

# Patch Pumps: What are the Advantages for People with Diabetes?

## Abstract

Patch pumps, i.e. insulin pumps without tubing, are an attractive alternative to conventional insulin pumps for people with type-1 diabetes and type-2 diabetes on insulin therapy. In this review, potential patient-relevant advantages and disadvantages of patch pumps are summarized and respective studies on patient-reported outcomes (PROs) are assessed.

**Keywords:** Patch pump • Tubeless insulin pump • Patient-reported outcomes • Quality of life • Diabetes-related distress • Treatment satisfaction • Patient preference

## Introduction

While typical hypoglycemic agent pumps are offered to patients since the 1970s, patch pumps (PPs) have solely been a therapeutic choice for the last fifteen years. It is initiated by the daddy of a boy with kind one polygenic disorder (T1D), the event of a tubeless, easy-to-use hypoglycemic agent pump junction rectifier to the creation of the Omnipod system (Insulet Corporation Acton, MA, USA), that was launched in 2005 because the 1st commercially offered patch pump within the USA[1-2]. The initial focus in PP development was totally on reducing a vital supply of error associated barrier to hypoglycemic agent pump medical aid (CSII) for folks with T1D: rather than connecting the pump to the body via an hypoglycemic agent infusion set and tube, tubeless PPs contain the hypoglycemic agent reservoir and therefore the infusion tubing inside the device and cling on to the skin. Usually, hypoglycemic agent delivery in a very PP is controlled and programmed with a distant hand-held device; but, some devices enable a minimum of some practicality via the PP itself similarly. Current developments attempt to expand the employment of PPs to folks with kind a pair of polygenic disorder (T2D). Although solely a couple of PPs area unit offered on the market these days, varied corporations have declared the event of recent PPs or revealed positive results from the clinical development part. It is, therefore, to be expected that extra PPs for insulin therapy for folks with polygenic disorder (PwD) can emerge within the coming years.

## Description

This review is predicated on a literature search of the PubMed information victimization. This review is predicated on a scientific literature search of the PubMed information victimization. Articles in English were enclosed if revealed before Gregorian calendar month thirty, 2021; no alternative criteria for publication dates were set [3-4]. In addition, references of relevant articles and Google Scholar were checked for additional references. The literature search didn't embrace studies on patch pumps that weren't applied to polygenic disorder and articles that didn't collect quantitative knowledge on execs. The systematic literature search and choice of relevant articles was performed by 2 freelance researchers, the simple replacement of PPs is another advantage of those devices, however, as a result of the insertion web site is roofed by the PP, it can't be often inspected. As a consequence, changes

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like inflammation at the insertion web site may not be like a shot recognized.

Ecological concerns and therefore the generation of appreciable amounts of waste play associate more and more necessary role in PwD's alternative of devices. As a result, disposable PPs area unit more and more being as important, leading most makers to differentiate between useful and disposable parts. Additionally to the packaging, waste is generated from the individual parts, is especially high for sterile product. The recyclability of the individual parts is additionally necessary [5]. Incontestable that the environmental burden of infusion sets with typical hypoglycemic agent pumps is far less than the load evoked by PPs just like the Omnipod. From associate ecological, similarly as from associate economic purpose of read, it's additionally important if hypoglycemic agent remaining within the cartridge should be disposed of with the PP attributable to the shorter time of use of the entire pods. The Accu-Chek Solo micropump (Roche polygenic disorder Care; city, Germany) consists of a 90-day reusable pump, a disposable 200-unit hypoglycemic agent reservoir, a disposable pump holder as well as the tubing, and a distant management. Also, the A6 TouchCare System PP (A6) (Medtrum Technologies, Shanghai, China) contains a reusable pump base and a disposable hypoglycemic agent reservoir as well as the tubing, additionally to a distant management. the event of the PP Panda (SFC Fluidics Fayetteville, USA.) was supported by the 2017 "Open-Protocol machine-controlled hypoglycemic agent Delivery Systems Initiative" of the ketosis-prone diabetes analysis Foundation (JDRF) that aimed to ascertain associate "open-protocol" AID scheme. The Sigi PP works with without delay offered prefilled hypoglycemic agent cartridges and is controlled directly from a private smartphone. The target cluster is folks with T1D and/or T2D or each. consequently, the main target of the event of PPs is either on the simplicity of the devices with a awfully simple operation or of PPs while not tube with the multiple choices of recent hypoglycemic agent pumps for individual hypoglycemic agent dosing (e.g., variable basal rates, bolus choices, bolus calculator). Generally, the various PPs are often divided into 3 classes consistent with restricted practicality and simple use, extra options of the PP, and

therefore the ability with alternative devices, particularly concerning the chance of being a part of systems for machine-controlled hypoglycemic agent delivery (AID). These variations also are significantly necessary for the interpretation of clinical studies of PPs with relevance patient preferences, satisfaction with the PP, and alternative patient-reported outcomes (PROs). PPs are getting more and more popular PwD and a spread of recent models are often expected to return to the market within the close to future, addressing a large vary of patient desires. The choice of PPs is very addicted to the goal of medical aid, starting from a straightforward replacement of MDI medical aid to use in AID systems. above all, for youngsters with T1D, the little size, low weight, reduced risk of interrupted hypoglycemic agent delivery thanks to no tube, simple use, and, above all, the decrease of the chance of issues thanks to the IIS, that could be a supply of concern particularly in kids, area unit important. Youth significantly appreciate the little size of the PP and therefore the ability to wear it discreetly on completely different components of the body. for people with T2D, simple PPs, e.g., with mounted hard and basal rate or customary fixed boluses, will scale back the hassle of medical aid and doubtless minimize the diabetes-related burden. Alternative specific indications for PP are often folks with high hypoglycemic agent desires or hypoglycemic agent resistance. However, hypoglycemic agent delivery by relations or caregivers with a PP may additionally be conceivable within the aged. The comfort of sporting PPs, the absence of IIS, and therefore the ability with alternative devices area unit additional arguments in favour of their use in AID systems

## Acknowledgement

None

## Conflict of Interest

No conflict of interest

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