

What factors support people to incorporate an insulin pump into their everyday lives?

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Background:

- Continuous subcutaneous insulin infusion (CSII) is a technological advancement that can help people manage diabetes better; both in terms of the benefit to the patient (quality of life (QoL), biomedical outcomes), and the resulting impact on health service resources.
- However, we are **at risk of widening the health inequality gap if CSII is limited** to those of higher socio-demographic status, or motivated patients who demonstrate good self-care behaviours.
- It is likely that there are **complex issues to consider** when an insulin pump is introduced into a patient's life.
- Understanding the factors which enable people to incorporate CSII could provide an exemplar for patients with diabetes to incorporate new technologies;** providing much needed flexibility and choice in how people manage their condition.

Method:

A systematic search of seven databases (AMED; CINAHL; EMBASE; MEDLINE; PsycINFO; Cochrane database; Web of Science) was conducted to identify studies reporting patient/health care professional (HCP) or significant others lived experiences of CSII. A critical interpretative synthesis was used to identify domains that are key to successful incorporation of CSII.

Table 1: Eligibility criteria for literature identified in the search

Inclusion	Studies examining some form of psychosocial aspect of living with CSII
	Peer-reviewed original research or review
	Studies published from 2008
	Research using qualitative or mixed methods, as well as literature reviews, review papers, reports, conference papers.
	Papers examining routine use of the pump
Exclusion	Studies published before 2008
	Studies published after search (September 2016)
	Abstracts that do not have a full-text article available
	Papers not written in English
	Papers with a purely bio-medical or quantitative focus

References:

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- Wilson V (2008) Barriers to effective communication between patients using insulin pump technology to enable intensive diabetes self-management and the health professionals providing their diabetes care. *Journal of Assistive Technologies* 2(4): 26-33

Results:

A total of 4,998 titles were identified. 274 abstracts, and 39 full papers were viewed. Finally, 20 papers were included. Two themes were identified;

The need for a receptive, flexible body

- Initially, work is required to physically and psychologically integrate the pump. It is a **complex, and foreign object, worn 24/7, never detached.**
- Being **reliant on technology** left a feeling of **vulnerability.**
- Pump visibility;** the pump was often seen as **bulky and inconvenient** (tubes).

- A phenomenon of a **heightened awareness** of one's body.

- Yet; CSII gives more of a sense of **choice, control and flexibility.**

- Pump users report on this **powerful bodily experience and impact** on their **identity**, while HCPs and parents do not. HCPs refer to QoL in a much more abstract way than pump users.

Responsibility and motivation towards engagement with CSII

- In early phases of adoption people were not passively waiting, they were pushing for a new means of insulin delivery. Some HCPs were supportive of this, others not. **HCPs = gatekeepers to access.**

- Responsibility, motivation, and active engagement** is required.

- There is consensus between pump users/parents/HCPs re: level of expectation of the pump; **the pump is a tool, not a panacea.**

Conclusions:

Our findings suggest that there are many benefits, but also complex issues to consider when CSII is introduced. There is a **potential encumbrance on self-care** when balancing the **burdens** of a **technologically-advanced, intensified, regimen** against its benefits. There is, as a result, **an initial liminality upon introduction to the pump, and a heightened bodily awareness.**

This review has uncovered a range of factors which impact on the extent to which people are able to incorporate CSII into their everyday lives. Such factors include the **interaction with HCPs as gatekeepers** to new technologies, and the **wider social support network.** The **establishment of effective collaborative relationships** and the means in which to **navigate support and resources** seem essential for people in incorporating new and advanced technologies in health.

Table 2: Content of studies

Author(s), year, country	Type of evidence*	Study design**	Perspective	Sample***	Age group****
Wilson (2008), UK	Mix	Descrip, Tel-ints	Patient	N=25, Age: 18-80, Sex: 12M	Adult
Everett et al (2010), UK	Qual	Descrip, FGs	Patient	N=17	Adult
Todres et al (2010), UK	Qual	Descrip, F2F ints	Patient	N=4, Sex: 2M	Adult
Hayes et al (2011), UK	Qual	Descrip, F2F ints	Patient	N=5	Adult
Olinder et al (2011a), Sweden	Qual	Descrip, F2F ints	Patient	N=12, Age: 12-19, Sex: 5M, 7F	Adoles
Olinder et al (2011b), Sweden	Qual	Descrip, F2F ints	Patient, parent, HCP	N=12, Age: 12-19, Sex: 5M, 7F + N=4 parents + 1 DSN	Adoles
Alsaleh et al (2012), (USA, UK, Sweden)	Rev	Sys lit search	Patient, parent	Various	Child/Adoles
Alsaleh et al (2013), UK	Qual	Experi, F2F ints	Patient & parent	N=35, Age: 5-17 + N=38 parents	Child/YA
Garmo et al (2013), Sweden	Qual	Descrip, F2F ints	Patient	N=16, Age: 5-9.5, Sex: 6M, 10F	Child
Tullman (2013), USA	Qual	Descrip, F2F ints	Patient	N=12, Age: 12-28, Sex: 12F	Adoles/YA
Alsaleh et al (2014), UK	Mix	Descrip, F2F ints	Patient & parent	N=34, Age: 5-17, Sex: 24M, 14F**** + N=38 parents	Child/Adoles
Barard et al (2014), UK	Mix	Experi, F2F ints	Patient & parent	N=15, Age: 12-18 + Sex: 9M, 6F + N=13 parents	Adoles
Forsner et al (2014), Sweden	Qual	Descrip, Longit, F2F ints	Parent	N=6 parents	Child
Saarinne et al (2014), Sweden	Qual	Descrip, FGs	Patient	N=11, Age: 25-74, Sex: 6M, 5F	Adult
Barnard et al (2015), UK	Mix	Experi, F2F ints	Patient	N=24, Age: Mean 43(12), Sex: 13M, 11F	Adult
Hood and Duke (2015), USA	Qual	Experi, F2F ints	Patient	N=9, Age: 19-24, Sex: 3M, 6F	Adult
O'Kane et al (2015), UK/Canada/USA	Qual	Descrip, F2F ints, DS, GMU	Patient	N=41, Age:23-65, Sex: 10M, 31F	Adult
Ferrari et al (2016), Australia	Qual	Descrip, Longit, F2F ints	Patient	N=17, Age: 7-15, Sex: 7M, 10F	Child/Adoles
Lawton et al (2016), UK	Qual	Descrip, F2F ints	HCP	N=18, DSN:12 Diet:6, Pract: 5-29	N/A
Shulman et al (2016), Canada	Qual	Descrip, F2F ints	HCP	N=16, Sex: 8M, 8F, Phys:16, Pract: 2.5-45	N/A

* Mix = Mixed methods, Qual = Qualitative, Rev = Review ** Descrip = Descriptive, Experi = Experimental, Sys lit = Systematic literature review, Longit = Longitudinal, Tel-ints = Telephone interviews, F2F Ints = Face-to-face interviews, FGs = Focus groups, DS = Diary Study, GMU = Group meet-up ****M = Male, F = Female, Paed DSN: Paediatric Diabetes Specialist Nurse, Diet = Dietician, Phys: 16, Pract = Diabetes practice in years **** Adoles = Adolescent, YA = Young adult *****numbers do not add up