Editorial Note

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Standard insulin treatment of type 1 diabetes is sometimes described as "open loop". This means that insulin doses are decided upon by patients and/or healthcare workers depending on self-monitoring of blood glucose levels. It is not a very satisfactory system – hence the quest for "closed-loop" systems, either pancreas transplantation (segmental or islet cell) or the "artificial pancreas". The latter is an external or implantable device which infuses insulin in response to continued measurement of tissue glucose levels, the doses being decided by computerised algorithms. Such devices have been intermittently tested for some time, and have been becoming smaller and more sophisticated. This recent Lancet study reports a trial of a "bihormonal" system (i.e. delivering both insulin and glucagon), compared with standard open-loop insulin treatment. The trial was short-term (two 11 week periods) but there was improvement in glycaemic control and reduction in hypoglycaemia in the automated delivery group. This confirms previous studies, and suggests that larger trials (at least 6 months) are now needed. An accompanying Lancet editorial comments that the focus should now move to "commercialisation and real-world application". In fact, an automated insulin-only delivery system (Medtronic Minimed 670G) was approved for use in the USA in 2016. We will certainly be hearing more of this fascinating technology.

As DKA is treated successfully, BOH is oxidised to acetoacetate, so blood ketone levels will accurately reflect DKA resolution, but urine tests will remain positive despite clinical and metabolic improvements. Other advantages of blood ketone meters are that they give a quantitative result, and do not rely on a urine sample, which can sometimes be difficult to obtain. The downside, however, as may be expected is that blood testing is relatively expensive..