SECURING THE PRE- AND POST-AWARD PROCESS FOR BOSTON CHILDREN'S HOSPITAL AND COLLABORATING INSTITUTIONS

by
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Abstract

In the world of research, where there are ever-changing policies and procedures, we must adapt technically as an institution by implementing well-established procedures to ensure security, version control, auditability and reduce the administrative burden for grant staff and key stakeholders. The role of research administrators is to assist in the application process and post-award management. The job relies on the effectiveness of the systems we use. It is paramount we have set procedures in place around federally accepted electronic signatures, documentation access, and a repository for collaborative review and templates. The institution will comply with federally accepted electronic signatures by implementing DocuSign and Adobe Acrobat Pro for digital sign-off. Using a centralized platform to share information by utilizing Dropbox will reduce unnecessary email communication and ensure the correct forms are used during the pre-and post-award process. Researching alternative platforms to adopt in the department will enhance the currently used methods. This project discusses the need to unify the steps to improve the overall process and reduce the administrative strain for all research administrators and key stakeholders.
Table of Contents

Abstract ........................................................................................................................................... ii
Glossary .......................................................................................................................................... v

Chapter 1. Introduction ................................................................................................................. 1
  1.1. Background. .................................................................................................................... 1
  1.2. Statement of the Problem. ............................................................................................. 1
  1.3. Project Question. ................................................................................................................. 2
  1.4. Project Objectives. .............................................................................................................. 2
  1.5. Significance. ......................................................................................................................... 3
  1.6. Exclusions and Limitations. ............................................................................................... 4

Chapter 2. Literature Review ....................................................................................................... 6
  2.1. Overview of the Literature Review ................................................................................... 6
  2.2. Details of Review ................................................................................................................. 6
  2.3. Applicability of the Literature Review .............................................................................. 7

Chapter 3. Need(s) Assessment ..................................................................................................... 8
  3.1. Need(s) Assessment ................................................................................................................. 8
    3.1.1 Assessment of Need. .......................................................................................................... 9
  3.2. Sources .................................................................................................................................... 10
  3.3. Committees. .......................................................................................................................... 11

Chapter 4. Project Description ................................................................................................... 12
  4.1. Project Elements ................................................................................................................... 12

Chapter 5. Methodology ............................................................................................................ 17
  5.1. Methodology Overview ......................................................................................................... 17
  5.2. Project Design and Discussion ............................................................................................. 17
  5.3. Discussion of Questionnaire. ................................................................................................ 19

Chapter 6. Project Results and Discussion ................................................................................ 20
  6.1. Project Results ....................................................................................................................... 20
  6.2. Project Results 2 .................................................................................................................... 20
  6.3. Project Results 3 .................................................................................................................... 21

Chapter 7. Recommendations and Discussion .......................................................................... 22
  7.1. Introduction ........................................................................................................................... 22
    7.2.1 Recommendation 1 .......................................................................................................... 23
    7.3.2 Recommendation 2 .......................................................................................................... 23
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter 8. Conclusion</td>
<td>24</td>
</tr>
<tr>
<td>Bibliography</td>
<td>26</td>
</tr>
<tr>
<td>Appendix 1:</td>
<td>30</td>
</tr>
<tr>
<td>Appendix 2:</td>
<td>32</td>
</tr>
<tr>
<td>Appendix 3: Short Bio</td>
<td>34</td>
</tr>
</tbody>
</table>
Glossary

Administrative Burden: “anything that is necessary to demonstrate compliance with a regulatory requirement, including the collecting, processing, reporting, and retaining of information and the financial and economic costs of doing so.”¹

Authorized Official: “an authorized official means an employee of an institution responsible for carrying out any duty or function or exercising any power in terms of this By-Law and includes an employee delegated or designated to carry out or exercise such duty, function or power.”²

eSignature Envelope Allowance: “When you subscribe to a DocuSign eSignature plan, the envelope allowance depends on your plan. Once an envelope is sent, it will count towards the envelope allowance included in your plan, whether or not the envelope is signed or completed.”³

eRA Commons: “eRA Commons is an online interface where grant applicants, grantees and federal staff at NIH and grantor agencies can access and share administrative information relating to research grants.”⁴

Flatten Document: “this is the process of removing the ability to edit and add values on the document by separating form data and adding it as a text/image. Like regularly scanned documents, standard PDF files won't be edited anymore by the receiver, and the PDF file will no longer be interactive.”⁵

Grants Managers/Research Administrators: this term will be used interchangeably throughout the paper. Research Administration/Grants Manager encompasses the activities that support faculty and staff involved in research projects across institutions regardless of funding source. This is an individual who assists in the pre-award process (submitting grant applications) and the post-award management (management of funds) for research grants.

Principal Investigators/Key Personnel: A principal investigator (PI) is the lead on a scientific development (sponsored project). Key personnel assists in the development of the project and is a significant contributor who carries out essential work.

Software Platform: “A software platform is a framework of software that is intended and designed to work together. Software platforms are curated to allow applications to work together seamlessly, without workarounds or integrations.”⁶

¹ (Administrative Burden Definition, n.d.)
² (Authorized Official Definition: 417 Samples, n.d.)
³ (Customer Community, n.d.)
⁴ (ERA Commons – User Registration | Grants.nih.gov, n.d.)
⁵ (How to Flatten a PDF Document, n.d.)
⁶ (What Is a Software Platform? - Webopedia Definition, 2021)
RPPR: “The Research Performance Progress Report (RPPR) is the progress report form used by grantees to submit progress reports to NIH. The RPPR documents grantee/recipient accomplishments and compliance with the terms of the award.”

7 (NIH Research Performance Progress Report (RPPR), n.d.)
Chapter 1. Introduction

1.1. Background.

For an institution to thrive in the realm of research administration, where technology, policies, and procedures are changing rapidly, it is paramount to adapt. The internal systems we use are critical for a successful grant submission. Having a division-wide process that focuses on document security, version control, auditability, and protected eSignatures will improve the process for all grants administrators and associated key personnel. This will be completed by unifying the steps to enhance the overall strategy and reduce the administrative toll for all stakeholders.

1.2. Statement of the Problem.

Our current pre-award process at Boston Children's Hospital (BCH) has proven to be an administrative burden due to the number of manual steps and outdated systems. This project aims to streamline the process and protect vital information that BCH and other institutions share. When applying for a grant, you are required to share sensitive information regarding Principal Investigators and key personnel. When collaborating with other institutions, you must sign off on a Statement of Intent (SOI) or Letter of Intent (LOI), which holds important information that each party consents to. During post-award management (annual progress reports), institutions are required to notify the sponsor regarding changes in grant support; this involves obtaining digital sign-off on Other Support (OS) pages by each key personnel. This project aims to minimize the risk
of information exposure, secure documentation, and reduce the amount of unnecessary work for fellow research administrators at BCH and participating institutions.

Implementing Dropbox to share data between BCH employees and other institutions will collectively reduce the current burden of unsecured information and the use of incorrect forms. Applying the use of DocuSign and Adobe Acrobat Pro to sign off on OS pages will ensure the document will not be edited once received by key personnel. The Office of Sponsored Programs and grant sponsors will be confident the information is correct and has not been edited by unauthorized personnel.

1.3. Project Question.

The Division of General Pediatrics would benefit from establishing an online system accessible to all General Pediatrics research staff and outside institutions, including their authorized personnel and research administrators, which will streamline the pre-and post-award process. This project aims to set up a system where BCH research administrators have a more efficient, secure, and federally compliant workflow. This study intends to answer the question: Will the adoption of these platforms be recommended for widespread implementation across BCH?

1.4. Project Objectives.

The project objective is to simplify the administrative process of our documentation workflows, securely and reliably share information, and maintain auditability throughout. This will be established by creating an online platform accessible to all General Pediatrics research administrators and outside institutions responsible for granting access to administrators and their authorized officials. We will test products
such as Adobe Acrobat Pro, DocuSign and discuss Dropbox to find the best overall fit for our department. Additionally, we aim to test the compatible software that all institutions can use to facilitate collaborative review and authenticated sign-off.

1.5. Significance.

Our current workflow involves a variety of manual steps, sending files back and forth on Microsoft Outlook, and no set protocol in place for obtaining electronic signatures. The series of manual steps create a workflow where many mistakes could be made and propagated through the pre-award process. For example, an incorrect document version could be distributed via email for review. Further, having no established way to comply with recent federal regulations around acceptable electronic signatures is a problem that requires a solution.

The existing system for transferring pre-award documentation is accomplished through email, creating confusion around which forms and templates are up-to-date and should be used. Sharing and reviewing documents on email creates an insecure passage of information, with no auditable record of changes made and by whom. Relying solely on email and reviewing document versions of each reviewer's PC tasks the system with additional time and possible error. The world of research is ever-changing, and the systems in our department have not yet progressed as fast as the current digital age. The amount of unnecessary communications experienced as an administrator is highly unnecessary. With the endless changing policies, we will create one place where collaborators will receive the latest updates and forms required for the submission.

The recent federal regulations around electronic signatures on OS pages requires our department to find a solution for the lack of electronic signature capability. Our
institution must adapt to the new rules implemented by NIH, which went into effect on January 25th, 2022.⁸ These changes outline updates that affect biosketches, OS pages, and Investigator signature. NIH will no longer accept wet signatures on OS pages; therefore, it must be submitted as a flattened PDF with a secure digital sign-off.⁹ Institutions cannot simply add a photo of the key personnel's signature to the document; it needs to be achieved using a secure platform (DocuSign, Adobe Pro, etc.).

1.6. Exclusions and Limitations.

The Division of General Pediatrics will implement and test these changes with the help of research administrators who assist in pre-and post-award management. BCH employs around 15,000 individuals, has 40 clinical departments, 52 research administrations, and many managerial and budgetary roadblocks in implementing a widespread process across all departments, divisions, and programs. A streamlined process for the aforementioned barriers may be challenging to implement across the hospital as each department has its own set process in place.

We have tested DocuSign and Adobe Acrobat for obtaining a federally accepted digital sign-off, and both have their own limitations. The primary limitations of Adobe Acrobat are accessibility and cost. To use Adobe's secure digital signature feature and edit a PDF, one must have the paid version. Without a business decision to purchase Adobe Acrobat Pro for all employees, and key personnel, the capabilities to sign off on and edit documentation will have additional burdens, such as managing purchased Adobe

⁸ (NOT-OD-21-073: Upcoming Changes to the Biographical Sketch and Other Support Format Page for Due Dates on or after May 25, 2021, n.d.)
⁹ (ERA Information: Reminder to “Flatten” PDFs for Just-In-Time and RPPR before Uploading to ERA Commons | ERA, 2022)
Acrobat Pro licenses and choosing who should have the additional sign-off capacity. While DocuSign, once purchased by the institution, has no limit on the number of account holders but limits how many documents are sent out.
Chapter 2. Literature Review

2.1. Overview of the Literature Review

There are over 194 research institutions in the United States. Each of these institutions has a pre-and post-award research administration process and a way to share information between collaborators. There are many ways to transfer data safely and a wide range of approaches displayed across the research world. The proposed approach may differ depending on the institution's size, portfolio magnitude, and organization setup. Some institutions have a central office for research which all sponsored projects get routed through. Others have a separate contracts office, research finance department, and pre-and post-award management offices.

2.2. Details of Review

All research institutions share the same goal when collaborating between institutions: to set up a process that efficiently and securely moves the required documents for grant submissions. The federal government has instituted many regulations around research ethics and governance approvals which has imposed a heavy burden on the application process. As stated in the article "Accelerating Regulatory Progress in Multi-Institutional Research," the “complex maze of administrative and regulatory requirements” constitutes a large portion of the effort needed to begin research. Some of this administrative burden includes ethics-related red-tape, like IRB submissions and approvals. Some of this effort is related to data security and agreements

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10 (ResearchMatch, n.d.)
11 (Petrova & Barclay, 2019)
12 (Paolino et al., 2014)
around sharing data. Some have financial and budgetary documentation, such as subcontracts and subawards.\textsuperscript{13} This also holds true during the submission process when sharing data between institutions, where security, version control, and user access are all important.

Each institution uses different platforms to share data safely. Choosing a platform that prioritizes privacy, user experience, and accessibility by partnering institutions is critical during the pre-and post-award process. That being said, Dropbox has strong encryption with multiple layers of protection, making it a more secure platform to share data than email.\textsuperscript{14}

\textbf{2.3. Applicability of the Literature Review}

The literature review highlights the need to utilize secure software and enhance the process to reduce administrative burden. Choosing software that aligns with federal government requirements is vital when transferring data between institutions. Strictly relying on email to move pre-and post-award documents is not the most effective or secure process. Having procedures in place for all research administrators in General Pediatrics for pre-and post-award management will reduce unnecessary emails and improve the workflow. Having two digital sign-off methods (DocuSign and Adobe Pro) in place will be useful to key personnel and grant managers. Although each institution uses different processes and platforms to accomplish research administrators’ duties and responsibilities, each focuses on efficiency and security.

\textsuperscript{13} (Paolino et al., 2014) 
\textsuperscript{14} (How Dropbox Keeps Your Files Secure, n.d.)
Chapter 3. Need(s) Assessment

3.1. Need(s) Assessment

At BCH, documents between research administrators and participating sites are shared solely through email. Although each institution has IT security practices in place to protect email, it still leaves sensitive information vulnerable and accessible to malicious information system attacks, especially when security is primarily training-driven (phishing attacks, etc.). The documents are saved to shared drives, private drives, individual hard drives, file shares, etc. Privacy and security are essential when applying for a grant, as PI and key personnel's sensitive information are contained in the documents needed for submission. Specifically, during grant submission, they risk exposures in the budget (e.g., salaries) and their biosketches, which contain private information.

In the department, we did not have a set process to sign off on legally binding documents which comply with the recent federal regulations. By utilizing DocuSign and Adobe Acrobat, BCH will ensure project information is not edited between the signature and arrival of the Notice of Award. Using platforms that are compliant with the federal electronic signature standards have enhanced security measures. These platforms were designed with privacy in mind which will ensure vulnerable information is not shared while protecting sensitive information. Dropbox does have enhanced security compared to Microsoft Outlook, the BCH provider for email. Although Microsoft Outlook has email encryption functionality, this is not an automatic protection but rather requires a multiple-step process which needs to be completed for each email sent. Dropbox uses a more rigorous, automatic encryption method (256-bit Advanced Encryption Standard) as
well as Secure Sockets Layer (SSL)/Transport Layer Security (TLS) to protect data in route on the internet.\textsuperscript{15}

\textbf{3.1.1 Assessment of Need.}

Federal policies are constantly changing; therefore, having a central place for current documents and instructions would reduce the number of unnecessary email communications and the use of obsolete forms. More specifically, our department does not have a set process in place for signing off documentation such as DocuSign or Adobe Acrobat Pro; thus, the implementation of a software platform is needed for both eSignature, traceable and auditable document review, and a repository for collaborative review and the most up-to-date information, forms, and templates. Our department also strictly uses email to transfer documents, and using a more centralized platform (Dropbox) for the pre-award process will enhance our current step-up. Using trusted systems will ensure that the subcontract documents are securely preserved once signed off.

The Department of Pediatrics receives over 50\% of the grant funding at BCH, and the current portfolio in General Pediatrics consists of 32 PI’s and 65 sponsored grants, which two research administrators manage. Several discussions have been held regarding enhancing our current workflow as a department around pre-award documentation and obtaining digital sign-off. Having a more uniform procedure regarding submissions and progress reports would be beneficial. Using a centralized system will allow information to be more easily shared between team members and allow for a smoother transition between employee departures.

\textsuperscript{15} ([PDF] Security on the Cloud Storage (Google Drive and Dropbox), n.d.)
3.2. Sources.

Establishing a new process for how we handle the transfer of information between institutions as well as sign-off procedures has been an ongoing discussion in the department. We discussed potential platforms, including Dropbox, DocuSign, and Adobe Acrobat Pro. BCH already utilizes DocuSign to sign off on consultant agreements but has not previously been adapted by our department specifically. Our department was given the contact information for the DocuSign Manager at our institution, where we were connected with the BCH's account representative at DocuSign. This individual provided us with the DocuSign Master Services Agreement between BCH and DocuSign. The contract outlines what type of account BCH holds, the amount of eSignature Envelope's BCH has per year and the annual cost. BCH holds an "eSignature Enterprise Pro Edition," which allows 200,000 "eSignature Envelopes," which is a container for documents that you send to a recipient to sign.\(^{16}\) Each document sent to the signer is the equivalent of one envelope.

The number of individuals who can be added as administrative users is unrestricted. Still, our institution has a limited amount of documents that can be sent out for signature per year. Our department requested four accounts from the BCH administrator, which allows administrative access to the two grants managers, the financial manager and supervisor. Being an account holder allows access to create the document, upload it into DocuSign, send it to the appropriate individual, send automatic reminders, and receive emails once it's been signed off.

\(^{16}\) (Customer Community, n.d.)
A contingency plan must be established for unforeseen events, such as an employee's unexpected departure. A centralized repository where each research administrator can access the necessary documents, e.g., budget, budget justifications, biosketches, etc., will support knowledge transfer and a more robust contingency plan for documentation, knowledge, and workflows. Dropbox will ensure a smooth transition between personnel as all documentation will be on this centralized file repository. Additionally, since Dropbox does not rely on the institutional on-premise IT architecture, using this cloud-based system will provide better data accessibility to administrators and researchers, which would be helpful when the institutional database is not accessible. For signing off on the Statement of Intent documents, the Office of General Counsel confirmed BCH uses DocuSign and Adobe, appropriate for all pre-award and post-award documentation.

3.3. Committees.

No committees were established to access the project.
Chapter 4. Project Description

4.1. Project Elements

DocuSign and Adobe Acrobat are easy-to-use and secure ways to sign documents electronically. Every grant submission requires sign-off on the Letter of Intent (LOI) or Statement of Intent (SOI) between participating institutions. This document outlines essential grant information, including grant title, PI information, human subject involvement, total costs, and Scope of Work (SOW), and requires an authorized official's signature. Most institutions manually add their signature (i.e., copy and paste a photo of their signature), allowing parties to edit the document. DocuSign creates a flattened document which removes the ability to make any changes to the document after signature. This will ensure no edits are made to the agreement from submission to the Notice of Award (NOA). This way, both parties share the same information, and there is no confusion around what was included and submitted during the time of application submission.

Dropbox is a cloud storage platform that enables users to back and sync files across many devices. By using a unique log-in, Dropbox Advanced Plan allows users to enter documents and download them to edit and upload into the same folders. This project aims to build folders for each pre-award document needed for the grant submission. A folder will be created for each document required for submission between participating institutions. These folders will hold directions on how to complete each document and include the most current form that needs to be finalized.

This will be completed by sending each participating institution a link to the application components via Dropbox, which will hold all of the latest information and
current forms to be completed. This includes the SOI/LOI form, budget forms (R&R budgets), the latest biosketch format, Other Support forms (if required), Resources and Facilities page (if applicable), Scope of Work (provided by the prime institution), and the Letter of Support.

The cost of DocuSign for 200,000 envelopes per year is estimated to be $100,000. One envelope is equal to one packet of documents sent to the recipient to sign.\(^{17}\) For BCH, this costs about .50 cents per document sent. The initial cost of implementation for premier support and adoption consulting, when first implemented in 2020 by BCH, was around $40,000. The contract BCH holds an unlimited amount of account users that can be added per year. Account-holders are set up with a username and are able to upload and send a limited number of envelopes. This number was based on the necessity for DocuSign during the initial setup. BCH has an option to purchase additional envelopes in minimum bundles of 2,000 at 1.95 per Envelope.

The Pediatric Scholar subscription at BCH costs $295 annually, including an Adobe Acrobat Pro account. The cost also includes helpdesk support, a collection of software programs, technical support, installation, configuration, and troubleshooting.\(^{18}\) Researchers can create a PDF, edit, combine files, organize pages, edit pre-existing PDF files, and digitally sign off on unlimited documents per year with the annual subscription.

Dropbox uses a more rigorous security method for both data existing in the repository and for data transmission than compared to existing alternative processes, which solely rely on Microsoft Outlook. The encryption method used is a 256-bit

\(^{17}\) (Customer Community, n.d.)
\(^{18}\) (Pediatric Scholar, 2018)
Advanced Encryption Standard to encrypt and protect privacy and file contents.\textsuperscript{19} Additionally, Dropbox protects data to and from its server and clients using Secure Sockets Layer (SSL)/Transport Layer Security (TLS). This protects and secures private information during the transmission of data.\textsuperscript{20} The enhanced encryption and the data transmission protocols are critical in protecting delicate and confidential information that may be transmitted and stored during pre-award submissions and post-award management processes.

Dropbox has an “Advanced Plan” for team members who have multiple users assigned to the account in order to collaborate. With this account, users will be able to store confidential files/sensitive information and provide as much space as one team needs. This plan also has sophisticated administrative, audit, integration, and security features.\textsuperscript{21} On the Advanced plan, there is the option to utilize the Device Approval feature, which allows administrators to control the number of connected devices and what happens to disconnected devices.

The cost for each team member in our department would be $25 monthly or $20 a month if purchased as an annual subscription. The advantage to using Dropbox in our department is the unlimited amount of space, while using email has a limit on sharing large files. With Dropbox, users are allowed to send up to 100 GB per transfer which is less than Microsoft Email.\textsuperscript{22} However, there are limitations that exist in investing in the Dropbox Advanced Plan, that being, the account holder has the ability to edit and make comments on current documents. Unpaid users (outside collaborators) can download and

\textsuperscript{19} (How Dropbox Keeps Your Files Secure, n.d.)
\textsuperscript{20} (Ibid)
\textsuperscript{21} (Ibid)
\textsuperscript{22} (pamelaar, n.d.)
make edits on their PCs and re-upload but are unable to make edits in real-time. This platform is still useful for department administrators as edits can be made in real-time and, in turn, will prevent unnecessary email communication.

Implementing Dropbox as the main form of transferring documents, even though outside collaborators are unable to make real-time edits (if they have not invested in the product), will allow our research administrators to pick up where they left off. While we cannot expect all collaborators to invest, using this internal system will enhance our existing process of holding documents in private folders on the server and will make for an easier transition between grant staff.

Adobe offers security advantages to current processes used by BCH General Pediatrics. Firstly, Adobe provides an option to password protect documents for a variety of tasks, including opening, editing, signing, etc. This heightened control of user access and privileges to documents within Adobe is a great advantage. A document with sensitive and confidential information could be opened only with a password set by, for example, the corresponding research administrators. Additional advanced password protection encrypts the file contents with this feature. The option to choose the level of security and encryption allows for flexible processes without sacrificing security when needed.

DocuSign offers a secure approach to electronic signatures and managing documents by using encryption and multi-factor authentication for signatures. The encryption used by DocuSign is AES 128-bit encryption and SSL 256-bit encryption.23 This level of encryption and security protocols create a secure environment for sensitive

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23 (How Dropbox Keeps Your Files Secure, n.d.)
and confidential documents. DocuSign also has user roles and privileges that can be managed at a document level. After one person signs a document, this custody management means the access is removed and transferred to another team member listed in the custody chain. This is a controlled approach to document privileges that will help protect BCH during both pre-award and post-award processes.
Chapter 5. Methodology

5.1. Methodology Overview

Our department has researched and narrowed down two possible platforms for the digital sign-off portion of OS pages. Adobe Acrobat Pro and DocuSign were the two options our team implemented across the department. Both have the capabilities to create secure flattened documents, which are unable to be edited once signed. The department reviewed the pros and cons of each platform to explore which company best fits the project's needs.

5.2. Project Design and Discussion

Adobe software has widespread use for transforming Word Docs into PDFs. Yet, their steps for digitally signing off documentation are less straightforward and difficult to follow depending on the staff members' Adobe version. We have created a step-by-step guide on how to complete this (Appendix 1), but this is only useful for employees who hold an Adobe Acrobat Pro account. Adobe Acrobat Pro is not a built-in service provided by BCH to its employers but rather an extra payment that costs the department $295 per year for each employee. Since our research faculty are paid through their clinical work and grant-funded projects, research staff may choose not to invest in the product, or they do not have the adequate funding to support the annual fee. Since each staff member at BCH has to pay extra for the Adobe package to get full access to Adobe Acrobat, it cannot be the only option we use as a department.

When research administrators develop documentation for PIs and other key personnel, i.e., biosketches or Other Support, PIs may be unaware of certain pertinent information (effort, total project cost, pending support, etc.). It is easier for the grant
managers to draft this information and have the PI review and sign off. Often, it is challenging to coordinate documentation updates, especially in situations where the PI preemptively digitally signs. In these cases, additional and time-consuming exchanges via email are needed. A more clearly defined and adhered to workflow around sign-off and documentation with PIs would reduce the administration burden.

The new policy, which went into effect on January 25th, 2022, by NIH, requires all Other Support documents to be digitally signed off by the PI. This means research administrators cannot add a photo of the signature or have staff print, sign, and scan. Federal agencies will only accept official digital signatures. DocuSign and Adobe Pro allows our department to create documents based on information that is accurate and current and send them back to the PI or other key personnel for review and sign-off. Since there is grant information that PIs/key personnel may not be aware of, this limits the need for unnecessary communication with staff before the final sign-off, which offloads work for research administrators.

The new rules that have been implemented by Federal agencies around digital sign-off have been a problematic concept that BCH and its key stakeholders are having a hard time adjusting to. Requesting an e-signature versus a secure digital sign-off and ensuring it is a flattened PDF has proven to be a challenge to stakeholders and grants managers. Not having a set procedure in place when requesting the electronic signature has proven to cause immense back and forth through email, which has led to delays in getting the required documentation back in time for the sponsor deadline. Having control as a grants manager of the documents needed for submission and having PIs/key personnel review/edit what we have created will prevent unnecessary communications.
5.3. Discussion of Questionnaire.

A questionnaire was not developed for this project.
Chapter 6. Project Results and Discussion

6.1. Project Results

The division of General Pediatrics tested out the use of Adobe and DocuSign to sign off necessary documentation. It was discovered that there are several advantages and disadvantages to both of the platforms. One concern with Adobe is that the researchers and key personnel are required to purchase the annual subscription through BCH's Pediatric Scholar for $295 annually to edit and digitally sign off on documentation. Research staff needs to be able to edit their Other Support pages; thus, having a paid version is worthwhile.

The ideal process is to assist in developing the OS page, send it to the PI and have them review/edit and send it back to the research administrator before digital sign-off. As the PDF cannot be edited once signed, it is imperative that the research administrator reviews it to ensure that the information is correct before key personnel sign. This will reduce the number of emails back and forth and avoid situations where the PI preemptively signs off on documents that contain errors.

6.2. Project Results 2

Both DocuSign and Adobe remove the ability to edit or merge once the documents are signed. This becomes problematic when eRA Commons only allows one combined document into the annual progress reports (RPPR). A solution to this issue is to create a flattened document by going to file, print, select print to PDF, and click print (Appendix 2). This allows research administrators to combine OS pages into one document and upload them into eRA Commons. This method works to flatten digitally
signed documents in DocuSign and Adobe. Since the research administrators in the
department have a paid-for Adobe Acrobat Pro allows the functionality to make this edit.

DocuSign has an automatic email notification system where once the documents
are ready for sign-off, the PI will open the document, review it, and input a secure
signature. The benefit of using this platform is the unnecessary email communication
between the administrator and PI since the platform sends automatic emails and
reminders every two days.24 Using both platforms has proven to be more effective than
driving researchers to invest in Pediatric Scholars for Adobe Acrobat pro.

6.3. Project Results 3

Dropbox was not implemented in the workflow during this research, and it likely
will be in the future. This analysis of Dropbox as a repository for documents appeals to
management, and the benefits included with Dropbox are evident. Budget discussions
and approval of the cost of software adoption are still being considered before
implementation in General Pediatrics. However, the conversations around Dropbox with
management has garnered interest in security, privacy, and the need for a file repository
in General Pediatrics.

24 (How to Set Reminders, Notifications & Expirations in DocuSign ESignature, n.d.)
Chapter 7. Recommendations and Discussion

7.1. Introduction

There are many platforms, and tools institutions can utilize to enhance their workflow around pre-award administration as well as obtain digital sign-off for OS pages. During the course of this project, we investigated products already in use at BCH and potential platforms to enhance our procedures. Our department has used Adobe for digital sign-off and editing PDFs, but this functionality is only available if the user holds a paid-for version of Adobe Pro. Our department covers this cost for the research administrators, but the research staff is held accountable for paying the annual fee to access this version of Adobe. Since we cannot require research staff to have this account, researching another option proved necessary.

DocuSign has been used in the Office of General Counsel at BCH but was not being utilized within General Pediatrics. Once our team contacted the BCH administrator who holds the ability to manage our DocuSign account, we discovered that BCH has 200,000 envelopes per year, and the research administrators were subsequently added to the account. Account-holders allow research administrators advanced functionalities, including uploading documents and routing for signatures. The recipient (our key stakeholders) does not need a paid version of DocuSign to sign off on the documentation securely.

Utilizing DocuSign and Adobe Acrobat during the post-award process to ensure that the sign-off is correctly done has demonstrated to be the most successful approach. Since PIs have different accessibility to various software, using both platforms have
allowed research administrators and PIs more freedom to use the system which they see fit. Applying for a grant already has its complexities, and having a straightforward way to sign documentation should not be one of them. The systems currently being used at BCH versus enhanced methods (Dropbox, DocuSign, and Adobe) that reduce the number of emails exchanged and secure the process should be implemented department-wide.

7.2.1 Recommendation 1

It is recommended that we utilize both DocuSign and Adobe Acrobat Pro for obtaining digital signatures. Implementing a system that gives research staff autonomy to choose between purchasing Adobe Acrobat or signing off on DocuSign will enhance our current system. Since there are restrictions to using Adobe as an unpaid user, having DocuSign to obtain signatures will benefit research administrators and research staff in the department of General Pediatrics. Using these two platforms will limit confusion around the type of digital signature federal sponsors require.

7.3.2 Recommendation 2

Dropbox has proven to be a secure way of transferring documents between collaborating institutions. It is recommended to use Dropbox during the pre-award submission process to enhance organization and ensure the correct forms are being used. Research administrators will have pre-existing folders in place to share with collaborators, which will save time when preparing pre-award documents.
Chapter 8. Conclusion

The role of research administrators is to assist in the application process and manage post-award responsibilities. This is best accomplished by utilizing efficient, secure methods that can be followed for each submission and progress report. Utilizing both DocuSign and Adobe Acrobat for digital sign-off will ensure it is completed by federal standards and limit confusion for key stakeholders. Using a central location to share information between institutions by implementing Dropbox will reduce the administrative burden on research administrators and streamline the pre-and post-award process.

DocuSign, Adobe Acrobat, and Dropbox offer secure, user-friendly platforms for workflow improvements. With encryption and security protocols, access and custody management controls, and compliance with federal regulations around electronic signatures, adopting and implementing this software will significantly improve documentation practices and streamline workflows in the department. The testing of these products did not show any negative impacts on user experiences during workflows while adding significant document control benefits. By incorporating both electronic signature platforms into the workflows in General Pediatrics, PIs and other administrators had flexibility with the workflow and functional outcomes: federally compliant electronic signatures and enhanced security from Adobe Acrobat and DocuSign, along with features such as email notifications and version control. Although Dropbox has not yet been adopted, discussions are in progress. Dropbox offers a safe and secure repository for files to communicate and contain the most up-to-date forms and templates, work collaboratively, and support business contingency and knowledge transfer.
Utilizing platforms already in place by BCH and researching other options has produced a more efficient way to conduct work. The Division of General Pediatrics will implement the new process to replace the use of transferring documentation strictly via email. Implementing a protocol to use DocuSign and Adobe Acrobat when obtaining e-signatures has improved the workflow of completing this task. This project has enhanced the pre-award and progress report process for research administrators and the Division of General Pediatrics research staff.
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Appendix 1:

How to digitally sign off using Adobe Acrobat Pro

Please sign in or create an Adobe account

Step 1:

Step 2:

Step 3:

Step 4:

Step 5:

Step 6:
Step 7:

Step 8: Review digital ID

Step 9: Enter a password for the screen to enable you to sign

Step 10: Create the box where you would like your signature to go (on the signature line).
Appendix 2:

How to Create a Flatten Document

Step 1:

File-> Print

Step 2:

Select to print to "Adobe PDF."

Step 3:

Click "Print."
Step 4:

Save the document to PC. This will convert the PDF to flatten documents and allow merging with other documents.
Appendix 3: Short Bio

Margaret Guinan attended the University of New Hampshire, where she received her Bachelor in Health Management and Policy with a focus in Public Health. Upon graduation in 2015, Margaret started her career at Boston Children's Hospital as the Program Coordinator for the Harvard-Wide Pediatric Health Services Program in the Division of General Pediatrics, which she held for two and a half years. In 2018, Margaret transitioned to a grants management role. She progressed from a research administrator I, research administrator II, and was recently promoted to a Senior Grants Administrator in March of 2022. In this role, Margaret assists PIs in pre-and post-award management and mentors new grant staff.