

Eliminating Faxing in Medicine

How far away are we?

How will we get there?



Eric Alper MD
Chief Quality Officer / Chief Clinical Informatics Officer
UMass Memorial Health Care

Larry Garber MD
Medical Director for Informatics
Reliant Medical Group
Board Member – DirectTrust.org

Harvard Clinical Informatics Lecture – March 26th, 2019

UMass Memorial – Community Healthlink
UMass Memorial HealthAlliance-Clinton Hospital
UMass Memorial – Marlborough Hospital
UMass Memorial Medical Center
UMass Memorial Medical Group
UMass Memorial Accountable Care Organization, Inc.

Outline

Why do we use fax to begin with

Why eliminate faxing

Use of existing interoperability tools

 Limitations

 Benefits

The path ahead

Remember when...

- ... we used to write notes on paper
- ... we used to write orders on paper
- ... we used to receive test results on paper

... we used to receive faxes

Someday soon, we may say this.

Why should we eliminate faxing?

Faxing is:

- Cheap
- Easy, does not require training. Fairly easy to find out fax number of intended recipient.
- Can easily send drawings and waveforms (e.g. EKGs)
- Reliable. You know when it fails. Receive or failure receipt.
- Universally available
- Obvious when you received one

- Can accidentally be sent to non-HIPAA-covered entity
- Sits exposed visible to non-intended recipients when received
- Paper or an image, of varying quality and legibility
- Needs to be scanned into the EHR of the recipient—more administrative work
- **Not text or structured data; data may require abstraction, which creates gaps in the record and rework**

The mandate: Eliminate Faxing

“If I could challenge the developers in this room here today to achieve one mission, it would be this: help us make every doctor’s office in America a fax free zone by 2020!”

Seema Verma, CMS Administrator, August 6th, 2018

In England, Health Secretary Matt Hancock [bans](#) NHS from buying new fax machines and insists that they be phased out by March 31, 2020.

HISTalk: Should hospitals be prohibited from using **fax** machines?
No 43.95 % (98 votes). Yes 56.05% (125 votes).
Total Votes: 223



Tweet Share 10

CMS, ONC send message on fax's demise; doctors put them on hold

'No Fax Friday' fittingly came and went much like its namesake; that's to say it suddenly jolted to life, made a small racket, then went stagnant waiting for someone to pay attention. Didn't you get the memo?

"Fax still has its place in optometry—today. But, the writing is on the wall, and it's likely that fax machines will be obsolete in the next 10 to 15 years."

An effort to encourage EHR direct messaging in lieu of the old standby, 'No Fax Friday,' Oct. 12, 2018, is part of a larger initiative from the Department of Health and Human Services Office of the National Coordinator (ONC) for Health IT to disengage the medical community from its "1990s time warp." Proclaimed by ONC Executive Director Steve Posnack at the [ONC's 2nd Interoperability Forum](#) in August, 'No Fax Friday' was a symbolic step on the health IT office's path toward interoperability.

While [true interoperability remains a brass ring](#) that ONC and the Centers for Medicare & Medicaid Services (CMS) strive for in the near future-ONC's annual meeting in November is titled "[Interoperability Awakens](#)"-CMS officials, at least, have pinned a date on fax's demise: 2020.

In remarks before the health IT community at August's Interoperability Forum, [CMS Administrator Seema Verma](#) [claimed](#) the federal government's \$35 billion effort to streamline doctors' workflow through EHRs backfired, making work more difficult and hastening physician burnout. As a result, doctors still jot down paper notes and fax patient records. Now's the time to budget, she argued.

"I don't think it's feasible that we get there by 2020," says Jeff Michaels, O.D., AOA Quality Improvement and Registries Committee past chair. "Because PHI is so regimented and regulated, and because EHR-to-EHR communication requires such a standardized set of data, right now, I don't think it's possible."

Communicating Healthcare Information

Who: **Internal to healthcare system**
 External healthcare providers
 External healthcare agents or agencies

What: Clinical and administrative information

Clinical examples:

Lab, radiology, pathology, cardiac reports
Physician notes, letters, communications
Request for information

Administrative examples:

Referrals, Prior authorizations

Communicating Healthcare Information

Properties:

- Directory of possible recipients
- Timely, including real-time notification that new information has been received
- Secure
 - Encrypted
 - Sender and recipient authenticated/authorized
- Reliable
 - Reaches intended recipient
 - When a failure occurs, a notification occurs
- Format is acceptable to the recipient
 - The recipient is able to find the information that they need
 - The recipient is able to take action on the information
- Retrievable
 - Easily made available within the EHR (now)
 - Can be easily found at a later date
- Structured data can be incorporated into the correct location in an EHR

Multiple methods for communicating healthcare information

How: Push / pull

Push:

Mail

Phone call

Fax

Email [SMTP] or Text [SMS]

Direct message (secure email [SMTP-S/MIME])

Point-to-point interface between EHR systems (HL7 V2.x [TCP/IP])

Internal EHR communication methods [Portal or proprietary APIs]

Web Service (IHE XDR [SOAP] or FHIR [REST])

Pull:

Phone call

Same EHR vendor (e.g. initially Epic's CareEverywhere [IHE XCPD/XCA] and eClinicalWorks' eHX)

Different EHR vendors (e.g. carequality, commonwell, eHealthExchange [IHE XCPD/XCA])

FHIR (Fast Healthcare Interoperability Resources)

"Pushing" a Release of Information request and then "pushing" back the requested information

Multiple formats for communicating healthcare information

Non-structured data:

Paper

TXT

TIFF and PCX (Fax)

PDF

Structured data:

PDF/H

HL7 V2.x point-to-point interfaces

HL7 V3 Consolidated clinical document architecture (C-CDA):

Continuity of Care Document (CCD)

Discharge Summary

International Patient Summary (Trillium2.eu)

FHIR

Importance of communicating structured data

- Facilitates incorporating data into EHR which saves time and reduces errors
 - Manual reconciliation (e.g. problems, allergies, medications, etc...)
 - Automated importing (e.g. lab results, immunizations, etc...)
- Enables clinical decision support
 - Alerting pharmacist when patient discharged on high-risk meds
 - Alerting physicians of abnormal results needing follow-up
- Reduces administrative burdens
 - Prior authorizations (Da Vinci Project – FHIR)
 - Closed-loop referrals (IHE 360X - CDA)
 - Referral request/acceptance/scheduling confirmation
 - Referral outcome/report linked to original order

We can improve healthcare by replacing Fax with structured data!

How is fax being utilized most frequently now? Where is the gap?

Pushing information

Referrals/Prior authorizations

Delivery/Routing of test results and notes to external, referring providers

Ad hoc routing of information to external providers

Benefits / Disadvantages of widely available Push options

Property	Fax	Email	Direct with C-CDA	Point-to-Point Interface	Internal EHR / External Provider
Provider Directory	No	Not for external providers	Yes (Most HISPs and ~2 Million DirectTrust)	N/A	N/A
Timely/Secure	Yes	Not encrypted, so not recommended for healthcare use	Yes	Yes	Yes
Reliable	Yes	Yes, although recipient can block read receipt. Can file into Junk folder.	Yes, although how EHRs display Delivery Status Notification (MDN/DSN) is variable	Yes	Yes
Format Acceptable/Retrievable	Readable: Yes Take Action: +/-	Readable: Yes Take Action: No	Readable: +/- Take Action: +/- (depends on receiver's EHR)	Yes	No
Structured Data	No	No	Yes	Yes	No
Cost/complexity to implement	Low	Low	Moderate	High	Low
Comments	Universal, reliable. Fax server can connect to EHR directly.			Excellent functionality, but each interface needs to be built individually. Not sustainable	Requiring private providers to log into external portal, print then scan into EHR is more labor intensive than Fax

Our best hope for eliminating faxes

Property	Fax	Email	Direct with C-CDA	Point-to-Point Interface	Internal EHR / External Provider
Provider Directory	No	Not for external providers	Yes (Most HISPs and ~2 Million DirectTrust)	N/A	N/A
Timely/Secure	Yes	Not encrypted, so not recommended for healthcare use	Yes	Yes	Yes
Reliable	Yes	Yes, although recipient can block read receipt. Can file into Junk folder.	Yes, although how EHRs display Delivery Status Notification (MDN/DSN) is variable	Yes	Yes
Format Acceptable/Retrievable	Readable: Yes Take Action: +/-	Readable: Yes Take Action: No	Readable: +/- Take Action: +/- (depends on receiver's EHR)	Yes	No
Structured Data	No	No	Yes	Yes	No
Cost/complexity to implement	Low	Low	Moderate	High	Low
Comments	Universal, reliable. Fax server can connect to EHR directly.			Excellent functionality, but each interface needs to be built individually. Not sustainable	Requiring private providers to log into external portal, print then scan into EHR is more labor intensive than Fax

Current barriers to leveraging Direct interoperability

Provider Direct address association

- Most, but not all HISPs are in the DirectTrust Provider Directory

- Inconsistent level of effort and success incorporating Directory into EHR

Difficulty sending exactly what you want to send depending on EHR

- Ability to select specific reports/documents, including images/PDFs

- Ability to include a free-text comment

Automatically generated Direct messages (e.g. referrals or results) is variable by EHR

Sending Direct message does not always assure timely receipt by intended recipient

- Message Disposition Notification (MDN) and Delivery Status Notification (DSN) (required by ONC's 2015 Edition of HIT Certification for EHRs) may not be visible to sender

- Each receiving organization has different workflows for patient-matching and routing incoming Direct messages which can delay delivery

Ability to see images embedded in the CDA (nonXMLBody element) or non-CDA attachments (e.g. PDFs) or free-text in body of message varies by EHR

Filing received structured data into correct location in the chart is variable by EHR

Addressing barriers to replacing Fax with Direct interoperability

Functionality will drive adoption

Usability has to **exceed** that achieved by Fax

- Automate data gathering/addressing/sending

- Automate routing and incorporating incoming data

Value has to **exceed** that achieved by Fax

- Reduction in work and chances for errors

- Improved timeliness

- Enable new workflows

 - Clinical decision support/alerts/tracking

 - Closed-loop referrals (IHE 360X)

EHR vendors & implementers must make functionality available!

Addressing barriers to replacing Fax with Direct interoperability

January 2018 – Multidisciplinary group working with EHR vendors developed and prioritized 57 functional requirements for Direct Interoperability (Appl Clin Inform 2018;9:205–220)

www.thieme-connect.de/products/ejournals/abstract/10.1055/s-0038-1637007

Feature/Function		Priority 1	Priority 2	Priority 3	Total
Transitions of care	Outbound message functions	5	4	2	11
	Inbound message functions	6	2	3	11
Clinical messaging	Outbound message functions	6	8	5	19
	Inbound message functions	4	5	0	9
Administrative functions		2	2	3	7
Total		23	21	13	57

ONC supportive of recommendations

EHR vendors are gradually improving their Direct functionality

New vendors supplementing EHR functionality to better support Direct (e.g. Kno2, MaxMD, etc...)

How do we get to the goal line?

Should we encourage EHR vendors to send PDF attachments to Direct messages?

Pros: Can readily include images (e.g. EKGs)
Could be implemented fairly easily

Cons: No structured data so limited benefit over Fax
May divert energy from structured-data solutions
May cause industry to declare that Faxes are dead
and stop work on better structured-data solutions

Will FHIR magically solve all of our problems?

Someday perhaps, but not for a while

EHR vendors are working mostly on FHIR queries

Next they will work on pushing FHIR resources (data)

Eventually they will catch up with Direct/C-CDA documents

How do we get to the goal line?

Legislation/Regulation or Conditions for Participation/Payment!

We have good transport standards (e.g. Direct)

We have good data format standards (e.g. C-CDA)

We have good vocabulary standards (LOINC, RxNORM,
SNOMED, etc...)

We send >25 Million Direct messages/month

What's lacking is usability (both sending & receiving)

We need to force EHR vendors to provide a minimum level of Direct interoperability usability that exceeds what is available today!

Summary

- Eliminating fax is a laudable goal
- Standards to support this are still being developed for several use cases, but most of the necessary standards are currently available
- There is no current regulation to implement these standards with a focus on usability, or that puts a hard time-limit on faxing; regulation may encourage vendors to more rapidly conform to the standards and add functionality to make it more user-friendly
- Without the technical foundation or the ease of use to drive achieving improved usability and value, progress will be slow (and likely incremental)
- **We believe that fax is on its path to elimination, but not in the time frame that has been articulated**

Questions?

- Eric.Alper@umassmemorial.org
- Lawrence.Garber@ReliantMedicalGroup.org