B *Design*
Randomised design: 7 points; randomisation procedure described and adequate: 4 points; randomisation procedure inappropriate: −3 points
C *Comparability of groups*
Groups comparable for duration of disease, age, sex, treatment, comorbidity, coping behaviour, social economic status, social network and baseline outcome measure: 1 point per item
D *Drop out handling*
Drop outs <10%, <30%, <50%: 3 points, 2 points, and 1 point respectively. Number of drop outs is presented for every group: 1 point. Reasons for drop out are mentioned: 2 points
E *Number of patients included*
Smallest group after inclusion contained >25 patients: 6 points; >50 patients: 9 points; >75 patients: 15 points
F *Description of interventions and standard care*
Participants in the intervention or standard care programme are described: 3 points per description. Intervention programme or standard care programme is described adequately so that others can replicate it: 4 points per description; programme is described partially: 2 points per partial description; site of intervention mentioned: 1 point
G *Simultaneous interventions*
No simultaneous interventions: 6 points; comparable simultaneous interventions: 3 points
H *Blinding of people who collected outcome measures*
If yes: 5 points.
I *Use of appropriate outcome measures to test quality of life*
Term "quality of life" clarified: 2 points; quality of life measured in a multidimensional way: 2 points; explanation of why test was used: 2 points; patients judged their own quality of life: 2 points
J *Follow up*
Outcome measures collected in the intervention and control group at equal time intervals: 3 points; outcome measures collected at least 1 month after starting intervention: 3 points
K *Statistical analysis*
Author(s) investigated possibility of selection bias owing to drop out: 1 point; drop out was not selective: 3 points; authors corrected findings for possible confounding factors and no confounding factors were present (as in adequately designed randomised studies): 6 points.
L *Data presentation*
Authors presented the mean of the dependent variables: 3 points

Routine replacement of central venous catheters: telephone survey of intensive care units in mainland Britain

A M Cyna, J L Hovenden, A Lehmann, K Rajaseker, P Kalia

Editorial by O'Leary and Bihari

Department of Anaesthesia, Hartlepool District General Hospital, Hartlepool, Cleveland TS24 9AH
A M Cyna, *consultant*
A Lehmann, *senior house officer*
K Rajaseker, *locum consultant*
P Kalia, *consultant*
Pathology Department, Hartlepool District General Hospital
J L Hovenden, *consultant microbiologist*
Correspondence to: Dr Hovenden

BMJ 1998;316:1944–5

The incidence of sepsis with duration of central venous catheterisation remains controversial. Although some authors routinely replace central venous catheters,[1 2] this practice is not supported by data from randomised, controlled studies.[3 4] We surveyed intensive care units in mainland Britain to determine whether central venous catheters are replaced routinely.

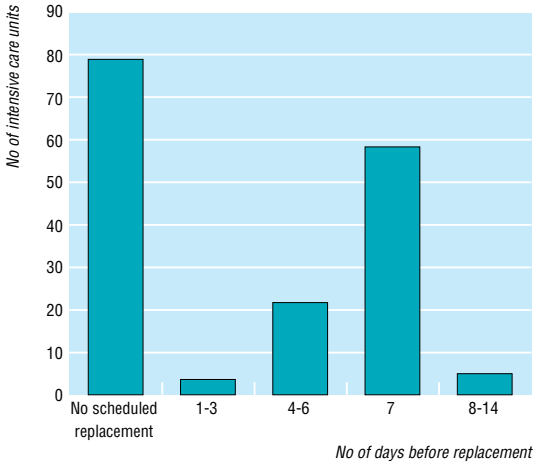
Subjects, methods, and results

We conducted a telephone survey in the first two months of 1997 of all general intensive care units in mainland Britain mentioned in the *Directory of Emergency and Special Care Units 1996*. We spoke to the consultant when available or the senior sister on duty and asked about their current practice of replacing central venous catheters. Of the 169 units contacted, 165 agreed to participate, two were busy, and two refused to respond. We asked three questions: Does your intensive care unit practise routine scheduled replacement of central venous catheters? If so, for how long are catheters left in place before replacement? What is your current practice based on (research, audit, microbiology advice, no reason given)? Any additional comments were noted.

Eighty six of the respondents (52%) routinely replaced central venous catheters, leaving them in place for a mean of 6.5 days (SD 1.6, range 2-14 days); replacement was also scheduled by 22 of the 37 teaching hospitals (60%) and 64 of the 128 non-teaching hospitals (50%). The figure shows the distribution of the units' practice according to the number of days before central venous catheters were replaced. Of the 86 units routinely replacing catheters, 23 based their practice on published research, three on local clinical audit, and nine on advice from their microbiology department, while 51 could not give a reason. Two units had been advised by their microbiology departments not to practise routine replacement; seven units said that their practice depended on the consultant on duty; two units had abandoned the practice in the past two years; one unit's practice was arbitrary; one unit's practice was pragmatic; and four units were in the process of implementing a policy.

Comment

Our survey shows that the routine replacement of central venous catheters in intensive care units in mainlaind Britain is variable. Examples of indications for replacement of central venous catheters included blocked lumens, inflamed entry sites, and suspected sepsis related to the catheter. Recent recommendations from the United States suggest that non-tunnelled cen-



Scheduled replacement of central venous catheters by 165 of the 169 intensive care units in mainland Britain listed in *Directory of Emergency and Special Care Units 1996*

tral venous catheters should not be routinely replaced as a means of preventing catheter related infections.[5] This guideline is strongly recommended for all hospitals and is supported by well designed studies.[5]

Fifty eight of the 86 units that routinely replaced central venous catheters removed them at 7 days. This practice was arbitrary, pragmatic, or influenced by conclusions from uncontrolled data.[1 2] The incidence of sepsis related to the catheter is not increased when central venous catheters are replaced after more than three days.[3 4] Scheduled replacement has recognised complications and is demanding of staff and resources. Despite the additional risks, the lack of evidence of benefit, and the extra costs entailed, routine scheduled replacement is still widely practised in many intensive care units in mainland Britain.

Contributors: AMC and JLH organised and supervised the study, interpreted the data, and wrote the paper. AL, KR, and PK collected the data and assisted with data entry and analysis. AMC is guarantor for the paper.

Funding: None.

Conflict of interest: None.

1 Ryan DW, Gould FK. Central venous line sepsis. *Anaesthesia* 1997;52:286-7.
2 Ullman RF, Gurevich I, Schoch PE, Cunha BA. Colonization and bacteremia related to duration of triple-lumen intravascular catheter placement. *Am J Infect Control* 1990;18:201-7.
3 Cobb DK, High KP, Sawyer RG, Sable CA, Adams RB, Lindley DA, et al. A controlled trial of scheduled replacement of central venous and pulmonary artery catheters. *N Engl J Med* 1992;327:1062-8.
4 Eyer S, Brummitt C, Crossley K, Siegel R, Cerra F. Catheter-related sepsis: prospective randomized study of three methods of long-term catheter maintenance. *Crit Care Med* 1990;18:1073-9.
5 Hospital infection control practices advisory committee. Part II. Recommendations for the prevention of intravascular device-related infections. *Am J Infect Control* 1996;24:277-93.

(Accepted 3 December 1997)

Questionnaire study of effect of sex and age on the prevalence of wheeze and asthma in adolescence

Andrea Venn, Sarah Lewis, Marie Cooper, Jennifer Hill, John Britton

In early childhood wheezing and asthma are more common in boys than girls.[1] This difference has either disappeared or reversed by early adulthood,[2] although the age at which the change occurs is unclear. We therefore measured the age and sex specific prevalence of self reported wheeze and diagnosed asthma in 11-16 year old children attending secondary schools in the Nottingham area.

Subjects, methods, and results

In 1996 we completed a prevalence survey of all pupils attending 44 secondary schools in a defined postcode area in and around Nottingham. Questionnaires about lifetime and current wheeze and asthma diagnosed by a doctor (appendix) were distributed to pupils for self completion during school time. Data were collected on 27 826 pupils (over 80% of registered pupils) aged 11-16 years, 51% of whom were boys. Parental responses to the same questions were obtained for a 1 in 4 random subsample of 3894 pupils (59% response).

The self reported lifetime prevalence of wheeze was 30.1% (8317/27 632), with 19.0% (5253/27 668) of children reporting having wheezed in the past year. Of the children with current wheeze who also provided information on asthma 3527/5154 (68%) had had asthma diagnosed by a doctor at some time. Wheeze and diagnosed asthma were both significantly more prevalent in girls than boys (relative risk for wheeze in the past year 1.24 (95% confidence interval 1.18 to 1.30) (figure); full data are available in a table on our website). However, this sex difference was dependent on age. At 11 years wheeze was more common in boys, but thereafter the prevalence of wheeze decreased with age in boys (χ^2 test for trend = 23.2, $P < 0.0001$) and increased with age in girls ($\chi^2 = 20.4$, $P < 0.0001$), the sex reversal occurring at age 12. Inclusion of an age-sex interaction term in the multiple logistic regression model confirmed the significance of this effect ($P < 0.0001$).

Analysis of parental responses gave lower prevalences of wheeze (lifetime 25.6% (994/3878), past year 16.4% (636/3880)). Sex reversal in wheezing ($P < 0.01$ for age-sex interaction term) occurred at age 13, after which prevalence was relatively constant.

Comment

The male predominance of wheezing during the first decade of life is reversed around the time of puberty due to an increase in reported wheeze in girls and a fall

Division of Respiratory Medicine, City Hospital, Nottingham NG5 1PB
Andrea Venn, *medical statistician*
Sarah Lewis, *medical statistician*
Marie Cooper, *research assistant*
Jennifer Hill, *research fellow*
John Britton, *reader in respiratory medicine*
Correspondence to: Andrea Venn mf2av@unix.ccl.nottingham.ac.uk

BMJ 1998;316:1945–6