cents differed from those of adults and children and ideally adolescents need their own accommodation."[3] What is new is that Viner has worked out that enough adolescents are admitted to British hospitals to warrant making such accommodation available.

In the United States during the 1970s and 1980s there was a tremendous push to establish inpatient adolescent units. By the mid-1990s the Society for Adolescent Medicine, the leading US professional organisation for adolescent health, estimated that there were 40-60 such units in the United States. As in Britain, some of these units are simply sections within other wards. The Society for Adolescent Medicine continues, however, to advocate "the continuation and establishment of adolescent medicine inpatient units in both paediatric and general hospitals as an optimal approach to the delivery of developmentally appropriate health care to hospitalised adolescent."[3] If Viner is correct this ideal can and should be realised in many district hospitals in the United Kingdom.

But even where the numbers do not justify a separate ward for adolescents, a multidisciplinary approach from health professionals with interest and expertise in adolescent health is still feasible in every hospital. As the Society for Adolescent Medicine suggests, this will be achieved through establishing guidelines for the managing teenagers in hospital, so that those with greatest expertise can be involved with young people's care.[4] But to truly realise a vision where all young people can receive the comprehensive services they need to become healthy adults we need to ensure that all health professionals in both primary and secondary care have the training they need to provide optimal care for this age group.

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Haematuria in asymptomatic individuals

It is often caused by inherited thinning of the glomerular membrane

Haematuria is often detected incidentally by "dipstick" tests in clinical practice, and much recent discussion in the *BMJ* has centred round whether haematuria in asymptomatic individuals should always be investigated or whether it can be disregarded.[1 2] Certainly haematuria can sometimes be dismissed as due to contamination with menstrual blood or to a urinary tract infection, but in other cases, as one correspondent chided, why do the test if you are going to ignore the result?

In most cases of dipstick haematuria the next step should be to examine the urine by phase contrast microscopy to confirm the haematuria and determine whether the red cells have originated from the glomerulus or elsewhere in the urinary tract.[3] "Dysmorphic" or "glomerular" red cells are present when there is glomerulonephritis with proliferative features and "non-glomerular" red cells when bleeding is from elsewhere in the urinary tract, usually resulting from infections, stones, a tumour, or contamination. Finding haematuria without proteinuria cannot be used to infer a non-glomerular origin since glomerular bleeding is not necessarily accompanied by proteinuria.[3]

What is the usual source of haematuria in asymptomatic individuals? The reported prevalence of haematuria in the community varies from $<1\%$ to 14%, but most studies of the causes of haematuria have examined patients referred to nephrology or urology clinics and have not used phase contrast microscopy to differentiate between glomerular and non-glomerular sources. In contrast, a recent Australian survey found that 9.4% of community based adults aged 25 or over had haematuria (SJ Chadban et al, scientific meeting of the Australian and New Zealand Society of Nephrology, 2000), and two thirds of these had red cells originating from the glomerulus on phase contrast microscopy (SJ Chadban, personal communication). Thus haematuria in otherwise well adults is more often due to bleeding from the glomerulus than from elsewhere in the urinary tract.

What causes this glomerular bleeding? In unselected individuals with glomerular haematuria the renal biopsy most often shows thin basement membrane disease.[4] This condition is characterised by uniform thinning of the glomerular basement membrane on ultrastructural examination and a very mild proliferative glomerulonephritis. Thin basement membrane disease is also known as benign familial haematuria,[5] and other family members often have haematuria too. Affected individuals typically have lifelong glomerular haematuria, minimal proteinuria, and normal renal function as well as often having a family history.

Alport's syndrome is a better understood but less common inherited disease that also affects the glomerular basement membrane. In Alport's syndrome the membrane is lamellated rather than thinned, and affected individuals have haematuria, renal failure, and often deafness and ocular abnormalities. The inheritance is either X linked or autosomal recessive, when mutations occur in the COL4A5 and COL4A3/COL4A4 genes respectively. These code for the α5, α3, and α4 chains of type IV collagen, the major constituent of the glomerular basement membrane. The demonstration of thinned glomerular membranes in carriers of autosomal recessive Alport's syndrome first suggested that mutations in thin basement

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membrane disease might affect the COL4A3 and COL4A4 genes too.[6 7] While carriers of X linked Alport's syndrome may also have thinned membranes, these have distinctive regions of lamellation, and there is usually a family history of X linked Alport's syndrome, renal failure, or inherited deafness.

We have confirmed that thin basement membrane disease is linked to the COL4A3/COL4A4 genes in six of 13 affected families (46%).[8] We suspect that more families with thin basement membrane disease also have mutations in these genes, but that we cannot show this because some family members have pathogenic mutations but no haematuria (incomplete penetrance) and because some mutations have arisen in younger family members and are absent from previous generations (de novo mutations). Our results indicate only that thin basement membrane disease is often due to COL4A3 and COL4A4 mutations and not that affected individuals are necessarily carriers of autosomal recessive Alport's syndrome.

Many studies, as well as the name benign familial haematuria, attest to the generally excellent prognosis of thin basement membrane disease. This condition does not predispose to hypertension or pre-eclampsia, and though some renal impairment is present in 7% of our hospital based patients,[9] this has often resulted from coincidental superimposed glomerulonephritis.[10] Individuals with thin basement membrane disease will nevertheless face unnecessary worry and investigations when their doctors are unfamiliar with the condition, and, of course, will pass on mutations to half their offspring, most of whom will have haematuria. We suspect, however, that thin basement membrane disease is not often a carrier state for autosomal recessive Alport's syndrome and that the offspring of two parents with haematuria due to the condition are unlikely to develop renal failure. Finally, the risk is small that a child or woman might be misdiagnosed with thin basement membrane disease when the true diagnosis is X linked Alport's syndrome.

In summary, thin basement membrane disease should be suspected when there is lifelong glomerular haematuria, minimal proteinuria, and normal renal function in the absence of a family history of renal failure or deafness that suggests X linked Alport's syndrome. The diagnosis is confirmed when another family member also has persistent glomerular haematuria. A renal biopsy is warranted only if the diagnosis is unclear, especially if X linked Alport syndrome cannot be excluded or a superimposed glomerulonephritis is suspected. The major differential diagnosis is IgA glomerulonephritis, which is characterised by episodic macroscopic haematuria with intercurrent infections (synpharyngitic haematuria), proteinuria, hypertension, and progressive renal impairment in one third of individuals and no family history of haematuria. In practice, differentiating between thin basement membrane disease and IgA glomerulonephritis is usually not difficult using these clinical features alone.

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Effectiveness, efficiency, and NICE

A NICE start but evidence costs money

The National Institute for Clinical Excellence (NICE) was established in England and Wales in 1999 to "provide guidance to the NHS on the use of selected new and established technologies."[1] NICE synthesises evidence on the effectiveness and cost of treatments and reaches "a judgment as to whether, on balance, the intervention can be recommended as a cost-effective use of NHS resources."[1] How has the institute measured up to these ambitious goals, and what has been learnt about the demands of an explicit process for assessing health technology?

The institute attracted attention from the international media with its first judgment that "health professionals should not prescribe zanamivir (Relenza) during the 1999/2000 influenza season."[2] The additional cost to the NHS would have been about £10m ($15m) for the benefit of reducing episodes of flu from six days to five. Although subsequently revised,[3] the decision showed that the institute has teeth and is prepared to bite even home grown drug companies like GlaxoWellcome (now GlaxoSmithKline). In some places, such as Australia[4] and Ontario, Canada,[5] pharmaceutical companies must prove that their products are cost effective before they can be reimbursed by the government. Although NICE operates differently in that it does not automatically assess new products and provides guidance rather than mandates, it is clear

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