The KidzMed project: teaching children to swallow tablet medication

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ABSTRACT

Tablets are safer, more convenient and cheaper than liquid medications. Children and young people (CYP) often remain on liquids due to habit, reluctance to change or staff and parents' lack of knowledge about switching to tablets. We describe a quality improvement project to train staff and embed a system of converting eligible children to tablet medication. A series of tests of change were made including training, making kit available, publicity and developing team protocols. In 3 months, 21 out of 25 eligible CYP were successfully converted with added benefit of saving £46 588 per year. Switching children to tablets is simple but requires whole team engagement, culture change of expectations and available resources.

THE PROBLEM

Tablet medications are safer, more convenient and considerably cheaper than liquid. Our family and staff feedback highlighted families' frustrations with liquid medicines. They often have short expiry dates, need refrigeration, are difficult to obtain from local pharmacies, can cause dental decay and many are unpalatable.[1] In addition many are unlicensed and costly[2] (eg, nitrofurantoin cost £9 tablets vs £447 liquid per month[3]). Liquid medications can vary in concentration, making accurate dosing more difficult and introducing a safety concern. Dose errors are common, particularly in families with low health literacy and limited English proficiency.[4]

In 1987, HIV medication was only available in tablet form[5] so paediatric infectious disease (PID) clinicians had no choice but to teach children from 4 years how to swallow tablets.[6–8] Yet nurses and parents of children with chronic kidney disease, when we surveyed them, suggested that patients should be at least 10 years old before attempting tablet conversion. The renal team paired up with PID team to share knowledge and set up a system to convert children to tablets.

AIMS

Working with families and our teams, we created an interactive training package with online supplementary video (http://northernpaediatrics.com/kidzmed/) and comic poster (figure 1). We ran interactive hour-long training sessions for staff. Using positive reinforcement and play, the trainer sat facing the child with sweets or dummy filled capsules of increasing sizes, from size 3 (15 mm) to size 00 (23 mm) (figure 2). The tablets were placed in the centre of the tongue, with the head in a neutral position and the learner swallowed by drinking or sucking from a sports bottle or straw.

Over the next 12 weeks our aim was to embed a process for children ≥5 years attending complex renal clinics to be converted from liquid to tablet medication unless contraindicated (eg, swallowing or cognitive impairment). Outcome measures included successful conversion rate, patient and staff feedback and cost savings. Savings were compiled from our pharmacy computer system comparing cost of each children and young people (CYP) remaining on liquid medication compared with tablets for 1 year.

MAKING THE CHANGE

We overcame practical barriers by placing easily accessible 'switching kits' in clinic filled with the necessary sweets, pre-packaged dummy pills, awards and certificates. To increase confidence, we created a sealed dosette box with common medications so children could see the size of tablets they needed to swallow. Working with pharmacists, prescribers and clinic nurse, we standardised processes (eg, how to round doses to the nearest tablet or half tablet, pre-screening clinic lists to select eligible children and writing prompts in clinic letters) and collected data on who was switched (see online supplemental driver diagram).

OUR IMPROVEMENTS

Over 3 months, 90 CYP were seen in 13 multidisciplinary renal clinics and 25 CYP on liquid medication without contraindications were suitable for conversion to tablet medication (figure 3). Twenty-one CYP (median age 8.4 years, range 5.1 to 15.5) were successfully converted (only one patient required two sessions). Two adolescents were able to swallow small tablets but have not yet reached the required tablet size, and the remaining two have yet to be trained. Thirty-six medicines were switched, generating £46 588 per year recurrent savings.

Feedback was good. Staff liked the opportunity for positive interaction with children and families appreciated the ease of obtaining tablet medications versus liquids. We subsequently trained other teams, including our research team who were recruiting for a study in which swallowing tablets is an inclusion criteria (https://vision-dmd.info/2b-trial-information/). The study team had our resources translated into 10 different languages including Chinese and Hindi.

Figure 1 Comic poster teaching children to swallow tablets. This work is licensed under a Creative Commons Attribution 4.0 International License.

LEARNING AND NEXT STEPS

In a short time frame it is possible to embed a system to convert children to tablet medication, improve the families' experience of obtaining medication and realise considerable cost savings. It requires staff training and cultural change. Pill swallowing is an easy skill to teach and learn, and children as young as 5 can successfully swallow pills. Parents were more likely to change if we discussed potential benefits first.

We automatically teach inhaler technique so equally we should teach CYP how to swallow tablets as a life skill. We would encourage all units to set up pill swallowing training, and for all medical and nursing schools to equip their graduates with this key paediatric skill as it is simple, rewarding and cost saving.

Figure 2 Dummy gelatine capsules in order of size compared with typical sweets (vegan non-gelatine capsules are also available).

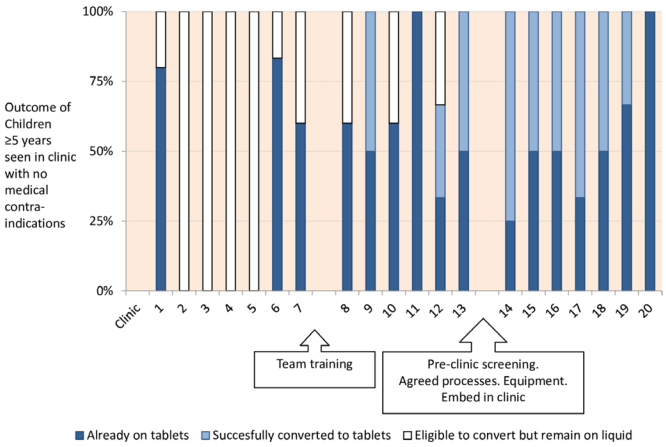

Figure 3 Run chart illustrating patients eligible and successfully switched to tablets.

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Contributors YT and NV obtained funding for KidzMed project to support multimedia material, consumables and SO. YT supervised DD who is a Newcastle University medical student on Student Selected Component module. EL and AP have been teaching pill swallowing for many years and taught >100 clinicians to teach children to swallow tablets. DD helped with much of the practical QI work in clinic. DD and SO performed family interviews and collected data. All authors contributed to setting up, spreading and embedding this project and subsequently approved this article.

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