

# The Blue Button Project: Engaging Patients in Healthcare by a Click of a Button

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## Abstract

The Blue Button project has become a way for many Americans to download their health records by just a click in any way that suits them, such as in print, on a thumb drive, or on their mobile devices and smartphones. Several organizations have developed and applied Blue Buttons on their websites to allow beneficiaries to securely access and view personal medical information and claims. The purpose of this literature review is to highlight the significance of the Blue Button project in the field of health information management. Findings suggest that the project could empower and engage consumers and patients in a healthcare system by allowing access to medical records, thereby promoting better management and overall improvement of their healthcare. To date, the project has gained wide support from insurers, technology companies, and health providers despite the challenges of standardization and interoperability.

**Keywords:** Blue Button Project, electronic health records (EHRs), medical records, HITECH Act, meaningful use, Office of the National Coordinator for Health Information Technology (ONC), Department of Defense (DoD), Blue Button+ (BB+), Blue Button Connector

## Introduction

Blue Button is an online portal for patients to download their own health information in a variety of formats, such as text and PDF.<sup>1</sup> The objective of this project is to empower and engage consumers and patients by allowing easy access to electronic health information and medical records to better manage and improve healthcare.<sup>2</sup> The White House defines Blue Button as a symbol that allows patients “to download their health information to their own home computer or portable memory device” and notes that the “VA is working with the Centers for Medicare & Medicaid Services and the Department of Defense to make Blue Button technology available to all government health plan beneficiaries.”<sup>3</sup> Lygeia Ricciardi, the director of the Office of Consumer eHealth for the Office of the National Coordinator for Health Information Technology (ONC) defined Blue Button on the simplest level as “a literal ‘button’ appearing on many websites that lets consumers get their health information online” and noted that “the VA’s definition of Blue Button specified a particular technical format which enabled patients to read, print, or store their health records in a straightforward but bare bones way.”<sup>4</sup> Other websites give similar definitions, such as “a tool to make patient medical records easily available for patients to download and share with members of their health care team.”<sup>5</sup> The Department of Veterans Affairs (VA) also allows veterans to download their self-entered information, for example insurance information or information from their medical record such as medications, allergies, or laboratory results.<sup>6</sup> Similarly, users of TriCare in the Department of Defense (DoD) can use Blue Button to download medical health records including medications, allergies, and test results.<sup>7</sup> Blue Button allows patients access to retrieve their health records, and it offers clinicians an easy way to provide their patients with necessary data.<sup>8</sup>

## Overview on the Development of Blue Button Project

The idea of Blue Button goes back to January 2010 during a workgroup meeting for Markle Consumer Engagement workgroup in New York City. Markle group had an exciting discussion of how to engage consumers in health system to meet the meaningful use of ARRA “The American Recovery and Reinvestment Act” issued on 2009. Dr. Carol Diamond, the managing director stated that “having that kind of information will certainly prompt patients to talk to their health care providers about issues that otherwise might not have noticed”.<sup>10</sup> The discussion of the members led to an idea, the idea of giving patients the ability to access their health data, that is the idea of “Blue Button”.<sup>9</sup>

This was followed by the launch of Blue Button at the Department of Veterans Affairs (VA) in 2010 based on the strong belief of the value that Blue Button would add to the veterans, the department has focused initially on the available data as a starting point.<sup>9-11</sup> In August, the first version of Blue Button was released to enable consumers to access their data records in My HealthVet. This has also inspired others to implement the idea of Blue Button such as HIT innovators and vendors.<sup>11</sup> The expansion of Blue Button was more noticed in 2011, when (ONC) launched the Consumer e-Health and Empowerment Pledge Community Program which includes more than 500 organizations committed to expand the Blue Button project and to further engage patients in health information technology.<sup>11</sup>

## Blue Button Expansion

The Blue Button Connector was launched by the Department of Health and Human Services at a conference in Orlando, Florida, in 2014. It is a website that helps patients and consumers reach their own health information electronically and helps developers to build tools to respond to market needs and readiness. Also, it provides several applications and tools for consumers who use structured EHRs.<sup>12</sup> The director of consumer e-health at ONC announced that “the Connector will help consumers to navigate within a fragmented industry and raises general awareness about the growing availability of electronic access to health data.”<sup>13</sup> About half of all Americans would be able to access their healthcare records online through healthcare providers, labs, pharmacies, immunization registries, and insurance companies.<sup>13</sup>

## Standardization and Interoperability

Blue Button+ is considered the evolution of the main Blue Button ecosystem, it is a guidance system followed by data providers and receivers to provide the later with the required health data.<sup>31</sup> this guidance was developed by about seventy organizations and individuals in compliance with the initiative of Standards and Interoperability framework.<sup>14</sup> This means giving the users the ability to get their medical records in a human/machine-readable format.<sup>14</sup>

HIT vendors and innovators should integrate healthcare into an application using the Blue Button+ either through Blue Button+ (BB+) Push (Direct Project secure e-mail) or Pull (REST and OAuth2-Software Architecture Styles).<sup>15</sup> When using the Direct Project (required for meaningful use stage 2) the health data would be transmitted securely from the data provider or holder to the third party (the consumer) after the patient’s identity is validated (see Figure 1).<sup>15</sup> The patient is authenticated by logging in using valid credentials; for live interaction, the validation of the identity can be obtained in writing or orally. The Direct Project uses S/MIME, SMTP, and X.509 certificates to provide privacy, security, authentication, and data integrity to meet the needs of health information exchange. The data providers are required to send the health information through a secure trust agent (STA) such as SMTP and S/MIME, which can be an internal component in the system or can be hosted externally by a health information services provider (HISP).<sup>16</sup>

The BB+ Push apps have several limitations, such as the complexity of the sign-up workflow requiring an always-on server, and the messages are sent to the patient with no on-demand data access. Therefore, the BB+ Pull apps have had to address these limitations. BB+ Pull shares the patient’s records with REST+ OAuth2 to protect patient data endpoints. The architecture of this app can be summarized as

consisting of three main components: personal patient apps that can be used via web access or mobile phone; data source providers, which can be hospitals or clinics; and finally the registries, which will allow the apps and the providers to discover one another.<sup>17</sup> Readers may refer to <http://bluebuttonplus.org/> for further description of the technical background of the Blue Button+ initiative.

In 2013, the students in both Harvard medical has utilized the idea of Blue Button+ in building a new application called “Growth-Tastic”, the idea behind this program is to enable parents to follow up their child progress including height, weight and body index mass.<sup>18</sup> The parents only need to provide the application with the child’s health data from the pediatrician’s office.<sup>18</sup> Nick Sinai, US deputy chief technology officer at the White House Office of Science and Technology Policy, and Adam Dole, a Presidential Innovation Fellow at the US Department of Health and Human Services, announced in 2014 that national pharmacy chains in the United States were planning to adopt Blue Button technology to help patients access their prescription information and further empower millions of Americans to better manage their healthcare. The pharmacies pledged to commence standardization of patient prescription data in 2015 to accommodate services using the Blue Button. These pharmacies would offer personal healthcare technology and medical history as well. Walgreens customers, for example, could view and download their prescription history through an online portal (Blue Button branded). In February 2014, five major pharmacy chains joined the Blue Button project, enabling customers to have access to their own prescription records, promoting personal control of their wellness and health data.<sup>19</sup> This expansion would fuel the tremendous growth of Blue Button technology and enable Americans to easily download their health and medical data.<sup>20</sup> To accelerate the movement of the Blue Button project and to empower the customers to better manage their health, ONC organized summits, such as the 2013 Consumer Health IT Summit: Accelerating the Blue Button Movement, and invited customers representing the interest of public and private sectors to lead the advancement in this field. These summits discuss the policies and the use of different applications to allow customers to search their health data in interactive sessions while addressing awareness and tackling implementation challenges.<sup>21</sup>

## **Moving Forward**

Health IT has empowered and engaged patients in healthcare systems. The development of health IT has moved rapidly “from a simple initiative to an active multistakeholder campaign and movement across diverse settings.”<sup>11</sup> Blue Button has become a way for many Americans to download their health records by just a click of a button. Dr. Carol Diamond, the manager of Markle’s healthcare program, stated, “We live in a networked world and no one thinks twice about going online to manage finances, or travel plans, or taxes. This is about building an expectation that health information should be equally accessible. . . . It’s also about reducing the amount of information that slips through the cracks in our health care system, such as when tests get repeated because a result isn’t available.”<sup>11</sup> As reported in the *Canadian Medical Association Journal*, “Highlighting these cracks may also lead to better self-management by patients, she says. ‘It’s going to become apparent their health information is scattered, not just across providers but across labs, pharmacies, hospitals and primary care providers, so they’ll seek out services and applications that will help organize their health information.”<sup>22</sup> Dr. Diamond provided the example of an average person who might not follow up on a test of cholesterol levels. Generating an automatic graph to show the patient how the levels had been trending would prompt him or her to communicate with a healthcare provider about issues he or she might not have noticed before.<sup>22</sup> this communication would therefore allow better management of medical conditions and better overall patient outcomes. Blue Button technology provides ease of access to data despite some concerns about safety and privacy protection issues. The project gained wide support from 46 insurers, technology companies, health providers, and consumer advocacy groups.<sup>22</sup> Dr. Diamond’s advice is to “enabl[e] people to download their information . . . The more this becomes available the more a demand for standardization and additional features will grow.”<sup>22</sup>

## **Conclusion**

In a recent study, Hogan et al. examined the VA’s increasing amounts of clinical information available to patients through Blue Button technology.<sup>23</sup> The study presented a framework for evaluating

the effects of the new technology on stakeholder experiences, processes of care, and health outcomes. The researchers concluded that this technology represented a significant advance for VA patients and the organization itself, and the proposed framework could serve as a roadmap for evaluation of Blue Button project.<sup>23</sup>

The implementation of the Blue Button project in the field of health information management has grown dramatically during recent years to become one of the best software application sources for healthcare providers and consumers to access and download their medical records. The movement in favor of the Blue Button project was accelerated in 2014 when five major pharmacies adapted this project to enable their consumers to download their prescriptions, as discussed previously. Taking control of wellness and healthcare has become much easier with the Blue Button project, and newly implemented applications allow customers to search their own data in exciting ways, thus allowing individuals unprecedented control and management of their own well-being. However, evidence to correlate improvement in healthcare delivery with new technologies, such as Blue Button, is not yet available. Further applications and extensive research in this area are necessary to develop a strong link between this technology and improved healthcare outcomes.

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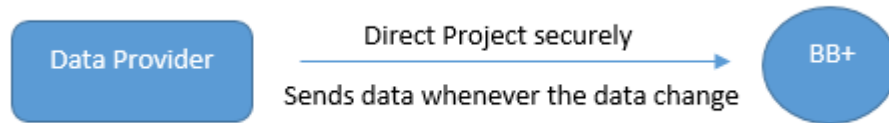
## Notes

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## **Figure 1**

### Workflow of BB+ Push Technology



*Source:* Blue Button+ Implementation Guide. “Transmitting Data Using the Direct Protocol.” February 4, 2013. Available at <http://bluebuttonplus.org/transmit-using-direct.html>.