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**Table 1** HIV antibody test results of HIV uninfected infants

Number	Sample date (months after birth)	Result (signal/cut-off)*	Sample date (months after birth)	Result (signal/cut-off)	Sample date (months after birth)	Result (% increase of signal/cut-off)
1	18.6	Positive (2.7)	22.8	Positive (1.13)	27.4	Negative
2	18.6	Positive (7.4)			22.4	Negative
3	18.1	Positive (9.3)	18.9	Positive (7.9)	21.6	Negative
4	18	Positive (2.6)			24.7	Negative
5	17.9	Positive (8.6)			26.8	Negative
6	20	Positive (6.9)			26.7	Negative
7	21.0	Positive (1.2)			23.5	Negative
8	18	Positive (1.2)			26	Negative

\*Patients with an established HIV infection generally have a signal/cut-off ratio of >10 on the Genscreen Ultra screening assay.

Paediatricians need to be aware which assays their local laboratories are using, and formulate their local testing policy accordingly.

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## NICE guidance on urinary tract infection in children abandons routine antibiotic prophylaxis

We welcome the recommendation to discontinue routine antibiotic prophylaxis in paediatric urinary tract infection, as mentioned in a review of the National Institute of Health and Clinical Excellence (NICE) guidance on this subject.<sup>1</sup> In one of our East London paediatric accident and emergency departments, the incidence of trimethoprim resistance in urinary infections increased from 30% in 1999/2000 to over 40% in 2006/7. This is in line with an increase from 24% in 1996 to 31.6% in 2000 from another London hospital.<sup>2</sup> As for adults, it can be queried whether the incidence of trimethoprim resistance in hospital is an accurate reflection of community resistance.<sup>3</sup> However, the Welsh Antimicrobial Resistance Programme recently reported an incidence of 26% and 27% for trimethoprim resistance in hospital and community specimens, respectively, in children under 6 years of age. High levels of trimethoprim resis-

tance may relate, at least in part, to use of this agent for low dose prophylaxis.

In a study, we found that 19 (86%) of 22 patients with trimethoprim resistant infections were still symptomatic after 2 days of trimethoprim given as initial therapy while awaiting sensitivities. In a further study, 15 (28%) of 53 patients with trimethoprim resistant urinary infections had been given trimethoprim previously, usually for a trimethoprim sensitive urine infection. An increased risk of trimethoprim resistance has also been shown in adult urinary tract infections in the 3 months following trimethoprim treatment.<sup>4</sup>

When considering oral treatment for a paediatric urinary tract infection, it is therefore advisable to establish whether trimethoprim has been given recently and to acquire details of local antibiotic resistance patterns. The incidence of resistance to nitrofurantoin and cefalexin is 11.6% and 7.6%, respectively, in our hospital patients (similar to paediatric community rates from the Welsh Antimicrobial Resistance Programme). However, many children are unable to tolerate nitrofurantoin and it is ineffective against *Proteus* sp. Use of broad spectrum antibiotics such as cefalexin may promote antibiotic resistance and encourage growth of *Candida* spp as well as enterococci and *Pseudomonas aeruginosa*.

These problems emphasise the need to avoid unnecessary use of antibiotics and to ensure a correct diagnosis in the first instance by obtaining at least one properly collected clean catch urine sample before starting treatment. The figure of 10<sup>5</sup> organisms/ml quoted in the BMJ editorial accompanying the NICE guidance review as indicating urinary infection, can be too high especially for small male infants who may pass urine frequently. Also, lower numbers of organisms from specimens obtained by in-out urinary catheters or ultrasound guided supra-pubic aspirates, will still indicate infection.

After an infection, simple general measures to reduce the risk of recurrence (particularly for girls) include avoiding the use of bubble baths or washing hair in the bath.

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## Probable idiopathic intracranial hypertension in pre-pubertal children

Idiopathic intracranial hypertension (IIH) is characterised by disturbed cerebrospinal fluid (CSF) hydrodynamics of unknown aetiology.<sup>1</sup> Diagnosis requires evidence of an elevated CSF pressure above 20–25 cm H<sub>2</sub>O during lumbar puncture (LP).<sup>1</sup> However, no consensus exists concerning what constitutes the upper limit of normal CSF pressure for different age groups. Therefore, current criteria may inappropriately exclude some children from the diagnosis of IIH and delay the start of treatment.

We prospectively followed 25 children with suspected IIH who were referred to our hospital since 2004. LP with measurement of CSF opening pressure was performed with patients in the lateral decubitus position. In non-cooperative children, moderately deep propofol sedation was used. For a diagnosis of IIH, Friedman criteria had to be completely satisfied.<sup>1</sup>

In our cohort, three boys (aged 5 years and 4 months, 7 years and 1 month, and 10 years and 11 months) and two girls (aged 8 months, and 8 years and 7 months) had clinical manifestations consistent with IIH but a CSF opening pressure <20 cm H<sub>2</sub>O and therefore did not completely meet the inclusion criteria (table 1). Patient 1 presented with unilateral abducens nerve palsy, which resolved after LP (no pressure recorded). Two months later, the symptoms reoccurred and LP demonstrated a CSF pressure of 18 cm H<sub>2</sub>O. Again, symptoms

**Table 1** Children with probable idiopathic intracranial hypertension

Patient	Sex (M/F)	Age	Symptoms	Ophthalmological findings	CSF pressure (cm H <sub>2</sub> O)
1	F	8 months	NS	IAP	18; 27
2	M	5 years, 4 months	HE	IAP	18; 20
3	M	7 years 1 month	HE	BP	19
4	F	8 years 7 months	HE, VO	BP	18
5	M	10 years 11 months	HE, VO	BP	17; 29

BP, bilateral papilloedema; CSF, cerebrospinal fluid; HE, headache; IAP, isolated abducens palsy; NS, no clinical symptoms; VO, visual obscuration.

### Diagnostic criteria for probable idiopathic intracranial hypertension

- (1) If symptoms or signs present, they may only reflect those of generalised intracranial hypertension or papilloedema.
- (2) Cerebrospinal fluid (CSF) opening pressure may be lower than 20 cm H<sub>2</sub>O.**
- (3) Normal CSF composition.
- (4) No evidence of hydrocephalus, mass, structural, or vascular lesion on MRI and/or MR venography.
- (5) No other cause of intracranial hypertension identified.
- (6) Clear clinical response to initial pressure release.**

Criteria adapted from Friedman and Jacobson (2002).<sup>1</sup> Important modifications are highlighted in bold type.

resolved after pressure release. A second relapse occurred after 10 weeks. This time, LP demonstrated an opening pressure of 27 cm H<sub>2</sub>O. The child was put on acetazolamide and remained symptom-free.

Patient 2 presented with unilateral abducens nerve palsy, which resolved after pressure release. Four months later he experienced a relapse. Again, abducens nerve palsy responded well to pressure release and he remained symptom-free under therapy with acetazolamide. Patient 3 presented with chronic daily headache for 6 weeks and bilateral papilloedema. Symptoms resolved after LP and initiation of acetazolamide. Patient 4 was admitted with blurred vision and a headache. She responded well to pressure release and treatment with acetazolamide. Patient 5 presented with a headache, visual obscuration and bilateral papilloedema. Initial CSF pressure was below 20 cm H<sub>2</sub>O, and no further treatment was started. However, because of persisting problems, a second LP was performed, demonstrating a pressure of 27 cm H<sub>2</sub>O. Symptoms resolved after pressure release and therapy with acetazolamide.

Diagnostic criteria for IIH are well established in adults. However, no modifications of these criteria currently exist for children. In the past, the upper limit of normal CSF pressure in children has been a controversial issue. Soler *et al* reported an upper limit of 7.5 cm H<sub>2</sub>O below the age of 2 years and 13.5 below the age of 5 years.<sup>2</sup> Kaiser and Whitelaw, who measured CSF pressure in a heterogeneous group of newborns, found normal values varying from 0–7.6 cm H<sub>2</sub>O.<sup>3</sup> Ellis, who accessed CSF opening pressure in children in a flexed lateral decubitus position, found a normal range between 10–28 cm H<sub>2</sub>O, without evidence of age or sex-related differences.<sup>4</sup> These discrepancies clearly

underline the need for age-adjusted normative data. In two of our children a second LP revealed pressure values above 20 cm H<sub>2</sub>O. Although technical problems cannot be ruled out with certainty, in our view this may indicate intraindividual/circadian fluctuations in CSF pressure.<sup>5</sup> On the basis of our observations, we propose the introduction of the term “probable IIH” into clinical practice. We define this condition as a clinical presentation consistent with IIH in the absence of a CSF opening pressure >20 cm H<sub>2</sub>O and a clear clinical response to pressure release and acetazolamide treatment (see box). Since the feared consequence of IIH is sight loss, we recommend a therapeutic trial with acetazolamide in all children with clinical presentations that are suggestive of probable IIH.

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## Long-term health outcomes of neonatal screening for cystic fibrosis

Balfour-Lynn's review<sup>1</sup> underlines the benefits of neonatal screening programmes for cystic fibrosis (CFNSP). However, long-term clinical outcomes still need to be clarified. In particular, only a few published studies have compared the clinical outcomes at age 15 years of screened and non-screened cystic fibrosis (CF) patients.<sup>2–4</sup> In Tuscany, Italy (3.5 million inhabitants, CF incidence 1 in 4144)<sup>5</sup> a CFNSP has been carried out since 1984 together with a centralised follow-up programme. We wanted to evaluate the clinical benefits of CFNSP in an entire population of CF patients 15 years after diagnosis. To this purpose, we compared the clinical conditions of CF patients born in Tuscany since the introduction of the CFNSP and diagnosed by screening with those of patients followed since diagnosis by our centre and born in the same period but diagnosed by symptoms either due to false-negative screening result or because they were born in other Italian regions without a CFNSP. Patients with meconium ileus were excluded. Until 1991 CFNSP was performed by the determination of albumin on dried meconium by semiquantitative radial immunodiffusion assay (with low sensitivity (68.9%) and a high rate of false-negative tests), followed by a protocol based on immunoreactive trypsin assay (IRT) on dried blood spots, which was followed, if positive, by IRT again and a meconium lactase test (sensitivity 94.7%). The programme covers 99.8% of the Tuscan newborns.<sup>5</sup> The diagnosis of CF was confirmed within the third month of life with a sweat test (Gibson and Cook method) performed at the Regional Referral Centre in Florence. The children diagnosed with CF were followed by the Regional Centre or by one of the two local CF units of Tuscany, according to a common follow-up programme, which includes clinical assessments on a quarterly basis.

Sixty seven children with CF born between 1984 and 1992 were included in the study. Thirty seven of them were diagnosed by screening (18 females, 19 males, mean age at diagnosis 1.7 months, SD 1.2, 10.8% DF508 homozygous, 51.3% heterozygous, 59.4% pancreatic insufficiency) and 30 were diagnosed by symptoms (14 females, 16 males, mean age at diagnosis 38.3 months, SD 43, 26.6% DF508 homozygous, 40% heterozygous, 60% pancreatic insufficiency). Clinical data were retrospectively retrieved from patients' clinical records closest to the 15th birthday ( $\pm 3$  months).



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