Short Communication

PPX-TEC API APP: A unique approach to sending and receiving health and insurance data

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A Short History of EHRs

In 1971, the U.S. Dept. of Veterans Affairs (VA) became one of the first large healthcare systems to fully implement a computerized patient record system. Shortly thereafter, in 1972, Regenstrief developed the Regenstrief Medical Record System (RMRS), a historically important EMR. The purpose of this early EMR was described in a quote that is still applicable today:

"Our goal was to solve three problems:

(a) to eliminate the logistical problems of the paper records by making clinical data immediately available to authorized users wherever they are,

(b) to reduce the work of clinical book keeping required to manage patients, and,

(c) to make the informational 'gold' in the medical record accessible to clinical, epidemiological, outcomes, and management research."

Since that time, hundreds of historically important medical EMR/EHR systems have been developed. As the use of EMRs and EHRs continued to grow, two things became clear:

1. electronic records are valuable to patients, providers and payers
2. the privacy of individually identifiable health information required protection.

Therefore, in 1996, the **Healthcare Insurance Portability and Accountability Act (HIPAA)** gave the Department of Health and Human Services (DHHS) 12 months to establish detailed recommendations on standards with respect to the privacy of individually identifiable health information.

Under the protection of HIPPA, EMRs and EHRs continued to flourish. However, widespread differentiation of data systems, structures and formats led to problems sharing data across disparate systems. System interoperability became a concern. On April 27, 2004, Executive Order (EO) 13335 was issued "to provide leadership for the development and nationwide implementation of an interoperable health information technology infrastructure to improve the quality and efficiency of health care." As a result,

the Office of the National Coordinator for Health Information Technology (ONC) was established, along with the American Health Information Community (AHIC) to oversee policy.

Widespread differentiation of data systems, structures and formats led to problems sharing data across disparate systems. System interoperability became a concern.

The Case for Interoperability

More than ever, mobile healthcare apps are becoming an integral part of an individual's health, assisting them with; information seeking behaviors and diagnosis and management of any chronic disease, etc [1]. Emerging research demonstrates that those individuals with readily accessible to their health data tend to have better health outcomes than those who do not [2, 3]. However, as varied healthcare apps and Electronic Health Records (EHR) software's emerge, there are limited platforms that can serve as intermediaries between these apps and software to give patients and providers the necessary health information [4].

Interoperable systems present a wide array of benefits:

- Increased operational efficiency
- Improvement in quality of patient care
- Stimulation of patient education and involvement
- Faster access to key data points for physicians
- Reduction in overall health care costs
- Establishment of potential feedback loops between facilities
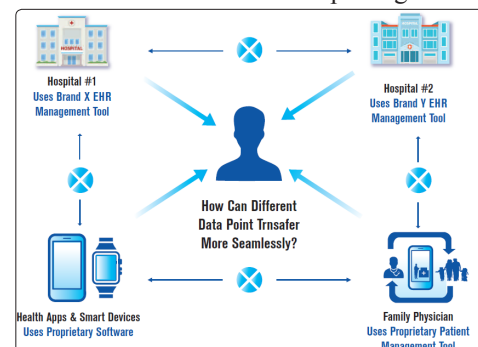- Allows for more advanced health reporting and monitoring

Figure 1

Figure 1 shows the current challenge with data transfer. A patient receives information from a number of various sources, each of which uses different software to catalog and track patient information. Not only does this amount of information from separate sources create a more cumbersome experience for the patient, but that patient may also have to act on behalf of one of those sources when providing this information to a different health care provider.
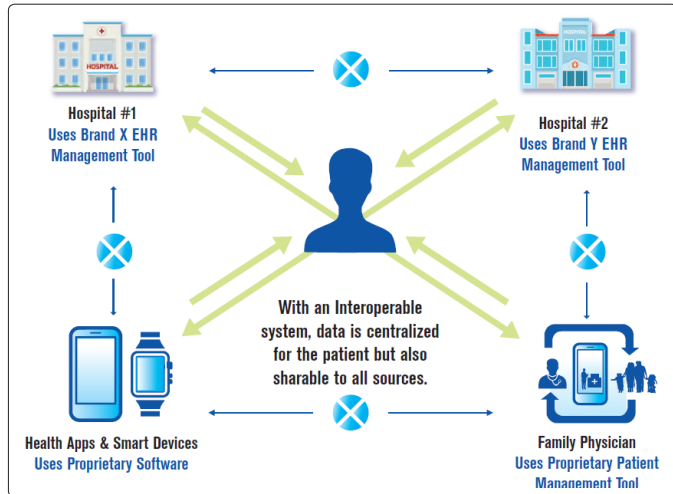
However, Figure 2 shows how more efficient and seamless sharing of data is possible with a patient-centric *interoperable* system. Until now, the proprietary nature of various software platforms has made it difficult to *universally share information*. This dramatically presents an opportunity to provide a way to help bridge the gap for data sharing in a safe, secure manner that adheres to regulatory compliance, all of which helps to keep patients engaged and health care practices working more efficiently. With the passage of the 21st Cures Act, data blocking is forbidden and patient's sharing in the ownership on personal data with a holistic approach is mandatory.

Introducing PPX: A Solution to Bridge the Gap
Patient Provider Exchange (PPX) seizes the opportunity to deliver a truly patient-centric interoperability solution by creating a bridge that allows both patients and health care providers a means to send, receive, search and integrate their health records in a secure and accessible application.

Patient Provider Exchange-TEC API APP (PPX) is uniquely positioned to quickly send and receive an individual's health data via Bluetooth (no internet connection needed) during interactions with the full range of health care providers, payers, friends and family using PPX on smart devices and integrated in EHR systems, insurance, social services, and pharmacology platforms.

family using PPX on smart devices and integrated in EHR systems, insurance, social services, and pharmacology platforms.

PPX is designed to aggregate data from multiple platforms into a single document. To our knowledge, there is no other app designed to do this across multiple apps and EHRs software. PPX can give healthcare professionals easier access to health and insurance history of all patients, especially those with multiple providers.

Additionally, PPX exchanges data solely between the patient and the provider. PPX serves as the conduit between parties, meaning PPX creates its own data exchange standard with a unique exchange and **share** screen.

This is true patient-centric healthcare data interoperability.

Real World Evidence
PPX-TEC was tested with live users to determine attitudes, willingness, and feasibility of PPX-TEC for exchanging electronic health data.

A total of 25 beta testers participated in the initial PPX-TEC In-Clinic Assessment;

"ATTITUDES WILLINGNESS AND FEASIBILITY OF PPX-TEC FOR EXCHANGING ELECTRONIC HEALTH DATA."
All participants downloaded and installed PPX-TEC software on their own personal smart phone devices, completed a brief training session, filled in personal profile information and completed at least one secure send/receive of profile information plus actual personal clinical data.

Participants represented a diversity of ages, were split 60% (male) /40% (female) by gender and were mostly Black (88%) in terms of race.
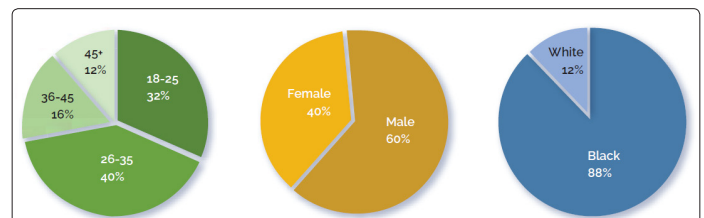
While all participants owned a smartphone, a mix of platform users were included:

Smart Phone OS:
iPhone 52%
Android 48%
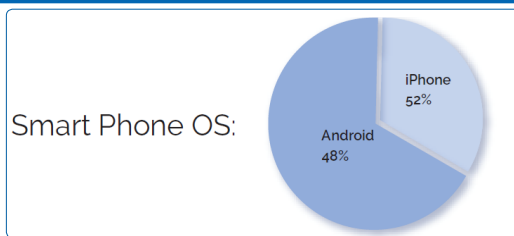
For some participants, their smartphone was their ONLY way of storing and accessing their medical records:

		All Respondents (n=25)
Smartphone (Apple, Android, etc.)	100%	25
Tablet Computer (iPad, Galaxy Tab, Kindle, etc.)	36%	9
Laptop Computer (MacBook, Vaio, Asus, etc.)	28%	7
Smartwatch (Apple, FitBit, Garmin, Samsung, etc.)	8%	2
Desktop Computer	4%	1

Participants found PPX-TEC core features valuable, including scheduling appointments, accessing lab test results, storing and managing medical records as well as sending and receiving health data.

Q: Please select the PPX-TEC features you feel are MOST valuable to you:

I can schedule appointments	78%
I can access my lab test results	78%
I can manage and store my medical records	67%
I can communicate with my medical team	56%
I can send and receive my health data	44%
I can manage my medications	44%
I can search for medical information	44%
I can access my medical imaging results	33%
I can manage and store my family member's medical records	22%
Other: "saves time and money / avoid unnecessary Dr. visit"	11%

Participants voiced PPX-Tec's value in ways that can be universally recognized:

"All of my information is stored and easily accessible on my device and I can easily transfer it when needed." - Female, age 22

"I have an electronic copy I can keep safe with me at all times that I can look back on if I need reminding of anything" - Male age 29

"It makes it easier to access [my health data] when situations arise where you need data immediately. So far, I am impressed and pleased with the information I have received." - Male, age 31

Participants felt PPX-Tec was "easy to use" and expressed high overall satisfaction with their user experience. Most were likely to recommend using PPX-Tec to friends and/or family.

User Experience	
Overall Ease of Use	100%
Overall Satisfaction	96%
Likelihood to Recommend	96%

percent answering "6" or "7" on 7-point Likert scale

Conclusion

Computerized patient record systems (EMRs/EHRs) have existed since the early 1970s. They were developed with the goal of eliminating logistical problems associated with copying and sharing paper records, reducing the amount of clinical bookkeeping required to manage patients, and making medical information more accessible to fulfil research goals broadly associated with population health.

Enabled by fast advancing computer technology and self-evident value, hundreds of historically important EMR/EHR systems were developed. As these systems became more common, the privacy of medical records needed to be addressed. As a result, in 1996, the Healthcare Insurance Portability and Accountability Act (HIPAA) set a historic milestone in protecting personal health information.

Over the next decade into the early 2000s, widespread differentiation of data systems, structures and formats led to problems sharing data across disparate EMR/EHR systems. System interoperability became a concern. As a result, the Office of the National Coordinator for Health Information Technology (ONC) was established, along with the American Health Information Community (AHIC) to oversee policy in 2004.

Interoperable systems offer significant benefits:
- Increased operational efficiency
- Improvement in quality of patient care
- Stimulation of patient education and involvement
- Faster access to key data points for physicians
- Reduction in overall health care costs
- Establishment of potential feedback loops between facilities
- Allows for more advanced health reporting and monitoring

However there have been challenges to making existing EMRs/EHRs interoperable, until recently.

Patient Provider Exchange Technology (PPX-Tec) allows both patients and health care providers a means to send, receive, search and integrate their health records in a secure and accessible application across the healthcare delivery system.

Participants felt PPX-Tec was "easy to use" and expressed high overall satisfaction with their experience. Most were likely to recommend using PPX-Tec to friends and family.

PPX-Tec is uniquely positioned to quickly send and receive an individual's health, insurance and social services data via PPX's unique Share screen during interactions with the full range of health care providers, payers, friends and family using PPX on smart devices and integrated in provider, insurance, social services, and pharmacology EMR/EHR platforms.

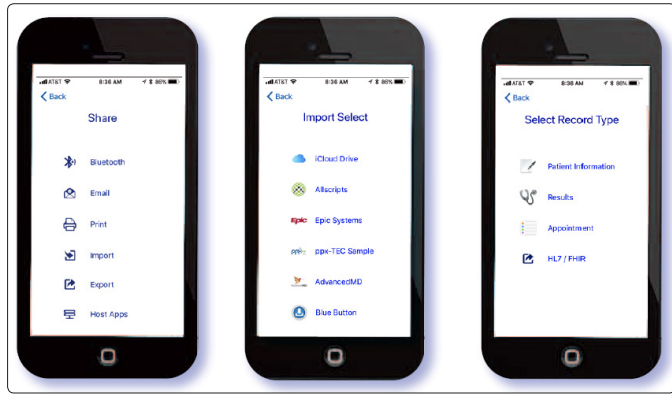The technology was recently tested in clinic with positive results. In "ATTITUDES WILLINGNESS AND FEASIBILITY OF PPX-TEC FOR EXCHANGING ELECTRONIC HEALTH DATA" 25 beta testers downloaded and installed PPX-TEC software on their personal smart phone devices, completed a brief training session, filled in personal profile information and completed at least one secure send/receive of profile information plus actual personal clinical data. PPX's clinical trial partners were Open Arms Healthcare Center in Jackson, Mississippi and its electronic health record vendor, AdvanceMD.

Participants found PPX-TEC core features valuable, including scheduling appointments, accessing lab test results, storing and managing medical records as well as sending and receiving health data.

PPX-Tec has advanced EMR/EHR technology to the next milestone of effective patient-centric interoperability. The multiple benefits of increased efficiency, improved quality of care and reduced costs will have great positive impact to patients, providers, social services, payers and clinical scientists.

Readers are encouraged to visit www.ppx-tec.com for additional information and details, or contact Debra Griffin with questions or comments.

References

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