A POCKETSIZED SMART PHONE ACCESSORY MEDICAL AUTO-INJECTOR

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Technology description

Auto-injector Incorporated into a Portable Electronic Device Case

Background and Summary

Every year, individuals die of allergic reactions because no EpiPen® or comparable product is immediately available. Folks simply do not always carry these devices in their purses, backpacks, pockets, etc., and so they may not be available when absolutely needed. Today nearly everyone carries a cell phone. An epinephrine delivery device that attached as an aftermarket case to a cell phone would save many lives by providing immediate access to epinephrine in the case of an allergic reaction.

The Jefferson team has engaged a professional medical device engineering firm and developed a functional prototype. We intend to continue making refinements to the design and operability, and we are seeking suitable partners as we aim to bring this product to market. Given the approval of a generic epinephrine auto-injector earlier this year, and considering the unique value proposition, there exists a tremendous opportunity for the envisioned product, both in the market segment alongside the EpiPen® and beyond.

Detailed Description

Personal auto-injection devices are employed to inject epinephrine during emergency treatment of severe allergic reactions (anaphylaxis). Such devices are generally available by prescription to be carried by individuals having sufficiently severe allergic reactions. The present invention entails incorporating the injection device within a case for a portable electronic device, such as a cell phone. The claimed hypodermic injection device shown below comprises: an enclosure having an internal cavity and including a safety cover; a lockable and removable cartridge within the cavity containing a reservoir for fluid medicament; a cannula, sheath covering, and safety catch release-arm; and a spring-loaded plunger. The device includes a durable barrier providing a sheath over an injectable cannula to maintain sterility of an injectable cannula that delivers medicament. The device also includes tamper-proof features such as by requiring that development of the device only be possible after completing two mechanical manipulations so as to prevent accidental discharge.

The device enclosure has an internal cavity and can include a safety cover preventing access to a button while the safety cover is in a closed position. The cartridge is situated within the cavity and configured to be slidably displaced within the cavity. The reservoir houses at least one dose of a fluid medicament.

The spring-loaded plunger is configured to urge the fluid medicament through the inner channel of the cannula responsive to release of a safety catch preventing actuation of the spring-loaded plunger. The resilient sheath covers the first end of the cannula so as to maintian the cannula in a sterile condition. The release arm is situated to release the safety catch responsive to the resilient sheath being urged toward the cannula. The cartridge is configured to be urged from a first position, where the cannula is situated entirely within the internal cavity of the enclosure a second position, where the first end of the cannula extends from the internal cavity to an exterior of the enclosure. The cartridge is urged to the second position in response to the depression of the button covered by the safety cover. By incorporating the injection device within a case for a portable electronic device, the injection device is readily available to those who rely on auto-injectors to provide emergency therapeutic treatment, and is much less likely to be forgotten or left behind by a user than a typical auto-injector.

Application area

• Epinephrine injection for emergency treatment of severe allergic reactions (including anaphylaxis) to insect bites or stings, medicines, foods (most notably peanut), unknown substances, or exercise
• Other emergency medical situations such as delivery of adrenaline (epinephrine) for sudden cardiac arrest and naloxone for opioid overdose

Advantages

• Readily available to those that rely on auto-injectors to provide emergency therapeutic treatment, and is much less likely to be forgotten or left behind by a user than a typical auto-injector

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