germany
Greece
Hungary
Iceland
Ireland
Israel
Italy
Kazakhstan
Kyrgyzstan
Latvia
Lithuania
Luxembourg
Malta
Monaco
Montenegro
Netherlands
North Macedonia
Norway
Poland
Portugal
Republic of Moldova
Romania
Russian Federation
San Marino
Serbia
Slovakia
Slovenia
Spain
Sweden
Switzerland
Tajikistan
Turkey
Turkmenistan
Ukraine
United Kingdom
Uzbekistan

WHO/EURO:2022-4774-44537-63060

World Health Organization Regional Office for Europe

UN City, Marmorvej 51
DK-2100 Copenhagen Ø, Denmark

Tel.: +45 45 33 70 00

Fax: +45 45 33 70 01

Email: eurocontact@who.int

Website: www.euro.who.int