2019 NPCR NEBRASKA SUCCESS STORY

Nebraska Cancer Registry: Qianru Wu, Connie Ganz, Lifeng Li

Implementation of Electronic Pathology (ePath) Reporting

NATIONAL PROGRAM OF CANCER REGISTRIES SUCCESS STORY

SUMMARY: To address the challenge of manually managing hard copies of pathology reports from pathology laboratories, the Nebraska Cancer Registry (NCR) initiated an Electronic Pathology (ePath) Reporting project to collect Health Level Seven (HL7) formatted electronic pathology reports. The NCR installed eMaRC Plus and tested the connection between eMaRC Plus and the Public Health Information Network Messaging System (PHINMS). The NCR designed a data transmission plan and worked with the CDC's Registry Plus User's Group for the laboratory on-boarding process. Currently two national laboratories have been on-boarded and the largest laboratory in the state is in development.

CHALLENGE:

1. Most reports that the NCR received directly from pathology laboratories were paper-based, which required manual case abstracting and data entry. The volume of received pathology reports was around 1,400-1,700 cases per month, including both reportable and non-reportable cases. The NCR staff was overwhelmed processing such a large volume of reports, creating major delays in the NCR work flow. Additionally, it was also burdensome for the reporting pathology laboratories to mail or fax hard copies of pathology reports to the NCR. For example, the largest pathology laboratory in the state faxed 80-100 pages per day, with some reports being as long as 30 pages; and according to them, they often had issues with faxing.
2. The accurate conversion of laboratory Electronic Medical Record (EMR) data to HL7 messages.
3. The transmission of information in the electronic pathology report from the EMR systems hosted by pathology laboratories to the NCR database.
4. The establishment of new data transfer methods with the reporting facilities may require the development of new HL7 interfaces or the modification of existing HL7 interfaces. The change to electronic reporting will incur additional expenses and training for the reporting facilities. It was a challenge for the NCR to persuade reporting facilities to participate in the ePath project.

SOLUTION:

1. The NCR initiated the ePath Reporting project to collect HL7 formatted electronic pathology reports, minimizing the requirement for manual case abstracting and data entry. Upon completion of the connection with the reporting laboratories, the electronic pathology reporting and Health Information Exchange (HIE) practices made data collection more efficient, accurate, complete, and secure.
2. The NCR reached out to CDC's NPCR-Advancing E-cancer Reporting and Registry Operations (NPCR-AERRO) ePath Workgroup for support. The workgroup offered HL7 message validation, ensuring messages from laboratories can be correctly abstracted in eMaRC Plus. Additionally, the workgroup assisted the NCR to set up the PHINMS connections between laboratories and the NCR.
3. The NCR designed a data transmission plan. Electronic pathology reports are initially stored in a laboratory's EHR system. Periodically, pathology reports are sent to the laboratory's HL7 interface. The interface filters out non-reportable cases and converts reportable cases to HL7 messages. The interface also guides the HL7 messages to the laboratory's PHINMS sender, where the HL7 messages are queued to be transmitted to the NCR PHINMS receiver. eMaRC Plus instantly picks up the HL7 messages from the NCR PHINMS receiver queue. eMaRC Plus automatically abstracts the cancer information within the HL7 messages. Staff reviews the abstracts to ensure no required data is missing. Abstracts are then converted to the North American Association of Central Cancer Registries (NAACCR) files in eMaRC Plus. The NAACCR files are imported into a subsystem of the Rocky Mountain Cancer Data Systems (RMCDS), which serves as the case abstractor and main database. In the subsystem, staff reviews and completes data items required by both National Program of Cancer Registries (NPCR) and NAACCR. Finally, all data in the subsystem is consolidated with the main system. The NCR decided to start with low-volume pathology laboratories to test the above procedure as well as to prepare for the high-volume laboratories.
4. The NCR sent out a survey to the reporting laboratories. In the survey, the NCR stated the value of electronic pathology reporting and also asked if the laboratory was interested in establishing electronic pathology report exchange. Survey questions also included a laboratory's demographic information, case volume, reporting methods, EHR system name and vendor, and any existing HL7 interfaces.

RESULTS: The NCR followed the data flow plan and successfully on-boarded two low-volume pathology laboratories. The knowledge gained from these experiences were then applied to the on-boarding process with the largest pathology laboratory in the state. Pathology reports from this laboratory are approximately 90% of the total case volume per year. Therefore, with the largest state laboratory on-boarded, the NCR achieved a major reduction in paper-based reporting to the NCR.

Electronic pathology reporting greatly shortens the processing time for pathology reports. Before electronic pathology reporting, hard copies of pathology reports were not usually processed at the time when received. The major reasons included:

1. Manual data entry was time and labor intensive. Physicians were required to report new cancer cases within six months, so more information could come in during this six-month window after the arrival of the initial pathology report. To be efficient, staff would delay data entry until all information had been received.
2. For one cancer case, there might be more than one pathology report, including but not limited to primary report, supplemental pathology report, addenda, amendments, and so on. This required data consolidations multiple times for one case.

Electronic pathology reporting allows staff to process electronic pathology reports in real-time because:

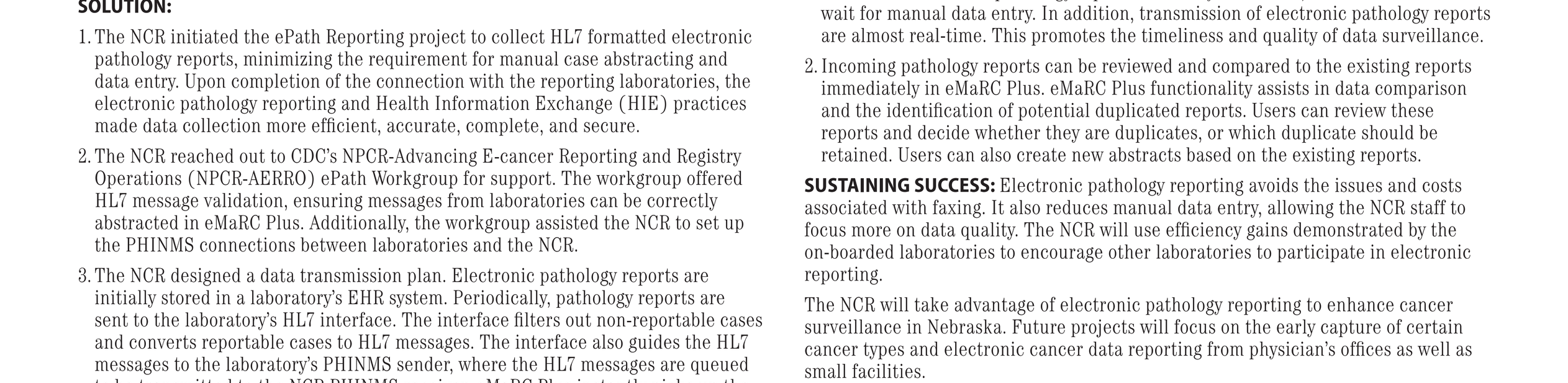
1. Data abstracted from pathology reports is already electronic, so there is no need to wait for manual data entry. In addition, transmission of electronic pathology reports are almost real-time. This promotes the timeliness and quality of data surveillance.
2. Incoming pathology reports can be reviewed and compared to the existing reports immediately in eMaRC Plus. eMaRC Plus functionality assists in data comparison and the identification of potential duplicated reports. Users can review these reports and decide whether they are duplicates, or which duplicate should be retained. Users can also create new abstracts based on the existing reports.

SUSTAINING SUCCESS: Electronic pathology reporting avoids the issues and costs associated with faxing. It also reduces manual data entry, allowing the NCR staff to focus more on data quality. The NCR will use efficiency gains demonstrated by the on-boarded laboratories to encourage other laboratories to participate in electronic reporting.

The NCR will take advantage of electronic pathology reporting to enhance cancer surveillance in Nebraska. Future projects will focus on the early capture of certain cancer types and electronic cancer data reporting from physician's offices as well as small facilities.

CONTACT INFORMATION:

Qianru Wu (email: Qianru.Wu@nebraska.gov or phone: 402-471-2241)
Connie Ganz (email: Connie.Ganz@nebraska.gov or phone: 402-471-0147)
Lifeng Li (email: Lifeng.Li@nebraska.gov or phone: 402-471-0553)
Website: http://dhhs.ne.gov/Pages/Cancer-Registry.aspx



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