Vision Screener Update: www.ABCD-Vision.org

Date: November 16, 2022

Summary: Portable instrument-based technology for early detection of amblyopia and amblyopia risk factors (ARF)

TABLE:

Now	Device	Version	Price	Source	Interpret	Validation	Sens	Spec	PPV	Comments
	PlusoptiX			Nuremburg Germany						
+		S16			In (99177)					(+) infrared multi-axial, precise, sturdy handle, Excellent referral criteria selection (-) slower on high errors
+		S12, A12			In (99177)	[1-15]				(+)infrared multi-axial, precise, AA batteries, sturdy handles, Excellent referral criteria selection (-) slower on high errors
-		S09, A09				[4,16-22]	74-98	41-96		
-		S08 desk				[21,23,24]				
-		S04 desk				[25,26]				(+) fast and child-friendly, rapid, convenient user output, Christian Schmidt (-) requires windows computer and firewire cables
	iScreen			iScreen, Memphis, TN	Cent (99174)	AAPOS[4,27-29]				
-		Table-top				[30], AAPOS[31]				(+)excellent centered red reflex and reading center, Jack Bellows (-) single image- current model too large
+		Hand-held				[4,21,28]				(+) fastest and best for delayed kids (-_ single axis
	2WIN			Adaptica (Padova, Italy)	In (99177)	[8,11,32-35]				(+) infrared multiaxial, accurate refraction, Mario Angi (-) old touch buttons and small screen
+		Hand-held				[1,2]				
+		CR function				AAPOS[36,37]				(+) infrared occluder for strabismus
+		Kaleidos case				[38]				(+) luminance and distraction control, extra battery, tablet control WiFi or Bluetooth (-) too close for infants, big
	GoCheck Kids			Gobiquity,	In (99177) or cent (99174)					(+) convenient familiar platform, portable, affordable per use pricing, central data control (-) wide-angle LED flash

-		Nokia 1020				39,40			50-78	(+) true flash (-) tape over flash
+		iPhone 7+				10,12,40-42				(+) familiar screen app (-) slow LED flash
+		Flash concentrate				38,43				(+) faster LED, two axis, fix on yellow square (-)
?		Glow fix				43				(+) relax accommodation (-) too interesting stays on
?		iPhone(s)				44				(+) could be public, (-) loss of doc control, less flash control
+	SPOT			Welch Allyn	In (99177)	2,4,6-8,12,45-52				(+) infrared multiaxial, fast, big vendor (-) less precise axis, minimal upgrades
?	Cell V100			MediWorks Shanghai, China						(+) infrared photorefractor
+	AI Optics					AAPOS[9]				Similar shape to Plusoptix S12
+	"Digital Eye" SW-800			China, Digital Eye		AAPOS[53]				(+) infrared
	Kanna					AI smartphone[54]				Smartphone red reflex
+	Blinq		$9K	Rebion (prior PVS, Rebiscan)	In (CPT), EMR	Ambly-Stab[11,34,55-59], AAPOS[37,60]				(+) birefringent binocular foveation, Hunter and Guyton, fixation instability (? Strabismic amblyopia), (-) heavy, hard to hold, frequent inconsistent interpretation
+	Retinomax	K+ III	$14 K	Righton	Only Rx, 92015	[1,17,61-64] VIPS[65], AAPOS[1,11,13,36,43,66]				(+) Hartman-Shack autorefractor, excellent refract ± cycloplegia, keratometry, printer (-) monocular, too close for infants, cost
-	Sure Sight			Welch Allyn		VIPS[65,67], AAPOS[68]				(+) monocular remote 30cm autorefract, kid adds +2, VIPS calibrated (-) low PPV
-	MTI				Required reader	Iowa[69], [26,31,70-88] VIPS[65,67]				(+) Simple, sturdy, focus-in-dark, high predictive value possible, Howard Freedman (-) Polaroid film, needs interpret
-	EyeDx				Paired computer	AAPOS[31,89]				(+) original, Kodak digital camera with extra flash, David Granet (-) slow serial cables, too sensitive
-	Vision Research				reader	[90]				(+) extensive Kindergarten experience, Keith Morgan (-) 35 mm film camera in frame
-	Video Refraction					[88]ALSPAC VIPS[65,91]				(+) precursor to PlusoptiX
	Palm-AR					VIPS[92]				
-	ADBC			ABCD		AAPOS[93,94]				

-		Gateway DV-S20			DCC	AAPOS[27]				(+) consumer $99 2megapixel non-zoom camera (-) low resolution
-		Canon TX1		ABCD	DCC	AAPOS[27,95]				(+) 10x zoom 7 megapixel camera, close flash-lens
-		iPhone 4		ABCD	DCC	AAPOS[27]				(+) precursor to iCheck Kids → GCK (-) not override pre-flash
+	CRADLE	iPhone 7		IOS		[96-98]				(+) Screens facial photographs for leukocoria
	MDEyeCare	iPhone 7		IOS		[96]				(+) more sensitive in real cases than CRADLE

Legend: "Now" indicates currently available or not, Devices have sometimes been produced with different versions. Internal software interpretation versions also differ and are not all included here. Interpretation by instrument referral guidelines either internal computer in screener on site (In) or sent to central expert reader for manual interpretation. Comments include advantages (+) and disadvantages (-).

Video Examples on VIMEO: https://vimeo.com/channels/abcdvision
Community Impact of Photoscreening Programs[70,78,83,99-103]
General topics and reviews of photoscreening[104-114]
[Uniform] Validation Guidelines[8,65,69,115-118]
History and Development of Objective Vision Screening[87,119-127]

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