#DitchtheDisk by Providing Patient’s Access to Their Longitudinal Diagnostic Imaging History through a Health Information Exchange and Cloud Access

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**Background/Problem Being Solved**
Beyond the challenge of leveraging legacy physical media to access and share diagnostic imaging (DI) exams, the process of importing CDs into an organization’s local PACS is a time consuming and challenging process. Studies have indicated that importing a single study from a CD can take on average between 10-30 minutes[1]. Our analysis indicates that a 500 bed hospital organization will have an average of 180 requested CD imports per month. This can equate to approx. 30-90 hours per month importing CDs. Additionally, studies imported from CDs often does not include the report as part of the data imported into the local PACS.

CDs only provide a limited view of the patient’s record, which typically represents a set of studies from 1 specific healthcare enterprise and does not represent a longitudinal record of the patients imaging history.

In Ontario, Canada, there are 4 regional Health Information Exchanges (HIEs) in which healthcare enterprises publish DI exams for the purpose of sharing patient imaging. The HIEs were not configured to provide patient driven access to exams.

**Interventions**
This paper focuses on the results of 2 HIEs coordinated efforts to reduce reliance on CDs and increase sharing of DI exams. The HIEs integrated with a cloud-based service provider, allowing patients to access and share their DI exams. This involved implementing a gateway device to provide query/retrieve functionality to access longitudinal patient records. Once the gateway device retrieves the records, it forwards the images and reports to the cloud solution for patient access. In order for patients to gain access to their longitudinal DI exams across the 2 HIEs, a five step process is followed (see figure1):

1) Request Submission
2) Enrollment
3) Request Validation
4) Request Fulfilment
5) Record Access
Barriers/Challenges
The two HIEs differ in the architectural design. One of the HIEs employs DICOM Query/Retrieve as the primary method of storage, discovery, and retrieval of studies. The second HIE leverages an XDS registry as a means of discovering exams and uses DICOM to retrieve them.

As a result, the gateway device was configured to issue two different query methods to the respective HIEs (see figure2).
Outcome
At the time of writing this paper, 16 sites have gone live with the regional cloud patient access imaging sharing solution, 11 sites from DIR1 and 5 sites from DIR2. Over a 28 week assessment period, 18,034 patients have enrolled in the service, an average of 1127 patients per participating site. During this assessment, 137,156 studies were shared across the cloud platform or an average of 4898 studies per week. With physical media averaging 10 mins per import, this accounts for a high number of reduced person-hours across the participating 16 sites that would have traditionally relied on CDs to share imaging.

Conclusion/Statement of Impact
Providing patients access to cloud solutions that leverage regional HIEs that deliver access to a patient’s longitudinal imaging record provides positive benefits. Administrative time in a local health enterprise is saved by reducing the reliance of legacy physical media.

Keywords
HIE, CD, image exchange