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Cost Effective Data Migration Alternatives for Health Informatics Implementation

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More often than not, the topic of data migration will pop up during health informatics projects related conversation and I noticed that this is a topic of confusion for many novices involved in health informatics implementation and management, hence the need for this article – to illustrate a few alternative that is easy on the wallet and has minimum conflict on effective workflow.

The alternative strategies suggested in this article applies to various categories of healthcare information systems, be it an Electronic Medical Record (EMR), ECG Management System (EMS), Picture Archival and Communication System (PACS) or even a Laboratory Information Management System (LIMS) etc.

Why Not a Full Scale Migration

In an ideal world, a full scale data migration of every single available record / data / image makes sense given that a comprehensive patient history will aid in the medical physician in making his diagnosis. Now the problem is, such approach will be;

1.   Time consuming.
2.   Costly (in terms of manpower as well as digital storage cost).
3.   Migrated in the wrong format

Allow me to explain. If the relevant information has already 'gone live' and use as part of your daily practice (example an EMR or a PACS) then data migration would most probably;

-    Take place office hours as relevant manpower can only be freed up -costly due to overtime pay and time consuming, or

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- Perform during office hours with extra manpower hired just for data migration purposes - costly due to extra manpower and may have impact on system's performance (depending on what load the solution was designed for

Now data migration of every single available can be costly (very costly). Twenty years worth of patient medical records may not need a lot of digital storage but twenty 20 years worth of medical imaging will (and it adds up to a huge figure if you include other relevant data like ECG, Lab reports etc) and there is always more than one copy, in addition to the primary storage repository, you have to cater for storage in your secondary copy (for disaster recovery) and maybe for your third copy (for offline backup purposes).

Now if all available records make a difference in the diagnosis process, then cost is not an issue, no two ways about that. However as we all know, some records are less important than others. Take for example, is the episodic cases of cough and flu or routine health checkup X-rays, pathology results or out of date ECG readings really that important? Would the physician be really concerned if a routine dose of cough mixture prescribed 10 years ago for a mild cough be missing? Most probably not.

Even of all these information are deem vital (cough, flu and all), would the data be migrated in the correct format? For example, scanning the records of a patient paper medical dossier into a picture format for storage and reference is of no use as the information cannot be search or utilized for statistics or trending. In fact, it might even pose as a slight nuisance if the medical physician have to go through 20 years of records in such format only to find insignificant details such as routine dose of cough mixture prescribed for a mild cough in every other record (pause for a slight moment and put yourself in this scenario. It's 'painful' isn't it?)

So you get the idea - not all records are as 'important'. However, without taking the effort to sieve the repository of data, one would never know if it is an 'important' piece of record that's worth migrating over right?

Totally agreed.

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Alternative Strategy for Manual to Digital implementation

If you are adopting a healthcare informatics solution (be it an EMR or a PACS) for the first time, simply keep your existing manual records around and use both the manual records and your new informatics solution in parallel. When a patient comes in, retrieve the manual record / x-ray / lab report etc for review and should you identify any information worth retaining, simply migrate those over.

Example, if you have three years worth of Patient A's ultrasound scans and after review, you determined that two out of the ten ultrasound scans are of some relevancy, then simply import/scan those two records into your PACS.
Or
If you determined that some bits of medical history in the medical dossier is relevant (e.g. it helps explain or provide insights to certain symptoms or diseases), then input them into your EMR.

You will save not only digital storage space and also precious time – time you can spend more on the patient. In addition you eliminate wastage of resources (and a lot of headache) in trying to perform unnecessary data migration. I call this the '**Just-in-Time Data Migration Methodology'**; you spend the effort and resources only when you need to. (If a patient has migrated and will never visit you ever again, then you don't really need his/her previous medical records right?).

Another useful tip for new healthcare informatics implementation is to perform 'pre-archival'. This may not relevant to all categories (like an EMR) but for healthcare informatics solutions like PACS or EMS, this will prove to be a workflow (and adoption) booster.

Pre-Archival (for Manual to Digital implementation)

Once the relevant healthcare informatics solution is 'up and running', have the relevant data be sent over. Take the example of a PACS or EMS, have the medical images (be it an X-Ray, CT scan, Cath or Mammogram) and ECGs be send for into the PACS or EMS before it 'goes-live'.

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The period between 'up and running' and 'goes-live' is usually used for user-acceptance testing, training and further customization/tuning (and this can take up to six months) so pre-archiving is not an issue since the solution is technically functional (just remember to factor the extra storage during your 'storage estimation').

The advantages of pre-archiving is incredible – once you 'goes-live', the relevant users immediately have access to 'recent historical data' for references purposes (it really does makes a difference if it is a PACS or EMS solution) and you effective eliminated the need to migrate 'most recent' data, which is usually the most relevant portions.

Alternative Strategy for Digital to Digital implementation

If you are replacing an existing healthcare informatics solution, then keep the old/legacy solution around as opposed to immediate decommissioning. Allow the relevant physicians ease of access to the legacy solution for referencing purposes and similarly, allow them to raise the request (or better still, setup a Do-It-Yourself option for them) to export select records/data into the new system.

The same principles and benefits applies and it would cost you less resources to maintain the legacy system then to perform a full scale migration.

Other Useful Considerations

1) Legal Period of Retention.
The legal period of retention differs from different states to different countries. The most common periods I heard of is seven years for adults and twenty-one years for pediatric so keeping in mind of this requirement, determine how long you need to keep your manual records or legacy systems around.

Even if you really need to perform a full scale migration, take note of the required period of retention and estimate the relevant time needed to perform the relevant migration (because by the time you are done migrating the data, it might no longer be relevant)

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2) Purging of data

Now the 'preference' of purging data from either manual or digital storage can be an extremely touchy topic. There are 'die-hard fanatics' on both side of the fence insisting that;

- Data should be purge once it's useful lifespan is up because they are irrelevant
- Data should never be purge even if its useful lifespan is up because one never knows when it is need

Now the decision is really up to you / your medical facility's policy because there is no 'right and wrong' answer, just relevancy. For example, a university affiliated teaching hospital would want to keep the relevant records/images due to the 'teaching value' of such data.

What I do recommend is if there is a need to purge data, one can consider having them transferred to offline media (e.g. DVDs, Tape or any form of reliable yet cheaper storage) and move these offline media to somewhere else (maybe the basement) for safe keeping of another period (e.g. 2 years) before deposing or recycling those archived media. This ensures that you still have access to the 'purged' data after the required retention period.

So there you have it, cost effective data migration alternatives for healthcare Informatics implementations that is easy on the wallet and minimize conflict on the workflow.

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