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Medicines in schools: a cross-sectional survey of children, parents, teachers and health professionals

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ABSTRACT

Objectives To describe how individual schools manage medicines and strategies for implementation of guidance, to determine the nature of problems perceived by children, parents, teachers and healthcare professionals (HCPs) in relation to medicines management in schools and to highlight differences between these perceptions.

Design A cross-sectional survey study in which questionnaires were completed by children, their parents and carers, groups of HCPs and head teachers.

Results There were 158 respondents to this survey. The management of medicines varies between schools and this reflects how policy guidance is interpreted and is revealed by the differences in experience described. Head teachers acknowledge that there is a lack of expertise about medicines among their staff and they rely on interpretation of and adherence to policy and procedure and compliance with training was used as a measure of good medicines management. There are inconsistencies in how information about medicines is communicated between the healthcare team, families and schools, and there is evidence that this communication is not always timely or effective. This results in problems with medicines at school. Parents emphasised the need for staff at school to understand their child's condition and their medicines.

Conclusions There are differences between how individual schools manage medicines and interpret policy guidance and discrepancies between the views of each stakeholder group. There is some evidence that medicines management does not always meet the needs of children and their families. Fewer than half of parents and HCPs are satisfied with how medicines are dealt with in schools.

What is already known on this topic?

- In the UK, individual schools are responsible for interpreting and implementing guidance on medicines management which is provided by the Department for Education.
- Most schools have medicines management policies in place. However, there is considerable variation in policy and practice.
- When at school, some children have problems accessing medicines and with privacy and adherence. They have concerns about the impact of side effects on school life.

What this study hopes to add?

- Fewer than half of parents and healthcare professionals are satisfied with how medicines are dealt with in schools.
- Communication about medicines between the healthcare team, families and schools is inconsistent and there is evidence that it is not always timely or effective.
- Parents want school staff to better understand their child's condition and their medicines.

INTRODUCTION

Children with chronic illness and short-term conditions often require medication that may need to be administered during school hours. The Department for Education (DfE) provides guidance on medicine management in schools.[1] The document includes statements on staff training, medicines storage, quality and safe disposal and on record keeping. Individual schools are responsible for interpreting and implementing this guidance which means that different schools opt to manage medicines in different ways. To date, we do not know whether children, their parents, school staff and healthcare professionals (HCPs) are satisfied with how medicines are managed in schools.

Previous studies in the UK have found that schools have policies in place, have a designated member of staff responsible for the medical needs of pupils, and provide staff training.[2] However, there is also considerable variation in local policy and practice.[3] There are problems with access to medicines, privacy, adherence and side effects.[4 5] A recent study in Finland identified a lack of consistency around medicines management at school.[6]

Several studies in the USA have identified medication errors: missed doses, overdose, double dose, incorrect medicine,

Table 1 Recruitment by stakeholder group

Stakeholder group	Number approached	Number recruited
Children with chronic illness	17	15*
Parents/carers of children with chronic illness	27	23*
Parents/carers of children receiving intermittent treatment	21	10
Head teachers	55	40
School nurses	20	11
Consultant paediatricians	53	23
Community paediatricians	16	6
Paediatric nurse specialists	42	15
Paediatric pharmacists†	10†	15†

*All completed questionnaire and returned it to the research team before leaving the hospital.
†Invitation also posted on Neonatal and Paediatric Pharmacists Group message board and an additional five respondents were recruited via this route (total of 15 pharmacists recruited).

transcription errors, expired medicines and incorrect storage.[7–10] One US study found that one in four school secretaries with responsibility for administering medicines had not received any training.[11] Another study reported poor standards of medication management.[12] A study of parents' understanding of medication management in US schools found poor awareness.[13]

This study aimed (1) to describe differences between how individual schools interpret guidance on how to manage medicines (2) to determine the nature of problems perceived by children, parents, teachers and HCPs in relation to medicines management in schools (3) to highlight differences between these perceptions.

METHODS

This was a cross-sectional survey study of children (n=15), parents (n=33), head teachers (n=40), school nurses (n=11) and other HCPs (n=59) (table 1).

Purposive sampling was used. The characteristics of participants were specified a priori and recruitment was targeted to meet those specifications.

The research team attended local head teacher forums to introduce the study. A link to an electronic questionnaire was sent to head teachers of primary, secondary and special schools, November 2015—March 2016. A link to an electronic questionnaire was sent to HCPs in the Local Community Health Trust, in a regional paediatric hospital and in two district generals in the UK, August 2015—April 2016. A reminder email was sent to participants at 4 and 6 weeks. A link to the electronic questionnaire was posted on the Neonatal and Paediatric Pharmacists Group (http://www.nppg.org.uk/) message board, December 2015.

Children, parents and carers were recruited from outpatient clinics, AED and outpatient pharmacy at a regional paediatric hospital, January—July 2016. Parents/carers and children recruited in outpatients completed the questionnaire and returned it to the research team before they left the hospital. In AED and pharmacy, parents/carers supplied informed consent to complete a questionnaire over the telephone approximately 1 week after their visit.

Questionnaires were designed specifically for this study and, adapted for each group (see online supplementary file 1 for an example). Questionnaires were either paper-based or electronic (Snap Survey Software). Responses were anonymous.

Since this was an exploratory study, a formal sample size calculation was not undertaken. A sample of convenience was used, based on the accessibility of participants.

Quantitative data were analysed using summary statistics. Free text was analysed thematically taking both an inductive and deductive approach. Free text was extracted from the main database and analysed in relation to each question with the aim of corroborating or expanding the closed questions. Text was then analysed thematically within subsections of the questionnaire to generate broader themes and identify any new concepts that emerged and had not been included in the closed questions. The research team initially read and discussed the free text from a sample of questionnaires and developed a coding framework for both the questions specific and the broader subsection analysis. A qualitative researcher then used the frameworks to code the rest of the free text and the team periodically reviewed the process. Responses which exemplified the key themes were selected as illustrative examples for inclusion in the results section of this report.

Ethical approval for this study was obtained from a local NHS Research Ethics Committee (REC), NHS REC reference 15/NW/0597, 17.07.15.

RESULTS

Responses from children and their parents

The median age of children with chronic illness was 13 years (IQR 10.5–15 years) and the median number of medicines required at school was 1.5 (1–2). The median age of children about whom parents answered questionnaires was 9.5 years (IQR 6–13 years) and the median number of medicines required at school was 2 (1–7.5). Of the 15 children who completed a questionnaire, 13 also had a questionnaire completed by their parent. Ten parents of children prescribed intermittent medicines were recruited, their mean age was 7.5 years (IQR 6.5–8.0), 50% were male.

Nine out of 15 children with chronic illness were happy or very happy with how their medicines were dealt with at school. Eleven out of 23 parents of children with chronic illness were satisfied or very satisfied. However, other parents reported specific problems (table 2). Some parents reported missed doses (table 2) and described how their child's dependence on school staff to manage

Table 2 All respondents—problems with medicines*

Problem	Children with chronic illness (n=15)	Parents/carers of children with chronic illness (n=23)	Head teachers (n=40)	School nurses (n=11)	Healthcare professionals (n=59)
Child couldn't get a dose when they needed it	3	5	2	2	24
Child missed a dose	5	5	19	2	17
Child given wrong dose			0	1	6
Child given wrong medicine			1		2
Medicine was lost			0	0	3
Medicine supply ran out	5	4	25	3	9
Medicine was not stored correctly			3	1	10
Side effects stopped child joining in			0	0	5
School not made aware of changes and carried on with old medicine/dose			6		
Other	1	2	1		10

*The survey for parents/carers of children receiving intermittent treatment did not include these questions.

their medicines was sometimes restrictive. Other parents reported that their child self-medicated at school (box 1) or that they had to go into school themselves and administer each dose.

Box 1 Comments from respondents

Parents

'No doses should be missed' (MSP6)
'My daughter feels the school makes too much fuss and she gets singled out having to go to an office while her friends eat lunch' (MSP23)
'My daughter was allowed to self-administer as required it would be easier for her' (MSP25)
'My child takes care of her own medicines' (MSP18)
'The medicine is available but he tends to forget' (MSP19)
'*I am kept informed about when more medicine is needed. I know where the medicine is kept'* (MSP21)
'His school always follow my instructions regarding his medication including, storage, when to give it to him and the best way to administer it' (MSP8)

Healthcare professionals

'Child has to go to the office for his tablet without prompts from teacher and due to the nature of disorder frequently forgets' (CP4)
'Access to inhalers should be relaxed to improve access […] not just 'call mum" (CONS2)
'Many patients are not allowed to have pain relief on a prn basis' (CONS13)
'*Try to avoid prescribing drugs that need to be given actually at school'* (CONS18)
'Amend medicines schedules to avoid school time administration even if that is not ideal' (P12)

Headteachers

'We work closely with parents' (HTP23)
'Myself and our school nurse….liaise with parents on a daily basis' (HTP20)

The majority of children 12/15 and parents 21/24 were aware of whom to contact at school about their medicines. Parents welcomed good communication about medicines between themselves and the school and one described how the school follows their instructions well (box 1).

Responses from HCPs

School nurses were responsible for primary schools with or without nurseries (n=2) and for schools exclusively for children with special needs (n=7), two respondents did not specify. Eleven school nurses had children in their school(s) taking regular medicines, 10 had children needing emergency medicines and nine had children taking intermittent treatment. Other HCP respondents were from a diversity of clinical specialties (figure 1).

Twenty-eight out of 70 HCPs were satisfied or very satisfied with how their patients' medicines were managed

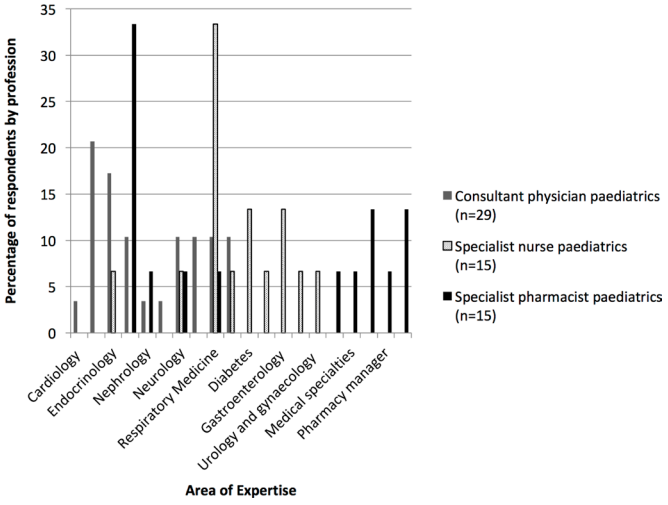

Figure 1 Healthcare professional respondents areas of expertise.

at school. Factors they thought improved medicines management included legislation, increased awareness, and the use of medicines that improved a child's symptoms in a way that was of benefit in the classroom (eg, medicines for attention deficit and hyperactivity disorder). HCPs reported variation in practice and experience between schools. Others reported poor cooperation from some schools. HCPs reported problems with a lack of support for children to engage with taking their medicine and with practical issues of access to medicines. Others reported children not having access to medicines on an 'as required' basis. Some HCPs reported adjusting prescriptions to accommodate or prevent difficulties at school (box 1). Some HCP respondents felt schools relied too heavily on policies and protocols resulting in a service that was inflexible. However, others felt that there were insufficient policies in place to ensure safe and effective medicine administration and others recognised the variation in practice as problematic. School nurses were asked about with whom they liaise to resolve problems with children's medicines at school. The most frequently selected answers were: parent, community paediatrician and hospital consultant. HCPs were asked with whom they liaise most often about children's medicines at school; parent, a named teacher and school nurse were the most frequently selected answers.

Responses from headteachers

Four out of 40 schools accepted verbal instructions from parents about medicines, 40 kept a written record of what needed to be administered and 39 kept a written record of what had been administered. Individuals designated to receive information about pupils' medicines included class teachers, teaching assistants, pastoral care managers and administrative staff. Head teachers most frequently received information about individual children's medicines from parents, school nurses and hospital nurses. People in a variety of roles in schools were responsible for administering medicines and storage arrangements for medicines varied between schools (table 3).

Thirty-five out of 40 of head teachers were aware of the DfE document 'Supporting pupils at school with medical conditions' but 13 reported some difficulties complying with the statutory guidance contained within it. Forty out of 40 schools reported that their staff had received training on specific medical conditions and on how to respond to emergency situations. Training on medicines management had been undertaken in fewer schools; 30 had training on safe storage, 32 had training on administration and 31 had training on record-keeping. About half of head teachers (19/40) reported that they had no concerns over the management of medicines in school and cited the presence of, and adherence to, policies and procedures as a means of measuring the safety and quality of medicines management. Twenty-one out of 40 head teachers thought there was some room for improvement in the overall management of medicines at their school and also cited policies and procedures as a means of making improvements.

One respondent had experienced problems communicating with healthcare practitioners while others were positive about communication with parents (box 1).

Table 3 Head teacher and parent respondents—medicine storage and administration

	Head teachers (n=40)	Parents/ carers of children with chronic illness (n=23)
Where are medicines stored?		
Child's classroom	0	6
First aid/nurse's room	8	7
School/teacher's/pastoral office	12	2
Children carry them	4	3
Who administers medicines?		
Child's teacher or teaching assistant	10	7
Named teacher or teaching assistant who is not the child's class teacher	23	3
School nurse	2	4
Children take their own	7	8
Parents	6	1
Administrative staff	12	3
Medication coordinator	2	0
Pastoral care manager/ mentors	2	0
Head teacher/senior leadership team	2	2

DISCUSSION

This study identified some specific problems which relate to medicines management in schools: there are inconsistencies in how information about medicines is communicated between the healthcare team, families and schools, and it is not always timely or effective; doses of medicine which are due during the school day are not always administered when they should be. Concerns about medicines management at school differed between stakeholder groups. Parents emphasised the need for staff at school to understand their child's condition and their medicines and expressed concerns about late or missed doses. Schools acknowledged their lack of expertise about medicines and their reliance on adherence to policy and procedure and compliance with training but they were reasonably confident about their medicines management processes. HCPs

expressed concern about missed doses and frustration about inconsistency between medicines management policies in schools.

This study also identified that the management of medicines varies between schools. This is perhaps unsurprising when we consider that the guidance on medicines management at school provided by the DfE is open to interpretation. This study has highlighted how variation in how the guidance is implemented has both negative and positive impacts for children and their families.

While the overall response rate for this study was high, it was lower for some stakeholder groups than for others. We postulate that stakeholders who had something to say (positive or negative) may have been more likely to complete the survey. This study only included stakeholders in one region; the findings may not reflect practice in other areas of the UK, although the patient and family stakeholder group is drawn from a large geographical area (circa 5 million).

In a previous UK survey study, fewer than 50% of schools in the area surveyed (London) had read the contemporaneous DfE document, 'Supporting pupils with medical needs: a good practice guide'.[2] In contrast, we found that the majority of head teachers were familiar with the current update to this DfE document. 98% of schools in our study kept a written record of medicines administered compared with only 76% in the findings published by Wong *et al*.[2] In the same study, support staff (eg, school administrators) had the main responsibility for managing medicines in most schools; our findings are in agreement with this. Although our study was carried out in a different part of the UK, our findings indicate that the management of medicines in schools in the UK has improved over the last decade. One reason why this may have changed over the last decade is that cuts in funding for school nurses[14] have meant that schools have taken on more responsibility for the management of children with medical conditions. Chakraborty and Hamer[3] undertook a survey of school medication administration policies in Sheffield, UK and determined, in accordance with our findings, that the majority of schools had a policy but that the content of those policies varied. Some reluctance to take on responsibility for the administration of medicines was highlighted in their study and this resonates with our findings. An interview study of young people with chronic illness identified one similar theme to our survey; young people reported barriers to access to medicines at school.[4] However, the same study also reported that the adverse effects of medicines had a significant impact on adherence and school performance, an issue not identified in our study. This difference may reflect the characteristics of the patient cohort in terms of the types of medicines they were taking, although this difference may also reflect study design. Our patient questionnaire permitted patients to select the response 'I had side effects at school which stopped me joining in with activities'; however, none of the respondents selected it. An in-depth interview can draw out more information from participants, it is known that patients use a variety of terms to describe side effects.[15]

Observation of medicines management practice in schools would complement these findings by characterising exactly what happens day-to-day in schools. Schools would benefit from additional support from other schools, children, their families and HCPs to implement DfE guidance. Further work should bring together stakeholders to share their perspectives, to identify what needs to be done better and what the mechanism(s) for this should be.

CONCLUSION

Medicines management at school derived from varied interpretation of policy and guidance does not always meet the needs of children and their families. Specifically, families reported that communication about medicines is suboptimal and doses of medicine are sometimes missed.

Contributors All authors planned the study, were involved in study design and critically revised the manuscript. JRB, JA, LB and MP devised the questionnaires. LB, JRB and RP collected the data. All authors participated in the analysis and interpretation of the data. JRB, JA, LB and MP drafted the manuscript.

Competing interests None declared.

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