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Chapter 2: Digital Pills

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Abstract: Digital Pills (DP) are an innovative drug-device technology that permits to combine traditional medications with a monitoring system to record data about medication adherence as well as patients' physiological data without human intervention. The Digital Medicine System (DMS), a drug–device combination developed for patients with serious mental illness, together combines adherence measurement with pharmacologic action by placing an ingestible sensor in a pill, allowing for information sharing among patients, Health Care Providers (HCPs), and caregivers via a mobile interface. Non-adherence to medication compromises the helpfulness of psychiatric treatments in patients with Serious Mental Illness (SMI). The combination of wearable technology with a "Digital Ingestion Tracking Program" (DITP) embedded within a pain pill may allow patients, caregivers as well as healthcare providers to track ingestion of pills through the web or a Smartphone app. Digital adherence technology could be promising patient-centered strategies for monitoring adherence. In November 2017, the Food and Drug Administration (FDA) approved a version of a second-generation antipsychotic, aripiprazole; embedded with a sensor (Abilify MyCite).

Keywords: Digital Pills, Digital Medicine System, Food and Drug Administration (FDA), Digital Medicine System

2.1 Introduction

Digital pills represent a revolutionary fusion of digital health and biotechnology that has the potential to completely transform the field of contemporary medicine. These cutting-edge therapeutic gadgets mark a substantial advancement in patient monitoring and medication adherence by fusing cutting-edge technology with pharmaceutical administration. In addition to enabling accurate medicine delivery, each digital pill has an ingestible sensor that records and sends real-time information on patient compliance and the effectiveness of the pharmaceuticals being taken [1]. The development of digital pills began in the early 2000s, when the concept of combining technology and medicine started to take shape. The potential advantages that such integration could offer the healthcare system were acknowledged by developers and academics, especially in terms