Development of an Electronic Exchange of Medical Documentation for Power Mobility Devices

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Abstract

Objectives Power mobility devices (PMDs) such as power wheelchairs and scooters are crucial for mobility, self-care, employment, and leisure activities. The documentation process for insurance coverage is complex and requires communication and document delivery among multiple stakeholders. The objective of this project was to develop an electronic submission process for medical documentation of PMDs submitted for prior authorization to a Medicare Administrative Contractor (MAC) and implement a standardized means of communication between providers and payers.

Methods A protocol was developed to create and securely transmit an electronic prescription and several documents that outline medical necessity from a clinical team using EpicCare to a MAC via a Health Information Handler. A Rehabilitation Technology Supplier (RTS) added detailed product information and specifications to the electronic package during transmission.

Setting The setting involved in the study was University-based outpatient assistive technology clinic.

Results The protocol demonstrated successful transmission of an order, medical documentation, and request for signature. Results were transcribed to a readable format for the clinical team and RTS. A set of quality metrics for use in future projects was also identified.

Conclusion This pilot project demonstrated successful electronic exchange and transmission of medical documentation for durable medical equipment from the electronic health record to a MAC.

Keywords

- electronic health records
- interoperability
- medical documentation
- rehabilitation
- wheelchairs

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Background and Significance

The appropriate and secure exchange of information is critical in preventing improper payments in the Medicare system. According to a 2019 Comprehensive Error Rate Testing report, 59% of improper payments were due to insufficient documentation, which was a result of burdensome workflows and slow, and error prone paper- or fax-based communication.[1] The Centers for Medicare & Medicaid Services (CMS) initiated Electronic Medical Documentation Interoperability (EMDI) with an aim to reduce provider burden and improve workflow and communication relevant to exchange of orders and medical documentation. With the changing landscape of health information technology moving toward interoperability, CMS is encouraging providers to explore the use of cases involving electronic connectedness, particularly those that involve physicians and service providers like durable medical equipment (DME) providers.

A particular area of concern for information exchange is within the documentation process required to obtain prior authorization for power mobility devices (PMDs). Power wheelchairs and scooters are PMDs used by people with disabilities to promote independence in daily self-management activities and mobility, improve participation in leisure and employment activities, and increase quality of life.[2–5] The health care service delivery model for these devices is complex and requires a multidisciplinary team of providers, including physicians, physical or occupational therapists, rehabilitation technology suppliers (RTS), assistive technology professionals (ATPs), and rehabilitation technicians.[6] Appropriate provision of mobility devices has been described as a basic human right.[7]

Multiple stakeholders are involved in provision process for PMDs. Thus, the documentation process required to obtain insurance approval is equally complex. No standard communication process currently exists among these multiple stakeholders. As a result, delays occur in receiving equipment, and clinics experience high administrative costs related to manual processing of paperwork. Most of the current documentation exchange (more than 66%) is fax-based, where the error rate is 7.5%. Poor communication and lack of efficient workflow lead to missing documentation or signatures.[1]

A particular service relevant to the Electronic Submission of Medical Documentation (esMD) and the EMDI initiatives is the prior authorization request service. A prior authorization request is submitted when a provider needs to request approval of a health care item or service before it is provided. Prior authorization allows providers and suppliers to address issues with claims prior to rendering services and to possibly avoid the appeal process. In September 2012, CMS initiated the prior authorization of PMD demonstration program for Medicare Fee-for-Service beneficiaries who reside in seven states (CA, IL, MI, NY, NC, FL, and TX). In October 2014, CMS expanded the PMD program to 12 additional states (MD, NJ, PA, IN, KY, OH, GA, TN, LA, MO, WA, and AZ). In 2013, the PMD request became the first type of prior authorization request to be transmitted electronically between Medicare Administrative Contractors (MACs) and Health Information Handlers (HIH). An HIH is an organization that performs functions such as providing electronic health record (EHR) system services and submitting claims on behalf of a provider.

These technological approaches are guided by the federal cross-agency, U.S. Department of Health and Human Services (HHS), and CMS goals and objectives for health information technology. Two priority goals across all federal agencies are to improve health information technology and cybersecurity performance. To progress the priories, HHS incorporated the goal to strengthen health care into the HHS strategic plan. Under this goal, the HHS objective relevant to the esMD initiative is to improve health care and population health through meaningful use of health information technology. The CMS contributes to this HHS objective through the following relevant key strategies:

- "Increase interoperable health information exchange by healthcare providers across public and private systems."[8]
- "Engage standards developers, health IT vendors, and other stakeholders to accelerate development, assure availability, and support effective use of consensus standards that meet electronic health information management and exchange needs of consumers and providers throughout the health care system."[8]

Furthermore, as communicated in the CMS Strategic Plan, the CMS priority performance goals support, and are directly aligned with, the HHS and cross-agency priority performance goals and objectives. Under the CMS Enterprise Excellence goal, the CMS objective relevant to the esMD initiative is to transform business operations by building agile and flexible information technology platforms. The relevant key strategies and desired outcomes associated with this objective are:

- "Infrastructure and technology improvements enhance interoperability and promote evidence-based decisions made by public stakeholders, researchers, state officials, and others using enterprise data, analytics, and information products."[9]
- "Administrative simplification activities align with other e-health and business initiatives in order to streamline interactions among health plans, providers, and other entities through standardized, real-time transactional automation, resulting in the integration of clinical and claims information and reduction in provider burden."[9]

Led by these goals and objectives, the creation and evolution of the esMD and EMDI initiatives demonstrate the commitment of CMS to modernize business processes, streamline medical documentation submissions, reduce provider burden, and improve the secure transport of electronic medical documentation.

Objectives

This pilot project was established as part of an overall CMS eHealth initiative which aligns health information technology and electronic standards programs with the overall goal to reduce paperwork, capture and track health information electronically, increase privacy and security of information,

reduce provider burden when exchanging documentation, and speed the prior authorization process. An external university-based team of experts was assembled to partner with CMS to develop and pilot an esMD system via a CMS-certified HIH.

Methods

Workflow

The documentation process required to obtain a PMD requires multiple stakeholders, office visits, and various documents. The detailed process is outside the scope of this document, but can be found in published practice guidelines[6] and in frameworks that are used in academia and internationally.[10–12] Briefly, a beneficiary (hereafter, "client") is typically evaluated by a physician and therapist and then a home visit is conducted to determine whether the selected PMD will be suitable for in-home use. This process results in documentation of medical necessity, a prescription from the physician, as well as device specifications, and a detailed product description supplied by the RTS. The RTS submits paperwork to a MAC for prior authorization. If the RST obtains prior authorization, the RTS submits the paperwork to the MAC for review, and once approved, the RTS orders the device and delivers it to the clinic. The client then returns for a second clinic visit for final fitting and training. The process between the first and second clinic visit may take several months, which places a burden on the client who may have limited mobility and independence while waiting for a PMD.

Pilot Electronic Submission System

This pilot was tested within a University-based Assistive Technology Clinic comprised of a multidisciplinary team of providers involved in the provision of mobility equipment. A process was developed to electronically transmit the documentation for a PMD from a physician's office to an RTS and then to a MAC via a HIH using esMD. A set of quality metrics was developed for measuring the impact of the process, and baseline data were collected prior to the implementation of protocol.

Exchange of Documentation between Physician's Office and RTS

One physician and one physical therapist used progress notes within the EHR, EpicCare, to document the face-to-face visit for the PMD. This information was then compiled with additional information into a document outlining medical necessity which was drafted and electronically signed using an informational encounter within EpicCare. To initiate the submission process, the office manager logged into a unique EpicCare department created for the purpose of the pilot. Whenever the office manager logged into this department and chose the print function, the encounter documentation was converted to a PDF and saved on a share drive using a print rule. The same process was used to save a PDF of the prescription for the PMD which was electronically signed by the physician in EpicCare. These files were coded with the following information in their filename: LabCorpPrint.date.time.printque. The timestamp differentiated the files.

If the order class was set to "External Referral" the order also printed to the local printer. If the order class was set to "No Printout," no paper copy was printed but could be printed manually by opening the PDF.

The PDFs on the share drive were then sent via secure file transfer protocol (SFTP) from the clinic shared drive to the RTS shared drive. The RTS then added additional documentation to support the physician order, compiled the documents into one PDF file, and placed the national provider identifier (NPI) number in the file name. The RTS then placed the compiled file on their shared drive where it was then sent via SFTP back to the clinic shared drive. The placement of the file in the NPI folder triggered an email to be sent to the physician notifying him that a file was available for signature. The physician then retrieved the file from his NPI folder, reviewed it, and electronically signed the compiled PDF file. The physician then placed the file into a folder named "Compiled" on the clinic shared drive. An electronic order at tier 1 level (electronic one-way, but not interoperable) was sent.

Electronic Submission from RTS to MAC through esMD

The HIH then retrieved the compiled PDF file from the clinic shared drive using the NPI number in the file name as part of the metadata and sent the compiled PDF via the esMD system to the MAC auditor. The auditor then reviewed the Prior Authorization request and sent the results back in XML format through the esMD system to the HIH. ►Table 1 depicts the different result codes that can be sent back to the HIH. The HIH then used an XSLT stylesheet to display the XML into a readable format. The HIH then placed the results in the readable format in another folder called "Results" on the clinic shared drive. The results were then sent via SFTP to the RTS and the physician for review.

Table 1 PMD PA review results responses

Number	Rule
1.	Affirmed (A) PMD PA review results responses shall contain a Unique Tracking Number (UTN) affirmed by the DME MACs.
2.	Affirmed (A) PMD PA review results responses shall not contain PMD Reason Identifier(s).
3.	Nonaffirmed (N) PMD PA review results responses shall contain a Unique Tracking Number (UTN) affirmed by the DME MACs.
4.	Non-affirmed (N) PMD PA review results responses shall contain PMD Reason Identifier(s).
5.	Rejected (R) PMD PA review results responses shall not contain a Unique Tracking Number (UTN).
6.	Rejected (R) PMD PA review results responses shall contain PMD Reason Identifier(s).

Abbreviations: A, affirmed; DME, durable medical equipment; MAC, Medicare Administrative Contractor; N, nonaffirmed; PA, prior authorization; PMD, power mobility device; R, rejected; UTN, Unique Tracking Number.

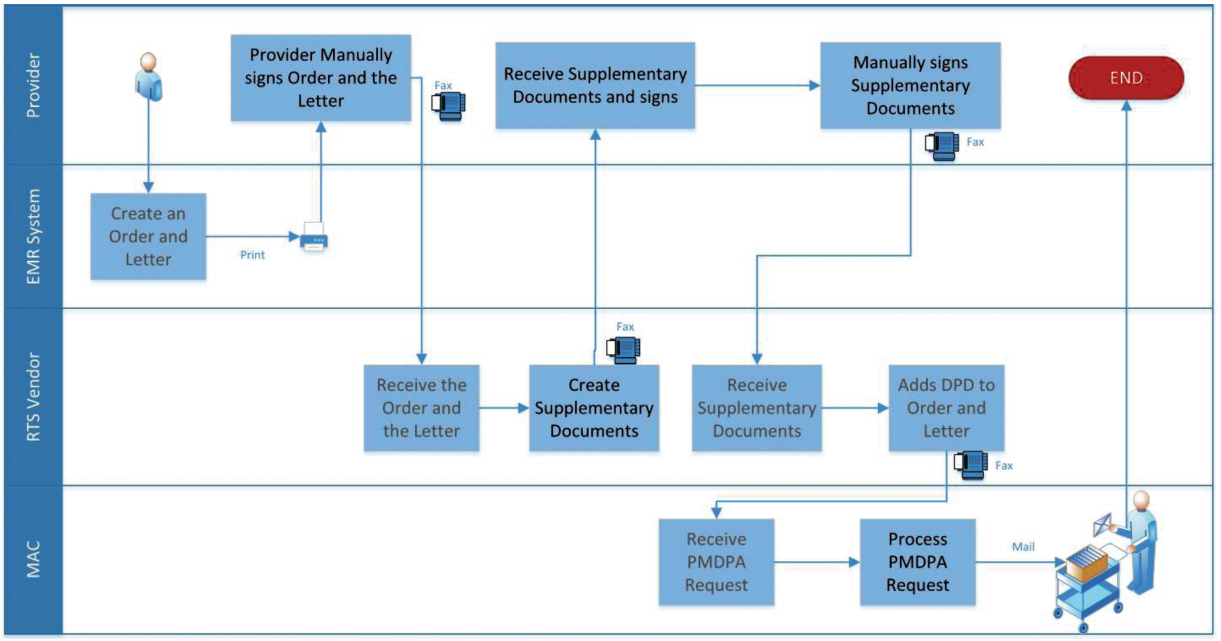

Fig. 1 Workflow diagram for old process. DPD, detailed product description; EMR, electronic medical record; MAC, Medicare Administrative Contractor; PMDPA, power mobility device prior authorization; RTS, Rehabilitation Technology Supplier.

Results

Several deliverables were created from the project. The workflow diagrams (►**Figs. 1** and **2**) demonstrate the steps in the process to create and route the documentation and order until the MAC provides prior authorization. ►**Fig. 1** shows the original workflow, and ►**Fig. 2** shows the new workflow. ►**Fig. 3** depicts an example of an affirmed prior authorization request. ►**Table 2** displays proposed quality metrics and the baseline data collected on those metrics before implementation. These metrics measure usability in terms of efficiency, errors, and satisfaction with each step of the process.

Discussion

This is, to our knowledge, the first pilot project demonstrating successful submission of electronic documentation for DME from a therapist, physician, and RTS to a MAC and from the MAC back to these providers.

One advantage of this model is that multiple workflows can be supported because the shared drive can be accessed by those working within and outside the hospital system. Our care model uses a therapist and physician who evaluate the client together in one setting and an RTS that is located outside of the clinic. Models that involve a therapist, physician, and RTS all located in different settings can also be supported. If a physician was not part of the process, the RTS could add a PDF of the physician's documentation and order to the package. Additionally, while the RTS evaluation always occurs after the therapist and physician evaluation, in some models the supplier sends the complete documentation to the therapist, and it is the therapist who then compiles all the documentation and sends it to the MAC. We developed this process so that such variations in workflows could be accommodated in the electronic pathway. Of course, with any electronic system, the users' willingness and ability to access the system is critical to feasibility, and this model may not fit all possible workflows for wheelchair provision.

Another advantage is that the model can be used with EHRs other than EpicCare. The print rule used to transfer documentation from the EHR onto a shared drive can be used with any EHR that allows a user to create and print orders or letters. Also, because the content of the PDF is left to the discretion of the clinician, any changes in clinical documentation requirements can be addressed by making changes to individual documentation templates. However, although many EHRs like EpicCare allow for documentation templates to be customizable at the individual user level, some do not have these advanced capabilities.

Some additional limitations of this model deserve discussion. First, system usability has not yet been fully studied. System errors, effectiveness, learnability, memorability, and satisfaction with use are all factors which may impact willingness to use the system. Second, the system may also need additional accessibility features to support use by people with disabilities. Third, this project was implemented as a proof of concept. Fully implementing the system would involve training multiple physicians, therapists, and administrative personnel in the offices of multiple physicians and RTS and collecting data for an extended period. Thus, future work will involve an implementation study in which additional preimplementation metrics are collected to evaluate workflow amongst multiple physicians and RTS, followed by collection of post-implementation metrics from all stakeholders. Fourth it is notable that a ceiling effect may exist for some of the quality metrics. The physician's office and RTS utilized in the pilot project were chosen because they already

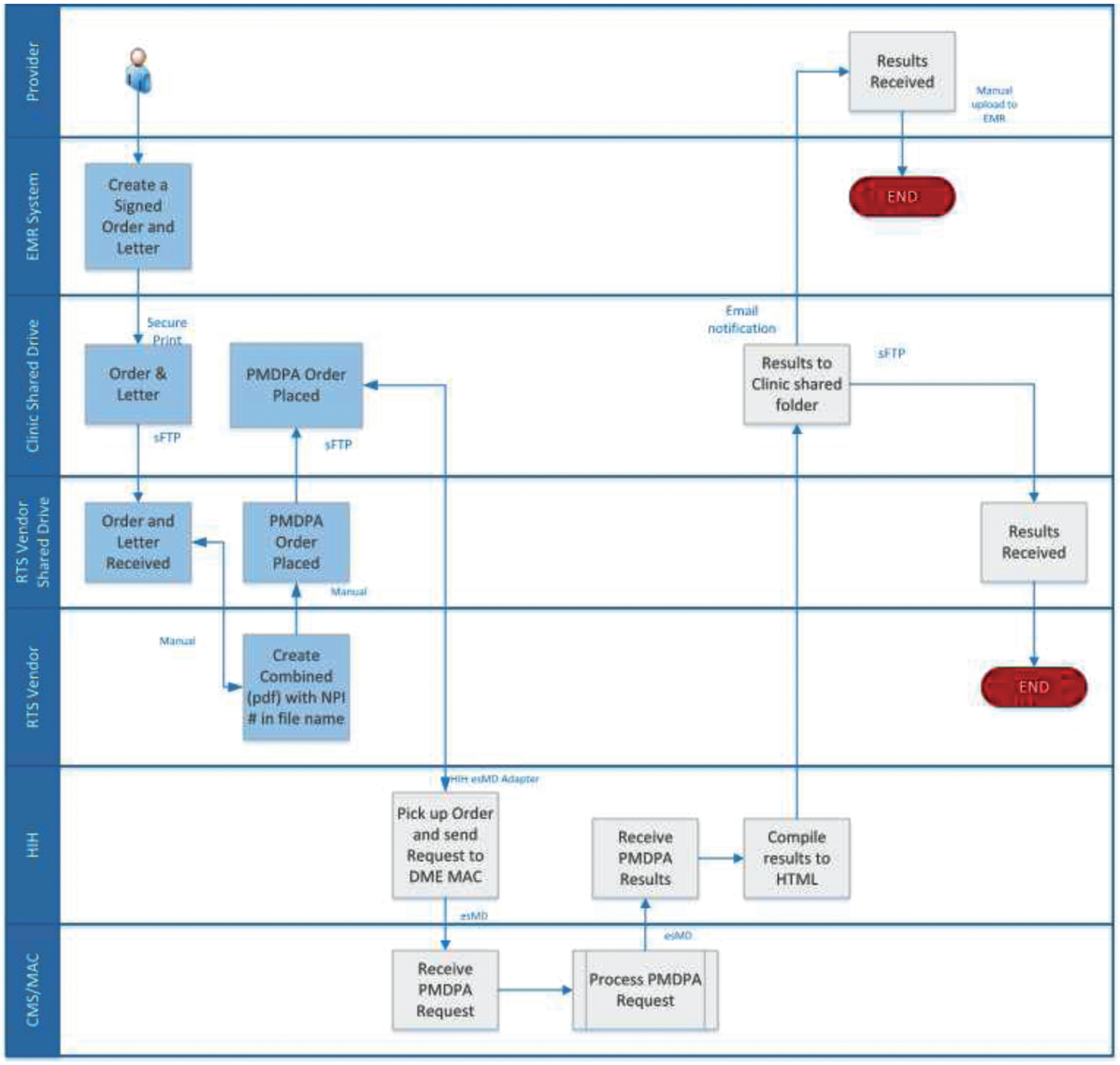

Fig. 2 Workflow diagram for new process. CMS, Centers for Medicare and Medicaid Services; DME, durable medical equipment; EMR, electronic medical record; sFTP, secure file transfer protocol; HIH, Health Information Handler; HTML, hypertext markup language; NPI, national provider identifier; MAC, Medicare Administrative Contractor; PMDPA, power mobility device prior authorization; RTS, Rehabilitation Technology Supplier.

Values contained in the XML: *01/13/2015 05:21:00 01/14/2015 05:21:00 12812678 8 R4567 A*
PMD Prior Authorization Review Results: Affirmed

Response created: 01/13/15; 05:21:00 pm EDT

Response submitted: 01/14/2015; 05:21:00 pm EDT

esMD Transaction ID: 1281267

Unique Tracking Number (UTN): R4567

Fig. 3 Example of affirmed PMD prior authorization request.

Table 2 Proposed annual quality metrics and baseline data

	Preimplementation
Physician's office	
% orders submitted to RTS via fax	<25%
% orders submitted to RTS via secure email	>75%
Average length of time from patient visit to submission of an order to RTS	30 d
Level of burden in answering requests from RTS for additional documentation or signatures	Some burden
# staff needed to submit an order and address documentation or signature request	3
Level of satisfaction with communication with RTS	Satisfied
Level of satisfaction with workflow with RTS	Somewhat satisfied
Level of satisfaction with order processing	Satisfied
Level of satisfaction with efficiency of document sharing with RTS	Somewhat satisfied
Electronic medical record	
Does workflow exist for RTS requests for additional documentation?	No
Does workflow exist for RTS requests for missing signatures?	No
Rehabilitation technology supplier (RTS)	
Are orders automatically entered into your order system?	No
Length of time between receiving order and manually entering into order system	24 h
% of orders received from physician's office that are missing documentation or signature	<20%
% of claims that require additional documentation or signature from physician	<20%
% of additional documentation requests that receive a response from physician's office	>95%
# staff that are needed to address requests for additional documentation or signatures	2
Time needed for staff to submit request for additional documentation to physician's office	48 h
Length of time between submitting request and receiving additional documentation	<30 d
% of missing signature or documentation requests remaining unanswered by physician's office	<20%
Time needed for staff to submit request for additional signature to physician's office	1 d
Length of time between submitting request and receiving needed signature	<2 wk
% claims denied due to insufficient documentation or missing signatures	<20%
Range of cost of claims unbillable due to insufficient documentation for missing signature	$1,000–$5,000
% of additional documentation or signature requests that are submitted to physician's office	100%
# Follow-ups needed to complete request	<5
Satisfaction with communication with physician's office	Satisfied
Satisfaction with physician's office workflow	Somewhat satisfied
Satisfaction with order process	Very satisfied
Satisfaction with quality of medical documentation	Very satisfied
Satisfaction with efficiency of document sharing with physician's office	Very satisfied

had an existing relationship that was efficient. Implementation of the electronic system for these particular stakeholders may not significantly improve all quality metrics. However, the system is expected to have larger effects when implemented across a variety of stakeholders who are willing to use the system as way to improve efficiency of workflow.

The long-term objective of this project is to provide input to CMS about future processes that could be used for prior authorization of other items such as prostheses, orthoses, or respiratory supplies. Future work will investigate the impact of this project on quality outcomes such as error reduction, administrative burden, and turnaround time for delivery of devices to the client. More work is also needed to incorporate accepted frameworks such as the International Classification of Functioning, Disability and Health into EHR operability to improve delivery of services and equipment to people with disabilities.[13]

Conclusion

A pilot project to submit electronic documentation for PMDs to CMS directly from the EHR resulted in a successful transmission of files needed to obtain prior authorizations. Future work will be aimed at evaluating the impact of

this system on administrative workload, responses to requests for signatures or additional documentation, and time to deliver the equipment to the client.

Clinical Relevance Statement

The documentation process for power mobility devices (PMDs) is complex. The Centers for Medicare and Medicaid Services report high rates of improper payments and inadequate documentation. This paper describes a successful pilot project with Electronic Submission of Medical Documentation and the Electronic Medical Documentation Interoperability initiatives which established an electronic order, document exchange and submission process for PMDs and built a roadmap for collecting quality metrics.

Multiple Choice Questions

1. Which of the following is a justification for improving the documentation process for power mobility devices?
   a. Few clinicians prescribing devices use an electronic health record.
   b. High rates of inadequate documentation by clinicians.
   c. High rates of improper payments by CMS.
   d. b and c

   Correct Answer: The correct answer is option d.

2. Which of the following is true about the electronic exchange solution described in this article?
   a. Can support various clinic models by accommodating different workflows.
   b. Would not be applicable for devices like prostheses or orthoses.
   c. Is not scalable to multiple device suppliers.
   d. Has already been implemented at multiple university clinics.

   Correct Answer: The correct answer is option a.

3. The electronic exchange solution described in this article is intended to overcome which of the following barriers?
   a. Eliminate the need for electronic signature of the physician.
   b. Reduce the time it takes to deliver a wheelchair to a client.
   c. Bypass the need for the supplier to communicate directly with the MAC.
   d. Replace physician progress notes with standardized templates.

   Correct Answer: The correct answer is option b.

Protection of Human and Animal Subjects

This project did not involve any human or animal subjects.

Conflict of Interest

None declared.

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