Using Insulin Pumps in Diabetes
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A Guide for Nurses and Other Health Professionals

Jill Rodgers

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For people living with Type 1 diabetes, the days of fixed insulin doses, twice-daily mixtures and once-a-week blood glucose monitoring should be confined to the dustbin of history. As with many aspects of life, technology continues to advance to help people deal with the nuances of living with a long-term condition.

Over recent years, insulin pump therapy in the United Kingdom has undergone something of a renaissance. Part of the reason for this has involved advances in technology, patient selection and the availability of analogue insulins. Nevertheless, the most important driver for expanding access to this form of therapy has been the enthusiasm and determination of a small group of experienced diabetes specialist nurses. Jill Rodgers has been and continues to be a very prominent member of this group. As in many areas of clinical care, the evidence on which to make decisions about diabetes-related treatment changes needs to be expanded: practical, clinically based experience is vital in order to advise people with diabetes properly.

Throughout the recent expansion of pump therapy, the available literature has been mostly based on US experiences and uses the language of that country, which does not always easily travel across the Atlantic. Although adequate up to a point, there remain significant transatlantic differences in approaches to diabetes education and training. Using Insulin Pumps in Diabetes: A Guide for Nurses and Other Health Professionals is a most welcome addition to the literature on insulin pump therapy. Importantly, it is based on many years of experience of dealing with the roller coaster of establishing a pump service and should be compulsory reading for anyone interested in moving into this area. For those already involved, there is always more to learn.

However, it is people with diabetes who will ultimately benefit the most from this book as the access to well-run, innovative and technologically efficient specialist diabetes services should improve exponentially and be available to everyone and anyone with Type 1 diabetes.

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Preface

Continuous subcutaneous insulin infusion, or CSII, therapy is commonly referred to as ‘insulin pump therapy’ or simply ‘pump therapy’, and these are the terms that will be used throughout this book.

Insulin pump therapy is now used more widely across the United Kingdom. This is partly due to the accurate and sophisticated technology that modern insulin pumps offer and partly to health professionals becoming more confident in using this type of therapy successfully. Diabetes specialist nurses, dietitians and specialist medical staff play a predominant role in helping people to manage their diabetes using insulin pumps, and this book will provide help to any health professionals working with people with diabetes who are using, or hoping to use, an insulin pump. It provides information that will take the reader step by step through both simple and also more intricate situations that they might come across.

As the author of this book, I am hoping to convey two messages, which might appear to conflict. The first is that insulin pumps can be the key to freedom to those using them: they can find they no longer have to regulate their mealtimes, eat when they are not hungry or live in fear of hypoglycaemic episodes occurring without warning. People can do anything they want to when they use an insulin pump, as there is to some extent a certain amount of simplicity about the whole process – they can increase or decrease their insulin doses to more tightly match their body’s insulin needs – so that they can better manage their diabetes in any situation.

The second message is that people can only gain this freedom by learning more about their diabetes: about the general effects of changes to their insulin doses and, through experimentation, about what specific changes work best for them as individuals. So using an insulin pump is not an easy ride; rather, it requires commitment, determination and sheer hard work if an individual is to get the most out of it, and many pump users find the first few weeks or months of using an insulin pump daunting. It also requires willingness on the part of health professionals to develop support systems to help people manage their diabetes using insulin pumps.
My personal view is that an insulin pump should be seen as an essential part of the ‘diabetes toolkit’. It is not something that is required or wanted by all, but something that should be used in specific circumstances, with clarity about what is to be gained by using the therapy. Both the health professional and the person with diabetes need to be clear about why a pump might be a suitable option, what the drawbacks are, what commitment is required and also what circumstances might dictate that pump therapy has not worked for that individual.

This book comprehensively covers: the rationale for pump use, how to set up a service to support insulin pump use, how to make decisions about whether a pump is suitable for someone, how to manage insulin doses, food intake and blood glucose levels and how to deal with both everyday situations and those requiring more complex management. Much of its content comes from practical experience: through my own professional experience of working with insulin pumps, through liaison with experienced specialist pump teams across the United Kingdom and also, very importantly, from the comments and feedback of pump users themselves.

In many areas of pump management, there is a paucity of evidence, and also opinions vary between specialist teams regarding how to manage different situations. This book will not dictate exactly what to do in every situation, simply because there are often a number of choices of actions to take. Instead, this book offers a range of options to choose from to manage pump therapy, and as they gain expertise pump users and health professionals will also develop alternative ways of dealing with specific situations, in addition to those discussed in this book.

Jill Rodgers
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All the people I have named here are but a few of the many who have offered help, support and advice along the way, and whose experiences have helped make this book what it is. Thank you.
Chapter 1

An Introduction to Insulin Pump Therapy

This chapter will provide information on what insulin pump therapy is, and how insulin pumps have developed from the early models introduced in the 1970s to the sophisticated models in use today. National guidance on the use of insulin pumps in the United Kingdom will be discussed, as will alternative devices that are either being researched or are in limited use. It is likely that technological advances will result in many new devices being developed over the next decade. More detailed information on all aspects of insulin pump therapy can be found in the relevant sections throughout this book.

WHAT IS INSULIN PUMP THERAPY?

Insulin pump therapy, also known as ‘continuous subcutaneous insulin infusion’ (or CSII) therapy, is a method of giving insulin subcutaneously without the need for injections. In brief, a small needle or catheter is introduced and left in place under the skin, and the insulin pump is attached to this via a length of tubing. The needle or catheter needs to be replaced every two to three days for most people. The pump is worn 24 hours a day (although can be removed for short periods) and delivers fast-acting insulin continuously, in very small amounts, known as the ‘basal rate’. The amount of insulin being delivered is programmed by the individual pump user according to their needs. Additional insulin doses, known as ‘boluses’, are given by the pump user – for example when they are eating or if their blood glucose level is too high – by pressing buttons on the pump in sequence.