Health care utilisation of infants with chronic lung disease, related to hospitalisation for RSV infection


Abstract

Aims—To compare the use of health care resources and associated costs between infants with chronic lung disease (CLD) who had or had not an admission with a proven respiratory syncytial virus (RSV) infection.

Methods—Review of community care, outpatient attendances, and readmissions in the first two years after birth. Patients: 235 infants (median gestational age 27 weeks) evaluated in four groups: 45 infants with a proven RSV admission (RSV proven); 24 with a probable bronchiolitis admission; 60 with other respiratory admissions; and 106 with non-respiratory or no admissions.

Results—The RSV proven compared to the other groups required more frequent and longer admissions to general paediatric wards and intensive care units, more outpatient attendances and GP consultations for respiratory related disorders, and had a higher total cost of care.

Conclusion—RSV hospitalisation in patients with CLD is associated with increased health service utilisation and costs in the first two years after birth.

Keywords: premature infants; chronic lung disease; respiratory syncytial virus

Respiratory syncytial virus (RSV) is the most important respiratory pathogen in childhood. Ninety per cent of children will have at least one significant RSV infection in the first two years after birth. In the United States alone it accounts for more than 90,000 paediatric hospitalisations and 4500 deaths annually. A humanised RSV monoclonal antibody (palivizumab) is now available. In a large randomised controlled trial, prophylaxis with palivizumab was associated with a significantly lower hospitalisation rate in infants born prematurely with or without chronic lung disease (CLD). It has been argued that prophylaxis with palivizumab may not be cost effective, except perhaps in infants with CLD receiving supplementary oxygen. Those studies, however, only took into account the cost of care related to the initial hospitalisation and are likely to have underestimated the financial burden, as RSV infection results in long term respiratory morbidity. Several prospective follow up studies have shown that even 7–11 years after the initial RSV infection, previously healthy babies born at term are more likely to wheeze, cough, and require antiasthma treatment than carefully matched controls. Certain groups, including those born prematurely, especially if they had CLD, are at risk of developing severe RSV disease. As a consequence, it seems likely that RSV infection would particularly impact unfavourably on the long term pulmonary outcome of CLD infants, with important implications for resource utilisation. Unfortunately such data, essential for the planning of provision, are not available from a UK based population. The aim, therefore, of this study was to evaluate the use of health care resources and associated cost of treatment of RSV infection, both in the hospital and in the community of infants who were born prior to 32 weeks of gestational age and developed CLD.

Methods

The study sample consisted of neonates born at less than 32 weeks of gestational age who had been admitted during the first week after their birth to one of four neonatal intensive care units between 1 July 1994 and 1 July 1997 and subsequently developed CLD (defined as an oxygen dependency beyond 28 days after birth). A retrospective review was made of their care in the community and during any readmission following discharge from the neonatal intensive care unit until the children were 2 years of age. The study was approved by the local research ethics committee of each of the four hospitals.

In each hospital, a research sister reviewed the neonatal units’ admission books to identify infants born prior to 32 weeks of gestational age. The medical records of the infants were then reviewed to ascertain whether they fulfilled the eligibility criteria—that is, they were born at less than 32 weeks of gestation, developed CLD, and survived until discharge. The general practitioners (GPs) of the infants who fulfilled the criteria were then contacted to determine whether the infants were still alive and to confirm their home address. For those infants whose parents were alive, information about the study and asked to send back written consent if they agreed for their child’s hospital and primary care medical records to be examined. On obtaining consent a unique study identifier was given to each child. In all subsequent reports and communications, each patient was only identified by their unique study identifier.

From the neonatal admission, the following data were retrieved: birth weight; use of antenatal steroids and postnatal surfactant;
development of an airleak (pneumothorax/pulmonary interstitial emphysema) or patent ductus arteriosus (clinical diagnosis with or without echocardiographic confirmation); duration of ventilatory support and supplementary oxygen; and use of high frequency oscillation and/or nitric oxide. From the GPs’ records for each child the following data were retrieved: venue of all hospital re-admissions; number of GP consultations; all medication prescribed; use and duration of home oxygen; number of referrals to a health visitor or community paediatric nurse; and use of community support services. For each hospital admission the following information was recorded: diagnosis or symptoms leading to the admission; duration of stay; whether the child was admitted to a paediatric ward, high dependency (HDU), or intensive care unit (ICU); days of supplementary oxygen and intravenous fluids; surgical or therapeutic procedures; and duration and frequency of all medication. Each infant’s hospital records were examined to ascertain the number of outpatient attendances.

Costs were assessed over the two year period. The costs per bed/day were obtained from the four main hospitals in the study. The mean cost (£634 per day HDU and £1380 per ICU) was used in the calculation of the cost of stay. The cost of each admission to HDU or ICU was calculated by multiplying the number of nights by the cost per bed/day, to which was added the cost of any surgical or therapeutic procedure. The cost of admission to a general paediatric ward was based on the data displayed on the NHS website (The New NHS 1999 Reference Costs). Drug costs were calculated from the British National Formulary prices. The cost of domiciliary visits for health visitors, nurses or routine visits to health visitors, for example for immunisations, were not recorded as these were considered the usual costs for visits to practice. The cost of domiciliary visits by community staff was estimated, assuming a 20 minute consultation. The cost of domiciliary visits for health visitors, paediatric nurses, and oxygen nurse specialists was based on average net remuneration for specialist nurses, allowing for superannuation, national insurance, travel, and capital overheads (£27 per visit). All visits to practice nurses or routine visits to health visitors, for example for immunisations, were not recorded as these were considered the usual costs for infants. The costs of care were summarised under four headings: primary care total, primary care respiratory related, primary care drugs, hospital drugs, hospital stay, and outpatient attendance.

STATISTICAL ANALYSIS

The infants were divided into four groups according to whether they had had at least one hospital admission associated with a proven RSV infection (RSV proven); an admission with probable bronchiolitis (probable bronchiolitis); an admission because of other respiratory problems (other respiratory); or either admissions for only non-respiratory problems or no admissions (non-respiratory). RSV infection was considered proven only if the RSV antigen was identified in a nasopharyngeal aspirate. The diagnosis of probable bronchiolitis was based on clinical signs including fever, dyspnoea, and wheeze. Differences between the four groups were assessed for statistical significance using a Kruskal–Wallis non-parametric analysis of variance and either a \( \chi^2 \) or Fisher’s exact test as appropriate for discrete data. Pairwise comparisons were made if significant deviation was found. Similar analyses were also performed after dividing the groups into those who were or were not discharged home on supplementary oxygen. The age at which each child in the RSV proven group was first hospitalised because of RSV infection was noted. Analysis was then undertaken to determine whether hospital resource utilisation and associated costs of care were greater in the RSV proven group following that admission compared to the other three groups throughout the study period.

PATIENTS

The medical records of 1581 infants were screened. One hundred and eighty one of the infants had died. Other reasons for exclusion from the study were: admittance to the neonatal intensive care unit only after the first week after birth (n = 35), absence of CLD (n = 906), and the medical records could not be found (n = 200). Written consent was obtained from 240 of the 259 sets of parents of eligible infants. It was not possible to obtain primary care and/or hospital data on five of the 240 infants. Analysis, therefore, was performed on the data from 235 infants who had a median gestational age of 27 weeks (range 22–31) and birth weight of 934 g (range 510–3000).

Results

During their first two years after birth, 45 infants (19%) had at least one hospital admission for a proven RSV infection, 24 had at least one admission for probable bronchiolitis, 64 had admissions with other respiratory problems, and 106 either had admissions for non-respiratory problems or were never admitted. The demographic features and neonatal course of the proven RSV group did not differ significantly from any of the other three groups, with the exception of the duration of ventilation on the neonatal ICU (NICU) and the time spent in the NICU (table 1).

After discharge from the NICU, the 235 children had in total 560 hospital admissions. The 45 children who had at least one admission for RSV proven infection had a total of 242 admissions: 55 were for an RSV proven infection, 13 for probable bronchiolitis, and 174 for other reasons. The median admission rate per infant for all causes differed significantly between the groups, being highest in the proven RSV group than the other three groups (p < 0.001; table 2). The total days spent in
hospital and in the general paediatric wards per infant also differed significantly between the four groups (table 3), being longest in the RSV proven group (p < 0.01).

Twelve infants in the proven RSV group were admitted to ICU (and had one admission and two admissions) compared to two in the probable bronchiolitis group, six in the other respiratory group, and only one in the non-respiratory group. ICU admission rates differed significantly between the groups, with the rate being highest in the proven RSV group (table 3). Days spent in ICU per infant also differed significantly between the groups, being highest in the RSV proven group (p < 0.01). The mean total cost of care during the first two years of life were significantly higher in the RSV proven group (p < 0.05; table 4), as were primary care consultations with GPs for respiratory illnesses (p < 0.05; table 4).

The mean total cost of care during the first two years after birth, following discharge from the NICU differed significantly between the four groups (table 2), being highest in the RSV proven group (p < 0.01). The total cost of inpatient care, hospital stay, hospital drugs, and outpatient attendances differed significantly between the four groups, being highest in the RSV proven group. Although total primary care costs did not differ significantly between the four groups, costs related to consultations for respiratory illness and for drug prescriptions did differ significantly, the highest costs occurring in the proven RSV group (table 5).

If only the children who were discharged from the NICU on supplementary oxygen at home were considered, the RSV proven group had a higher total cost of care than the other groups (p < 0.001). This related to higher costs associated with hospital stay (p < 0.01) and primary care drugs (p < 0.001). Consideration of only the children who were not discharged home on oxygen revealed that the RSV proven compared to the other groups generated higher costs of care in all areas considered (p < 0.05), except for primary care drugs.

### Table 1  Demographics and neonatal course according to RSV status

<table>
<thead>
<tr>
<th>RSV proven (n = 45)</th>
<th>Probable bronchiolitis (n = 24)</th>
<th>Other respiratory (n = 60)</th>
<th>Non-respiratory (n = 106)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gestational age (weeks)</td>
<td>26 (24–31)</td>
<td>26 (23–31)</td>
<td>27 (22–31)</td>
</tr>
<tr>
<td>Birth weight (g)</td>
<td>863 (640–2178)</td>
<td>834 (590–1538)</td>
<td>972 (630–1696)</td>
</tr>
<tr>
<td>Antenatal steroids</td>
<td>81</td>
<td>93</td>
<td>88</td>
</tr>
<tr>
<td>Postnatal surfactant</td>
<td>91</td>
<td>88</td>
<td>90</td>
</tr>
<tr>
<td>CPAP</td>
<td>54</td>
<td>46</td>
<td>51</td>
</tr>
<tr>
<td>IPPV</td>
<td>98</td>
<td>100</td>
<td>98</td>
</tr>
<tr>
<td>NO</td>
<td>5</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>Airleak</td>
<td>11</td>
<td>29</td>
<td>20</td>
</tr>
<tr>
<td>PDA</td>
<td>38</td>
<td>46</td>
<td>40</td>
</tr>
<tr>
<td>Postnatal dexamethasone</td>
<td>41</td>
<td>50</td>
<td>38</td>
</tr>
<tr>
<td>Duration of IPPV (days)</td>
<td>12 (0–59)*</td>
<td>4.5 (0–62)</td>
<td>10 (0–103)*</td>
</tr>
<tr>
<td>Duration of admission (days)</td>
<td>91 (16–360)**</td>
<td>83 (18–260)</td>
<td>76 (10–464)**</td>
</tr>
</tbody>
</table>

Data are presented as mean (median) and [range] or (%).

*p < 0.05, **p < 0.01.

**CPAP, continuous positive airway pressure; IPPV, intermittent positive pressure ventilation; HFOV, high frequency oscillatory ventilation; NO, nitric oxide; PDA, patent ductus arteriosus.**

### Table 2  Health care utilisation and cost of care related to RSV status

<table>
<thead>
<tr>
<th>RSV proven (n = 45)</th>
<th>Probable bronchiolitis (n = 24)</th>
<th>Other respiratory (n = 60)</th>
<th>Non-respiratory (n = 106)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital admission rate per infant</td>
<td>5.4 (4)</td>
<td>2.8 (2)</td>
<td>3.1 (3)</td>
</tr>
<tr>
<td>Days in hospital*</td>
<td>39.8 (21)</td>
<td>17.7 (6.5)</td>
<td>16.3 (8)</td>
</tr>
<tr>
<td>Days in ICU*</td>
<td>2.9 (0)</td>
<td>0.9 (0)</td>
<td>0.5 (0)</td>
</tr>
<tr>
<td>Outpatient attendances**</td>
<td>3.1 (12)</td>
<td>8.3 (8)</td>
<td>9.2 (8)</td>
</tr>
<tr>
<td>Consultation with GP for respiratory illnesses***</td>
<td>12.638 (0841; 17235)</td>
<td>6059 (3427; 8690)</td>
<td>5683 (3427; 6775)</td>
</tr>
</tbody>
</table>

Data are presented as mean (median) and [range] unless otherwise stated. Between group difference: *p < 0.001, **p < 0.01, ***p < 0.05.

### Table 3  Frequency and duration of admissions (days) according to RSV status

<table>
<thead>
<tr>
<th>RSV proven (n = 45)</th>
<th>Probable bronchiolitis (n = 24)</th>
<th>Other respiratory (n = 60)</th>
<th>Non-respiratory (n = 106)</th>
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<td>39.8 (21)</td>
<td>17.7 (6.5)</td>
<td>16.3 (8)</td>
</tr>
<tr>
<td>Days in ICU*</td>
<td>2.9 (0)</td>
<td>0.9 (0)</td>
<td>0.5 (0)</td>
</tr>
<tr>
<td>Days in paediatric ward*</td>
<td>30.7 (16)</td>
<td>13.9 (4.5)</td>
<td>12.4 (8.0)</td>
</tr>
</tbody>
</table>

Data are presented as mean (median) and [range]. Between group difference: *p < 0.001.
Table 4  Outpatient attendances and primary care contacts by RSV status

<table>
<thead>
<tr>
<th>RSV status</th>
<th>RSV proven (n = 45)</th>
<th>Probable bronchiolitis (n = 24)</th>
<th>Other respiratory (n = 60)</th>
<th>Non-respiratory (n = 106)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outpatient attendances*</td>
<td>11.9 (12) [2-27]</td>
<td>8.3 (8) [1-30]</td>
<td>9.2 (8) [0-36]</td>
<td>8.6 (7.5) [0-41]</td>
</tr>
<tr>
<td>GP contacts</td>
<td>16.3 (14) [0-56]</td>
<td>12.5 (12) [1-37]</td>
<td>18.3 (13) [0-76]</td>
<td>14.6 (13) [0-44]</td>
</tr>
<tr>
<td>Consultations with GP for respiratory illness**</td>
<td>8.3 (7) [0-28]</td>
<td>7.6 (5.5) [0-26]</td>
<td>8.6 (5) [0-48]</td>
<td>5.6 (5) [0-25]</td>
</tr>
</tbody>
</table>

Data are presented as mean (median) and [range].
Between groups difference: *p < 0.01, **p < 0.05.

Table 5  Cost of care (in pounds sterling) by RSV status

<table>
<thead>
<tr>
<th>RSV status</th>
<th>RSV proven (n = 24)</th>
<th>Probable bronchiolitis (n = 12)</th>
<th>Other respiratory (n = 24)</th>
<th>Non-respiratory (n = 48)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary care drugs*</td>
<td>663 (432; 903)</td>
<td>340 (132; 548)</td>
<td>513 (371; 654)</td>
<td>269 (180; 359)</td>
</tr>
<tr>
<td>Primary care respiratory consultations**</td>
<td>192 (137; 226)</td>
<td>155 (97; 212)</td>
<td>191 (145; 236)</td>
<td>117 (101; 134)</td>
</tr>
<tr>
<td>Total primary care cost</td>
<td>626 (359; 893)</td>
<td>4127 (1646; 6607)</td>
<td>3409 (2480; 4339)</td>
<td>717 (429; 1096)</td>
</tr>
<tr>
<td>Hospital stay***</td>
<td>9347 (5192; 13916)</td>
<td>4127 (1646; 6607)</td>
<td>3409 (2480; 4339)</td>
<td>717 (429; 1096)</td>
</tr>
<tr>
<td>Hospital drugs***</td>
<td>340 (186; 494)</td>
<td>61 (17; 104)</td>
<td>69 (42; 96)</td>
<td>7 (3; 12)</td>
</tr>
<tr>
<td>Total inpatient cost***</td>
<td>9687 (5459; 13916)</td>
<td>4187 (1668; 6705)</td>
<td>3478 (2530; 4427)</td>
<td>725 (435; 1015)</td>
</tr>
<tr>
<td>Outpatient attendance***</td>
<td>1495 (1119; 1871)</td>
<td>1024 (596; 1453)</td>
<td>980 (802; 1159)</td>
<td>953 (822; 1084)</td>
</tr>
<tr>
<td>Total cost of care***</td>
<td>12638 (8041; 17235)</td>
<td>6059 (3427; 8690)</td>
<td>5683 (3427; 6775)</td>
<td>2461 (2074; 2849)</td>
</tr>
</tbody>
</table>

Data are presented as mean (95% CI).
Between groups difference: *p < 0.005, **p < 0.02, ***p < 0.001.

The mean age of the 45 infants at their first admission for an RSV proven infection was 7.9 months (median 6.6, range 1–22). This was the first hospital admission for 16 of the 45 infants. After their first RSV proven admission, that group had a median total number of admissions of 2 (range 1–17) for a median total duration of 13 days (range 2–164); 10 of the children were admitted to ICU on 12 occasions for a median duration of 0 days (range 0–38). Their health care utilisation after their first RSV proven admission was significantly greater than that of the other three groups throughout the entire study period. Similarly, the inpatient costs (mean £7294, range £768–62552) were significantly higher in the RSV proven group, considering the costs accrued only after the initial RSV proven hospitalisation compared to the costs generated by the other three groups throughout the study period (p < 0.001).

Discussion

This study has shown that CLD patients who require hospitalisation for RSV infection have significantly greater morbidity than those without RSV infection, as highlighted by more frequent and longer duration admissions to paediatric wards and ICUs. The criteria for selection of patients into the study were chosen to include those at highest risk of the adverse consequences from RSV infection. Infants born prior to 32 weeks of gestation are disadvantaged because of abnormal airways and/or a relative or complete lack of maternal RSV neutralising antibody.11 The more severe impact of RSV infection on premature infants who develop CLD is highlighted by their hospitalisation rate of 19%.12 We diagnosed CLD as oxygen dependency beyond 28 days as that definition has been frequently used in studies assessing the impact of RSV infection.11 13 In addition, in the present population of preterm infants, oxygen dependency beyond 28 days is a sensitive and specific predictor of chronic respiratory morbidity.11 14

We divided the patients into four groups as we suspected that a clinical diagnosis of bronchiolitis in children with a high rate of underlying respiratory problems might be relatively inaccurate in a retrospective study. Our hypothesis was supported by the finding that the RSV proven group had a significantly different outcome to the probable bronchiolitis group, who fared similarly to the other respiratory group. These results underscore the importance, when prospectively trying to accurately assess the impact of RSV infection in infants with an underlying respiratory disorder, of establishing the diagnosis by examination of a nasopharyngeal aspirate.

The incidence of hospitalisation for RSV infection among preterm infants in North America varies from 2.8% to 37%, higher rates being experienced in those with underlying cardiac or pulmonary disease and those oxygen dependent beyond 28 days.1 The hospitalisation rate for proven RSV infection among our CLD infants of 19% was higher than the 17.4% reported in the PREVENT study15 or the 12.8% in the IMPACT study,16 but lower than the 38.8% recently noted.17 The PREVENT and IMPACT studies only reported data from a single RSV season, whereas we recorded the outcome during a two year period. The longer period of follow up was chosen as we wished to document the full impact of RSV infection, and it is well appreciated that some young children will be readmitted on more than one occasion with proven RSV infection.16 Although in older children and adults, reinfections with RSV are less severe with each successive occurrence,17 this is not so with young children requiring supplementary oxygen.16 In a recently reported retrospective cohort study,18 it was shown that children with CLD had high rates of RSV hospitalisation until 24
months of age, whereas after the first year of life, children with congenital heart disease or prema-
turity have rates no higher than that of children at
low risk who were less than 12 months old. In a study which has followed a group of CLD
infants less than 32 weeks of gestational age for
two years, a hospitalisation rate of 45% was
documented. Our 69 patients in the RSV proven
and probable bronchiolitis groups had a total of
94 admissions for proven or suspected RSV
infection during the first two years after birth.

Welliver27 reported a 32–37% rate of ICU
admission for CLD patients, 17–25% requiring
mechanical ventilation. The rates in the
PREVENT study (4.6% admission and 2% ventila-
tion) and the IMPact study (3% admission
and 0.2% ventilation) were much lower.12

In the present population 5% of children with
RSV proven infection were admitted to ICU.

We have shown that those CLD patients who
had a proven RSV infection generated signifi-
cantly higher costs of care, approximately three
times, of those who were RSV negative (table
5). Previous estimations of the cost of care for
RSV patients have usually only included the
costs related to hospitalisation.1 One1 did
include the cost of attendance in casualty or an
acute clinic immediately preceding the admis-
sion and non-medical costs such as those
incurred by the parents because of loss of work.
Marchetti and colleagues28 examined data on
hospital charges (including outpatient costs)
related to RSV infection in infants less than 35
weeks of gestational age with or without CLD.
Assuming a hospitalisation rate of 12.8%, they
calculated the expected hospital charge would
vary widely, from $1341 to $21 327, depend-
ing on the source used. The lower figure was
based on a multicentre assessment of infants
regardless of comorbidities,21 and the higher
figure based on an assessment of high risk
infants in a single institution.22 The costs, how-
ever, were only calculated for a single season,
which is likely to be an underestimate of the
impact of RSV infection,19 and they ignored
certain types of health service utilisation also
likely to generate extra cost.23 The Avon
perinatal follow up study has shown that
preterm compared to term infants are not only
on average six times more likely to be readmit-
ted and require more outpatient attendances,
but have more frequent GP consultations and
see their health visitors more often for
non-routine visits.23 We therefore felt that if the
ture cost of care for RSV infection was to be
obtained, it was essential to record not only
hospital admissions and outpatient atten-
dances, but also GP consultations and visits
from other community staff over a two year
period. This highlighted that CLD patients
with proven RSV infection generated higher
costs for all aspects of care; the differences in
cost compared to the other groups were statis-
tically significant, not only when considering
costs related to hospital admissions and drugs,
but also outpatient attendances and primary
care respiratory related consultations and drugs.

The RSV proven group differed significantly
from the other groups in requiring significantly
longer durations of neonatal ventilation and
NICU stay. This might suggest they had
suffered more severe neonatal lung disease and
hence required hospitalisation when suffering
an RSV infection. The four groups, however,
did not differ with regard to other indicators of
respiratory disease severity—that is, the propor-
tions suffering complications such as pneu-
omothorax or requiring postnatal dexametha-
sone. In addition, the proportion of the RSV
proven group discharged home on supplementary
oxygen did not differ similarly from the
other three groups. The four groups were also
similar with respect to their gestational age and
birth weight. Our data highlight the difficulty of
predicting from their neonatal characteristics
which CLD infants are likely to suffer severe
consequences of RSV infections. Research to
further refine methods for identifying infants at
high risk is desirable in order to facilitate
targeting of RSV prophylaxis.

The patients were discharged from the neo-
natal units at different times of the year and
thus their ages varied at the beginning of the
RSV season. Hence, the mean age at the first
RSV proven hospitalisation was approximately
8 months (range 1–22 months). The latter fig-
ure emphasises that CLD patients may still
experience serious consequences of RSV infec-
tion even in the second year after birth.19 As
the patients were on average 8 months of age when
they experienced their first RSV proven hospita-
alisation episode, their health care utilisation
and associated costs only after, but not before,
that age could be attributed to RSV infection.
Thus, to obtain a more accurate estimate of the
extra care attributable to RSV infection, we
compared health care utilisation and associated
costs in the RSV proven group post initial RSV
hospitalisation to the other three groups for the
whole study period. Although we were assess-
ing the RSV proven group over a shorter time
period than the other groups, the former group
still had a significantly greater hospitalisation
requirement, with significantly higher inpa-
tient, outpatient, and primary care costs.

We conclude that RSV infection associated
with hospital admission in very preterm
infants with CLD causes important morbidity,
as indicated by their significantly higher use of
health service resource. Our study indicates
that the current estimations of the cost
effectiveness of RSV prophylaxis24 are weak-
ened by an incomplete consideration of the
longer term costs and health impacts of RSV
infection. At this time, however, there are no
data available regarding the impact of prophy-
laxis on the long term sequelae of RSV infec-
tion. Future research needs to take full
account of significant cost offsets that may be
available through appropriate prophylaxis and

Key message

- Prematurely born CLD infants who are
  hospitalised with RSV infection have an
  increased health service utilisation in the
  first two years after birth

www.archdischild.com
the quality of life impact of RSV on the infants and their families.

The research funds were used by Abbott Laboratories Ltd. We are grateful to Mr M Elsley for assistance with data analysis and Ms S Williams for secretarial assistance.


Commentary

Prescribers of paediatric respiratory drugs have faced some difficult decisions in the past few years. First we had alfa bone marrow for cystic fibrosis, costing a cool £7108 ($10 306) per annum, then as we were recovering from that shock, we had tobramycin for nebulisation at £10 038 ($14 555) per annum (basic NHS prices as at June 2001). Barely had the ink dried on the cheques for these new drugs, than we were asked to advise on the use of palivizumab, an anti-respiratory syncytial virus (RSV) monoclonal antibody designed to protect vulnerable babies from the ravages of acute bronchiolitis. At a basic NHS price of £2544–4235 ($3688–6140) for the six injections generally used to cover the RSV season, this was the final straw for many of us, and use of the product has varied widely around the country. This variation is not based on rational decision making. Rather, it reflects local experience and finances, illuminated by inadequate information on the costs and benefits of using palivizumab.

Greenough et al highlight the inadequacies of some previous studies of the costs of RSV infection in infants with chronic lung disease (CLD), and make a valiant attempt to remedy these by examining the total health care costs of such infants. In addition to the short term costs of hospitalisation associated with RSV infection, which have already been looked at, they have evaluated in great detail the financial impact of the longer term clinical deterioration that can follow RSV infection, and from which it can take many months to recover.

These figures will be of great interest to neonatologists and other paediatricians, as well as to public health doctors responsible for footing the bill for palivizumab. The latter will be quick to point out that there is no information on the effects of palivizumab on longer term disability from RSV infection, and may use this as a delaying tactic to keep their finances in balance. The sooner such information becomes available, the better.

Finally, it can reasonably be asked why there is so much emphasis on the cost efficiency of screening programmes and immunisations. In strict financial terms, very few medical and surgical treatments have been shown to be cost effective, but we don’t let our patients suffer for the sake of a few pounds. So, in studies evaluating the total costs and benefits of palivizumab in babies with pre-existing CLD, we must be sure to examine clinical as well as financial outcomes. I for one would much rather prescribe a drug because it was likely to help my patient, than because it brought a smile to an accountant’s face.

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www.archdischild.com
Health care utilisation of infants with chronic lung disease, related to hospitalisation for RSV infection


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