

## New guidelines for the use of insulin infusion pumps in South Africa: a welcome document which is well overdue

Continuous subcutaneous insulin infusion (CSII) therapy using insulin infusion pumps has been used for over 20 years.<sup>1,2</sup> The early mechanical insulin pumps of the last century were fraught with problems which included mechanical breakdowns, blocked cannulas and an increased incidence of ketoacidosis. These challenges resulted in large-scale abandonment of the use of CSII in this country in the 1990s. Technological improvements in pump functionality, dissemination of accumulated knowledge and the desire to achieve blood glucose values as close to the normal range as possible, have led to a significant increase in insulin pump use throughout the world. In addition, an understanding of the role played by carbohydrate counting in correctly managing appropriate insulin dosing, and an improvement in the accuracy and convenience of self-administered, home glucose monitoring meters, has allowed for more meaningful home testing of blood glucose, an absolute necessity if CSII is to be successful. An increasing body of evidence supports the ability of insulin pump therapy to improve glycaemic control, while reducing hypoglycaemic episodes when used in appropriately selected patients.<sup>3-7</sup>

Insulin pump therapy (CSII) can no longer be ignored as a therapeutic option in patients. The use thereof has expanded significantly since its reintroduction into South Africa in 2001. If CSII is to be a viable alternative for appropriate patients, a balance needs to be attained between CSII use and the ability of the healthcare network to support the additional costs. CSII is an expensive alternative to multiple daily injections and will raise the cost of diabetes management significantly.<sup>8</sup> Its use is limited to wealthy patients or those on medical schemes which agree to reimburse the cost of the pump therapy. Thus, the benefits of CSII should be measurable and demonstrable. Creation of an environment in which these benefits can be realised will ensure the viability and sustainability of this form of therapy in the diabetes care armamentarium.

With the progressive sophistication of insulin pumps and the introduction of continuous glucose monitoring devices, either independent of or linked to the pumps themselves, the need for highly trained individuals to supervise and counsel patients on CSII is becoming increasingly obvious. While the companies who provide insulin pumps to the marketplace have trained individuals who are skilled in the technical aspects of pump therapy, the decision as to who is suitable for CSII therapy, the initiation of CSII and the

follow-up is the domain of the clinical team managing that patient. Wrong patient selection, unrealistic expectations, inadequate patient training and failure of regular follow-up are the major reasons for CSII's failure.

For these reasons, CSII should only be initiated and managed by a centre which has the required expertise and trained staff, as outlined and specified in the pump guidelines. Therefore, prospective insulin pump patients should be referred to a local pump centre for evaluation, initiation and ongoing management of insulin pump therapy should CSII therapy be deemed to be appropriate.

Bearing in mind the amount of cooperation and commitment that is required by any patient commencing CSII, patients should be asked to enter into a contract with the pump centre for pre-pump appraisal, education and ongoing management. Explicit in this contract should be the indications for insulin pump therapy in that particular patient, pre-determined follow-up with the insulin pump team and definition of their individual treatment targets. Criteria for continuation and discontinuation of pump therapy should be agreed upon prior to starting CSII therapy.

Because of the expense of this form of therapy, CSII is largely only available in the private sector, and as a result, endocrine fellows in training do not have the opportunity to become adept at pump therapy. This needs to be addressed by providing these fellows with access, either through spending time at a local pump centre or through the establishment of pump units in training hospitals. In this way, graduating endocrinologists would automatically qualify to initiate pumps.

Finally, it should be stressed that, as with all guidelines, the recommendations that are presented in this document are not meant to replace the judgement and discretion of physicians treating individual patients, but rather to formulate guidelines to facilitate their work.

### Conclusion

The advent of newer designer basal analogue insulins, ultra-rapid acting insulin analogues, pen devices and 4-mm needles will continue to erode the absolute haemoglobin A<sub>1c</sub> benefits that CSII therapy currently holds over multiple daily injections therapy. For this reason, quality of life and personal choice may become the primary indications for choosing CSII therapy over multiple daily injections

therapy. Appropriate patient selection, a high degree of diabetes education and attainment, and maintenance of optimal outcomes will be required to sustain the global increase in CSII therapy.

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