



VISION SCREENING IN PREVENTIVE YOUTH HEALTH CARE: CAN IT BE IMPROVED BY USING AN AUTOREFRACTIVE DEVICE?

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DISCLOSURE

- › Main funding: ZonMw (grant 531002005)
- › Co-funding: PlusoptiX GmbH (lending the PlusoptiX devices)
- › Co-funding: Cordial medical (financial support)

- › TNO independently performs the analyses, without any input or influence from the funders.

VISION SCREENING IN PYHC (2016)

- › Preventive Youth Health Care (PYHC) performs vision screening during routinely performed health assessments at the ages of
 - 3 years;
 - 3 years and 9 months;
 - 5-6 years.
- › The primary goal of vision screening in young children is the detection of amblyopia (“lazy eye”) and risk factors for development of amblyopia.

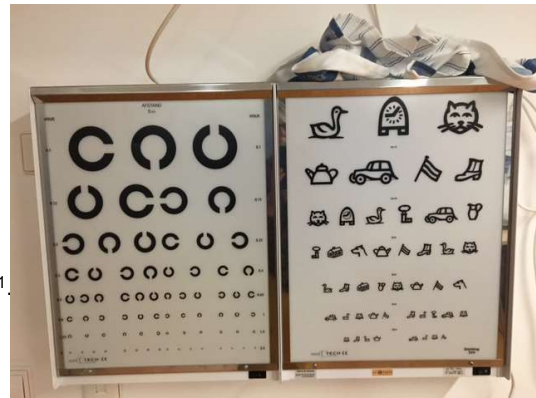
Tabel 2.1: Onderzoeksmomenten in de JGZ

Leeftijd	Onderzoek	Uitvoering*	Verwijzing
1 mnd	Van Wiechenonderzoek	arts, np, vpk	arts
1-2 mnd	VOV-test	arts	arts
2 mnd	Van Wiechenonderzoek	arts, np, vpk	arts
3 mnd	Van Wiechenonderzoek	arts, np, vpk	arts
3-4 mnd	VOV-test	arts, np	arts
6-9 mnd	VOV-test	arts, np	arts
14-24 mnd	VOV-test	arts, np	arts
3 jaar	Visusbepaling (APK-TOV of APK) VOV-test**	vpk, np, arts arts, np	arts
3.9 jaar	Visusbepaling (Landolt-C-kaart) VOV-test**	vpk, np, arts arts, np	arts
5-6 jaar	Visusbepaling (Landolt-C-kaart) VOV-test**	ass, vpk, np, arts arts, np	arts
≥ 7 jaar	Visusbepaling (Landolt-C-kaart) op indicatie***	ass, vpk, np, arts	arts

*) Per leeftijdsperiode is aangegeven door wie de onderzoeken kunnen worden uitgevoerd, in volgorde van voorkeur. Hierbij worden de volgende aanduidingen gebruikt: arts: jeugdarts, np: nurse-practitioner, vpk: jeugdverpleegkundige, ass: doktersassistente.
 **) Als de uitslag van de visusbepaling daartoe aanleiding geeft.
 ***) Bij kinderen vanaf zeven jaar wordt een visusbepaling verricht wanneer aan één of meer van de volgende criteria is voldaan, maar het kind niet bekend is bij een oogarts of opticien:
 - verzoek ouders, kind of school vanwege twijfel over visus;
 - geen eerdere visusbepaling verricht;
 - regelmatig hoofdpijnklachten;
 - leer- en/of leesproblemen;
 - beide ouders bijktridend of bekend bij oogarts.

VISION SCREENING IN PYHC

- › APK: Amsterdam Picture Chart } age-depend. criteria
- › Landolt-C }
- › VOV }
- › Disadvantages:
 - Time consuming;
 - It is hard to obtain reliable results¹;
 - Serious doubts about prognostic value¹;
 - Low acceptance of screening outcomes by parents¹.
- › Instrument-based screening is quick and requires minimal cooperation of the child.



¹ Iyer V, van Samkar A, Vlasblom E, van Minderhout HM, van der Harst S. Effectiviteit van Nederlandse Visuscreening. Ruimte voor verbetering. Tijdschrift voor JGZ : submitted.

AUTOREFRACTIVE DEVICE

› The PlusoptiX ® is a computer-aid, handheld digital photo screener that measures

- Refraction (spherical equivalent)
- Pupil diameter and pupil distance
- Symmetry of corneal reflexes

› With these measurements it is possible to detect risk factors for amblyopia:

- Hyperopia (farsightedness)
- Myopia (nearsightedness)
- Astigmatism (blurred vision)
- Anisometropia (unequal refractive power)
- Anisocoria (unequal pupil size)
- Strabismus (eye misalignment)



AIM OF THE STUDY

› **Research question:**

Can vision screening in Dutch Preventive Youth Health Care (PYHC) be improved by adding PlusoptiX ® photo screener?

› **Key outcome measures**

- Screening performance
- Costs of screening and diagnosis

SCREENING PERFORMANCE

- › The number of children with a referral (potential burden on health system, confidence of parents in YHC)
- › Screening performance is measured by
 - *Sensitivity*: the ability of the test to identify correctly those who have the disease
 - *Specificity*: the ability of the test to identify correctly those who do not have the disease
 - *Positive predictive value (PPV)*: proportion of positive tests that are true positive (i.e. have the disease)

		Amblyopia or risk factor needing treatment			
		+ (present)	- (absent)		
Test	+	a	b	a+b	PPV
	-	c	d	c+d	
		a+c	b+d	Total	
		Sensitivity: $a/(a+c)$		Specificity: $d/(b+d)$	

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METHODS

- › Data from the Dutch Preventive Youth Health Care (PYHC) of the Hague of children aged 3-6 years.
 - Background parameters
 - Screening results from 1) standard YHC vision screening, 2) test with PlusoptiX ®
 - Time needed to perform tests
- › Referrals to orthoptist at Haaglanden Medical Center (HMC) for diagnostic follow-up
 - Diagnostic results
 - Therapy
- › Three work packages:
 - *Validity study*: compare autorefractive device with current vision screening in Dutch PYHC
 - *Clinical study*: determine sensitivity in high-risk population at HMC
 - *Focus groups*: determine feasibility and acceptability of autorefractive device in PYHC-practice

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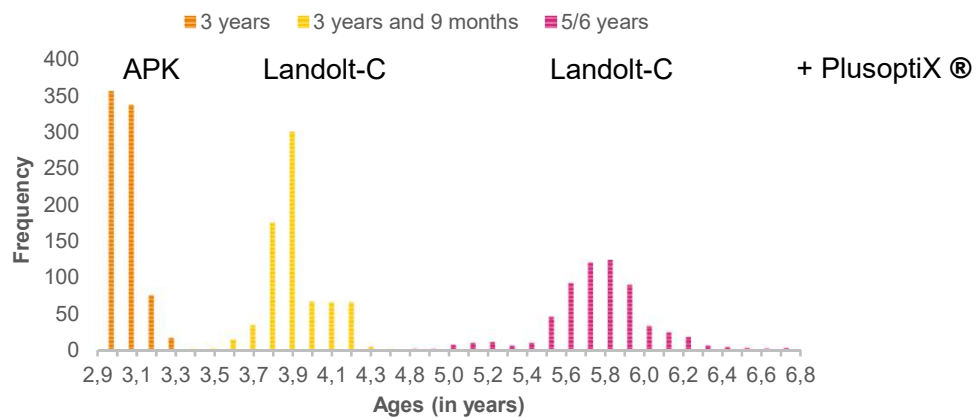
RESULTS

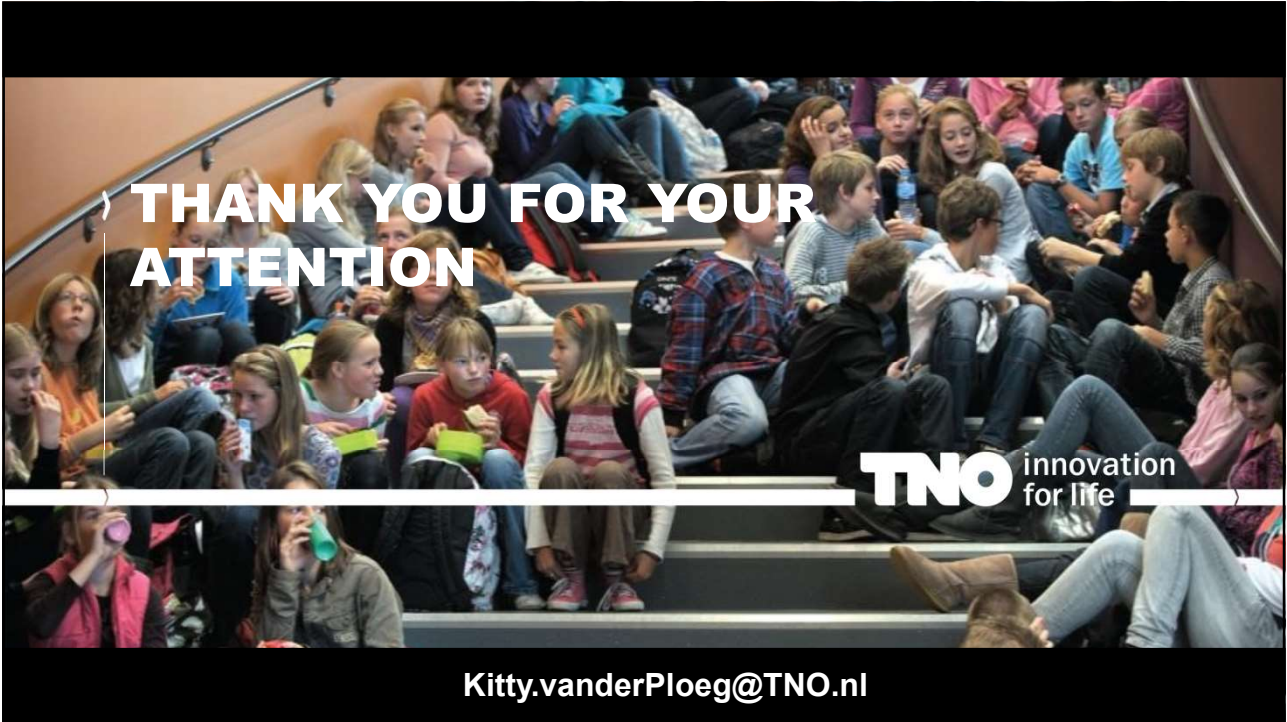
› NOTE: All results are preliminary first results

RESULTS HAVE BEEN REMOVED FROM THE ONLINE PRESENTATION AS THEY FIRST NEED TO BE PUBLISHED AN A PAPER

VALIDITY STUDY

AGE DISTRIBUTION





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