

A close-up photograph of a woman with blonde hair tied back, holding a young child with light brown hair. The woman is looking towards the camera with a gentle expression. The child is looking slightly to the side. The background is softly blurred, suggesting an indoor setting.

Screening for amblyogenic defects

Results and experiences after 5 years

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Kind & Gezin

Screening for amblyogenic risk factors

1. Flemish Pre-school Eye Screening Programme
 - Background
 - Screening device
 - Protocol
2. Results and evaluation
3. Future challenges and opportunities

1. Flemish Pre-school Eye Screening Programme

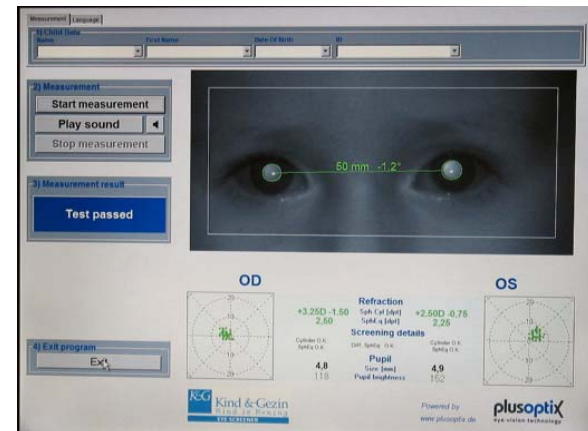
- Background
 - **Aim: Early detection of amblyogenic risk factors (ARFs) to prevent development of amblyopia**
 - Since mid 2013 all children in Flanders aged **12/15** months and **24/30** months visiting well-baby clinics
 - Tested with automated infrared video-refractometer (Plusoptix®)
 - Internationally accepted cut-off criteria for referral
 - Myopia
 - Hypermetropia
 - Astigmatism
 - Anisometropia
 - Pupil diameter

1. Flemish Pre-school Eye Screening Programme

- Screening Device
 - Plusoptix®
 - Infrared video-refractometer: eye deviations are detected through reflected infrared light
 - Both eyes tested jointly from distance of 1 meter
 - Cut off parameters can be adjusted for different target groups
 - Easy-to-use, child friendly and instant results



Kind & Gezin



1. Flemish Pre-school Eye Screening Programme

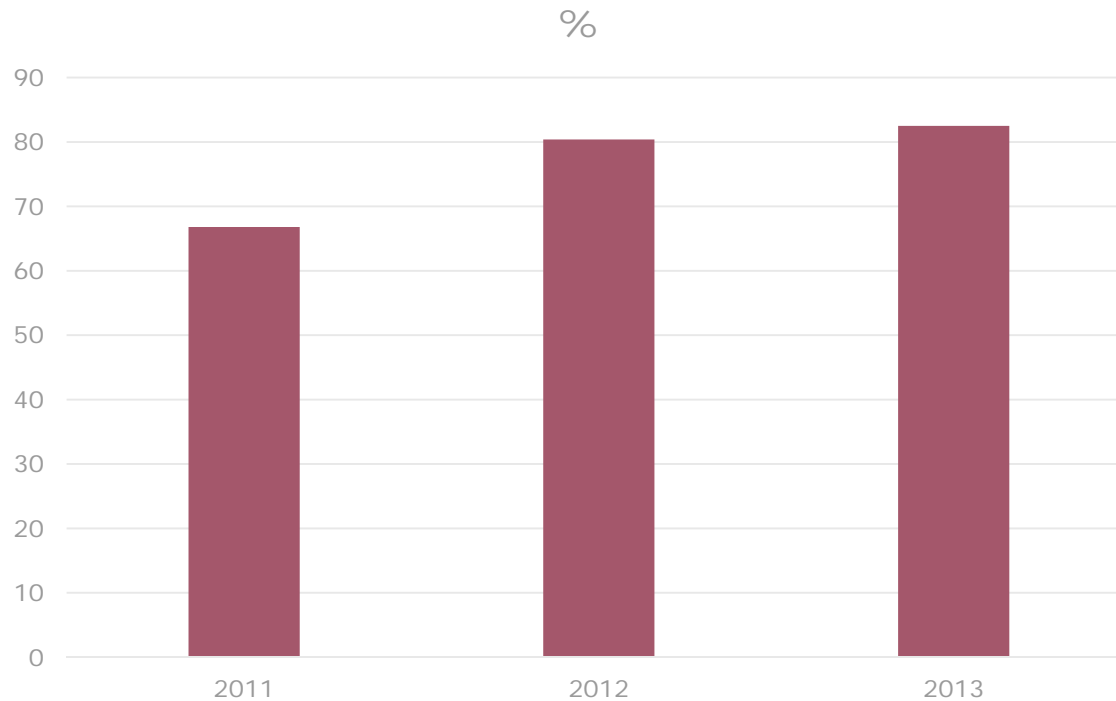


1. Flemish Pre-school Eye Screening Programme

- Protocol
 - Integrated in standard programme of well baby clinics
 - Test age = 12/15m and 24/30m
 - If test result = REFER or FAILED
 - ↳ Referral to ophthalmologist for further examination, diagnosis and treatment
 - Data of screening and results collected in central database

2. Results and evaluation

- Coverage
 - >500 000 tests performed since implementation(2013-6/2017)
 - 82.3% of children born in Flanders in 2013 received at least 1 screening test by the age of 30 months



2. Results and evaluation

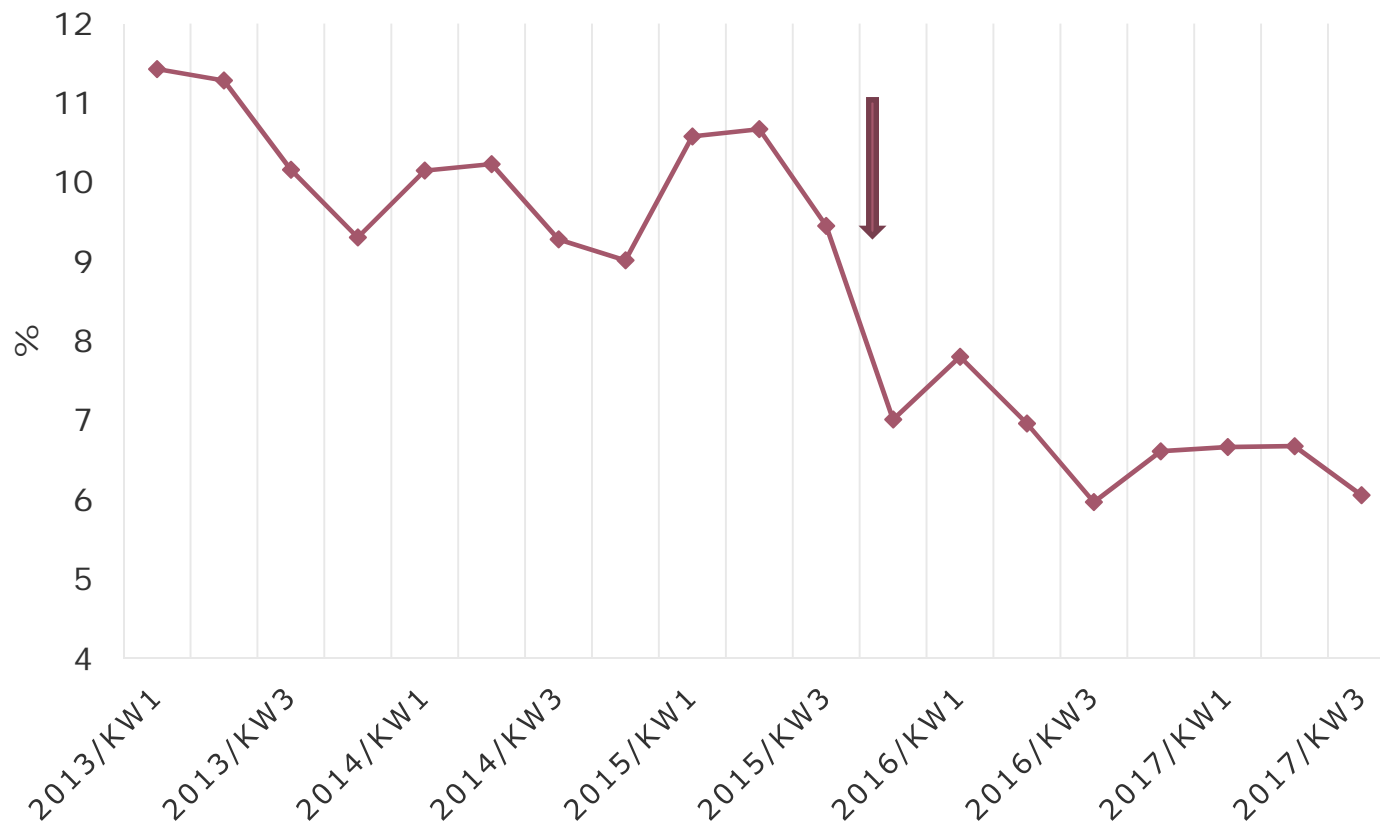
- Coverage

Year	N° children tested	N° tests performed
2010	590	591
2011	6.044	6.256
2012	43.139	46.056
2013	100.760	108.594
2014	102.679	110.478
2015	103.820	111.516
2016	81.474	85.275
2017	67.695	70.022

2. Results and evaluation

- Referral Rate

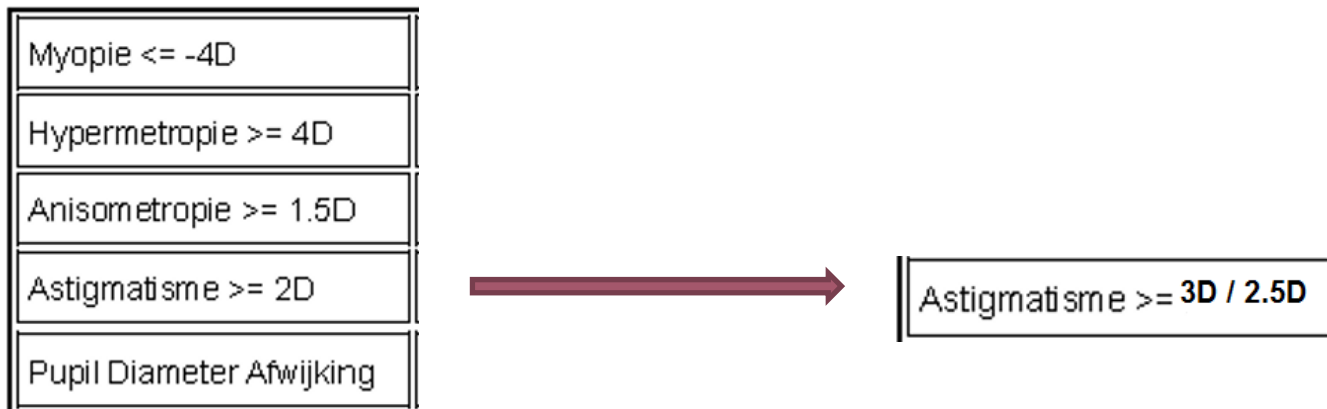
Based on all tests up to July 2017



2. Results and evaluation

- Referral thresholds
 - Balance between sensitivity and specificity of the test
 - Avoid over-referral
 - Detect these refraction errors for which early treatment is possible

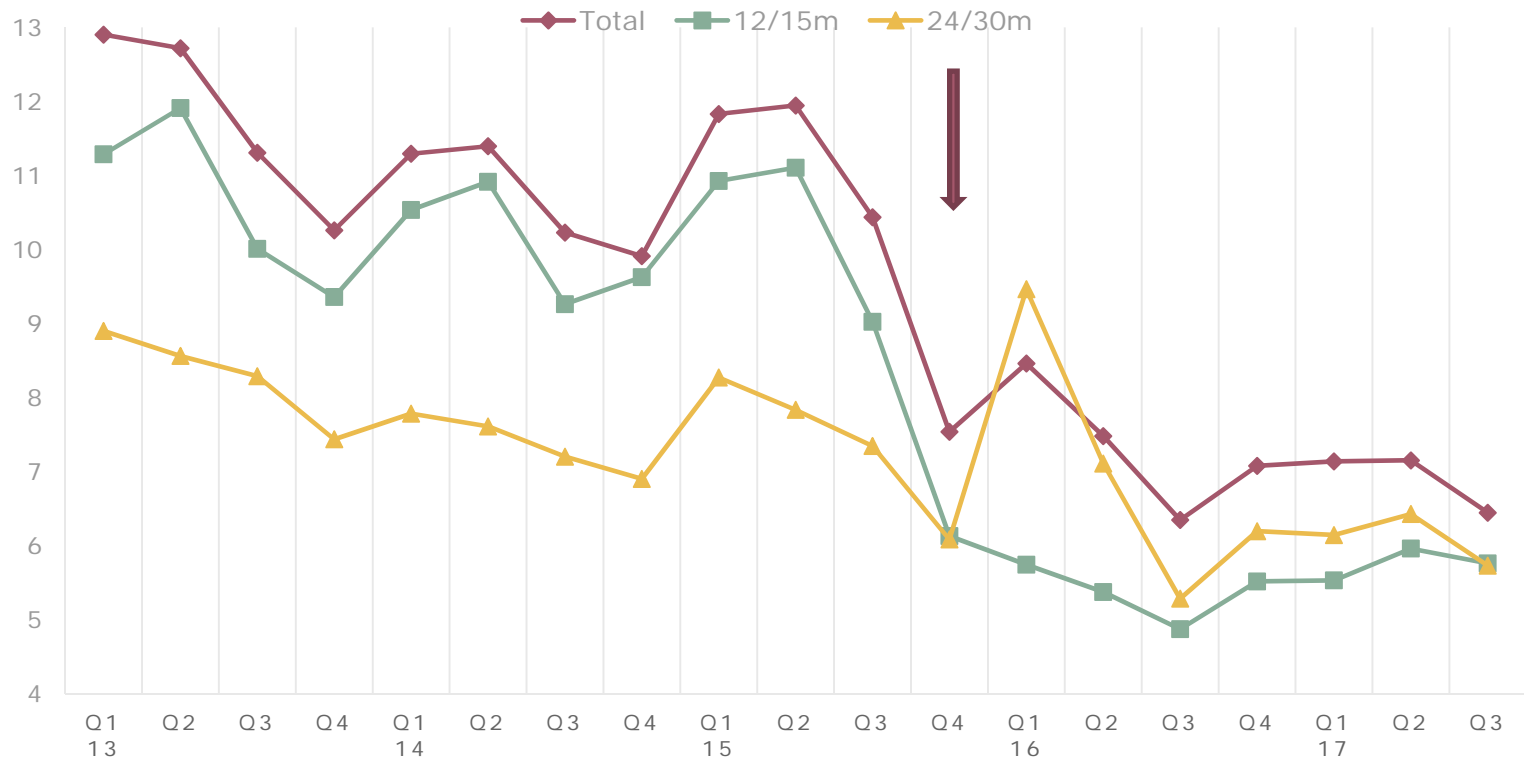
Start screening programme (2013)  November 2015



2. Results and evaluation

- Referral Rate

Based on all tests up to July 2017



2. Results and evaluation

- Referral Rate


Based on all tests up to July 2017

	Pre nov '15	Post nov '15
Total	10,2%	7,2%
12/15m	10,0%	5,6%
24/30m	7,8%	6,6%

2. Results and evaluation

- Reason for referral

Based on all tests (all ages) up to July 2017

	2014		2016
– Astigmatism	47%		24%
– Anisometropia	14%		19%
– Hyperopia/myopia	3%		8%
– Combination	36%		49%

2. Results and evaluation

- Follow-up diagnostic tests after refer
 - Examination by ophthalmologist
 - Standard referral letter and report to be filled in by ophthalmologist
 - Data collected in central database

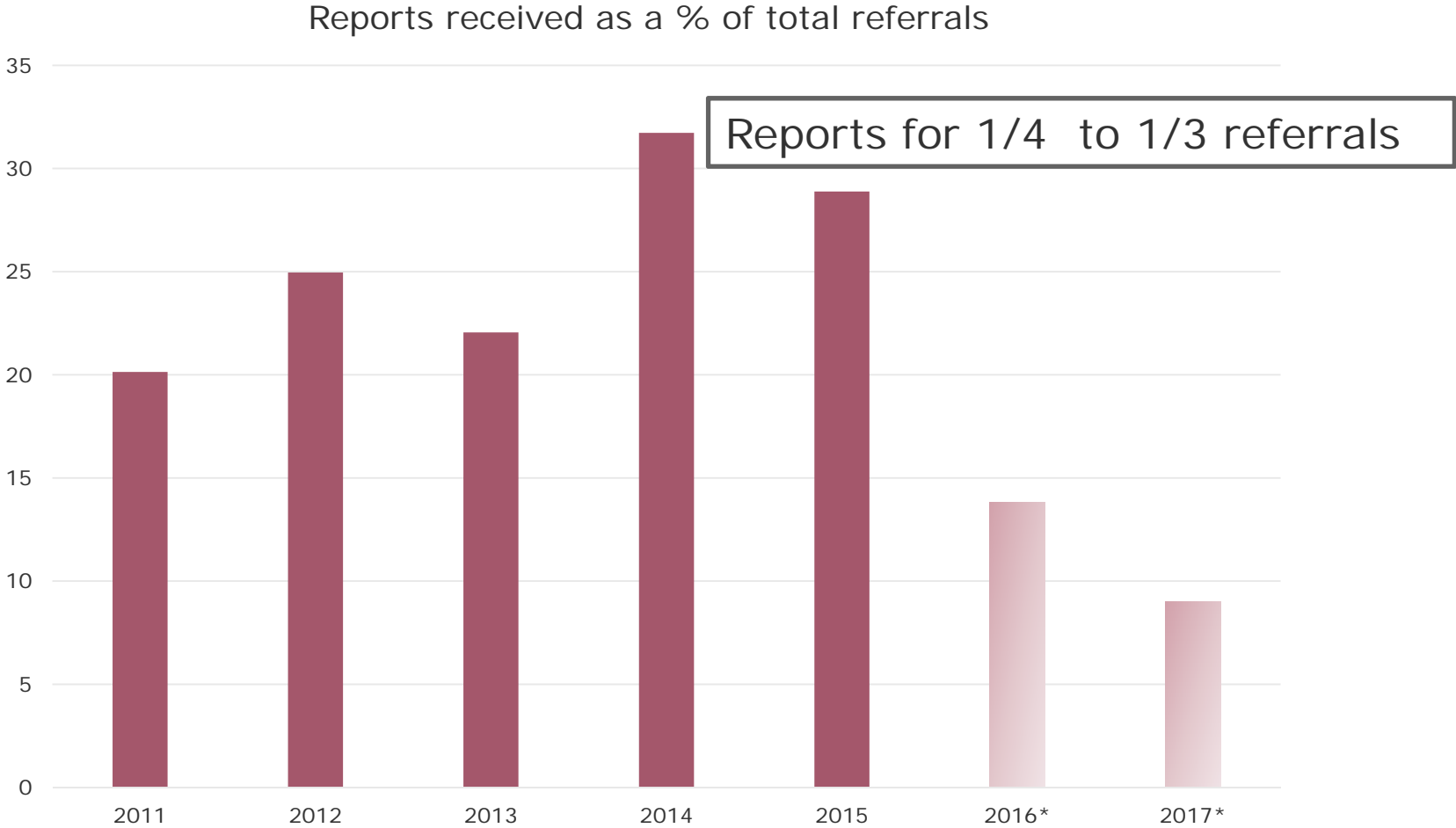
Fixatie		Covertest	
OD	Goed <input type="checkbox"/>	Recht <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
	Nystagmus <input type="checkbox"/>	Esotropie OD <input type="checkbox"/>	
	Afwezig of niet te interpreteren <input type="checkbox"/>	Esotropie OS <input type="checkbox"/>	
	-----	Esotropie alternerend <input type="checkbox"/>	
OS	Goed <input type="checkbox"/>	Exotropie OD <input type="checkbox"/>	
	Nystagmus <input type="checkbox"/>	Exotropie OS <input type="checkbox"/>	
	Afwezig of niet te interpreteren <input type="checkbox"/>	Exotropie alternerend <input type="checkbox"/>	
	-----	Ander strabisme <input type="checkbox"/>	
		Schatting hoek in graden <input type="checkbox"/>	
Biomicroscopie			
	Normaal <input type="checkbox"/>		
	Afwijkend <input type="checkbox"/>		
Cycloplegische refractie			
Methode :	Skiaskopie <input type="checkbox"/> (gouden standaard)	Product :	Cyclopentolaat <input type="checkbox"/>
	Refractometer <input type="checkbox"/>		Atropine <input type="checkbox"/>
			Cyclopentolaat + tropicamide <input type="checkbox"/>
Meting	Re oog :		
	Li oog :		
Oogfundus	(gedilateerd)		
Bestuit:		Risico op uni- of bilaterale amblyopie:	
		<input type="checkbox"/> Ja	
		<input type="checkbox"/> Nee	
		Andere:	
Opvolging:		<input type="checkbox"/> Actieve behandeling opgestart: bril / occlusie / andere (schrappen wat niet past)	
		<input type="checkbox"/> Follow-up gepland bij oogarts	
		<input type="checkbox"/> Oogscreening op leeftijd 24/30 maanden bij Kind en Gezin	
Opmerkingen:			
.....			
.....			

2. Results and evaluation



*incomplete data

2. Results and evaluation



*incomplete data

2. Results and evaluation

- Confirmation of screening results
 - Based on analysis of 8419 reports collected over period 2011-2016

	Screening confirmed	Amblyogenic risk factors
Yes	57,9%	29,2%
No	20,7%	17,6%
No data	15,9%	52,3%
Not conclusive	5,3%	0,7%

2. Results and evaluation

Average confirmation rate after referral 60%

Main reason for 'not conclusive' results

Lack of cooperation for diagnostic tests

Reports often incomplete

2. Results and evaluation

- Based on analysis of 8419 reports collected over period 2011-2016

	Total treatment started*	Treatment started as % of confirmed
Yes	19,9%	34,4%
No	80,1%	65,6%

*Glasses, eye patch, both

2. Results and evaluation

20% of all children referred started corrective treatment

For 65% of children with confirmed refraction error no treatment was started

Main reasons not to start treatment when refraction error is confirmed

Young age

Small astigmatism

2. Results and evaluation

- Evaluation
 - Photoscreening for amblyogenic risk factors in Flanders
 - Easy test to perform on young children
 - Accepted by parents
 - Achieves a high coverage
 - Part of ongoing screening programme for amblyopia continuing at school age
 - Referral criteria need to be set for high specificity in order to detect these children for whom treatment will be started at young age
 - Collecting results from follow-up tests and diagnosis remains difficult

3. Future challenges

- Improving data collection on follow-up tests, diagnosis and treatment by developing electronic referral and reporting system
- Further adjusting cut-off criteria for referral?
 - ❖ Astigmatism?
 - ❖ Pupil diameter?
- Transfer of screening results from pre-school screening at Kind en Gezin to school services (CLB)
- More research onto the outcome of early screening on the incidence of amblyopia.
 - ❖ Incidence of amblyopia in 8 year olds in Flanders
 - ❖ Data from school vision screening