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BIOMEDICAL AND HEALTH INFORMATICS

J-BHI Special Issue on "Biomedical and Health Informatics for Diabetes"

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It is estimated that 371 million people in the world have diabetes and the number is increasing at an alarming rate. In addition to short-term symptoms, there are long-term complications including cardiovascular disease, especially heart attacks and strokes, kidney failure, diabetic foot disease leading to gangrene and amputation, and blindness. Evidence suggests that the complications are reduced by good control of blood glucose. The associated financial costs are substantial and 80% of those affected live in low and middle countries.

The onset of Type-2 diabetes can be delayed or prevented in many instances by lifestyle modification – dietary measures and physical activity. The benefits of avoiding diabetes persist for many years. Effective behavioural modification strategies involving personal contact methods are expensive and ways of reproducing the benefits using new mobile devices are needed. Better methods of glucose monitoring and drug delivery are essential.

Type-1 diabetes cannot at present be prevented. It requires systemic treatment with insulin, usually given by intermittent injections. As with Type-2 diabetes, avoidance of complications requires effective control of blood glucose and research continues into continuous monitoring and improved insulin delivery. Types of diabetes other than Type-1 or Type-2 may be difficult to differentiate clinically at presentation and even subsequently. Of especial importance is MODY (Maturity Onset Diabetes in the Young) which is caused by single gene mutations and often treated inappropriately (such as unnecessary insulin injections). Methods of rapid accurate assignment of diabetes type are required.

The topics of this special issue include, but are not limited to:

- Improved methods of glucose monitoring continuously with extensive validation results
- Fully functional, reliable, portable closed loop systems for intelligent insulin delivery in Type-1 diabetes
- Optimised delivery of insulin and other systemically ministered drugs to people with Type-2 diabetes
- Bioinformatics and system level modelling (with validation) for diabetes
- Smart wearable and implantable devices for continuous monitoring and intervention
- Rapid assignment of diabetes types at or shortly following diagnosis
- Mobile and wearable devices to assist people in lifestyle change e.g. physical activity monitoring and behaviour profiling
- Technology-assisted delivery of education and motivation to people at risk of developing Type-2 diabetes before disease onset
- Technological innovations for supplementing care for people with established Type-2 diabetes.

Priorities will be given to papers reporting original work supported by long-term analysis, carefully designed studies, large cohort validation, and supplemented by on-line data or resources that can be shared by the research community.

Submission of manuscripts

Submitted articles must not have been previously published or currently submitted for journal publication elsewhere. As an author, you are responsible for understanding and adhering to our submission guidelines (http://jbhi.embs.org/for-authors/). When submitting, **authors are requested to choose "Biomedical and Health Informatics for Diabetes" in the manuscript type to indicate that the paper is intended for this special issue.** The managing editor for coordinating this special issue is **Dr Benny Lo**.

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