



## 10. PREVENTIVE CARE

### 10.1. Vaccination against selected childhood infectious diseases (P-1, P-1, P-3)

|                     |  |
|---------------------|--|
| Description         | <p>Percentage of <b>infants</b> who have been fully vaccinated against important infectious childhood diseases. The following coverage will be monitored: Poliomyelitis, Diphtheria, Tetanus, Pertussis, Pneumococcus.</p> <p>Percentage of <b>infants and adolescents</b> who have been fully vaccinated against Measles</p>  |
| Calculation         | <p><b>Diphtheria-tetanus-pertussis, poliomyelitis, pneumococcus</b></p> <p>Percentage of infants of 18-24 months who have been fully vaccinated for this age according to national vaccination schedules, against pertussis, diphtheria, tetanus, poliomyelitis (4 doses) or pneumococcus (3 doses).</p> <p><b>International comparisons:</b> Only full vaccination coverage by vaccine preventable disease should be compared. National vaccination schemes differ between countries qua age and number of doses. As currently published international figures do not always display this full coverage, we do not use them and we do not present international comparison.</p> <p><b>Measles</b></p> <p>Percentage of infants reaching their 2nd birthday in the given calendar year who have been fully vaccinated against measles (first dose).</p> <p>Percentage of adolescents who have received the second dose of vaccination against measles.</p> |
| Rationale           | <p>Immunisation is one of the most powerful and cost-effective forms of primary prevention. It is a classical prevention strategy which should be maintained to ensure collective protection. Moreover, Belgium has signed the international commitment to eliminate measles, which implies a vaccination coverage of 95% for the first and the second dose of measles, and the European Vaccine Action Plan (1;1;2).</p> <p>The choice of the specific vaccine preventable diseases in our indicator set is a sub-selection of the vaccination indicators from ECHIM (3) that has been updated to recent vaccination schemes.</p>   |
| Primary Data source | <p>Regional vaccination coverage surveys organized by the regions/communities ; for adolescents: school surveys in Wallonia and Brussels</p>   |
| Indicator source    | <p>By region: vaccination surveys reports: 2015 for Wallonia, 2016 for Flanders and 2012 for Brussels (4-6).</p> <p>For measles coverage in adolescents in Wal-Bxl (7)</p> <p>For the Belgian pooled values : Sciensano (Service of Epidemiology of Infectious Diseases)</p>   |
| Periodicity         | <p>Vaccination coverage surveys occur every 3-4 years (5-6 years in Brussels)</p>  |

**Technical definitions and limitations**

In Belgium, vaccination is a regional health competence and the vaccination coverage rates are measured at regional level. A “national” vaccination coverage rate is computed afterwards as a weighted average of the 3 regional rates, assuming that the rates remain constant during the inter-survey period.

Vaccination schedule: for poliomyelitis, diphtheria, tetanus and pertussis, the complete schedule in Belgium foresees 4 doses. For pneumococcus, it comprises 3 doses. For measles, the target for measles elimination is to reach a 95% coverage of the 1<sup>st</sup> (at 12 months) and 2<sup>nd</sup> dose (which is given around 11-12 years in Belgium). However, coverage for the 2<sup>nd</sup> dose is not measured the same way in Flanders, Brussels and Wallonia, and is therefore difficult to be compared, including the possibility of underestimation in Brussels and Wallonia.

Note that it can be that a small percentage of infants was fully vaccinated in a country with another schedule and therefore misclassified as not fully vaccinated.

**Targets and critical immunization rates**

The critical immunisation rate (minimal level to reach herd immunity ensuring a collective protection) varies according to authors <sup>(4)</sup>. Based on those ranges, WHO has recommended minimal targets to reach: 90% for DTP and polio, 95 % for measles. The Superior Health Council <sup>(8)</sup> recommends a 95% coverage for poliomyelitis.

**Table 98 – critical immunization threshold and WHO immunization target rates.**

| Disease         | Critical threshold | WHO target | Belgian Superior Health Council |
|-----------------|--------------------|------------|---------------------------------|
| Poliomyelitis   | 80-93%             | 90%        | 95%                             |
| Diphtheria      | 80-85 %            | 90%        |                                 |
| Pertussis       | 92-95%             | 90%        |                                 |
| Pneumococcus    | 70%                | /          |                                 |
| Measles 1 and 2 | 92-95%             | 95%        |                                 |



### 10.1.1. Results

Table 99 summarises the immunization rates for polio, DTP, pneumococcus and measles at Belgium level. Those national rates are computed by Sciensano as a weighted average from the regional rates.

At national level, there is a stability of the vaccination coverage rate for polio and DTP vaccines, around 93%. This level is sufficient for diphtheria, but slightly lower than the (Belgian) target for polio, and slightly lower than the critical threshold for pertussis. The national coverage is sufficient for pneumococcus.

The national coverage for the 1<sup>st</sup> dose of measles vaccination has reached the 95% target since 2012. However, the coverage for the 2d dose of measles vaccination is too low.

The regional figures are displayed in Table 100 vaccination coverage used to be much lower in Wallonia and Brussels than in Flanders. The 2015 survey revealed that the rates in Wallonia are now very close to the rates in Flanders (no survey was done in Brussels in 2015-2016). The rates of measles vaccination has now reached the 95% target in Wallonia for the 1<sup>st</sup> dose. The only exception is the coverage of the 2nd dose of measles vaccination, which is much lower in Wallonia. However, the measurement method differs between the regions, rendering the rates difficult to compare.

**Table 99 – National immunisation rates (weighted average) by disease, Belgium 2009-2016**

| Year  | 2009                        | 2012                        | 2016   |
|---|-----------------------------|-----------------------------|--|
| <b>Surveys used for calculation of weighted average</b> | VL2008<br>RW2009<br>Bxl2006 | VL2012<br>RW2012<br>Bxl2012 | VL2016 (5)<br>RW2015(4)<br>Bxl2012(6)<br>Bxl-Wall 2015-16 for MMR2 (9) |
| <b>Polio 4</b>  | 93.0%                       | 92.0%                       | 93.0%  |
| <b>DTP 4</b>  | 93.0%                       | 91.9%                       | 92.7%  |
| <b>Pneumococcus (PCV) 3</b>                             |                             | 93.3%                       | 93.6%  |
| <b>MMR 1</b>  | 94.5%                       | 95.6%                       | 95.7%  |
| <b>MMR 2 *</b>  | 83.1%                       | 85.0%                       | 85.1%  |

*Green: reaching the critical threshold and national target; Yellow: reaching critical threshold but not national target, or very close to critical threshold; Red: far from the target/threshold*

*VL = Flanders; RW = Wallonia; Bxl = Brussels*

*Source=official national estimates (Institute of Public Health), computed from the weighted average of the regional survey results*



**Table 100 – Regional immunization rates against selected diseases by region; 2012 and 2015-2016 regional vaccination surveys.**

| Vaccine and dose     | Flanders 2012 | Brussels 2012        | Wallonie 2012        | Flanders 2016 | Brussels 2015        | Wallonie 2015        |
|----------------------|---------------|----------------------|----------------------|---------------|----------------------|----------------------|
| polio 4              | 93.2%         | 91.1%                | 90.4%                | 93.6%         | no new survey        | 92.9%                |
| DTP 4                | 93.0%         | 91.1%                | 90.4%                | 93.0%         | no new survey        | 92.9%                |
| Pneumococcus (PCV) 3 | 96.5%         | 90.1%                | 89.2%                | 94.9%         | no new survey        | 92.9%                |
| MMR 1 / MCV 1        | 96.6%         | 94.1%                | 94.4%                | 96.2%         | no new survey        | 95.6%                |
| MMR 2                | 92.5%         | 75.5%<br>(2008-2009) | 75.5%<br>(2008-2009) | 93.4%         | 75.0%<br>(2015-2016) | 75.0%<br>(2015-2016) |

For MMR2: the method differs by region (school survey for Wallonia and Brussels, survey in general population for Flanders)

#### Keypoints

- For the polio vaccine: the coverage of full vaccination (4 doses) reaches the critical threshold for collective immunisation, but not the national target (95%).
- For the DTP vaccine: the coverage of full vaccination (4 doses) is near to the critical threshold, but still a bit too low for pertussis. Many small outbreaks are still observed for pertussis.
- For the pneumococcus: the coverage is satisfying.
- For measles: for MMR1, the coverage of 95% is now reached in the 3 regions. The MMR2 coverage is too low in all the 3 regions; in Flanders it almost reaches the threshold, but in Wallonia and Brussels the coverage is quite low. However, the methodology differs between the regions, and the coverage in Brussels and Wallonia may be underestimated. An effort is still to be done to avoid measles outbreaks.

#### References

1. Regional Committee for Europe. Sixtieth sessio. Resolution: Renewed Commitment to elimination of Measles and Rubella and prevention of congenital Rubella syndrome by 2015 and sustained support to polio-free status in the WHO European Region. Moscow: WHO Regional Office for Europe; 2010.
2. WHO European Office for Europe. European Vaccine Action Plan 2015-2020. Copenhagen: 2014.
3. Verschuuren M, Achterberg PW, Gijsen R, Harbers MM, Vijge E, Wilk EA, et al. ECHI Indicator Development and Documentation - Joint action for ECHIM final Report Part II. RIVM; 2012. Report No.: II.
4. Robert E, Swennen B. Enquête de couverture vaccinale des enfants de 18 à 24 mois en Fédération Wallonie-Bruxelles (Bruxelles exceptée) 2015. ULB- PROVAC; 2016.
5. Vandermeulen C, Hoppenbrouwers K, Roelants M, Theeten H, Braeckman T, Maertens K, et al. Studie van de vaccinatiegraad in



- 6. Vlaanderen, 2016. Leuven's Universitair Vaccinatie Centrum (KUL) and Centrum voor de evaluatie van Vaccinatie (UA); 2018.
- 7. Robert E, Swennen B. Enquête de couverture vaccinale des enfants de 18 à 24 mois à Bruxelles en 2012. 2013.
- 8. Vermeeren A, Goffin F. Statistique de couverture vaccinale en 6e primaire en Fédération Wallonie-Bruxelles en 2015-2016. Bruxelles: Provac; 2016.
- 9. Conseil Supérieur de la Santé. Guide de vaccination. Bruxelles: 2009.
- 10. Fédération Wallonie-Bruxelles. La Fédération Wallonie-Bruxelles en chiffres, 2017. Partie III.2. Enfance, Bruxelles; [http://www.directionrecherche.cfwb.be/index.php?eID=tx\\_nawsecure&u=0&g=0&hash=b5e969f6e3d2c14242e53fa62e4ff35c70480783&file=fileadmin/sites/sr/upload/sr\\_super\\_editor/sr\\_editor/documents/statistiques/CC2017\\_enfance.pdf](http://www.directionrecherche.cfwb.be/index.php?eID=tx_nawsecure&u=0&g=0&hash=b5e969f6e3d2c14242e53fa62e4ff35c70480783&file=fileadmin/sites/sr/upload/sr_super_editor/sr_editor/documents/statistiques/CC2017_enfance.pdf). Bruxelles: 2017.

## 10.2. Vaccination against influenza for the elderly (P-4)

### 10.2.1. Documentation sheet

|                              |   |
|------------------------------|---|
| <b>Description</b>           | Proportion of the population aged 65 years and over that were vaccinated against influenza  |
| <b>Calculation</b>           | Numerator: number of individuals aged 65 years and over who received a dose of influenza vaccine during the past calendar year. <sup>ddd</sup><br>Denominator: number of individuals aged 65 years and over<br>Because results are based on sickness funds data, all calculations are based on elderly patients who are not residing in an institution (see section limitation for details).  |
| <b>Rationale</b>             | Influenza vaccines are considered as the most effective preventive tool to reduce disease burden and severe disease due to influenza in individuals. In Belgium, seasonal influenza vaccination is currently recommended for the prevention of influenza for all persons aged 65 years and over and for all persons living in institutions (among other groups). <sup>1</sup><br>The WHO recommends a target a 75% vaccination rate for the elderly. <sup>2</sup> |
| <b>Primary data source</b>   | There are two sources of results for this indicator: <ul style="list-style-type: none"> <li>• Results presented in this report are based on billing data (IMA data) of influenza vaccines which have been reimbursed.</li> <li>• Results presented in international databases (OECD, Eurostat) are based on Belgium health interview survey (HIS) (self-reported vaccination status).<sup>3,4</sup></li> </ul>  |
| <b>Technical definitions</b> | In IMA data: all vaccines belonging to the ATC 4 class J07BB (anti-influenza vaccines).   |
| <b>Limitation</b>            | In IMA data, only vaccines which have been reimbursed are taken into account.   |

<sup>ddd</sup> This definition differs from epidemiological studies, where rates are generally calculated on one influenza season, which usually overlaps two calendar years.