Donald W. Rucker, MD
National Coordinator for Health IT
Office of the National Coordinator
Department of Health and Human Services
Mary E. Switzer Building
330 C Street, SW, Office 7009A
Washington, D.C. 20201

Re: Office of the National Coordinator's Request for Information on Experiences with Patient Matching

Dear Dr Rucker,

On behalf of CommonWell Health Alliance, we are pleased to submit comments to the Office of the National Coordinator's Request for Information on experiences with patient matching. We welcome the opportunity to provide input and insight into our existing challenges and our thoughts into promising innovations in patient identity and matching to inform ONC's report to Congress on technical and operational methods that improve patient identity and matching.

CommonWell Health Alliance is a not-for-profit trade association made of various health IT and health care stakeholders. As a membership-based trade association, we provide an environment to openly work on interoperability improvements across many cornerstones of health care including but not limited to technology companies, payers, State and Federal agencies, providers, clearing houses, and patients. When the Alliance launched seven years ago, we started with services centered around Care Treatment and provided the ability for providers to query across other provider systems and retrieve data about a given patient. We have and continue to be a patient-centered network available nationwide and are proud to have added Patient Access use cases to give individuals the ability to find and access their data through patient portals, personal health records, and other patient-centric applications.

CommonWell has a simple vision: health data should be available to individuals and caregivers regardless of where care occurs. Additionally, access to this data must be built into health IT at a reasonable cost for use by a broad range of health care providers and the people they serve. At CommonWell, together with our service provider and members, we have created and deployed a vendor-neutral platform that breaks down the technological and process barriers that inhibit effective health data exchange. We leverage existing standards and policies in order to enable scalable, secure, and reliable interoperability as easily as possible for our members and their customers across the nation. We believe the ONC's Strategic Plan aligns with our mission and vision.

Note on Our Comments

These comments are reflective of the opinions of the Alliance and its members in regard to the objectives of CommonWell. It is not intended to represent the individual comments of each of our Members. Comments made here are not intended to represent the view of any particular member; and we expect some of our members to submit their own comment letters.

Overview

As part of our work as a national network enabling access to patient records for multiple use cases including both providers and patients themselves, we have come to understand that there are two distinct issues at play when it comes to the problem of patient identity and matching: – first, the need to properly identify that a person is who they claim to be, and second the need to match a person's records across systems and to the identity of the person. CommonWell supports a system that applies a high level of trust to the identity of a person as well as a unique healthcare patient identifier that can be matched with that identity. This system should be a multi-method approach that takes into account the identification issues inherent in the population of the United States. We encourage ONC to work with other departments of the federal government particularly those advancing the adoption and usage of REAL IDs to understand the progress that has been made outside of the healthcare ecosystem on identity.

The rest of this document details our observations of the current issues and outlines our opinion on the best path forward for patient matching and the creation of a unique patient identifier to substantially improve the identification and matching of patients clinical data across the healthcare continuum.

Patient Matching

Patient matching is a well-known challenge for healthcare in the United States. As we try to coordinate care across providers, share data across care settings, and engage patients in their records we regularly need to move patient data between systems. Given the lack of a unique healthcare identifier that replicates across systems, the healthcare ecosystem has developed methods to match patients, most commonly based on their demographics. Health Information Exchanges (HIEs) and Health Information Networks (HINs) as well as individual facilities have developed elaborate processes and algorithms for attempting to match patients across care settings. Most of these processes rely on comparing demographics of a patient across two systems to determine if they are the same person including most commonly First Name, Last Name, Date of Birth, Address(es) and Administrative Gender. Additional fields that are

used often include Phone Number(s), email address(es) and Strong IDs (e.g. Driver's license number and state).

The level and completeness of demographics needed to match a patient across two systems depends on many factors. When matching a patient across two settings we are effectively trying to unambiguously determine that patient 1 at facility A is the same person as patient 2 at facility B. Sometimes this can be accomplished with very little information and other times it requires a lot of information. If speed didn't matter and we had infinite resources this would not be that hard. Humans are usually able, when looking at two records, to determine if one patient is the same as another. Human intervention in digital exchange is both expensive and disruptive to expected workflows and therefore machine algorithms for matching will continue to increase in importance.

At CommonWell, algorithms are in place to inform our record locator service. Many HIEs and HINs have automated, manual, and hybrid systems to do this. At CommonWell we are not predominantly automated, most of our matching is computer assisted with human verification. When a provider is looking for data across the network, they are presented with a list of probable matched patients by the algorithm, and they choose which patients are the same person and link them together. While this probable list is determined by computers, the final decision is made by a human which increases trust in the matching. In networks like ours, data moves at the speed of trust and patient matching is a key component of maintaining this.

Most HIEs and HINs are making match decisions electronically through computer algorithms. Even at CommonWell, we are moving towards increased automation because some of our newer use cases require automated matching (e.g., patient access, release of information for payment and health care operations) and there is a desire to increase operational efficiency and decrease clinical or provider burden network wide.

When looking at automated matching, it is important to differentiate between false negatives and false positives. With a false negative[1] - two patients are the same person, but the algorithm determines they are separate people. With a false positive[2] - two patients are different people, but the algorithm determines they are the same person. To address these issues, most patient matching systems use a scoring structure that gives

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[1] Irene Stemmle, Female, DOB 1/1/1970
Currently residing at 123 Main St, Springfield, MA, 99999.
Moved from 1025 Broadway Ave, New York, NY, 11111 two years ago
Springfield, MA provider has new address, NY, NY provider has old address.
Patient does not match due to non-matching address

[2] Irene Stemmle, Female, DOB 11/10/1970 at 123 Main St, Springfield, MA, 99999
Irene Stemmle, Female, DOB 10/11/1970 at 321 Main St, Springfield, MA, 99999
Patient matches due to algorithmic assumptions including zip and city matching being weighted heavily and DOB month/day swapped assumed as an error

points for attributes that are the same and often partial points for attributes that are frequently miscoded. Other items included in these scoring systems include but are not limited to comparing phonetic pronunciation of names instead of spelling, checking for typos in names and addresses by substituting near characters on the keyboard for all typed letters. There is an inherent challenge in creating a system that allows room for coding errors while minimizing the risk of false positives.

Once the scoring system is created, systems then assign a threshold to determine whether there is a match or not. Many systems have a multi-tiered threshold process which include definite matches, definite non-matches, and those that should be reviewed by a human.
It is important to note that the threshold and requirements of a matching system may depend upon the specific use case of the match request. For example, directed exchange that involves the search of a single system where a patient is known to have records may allow for a lower match threshold than exchange across an entire network.

At CommonWell, we only auto-match perfectly aligned records. While this likely causes us to have more false negatives than other automated MPI systems, we are still successfully able to match millions of people to their records because most of our near matches are reviewed by human users. As we look to expand auto-matching we are actively looking into new approaches to decrease the false negatives while not increasing false positives. One approach we are exploring is data cleansing before records are compared for patient matching.

Address Normalization

Not all addresses are created equal. Health care facilities collect address information from the patients themselves or from identification provided by the patient, but these addresses are often inaccurate for many reasons. In CommonWell we have over 93 Million unique individuals matched across our network but many more that could have been matched with better address information.

One helpful approach in this situation is to validate the address before it is stored in the EHR or when it is compared with other records. The US Postal Service has an address API that validates addresses and corrects them to US Postal Standard addresses which allows for address normalization. This API is used by online retailers and other industries but is not available to health care software today. Making this available would greatly help in demographic based matching nationwide. CommonWell would support legislation making address normalization easier by bringing postal service address verification APIs to health care systems.

Phone Number and E-mail

Since number portability regulations were enacted, mobile phone numbers have become an effective identifier. This is also true of e-mail addresses. These elements have been, and should continue to be, effectively used as part of a robust patient matching algorithm. It is important to note that an algorithm should not to rely solely on phone numbers and e-mail address While a phone number or e-mail address is often unique to a person, they can also be associated with multiple people. For example, many parents use their e-mail or phone number in the records for their children and some people's contact info may be used in the records of aging relatives.

Strong IDs

Storing the characters from government issued IDs and associating them with clinical records and addresses could also help patient matching. For most people, the most commonly issued strong ID is a driver's license. While it does not change often, there are many circumstances where they do. For example, when a person moves to a new state. Also, minors generally don't have driver's licenses or state IDs. Passports could work as a national approach, but a large swath of the population does not have a passport and for those who do this number may not be unique as each time a passport is renewed a new number is generated.

Demographic Gap Closure Options

Prior Address Capture

Currently, new patients to a practice or system are usually only asked for their current address. With constant movement between addresses and locations, patients may be less likely to be matched when they change addresses because there is no record of the prior address. One way to address this issue is to make it standard practice in health care to collect at least one prior address from the patient if available. While USCDI has added prior address as a standard demographic, if it isn't entered and isn't used when records are queried it won't help. Some EHRs have started to make this workflow easier and we expect this will improve our ability to track across gaps. CommonWell supports education and other efforts available to accelerate adding this to routine workflows.

Referential Matching

Referential matching companies use data outside of health care to help create a longitudinal view of a person's address history. While health care entities often don't know about prior addresses, there are many other data points that are able to match. When a person moves between addresses, the likelihood that their credit card bill, auto loan, or mobile phone bill are now associated with the new address is high. Using this account history, a system can determine that the person with a prior address is the same as the person with the new address based on having the same credit card or auto loan along with other key demographic data matches. This type of system is not perfect as it is limited to those with a robust financial and utility history.

Payer Data

When a person moves, they may stay on the same insurance plan either permanently or temporarily. When employment changes, insurance plans and membership numbers also change. Many clinical systems store both current and historical insurance membership numbers and often include them within clinical transactions. This is a high quality, health care specific foreign key that can help close gaps. Unfortunately, most HIEs (including CommonWell) have not fully integrated payers' data into their system so the data is not present, but those who have done so have seen success.

Unique Healthcare Identifiers

Commonwell supports assigning a unique healthcare identifier to everyone in the United States, ideally at birth, recognizing that while this is a logical way to correct patient matching issues, it is also inherently complicated. The current population would need to be assigned an identifier and a system would need to be put in place to assign identifiers as people enter the system. If deployed correctly, a unique identifier can help with the matching of pediatric patients, a problem that far exceeds the issues around matching adult patients, as many of the identifiers described either do not exist yet or are not unique to minors. A birth assignment system will not work for all who use the US healthcare system (such as vacationing foreigners or undocumented immigrants) but it can be seen as the beginning stages of a system that could benefit a large swath of the population and reduce administrative costs throughout health care. Mechanisms could be put in place to add an identifier when someone new enters the system, perhaps building on the matching algorithms described above or in conjunction with other externally recognized identification systems.

For a system like this to work, other controls would need to be put in place. As discussed, an identifier needs to be matched to the identity of the person to whom that identifier is assigned. If unique IDs are assigned to every individual in the United States,

an identity management system would need to be established to create and match the patient's identity to their assigned identifier.

Regulatory Considerations

TEFCA

The coming full implementation of TEFCA requires the implementation of a standardized national method of patient matching. If not implemented, it is possible that TEFCA becomes yet another administrative burden on the system, adding more confusion and misinformation to an already stressed system. As part of the implementation of TEFCA, large Qualified Health Information Networks (QHINs) will be established. The populations within these QHINs will have increased likelihood of mismatches due to the expanded population which heightens the risk of two people within a system having similar or exactly the same demographics. This could potentially result in a false positive match and the sharing of clinical records with the wrong patient, which could result in negative patient outcomes.

With QHIN to QHIN exchange expected to be based on population queries, the likelihood of a query yielding a non-ambiguous result increases by the size of the responding QHIN. To make it work effectively, we may need to standardize the fields used to make the query from one QHIN to another. As well as potentially standardize the methods of matching used by the responder. This need of a common approach increases when we move from Treatment use cases to Patient Access use cases where incorrect matches cannot be tolerated.

In order for TEFCA to be properly implemented, there needs to be trust between the QHINs and proven to be working. If a provider under QHIN A is able to find records for their patient in QHIN B, but the provider in QHIN B can't retrieve the records from the practice in QHIN A, then trust may be eroded. In practice this could happen because QHIN A is a much larger QHIN and is unable to uniquely match a patient to a set of records and therefore must respond with no data. Or it could be that the matching algorithm in QHIN A is stricter than the algorithm in QHIN B. Matching standardization could help alleviate these problems.

Anti-Information Blocking

Another regulatory consideration is the newly finalized information blocking rule. This rule strives to allow patients to more easily request and gain access to their records. At CommonWell we believe a network like ours is a great way to allow a patient to get access to their data at scale – one request can result in responses for many practices, and we believe that patients have a right to securely and easily access their own clinical records. However, the reality of providing this data directly to patients is complicated, as

a match for direct patient access requires that the system is certain the person requesting the data is the same person associated with a clinical record.

This is less of an issue for provider to provider exchange which is governed by HIPAA. When two practices exchange data and the wrong person's data is sent in error, it is an error. Both parties have policies and procedures grounded under HIPAA to cover the accidental disclosure. If a patient is given the wrong data, on the other hand, it is now outside HIPAA. There is minimal legal framework in place to cover an accidental release of information to the wrong person and therefore matching for direct disclosure to patients needs to be more tightly controlled.

One solution is to make patients obtain records directly from their provider practices with a strict identity proofing requirement and patient matching done at the provider level. This option does not scale, and we believe the difficulty in matching an incoming request from a patient to a record held in an EHR will be a deterrent to the goals of universal, secure access to patient records for all individuals.

CommonWell fundamentally believes the networks we have built should be able to help patients collect their own data. For example, as the COVID pandemic evolved, our patient access focused Members saw an increase in people seeking their records. There are many possible reasons for this including concern about COVID and health in general, higher unemployment leading to more free time to explore new apps, and increased data needs for claims processing. The stress on a provider system created by an influx of patients wanting to access their information is an unnecessary burden that could be solved by making it safer and easier for a person to identify themselves and collect their data.

This goal is achievable with the combination of verified identity and a patient identifier. CommonWell has begun this work by choosing to require IAL2 as defined in NIST Special Publication 800-63A as the minimum bar for identity verification. Once identified, a patient should be able to use his or her unique health care identifier as a primary key to match queries. As providers begin incorporating this ID into their systems, match rates could improve for all data exchange use cases. Outside of health care systems, this level of identity verification has already begun to be implemented with systems such as the REAL ID and CommonWell encourages ONC to explore in-process person identity verification efforts and marry them with patient identity verification efforts.

Summary

In Summary, CommonWell supports and urges the ONC to consider the following guidance as we strive to improve patient outcomes across the health care continuum, provide safe and secure access to clinical records for those who have a right to them, and safeguard against wrongful disclosures:

- Current approaches based on demographic matches have proven to be relatively effective, but they do have many shortcomings in practice. Improvements to demographic-based matching will likely have diminishing returns and we are already nearing the edge of the improvements available with this method.
- Strategies to make data cleaner within systems and when matching across them can simplify the matching process. CommonWell supports legislation that requires postal service address verification APIs to be made available to health care systems for data normalization.
- Moving to a unique health care identifier is the most logical solution to many of the problems facing us today, but it would require careful rollout to be effective.
- A multi-method approach that works with a unique health care identifier in conjunction with a validated identity is likely the best approach long term. We encourage ONC to work across agencies to build upon the person identity work that is already in process.

On behalf of the CommonWell Health Alliance, thank you again for the opportunity to reply to the ONC's Request for Information on Patient Matching. For any clarification or comments, please feel free to contact me at paul@CommonWellalliance.org.

Sincerely,

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