

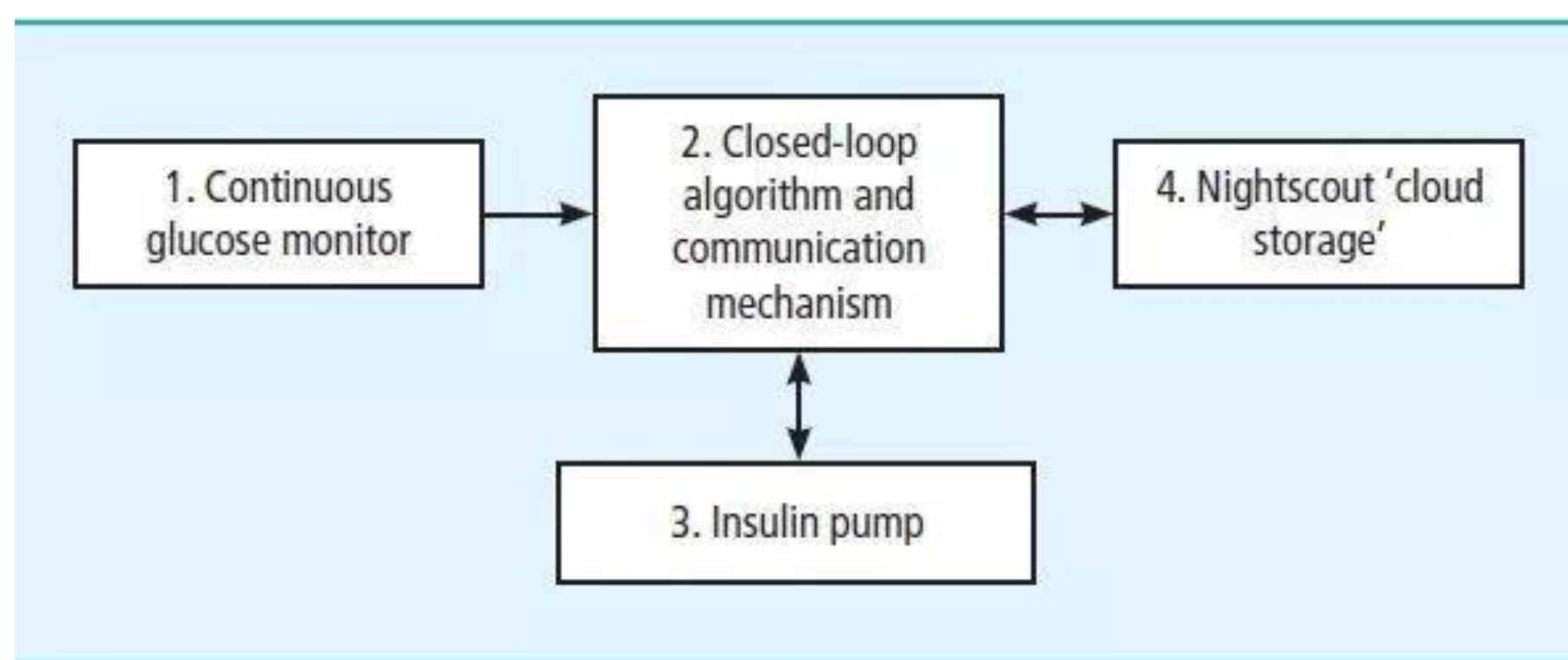
# Diabetes Healthcare Professional perspectives on do-it-yourself artificial pancreas systems: Results of the Diabetes Technology Network UK national survey 2019

TSJ Crabtree<sup>1,3</sup>; A Lumb<sup>4</sup>; P Hammond<sup>5</sup>; P Choudhary<sup>6</sup>; REJ Ryder<sup>3</sup>; A McLay<sup>7</sup>; EG Wilmot<sup>1,2</sup>

1. University Hospitals of Derby and Burton NHS Trust; 2. University of Nottingham, 3. Sandwell and West Birmingham Hospitals NHS Trust; 4. Oxford Centre for Diabetes, Endocrinology and Metabolism, Oxford University Hospitals NHS Trust, 5. Harrogate District Hospitals, Harrogate and District NHS Trust, 6. Leicester Diabetes Centre, University Hospitals of Leicester NHS Trust 7. DIY APS Community

## Introduction

The care of individuals with diabetes mellitus is ever advancing as new technologies emerge and become more readily available to a wider population. One in five people living with type one diabetes now use insulin pump therapy and with the development of a greater range of pumps, increased access to interstitial glucose monitoring and the influence of social media the use of 'do-it-yourself artificial pancreas systems' (DIY APS) is on the rise. A cohort of tech savvy people living with diabetes have used a combination of a CGM device, an insulin pump, a communication device and an algorithm to create 'home-made' closed loop systems (1).



Components of a DIY artificial pancreas system<sup>1</sup>.

The use of these DIY APS systems is unregulated and unapproved, and there is currently limited evidence on health care professional opinions of these systems and their approach to their use in clinical practice.

Please note: a short communication with results of this work has been published in *The Lancet – Diabetes & Endocrinology*<sup>2</sup>

## Methods

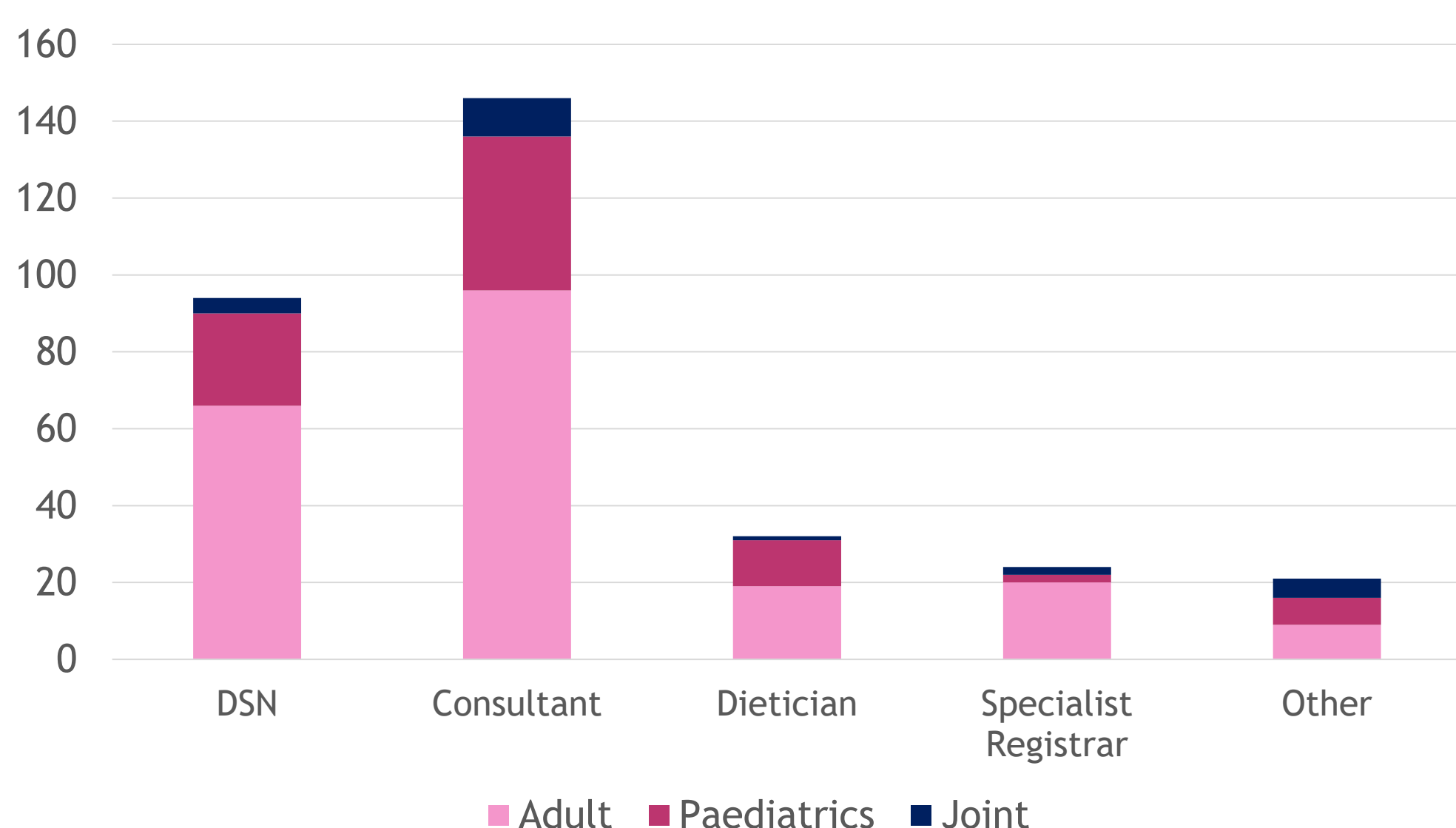
A survey was developed by members of the Diabetes Technology Network UK (DTN-UK) committee in SurveyMonkey and disseminated widely to members of DTN-UK and the Association of Children's Diabetes Clinicians (ACDC), targeting members of the pump multidisciplinary team (MDT). Results were received between February and May 2019. Analyses were performed using simple descriptive statistics in Microsoft Excel.

## Results

317 responses were received from a variety of healthcare professionals, all part of the diabetes MDT. The make-up of the respondents is displayed in **Figure 1**.

The results demonstrated that the vast majority of HCPs would not initiate conversations regarding DIY APS. This was mostly due to it being "not-regulated/approved" (212/317, 67%) and "limited knowledge around the system" (200/217, 63%). Fewer, only 101/317 (32%) were concerned about implications on professional indemnity.

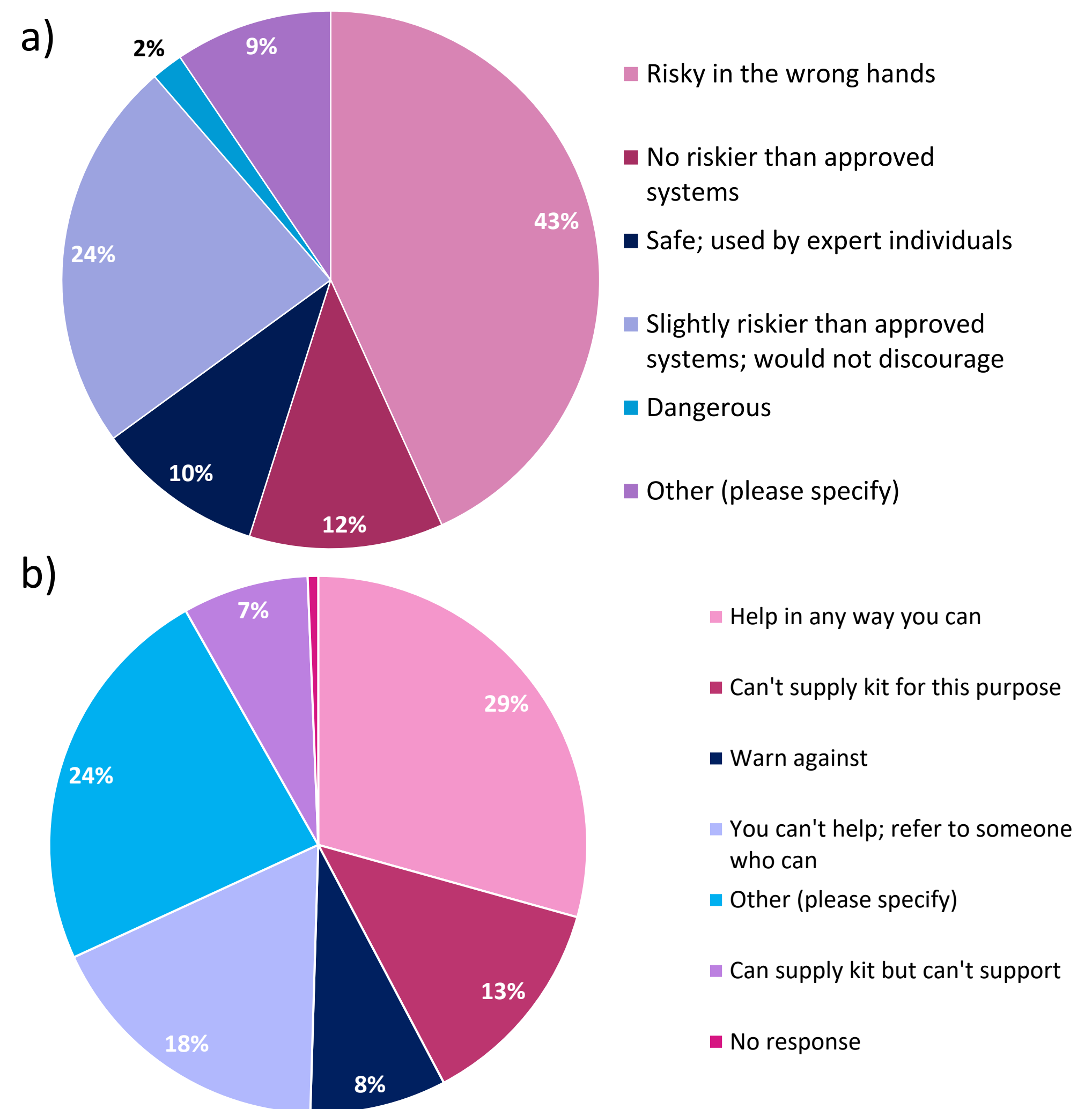
Figure 1. Bar chart showing the number of respondents from each group, further divided by adult, paediatric or joint practice



## Results (continued).

HCPs were aware of the potential risks of the system although only 7/317 (2%) perceived the systems as dangerous. Full results for HCP perception of risk are displayed in **Figure 2a**.

Figure 2. Pie charts showing HCP responses to enquiring about a) their perceptions of the risks associated with DIY APS, b) their practices in terms of continuing to support users of these systems



**Figure 2b.** Demonstrates that, despite their reservations, the overwhelming most HCPs are willing to help in anyway they can, and very few (only 41/317, 13%) would suspend consumables.

The majority (187/317, 59%) did not feel comfortable providing clinical support and troubleshooting, with many citing their own lack of knowledge around the systems as being a barrier to this.

There was a near universal belief (308/317, 97%) that diabetes HCPs should learn more about the systems in order to better support users. When asked if they would use these systems if they had type 1 diabetes themselves, 47% (149/317) responded yes.

## Conclusions

Even with the introduction of commercial closed-loop systems on the horizon, it is unlikely that DIY APS will disappear anytime soon. It is clear that HCPs are cognoscente of the risks of its use and may not be comfortable with advising about these systems. However, the majority are keen to support in anyway they can and almost all respondents wish to learn more.

We hope to repeat this survey to see how opinion is evolving in the next 12 months.

We are currently running the ABCD DIY APS audit to capture data on the use of these systems in the real world. Participation in this is Diabetes UK endorsed as best practice for all healthcare professionals looking after DIY APS users. To participate and find out more please go to [abcd.care/DIYAPS](http://abcd.care/DIYAPS)

1) Crabtree, T.S., McLay, A. and Wilmot, E.G. (2019), DIY artificial pancreas systems: here to stay?. *Pract Diab*, 36: 63-68. doi:10.1002/pdi.2216

2) Health-care professional opinions of DIY artificial pancreas systems in the UK, Crabtree, Thomas S J et al. *The Lancet Diabetes & Endocrinology*, Volume 8, Issue 3, 186 - 187