**PMI Consolidation – How to Do it.**

**Introduction**

If you have two patient centric applications then they will both have an index of patients. If these applications are not integrated, then both will consider their list the “master”. However, an organization will normally consider only one application to be the “master” and that is usually the Patient Administration System (PAS), which will have a unique patient record number (UR) for every patient. All other applications will be expected to record the UR number, from the PAS, against every patient, so that patient information can be collated. If the two systems are not integrated, then that recording will be manual, and hence may contain errors. If a move to integrating these two systems is planned, then these errors must be corrected. This poses two problem; how to find these errors and how to correct them.

Initially you will have two sets of patients and you won’t know the relationship between them.

What you want to achieve is either a consolidated state, where the secondary is a perfect subset of the master.

Here, every patient in the secondary application has a UR number, and it is the right UR number because it exactly matches a patient in the master application.

Or a consistent state, where not all patients in the secondary application have a UR number, but those that do, have the right UR number.

A consistent state is appropriate where the master and secondary applications are associated with marginally different sets of patients, such as acute patients and community health patients. There may well be some community health patients that never need any acute services, and hence may never appear in the master application. However, there are risks. A patient that has only received community health services will exist in the bulge outside the master patient list. If, however, they now require acute services, they will be added to the master application; inside the master circle, but outside the secondary overlap. Hence there will be two records for this patient; one in master only and one in secondary only. In reality these two records should be merged into the master/secondary overlap. A consistent state is difficult to maintain without frequent audits of the data in the two patient lists.

**The Analysis**

The first step towards the consolidated or consistent state is to check the goodness of health of the two patient lists (no duplicates, valid UR numbers etc.) This is normally part of the routine maintenance of any patient list.

The second step is to use the UR in the secondary patient list to “lookup” the master patient list. The “lookup” will return one of three answers.

1. A patient with the same surname, first name, date of birth and sex – a perfectly matching patient.
2. A patient who may be the same patient, but some of the details don’t quite match – an uncertain patient. The UR number will be a match, but there is no certainty that any of the other demographic data matches. The percentage of “uncertain” patients will depend upon how a “match” is defined. It is possible to “clean up” surnames and create fuzzy matches, so that “O’Donnell” matches “ODONNELL”. With first names is it possible to get “Maryanne Jane” matches “MARY”. It is often useful to clean out nicknames such as “John (Jack)”, but that requires an analysis of what techniques staff have been using for recording alternate names (e.g. “John/Jack”, “John [Jack]”, “John,Jack” etc.)
3. No matching patient at all, because a record in the secondary list has not UR or the UR number in the secondary list doesn’t exist in the master list.

The next step is to deal with the uncertainty. This usually involves a manual comparison; each uncertain secondary application patient is compared to the nearest matched master application patient. This manual analysis would be assisted by inclusion of additional demographic data, such as address, mobile phone no, medicare number etc. The result of this analysis will be to push each secondary uncertain patient into one of the other two groups; “secondary – no valid UR” and “secondary – perfect match”.

Putting patients who aren’t perfect matches into the “secondary – perfect match” group changes the name of that group to “secondary – UR matched”. Every patient in this group has the correct UR number, if not the absolutely correct demographic data. However, the next integration message from the master application will update all the demographic data, thus erasing any discrepancies.

However, the fact that a group of secondary patients don’t have a valid UR doesn’t mean that those patients aren’t in the master patient list. They may simply have the wrong UR number, so further analysis is required. The next step is to “lookup” each of these patients, without regard to the UR number, in the master patient list. That is, to “lookup” each patient by name, date of birth and sex. Unfortunately, any matches found cannot be assumed to be perfect matches, even though this is likely for patient who matches on all four values. And the lack of a match does not imply that the patient does not exist in the master list. Simple, explainable differences, can prevent a perfect match, such as changing surname when married, simple typing errors etc. So, this “lookup” needs to search for matches on any three of the four values, as well as “sounds like” matches on surname and first name. If matches are found they would have to be classified as “possible” matches.

Again, there will have to be a manual comparison of each possible secondary application patient, with the nearest matched master application patient. The result of this analysis will be to push each “secondary – possible” patient into one of the other two groups; “secondary – no valid UR” and “secondary – UR matched”.

However, this time, all of the secondary patients pushed into “secondary – UR matched” will have to have their UR number updated to the one identified during this analysis.

It will also be necessary to check the “secondary – no valid UR” group to ensure that none of these patients has a UR that is potentially valid in the master application, such as UR numbers that may be allocated in the future. Any “secondary – no valid UR” patients, with a potentially valid master application UR number, will have to have their UR number removed or updated to something that can never be used in the master application. Otherwise there is a risk of them receiving random, spurious integration updates in the future.

At this point, the two application patient lists are consistent and one way integration from the master to the secondary will keep all the “secondary – UR matched” patients up to date. However, there is a risk of the “secondary – no master UR” patients being registered in the master application. This would create an inconsistency. There is no guaranteed way of maintaining consistency, even with integration, if some patients exist in only one application, but patient registration can occur in the other.

However, if you can use the master application to add all the “secondary – no master UR” patients to the master patient list. And then update those same patients in the secondary system with the UR allocated by the master application, you will have consolidated the two patient lists. Every patient in the secondary application will have a UR number and it will be the correct UR number for the master application as well. One-way integration from the master application, to the secondary application, will now keep the two patient lists consolidated.