Sample Health Information Exchange Use Narratives

Hospital-related

1. A patient who has recently visited an ER or been an inpatient at a hospital goes for a follow-up visit to her primary care physician	
Today	*Future*
The doctor requests copies of paper records and hopes they arrive complete and in time for the patient visit. Expense is incurred in receiving, tracking, and filing these paper records.	With the patient's consent, the primary care physician's EMR requests updated patient records from the hospital's EMR. The patient is registered with the Statewide MPI and records are available from both the primary care physician and the hospital. A timely transfer of information is automated with little marginal expense on the part of the hospital or the practice. Care decisions are made with complete information.

2. During a hospitalization the attending physician modifies the patient's blood-pressure prescription regimen. The primary care physician (PCP) is notified of the change, but the patient does not realize that a change has occurred. After discharge, the patient continues on the original regimen. Not feeling well, the patient visits the PCP, and the PCP finds higher than normal blood pressure. The physician asks the patient about the regimen and is told that is has not changed. *(Delaware Use Narrative, modified)*	
Today	*Future*
The patient has incurred the cost (copayment) and inconvenience of a visit to his primary care physician (PCP) which could have been avoided. Assuming the patient means nothing has changed from the new regimen, additional, more costly medications are prescribed by the PCP, potentially putting the patient at risk.	With the patient's consent, the PCP searches for the patient in the health information exchange and accesses prescription data from the hospital visit which is transmitted to the provider's EMR or viewed on a web browser through a dedicated application. The physician can now review the drug regimen before, during, and after the hospitalization and instruct the patient as to the proper course.

3. A patient who had visited his primary care physician as an outpatient during the week arrives unconscious at the ER on a weekend. *(Delaware Use Narrative, modified)*	
Today	*Future*
A summary of recent care, allergies, and medication data are unavailable. X-ray images taken elsewhere during the past week are unavailable. The doctor orders duplicative tests. A lack of information delays diagnosis and medications administered may put the patient at risk.	Because the patient is unconscious the nurse invokes the statute that allows action without the patient's consent. An ID card in the patient's wallet provides information that the ER nurse uses to get information from the health information exchange through the hospital's EMR or via a dedicated web browser application. Current medication data, recent care summary, lab results, and x-ray images are accessed. Only necessary tests are ordered. The diagnosis is determined more quickly and with greater confidence.

4. A small commuter jet has crashed into the forest in a rural area of the state. There are many injured and emergency care is provided on the scene before injured patients are transported to the closest trauma center or hospital ER.	
Today	*Future*
Alert patients are questioned about their condition and relevant past medical history. First responders do their best to assess unconscious patients. Field medical cards are prepared for each patient with brief identification, diagnosis, and treatment data. Some are supplemented by ambulance run reports. Patient charts are initiated when patients reach the trauma center or hospital. If a patient needs a quick transfer to a specialized facility (*e.g,* regional burn unit) the staff tries to pull together all paper records from the field and hospital admission so they can be sent with the patient. Some patients are transferred with incomplete records, putting them at risk.	As patients are positively identified on-site, medical personnel, with patient consent or by invoking the "break the glass" provision, access personal health records from a portable storage device or through the health information exchange's provider portal. On-site testing, diagnosis, and treatment information is entered into the provider portal by field emergency medical personnel and is available to the trauma center or ER as the patient arrives. If a patient is transferred to another facility, records are accessible on-line from that new location. Timely treatment improves health outcomes and lowers cost through treating before patient condition worsens.

Private Practice Related

5. A 67-year-old man with diabetes and coronary artery disease is insured through the Medicaid program. He has targeted chronic conditions so his case is selected for disease management services. Claim and eligibility data is analyzed and he is referred for completion of a health risk assessment.	
Today	*Future*
When the state's vendor calls to complete the assessment he decides not to participate so his name is not put on the list of people who receive phone calls or face-to-face visits from a nurse. He gets educational mailings but he usually throws them away. He regularly visits his local general practitioner and is sometimes referred for lab tests. He doesn't always go, but when he does, the results show that his health is declining. He doesn't always take his medication and he doesn't make recommended lifestyle changes. The cardiologist that he visits for his heart condition a couple of times a year doesn't know which tests he has taken or the results, so tests are sometimes duplicated. This man's health is out of control and it is likely that he will end up in the emergency room.	The patient is referred to the Care Coordination Program for special attention, and the regional nurse and social worker get in touch with him. Because they know his doctor and community he agrees to participate in the program. They work with the patient and both his doctors to develop a collaborative plan for managing his conditions. Because lab data is available electronically through the health information exchange, with the patient's consent they can easily follow up to ensure that the patient has taken tests when they were ordered, and they can monitor the results. Both doctors get the results so there is no duplication and they can make better care decisions. The Care Coordination Program employees refer the patient to the local Healthy Living Workshop where he improves his self-management skills. Information about the patient's health status and education are available to the patient on-line. A health crisis is avoided and health dollars were spent appropriately.

6. A woman with dementia is confined to an assisted living facility. Because she also suffers from a variety of other ailments, she requires frequent tests and treatment from a variety of providers and facilities. The facility's care coordinator is responsible for managing her access to care and ensuring that her treatment plans are followed.	
Today	*Future*
The care coordinator, who is responsible for twenty to thirty residents, maintains extensive paper files which include documentation of legal authority to speak on behalf of the patient and information about diagnoses and care plans. Most of the day is spent on the telephone juggling appointments, permissions, and transportation. Appointments are often missed through miscommunication or confusion among the care coordinator, the transportation service, and the providers. An already disoriented patient is away from familiar surroundings for hours. Costly staff time is wasted waiting for arrangements to be made.	The care coordinator is given proxy access to the resident's Personal Health Record (PHR) where a consolidated medical record can be viewed. Alerts and triggers are set up for future events, conditions, or activities. The PHR documents the patient's providers and the consent profile associated with each, making it easy for the care coordinator to e-mail the right provider, or to initiate a request for an appointment. The coordinator can also access the facility's transportation schedule to ensure appropriate transportation. The care coordinator's activities are more streamlined and efficient, allowing the management of more client needs in the same amount of time and ensuring a more comforting experience for the residents.

7. A new combination childhood vaccine is introduced and the previous vaccines are no longer provided by the statewide Vaccines for Children program. A four-year old child who began her series with the older vaccines has come in for a well child visit and the nurse must assess whether the child's immunizations are up-to-date.	
Today	*Future*
The nurse looks at the chart and consults an American Academy of Pediatrics "cheat sheet" to see if the child is up-to-date. The "cheat sheet" only covers the old vaccines, however, meaning that the nurse must individually evaluate the antigens in the new vaccine to be sure that each series is up to date. Risk is real that the child will be over-immunized, resulting in unnecessary cost and risk of an adverse event, or under-immunized and at risk for an infectious disease.	Before the child's visit, the nurse uses the practice's EMR to determine which immunizations are needed. The EMR provides accurate information each time because it consults electronically with the statewide immunization information system (IIS) to access its forecast algorithm and to update the EMR database with any new immunization information. The EMR's automated inventory system manages the vaccine lots in-hand to ensure that the most appropriate lot (*e.g.,* closest to expiration) is used, and supplies are ordered based on projected need. Vaccine inventory is fresh, waste is minimized, and the child is properly immunized.

8. An otherwise healthy patient has blood drawn and sent to the lab for routine work-up during an annual physical.	
Today	*Future*
The results of the blood work-up are mailed or FAXed back to the primary care physician along with many other lab reports for other patients. The patient's cholesterol level is unusually high but this is not noticed by the physician; the lab report is filed away in the patient's three inch thick (and growing) medical record folder. The patient assumes that "no news is good news" and does not follow up with the physician. At a subsequent visit the initial blood test result can't be located in the patient's chart so another blood test is ordered.	With the patient's consent, the results from the lab are electronically sent back to the physician's EMR through the health information exchange. The physician's EMR screens the incoming lab test and determines that the patient's cholesterol level is indeed too high. Past lab test results are also available in the EMR for comparison and trend analysis. The physician and nurse receive an alert in the EMR's messaging sub-system which indicates that follow-up with the patient is necessary. An e-mail message is also sent to the patient instructing him to contact the physician. Unnecessary repeat tests are avoided, and the quality of the patient's care is improved.

9. An adult patient visits his primary care physician complaining of flu-like symptoms. It's a busy day, so the physician performs a "brief" visit which entails administering a quick strep test, listening to the patient's lungs, and discussing other symptoms.	
Today	*Future*
Progress notes are recorded on the paper chart to indicate what was said by the patient, the physician's diagnosis, and the treatment plan. The patient brings the chart to the front desk where it is examined briefly by the nurse who collects the co-payment and places everything in a pile to be processed by the billing clerk. The billing clerk uses the practice management system to determine the appropriate ICD-9 and CPT codes and adds this claim to the batch to be sent electronically to the patient's insurance company. The claim is rejected because the insurance company determines there was an error in the ICD-9 code. The notice of rejection is received on paper five weeks after the claim was submitted. The billing clerk tries to find the right code but can't figure out what is wrong. The claim is put aside until a nurse has a spare moment to help. Revenue is delayed. Medical personnel are diverted from patient care to administration.	The patient's chief complaint is entered in the EMR before being taken to the examination room. As the doctor is meeting with the patient, the nurse is accessing the patient's EMR record from the examination room. Based on initial information entered, pick lists within the EMR application put relevant diagnosis and treatment choices towards the top. During the examination the nurse chooses the appropriate elements from the prepared lists. The EMR automatically assigns the right ICD-9 and CPT codes to the encounter record. The EMR also completes a real-time check for insurance eligibility. Overnight, the EMR will assemble this record with others destined for the patient's insurance company, and submit the claims electronically for processing. The risk of rejection is lower since the EMR knows precisely what combination of codes is necessary.

10. An older patient with coronary disease is prescribed several medications which work together to keep the individual's condition under control. The elderly patient finds it difficult to understand and stick to the prescription regimen.	
Today	*Future*
The physician provides a paper prescription to the patient and hopes they will get it filled and take the medication as prescribed. When the patient returns for a periodic check-up, the physician asks whether the patient has been diligent about filling the prescriptions and taking the medicine. The patient may not accurately remember or report what has been happening.	The physician uses the EMR's ePrescribing capability to send electronic prescriptions directly to the patient's pharmacy, and receives electronic confirmation as prescriptions (and refills) are filled. The EMR tickler system warns the physician if a prescription refill is due but not completed and the physician sends reminders (electronic, paper, or automated telephone) to the patient. The patient completes a periodic survey on her electronic Personal Health Record which reinforces proper compliance habits. Survey data is sent to the physician so they can determine whether further follow-up is needed. Electronic monitoring mitigates the risk of incorrect dosage, and results in a higher level of compliance, fewer unnecessary prescriptions, and less patient confusion.

11. The primary care physician refers a patient to a urologist for care of a persistent infection. The patient wants to be sure that no references to past substance abuse or mental health services are included in the referral documentation.	
Today	*Future*
The nurse in the primary care physician's office provides the patient with contact information for the specialist and a paper insurance referral form. The patient is instructed to contact the specialist for an appointment within a proscribed time period. The patient's paper medical record is photocopied - including free-text progress notes and lab tests. Redacting or excluding information is a manual process and time consuming. Once ready, the record is given to the patient in a sealed envelope to bring to the specialist. The nurse hopes the patient will schedule the appointment and that the results of the specialist visit will be FAXed to the PCP or hand delivered by the patient. Follow-up by the PCP is not likely to occur unless the patient takes the initiative.	Required insurance authorization is electronically requested and received from the insurance company. The nurse in the primary care physician's office looks up the specialist's Direct address in an online provider directory sends a Direct message from within the EMR requesting an appointment for the patient. The appointment is scheduled via a return Direct message and entered in the "tickler" file of the EMR. The nurse asks the patient whether any information should be withheld from the specialist and sets EMR privacy flags accordingly. Appropriate pieces of the patient's medical records are assembled into a composite record and sent electronically to the specialist's EMR via Direct. The patient is sent reminders (electronic, paper, or automated telephone) about the scheduled appointment. After the visit with the specialist, an update is electronically returned to the primary care physician via Direct. The nurse is prompted by the EMR to schedule a follow-up visit with the patient. Electronic processing and tracking of appointments and associated records results in fewer missed referrals and better follow-up by the PCP.

12. A diabetic patient visits his or her primary care physician complaining of weakness in arms and legs.	
Today	*Future*
The patient enters the practice and is given a clip board with forms to fill out. Much of the requested information is already known by the practice because the patient has filled out the same forms on prior visits. The patient can't recall all the medications prescribed and being taken. During the examination, the patient remembers that two months ago s/he visited an outpatient clinic unaffiliated with this practice, but does not remember the exact diagnosis or treatment plan. The physician has no knowledge of tests that were completed at the clinic and the patient is uncertain. The physician has no choice but to order additional, possibly duplicative, tests so that the patient's condition can be determined.	With the patient's consent, the primary care physician's EMR requests updated patient records from the health information exchange before the scheduled visit. The patient is asked to validate information printed from the EMR, including medication information from the pharmacy clearinghouse and lab results. In addition, the patient's Personal Health Record contains blood sugar level readings uploaded automatically from a household device used by the patient. Duplicate tests are avoided and the PCP has additional information.

13. A patient moves to a neighboring state and needs to get her medical records from her prior primary care physician and other medical providers.	
Today	*Future*
The patient telephones the former primary care provider and requests a copy of all medical records. The medical records assistant insists on seeing a signed, written release before records are photocopied and held for pick-up or mailed to the patient's new address. The patient goes through the same process with each medical provider. Navigating complex systems, like hospitals, to gather records is difficult and confusing. The patient is so overwhelmed that she decides not to bother getting her hospital records.	Through the patient portal, the patient authorizes a new physician to request and receive records for the patient. The new provider's EMR requests records from the provider's local health information exchange but specifies that the records are found at a remote health information exchange network. The new provider's health information exchange network routes a request to the patient's old health information exchange network and, because the patient has authorized it in advance, collects and sends any medical records found to the new provider.

14. A patient is concerned about how her medical records might have been disclosed to others by her care providers and asks for an accounting of all such record transfers.	
Today	*Future*
A medical records specialist picks through the patient's paper medical record for documentation about disclosure of medical records to a third party, and compiles a report for the patient. Similar research must be done at each and every care setting. Costly staff time is diverted from other tasks. The patient must personally track each request and endeavor to understand the resulting reports which will be in different forms and formats.	Through the patient portal, the patient queries her Personal Health Record and views an electronic audit trail of all system users who accessed the data through the health information exchange. She can quickly focus on suspected inappropriate access and contact those users directly. Provider's save the time and expense of compiling reports and can focus on exceptions when alerted by the patient.

Other

15. Twenty individuals who live over a fairly wide geographic area have reported serious stomach ailments to their family physicians, health clinics, and pediatricians. Three individuals have presented at hospital emergency rooms in serious pain. Blood tests performed at the hospital labs confirm the presence of E. Coli.	
Today	*Future*
The hospitals report the lab results via FAX to the health department in their jurisdiction. In the next few days, five more people are tested by physicians and lab results confirm reports of E. Coli. By the end of the following week these reports are FAXed to local health departments. After two weeks, the State health department has received most of the reports via FAX and can begin to piece together what has happened. Investigation indicates that several shipments from an out-of-state produce grower were tainted with E. Coli bacteria. These shipments were sent to more than a dozen grocery stores in the metropolitan area. By this time, most of the produce has been sold or discarded.	As soon as lab tests show positive results for E. Coli, the test and patient information is simultaneously forwarded to the submitting hospital or physician, the case management system of the appropriate local health department, and the case management system of the State health department. The investigation begins immediately. Alerts are sent by e-mail to state epidemiologists who plot cases by the location of the healthcare provider and the patient's home address. A cluster of cases is quickly identified and additional data is solicited from healthcare providers in the area. Within a short period of time it is discovered that tainted produce is the cause and it can be removed from stores in time to keep other people from getting sick.

16. Workers in a suburban office building have complained of chronic headaches and the flu for months. An astute supervisor mentions this to the human resources manager who alerts the local health department. There is no readily apparent cause for the symptoms or a good understanding of who is affected. An investigation begins.	
Today	*Future*
Health department epidemiologists begin to interview workers and collect data about symptoms and treatments. It is difficult to assemble medical records related to this situation because it is an extra step for the patients. Over a long period of time the health department builds a comprehensive picture of the symptoms and investigates several possible causes related to the building's infrastructure.	With the workers' permission, health department epidemiologists assemble available medical data for the affected (and unaffected) workers through the statewide health information exchange. They quickly observe patterns in the data, develop working hypotheses about the cause of the symptoms, and implement action plans to rectify the situation. Availability of this electronic information in a timely manner reduces the financial impact on the businesses in the building and allows epidemiologists to focus on possible causes and solutions with less staff time.

17. Rising flood waters cause residents and businesses to quickly leave their present premises and relocate to temporary or shared quarters, some of which are out of state. Because of the speed with which events unfold there is little time to pack and remove medical records which are critical to ongoing and future patient care.	
Today	*Future*
Some paper-based provider records are temporarily inaccessible. Many are severely damaged or destroyed. Patients and providers must attempt to reconstruct events from records held at ancillary facilities (*e.g.,* labs, pharmacies) or larger facilities that were better protected (*e.g.,* hospitals). This takes a lot of time and results in inaccurate conclusions based on incomplete data, or costly retesting and re-examination.	Almost all patient records captured in EMRs at provider sites survive the flood. They were less susceptible to loss or damage from natural disaster because their physical container is more durable (electronic storage versus paper) and records are typically backed up at another location or in an easily portable format (disk or tape image is compact and portable versus photocopy of paper records). Electronic records stored at an alternate location are available for redeployment. In this case, the health information exchange gave providers (large and small) a place to send medical records electronically for back-up storage even if they are not shared with other providers. Personal health records stored centrally by the health information exchange and available on-line to patients also helped speed up access to records. The quality of patient care is maintained because data is complete and unnecessary re-testing and re-examination is avoided.