



Trends in Childhood Vaccination Coverage

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Topics

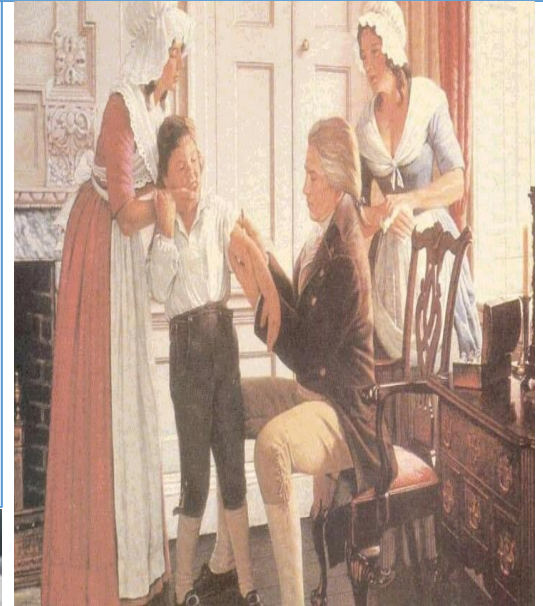
- **Background vaccination coverage**
- **Childhood Immunization coverage: Israel and Global**
- **Achievements & challenges**



Childhood Vaccinations

A cornerstone of Public Health

- Childhood Immunizations – Primary prevention – pre-exposure.
- A vaccine-preventable disease VPD is an infectious disease for which an effective vaccine exists.
- Vaccination Coverage (VC) is one of the Child Health Indicators.



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Background

- Childhood vaccinations prevent morbidity and mortality from vaccine-preventable diseases and provide a cost-effective intervention to improve health equity.
- Routine childhood vaccinations in Israel - included in the National Health Insurance Law.
- Community-based clinics - free vaccination to all children regardless of civil status.
- While the national vaccination coverage is adequate, gaps between population groups exist.
- An immunization registry assembles vaccinations data to one database, enabling monitoring and planning aiming to sustain and increase vaccination coverage.
- Even in high coverage locations, “pockets” of unvaccinated children occur, limiting herd immunity against contagious pathogens and expediting infection spread and outbreaks.
- **Health Inequities are defined as gaps in health status, access and utilization of services among population groups.**

Health and health care in Israel: an introduction. Clarfield AM, Manor O, Nun GB, Shvarts S, Azzam ZS, Afek A, Basis F, Israeli A. Lancet. 2017

Maternal and child health in Israel: building lives. Rubin L et al.. Lancet. 2017.

Derrough T et al. Immunisation Information Systems - useful tools for monitoring vaccination programmes in EU/EEA countries, 2016. Euro Surveill. 2017

Chard AN et al . Routine Vaccination Coverage - Worldwide, 2019. MMWR Morb Mortal Wkly Rep. 2020

EQUALITY VERSUS EQUITY



In the first image, it is assumed that everyone will benefit from the same supports. They are being treated equally.



In the second image, individuals are given different supports to make it possible for them to have equal access to the game. They are being treated equitably.



In the third image, all three can see the game without any supports or accommodations because the cause of the inequity was addressed. The systemic barrier has been removed.

<https://www.diffen.com/difference/Equality-vs-Equity>

Methods

- Vaccination coverage (VC) - appraised based on data retrieved from the Israeli National Immunization Registry.
- Routine vaccinations are offered without charge to all children at community-based clinics (age birth to 6 years) and school health services (age 6 to 15 years). Vaccinations are not mandatory.
- In 2022, national population 9.5 million, children (0-17 years) – 1/3 of the population. Annual birth cohort 185,000.
- The immunization registry, launched in late 2009, expanded to include routine childhood vaccinations, from clinics and schools' Electronic Health Records.
- The registry incorporates data on: vaccine doses and dates, child characteristics (ID, name, date of birth), socio-demographics including main population groups (Arab, Jewish Ultra-Orthodox and traditional-secular) based on residence.

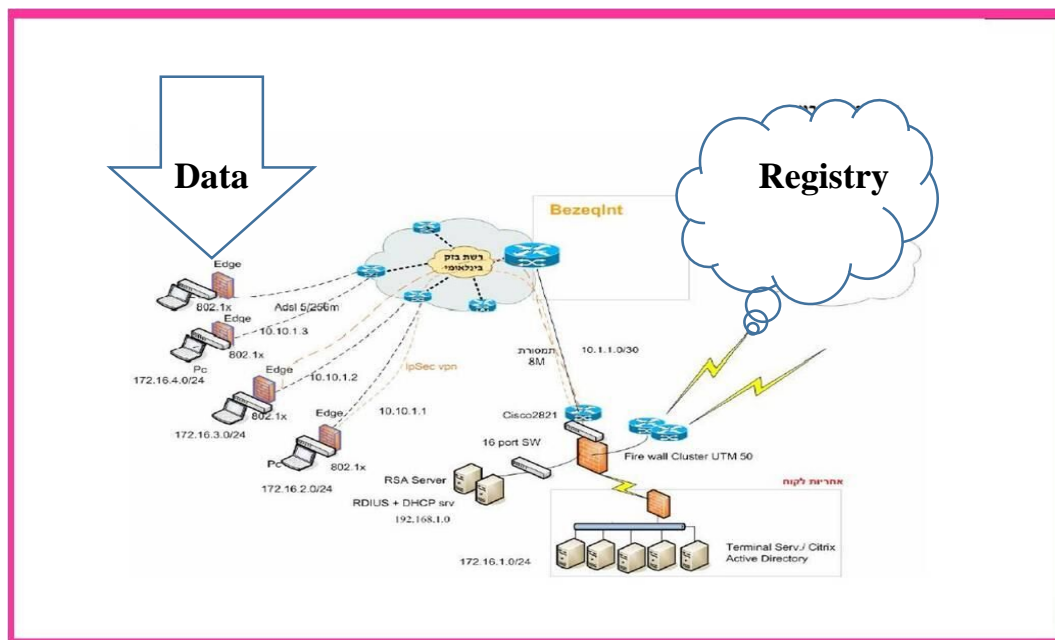
The Israel National Immunization Registry. Stein-Zamir C et al. Isr Med Assoc J. 2010.

Immunization registry as a digital assessment tool during outbreaks. Stein-Zamir C et al. Clin Microbiol Infect..2021

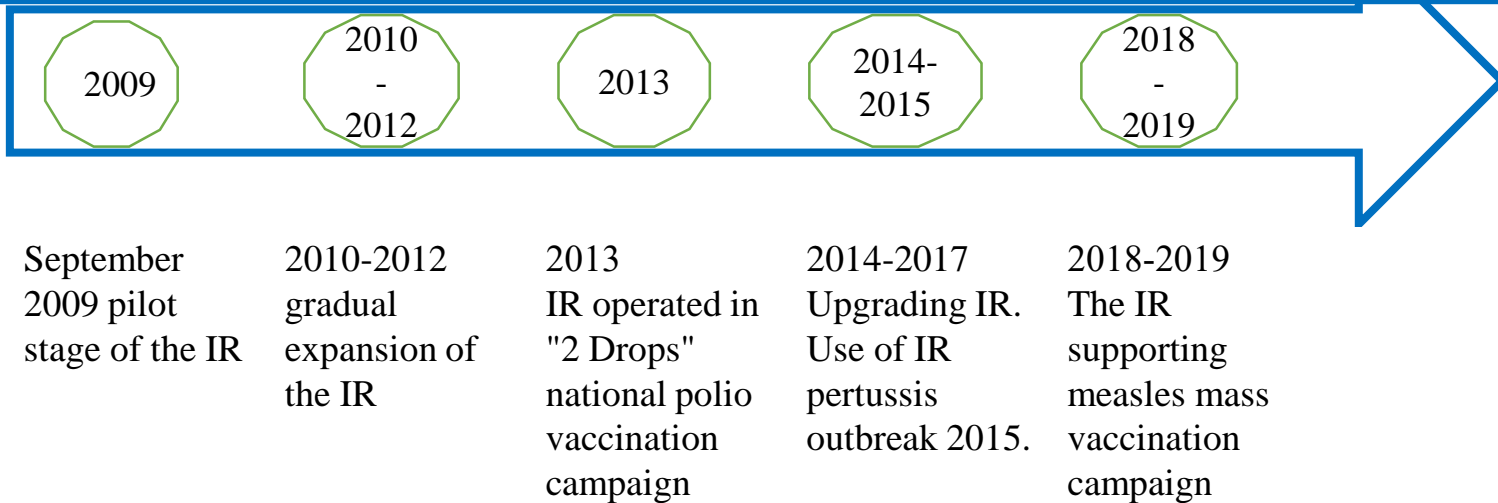
Vaccination schedule for children and adolescents

Age /vaccination	Hepatitis B	Tetanus, Diphtheria, Pertussis, Poliomyelitis (Polio)	Haemophilus influenzae B	Pneumococcus	Rota-virus	Measles, Mumps, Rubella, Varicella	Hepatitis A	Papilloma-virus	Influenza*
At birth /hospital	1st dose	—	—	—	—	—	—	—	—
1 month	2nd dose	—	—	—	—	—	—	—	—
2 months	—	1st dose	1st dose	1st dose	1st dose	—	—	—	—
4 months	—	2nd dose	2nd dose	2nd dose	2nd dose	—	—	—	—
6 months	3rd dose	3rd dose + bOPV Polio vaccine	3rd dose	—	3rd dose	—	—	—	The number of doses (1 or 2) depends on age and vaccination history
12 months	—	4th dose	4th dose	3rd dose	—	1st dose	—	—	—
18 months	—	bOPV Polio vaccine	—	—	—	—	1st dose	—	—
24 months	—	—	—	—	—	—	2nd dose	—	—
6 years (1st grade)	—	—	—	—	—	2nd dose	—	—	—
7 years (2nd grade)	—	Booster**	—	—	—	—	—	—	1 dose
8 years (3rd grade)	—	—	—	—	—	—	—	—	1 dose
9 years (4th grade)	—	—	—	—	—	—	—	—	1 dose
13 years (8th grade)	—	Booster (without Polio)	—	—	—	—	—	2 doses	*** See below

The national immunization registry structure



Israel national immunization registry (IR) 2009-2019 timeline



Stein-Zamir C et al. Immunization registry as a digital assessment tool during outbreaks. Clin Microbiol Infect..2021

The immunization registry - 2013 polio (bOPV) vaccination campaign “2 drops”

- June 2013: wild poliovirus type 1 (WPV1) isolation in sewage from southern Israel.
- 6-7 2013 - IPV catch-up, focus on southern Israel ->98% coverage ages 0-9y.
- 8/2013 - bOPV (types 1 & 3) campaign. 180,000 children < 10 y - southern district. 1.2 million children < 10 y. Coverage: 90% south. district, 80% nationally.
- Control measures - timely and effective
- No cases of paralytic polio despite sustained WPV1 transmission.
- Ongoing coverage monitoring (**The Immunization Registry**).
- Health professionals played a key role in communication.
- 1/2014 Routine Vaccination Program - 2 bOPV (6 & 18 months) + IPV.



Moran-Gilad J et al. Public health response to the silent reintroduction of wild poliovirus to Israel, 2013-2014. Clin Microbiol Infect. 2016

2 Drops - Polio Vaccination Campaign

Just two drops, and the family is protected from the risk of polio

Supplemental Polio Vaccination Campaign

Information translated into languages

To Vaccination Centers

The Ministry of Health has commenced a vaccination campaign aimed at protecting the population from polio. In accordance with Ministry recommendations, children born on 1-Jan-2004 or later (who have not yet received OPV vaccine but have received at least one dose of IPV vaccine) will be vaccinated. The additional vaccine will be given as a single supplemental dose (2 drops given by mouth) of bivalent bOPV vaccine.

Why is this important?

- In monitoring tests performed by the Ministry of Health, poliovirus has been found in the sewerage system at a number of foci in the South. So far, not one case of outbreak of the disease has been discovered, but it is important to continue to protect close family.
- The OPV vaccine is considered to be particularly effective and has a good safety profile. Children who have never received OPV vaccine but have received all the doses of IPV vaccine can still transmit the virus to family members who are not vaccinated.

**SIA =
Supplementary
immunization
campaigns/activities**

The immunization registry - 2015 Pertussis outbreak

- ❖ Jerusalem pertussis outbreak in (2015), 104 cases in infants with 3 deaths.
- ❖ An accelerated pertussis vaccination program for infants at the ages of 6, 10 and 14 weeks was employed (the routine schedule is 2,4,6 months).
- ❖ **The immunization registry** (district level) - real-time vaccination coverage, program progress and effectiveness.

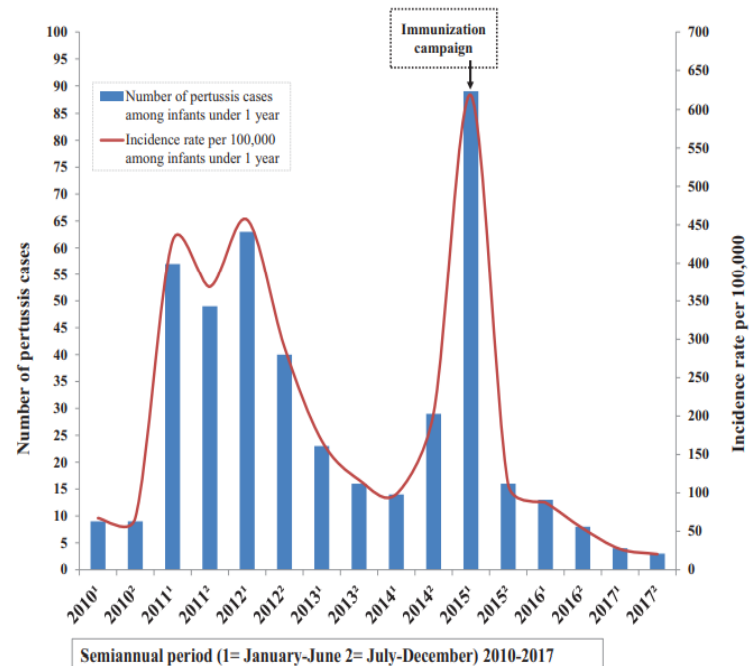
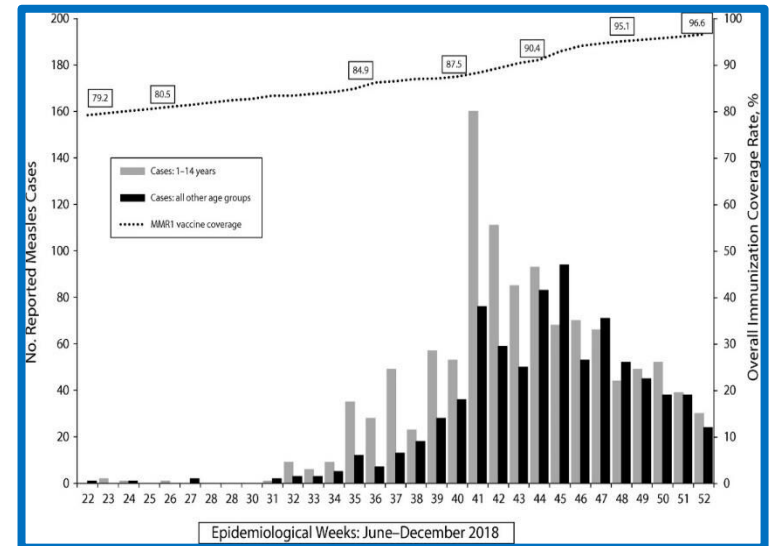


FIGURE 1. Pertussis notifications in infants younger than 1 year of age in the Jerusalem district and semiannual incidence rates (January–June and July–December) per 100,000 for the years 2010–2017.

Stein-Zamir C et al. Pertussis Outbreak in Infants and an Immunization Campaign Based on Providing Pertussis Vaccine Doses at 6 Weeks, 10 Weeks, and 14 Weeks. *Pediatr Infect Dis J.* 2019

The immunization registry - 2018-2019 national measles outbreak

- ❖ The 2018-2019 national measles outbreak (n=4300 cases), 8-10% were hospitalized (the leading complication pneumonia/pneumonitis) with 3 fatalities.
- ❖ Most cases (75%) children under 15 years, 85% unvaccinated.
- ❖ The vaccination campaign used **online immunization registry data**.
- ❖ MMR1/MMRV1 coverage rates in affected regions increased from 80% to 95% within 3 months with decline in measles incidence.



Ben-Chetrit E, et al. Measles-related hospitalizations and associated complications in Jerusalem, 2018-2019. Clin Microbiol Infect. 2019.

Stein-Zamir C et al. Community-Oriented Epidemic Preparedness and Response to the Jerusalem 2018-2019 Measles Epidemic. Am J Public Health. 2019.

Stein-Zamir C et al. Large Measles Outbreak in Orthodox Jewish Communities - Jerusalem District, Israel, 2018-2019. MMWR Morb Mortal Wkly Rep. 2020.

The measles vaccination campaign 2018

- Unvaccinated children were detected through the registry and outreach community-based activities.
- The campaign: long opening hours at clinics, families brought all unvaccinated children without appointments.
- To improve accessibility, a mobile unit in affected neighborhoods with high compliance.
- All measles campaign locations were linked online to the registry.
- **A 2-way link:** receiving information on child vaccination status and reporting on vaccines administered.
- The number of measles vaccine doses and coverage rates were monitored daily.

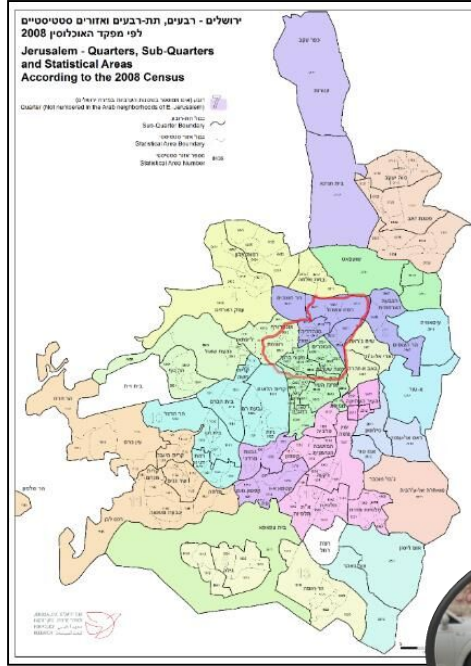


**Mobile
Vaccination
units**



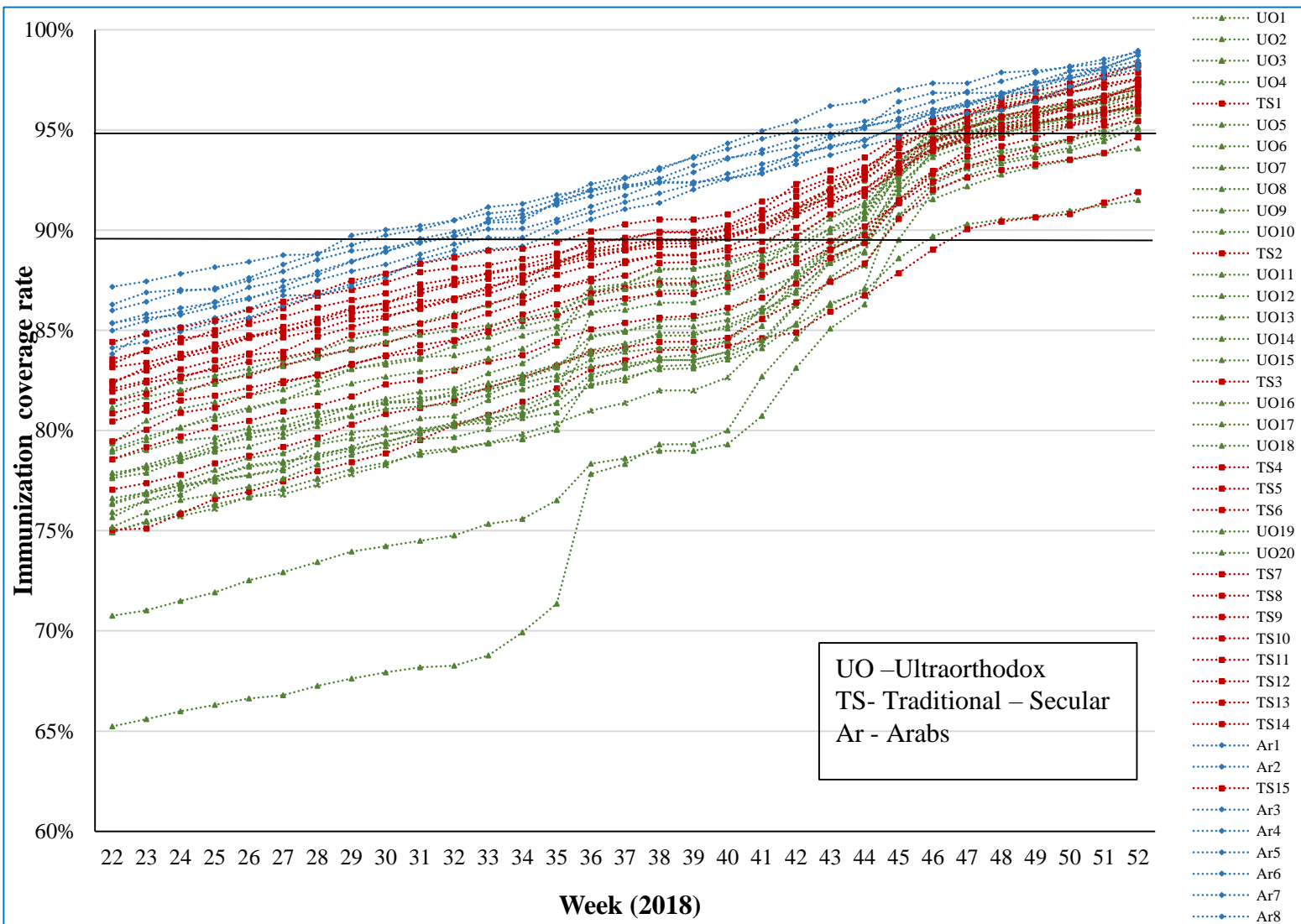
Stein-Zamir C et al. Community-Oriented Epidemic Preparedness and Response to the Jerusalem 2018-2019 Measles Epidemic. Am J Public Health. 2019.
Stein-Zamir C et al. Large Measles Outbreak in Orthodox Jewish Communities - Jerusalem District, Israel, 2018-2019. MMWR Morb Mortal Wkly Rep. 2020.

The 2018–2019 Measles Epidemic



A Large Measles Outbreak in Orthodox Jewish Communities - Jerusalem District, Israel, 2018-2019. Stein-Zamir C, Abramson N, Shoob H. MMWR Morb Mortal Wkly Rep. 2020 May 8;69(18)

Community-Oriented Epidemic Preparedness and Response to the Jerusalem 2018-2019 Measles Epidemic. *American journal of public health* vol. 109,12 (2019).



פסיקה הלכתית מודרנית על ההתחסנות נגד חצבת

יהודה לרמן¹

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תקציר

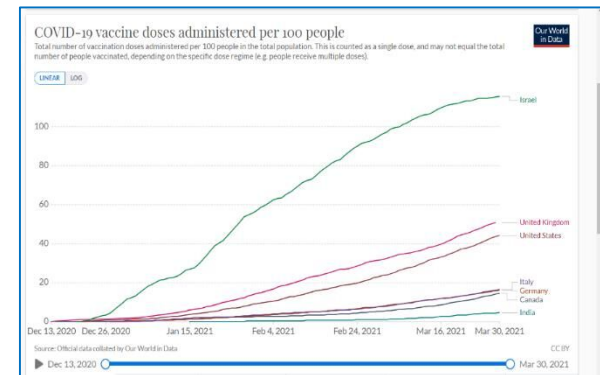
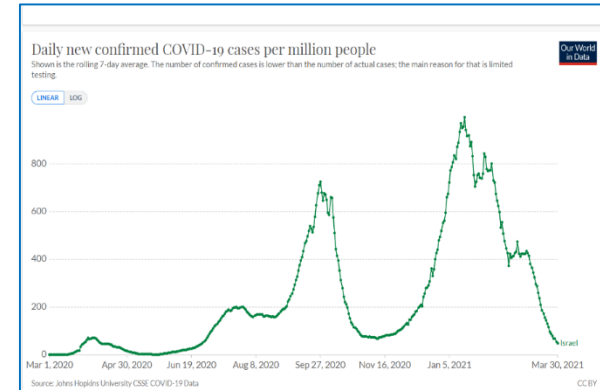
במאמר זה, מוצגות פסיקות של מבחר רבנים המשתייכים לזרם הדתי-לאומי והחרדי בישראל ובחו"ל. הפסיקות התפרסמו בעקבות התפרצות החצבת. כל הפוסקים תמכו ללא סייג בחובה ההלכתית של המבוגרים להתחסן ולחסן את הילדים נגד חצבת. הם הסתמכו בהחלטתם על נתונים מדעיים המעידים על התפשטות החצבת ועל הסכנה הכרוכה בהיעדר חיסון של האוכלוסייה, לאחר ששקלו בדעתם גם את טענות מתנגדי החיסונים. הפוסקים אינם תומכים באופן גורף בכל החיסונים; הם מתנגדים לדוגמה לחיסון נערות ונערים בכיתה ח' נגד נגיף הפפילומה. לנוכח הסכנה שבהימנעות מקבלת חיסונים בקרב קהילות דתיות וחרדיות בישראל ולנוכח החיסון נגד נגיף הקורונה שהוכנס לאחרונה לשימוש בישראל, הקהילה הרפואית חייבת להכיר את הפסיקה ההלכתית בנוגע לחיסונים, כדי לדעת כיצד להדוף את הטענה כי ההלכה אוסרת קבלת חיסונים.

מילות מפתח: חיסונים; הססנות להתחסן; הלכה, חצבת; נגיף הקורונה.

key words: Vaccines; Vaccine hesitancy; Jewish Law; Measles; COVID-19.

COVID-19 vaccinations Dec 2020 – March 2021

- Israel's population-based **immunization registry** includes all the country's children.
- Based on previous mass vaccination campaigns, the national registry was quickly adjusted to the COVID-19 vaccine campaign.
- Israel residents have a single unique identifier (ID) used in all health care facilities, allowing for ongoing data assembly on vaccine doses and n. of vaccinees.
- The registry allows follow-up, assessment of adverse events and real-world vaccine effectiveness.












<https://ourworldindata.org/explorers/coronavirus-data-explorer>



RESEARCH ARTICLE



Reasons underlying the intention to vaccinate children aged 5-11 against COVID-19: A cross-sectional study of parents in Israel, November 2021

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ABSTRACT

Vaccination is a key tool to mitigate impacts of the COVID-19 pandemic. In Israel, COVID-19 vaccines became available to adults in December 2020 and to 5–11-year-old children in November 2021. Ahead of the vaccine roll-out in children, we aimed to determine whether surveyed parents intended to vaccinate their children and describe reasons for their intentions. We collected information on parental socio-demographic characteristics, COVID-19 vaccine history, intention to vaccinate their children against COVID-19, and reasons for parental decisions using an anonymous online survey. We identified associations between parental characteristics and plans to vaccinate children using a logistic regression model and described reasons for intentions to vaccinate or not. Parental non-vaccination and having experienced major vaccination side effects were strongly associated with non-intention to vaccinate their children (OR 0.09 and 0.18 respectively, $p < .001$). Parents who were younger, lived in the socio-economically deprived periphery, and belonged to the Arab population had lower intentions to vaccinate their children. Reasons for non-intention to vaccinate included concerns about vaccine safety and efficacy (53%, 95%CI 50–56) and the belief that COVID-19 is a mild disease (73%, 95%CI 73–79), while a frequent motive for vaccination was the return to normal social and educational life (89%, 95%CI 87–91). Understanding rationales for COVID-19 vaccine rejection or acceptance, as well as parental demographic data, can pave the way for intentional educational campaigns to encourage not only vaccination against COVID-19, but also regular childhood vaccine programming.

HIGHLIGHTS

- Parental intention to vaccinate children aged 5-11 is much lower than vaccine coverage in parental age groups
- Being unvaccinated and having experienced side effects following vaccination were the greatest negative predictors in parents of intention to vaccinate their children
- Parents were more likely to accept a COVID-19 vaccine for their children to allow them to return to daily social life and to ensure economic security in the family
- Parents were more likely to reject a COVID-19 vaccination for health reasons such as safety concerns or due the belief that COVID-19 was a mild disease in children

ARTICLE HISTORY

Received 30 March 2022
Revised 20 July 2022
Accepted 29 July 2022

KEYWORDS

COVID-19; vaccine hesitancy; childhood vaccines; parental vaccine hesitancy; Covid-19 and children

STANDARD OPERATING PROCEDURES

RESPONDING TO A POLIOVIRUS EVENT OR OUTBREAK

VERSION 3.1

MARCH 2020

VDPV3 March 2022

Acute Flaccid Paralysis AFP child case.

Several children VDPV3 in stool samples and asymptomatic.

All children unvaccinated.

Living in crowded community in Jerusalem.

Complicated investigation due to community characteristics.

Educational facilities - independent (not governmental /municipal).

Environmental surveillance of the Jerusalem sewage system VDPV3.

Vaccination campaign

- Call for catch up all suppliers
- Vaccination campaign – catch – up.
- City-wide, focusing on specific communities in Jerusalem
- Guidelines to all preventive services providers
- Outreach – unvaccinated 6w-6y+ schools
- Prioritization 1st 2nd doses
- 1st IPV 6w 2nd 12w.



בעקבות מקרה של חולה עם מניעה נגיפית כתוצאה מחיד בקות בגיף הפוליו ולונכה איתור של הגיף בבדיקה מי שפכים בירושלים, חשוב לדעת:

נגיף הפוליו עלול לגרום רח"ל

לשיתוק ילדים

החיסון נגד נגיף הפוליו מעניק הגנה מלאה מתחלואה והדבקה!

בהוראת גדולי ישראל על ההורים מוטלת החובה לחסן את ילדיהם!
ודא כי ילדיכם קיבלו את מנת החיסון בהתאם לליגים, אודות פט בדחיפות לתחנת החיסון

משרד הבריאות והרשות המקומית יתגברו את שעות הפעילות של תחנת טיט חלב בירושלים, בית-שמש ובית-עילית לטובת ההורים המעוניינים לחסן את ילדיהם.

התחנת פעולת בבלים (בבלים) ללא צורך בקביעת תור.
לחיסון ילדם מעל כיתה א' צד קשר עם חברת נטלי 121-504-1700.

"אבינו מלכנו חמל עלינו ועל עוללינו וטפנו"

לכיר' שעות מיוחדות וזמינות תחנת חיסון בית למנוח למוקד קול הבריאות 5400

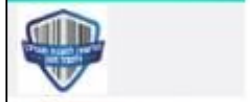
לפרטים נוספים: קו המידע של משרד הבריאות לציבור הרחב: 03-5097000

משרד הבריאות

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**בואו לגלוש
אזהרות הו
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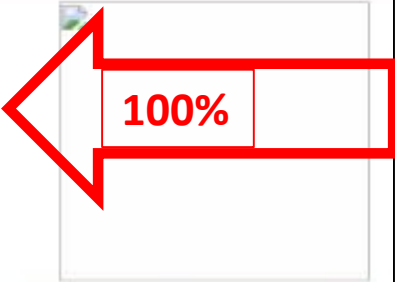


גור הדים נרחבים
התבטאות ראשונה
קנייבסקי בנושא הת
באוקראינה

עמוד הבית | בריאות | חדשות בריאות

מהפך במאה שערים: כמעט מאה אחוזי התחסנות לפוליו

בעקבות מקרה ההדבקה בפוליו, כ-6,000 חיסונים לפוליו ניתנו בשבוע שעבר בירושלים. תחנות טיפות חלב העירוניות פועלות במתכונת חירום ותוגברו באחיות מחסנות מערים אחרות. ראש העיר ליאון: "נמשיך במבצע החיסונים כדי למנוע טרגדיות"



ארי קרויזר, י"ב אדר ב' תשפ"ב 14:24 15/03/2022

תגיות: [פוליו](#), [משה ליאון](#), [מאה שערים](#)



חדשות אחרונות

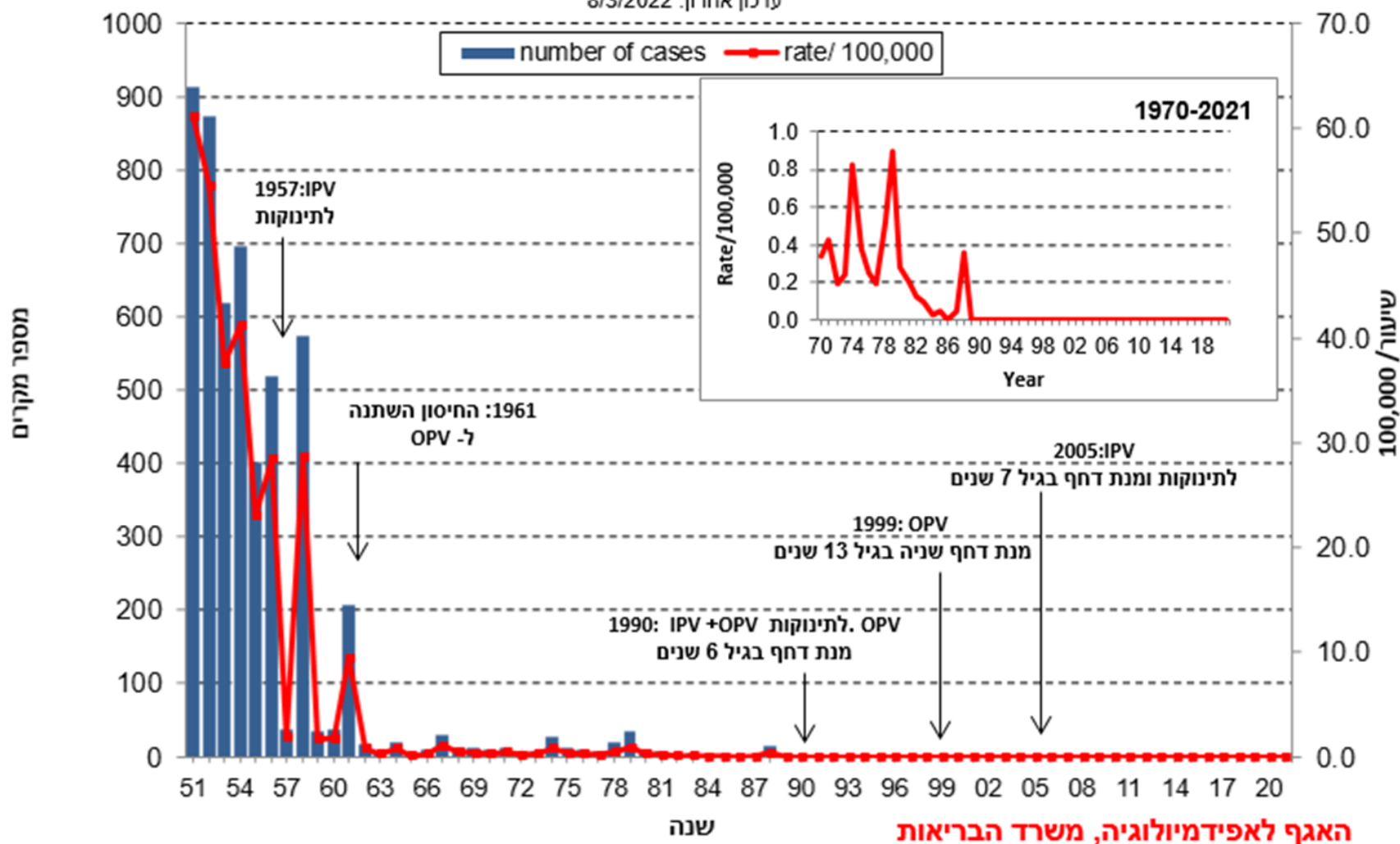
הילדים שנמלטו מהתוכנית הכינו משלוחי מנות לילדים שנשארו בבבולות

עם תת מקלע מטורף: לקחו רכב אזרחי והסכו אותו לצבאי - צפו

שיתוק ילדים: 1951-2021

מספר מקרים ושיעור ל-100,000

עדכון אחרון: 8/3/2022



Achievements & challenges

[https://www.who.int/data/gho/data/indicators/indicator-details/GHO/polio-\(pol3\)-immunization-coverage-among-1-year-olds\(-\)-](https://www.who.int/data/gho/data/indicators/indicator-details/GHO/polio-(pol3)-immunization-coverage-among-1-year-olds(-)-)

[https://www.who.int/data/gho/data/indicators/indicator-details/GHO/measles-containing-vaccine-first-dose-\(mcv1\)-immunization-coverage-among-1-year-olds\(-\)-](https://www.who.int/data/gho/data/indicators/indicator-details/GHO/measles-containing-vaccine-first-dose-(mcv1)-immunization-coverage-among-1-year-olds(-)-)

התחסנות במועד

Timeliness and completeness of routine childhood vaccinations

פנקסי חיסונים
 עם קבלת החיסון הראשון מקבל ההורה את פנקס החיסונים.
 כל חיסון של הילד נרשם בפנקס.
 בכל מקרה של פגיעה יש להציג את הפנקס בפני הרופא כדי למנוע מתן חיסון מיותר.
 פנקס זה מהווה מסמך המאשר את החיסונים שקיבל בעל הפנקס.
 יש לשמור על פנקס החיסונים לאורך כל החיים.

פנקס חיסונים
 بطاقة تطعيمات
 IMMUNIZATION RECORD

שימרו היטב על פנקס זה!

עלון זה הוק על ידי שיחתי בראות הציבור, משרד הבריאות, ירושלים.
 דצמבר 2014

לפיכך חיסונים ומסמכים

חיסונים בגיל הילדות

הורים מגינים על ילדיהם. חיסונים מגינים על ילדים.

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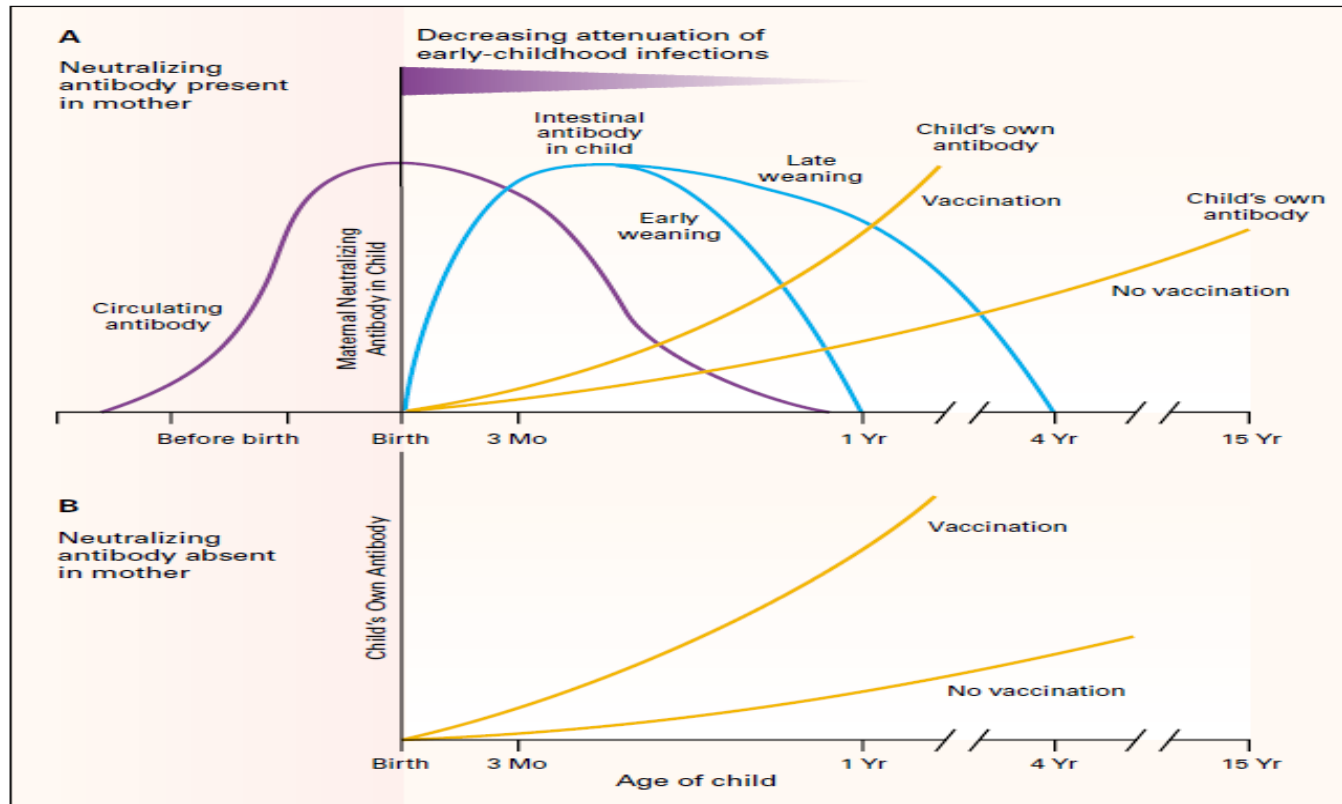
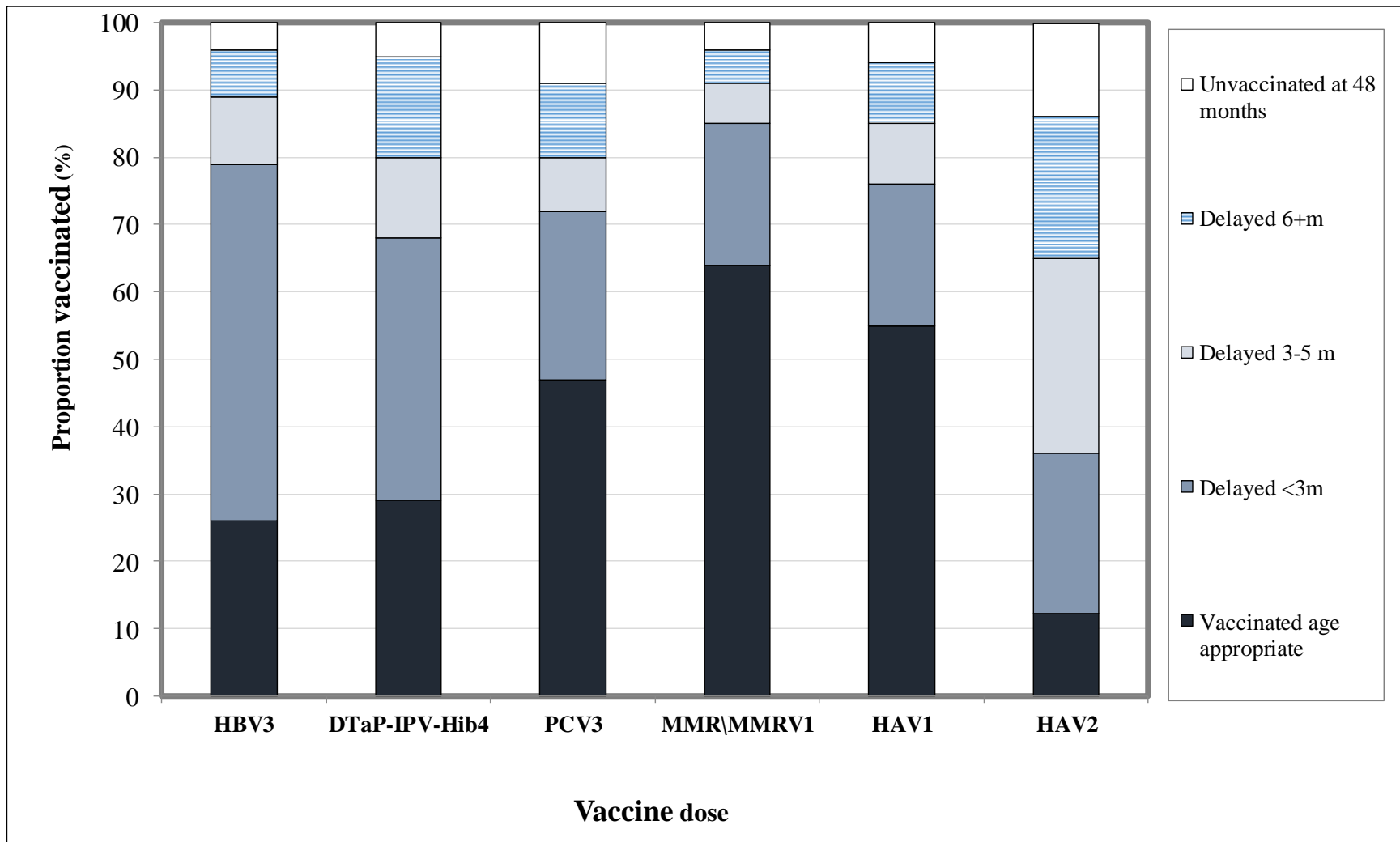


Figure 1. Protective Effect of Maternal Antibodies in Serum and Milk.
 In Panel A, maternal neutralizing antibodies cross the placenta to protect the offspring and attenuate systemic infections for 6 to 12 months after birth. The timing of weaning — early or late — influences the levels of intestinal antibodies derived from breast milk and the rate of attenuation of gastrointestinal infection. In Panel B, the absence of specific neutralizing antibodies in maternal serum leads to the absence of a protective effect.

Zinkernagel RM. Advances in immunology: maternal antibodies, childhood infections, and autoimmune diseases. *N Engl J Med* 2001

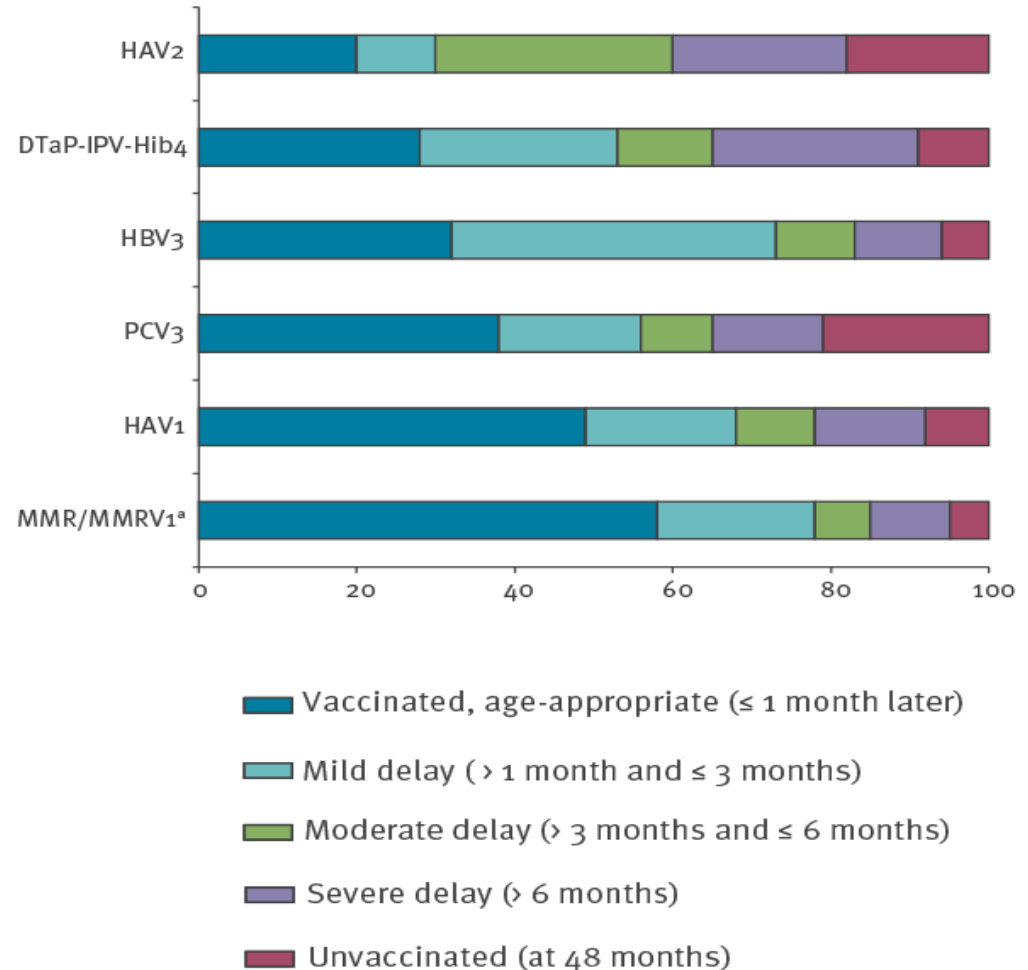
Age-appropriate versus up-to-date coverage of routine childhood vaccinations among young children in Israel. Stein-Zamir C, Israeli A. Hum Vaccin Immunother. 2017



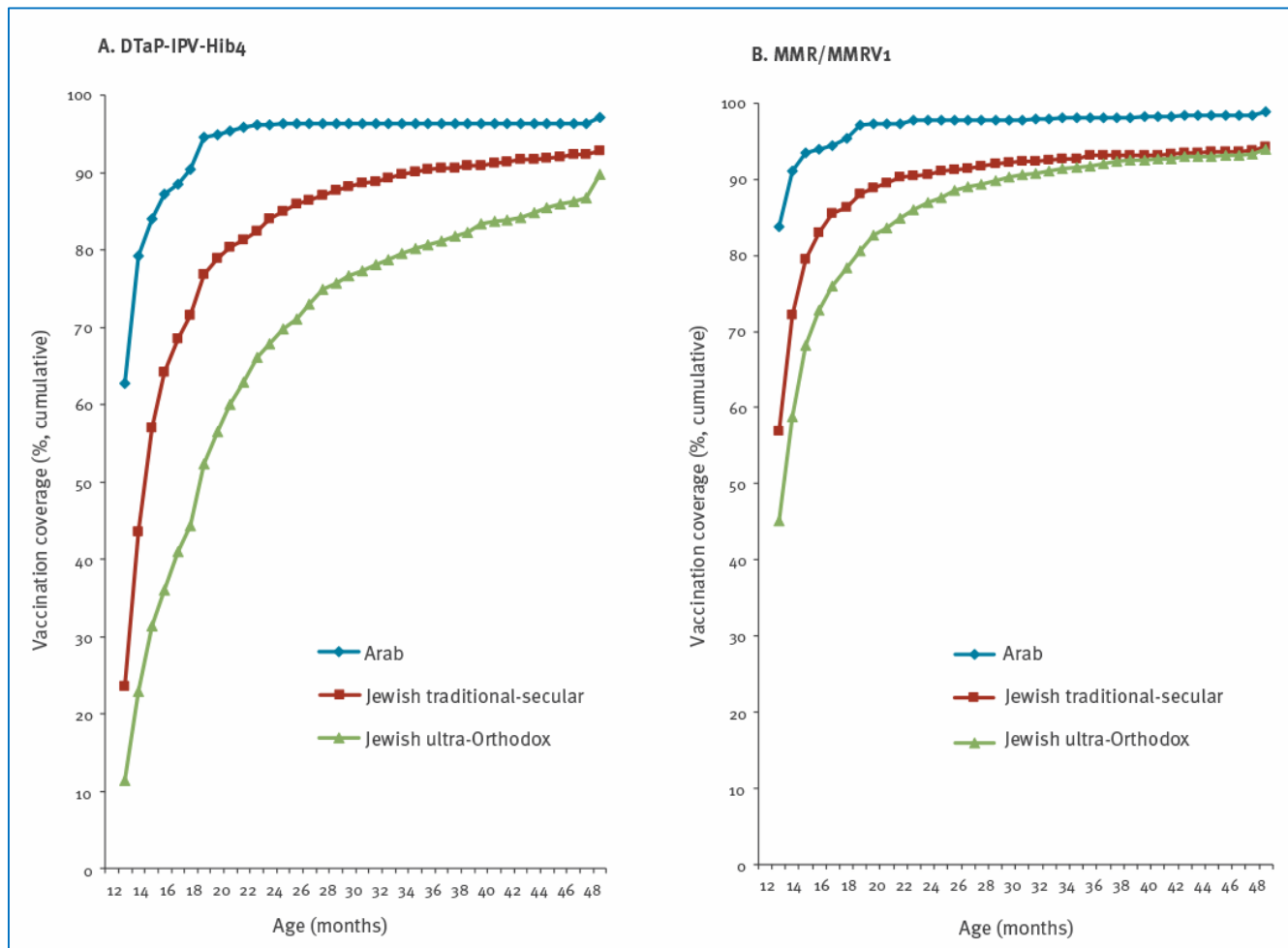
Timeliness and completeness of routine childhood vaccinations in young children residing in a district with recurrent vaccine-preventable disease outbreaks, Jerusalem, Israel.

.Distribution of vaccination coverage by defined categories (status at the age of 48 months) for selected vaccine doses, children born in 2009, Jerusalem district, Israel, 2016

Timeliness and completeness of routine childhood vaccinations in young children residing in a district with recurrent vaccine-preventable disease outbreaks, Jerusalem, Israel. Stein-Zamir C, Israeli A. *Euro Surveill.* 2019;24(6).



The cumulative proportion of vaccination uptake by age for (A) DTaP-IPV-Hib4 and (B) MMR/MMRV1a, in children born in 2009 and followed up to 7 years of age, by main population groups, Jerusalem district, Israel 2016



Timeliness and completeness of routine childhood vaccinations in young children residing in a district with recurrent vaccine-preventable disease outbreaks, Jerusalem, Israel. Stein-Zamir C, Israeli A. *Euro Surveill.* 2019;24(6).

Risk Markers

Delayed childhood vaccinations

- Multiple doses vaccines
- child's birth order 4TH and above
- Lower socio-economic status of the locality of the family residence
- Delayed DTaP1 (odds ratio = 4.96, 95%CI 3.8-6.4).

Non-vaccinated at 48 months

- Ethnicity (non-vaccination more common in Jewish vs. Arab children).
- higher socio-economic status borderline of the locality of the family residence
- Season of birth borderline (higher in children born in Oct-March vs. April-Sept).

Delayed DTaP1

- LBW (birthweight <2500 gr)
- child's birth order 4TH and above



Vaccination timeliness and completeness among preterm and low birthweight infants: a national cohort study

Dov Bary-Weisberg  & Chen Stein-Zamir

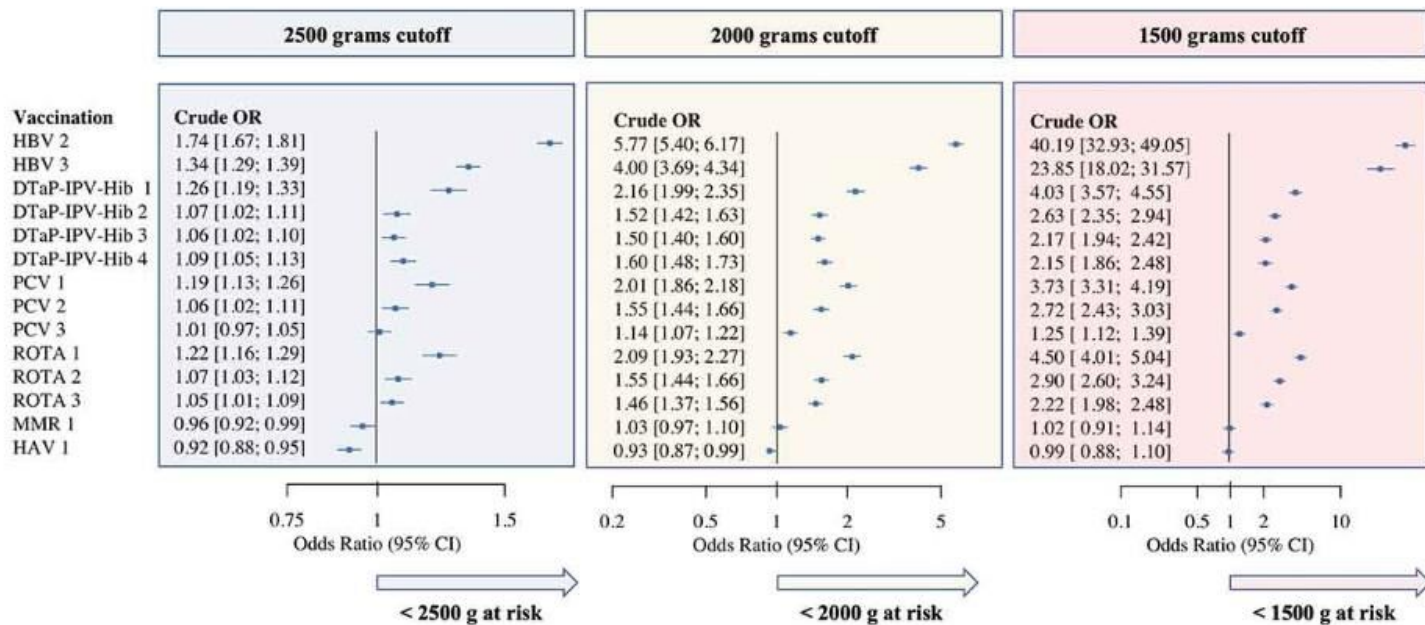
<https://doi.org/10.1080/21645515.2020.1840255>

PUBLISHED ONLINE:
16 December 2020

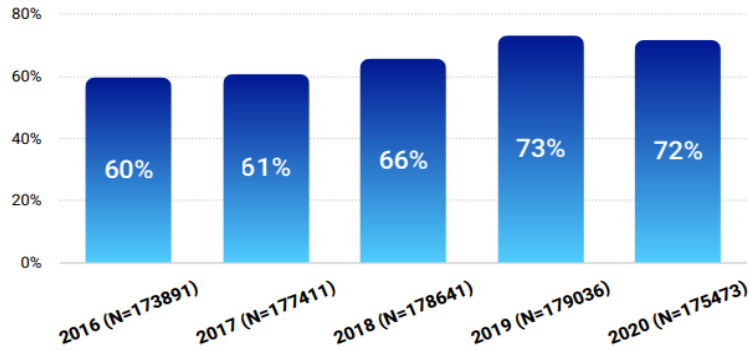
Figure 4 of 4

Figure 4. Forest plot presenting OR for risk of vaccination delay among NBW and LBW infants

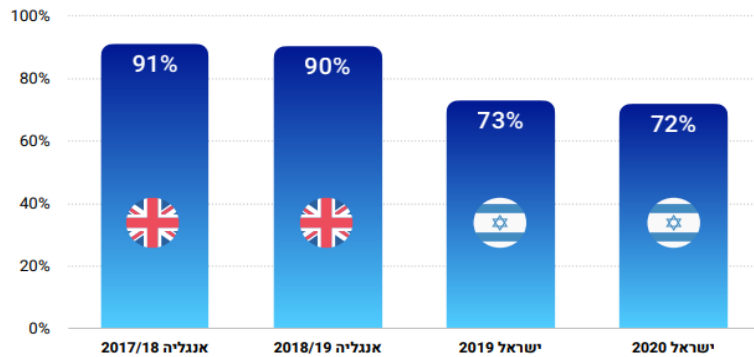
Note: In early infancy LBW children are at a higher risk of vaccination delay (vaccine dose administered more than 30 d after required age), compared to NBW weight. The risk for later doses within each series is generally lower as doses progress. In some cases, vaccinations administered at older ages and not limited by earlier doses from a series show an advantage among LBW infants. Abbreviations: NBW, normal birthweight (≥ 2500 g); LBW, low birthweight (< 2500 g).



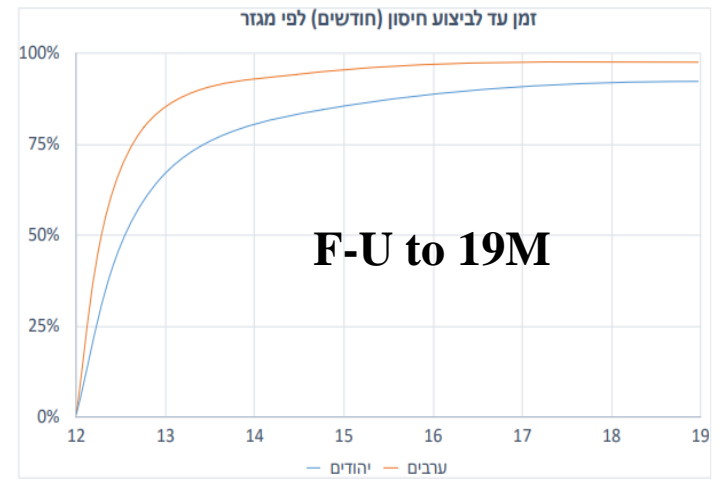
Israel 2016-2020 MMR/MMRV 1st at age 13 months



השוואה בין-לאומית



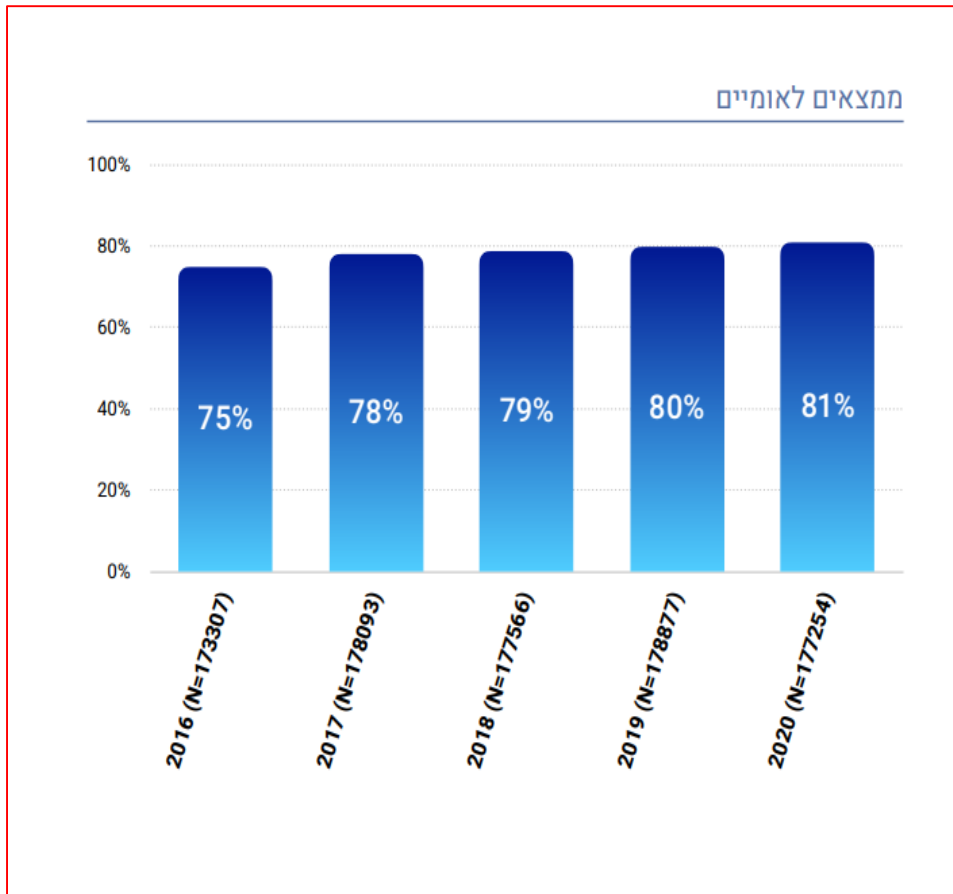
השוואת נתונים לאומיים של עמידה במדד לפי מגזר (זמן עד לביצוע חיסון)



336 התוכנית הלאומית למדמי איכות, דו"ח לשנים 2013-2020

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Israel 2016-2020 DTaP-IPV 4 at age 18 months



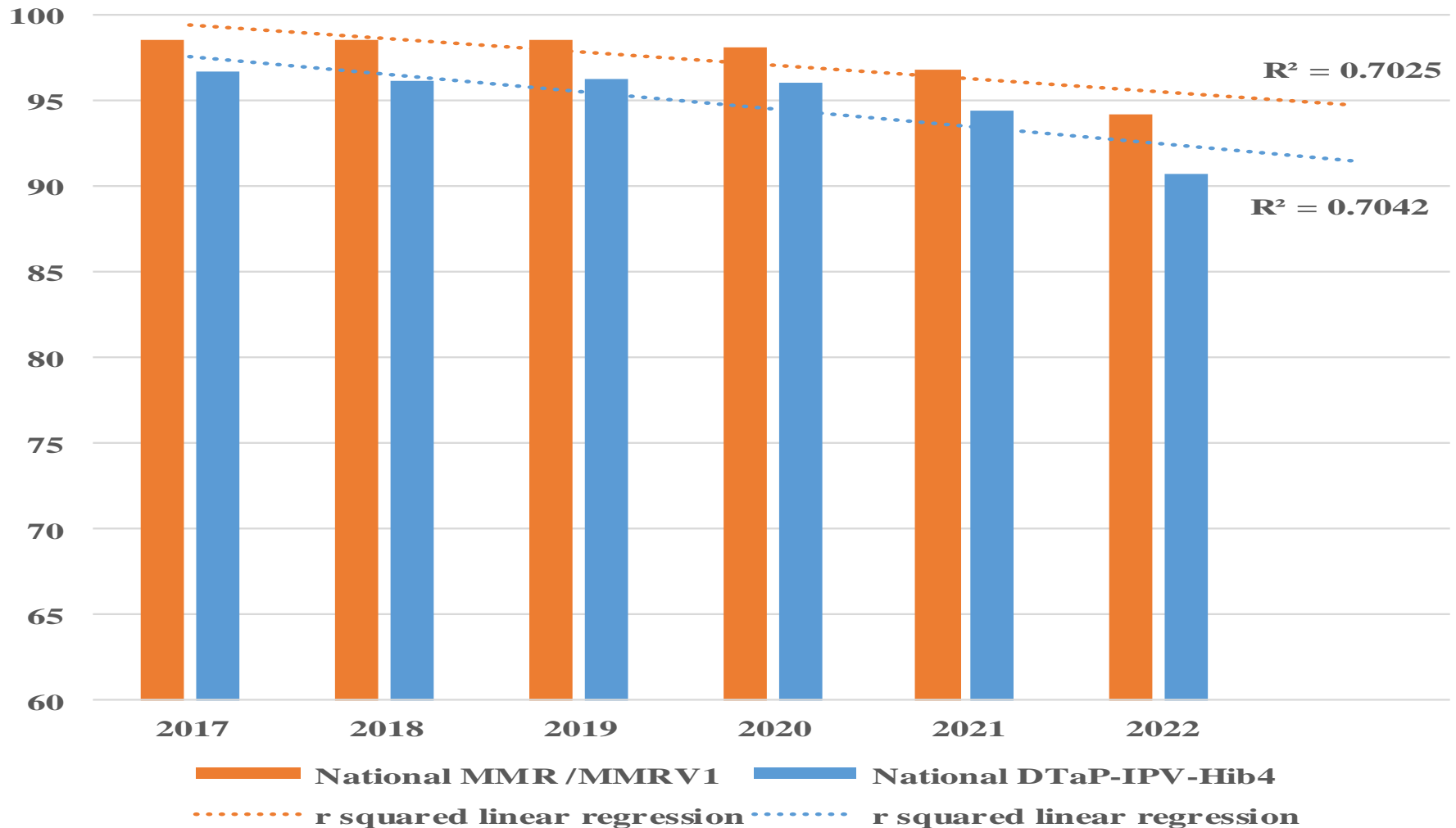
F-U to 24M



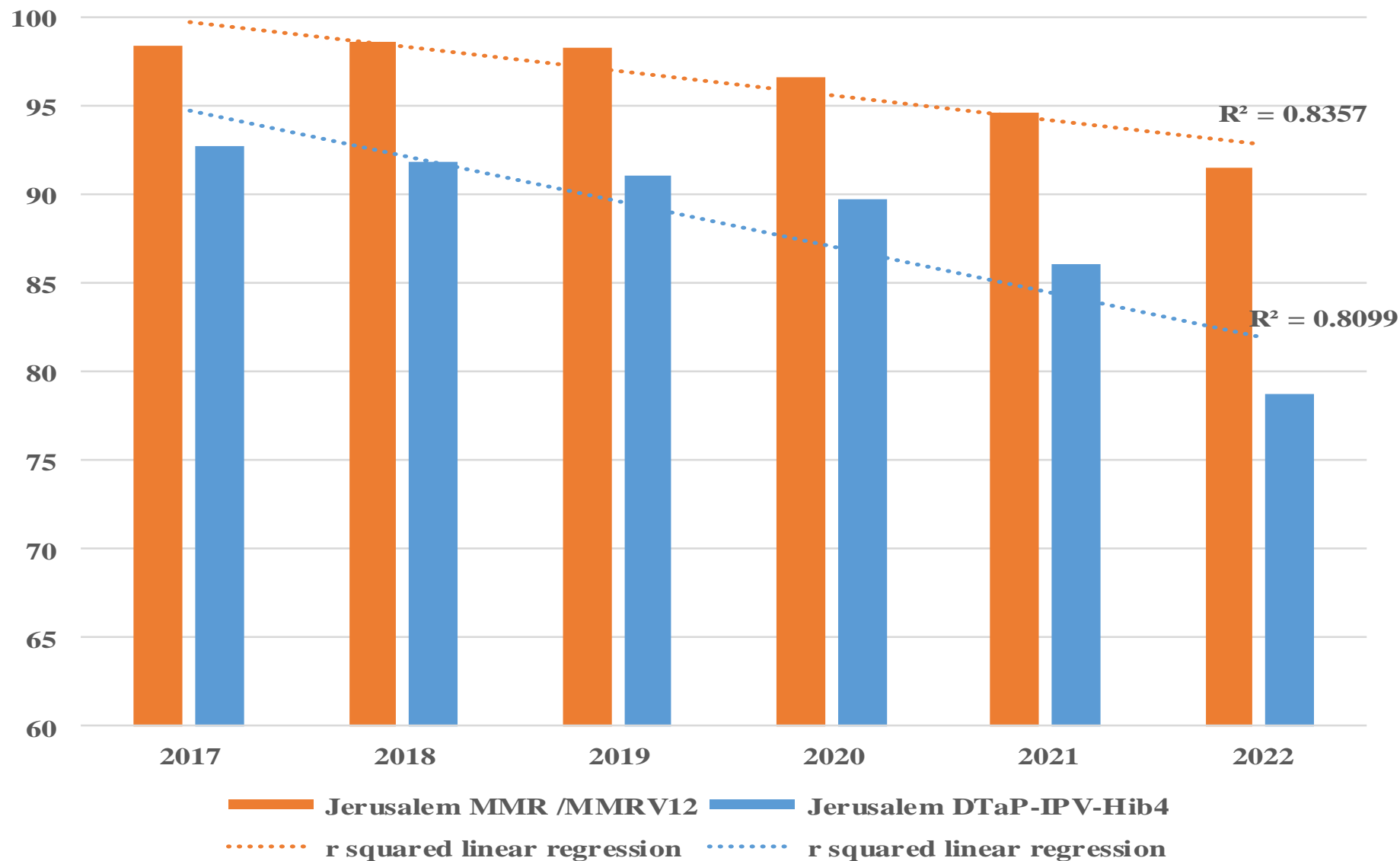
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השנים של מגיפת הקורונה

National Vaccination Coverage for children at age 12 months 2017 – 2022 for DTaP-IPV-Hib4 and MMR/MMRV1



Jerusalem District Vaccination Coverage for children at age 12 months during 2017 – 2022 DTaP-IPV-Hib4 and MMR/MMRV1



2020



Routine Vaccination Coverage — Worldwide, 2020 *MMWR* / Oct. 2021

2020



Vaccine	No. (%) of countries with vaccine in schedule	WHO region % coverage ^a						
		Global	AFR	AMR	EMR	EUR	SEAR	WPR
BCG	156 (80)	85	79	68	89	94	87	95
DTP1	194 (100)	87	79	88	87	97	88	96
DTP3	* 194 (100)	83	72	82	81	94	85	95
HepB BD	114 (58)	42	6	60	35	41	51	84
HepB3	190 (98)	83	72	82	81	91	85	95
Hib3	192 (99)	70	72	81	81	79	83	25
HPV, last ^b	111 (57)	13	18	44	0	29	3	5
MCV1	* 194 (100)	84	68	85	83	94	88	95
MCV2	179 (92)	70	36	73	76	91	78	94
PCV3	148 (76)	49	68	76	52	79	27	16
Pol3	* 194 (100)	83	71	81	84	94	85	94
RCV1	173 (89)	70	36	85	45	94	87	95
Rota, last ^c	114 (52)	46	53	71	53	30	58	2



Routine Vaccination Coverage — Worldwide, 2020 (*MMWR* October 29, 2021)

What is already known about this topic?

Global coverage with the third dose of diphtheria and tetanus toxoids and pertussis-containing vaccine (DTP3) and of polio vaccine (Pol3) and the first dose of measles-containing vaccine (MCV1) remained between 84% and 86% during 2010–2019.



What is added by this report?

In 2020, estimated global coverage with DTP3 and Pol3 decreased to 83%; MCV1 coverage decreased to 84%. Globally, 17.1 million zero-dose children did not receive the first DTP dose, an increase of 3.5 million from 2019.

What are the implications for public health practice?

Full recovery from COVID-19–associated disruptions will require targeted, context-specific strategies to identify and catch up zero-dose and undervaccinated children, introduce interventions to minimize missed vaccinations, monitor coverage, and respond to program setbacks.



Global coverage DTP3, polio3, MCV1 in 2019 has remained between 84% - 86% since 2010.

2021



Routine Vaccination Coverage — Worldwide, 2021 *MMWR* / Nov. 2022

TABLE 1. Estimated vaccination coverage, by World Health Organization region and vaccine — worldwide, 2021



Vaccine	Countries with vaccine in schedule,* no. (%)	WHO region coverage, ^{†,§,¶} %						
		Global	African	Americas	Eastern Mediterranean	European	South-East Asia	Western Pacific
BCG	156 (80)	84	78	81	88	92	85	89
DTPcv1	194 (100)	86	80	86	89	97	86	91
DTPcv3	194 (100)	81	71	80	82	94	82	90
HepB BD	111 (57)	42	17	59	33	43	51	78
HepB3	190 (98)	80	71	80	82	91	82	90
Hib3	192 (99)	71	71	79	82	81	82	29
HPV, last**	116 (60)	12	21	38	—	27	2	2
MCV1	194 (100)	81	68	84	82	94	86	91
MCV2	183 (94)	71	41	75	77	91	78	91
PCV3	154 (79)	51	66	74	54	82	29	19
Pol3	194 (100)	80	70	79	83	94	82	90
RCV1	173 (89)	66	35	84	42	94	86	91
Rota, last††	118 (61)	49	52	69	57	34	61	2



Routine Vaccination Coverage — Worldwide, 2021 *MMWR* / Nov. 2022

What is already known about this topic?

High routine childhood vaccination coverage achieved during 2015–2019 declined globally for most vaccines during 2019–2021 because of COVID-19 pandemic disruptions.

What is added by this report?

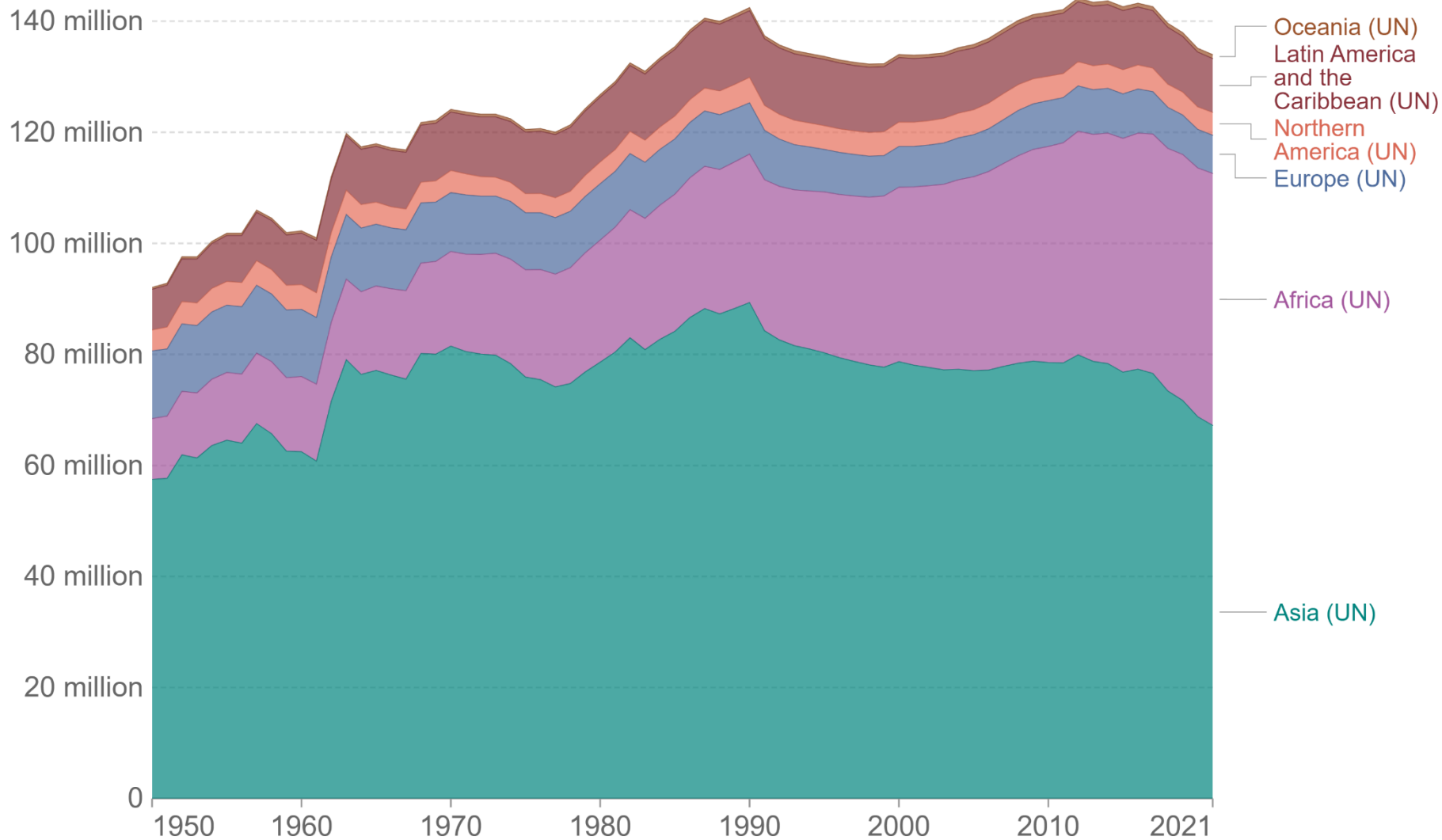
In 2021, the estimated global coverage with 3 doses of diphtheria-tetanus-pertussis–containing vaccine as well as the first dose of measles-containing vaccine decreased **to 81%, the lowest level since 2008. Globally, 25.0 million children were unvaccinated or incompletely vaccinated in 2021, 5.9 million more than in 2019.**

What are the implications for public health practice?

Reversing declining vaccination trends and addressing immunity gaps, as well as extending previous gains in vaccination coverage beyond prepandemic levels, requires targeted and context-specific approaches that prioritize routine vaccination as an essential health service and improve access to vaccination across the life span.

Global coverage DTP3, polio3, MCV1 in 2019 has remained between 84% - 86% since 2010.

Annual number of births by world region



Progress and Challenges with Achieving Universal Immunization Coverage

2021 WHO/UNICEF Estimates of National Immunization Coverage (WUENIC)

Sources:

- 2022 Member State reports to WHO and UNICEF
- The 2022 World Bank Development Indicators Online
- United Nations, Population Division, 2022 revision

Estimates as of July 15th, 2022. Include data reported until July 7th, 2022

<https://www.who.int/data/immunization>

<http://www.data.unicef.org/child-health/immunization>



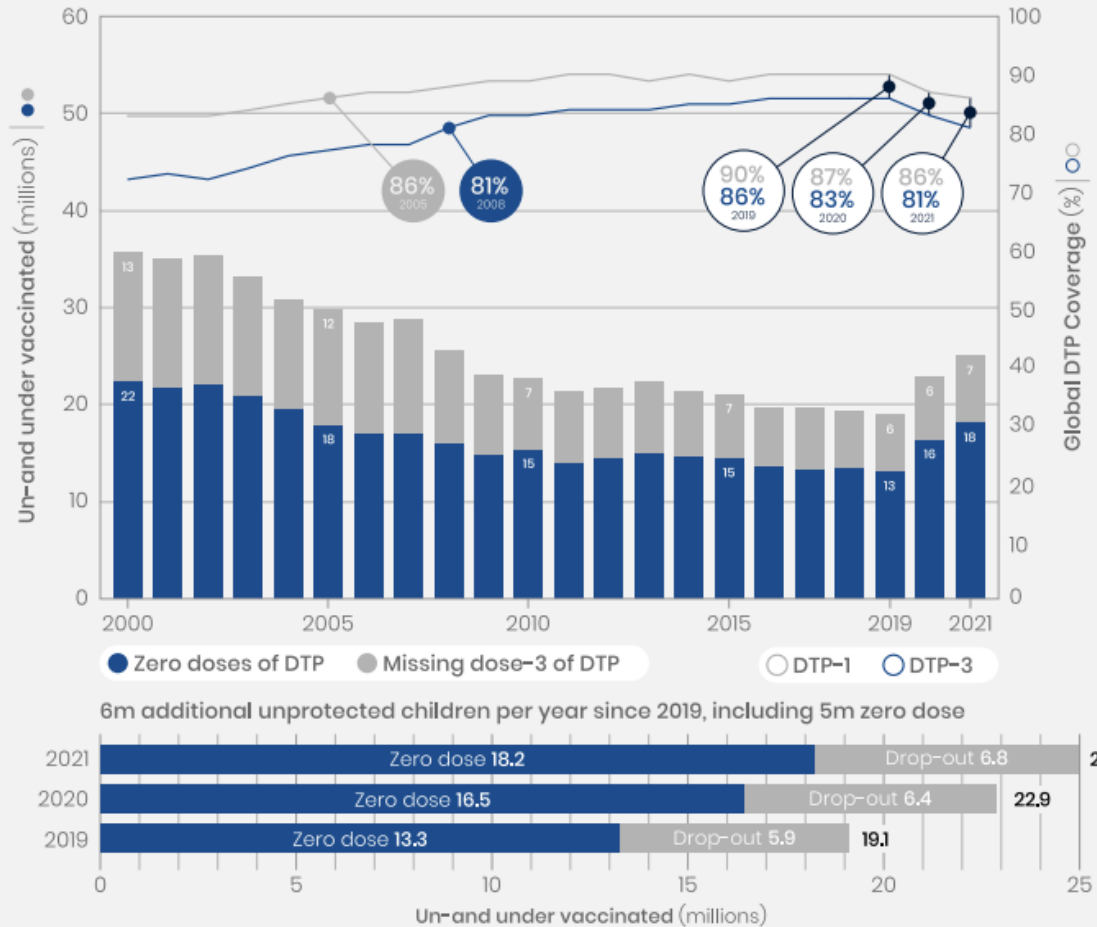


25 million children were un-or under-vaccinated in 2021, 2 million more than in 2020, and 6 million more than in 2019

Coverage of the third dose of diphtheria, tetanus, and pertussis vaccine (DTP-3) dropped a further 2% compared 2020, to 81% in 2021, leaving 25 million children vulnerable to vaccine-preventable diseases

The Immunization Agenda 2030 aims to make vaccination available to everyone, everywhere, by 2030. The Covid-19 pandemic, associated disruptions, and Covid-19 vaccination efforts have strained health systems in 2020 and 2021, resulting in 25 million children missing out on vaccination, 6 million more than in 2019 and the highest number since 2008. The number of children missing out on any vaccination - "zero-dose children" - increased by 5 million in 2021 compared with 2019, going from 13 to 18 million.

In this analysis, zero-dose children are those who lack any dose of DTP. Under-vaccinated are those who received one dose, but not a third protective dose.

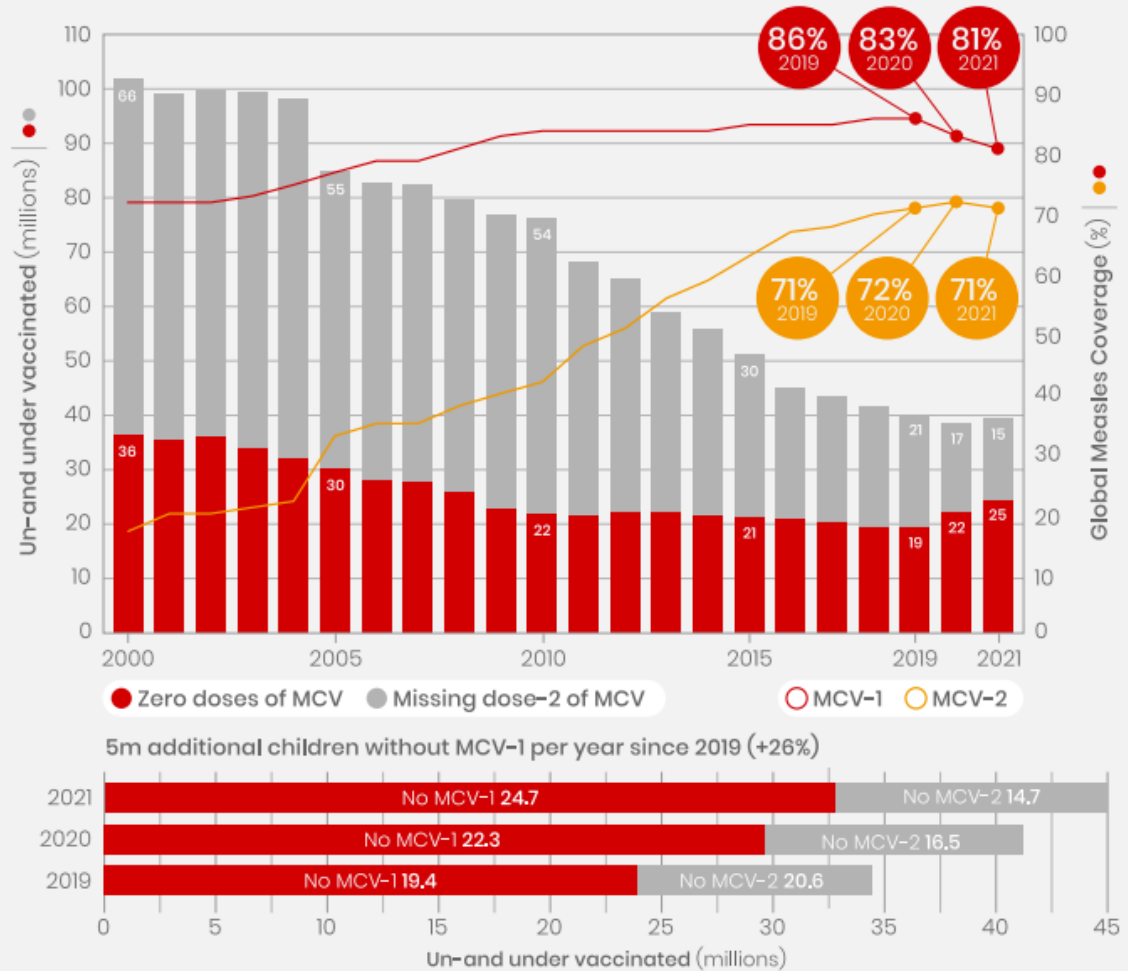


First dose measles coverage dropped to 81% in 2021, leaving 5 million more children unvaccinated compared to in 2019

Coverage of the first dose of measles-containing vaccine (MCV-1) dropped to 81% in 2021, the lowest level since 2008.

This leaves 25 million children vulnerable. An additional 15 million children received only a first dose, but not a needed second dose through regular public health services.

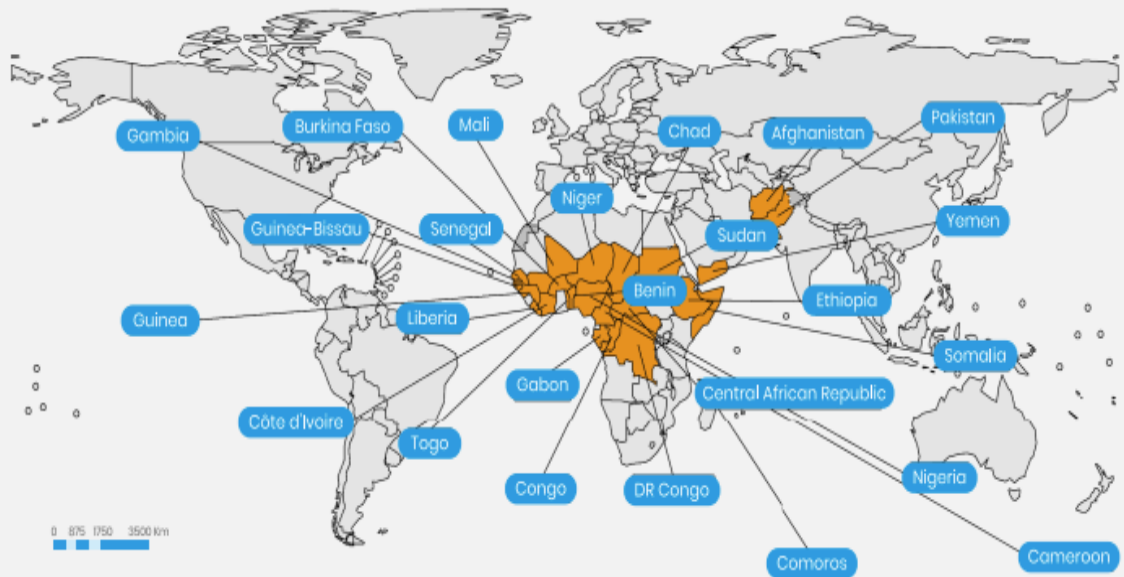
Supplemental Immunization Activities (including campaigns) continue to be required to ensure that all children receive the 2 doses that will protect them from measles.



Measles outbreaks are rife again in low- and middle-income countries

After two years of lower than usual routine immunization coverage, and the postponement of many supplementary immunization activities (including campaigns), the risk of large outbreaks is now very real.

While reported cases of measles are still below the levels seen during the worldwide surge in 2019, a cyclical high, large and disruptive outbreaks are again being detected in the African and the Eastern Mediterranean regions.



Map production: World Health Organization (WHO), 2022. All rights reserved

Data source: IVB Database

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area nor 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.



A guide to 9 global buzzwords for 2023, from 'polycrisis' to 'zero-dose children'

January 17, 2023 · 2:27 PM ET

ANDREW CONNELLY



Aridification



Polycrisis



Poverty

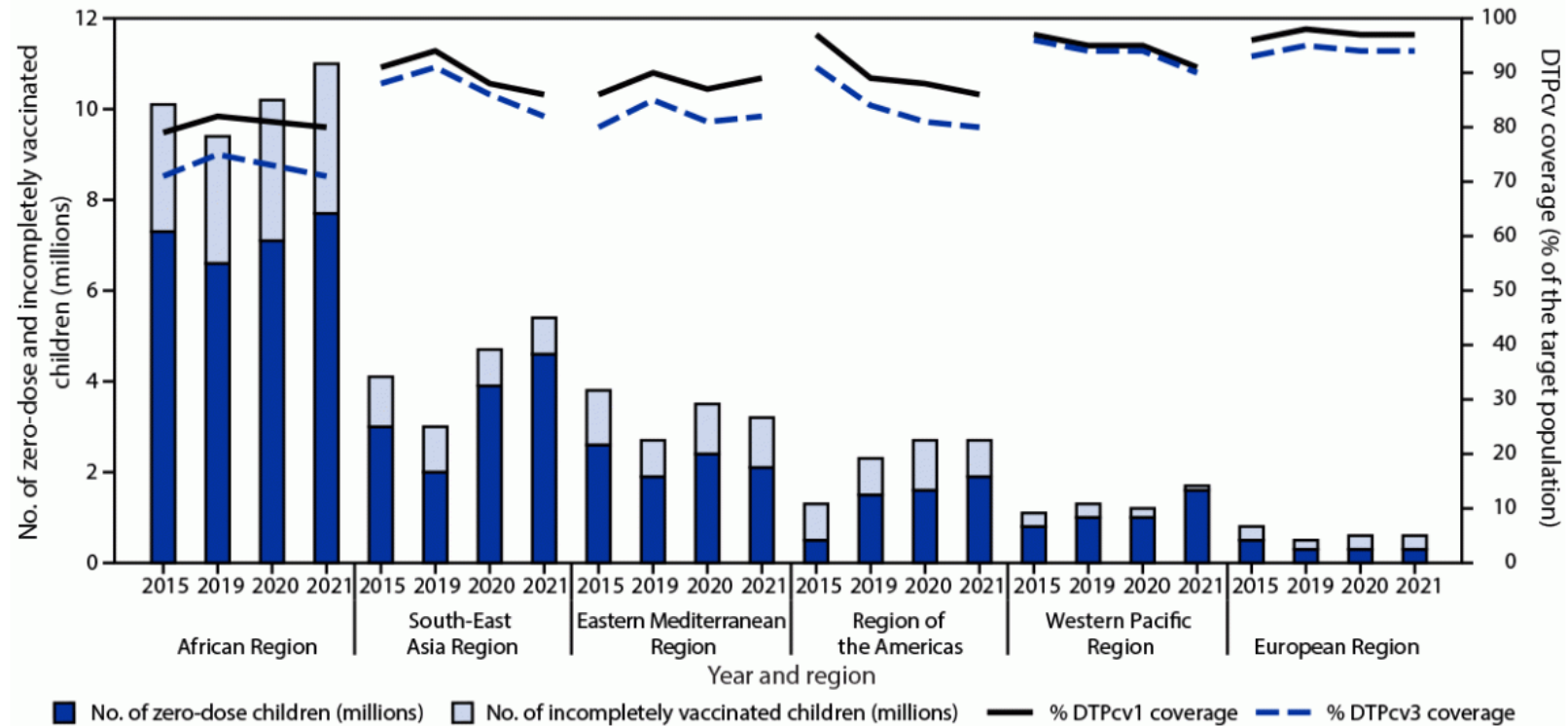


Zero-dose children



Traveler surveillance

FIGURE. Estimated number of zero-dose and incompletely vaccinated children* and estimated coverage with first and third dose of diphtheria-tetanus-pertussis-containing vaccine, by World Health Organization region — worldwide, 2015 and 2019–2021



Abbreviations: DTPcv1 = first dose of diphtheria-tetanus-pertussis-containing vaccine; DTPcv3 = third dose of diphtheria-tetanus-pertussis-containing vaccine.

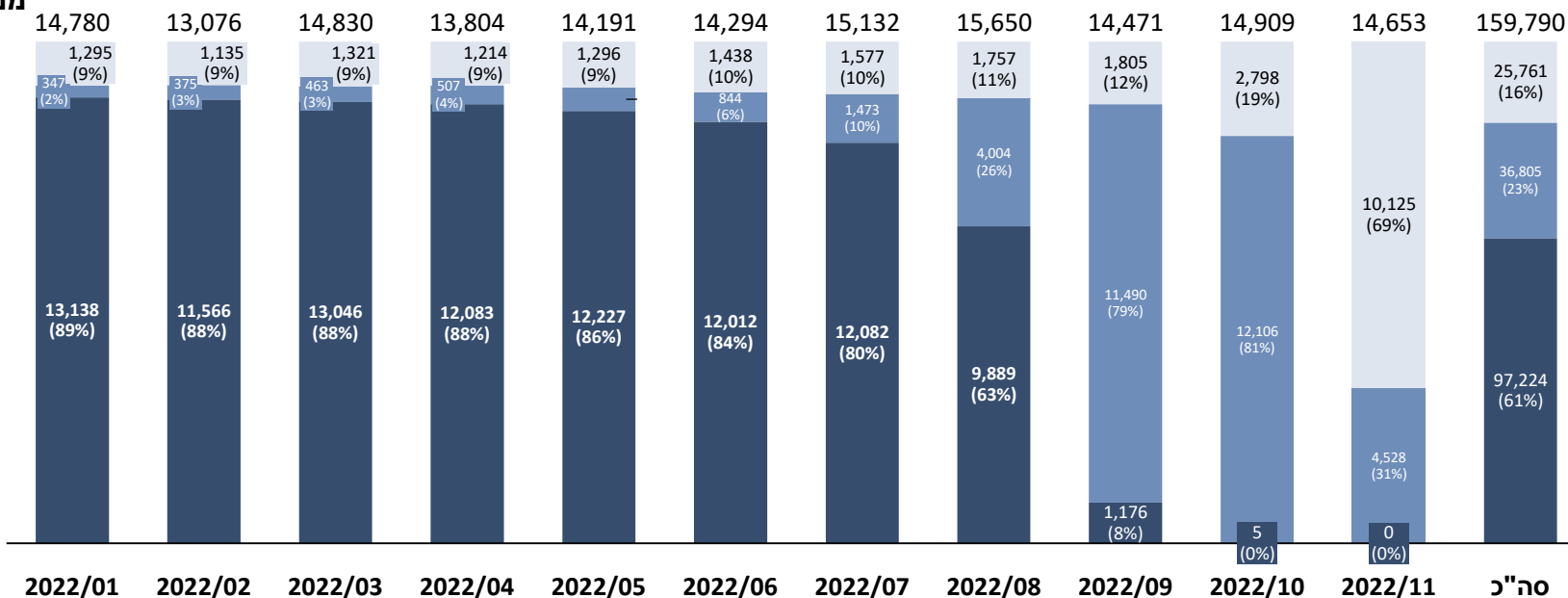
* Zero-dose children are surviving infants who lack receipt of any dose of DTPcv by age 12 months. Incompletely vaccinated children are those who received at least 1 dose, but not the third dose needed for basic protection.

Worldwide in 2021, 25.0 million infants (19% of the target population) were not vaccinated with DTPcv3, 2.1 million more than in 2020 and 5.9 million more than in 2019.

IPV COVERAGE COHORT OF 2022

התפלגות פעוטות מתחסנים ב-IPV לפי חודשים שנתון 2022 מנה 1

■ לא מחוסנים
■ מנה 1
■ מנה 2 או יותר



מקור: מערכת BI משרד הבריאות המבוססת על מרשם האוכלוסין

מעודכן 09 בינואר שעה 14:00

25,761 ילדים 0 מנות IPV שנתון 2022

תקציב תוכניות החיסונים

תרשים 4 מציג את ההוצאה הלאומית השוטפת מהתוצר ואת ההוצאה הלאומית השוטפת לנפש במדינות ה-OECD.

תרשים 4: ההוצאה הלאומית השוטפת על בריאות מהתוצר ולנפש ב-OECD (PPP, דולרים ארה"ב, 2019)¹¹

המדינה	שיעור מהתוצר (%)	לנפש (PPP, דולרים)
מקסיקו	5.5	1,154
קולומביה	7.3	1,213
טורקיה	4.4	1,340
לטביה	6.3	1,973
צ'ילה	9.1	2,159
הונגריה	6.4	2,222
פולין	6.3	2,292
סלובקיה	6.9	2,354
יוון	7.8	2,384
אסטוניה	6.8	2,579
ליטא	6.8	2,638
ישראל	7.3	3,089
סלובניה	8.3	3,224
פורטוגל	9.6	3,379
קוראה הדרומית	8.0	3,384
צ'כיה	7.8	3,426
ספרד	9.0	3,616
איטליה	8.7	3,649
ניו זילנד	9.3	4,204
מוצע OECD	8.8	4,224
פינלנד	9.1	4,578
בריטניה	10.3	4,653
איסלנד	8.8	4,811
יפן	11.1	4,823
אוסטרליה	9.3	5,187
אירלנד	6.8	5,276
צרפת	11.2	5,376
קנדה	10.8	5,418
בלגיה	10.3	5,428
לוקסמבורג	5.4	5,558
דנמרק	10.0	5,568
שוודיה	10.9	5,782
אוסטריה	10.4	5,851
גרמניה	11.7	6,646
נורווגיה	10.5	6,647
שווייץ	12.1	7,732
ארצות הברית	17.0	11,072

¹⁰ הלשכה המרכזית לסטטיסטיקה, הודעה לתקשורת, [ההוצאה הלאומית לבריאות 2020](#), יולי 2021.

¹¹ הלמ"ס, [ההוצאה הלאומית לבריאות 2019](#), 18 באוגוסט 2020. הוצאה שוטפת: הוצאה על הבריאות ללא ההשקעות, הגדרה בפסקה 1.1.

אתגר הכללת חיסונים בסל שירותי הבריאות

המצב הנוכחי של קשיים להכליל חיסונים חדשים דרך "ועדת הסל" פוגע בשמירה על רמת תכנית החיסונים. תמונת המצב והפתרון לה



פרופ' שמואל רשפון

פרופ' גליה רהב: "צריך לייצר סל נפרד לחיסונים. אין להשוות אותם לתרופות"

שעות לפני שוועדת סל הבריאות מסכמת את החלטותיה, אומרת יו"ר האיגוד למחלות זיהומיות לאולפן ynet: "אי אפשר להשוות בין תרופה מסוימת שמאריכה חיים של חולה אינדיבידואלי, לבין חיסון שמונע מחלות ותמותה של אלפי ומיליוני אנשים. חיסון אחד נגד זיהומים יכול למנוע תמותה ממחלות רבות, והציבור צריך לקבל אותו"



אלכסנדרה לוקש | 17.01.23 | 15:41



האזינו לכתבה 4 דקות



היום: החלטות ועדת סל התרופות ל-2023



הדילמה של החיסון נגד החיידק האלים

מזה כמה שנים מנסים להכניס לסל התרופות חיסון בשם בקסרו נגד החיידק האלים מנינגוקוק B • מנינגוקוק הוא חיידק שנמצא בלוע של ילדים ומבוגרים בשכיחות גבוהה בצורתו הלא אלימה • כיום החיסון ניתן בתשלום פרטי של כ־600 שקל, והכנסתו לסל התרופות עבור 180 אלף ילדים מדי שנה היא בעלות אסטרונומית של 109 מיליון שקלים

מיטל יסעור בית-אור

08:36, 15/1/2023, עודכן 08:13, 15/1/2023



השמעה ▶

0 🗨️



היעצנות לחיסונים

Vaccine Hesitancy

Vaccine hesitancy refers to delay in acceptance or refusal of vaccines despite availability of vaccination services.

Vaccine hesitancy



Credits +

Vaccine hesitancy – the reluctance or refusal to vaccinate despite the availability of vaccines – threatens to reverse progress made in tackling vaccine-preventable diseases. [Vaccination](#) is one of the most cost-effective ways of avoiding disease – it currently prevents 2-3 million deaths a year, and a further 1.5 million could be avoided if global coverage of vaccinations improved.

Measles, for example, has seen a 30% increase in cases globally. The reasons for this rise are complex, and not all of these cases are due to vaccine hesitancy. However, some countries that were close to eliminating the disease have seen a resurgence.

The reasons why people choose not to vaccinate are complex; a [vaccines advisory group](#) to WHO identified complacency, inconvenience in accessing vaccines, and lack of confidence are key reasons underlying hesitancy. Health workers, especially those in communities, remain the most trusted advisor and influencer of vaccination decisions, and they must be supported to provide trusted, credible information on vaccines.

In 2019, WHO will ramp up work to eliminate [cervical cancer](#) worldwide by increasing coverage of the HPV vaccine, among other interventions. 2019 may also be the year when transmission of wild poliovirus is stopped in [Afghanistan and Pakistan](#). Last year, less than 30 cases were reported in both countries. WHO and partners are committed to supporting these countries to vaccinate every last child to eradicate this crippling disease for good.

Vaccine Hesitancy: Where We Are and Where We Are Going

Catherine C. McClure, MD, MPH, Jessica R. Cataldi, MD, Sean T. O'Leary, MD, MPH

Clinical Therapeutics

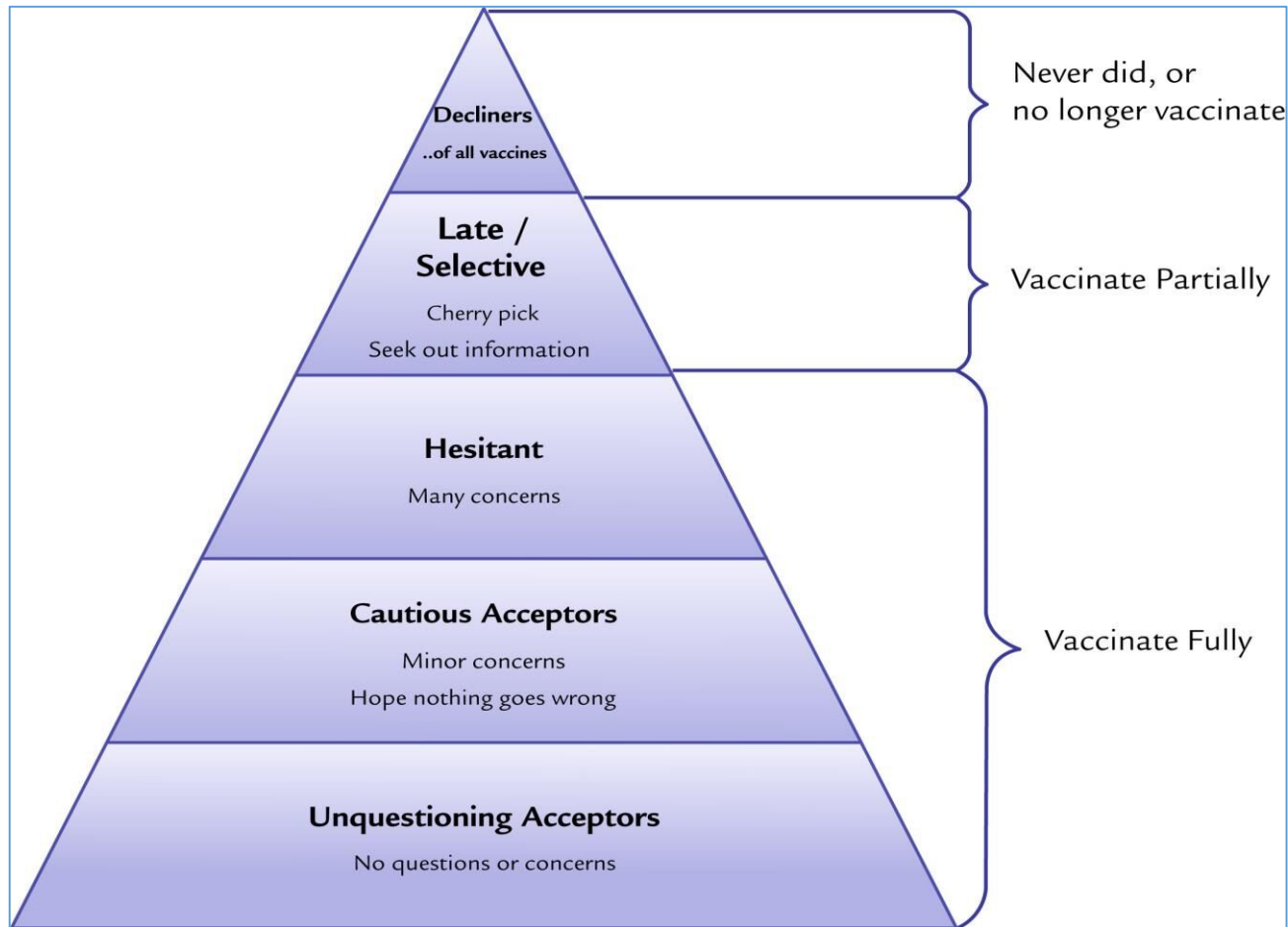
Volume 39 Issue 8 Pages 1550-1562 (August 2017)

DOI: 10.1016/j.clinthera.2017.07.003

Implications

1. **Community based EBM communication strategies** to address vaccine hesitancy.
2. **Not recommended** - dismissing families who refuse to vaccinate from **pediatric** practices.
3. **Controversial** and evolving : statewide vaccination **mandates**, school **exemption** policies.
4. **Electronic interventions**, e.g. text-messaging services and social media – live effective communication methods.

Vaccine acceptance spectrum



Vaccine acceptance spectrum. From: Leask, J. (2015, May 12). Improving communication about vaccination – “SARAH.” [Blog post]. <https://juleileask.wordpress.com/2015/05/12/improving-communication-about-vaccination-sarah/>.

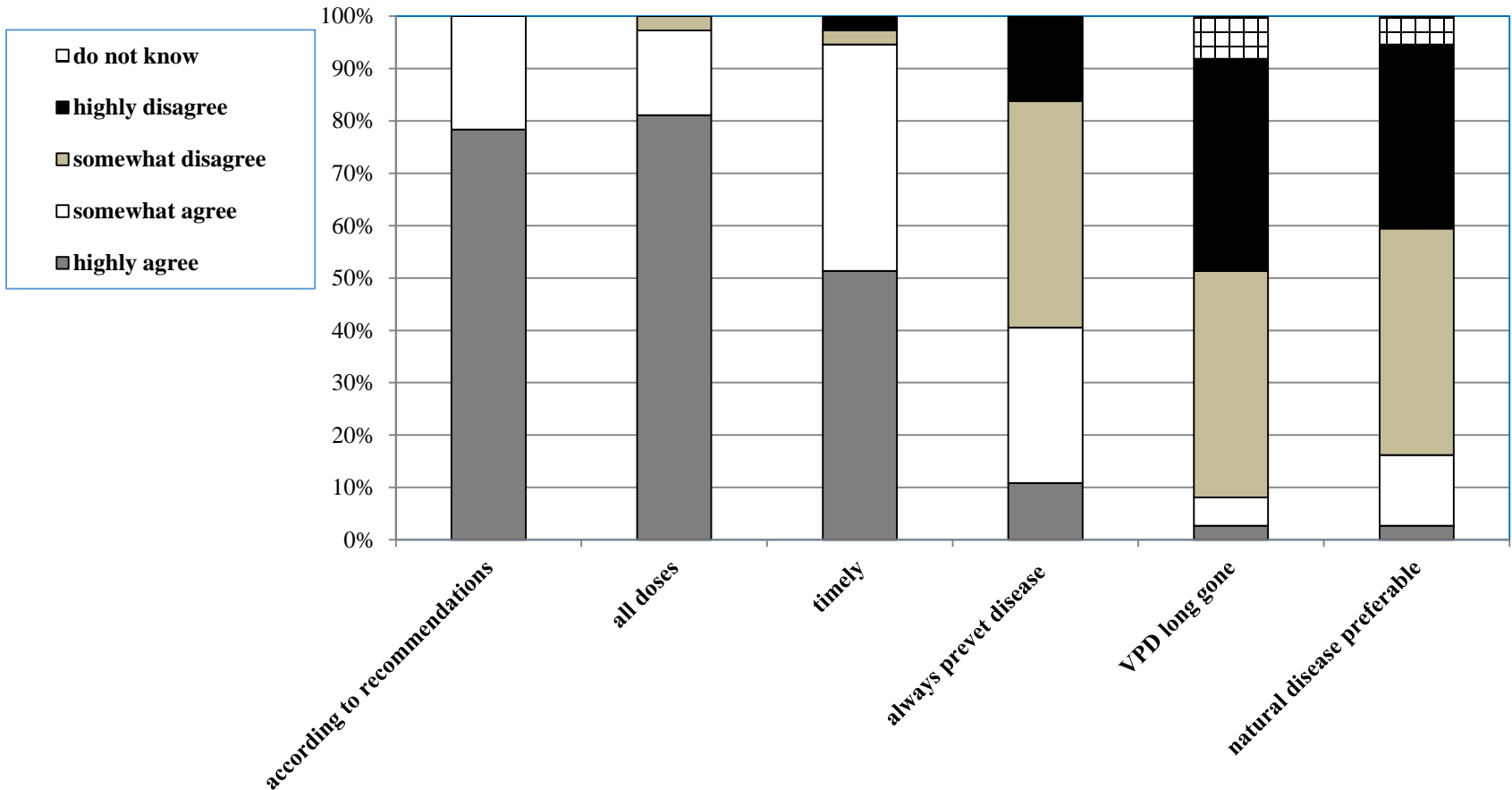
Vaccine hesitancy in Israel

- Vaccine hesitancy - a broad **spectrum**, ranging from a genuine call for help to complete defiance of authorities.
- Hesitancy related to routine childhood vaccination programs:
- An increase in parents who **immunize their children, but deviate (extent or ages)** from the recommended vaccination schedule.
- A self-reporting study: parents deviating from the recommended schedule, **9 %**.
- A records-based study: children who did not complete the recommended schedule, **7.5 %**.
- Over 50% of parents indicated that deviations were a parental decision.
- **Possible reasons:** delaying vaccination, spreading injections over more visits, or omitting specific vaccines.

- Velan B, Vaccine hesitancy as self-determination: an Israeli perspective. Israel Journal of Health Policy Research (2016)
- Velan B, Boyko V, Lerner-Geva L, Ziv A, Yadgar Y, Kaplan G. Individualism, acceptance and differentiation as attitude traits in the public's response to vaccination. Hum Vaccin Immunother. (2012)
- Baron-Epel O, Rishpon S, Amit-Aharon A, Nehama H, Barriers and enhancing factors effecting decisions of parents to vaccinate their children in Tel Aviv and in district of Haifa. Report to the "The Israeli national Institute for Health policy research" (2015).

Knowledge, Attitudes and Perceptions About Routine Childhood Vaccinations

Statements on vaccines



Knowledge, Attitudes and Perceptions About Routine Childhood Vaccinations Among Jewish Ultra-Orthodox Mothers Residing in Communities with Low Vaccination Coverage in the Jerusalem District. Stein Zamir C, Israeli A. Matern Child Health J. 2017

Addressing vaccine hesitancy in Israel

- Free universal accessibility to preventive health services.
- Health education by health professionals e.g. in maternity departments.
- Guidance by nurses and physicians at the Mother and Child Health Clinics and community pediatric clinics.
- Culture-adapted campaigns in hard-to-reach groups.
- Mass media information campaigns.
- CME for health professionals.
- **The Israel Pediatric Association** activities.
- NGO's (MIDAAT for a healthier Israeli society, The vaccinated kindergartens).

- Stein-Zamir C, Shoob H, Zimmerman DR. The role of the physician in Israel's maternal child health clinics: surveys of professional and parental perceptions. *Isr J Health Policy Res.* (2017)
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- Elran, B., Yaari, S., Glazer, Y., Honovich, M., Grotto, I., Anis, E. Parents' perceptions of childhood immunization in Israel: Information and concerns. *Vaccine.* (2018).
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עמדות הורים בנושא חיסונים לילדים

המחקר נערך עבור:

לפמ

בראשות: פרופ' אבי דגני | ד"ר רינה דגני

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לדעת כדי להצליח!

המתודולוגיה המחקרית

מועד ביצוע:

הסקר בוצע בסוף חודש יולי
ובתחילת חודש אוגוסט
2022

טווח שגיאה:

טווח השגיאה הסטטיסטית
המרבית הוא $\pm 2.89\%$
כאשר בקרב כל מגזר, טווח
השגיאה הסטטיסטית
המרבית הוא $\pm 5.65\%$
ברמת מובהקות סטטיסטית
של 95%

המשיבים:

1200 הורים לילדים עד גיל
13, מתוכם 300 מהמגזר
היהודי כללי (ללא חרדים),
300 מהמגזר החרדי, 300
מהמגזר הערבי ו-300
מהמגזר הבדואי המהווים
מדגם מייצג של אוכלוסיות
אלה במדינת ישראל.

מתודולוגיה:

סקר משולב – טלפוני
ואינטרנטי (עבור המגזר
הכללי, חרדי וערבי) ושטח
(עבור המגזר הבדואי)

מטרות המחקר:

בחינת העמדות והתפיסות
של הורים בנושא חיסונים
לילדים.

הערה: לצורך ההשוואה למחקר הקודם, נלקח מהמחקר הנכחי רק הקהל המתאים למאפייני הדגימה שנעשתה ב-2016, כך שבשקפים בהם מוצגת השוואה לאורך זמן, מוצגים נתוני 2022 בקרב קהל ייחודי זה.

סקר עמדות הורים 2022

- **מרבית ההורים לילדים בגילאי 0-13 (86%), מעידים שילדיהם קיבלו את החיסונים באופן מלא.**
11% דיווחו על קבלת חיסונים באופן חלקי.
- **9% מההורים העידו כי הם מאוד או די מתלבטים בנוגע לחיסוני ילדיהם (16% במגזר הבודואי, 4-5% במגזר החרדי והערבי), לעומת 60% שכלל לא מהססים.**
- **בקשר לכמות החיסונים, כרבע מההורים (23%) סבורים כי הילדים מקבלים היום יותר מידי חיסונים, בדומה לתוצאות סקר עמדות הורים לשנת 2016.**
- **מרבית ההורים מביעים אמון בהמלצות גורמי הבריאות בכל הקשור לחשיבות חיסוני הילדים (72%) נתון דומה לסקר 2016.**
- **הרוב (69%) סבורים כי יתרונות החיסונים עולים על הסיכונים האפשריים.**

Conclusions

- An ongoing childhood VC monitoring, by a national registry, during regular circumstances prepares the basis for utilization in outbreaks and emergencies.
- While aggregated vaccination coverage rates are high, disaggregated data reveal gaps amid population groups.
- **Vaccinations gaps and delays**, despite appropriate up-to-date coverage, reported from many countries and deepened during the COVID-19 pandemic.
- VPD outbreaks emerge mainly among children residing in communities with low VC and vaccination delay.
- Yet, compliance with mass immunization campaigns during outbreaks is high.
- Community-based health education campaigns to advance **awareness about and trust** in childhood vaccines and sustainable programs are essential.
- Our challenge is to **improve and sustain childhood vaccination rates**.



כנס החורף של חיפ"א

23-25 בפברואר 2023

מלון דן כרמל, חיפה | 23-25 בפברואר 2023

בחיפ"א



1. האם אנו צופים אתגר לטווח ארוך בנושא התחסנות בחיסוני שיגרה בילדים בישראל ואם כן - מה האפשרויות להתמודדות?
2. מה מקומם ותפקידם של רופאי הילדים בנושא התחסנות ילדים?
3. האם יש לקדם צעדים כגון חקיקה בנושא התחסנות בחיסוני שיגרה בילדים?



כנס החורף של חיפה"א

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