

Developing a tool for ward-based hypoglycaemia education

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Article points

1. The diabetes team at Queen Elizabeth Hospital Birmingham has developed a table-top flip chart to assist with education on hypoglycaemia management for ward nurses.
2. The chart is designed to be participatory and engaging so that learners are more likely to retain and apply the knowledge.
3. It is also designed to deliver information via different modalities, to account for different learning styles.

Key words

- Education
- Hypoglycaemia
- Inpatient care

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The diabetes team at Queen Elizabeth Hospital Birmingham have developed an educational resource to address a lack of knowledge about hypoglycaemia in ward-based staff that has previously been identified. The resource, which takes the form of a two-way flip chart, is designed to make use of opportunistic teaching in the busy clinical environment and can be delivered in any convenient space over a short time frame. It is designed as a visual tool to supplement informal educational sessions which are participatory rather than transmissive, which makes it easier for participants to retain and apply what they have learnt.

Queen Elizabeth Hospital Birmingham (QEHB) is the largest single-site hospital in England, with 1213 inpatient beds, of which 20% are occupied by people with diabetes (Health and Social Care Information Centre [HSCIC], 2014). QEHB's diabetes team is increasing provision of ward-based education to complement its classroom sessions, as part of a service evaluation of the way diabetes education is delivered. One of the issues being addressed is hypoglycaemia management and, as part of this process, a novel resource has been created, in the form of a table-top flip chart for teaching staff within an inpatient setting.

Rationale for focus on hypoglycaemia

The prevalence of hypoglycaemia among inpatients is well documented, with the National Diabetes Inpatient Audit identifying 9.3% of inpatients as having had one or more severe hypoglycaemic episode and 20.0% as having had one or more mild hypoglycaemic episode (HSCIC, 2014). On average, people with type 1 diabetes experience around two episodes of mild hypoglycaemia per week (Joint British Diabetes

Societies [JBDS], 2013). According to the JBDS, hypoglycaemia is the commonest side effect of insulin and sulfonylureas in the treatment of all types of diabetes and presents a major barrier to satisfactory long-term glycaemic control. The adverse effects of hypoglycaemia include extended hospital stay, cardiovascular events, coma, seizures, cognitive dysfunction and death (Frier et al, 2011; Nirantharakumar et al, 2012; Rajendran and Rayman, 2014; Ghosal and Sinha, 2015).

Unfortunately, hypoglycaemia is not always treated effectively in hospitals, despite the availability of guidelines and protocols (JBDS, 2013). Nationally, there remains a consistent lack of compliance with these guidelines among clinical staff (Chan and Zang, 2007; Young, 2011; HSCIC, 2014).

The issue is not only application of policy but also a lack of knowledge about hypoglycaemia among both registered and unregistered nurses. The most common areas of knowledge deficit include the need to treat blood glucose levels of <4 mmol/L promptly, to treat hypoglycaemia with appropriate carbohydrates and to re-check blood glucose levels after 10–15 minutes (Chan and

Zang, 2007; Chinnasamy et al, 2011; Modic et al, 2014). These specific areas have been confirmed by the QEHB DSNs, who regularly identify multiple cases of mismanaged hypoglycaemia. When an incident associated with hypoglycaemia management is identified, it is formally reported for follow-up by the DSN team and action plans are implemented at both individual and ward levels.

As part of a Trust-wide initiative to improve the care of people with diabetes, the role of diabetes staff educator was created in 2015. An essential component of the role is to develop educational resources within the wider Trust educational strategy. Part of that strategy is embedding ward-based diabetes learning, to supplement classroom education. According to Williams (2010), resources for work-based learning need to be participatory, portable, reusable, cost-effective and quick to deliver (15–20 minutes). In addition, current pedagogical discourse around continuing professional development supports the idea that nurses learn better within their clinical context, rather than in an external (classroom) setting (Williams, 2010; Bjørk et al, 2013; Govranos and Newton, 2014).

For these reasons, a table-top flip chart capturing the essentials of hypoglycaemia care was chosen as a learning resource. The use of flip charts is well established in diabetes education, albeit mostly for patient education (Centers for Disease Control and Prevention, 2008; Joslin Diabetes Center, 2017).

Work-based learning can be challenging within the busy and unpredictable clinical environment. Success will depend on working closely with ward managers to negotiate protected time for these sessions, but also on making use of opportunistic teaching. Williams (2010) argues that a learning culture, supported by skilled facilitation and critical reflection, needs to be encouraged on the wards.

The flip chart

In practice, the flip chart is used with small groups or individual nurses on their wards. For groups, the sessions take place around the nurses' station or any convenient space. For individuals, the sessions can be wherever they are working on the ward. The training tends to occur on an *ad hoc* basis

but is sometimes planned, particularly following a clinical incident on a ward.

The flip chart is a visual prompt in a session that should feel conversational and informal. The chart stands on a flat surface (*Figure 1*) and has a learner's view and a trainer's view, with questions and answers on different pages. The trainer's pages include further information supporting the presentation, as well as prompts, whilst the learner's pages include questions, activities and answer pages. The answers to questions are only revealed by the trainer after the learners have made their contribution. One of the questions, for example, is "What causes a hypo?". Learners are not simply told the answer but are given an opportunity to reflect on their personal experiences of what has caused hypoglycaemia in their patients.

The resource also contains examples of anonymised blood glucose monitoring charts showing instances of hypoglycaemia, and drug charts which are used to discuss the need to review medication following a hypo. When the answers are revealed, it is an opportunity to expand on other factors the learners may not have considered, such as considering a reduction in insulin dose. This makes the tool *participatory* rather than *transmissive*, and the benefit of this is

Page points

1. Current theories state that work-based learning needs to be participatory, portable, reusable, cost-effective and quick to deliver, and evidence suggests that nurses learn better within their clinical context, rather than in the classroom.
2. With this in mind, the diabetes team at Queen Elizabeth Hospital Birmingham have developed an interactive flip chart to aid education of ward-based staff on hypoglycaemia management.
3. The chart contains information, questions and activities for learners, which makes it participatory rather than transmissive, and thus more likely to be retained.

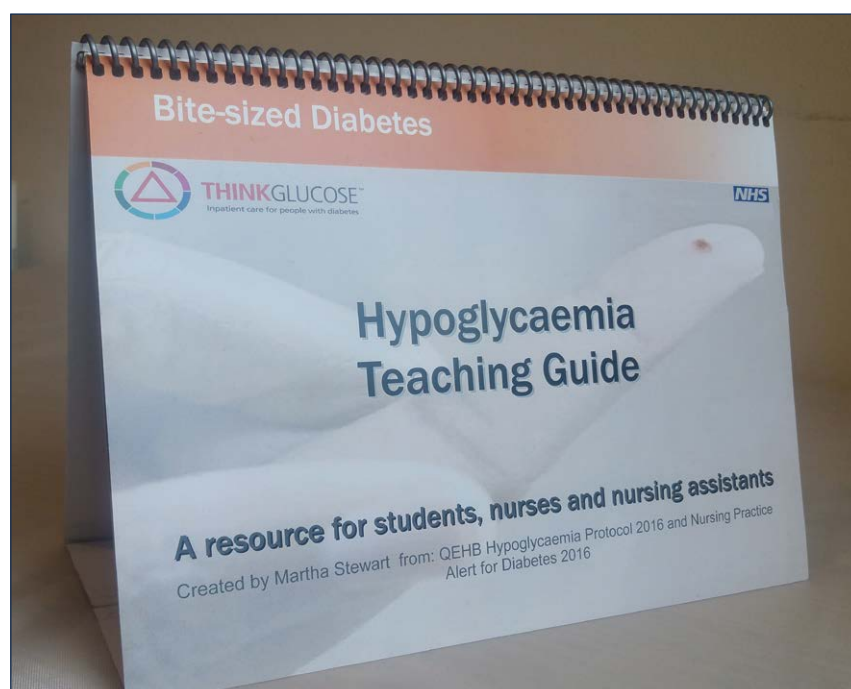


Figure 1. The hypoglycaemia flip chart.

Page points

1. The flip chart learning resource can be adapted to suit different staff levels. It also features real examples designed to improve the way learners retain and apply the information.
2. The chart is designed to be appropriate for all learning styles, including visual, aural, read/write and kinaesthetic.
3. Alternative delivery methods, such as leaflets and posters, were also considered but were deemed to be less effective.

that learners are more likely to retain information (Kennedy, 2005). The participatory element is also in line with the Nursing and Midwifery Council’s (2016) revalidation requirements for continuing professional development.

The flip chart is adaptable to all staff levels. For example, one of the activities is to place cards under the headings of either autonomic or neuroglycopenic symptoms (Figure 2). For some staff, the terms initial onset and late onset are used instead. Depending on the level of the learners, the trainer may expand on the pathophysiology associated with those symptoms.

The section on hypoglycaemia treatment depicts correct and incorrect treatments for the learner to choose from. It also features anonymised, real examples of correct and incorrect treatments given by staff in the hospital. In the author’s opinion, using these real examples can positively affect the way learners retain and apply this information; if they see that a real person made certain decisions, they can critique those actions and learn from them.

Rationale for the flip chart

A benefit of the flip chart is that it offers learning through multiple methods to maximise its effectiveness. In considering this, the VARK (Visual, Aural, Read/write, and Kinaesthetic) tool was used. This is a well-recognised educational tool which identifies different people’s learning

styles (Fleming and Mills, 1992). Individuals with the visual style learn mostly through “sight” and benefit from visual displays, such as pictures, graphs and diagrams. Auditory learners benefit most from hearing, discussing and questioning an explanation. Those who are read/write learners prefer to read information and take notes. Kinaesthetic learners prefer experiential learning and practical application. Honey and Mumford (1986) offer similar terms for preferred learning styles, namely activist, theorist, pragmatist and reflector styles.

The flip chart incorporates a combination of all four VARK learning styles by using activities, question and answer sessions, games and quizzes. It also includes anonymised real-life scenarios, which stimulate the experiential component of learning. Wink (2014) asserts that such active methods of education are more effective than passive methods such as lecturing.

Knowles’ (1990) adult learning theory of andragogy was also used when developing this learning tool. He argued that adult learners are motivated to learn and improve practice. The greater their participation in their own learning, the more they retain and apply what they have learnt. This resource helps engage nurses to identify the issues surrounding hypoglycaemia mismanagement and provide them with the tools to apply that knowledge in practice. An improvement in their knowledge and skills will hopefully reveal itself in improved inpatient care. Adopting this constructivist model of learning, Kala et al (2010) contend that students are more likely to retain knowledge attained by engaging in real-world and contextualised problem-solving than by traditional transmission methods.

Before the flip chart was developed, alternative options for the training resource were considered, including a leaflet and a poster. Although leaflets are relatively easy to produce and are small enough to be placed in the learner’s pocket for future reference, they were deemed to be a good supplement to the flip chart rather than a standalone resource. There are already a number of patient information leaflets on hypoglycaemia, which staff have access to, but these do not seem to have had the desired impact of improving knowledge and treatment of hypoglycaemia,



Figure 2. An interactive page of the flip chart. Learners are asked to match the appropriate cards to the two types of hypoglycaemia symptom.

as evidenced by the numerous incidents being reported. Posters were also considered, as they have the advantage of being highly visible, but, in my opinion, they take away the interaction between the trainer and the learner. Ultimately, the choice was based on the opinion that neither leaflet nor poster met the requirements of an engaging, interactive ward-based education resource.

Other interventions and evaluation

The teaching aid is one of several resources being devised by the diabetes team to improve diabetes care and education. The main intervention is a ward-based model of education that involves an established 3-monthly audit system called “diabetes back to the floor”, in which DSNs audit various aspects of diabetes care and staff knowledge at the ward level. In addition to identifying areas for improvement, praise is given to ward staff who follow diabetes protocols and demonstrate ingenuity. The action plan for staff education will include ward-based education using resources such as the flip chart.

The flip chart will supplement the other interventions that are in place, and its effectiveness will be measured by monitoring the number of clinical incidents involving hypoglycaemia management, as well as hypoglycaemia data from the “back to the floor” audits. Data from the annual National Diabetes Inpatient Audit should also show if there have been improvements in hypoglycaemia management. The diabetes team will also rely on staff feedback to assess the training’s effectiveness and to make any appropriate changes to it.

Summary

In summary, the diabetes team at QEHB have developed a model of ward-based diabetes education which incorporates resources such as this table-top flip chart in order to address issues in treating hypoglycaemia within the inpatient wards. This educational tool is mobile and flexible in use and can thus be used for staff with differing levels of knowledge and clinical backgrounds. It draws on current thinking that nurses learn better within their clinical context and that adult learners who engage in their own learning are more likely to retain and apply what they have learnt. ■

The hypoglycaemia teaching guide

The author has made the hypoglycaemia education flip chart available to readers who wish to use or adapt it.

Interested readers can email the author at:

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