Pack Pal Design Specifications

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Device Function

The Pack Pal is system that will use a smart cigarette in combination with an Android Smartphone application to help people with severe mental illness(SMI) quit smoking. The case will house a sensor to detect when the case is accessed or closed as well as the current number of cigarettes in the case. The date obtained from these sensors will then be communicated via Bluetooth (v4.0) to the Smartphone as serial characters that are coded for the state of the case, open/closed, and the amount of cigarettes it contains. The phone reads in this data and each time the user accesses the case, the phone application will ask the user a series of questions about their desire to smoke, the environmental or emotional cue that prompted the urge, and to rate the salience of the urge. Overtime, the user will gain knowledge about their own use and will then be able to use skills (acquired via the application) to cope with not having a cigarette. The application will assist in the user in choosing not to smoke by deploying

counter measures when the case is accessed such as other activities like the option to play a video game, listen to music, or do any other activity that the participant has indicated helps them avoid smoking, or to remind them of the reasons that they want to quit (display a picture of their child, pet, or loved one). In addition, the case will send daily updates to the subject and/or to any clinicina or provider the subject specifies.

Client Requirements

- The case should be difficult to break and hold at least 20 cigarettes (should be modeled after the cases in current use).

- The case should have an onboard rechargeable battery.

- The system should interact (can be through application) with the user to help track behaviors, beliefs, and urges around smoking and support coping skills.

- The application should prompt the participant to engage in coping skills to delay and reduce smoking.

- The device and the application should be easy to use, with a simple opening/closing mechanism, uncluttered interface on the application, simple text, minimal layers of navigation, minimal requirements for abstract thinking and memory.

- Five working prototypes must be completed in Spring 2013.

Design Requirements

Performance requirements:

The device is required to be augmented for daily and frequent use. Severely mentally ill patients may attempt to access it in different time delays that vary from few minutes or sometimes few seconds in the case of severe addiction to few hours in less severe cases.

Safety:

The cigarette case should be developed for mentally ill patients so it should be totally safe and free of warnings because we cannot rely on the patient to take precautions.

Accuracy and Reliability:

The case should record and send reliable data about the access times the opening of the case and the number of cigarettes taken because this information can lead to faulty interpretations if it lacks accuracy.

Life in Service:

This case should serve the patient for the whole period of the treatment and remain useful after the treatment is done for future uses. It should work in different countries and operate 24/7 but the battery needs to be recharged every 8 hours.

Shelf Life:

The battery that is included in the case should be a rechargeable battery for efficiency and ease of use and also because it is more environmentally friendly.

Operating Environment:

The cigarette case must adapt to different working environments. It can be exposed to different temperatures and different humidity ranges. It can also be exposed to dust, vibrations and accidental hits. We have to make sure that the accuracy of the data is not affected by those factors.

Production Characteristics

Quantity:

We should have five devices for the research purpose.

Target product Cost:

The cost of this cigarette case will be higher than the cost of a normal cigarette case but has to be within the limits of the clients grant limitations.

Miscellaneous

Patient-related concerns:

The patients we are dealing with are mentally ill patients so extra considerations should be taken into account regarding the system so it is tailored to the needs of the users. The collected data should be confidential

and provided only to a specified mentor, clinician and a system

administrator.