

The Healthy Kids Check — is it evidence-based?

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The Healthy Kids Check (HKC), introduced by the Australian Government into the Enhanced Primary Care Program in July 2008, continues the trend of illness prevention and improved coordination of care through services that attract Medicare Benefits Schedule rebates. It targets every 4-year-old child in Australia for a basic health check before commencing school, to “promote early detection of life-style risk factors, delayed development and illness, and introduce guidance for healthy lifestyles and early intervention strategies”.¹

Medical practitioners and practice nurses can administer the HKC, with a Medicare rebate for the service being contingent on completing the vaccinations for 4-year-olds.² Six areas of health must be examined as part of the HKC (Box 1), some of which contain a number of components. Additional examinations may be completed at the discretion of the practitioner.

We aimed to determine whether the mandatory assessments within the HKC are supported by evidence-based clinical guidelines or systematic reviews.

METHODS

We performed a search of databases and websites (Box 2) for clinical practice guidelines and systematic reviews published between January 2000 and October 2008. Search terms included “child health”, “prevention”, “screening”, and health topics reflecting the mandatory components of the HKC.

1 Healthy Kids Check

- Administered by child’s usual general practitioner or designated practice nurse
- Conducted in conjunction with vaccinations for 4-year-olds
- Provide parents with a copy of the *Get set 4 life – habits for healthy kids* guide, an information booklet that includes tips on child health and development
- Checklist of mandatory assessments:
 - Measure height and weight
 - Check eyesight
 - Check hearing
 - Check oral health
 - Question toilet habits
 - Note known or suspected allergies ◆

ABSTRACT

Objective: To assess whether the components of the Healthy Kids Check (HKC), a preschool screening check recently added to the Australian Government’s Enhanced Primary Care Program, are supported by evidence-based guidelines or reviews.

Data sources: Guideline and MEDLINE databases were searched for guidelines and systematic reviews published between 2000 and 2008 that were relevant to screening, prevention or well-child care in primary health care, and including children of preschool age. Search subjects reflected the HKC components: growth, weight, obesity, vision, hearing, oral health, enuresis, encopresis, allergic disease and food allergies.

Study selection: 34 relevant guidelines or reviews were retrieved.

Data extraction: For each component of the HKC, guidelines addressing the presumed rationale for screening, or the test or tool required to implement it, were reviewed. Relevant evidence-based and consensus-based guideline recommendations were assessed as either supporting or opposing components of the HKC, or stating that the evidence was insufficient to recommend screening of preschool children.

Data synthesis: Guidelines were often inconsistent in their recommendations. Most of the components of the HKC (eg, screening for chronic otitis media and questioning about toilet habits) are not supported by evidence-based guidelines relevant to the primary care setting, though a number of consensus-based guidelines are supportive.

Conclusions: There is currently a dearth of evidence relevant to child health surveillance in primary care. The components of the HKC could be refined to better reflect evidence-based guidelines that target health monitoring of preschool children.

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Guidelines and systematic reviews were included if they were published in English, considered children of preschool age, and were relevant to practitioners in primary care. The topic “immunisation” and guidelines adapted from other primary guideline sources were excluded.

For each component of the HKC, guidelines were extracted if they addressed the presumed rationale for screening or the test or tool required to implement the examination in the primary care setting. Guideline recommendations are often graded to reflect the best available evidence, but the method used for this is not consistent between guideline developers. For the purposes of this review, statements were considered to be “evidence-based” if they incorporated evidence equivalent to National Health and Medical Research Council (NHMRC) level III-3 or above, and “consensus-based” if below this level.³

RESULTS

A total of 29 guidelines and five systematic reviews that contained statements relevant to the mandatory components of the HKC were retrieved.^{4–37} Guideline recommenda-

tions were tabulated according to whether they supported or opposed each HKC

2 Databases and websites publishing guidelines used in this review

Databases

MEDLINE

The Cochrane Library

Websites

Agency for Healthcare Research and Quality (United States)

American Academy of Pediatrics

Australian Government Department of Health and Ageing

Guidelines Advisory Committee (Canada)

Guidelines International Network

Michigan Quality Improvement Consortium

National Health and Medical Research Council

National Institute for Health and Clinical Excellence (United Kingdom)

National Guideline Clearinghouse (US)

New Zealand Guidelines Group

National Institute for Health Research Health Technology Assessment programme (UK)

Scottish Intercollegiate Guidelines Network ◆

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assessment (Box 3). Many guidelines identified gaps in the evidence and were unable to make a recommendation either for or against a particular screening examination. One guideline¹⁰ has since been withdrawn, at the end of 2009.

DISCUSSION

The mandatory assessment components of the HKC, although in line with health promotion and disease prevention primary care agendas, do not have a strong evidence base.

Stand-alone measures of height and weight do not confer health benefits for preschool children in screening programs,^{4,5} but are useful when translated into measures of body mass index (BMI) (weight [kg] divided by height squared [m²]). Guidelines consistently indicate that calculating BMI is a practical estimate of childhood overweight and obesity and should be documented on appropriate BMI percentile charts.⁵⁻¹³ The United States Centers for Disease Control and Prevention BMI-for-age percentile charts, which identify children at risk of overweight at a BMI above the 85th percen-

tile (obesity, above 95th percentile), should be used until local BMI growth charts become available.¹² The lack of effective treatment measures means that screening programs for childhood overweight and obesity remain controversial.^{4,5}

Guidelines are contradictory in their recommendations for each component of vision screening. There is no direct evidence that screening for visual impairment, compared with no screening, leads to improved visual acuity.^{14,15} Despite this, preschool screening programs are strongly supported in the US,¹⁶⁻¹⁸ based on indirect evidence

3 Mandatory assessment components of the Healthy Kids Check, with relevant guideline statements

Mandatory assessment	Supporting guideline statements	Oposing guideline statements	Insufficient evidence for screening
Measure height			Screening for short stature ⁴
Measure weight	BMI can identify overweight (EB) ^{5,6,8,14} BMI-for-age percentile charts should be used (CB) ^{7,9-12}	Screening for overweight (EB) ⁴	Screening for overweight ⁵
Conduct a visual inspection of eyes	Screening for amblyopia/strabismus (EB) ^{14,15} (CB) ^{16,18}	Screening for risk factors for amblyopia (EB) ⁴	Impact of screening on prevalence of amblyopia ¹⁹
Check eyesight using LEA Children's Chart or similar	Screening for defects in visual acuity (EB) ^{14,15} (CB) ^{16,18}		Preschool visual acuity screening ⁴
Seek parental concerns about child's vision (eg, squint, infection, injury)	Asking parent about possible eye or vision problems (CB) ¹⁶		No evidence evaluating screening for parental concern ¹⁵
Question if child has family history of eyesight problems	Asking about positive family history of strabismus, amblyopia or media opacity (CB) ¹⁷		No evidence evaluating screening for family history ¹⁵
Check hearing, including conducting an ear examination	Abnormalities of eardrum may indicate hearing impairment (CB) ²¹		Alternative screening tests not adequately compared ²⁰ Inadequate evidence for school entry screening ⁴
Seek parental concerns regarding child's hearing, listening, following instructions, or language	Parental concern is of greater predictive value than examination in doctor's office (EB) ²¹		
Question if child has any history of ear infections, discharge, recurrent or chronic otitis media		Screening for otitis media with effusion (EB) ^{4,24,25}	
Check oral health — teeth and gums		Caries risk assessment should be based in dental practice (EB) ²⁶	Dental health screening or caries risk assessments ^{4,27}
Question if child has been to dentist			Impact of general practitioner referral to dentist ²⁷
Question how often child brushes teeth	Brushing teeth twice daily with fluoride toothpaste (EB) ^{26,29,30}		
Question whether child is independent with toileting		Assess after age 5 years (CB) ³¹⁻³³	
Question whether child wets the bed		Assess after age 5 years (CB) ³¹⁻³³	
Note suspected allergies	Sensitivity to most food allergens remits later in childhood (EB) ³⁵ (CB) ³⁶		
Note known allergies	Educate, prescribe and develop management plan for identified children (CB) ^{34,35}		

BMI = body mass index. EB = evidence-based guideline statement (National Health and Medical Research Council [NHMRC] level III-3 or above³). CB = consensus-based guideline statement (below NHMRC level III-3³).

that screening tests are effective at detecting and allowing treatment for strabismus, amblyopia and refractive error.^{14,15} However, their application in primary care has not been established,¹⁵ and there is insufficient evidence to determine if screening and subsequent treatment reduce the prevalence of amblyopia in older children.¹⁹ Screening for eye infections or injury may only be appropriate in some Indigenous communities in Australia,³⁸ and programs should be tailored accordingly.

How to assess a child's hearing as part of the HKC is unclear, as hearing test options have not been adequately trialled for use in primary care.²⁰ One guideline advocates inspection of the eardrums and direct questioning of the parent about problems with hearing or speech development.²¹ A review of the whispered voice test found it to be reasonably sensitive (80%–96%) and specific (90%–98%) in children, but the testing procedure requires standardisation in the primary care setting.²² In the US and United Kingdom, audiometry is the preferred screening method.^{20,21,23} Pneumatic otoscopy successfully identifies otitis media with effusion, but screening programs for non-Indigenous children are not supported by guidelines.^{4,24,25}

There is currently insufficient evidence to recommend for or against oral health screening in preschool children.⁴ However, the rising prevalence of dental caries in young school-aged children is a major public health concern.³⁹ Evidence-based guidelines do not currently support general practitioners implementing caries risk assessments^{26,27} (clinical evaluation of the teeth and gums for plaque, gingivitis and decayed or missing teeth), and there is debate as to whether they should be trained to do so,²⁸ or if this should be confined to dental practice.²⁶ There is also insufficient evidence that referring children to the dentist and dietary counselling by GPs improves oral health.²⁶ However, guidelines are consistent in recommending assessment of a child's exposure to fluoride in drinking water²⁹ or toothpaste, with good evidence for the benefits of brushing teeth twice daily with fluoride toothpaste.^{26,29,30}

The evidence indicates that screening for problems with toileting at 4 years of age is inappropriate and should be removed from the HKC. Guidelines do not recommend assessment of enuresis until a child is at least 5 years old.^{31–33} A fifth of normal 5-year-olds still experience nocturnal enuresis.⁴⁰ Screening for constipation and encopresis is

not addressed in guidelines, except in association with enuresis.

Identifying children at risk of anaphylaxis and their subsequent management is an important step towards preventing food anaphylactic reactions in schools. This recommendation is derived from a consensus-based guideline,³⁴ and recent Victorian legislation enforces it.⁴¹ Re-evaluating patients with suspected food allergy is also supported by guidelines to avoid unnecessary dietary restrictions, as many nutritionally important food allergies are outgrown.^{35,36} The assessment of other allergies is not addressed by guidelines, other than an evidence-based recommendation that referral to an allergist–immunologist may improve outcomes for children with allergic rhinitis and eczema.³⁷

By filling a gap between maternal and child health nurse screening and examinations of selected children by school nursing services, the HKC has the potential to play a key role in childhood developmental surveillance, whereby professionals work with parents to detect specific problems over the course of time. However, despite the limitations of the search methods we used, the evidence behind the HKC is not compelling and its components are ill defined and lack rationale. The HKC could be refined to better reflect the available evidence. For example, guidelines that discussed fluoride exposure for oral health were based on high levels of evidence, and information on a child's exposure to fluoride should be sought. On the other hand, screening for chronic otitis media and questioning about toilet habits are not supported by evidence and should be removed from the HKC.

Guidelines are also inconsistent in their recommendations. Most of the components of the HKC are not supported by evidence-based guidelines relevant to primary care, though a number of consensus-based guidelines are supportive. Some components of the eyesight check, hearing tests and the use of caries risk-assessment tools have not been validated in the general practice setting.^{15,22,27}

This review attempted to identify guidelines that support the assessment tasks of the HKC. It did not include a formal review of the quality of those guidelines because the subject matter covered by the HKC is so diverse. Guideline quality may also account for inconsistency between recommendations, and further research could incorporate such a review.

Appraisal of guidelines that endorse the non-mandatory components of the HKC and that identify other useful preventive health measures is required. The uptake and utilisation of the HKC, and its perceived usefulness by health care providers and parents, could inform the program as a whole. Longer-term evaluation should ascertain how well parents comply with follow-up recommendations and the program's impact on health outcomes.

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COMPETING INTERESTS

None identified.

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