

Change in viral bronchiolitis management in primary care in the UK after the publication of NICE guideline

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ABSTRACT

The aim of this study was to investigate changes in General Practitioner (GP) management before and after the publication of the NICE bronchiolitis guideline. In March 2015 and May 2016, an electronic questionnaire was sent to GPs. It was completed by 1001 GPs in 2015 and 1009 in 2016. There were small but significant improvements in proportions of GPs using a guideline, measuring oxygen saturations, and providing written guidance, and appropriate reductions in those prescribing medications. 35% had read the guideline and 25% changed their practice since guideline publication. There were modest but significant improvements in reported management by GPs after guideline publication.

INTRODUCTION

Viral bronchiolitis is the leading cause of hospitalisation in infants less than one year old, with wide variation in rates of hospitalisation across the United Kingdom (UK).[1,2] The National Institute for Health and Care Excellence (NICE) guideline for bronchiolitis was published in June 2015 to try to reduce this variation. [3] The main aim of this study was to investigate any change in the management of bronchiolitis by General Practitioners (GPs) between 2015 and 2016, after the NICE guideline had been published. A secondary aim was to assess how GPs changed their management. The data from the 2015 survey has been published previously.[4]

METHODS

In March 2015 and May 2016, an electronic, structured questionnaire, was sent to GPs registered with the General Medical Council in the UK and recruited by MedeConnect, the market research division of the professional network, Doctors.net.uk. As previously described,[4] MedeConnect sent invitations to members followed by reminders until 1000 GPs had completed the questionnaire. We compared the responses from GPs in 2015 and 2016 for those questions that were asked in both years. Different GPs may have responded in each of the years. Ethical approval was not required for this study. Further details are available in the online supplement.

RESULTS

Comparison of management between 2015 and 2016

The questionnaire was completed by 1001 GPs in 2015 and 1009 in 2016 (online Table 1). Overall, there were significant increases in the use of a guideline by GPs (61% versus 73%, Difference +12% [95% confidence interval 6-16%], $P<0.0001$) and in GPs providing written guidance to parents (38% versus 46%, Difference +8% [4-12%], $P<0.0005$) from 2015 to 2016 (online Tables 2 and 3). Although there was an improvement in the number of GPs routinely testing oxygen saturations this did not reach statistical significance (67% versus 71%, Difference +4% [-0.1 to +8%], $P=0.056$) (online Table 4). There was no significant change in GPs' reported feeding level threshold for hospital referral (84% versus 85%, Difference +1% [-2 to +4%], $P=0.65$) (online Table 5) but a significant reduction in the use of medications (Table 1).

Table 1: Medications prescribed by GPs in 2015 and 2016. Data presented as n (% , 95% confidence interval).

Medication	2015	2016	Difference	P value
Inhaled bronchodilator (NICE recommendation: Do not use salbutamol, ipratropium bromide or adrenaline)	349 (35%, 32-38%)	309 (31%, 28-34%)	-4% (-0.1 to -8%)	0.048
Inhaled corticosteroid (NICE recommendation: Do not use inhaled corticosteroids)	53 (5%, 4-7%)	54 (5%, 4-7)	0% (-2 to +2%)	>0.99
Oral corticosteroid (NICE recommendation: Do not use oral corticosteroids)	195 (19%, 17-22%))	193 (19%, 17-22%)	0% (-4 to +4%)	>0.99
Oral antibiotic (NICE recommendation: Do not use antibiotics)	75 (7% 6-9%)	48 (5%, 4-6%)	-2% (-0.6 to -5%)	<0.0001
Oral leukotriene receptor antagonist (e.g. montelukast) (NICE recommendation: Do not use montelukast)	16 (2%, 1-3%)	23 (2%, 2-3%)	0% (-1% to +2%)	>0.99

Saline (or similar) nose drops (No NICE recommendation on nose drops)	244 (24%, 22-27%)	193 (19%, 17-22%)	-5% (-1 to -8%)	0.004
None of the above	435 (43%, 40-47%)	504 (50%, 47-53%)	+7% (3 - 11%)	0.003
Total	1001 (100%)	1009 (100%)		

Change in practice after the publication of the NICE guideline

In 2016, 268 (27%, 95% confidence interval 24-29%) GPs were aware of the NICE guideline but had not read it and 351 (35%, 32-38%) had read some of it. Since the publication of the guideline, 256 (25%, 23-28%) GPs had changed their practice, but only 69 (7%, 5-9%) as a direct result of the guideline. Of these, 129 (50%, 44-56%) GPs now routinely monitor oxygen saturations, 119 (46%, 40-53%) no longer routinely prescribe medications, 79 (31%, 26-37%) now routinely provide parental written advice and 14 (5%, 3-9%) had changed their practice in other ways. Overall, 848 (84%, 82-86%) GPs had not changed their hospital referral pattern, 79 (8%, 6-10%) reported they now referred fewer infants and 82 (8%, 7-10%) referred more. For further details see online supplement.

Rationale for medication prescriptions

Of the 505 GPs who routinely prescribed medications to treat bronchiolitis, reasons for prescriptions included (more than one answer was possible):

- treat potential differential diagnosis (e.g. pneumonia, viral wheeze) (n=246 [49%, 95% CI 44-53%])
- there is good evidence the medication is efficacious (n=174 [34%, 30-39%])

- parents expect a prescription (n=131 [26%, 22-30%])
- the placebo effect can be beneficial (n=85 [17%, 14-20%])
- a prescription reduces the likelihood of re-attendance with the same problem (n=59 [12%, 9-15%])
- a prescription removes the need for a discussion with parents about supportive management only (n=25 [5%, 3-7%])
- there is another reason for routinely prescribing medication (n=50 [10%, 8-13%])

DISCUSSION

In this study we demonstrated modest but significant improvements in GPs' reported management of viral bronchiolitis after the publication of the NICE guideline. Although there were significant improvements in the reported prescription of bronchodilators and antibiotics, GPs still reported prescribing bronchodilators to 31% and antibiotics to 5% of infants in 2016. In addition, a large proportion of GPs (24%) prescribed some form of corticosteroid, predominantly oral corticosteroid, both before and after the publication of the guideline. This is of concern as corticosteroids are not even recommended for infants for the main differential diagnosis of viral induced wheeze due to a lack of evidence for clinical effectiveness and potential adverse effects.

A variety of reasons for prescribing medications not recommended by the guideline was given by GPs. Almost half (49%) did so to treat potential differential diagnoses reflecting the clinical challenge of differentiating between

bronchiolitis and other conditions (e.g. viral wheeze or bacterial infections). However, it is worrying 34% of respondents prescribe a medication because they believe there is good evidence it helps the infant. There is clear evidence from systematic reviews, noted in the NICE guideline, that medications including bronchodilators,[5] corticosteroids,[6] leukotriene receptor antagonists [7] and antibiotics [8] are not efficacious. More widespread use of, and familiarity with, the NICE guideline could potentially improve GPs' knowledge and thus clinical practice in this area. A further 60% of GPs regularly prescribed a medication for a 'non-clinical' reason. A more multifaceted approach to the implementation of the NICE guideline may help some of these problems. For example, Switzerland included a parental engagement strategy using leaflets explaining the natural disease course and lack of evidence for medications in the implementation of their national bronchiolitis guideline.[9] Future updates of the NICE guideline may consider this approach. In addition, the duration of a standard GP consultation in the UK is approximately nine minutes,[10] making it difficult to have a complex discussion with parents. Increasing GP consultation times may improve prescribing practices in this context.

The majority of GPs (84%) did not report changing their hospital referral pattern after the publication of the guideline, suggesting it has had little impact overall on the numbers of infants referred to hospital from primary care.

The strengths and weaknesses of the methodology used in this study have previously been reported.[4] Briefly, we have investigated a large number of

UK GPs, with a broad range of experiences and geographic locations, at two time points. GPs were recruited through Doctors.net.uk and due to how the questionnaires were sent out, we do not know how many GPs declined to answer the questionnaires before the total requested number of 1000 GPs completed it. Therefore, the GPs who responded may not be representative of all GPs. We did not review individual patient notes and thus we cannot comment on the actual impact on patient care of the reported GP management. In addition, because it is unknown how many GPs completed the questionnaire in either one or both years, some of the observed differences may be due to different GPs responding in each year rather than any overall change in practice. Overall, however, we believe these limitations are unlikely to significantly alter the conclusions of the study, as they are in line with other similar studies.

In summary, we have shown the NICE bronchiolitis guideline has resulted in small but significant improvements in reported patient care by UK GPs. Additional resources for implementing, adhering to and monitoring compliance with guidelines should be provided to improve GPs' clinical care. Future similar guidelines should be publicised widely, including to the public, and using a variety of approaches to ensure increased knowledge and to change practice.

COMPETING INTERESTS

AJP has previously conducted vaccine clinical trials on behalf of Oxford University funded by vaccine manufacturers but he no longer does so and did not receive any personal reimbursement from them. AJP is chair of the

Department of Health's (DH) Joint Committee on Vaccination and Immunisation (JCVI) but the reviews expressed herein do not necessarily represent those of DH or JCVI. SBD, CRC and EJC have no conflicts of interest to declare.

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CONTRIBUTORSHIP STATEMENT

SBD, AJP and CRC conceived the study. SBD, EC, CRC designed the study. EC and SBD analysed the data. EC wrote the initial draft and all authors reviewed and approved the final manuscript. SBD takes overall responsibility for the study.

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