

# Early vision screening in Flemish schoolchildren (CLB): Why, when and how?

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VLAAMSE WETENSCHAPPE  
LIJKE VERENIGING VOOF  
JEUGDGEZONDHEIDSZOR



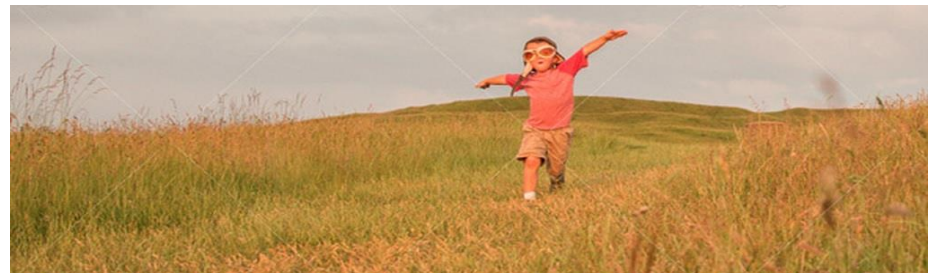
*Flemish Scientific Society for Youth Health Care, Leuven, Belgium*

With the support of the Flemish Authorities



**Vlaamse  
overheid**

# The screening program



# School Health Care: Pupil Guidance Centers 'CLB'

- Since 2003: **Standard Vision** = guidelines for systematic screening from the age of 3y

**2003-2018**

**Systematically**

- 1<sup>st</sup> grade Maternal school (3y)
- 2<sup>nd</sup> grade Maternal school (4y)
- 1<sup>st</sup> grade Primary school (6y)
- 3<sup>rd</sup> grade Primary school (8y)
- 5<sup>th</sup> grade Primary school (10y)

**Ad hoc**

- 1<sup>st</sup> grade Secondary school (12y)
- 3<sup>rd</sup> grade Secondary school (14y)

**WHEN ?**



**New Decree**

**Since Sept 2018**

**Systematically**

- 1<sup>st</sup> grade Maternal school (3y)
- ~~2<sup>nd</sup> grade Maternal school (4y)~~
- 1<sup>st</sup> grade Primary school (6y)
- 4<sup>th</sup> grade Primary school (9y)
- 6<sup>th</sup> grade Primary school (11y)

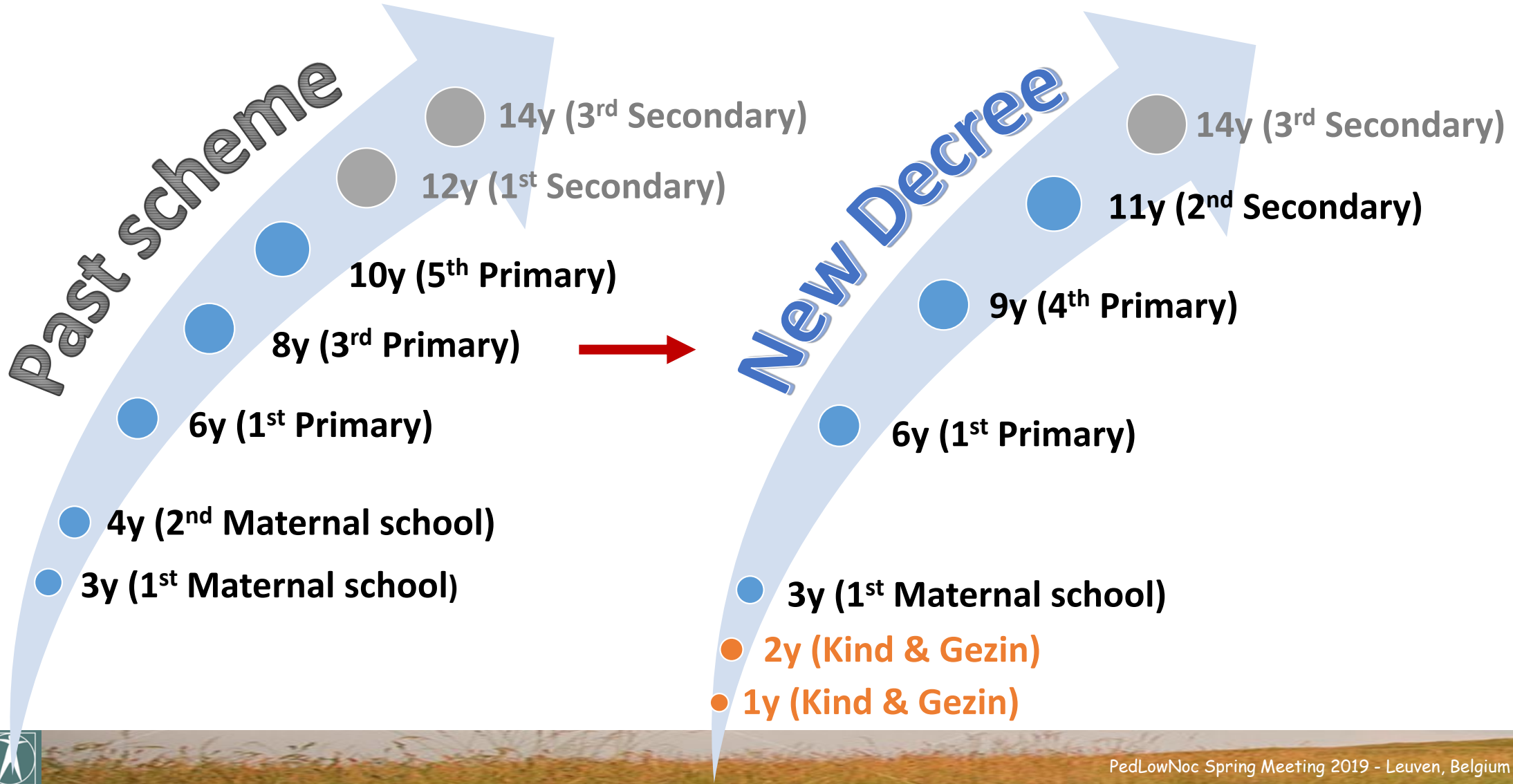
**Ad hoc**

- ~~1<sup>st</sup> grade Secondary school (12y)~~
- 3<sup>rd</sup> grade Secondary school (14y)



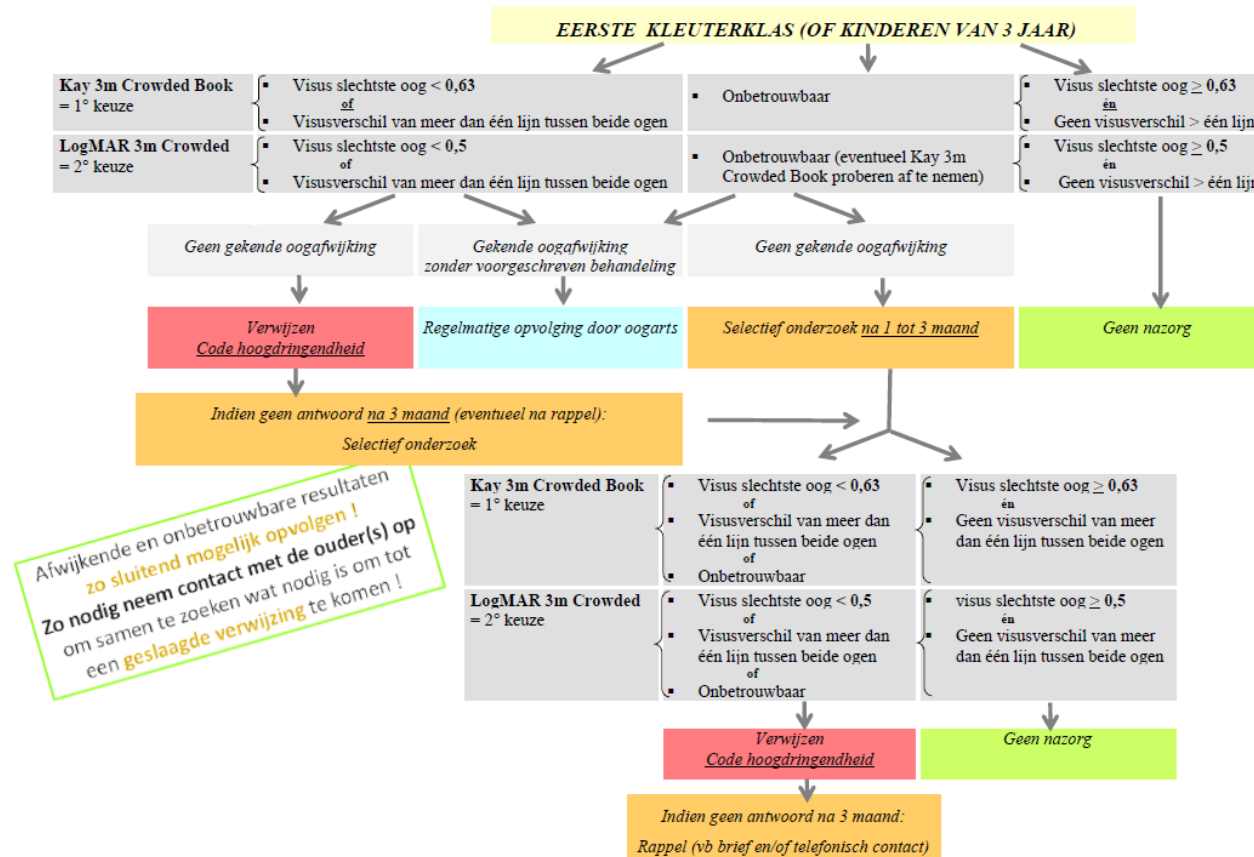
# Early vision screening by CLB

Since Sept 2018



# Early vision screening in CLB

Sept 2018: **Update Standard Vision** → <https://vvvj.be>





**WHAT ?**

# Early vision screening in CLB

**HOW ?**

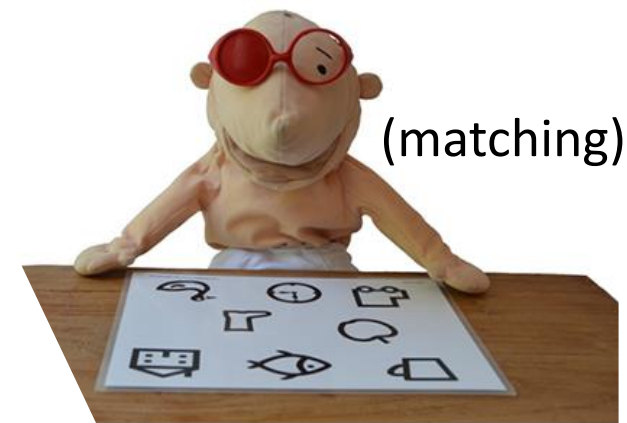
Screening for early detection of **amblyopia** and **amblyogenic factors**

**Logarithmic crowded picture test for visual acuity (3m)**



KAY PICTURE TEST LINEAR CROWDED BOOK

**Ocular alignment examination**



## Preschool: Well baby clinics

Kind & Gezin



PlusoptiX® Eye Screener



2010-2012: progressive introduction of an **automated refractometry** (plusoptiX® Eye Screener) at 12 & 24 months



# Research questions

- Which impact of this screening in toddlers on the timing (age) of detection of visual impairment?

→ No epidemiological data available



→ Indirectly

1. Which proportion of 3-year olds at school entry:

- already wearing glasses ?
- with a known eye abnormalities or vision impairment ?



Registration  
before first screening

2. Which proportion of newly detected eye abnormalities of vision impairment by CLB at school entry ?



Registration  
before second screening

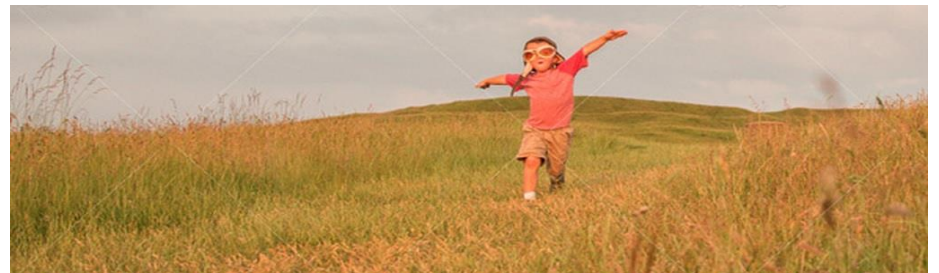
→ Evolution of these results since start of plusoptiX<sup>®</sup> Eye Screener program?

→ Arguments to adapt amblyopia screening program by CLB ???





# METHODS



# Systematic electronical registration of vision screening

- **LARS = uniform electronical registration system** for CLB activities
  - Anamnestic information
    - Known ocular abnormalities & vision impairment (parents' information)
    - Is the pupil wearing glasses / occlusion patch at screening moment ?
    - Kind & Gezin info incl. eye screening (date & results): **no electronical data !**
  - Screening
    - Which vision test + Result visual acuity R & L (of both eyes in case of glasses)
    - Which test(s) for ocular alignment + Result
  - Follow-up
    - Referral
    - Feedback of ophthalmologist: **no uniform registration !**



# Data extraction & analyses



## Data extraction:

- From systematically registered computerized school health records
- **For both cohorts of pre-schoolers**
  - 3y = 1th grade of maternal school (1MS)
  - 4y = 2de grade of maternal school (2MS)
- **For registration period 2010-2016 (6 school years)**

## Data analyzes to determine:

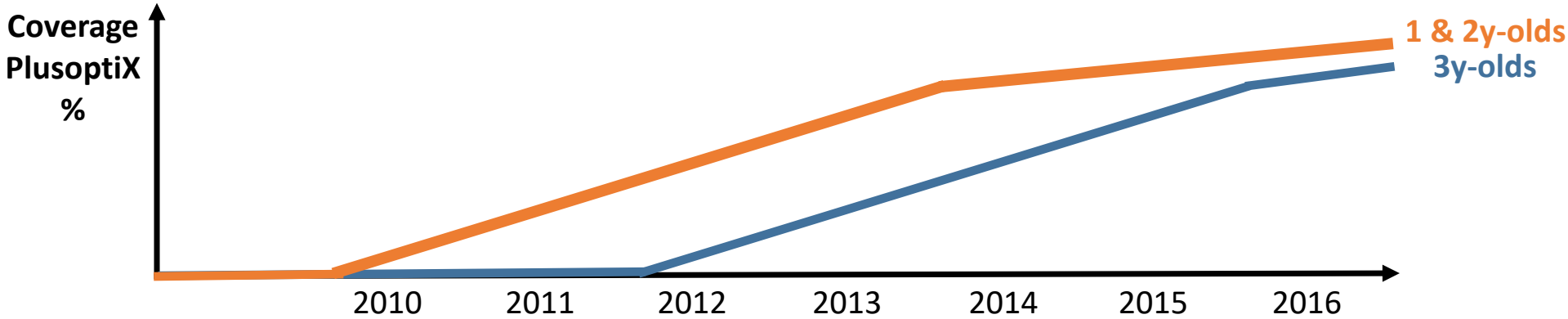
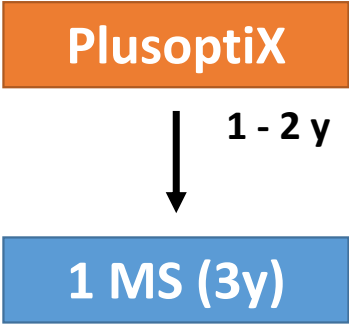
- Prevalence of impaired visual acuity
- Proportion of children wearing glasses
- Proportion of children with known eye abnormality or vision impairment
- Proportion of **newly detected** eye abnormalities **between 1 MS & 2 MS ?**

School year	1 MS (3y)	2MS (4y)	TOTAL
2010-11	66.077	68.545	134.622
2011-12	68.033	70.626	138.659
2012-13	63.375	69.190	132.565
2013-14	69.647	72.874	142.521
2014-15	70.385	74.752	145.137
2015-16	69.735	73.686	143.421
Total	407.252	429.673	836.925

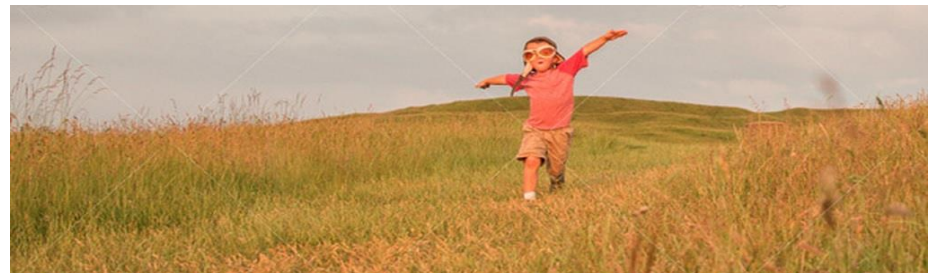


# Progressive implementation & delayed impact on school population

School year CLB			2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Year	2009	2010	2011	2012	2013	2014	2015	2016
Age (years)	Birth	1	2	3	4	5	6	7
		Birth	1	2	3	4	5	6
			Birth	1	2	3	4	5
				Birth	1	2	3	4
					Birth	1	2	3



# RESULTS



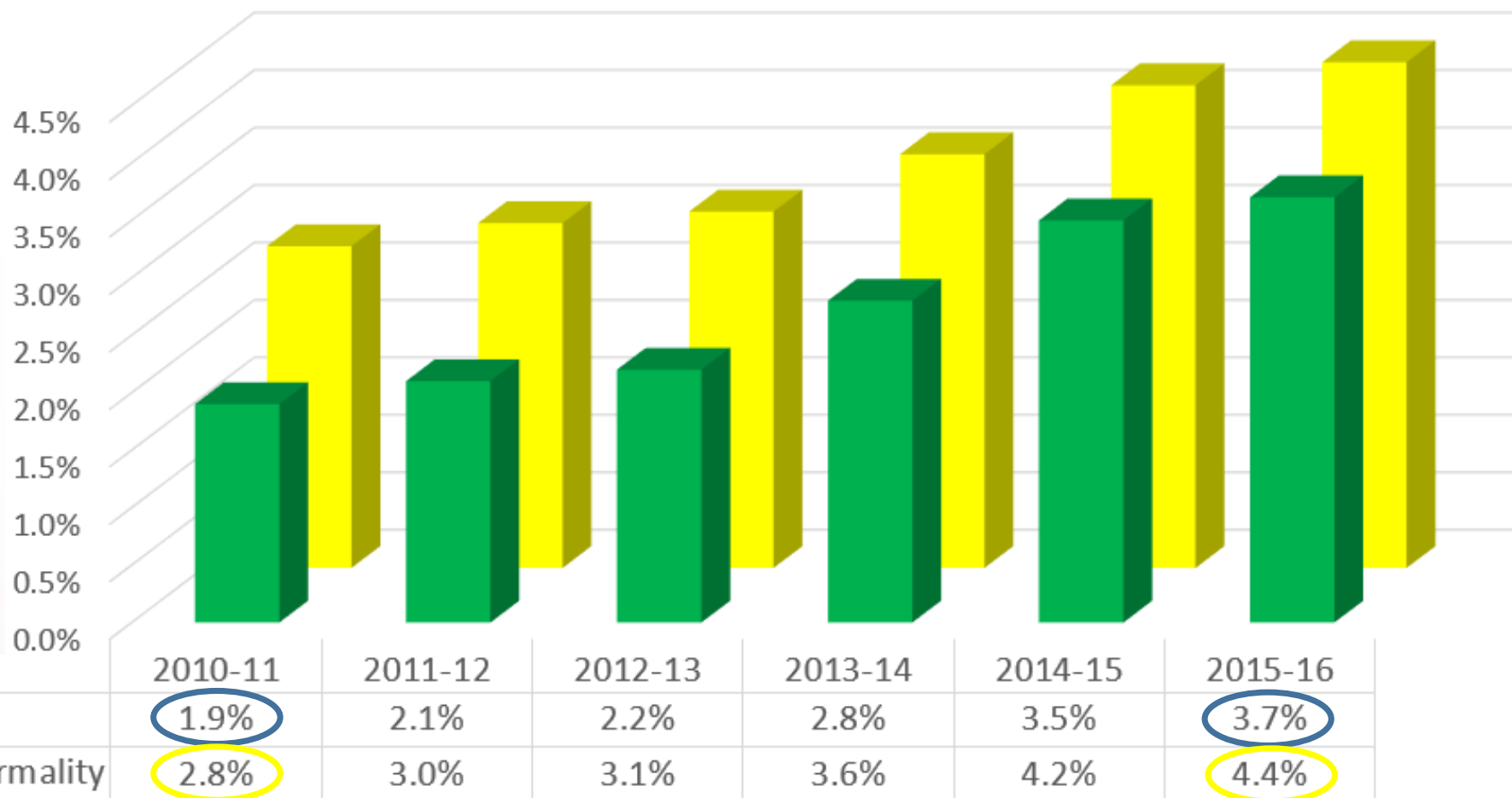


# Pupils with glasses vs known eye abnormality



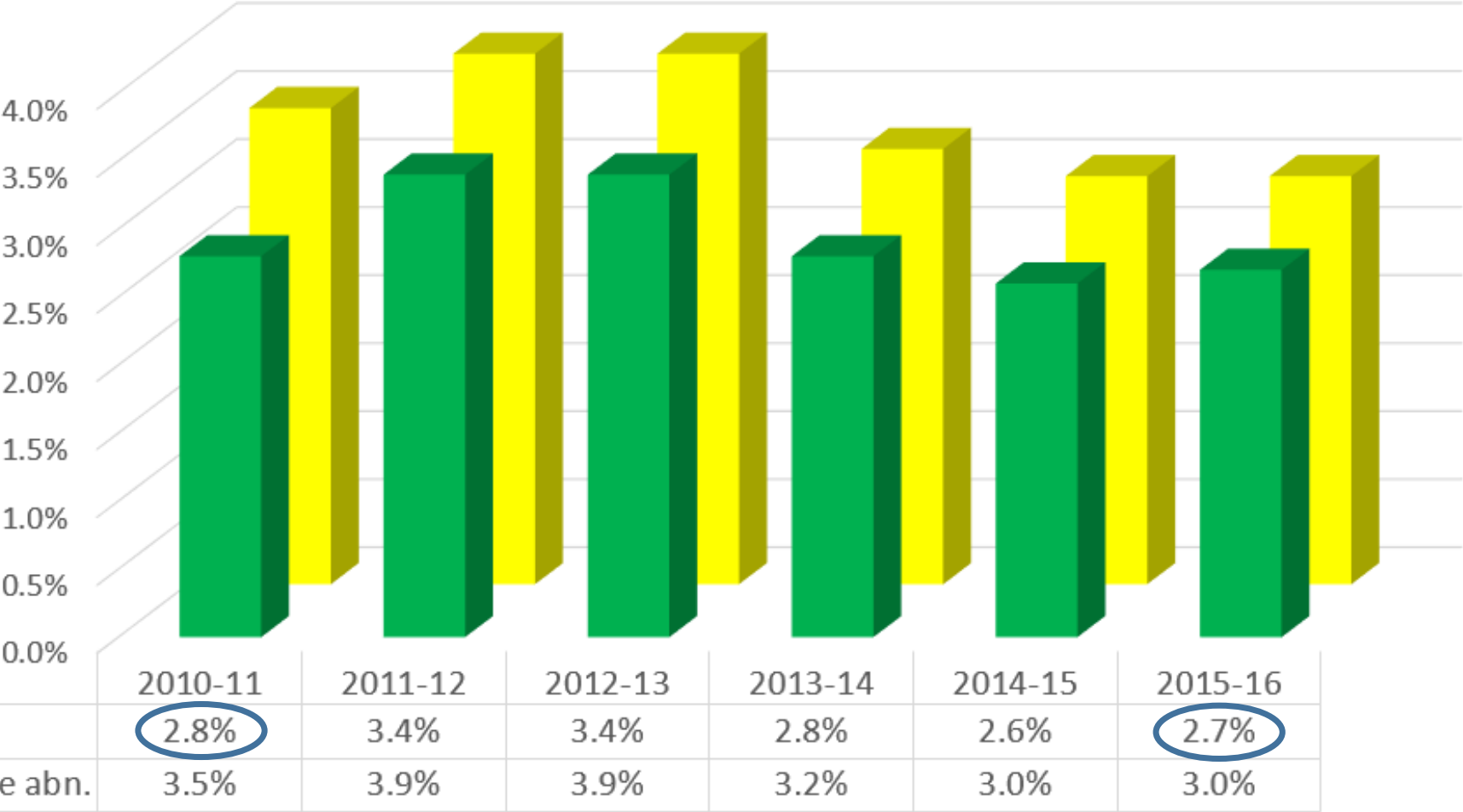
registration BEFORE FIRST screening

1 MS (3y)



# Pupils with new glasses vs newly detected eye abnormality

**clb** registration BEFORE SECOND screening **2 MS (4y)**

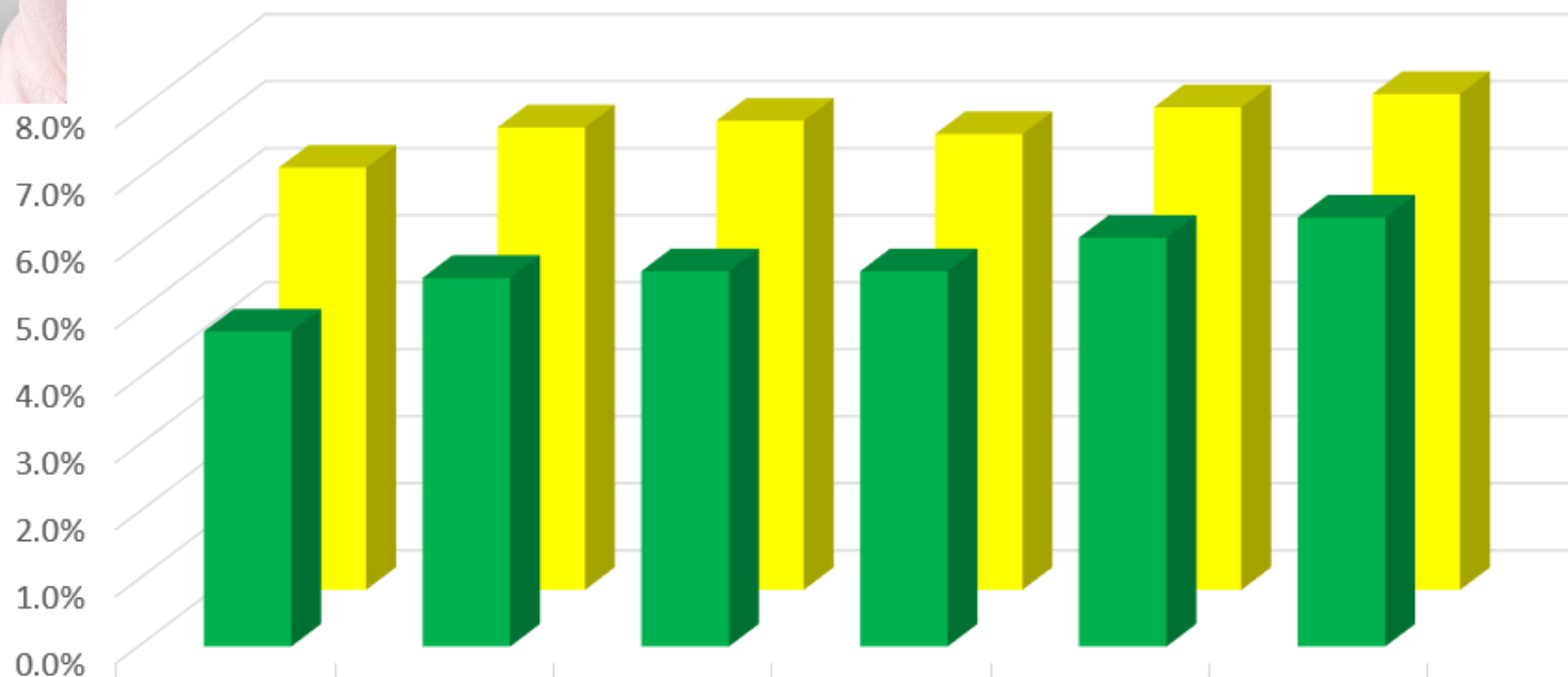


# Pupils with glasses vs known eye abnormality



registration BEFORE SECOND screening

2 MS (4y)



■ Wearing Glasses

■ known eye abnormality

2010-11

2011-12

2012-13

2013-14

2014-15

2015-16

4.7%

5.5%

5.6%

5.6%

6.1%

6.4%

6.3%

6.9%

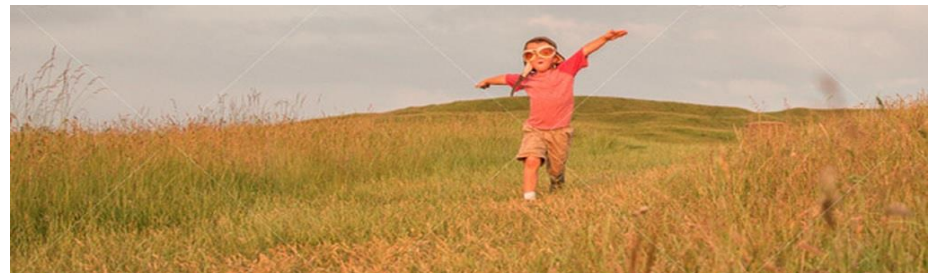
7.0%

6.8%

7.2%

7.4%

# CONCLUSIONS



# Since the introduction of PlusoptiX screening in toddlers:

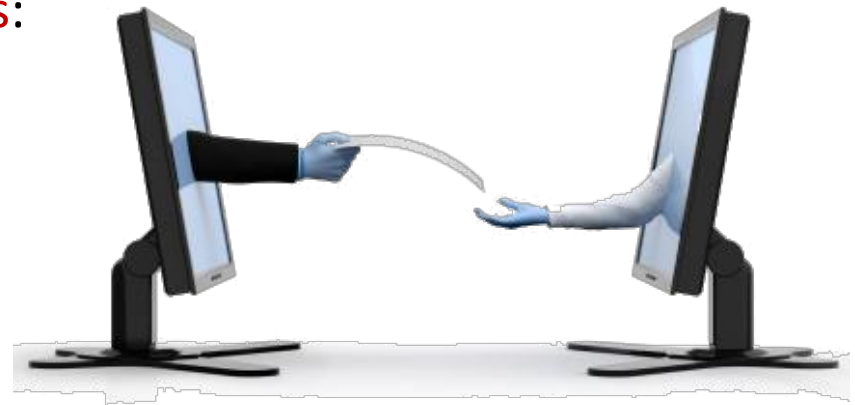
- Vision disorders are detected faster in young children
- Children receive the needed visual correction at earlier age
- Added value of 2 systematic eye screening programs in toddlers & preschoolers
  - More children are found with an eye disorder and receive earlier treatment
  - As amblyopia is detected at an earlier stage:
    - Can be successfully treated
    - Lifelong loss of visual acuity can be avoided





# Looking at the future...

- This research = **Indirect evaluation** of 5 years PlusOptix screening in toddlers based on electronic CLB-records
    - Systematic and uniform electronic CLB-registration
    - reveals for the first time the impact at population level of Kind & Gezin eye screening
  - Future:
    - **Automatic transfer of individual electronic records** between Kind & Gezin and CLB !
    - Analyses of **differences between 2 populations**:
      - Children **with** early eye screening
      - Children **without** early eye screening
    - **Longitudinal data-analyses**
- More precise and direct evaluation of early eye screening program in Flanders!



Information & online education material: <https://vwvj.be>

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