



New outbreaks of Measles and their importance for neurology

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Acknowledging Laura Cornelissen, Sciensano
Committee for Elimination of Measles and Rubella in Belgium

7 Dec 2019

Faculty Disclosure

	No, nothing to disclose
x	Yes, please specify:

<i>Company Name</i>	<i>Honoraria/ Expenses</i>	<i>Consulting/ Advisory Board</i>	<i>Funded Research</i>	<i>Royalties/ Patent</i>	<i>Stock Options</i>	<i>Ownership/ Equity Position</i>	<i>Employee</i>	<i>Other (please specify)</i>
Pfizer		x	x					Investigator- initiated research grant (Uantwerpen)
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MSD/AP		x						
GSK		x						
Flemish Ministry of Health			x					
National Health Council		x						

Measles in Europe—there is room for improvement

Published Online
January 7, 2009
DOI:10.1016/S0140-
6736(08)61850-4
See [Articles](#) page 383

In *The Lancet* today, the EUVAC.NET group¹ have compiled measles data for 2006–07 from 32 European countries, in the context of eliminating measles in the WHO-European Region (WHO-EURO) by 2010. It seems good news that only half as many (3909) measles cases occurred in 2007 as in 2006 (8223). However, preliminary data suggest that measles incidence was about three times higher during the first half of 2008 than in the same period in 2007.^{2,3}

The **relatively low incidence** found by EUVAC.NET in 2007 might therefore mostly reflect the periodicity of measles outbreaks, rather than sudden progress in vaccination. It is encouraging that most of the cases from 2006–07 (77–87%) have occurred in

unvaccinated individuals, confirming that the vaccine is highly effective even in the diverse socioeconomic settings of the participating countries and despite different vaccination schedules. Although this finding is not new, it is

when increases in measles are protected by virus-induced

The situation in EUVAC.NET countries shows that 10–17% of children receive one dose, and 10–17% receive two doses. But the overall coverage of t



applies to all types of measles. In the complex world with measles, two doses are essential unless cases

11, 2009

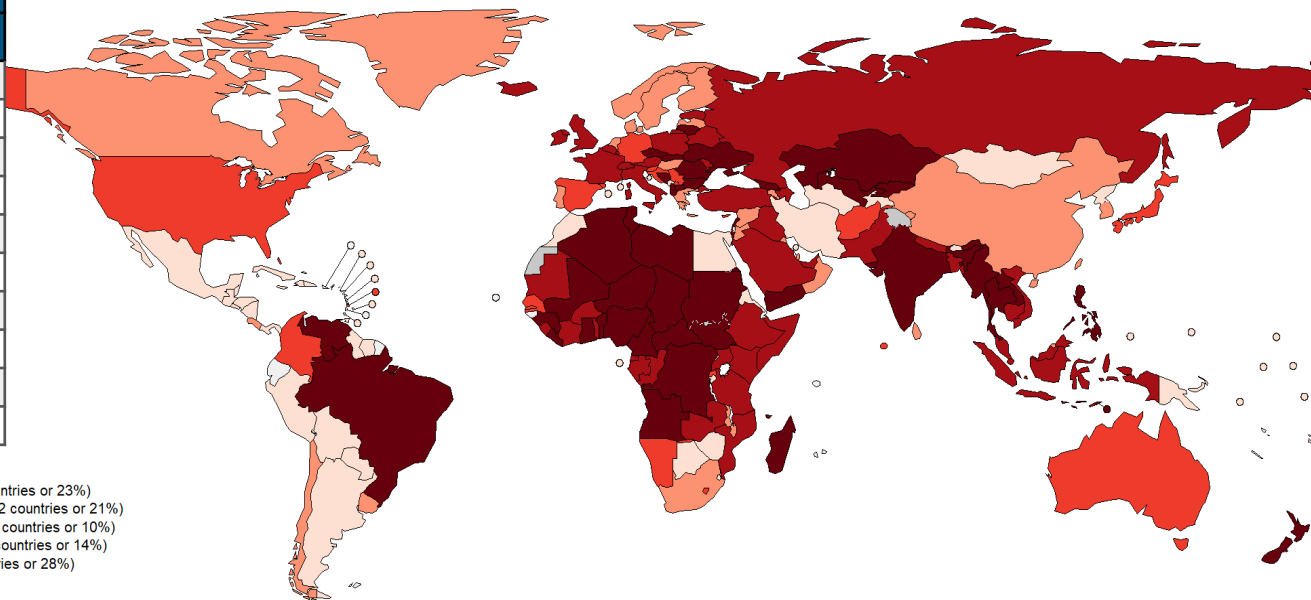
Kremer J, Muller P, *Lancet* 2009

Comment on Muscat et al, Measles in Europe: an epidemiologic assessment

Measles Incidence Rate per Million (1 year up to nov 2019)

Top 10**		
Country	Cases	Rate
Madagascar	151032	6066.87
Ukraine	78708	1771.16
India****	69218	52.27
Philippines	49419	478.31
Nigeria	27954	150.3
Brazil	18927	91.15
Kazakhstan	10696	594.63
DR Congo	9245	117.42
Yemen	9156	331.93
Thailand	7738	112.37

- Rate \geq 50 (45 countries or 23%)
- $10 \leq$ Rate $<$ 50 (42 countries or 21%)
- $5 \leq$ Rate $<$ 10 (19 countries or 10%)
- $1 \leq$ Rate $<$ 5 (27 countries or 14%)
- Rate $<$ 1 (55 countries or 28%)
- No data
- Not available



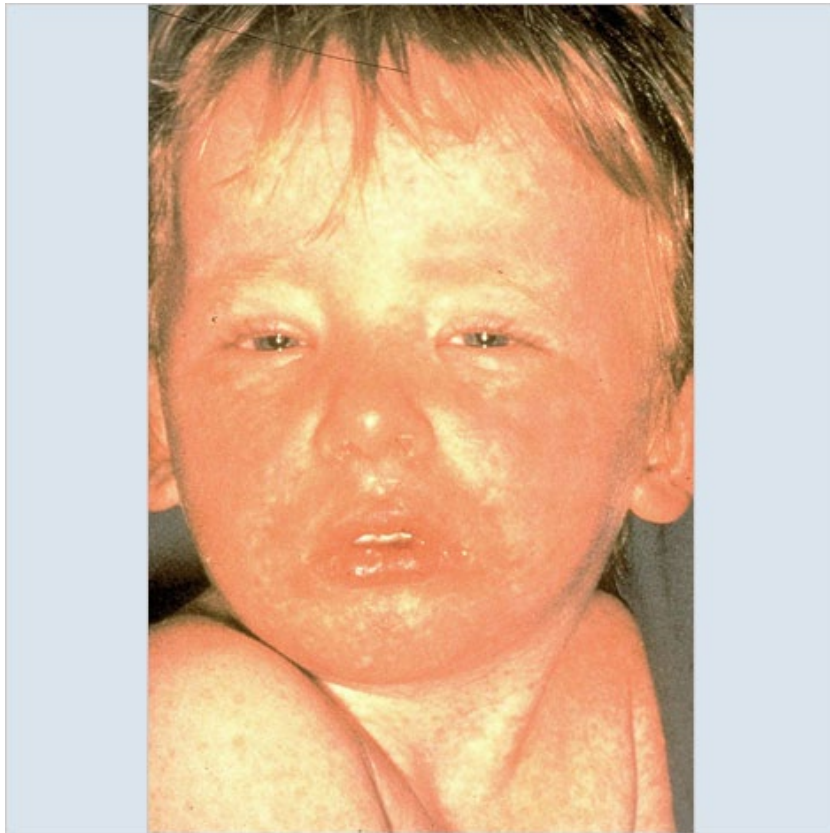
Map production: World Health Organization, WHO, 2019. All rights reserved
 Data source: IVB Database

Disclaimer:

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 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.

Notes: Based on data received 2019-11 and covering the period between 2018-10 and 2019-09 - Incidence: Number of cases / population * 1,000,000 - * World population prospects, 2019 revision - ** Countries with the highest number of cases for the period - *** Countries with the highest incidence rates (excluding those already listed in the table above) - ****WHO classifies all suspected measles cases reported from India as measles clinically compatible if a specimen was not collected as per the algorithm for classification of suspected measles in the WHO VPD Surveillance Standards. Thus numbers might be different between what WHO reports and what India reports.

Measles, anno 2020



Web MD

Or only the complication (late presentation):

Diarrhea, otitis

Pneumonia

Bacterial surinfection

Rhabdomyolysis

Encephalitis

Hepatic cytolysis

Hemorrhage with seizures, delirium and
respiratory distress

CDC image

Fever

Coryza, cough, conjunctivitis

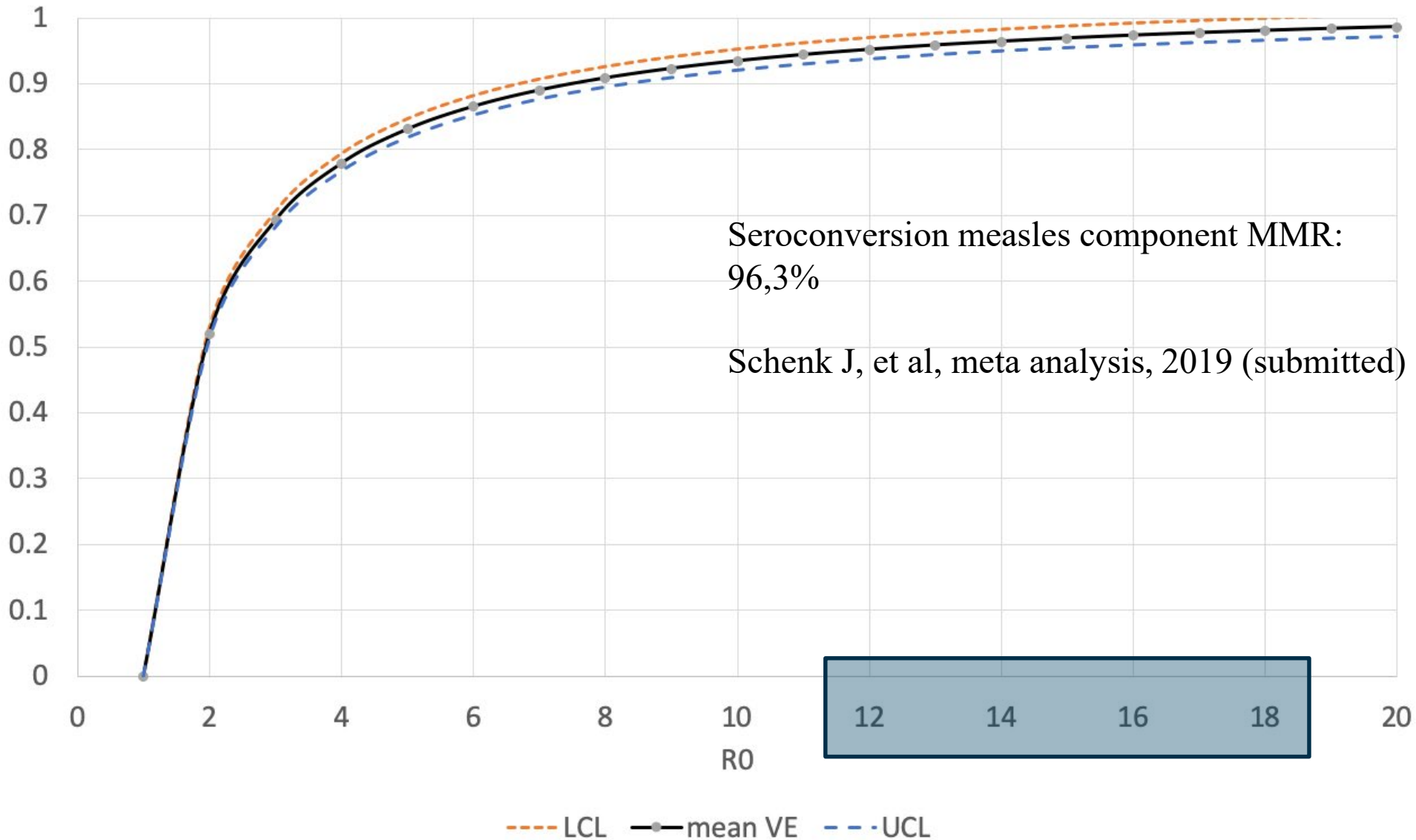
Top-down maculopapular rash

Outbreaks occur because susceptibles build up over time...

Susceptibility to measles infection depends on :

- (1) Previous exposure to natural measles infection
- (2) Previous vaccination coverage: whether or not susceptibles received measles containing vaccine (MCV)
- (3) Effectiveness over time of MCV

Required MMR vaccine coverage for measles elimination



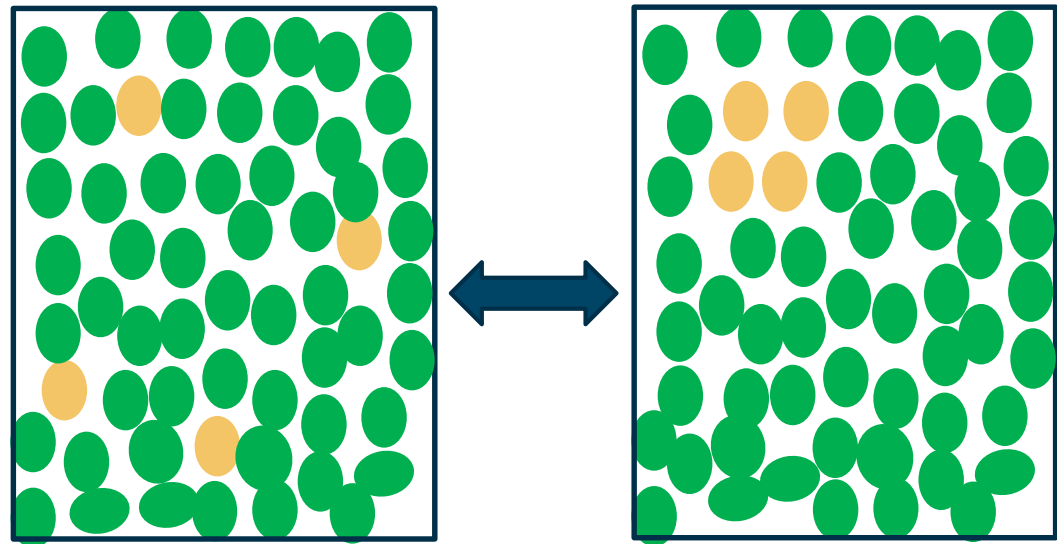
Occurrence and persistence of measles outbreaks depends on

Level of susceptibility and

whether susceptibles cluster in physical locations, like schools, religious communities, households, etc

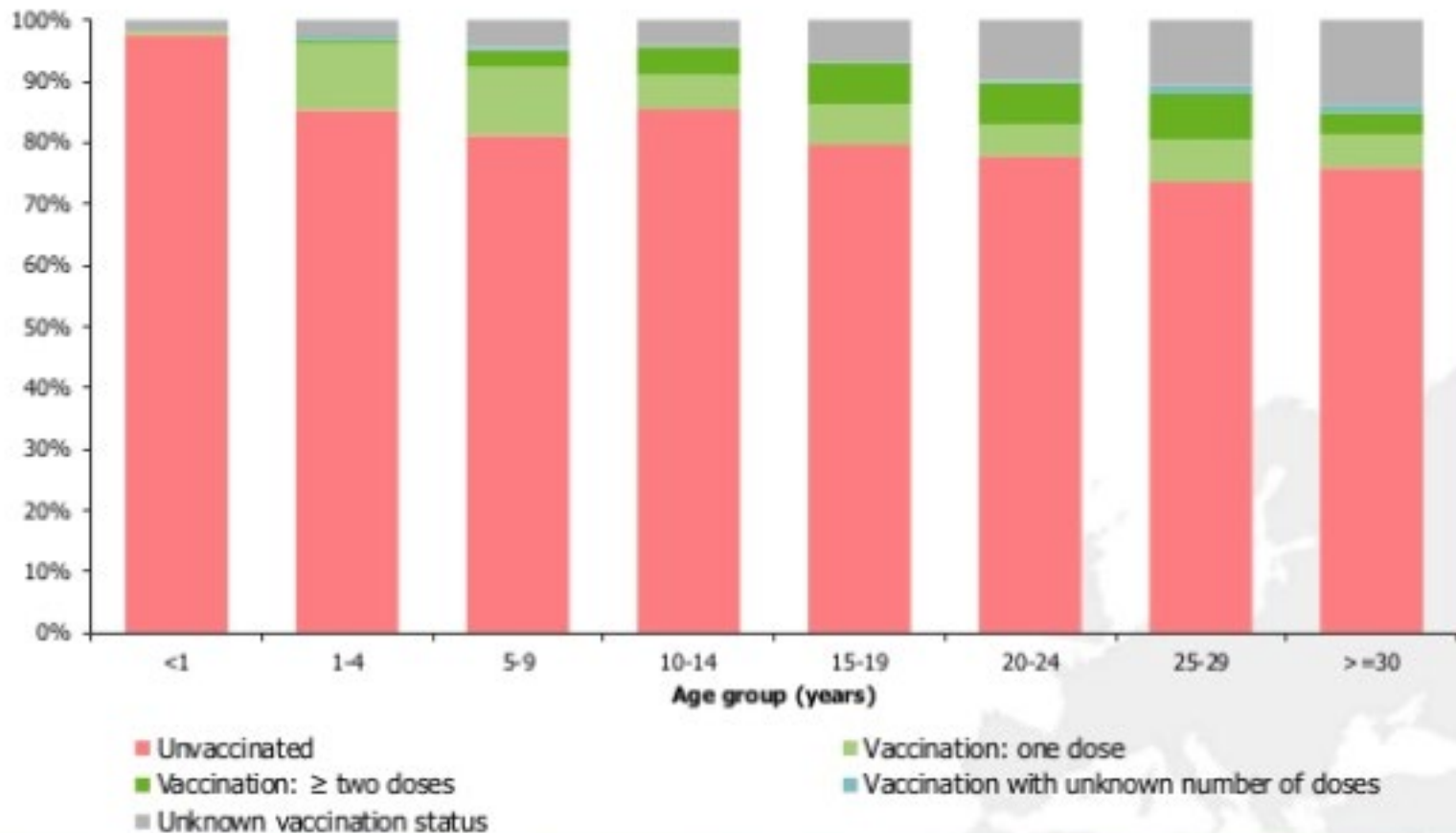
● susceptible

● immune



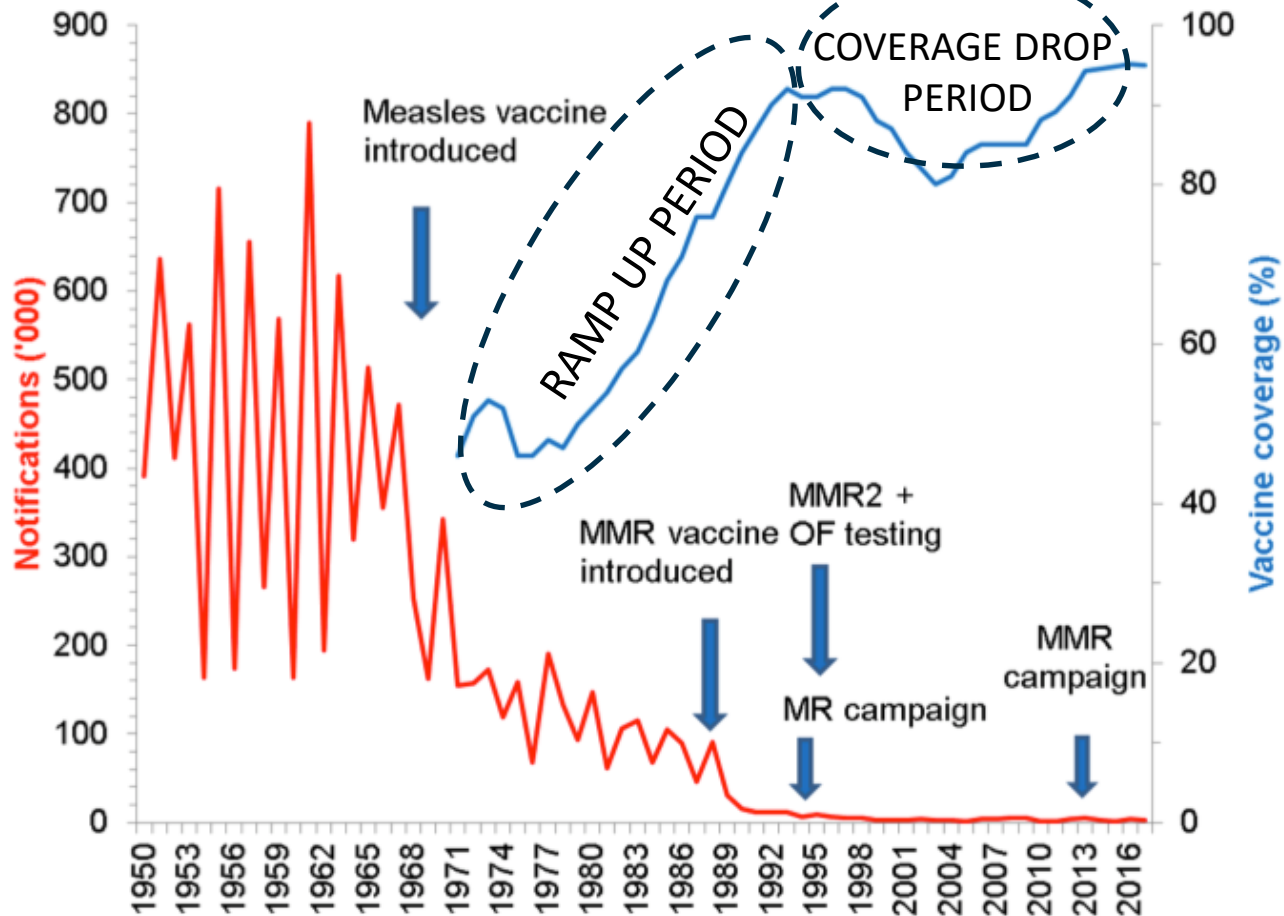
Non-vaccination is the main reason why outbreaks occur in Europe

Vaccination status of measles cases by age group, EU/EEA countries, March 2016 – February 2017 (n=5 881)



Historical non-vaccination

Figure 1. UK coverage of measles vaccination and measles notifications from 1950 to 2016



Vaccine refusal & hesitancy: Measles as an example

EARLY REPORT | VOLUME 351, ISSUE 9103, P637-641, FEBRUARY 28, 1998

PDF [942 KB] Figures Save

RETRACTED: Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children

Dr AJ Wakefield, FRCS · SH Murch, MB · A Anthony, MB · J Linnell, PhD · DM Casson, MRCP · M Malik, MRCP
et al. [Show all authors](#)

Published: February 28, 1998 · DOI: [https://doi.org/10.1016/S0140-6736\(97\)11096-0](https://doi.org/10.1016/S0140-6736(97)11096-0)

https://www.google.be/search?q=grim+et+al+what+you+believe+travels+differently&ie=utf-8&oe=utf-8&client=firefox-b-ab&g

Google

MMR vaccine

- mmr vaccine
- mmr vaccine autism
- mmr vaccine side effects
- mmr vaccinatie

About 3.870.000 results (0,48 seconds)

MMR vaccine - Wikipedia, the free encyclopedia
https://en.wikipedia.org/wiki/MMR_vaccine
The MMR vaccine is an immunization vaccine against measles, mumps, and rubella (German measles). It is a mixture of live attenuated viruses of the three ...
[Mumps - MMR vaccine controversy](#)

People also ask

- What is the MMR vaccine for?
- How often do you need a measles vaccine?
- What is measles mumps and rubella?
- What does the MMR stand for?

Measles, Mumps, and Rubella (MMR) Vaccine Safety Vaccines ...
www.cdc.gov/vaccinesafety/vaccines/mmr-vaccine.html
Nov 23, 2015 - The MMR vaccine is very safe, and it is effective at preventing measles, mumps, and rubella. Vaccines, like any medicine, can have side effects.
[Measles, Mumps, Rubella, and ... \(MMR\) Vaccine Safety Studies](#)

Vaccine Information Statement | MMR | Measles-Mumps-Rubella | VIS ...
www.cdc.gov/vis/home
Jun 18, 2013 - What are the risks from MMR vaccine? What if there is a serious reaction? The National Vaccine Injury Compensation Program; How can I learn ...



Donald J. Trump ✓
@realDonaldTrump



Following

Healthy young child goes to doctor, gets pumped with massive shot of many vaccines, doesn't feel good and changes - AUTISM. Many such cases!

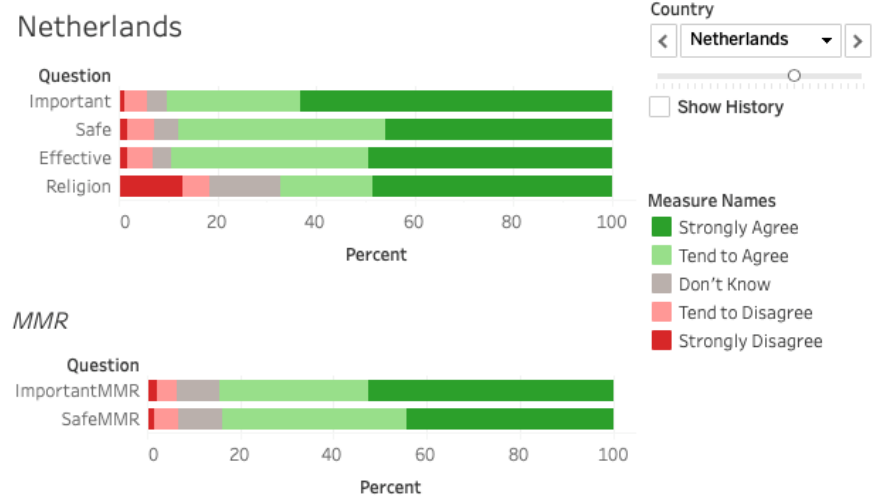
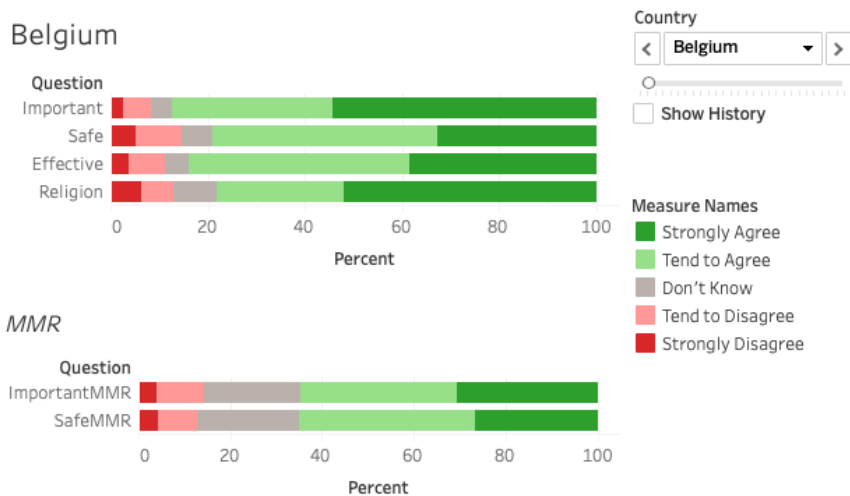
RETWEETS 3,221 FAVORITES 1,992



5:35 AM - 28 Mar 2014



Vaccine confidence project (LSHTM): “vaccines are...”



“Belgium has the lowest percentage of respondents agreeing that the MMR vaccine is safe and important for children: 64.7% believe it is important for children and 64.9% that it is safe.” Larson et al, EC report 2018

What did WHO Europe do?

- all Member States reconfirmed their commitment to **eliminating** measles and rubella, and made this a central objective of the **European Vaccine Action Plan 2015-2020 (EVAP, 2014)**.
- The European **Regional Verification Commission** for Measles and Rubella Elimination (since **2011**) evaluates the status of elimination based on documentation submitted **annually** by each country

BUT: Each country's commitment is influenced by **competing health priorities**, and in some cases **lack of capacity and resources**

Conclusions of the 8th meeting of the European RVC for Measles and Rubella Elimination (June 2019)

in the **majority** of countries efforts to eliminate measles and rubella continue to result in the achievement or **maintenance of interruption** of endemic diseases transmission.

However, it is of concern that **4 countries* lost their measles-interruption or measles-eliminated** status due to continuous transmission of measles virus for over 12 months in 2017 and 2018.

*Albania, Czechia, Greece and the United Kingdom

European Region loses ground in effort to eliminate measles



Press release

Copenhagen 29 August 2019

Following several years of steady progress toward elimination of measles in the WHO European Region, the number of countries having achieved or sustained elimination of the disease has declined. This was the conclusion of the European Regional Verification Commission for Measles and Rubella Elimination (RVC) based on an assessment of annual status updates for 2018 submitted by the 53 Member States of the Region.

The RVC determined that for the first time since the verification process began in the Region in 2012, 4 countries (Albania, Czechia, Greece and the United Kingdom) lost their measles elimination status.

“Re-establishment of measles transmission is concerning. If high immunization coverage is not achieved and sustained in every community, both children and adults will suffer unnecessarily and some will tragically die,” says Dr Günter Pfaff, Chair of the RVC.

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WHO Europe RVC conclusion on ASRU 2018

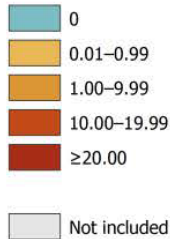
Table 2: Summary of Member States of the WHO European Region by measles and rubella elimination status for 2018

Country status in 2018	Measles	Rubella
Eliminated	35 (66%)	39 (73%)
Interrupted ≥ 24 months	1 (2%)	3 (6%)
Interrupted ≥ 12 months	1 (2%)	0 (0%)
Endemic	12 (22%)	11 (21%)
Re-established	4 (8%)	0 (0%)
Total	53	53

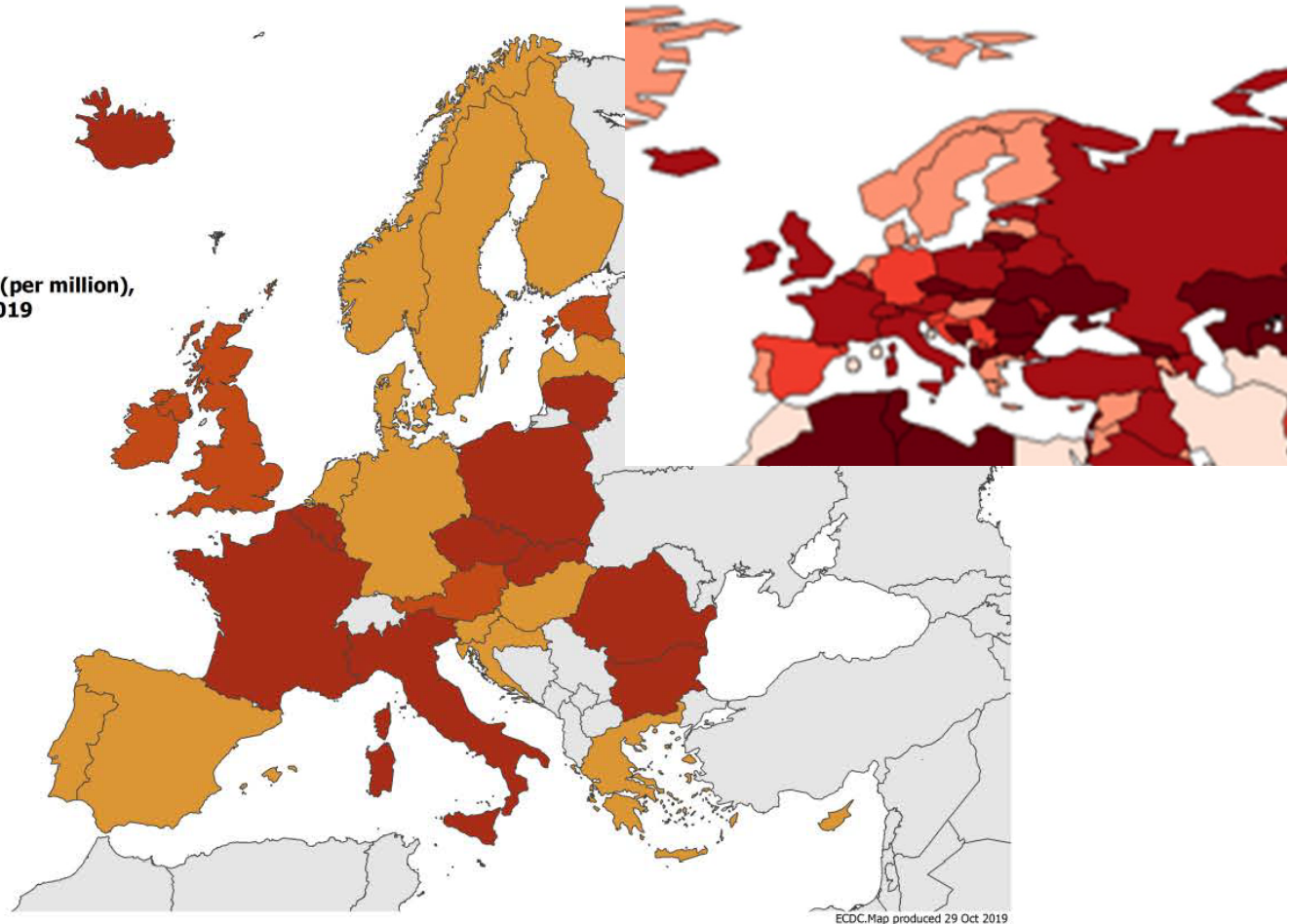
Figure 2. Measles notification rate per million population by country, EU/EEA, 1 October 2018–30 September 2019



Notification rate of measles (per million),
October 2018–September 2019



Countries not visible
in the main map extent

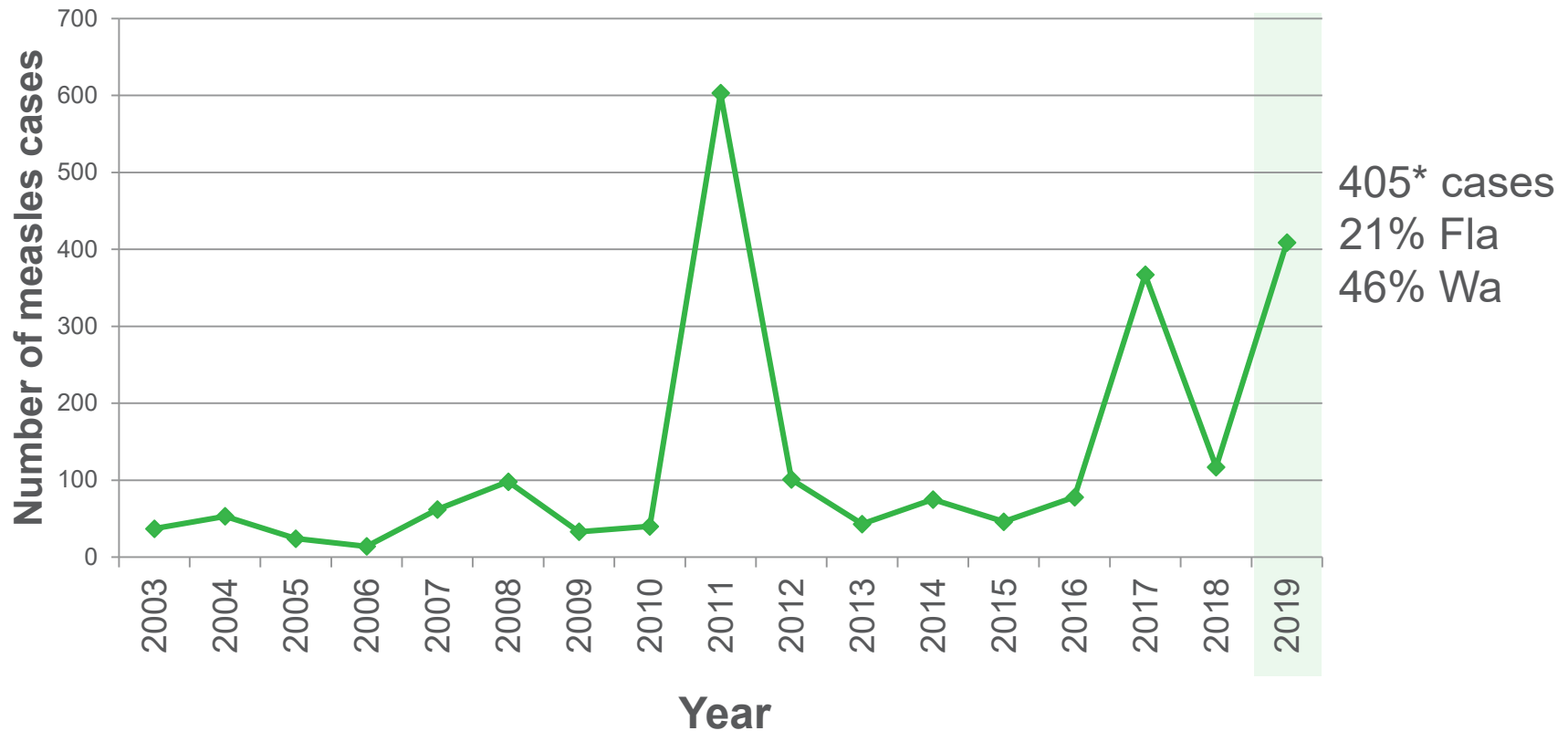


Eleven deaths attributable to measles were reported to TESSy during the 12-month period in Romania (5), France (3), Hungary (1), Italy (1) and the United Kingdom (1); (Figure 3).

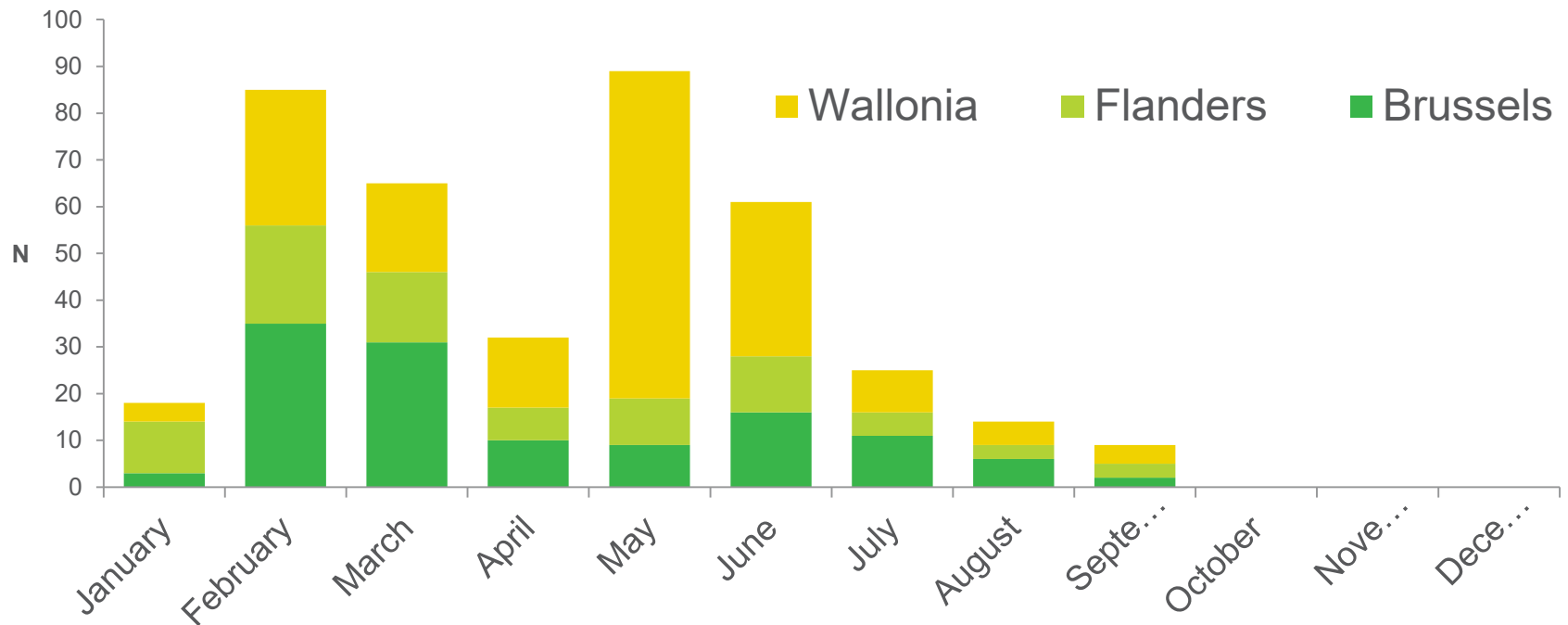
Of the 12650 cases with known age, 3588 (28%) were children under five years of age, and **7000 (55%) were aged 15 years or older**. The highest notification rates were observed in infants under one year and children aged 1–4 years

Measles in Belgium, 2019

- until 30/09/2019 (situation 18/11/2019)



Number of cases per month and region, (31/08/2019) N=405



What did Belgium do?

Epidemiology and Infection

cambridge.org/hyg

Short Paper

Cite this article: Braeckman T, Theeten H, Roelants M, Blaizot S, Hoppenbrouwers K, Maertens K, Van Damme P, Vandermeulen C (2018). Can Flanders resist the measles outbreak? Assessing vaccination coverage in different age groups among Flemish residents. *Epidemiology and Infection* **146**, 1043–1047. <https://doi.org/10.1017/S0950268818000985>

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First published online: 2 May 2018

Key words:

MMR vaccination; vaccines; vaccination (immunisation)

Can Flanders resist the measles outbreak? Assessing vaccination coverage in different age groups among Flemish residents

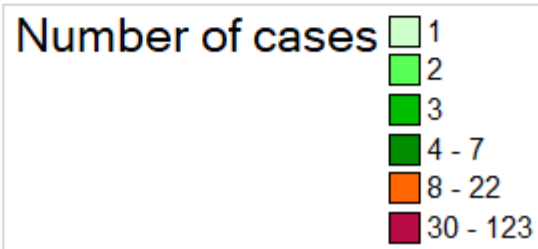
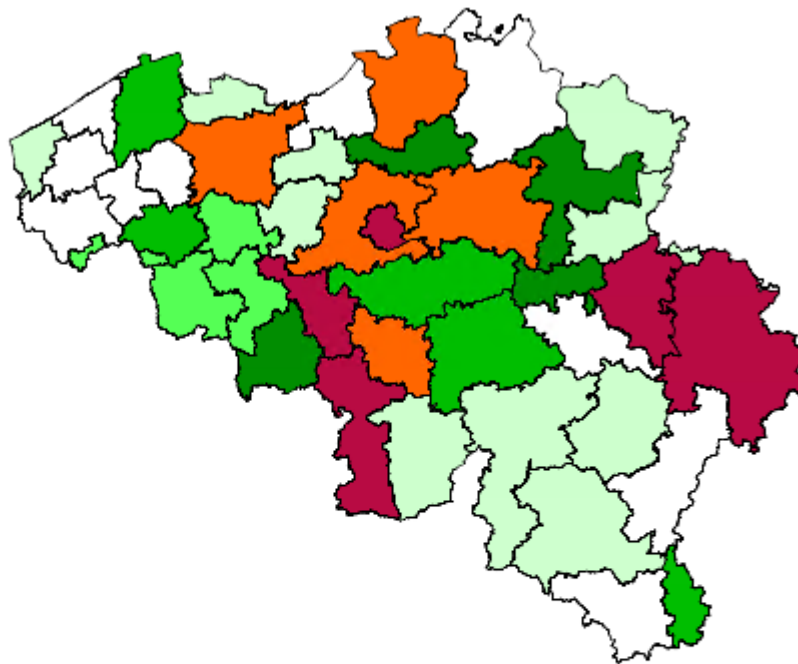
T. Braeckman¹, H. Theeten¹, M. Roelants², S. Blaizot³, K. Hoppenbrouwers², K. Maertens¹, P. Van Damme¹ and C. Vandermeulen⁴

¹Centre for the Evaluation of Vaccination, VAXINFECTIO, University of Antwerp, Universiteitsplein 1, Wilrijk 2610, Belgium; ²Environment and Health, KU Leuven, Kapucijnenvoer 35 blok d, 3000 Leuven, Belgium; ³Centre for Health Economics Research and Modelling Infectious Diseases, VAXINFECTIO, University of Antwerp, Universiteitsplein 1, Wilrijk 2610, Belgium and ⁴Leuven University Vaccinology Center, KU Leuven, Campus Gasthuisberg, Herestraat 49, Leuven 3000, Belgium

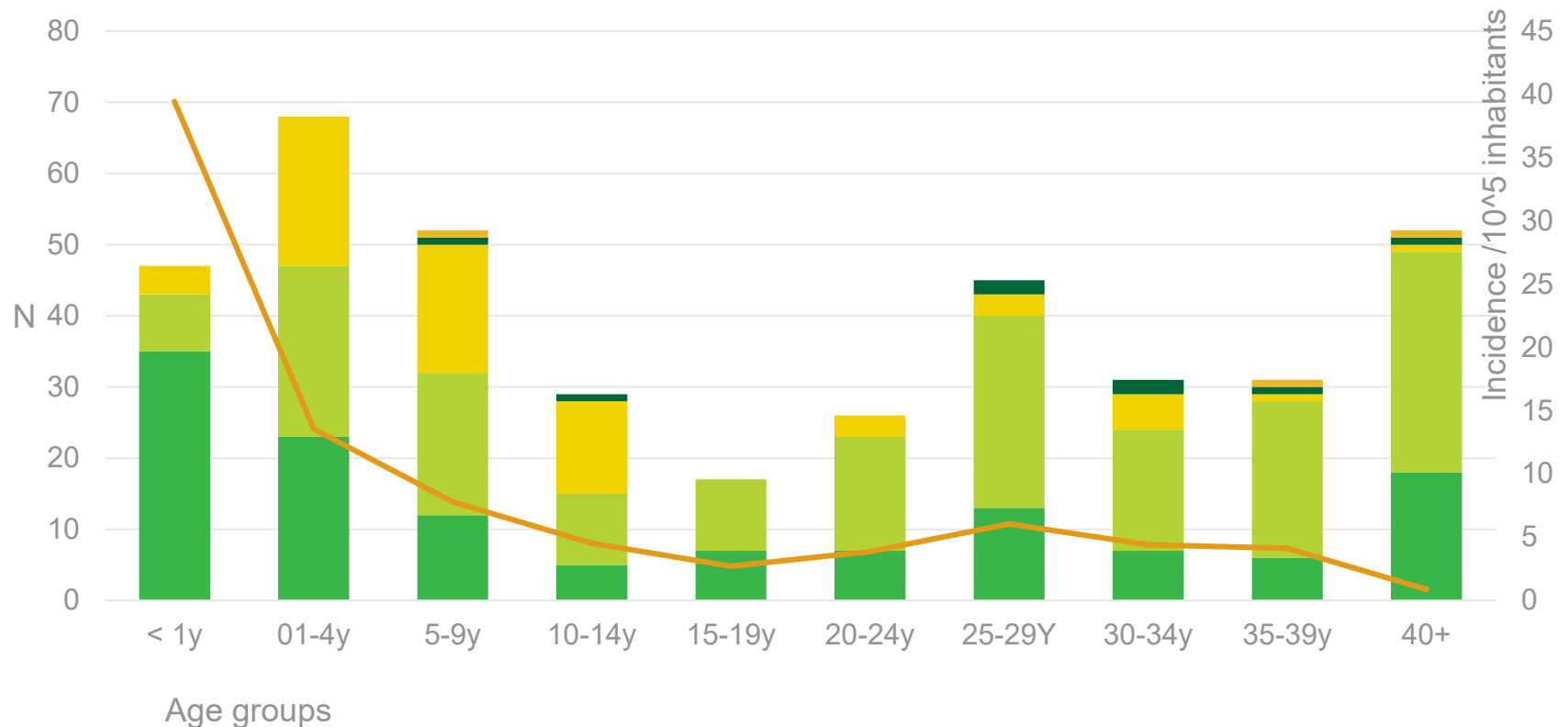
Abstract

The Belgian strategic plan to eliminate measles contains several vaccination strategies including routine immunisation programmes and catch-up campaigns. A new expanded programme on immunisation-based survey (2016) assessed the uptake of the recommended measles–mumps–rubella (MMR) vaccine in three different cohorts: toddlers, adolescents and parents of toddlers. A two-stage cluster sampling technique was used to select 875 toddlers (age 18–24 months) and 1250 adolescents (born in 2000) from 107 municipalities in Flanders. A survey

Number of measles cases per arrondissement (2019 until 30/09)



Number of measles cases per age group and vaccination status (31/08/2019)



Challenges anno 2019

- Ensure that all population groups have **equitable access** to vaccination services and that these are **convenient**
- Identify **who has been missed** in the past and reach them with the vaccines they need
- Ensure that **health workers** are **vaccinated** to prevent transmission in health facilities, and that they have sufficient technical **knowledge** about vaccines and the immune system to feel confident in recommending vaccination to their patients
- Improve **outbreak detection and response**

Challenges anno 2019

- Secure access to a timely and affordable **supply** of vaccines
- Strengthen **public trust in vaccines** and health authorities
- Listen and **respond to people's concerns** and respond to any health event that could be potentially related to vaccine safety.
- **High vaccination coverage** of at least 95% with two doses of measles vaccines **in all population groups** and age cohorts at national level and in all districts

Epidémie de rougeole en Europe: la France doit-elle s'inquiéter?

© 29/08/2019 à 16h57



D'autres épidémies à venir?

Pour que tout le monde soit protégé, il faudrait que 95% des Français soient vaccinés, mais en 2018, seuls 79% des nourrissons étaient vaccinés, [selon Santé Publique France](#). "On ne peut pas atteindre les 100% car

Depuis le 1er janvier 2018, la vaccination contre la rougeole est devenue obligatoire chez le nourrisson. "On espère que ça va enrayer la propagation de la rougeole, notamment grâce à ce vaccin obligatoire, et que d'ici une dizaine d'années, l'épidémie prenne fin", explique la virologue. En attendant, il est possible que de nouvelles épidémies traversent la France.



Let's talk about protection

Childhood Vaccination

Flipbook to support conversations with parents and caregivers

F



[Home](#) / [Documenten](#) / Actieplan voor de eliminatie van mazelen en rubella in België voor de periode van 2016-2020

Actieplan voor de eliminatie van mazelen en rubella in België voor de periode van 2016-2020

Informatie

Raadpleeg de [Gemeenschappelijke verklaring - eliminatieperiode van 2016-2020](#).

- Catch-up in adults, HCW, migrants
- Surveillance and surveys
- confirmation of cases by NRC
- Coordinate responsible agencies

What did Belgium do to improve control?

- Recommend adult MMR catch-up (including for travel) up to birth cohort 1970
 - Free of charge MMR for adults (Flanders)
- Travel advice for children <12M (Free of charge)
- Vaccinate asylum seekers at entry
- Mobile vaccination team (Flanders) for Roma, ..
- Age-appropriate vaccination required in daycare (Wallonia)
- Accelerate 2dose: from 10-13y to 8-10 years

What more needs to be done?

Euro Surveill. 2017 Apr 27;22(17). pii: 30524. doi: 10.2807/1560-7917.ES.2017.22.17.30524.

Ongoing measles outbreak in Wallonia, Belgium, December 2016 to March 2017: characteristics and challenges.

Grammens T¹, Schirvel C², Leenen S², Shodu N², Hutse V³, Mendes da Costa E¹, Sabbe M¹.

⊖ Author information

- 1 Service of Epidemiology of Infectious Diseases, Department of Public Health and Surveillance, Scientific Institute of Public Health, Brussels, Belgium.
- 2 Infectious Disease Surveillance Unit, Agence pour une Vie de Qualité (AVIQ), Walloon region, Charleroi, Belgium.
- 3 National Reference Centre for measles, mumps and rubella, Service of Viral Diseases, Scientific Institute of Public Health, Brussels, Belgium.

Abstract

We describe characteristics of an ongoing measles outbreak in Wallonia, Belgium, and difficulties in control measures implementation. As at 12 March 2017, 177 measles cases were notified, of which 50% were 15 years and older, 49% female. Atypical clinical presentation and **severe complications, mainly among adults**, in combination with late notification, low or unknown vaccination coverage of contacts, infected **healthcare workers and increased workload due to contact tracing**, are the main concerns for outbreak management.

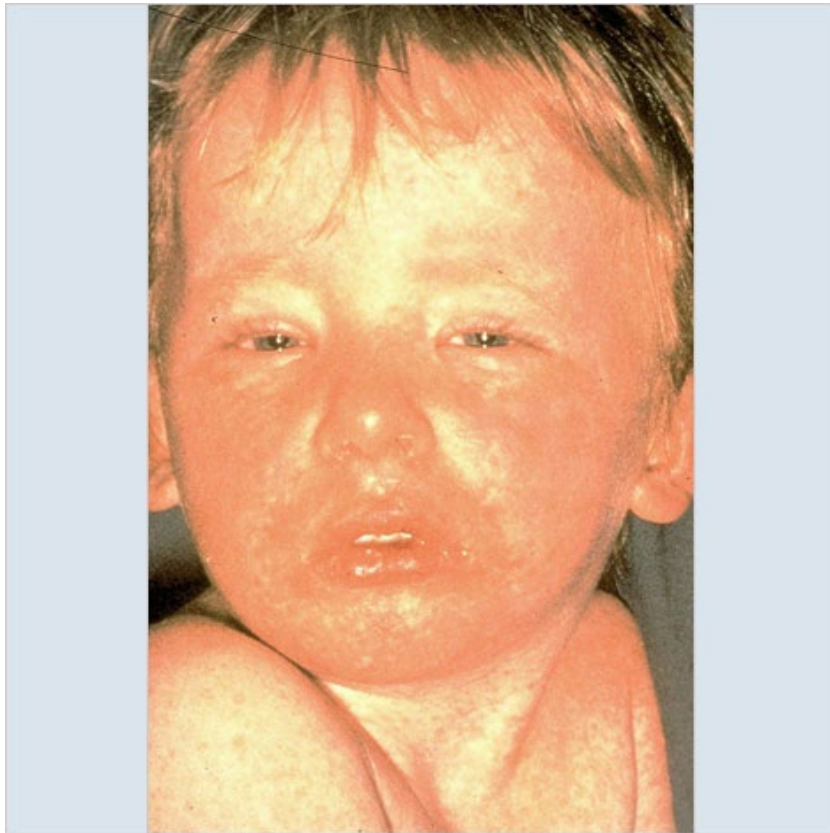
This article is copyright of The Authors, 2017.

12% of cases in Wallonia were HCW in hospitals

41% of cases hospitalised

3 cases of encephalitis

Measles, think of it!



Web MD

Or only the complication (late presentation):

Diarrhea, otitis

Pneumonia

Bacterial surinfection

Rhabdomyolysis

Encephalitis

Hepatic cytolysis

Hemorrhage with seizures, delirium and
respiratory distress

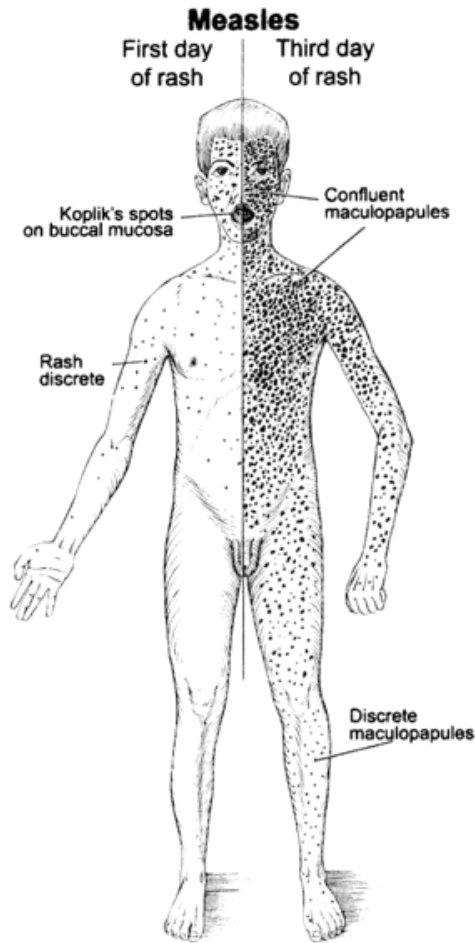
CDC image

Fever

Coryza, cough, conjunctivitis

Top-down maculopapular rash

Figure 1. Development and distribution of measles rash. Reprinted with permission from [8].



Measles complications (30%)

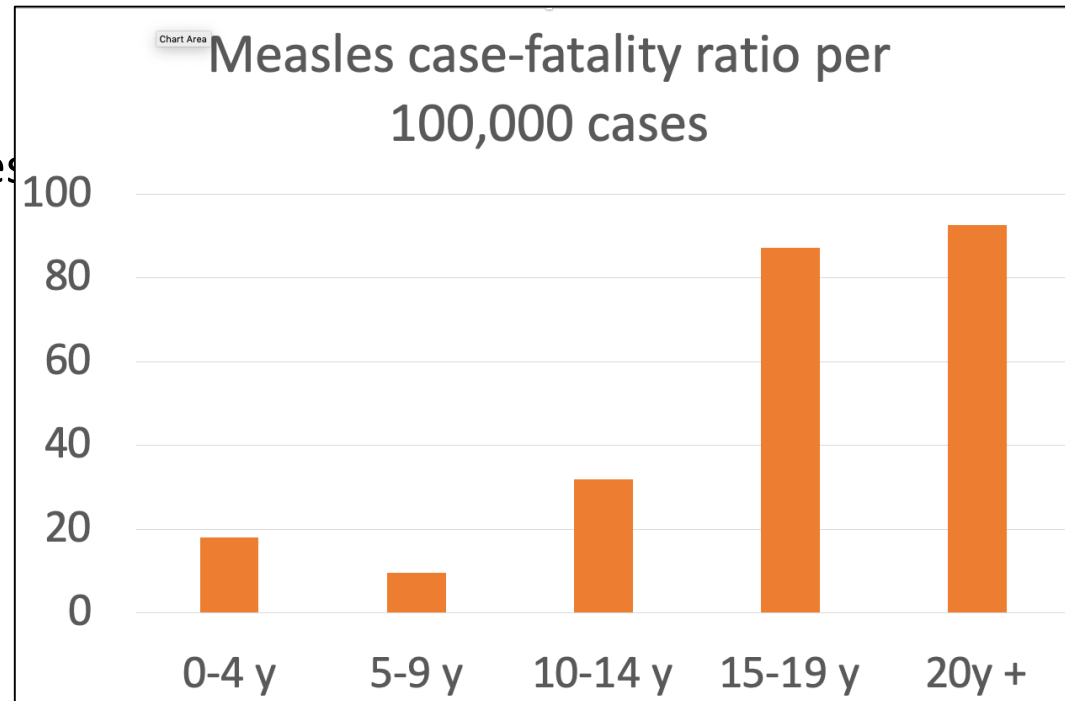
More in children <5; adults>20;
immunocompromised

Most frequent:

- Diarrhea, vomiting (dehydration)
- Middle ear infection
- Bronchopneumonia (severe)
- ophthalmic (developing countries)

Neurological: most sequelae

- Febrile convulsions
- Meningitis
- Encephalitis
- Myelitis
- Guillain-Barré S
- Reye's S



Ramsay M, et al. Communicable Disease Rev 1994 ; 4 : R141-6.

Death (1/1000-1/10000 in developed countries)

Measles Encephalitis

Acute Measles Encephalitis /Post Infectious Encephalitis

- 1-3/1000; more frequent in adults
- symptoms generally start 3–10 days after rash onset
- immune-mediated demyelinating syndrome
- Lethal in 25%; Sequelae in 33% of survivors

Acute progressive encephalitis/measles inclusion-body encephalitis

- In immunocompromised (HIV, leukemia, ..)
- Onset usually 5 weeks to 6 months after acute measles.
- >80% lethal

Subacute Sclerosing PanEncephalitis (1-10/10⁵)

- Latency: 2-10 years after infection (or later)
- Risk X16 if infected <1 year age (versus > 5 years); M/F 3:1
- Persistent measles infection (mutated): Viral antigen in CSF + high levels of neutralising antibody in CSF and serum

Children:

- Start: mild intellectual deterioration and behavioral change
- Later: periodic stereotyped myoclonic jerks and motor disturbance
- Ocular/visual manifestations in 10-50%, may precede neurological

Adults (rare): mean age 25 years

- often cortical blindness or visual manifestations as first sign;
- typical EEG and myoclonus may be absent

Lethal after a 1-3 years course (6% longer) due to decortication

Reviews by Garg, 2002 -2019

High risk of subacute sclerosing panencephalitis following measles outbreaks in Georgia.

Khetsuriani N¹, Sanadze K², Abuladze M³, Tatishvili N³.

Author information

- 1 Global Immunization Division, Centers for Disease Control and Prevention (CDC), Atlanta, GA, USA; CDC South Caucasus Office, Tbilisi, Georgia. Electronic address: nck7@cdc.gov.
- 2 National Center for Disease Control and Public Health of Georgia, Tbilisi, Georgia.
- 3 Iashvili Children's Hospital, Tbilisi, Georgia.

Abstract

OBJECTIVE: To describe cases and estimate subacute sclerosing panencephalitis (SSPE) risk following large-scale measles outbreaks in Georgia. A rare, fatal late complication of measles, SSPE is often overlooked in assessments focused on the acute illness. Georgia had 8377 and 11,495 reported measles cases during the 2004-2005 and 2013-2015 outbreaks,

Estimated risk: 1:1396 (16 cases).

Clin Infect Dis. 2017 Jul 15;65(2):226-232. doi: 10.1093/cid/cix302.

Adjusted estimates of subacute sclerosing panencephalitis: 50%, 25% at risk

Subacute Sclerosing Panencephalitis: The Devastating Measles Complication That Might Be More Common Than Previously Estimated.

Wendorf KA¹, Winter K¹, Zipprich J¹, Schechter R¹, Hacker JK², Preas C², Cherry JD³, Glaser C⁴, Harriman K¹.

Author information

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- 2 Viral and Rickettsial Disease Laboratory, California Department of Public Health, Richmond.
- 3 David Geffen School of Medicine, University of California, Los Angeles.
- 4 Kaiser Permanente, Infectious Diseases, Oakland, California.

Abstract

BACKGROUND: Subacute sclerosing panencephalitis (SSPE) is a fatal complication of measles. We reviewed California cases from 1998-2015 to understand risk factors for SSPE and estimate incidence.

Similar in US

To prevent measles: vaccinate the unvaccinated!

Find them

Alert them

Convince them

Especially HCW in your hospital!

To prevent SSPE e.a.: extra dose in children 6-12 months age

- Traveling to endemic country
- Or exposed in outbreak (daycare..)

Suspected Measles, report it!

Suspect= (history of) rash+fever

Outbreak control: vaccination of unprotected contacts within 72 hours after exposure works!

Afterwards: Lab confirmation (IgM or RT-PCR on saliva or throat swap)

or epidemiological linking

... and report sequelae too!

[Home](#) > [Procedures](#) > Een meldingsplichtige infectieziekte aangeven

Een meldingsplichtige infectieziekte aangeven

Als arts en hoofd van een klinisch laboratorium geldt een meldingsplicht om alle [meldingsplichtige infectieziekten](#) **binnen 24 uur vanaf het eerste vermoeden** te melden aan de arts infectieziektebestrijding van Zorg en Gezondheid. Ook bij een vermoeden van een ernstige infectie die niet in de lijst is opgenomen en die op basis van de medische kennis of uw inschatting een epidemisch karakter dreigt aan te nemen of aangenomen heeft, moet u dat melden.

MATRA

Déclaration des maladies transmissibles

Quitter

Accueil

Rechercher :

Google Recherche personnalisée



Bienvenue sur le site de **déclaration obligatoire des maladies infectieuses** de la cellule de surveillance des maladies infectieuses de l'AViQ, destiné aux professionnels de la santé.
La cellule de surveillance des maladies infectieuses, en collaboration avec l'Institut scientifique de santé publique, réalise mensuellement le « FLASH », une lettre d'information électronique sur des points d'attention épidémiologique particuliers, en Belgique, en Europe et dans le reste du monde.
En tant que professionnel de la santé, si vous désirez joindre directement les inspecteurs, ceux-ci sont disponibles 7 jours sur 7 par téléphone au 071/205 105.

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GEMEENSCHAPPELIJKE GEMEENSCHAPSCOMMISSIE

Déclaration obligatoire des maladies transmissibles Registratie van besmettelijke ziekten in het Brussels Gewest

• Indien u al bent ingeschreven:

- Een nieuw geval registreren
- Uw gegevens raadplegen



Health Economics & Modelling Infectious Diseases
Vaccine & Infectious Disease Institute
University of Antwerp