Insulin Dose Adjustment: An Online Education Program for Parents of Children With Diabetes

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Introduction
Achieving the blood glucose (BG) goals recommended for children with diabetes requires intensive methods of management and education. When used appropriately, insulin dose adjustment is a powerful self-care skill for effective diabetes management. Timely and appropriate insulin dose adjustment can improve BG levels and quality of life. Parents of children with diabetes require specific knowledge and problem-solving skills as well as confidence, to do this competently. Flexible, accessible, interactive educational resources are needed to help parents learn insulin dose adjustment.

Program description
British Columbia’s Children’s Hospital (BCCH) Diabetes Program has developed an innovative series of online insulin dose adjustment education modules for parents. The goal of the online program is to increase parents’ knowledge, confidence and problem-solving skills, so they can competently adjust insulin doses for their children. The online electronic-learning format uses principles of adult learning to support interactive, self-paced education and practical problem solving.

The program incorporates several features to foster learning:
• concepts and problems progress from simple to complex;
• learning activities are interactive and self-paced;
• real-life examples are used in practical, problem-solving activities;
• modules can be accessed any time, as needed by the learner;
• modular content allows learners to focus on specific topics and review them as needed; and
• hyperlinks are included throughout the program to link learners to other relevant education materials at the BCCH diabetes program website (e.g. handouts on hypoglycemia, sick day management).

The program’s 4 learning modules (Table 1) address key topics for insulin dose adjustment relevant to children who are on 2 or 3 daily injections of insulins.

Plans are underway for the BCCH diabetes team to develop subsequent modules to address advanced and more specialized areas of insulin dose adjustment, including basal-bolus intensive therapy.

Program development and evaluation
A formative (process) evaluation was completed during the development of the first four modules. This involved 2 focus groups with parents and administration of a pre- and post-program questionnaire to assess program strengths, areas for improvement, learner satisfaction with the program, and potential changes in learner knowledge and confidence for insulin dose adjustment.

Knowledge alone does not result in effective diabetes management. Diabetes education must also promote self-efficacy and problem-solving skills.

Information was gathered during the assessment to determine parents’ perceptions of case of use of the program and relevance of all examples and problem-solving scenarios.

Qualitative and quantitative data obtained from the formative evaluation were summarized and used to make changes to the final copy of the education program. The program is now available online at http://endodiab.bcchildrens.ca. (Click on the Endocrinology & Diabetes Unit resource section “For Families”.)

What’s next?
Systematic evaluation is needed to assess its effectiveness in achieving specific outcomes, including changes in knowledge, self-efficacy for insulin dose adjustment, problem solving, and changes in control. These outcomes are known to be essential for competency in insulin dose adjustment. Research has shown that knowledge alone does not result in effective diabetes management and therefore, diabetes education must also promote the development of self-efficacy and problem-solving skills for effective decision-making and diabetes self-care behaviors.

As our evaluation of the online learning modules has been very positive, we plan to continue to develop other modules.