Role of Electronic Merges in an Integrated Delivery System

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The existence of duplicate medical record numbers is a familiar problem in hospitals today. However, there is a heightened awareness of the importance of eliminating duplicate records. As healthcare organizations increase their use of the master patient (person) index (MPI), they are realizing that they must maintain an accurate MPI to capture accurate outcome analyses and managed care evaluations in addition to monitoring patient care. What's more, as organizations prepare to merge into integrated delivery systems, the problem of duplicate medical record numbers has been thrust into the spotlight.

Everyone agrees that duplicate medical record numbers must be eliminated. Choosing a method for correction, however, is not as clear cut. Should an organization opt for a traditional merge approach, an electronic-only merge, or some combination of the two? This article discusses the advantages and disadvantages of these options, including operational issues and hidden costs.

The Traditional Duplicate Medical Record Number Merge

Duplicate numbers normally result from errors occurring during the registration process. If an incomplete or incorrect inquiry is performed in the MPI, a previously registered patient can be assigned a new medical record number. The health information management (HIM) department traditionally corrects these duplicate medical record numbers.

The HIM staff performs the following steps to complete a merge:

- combines all the physical chart folders to one medical record number
- electronically merges the numbers in the main computer system
- updates any electronic chart tracking system
- updates any microfilm jackets or microfiche
- notifies ancillary departments and satellite clinics of merges so that they can update their records

Advantages

The traditional merge is risk free from a legal standpoint—i.e., error is identified and corrected immediately. The corrected chart is easy to locate and is readily available when a patient returns for medical care. All costs are incurred at the time of cleanup; there are no future hidden costs.

Disadvantages

Physical chart correction is very labor intensive and time consuming. Additional costs are spent on supplies to update chart folders of patients who may never return for care. Therefore the traditional merge takes longer and costs more. Also, a large-scale cleanup requires physical resources; an MPI cleanup team may have to compete with HIM department staff for office space, computer time, and chart folders.

The Electronic-only Merge

In the last two years, use of the electronic-only merge has evolved. Many organizations look favorably upon the speedy electronic-only merge option when faced with the need to correct large numbers of duplicate records before strict system conversion or implementation deadlines. Lower up-front costs of this approach also lead organizations to select this option. Additionally, organizations with limited space to support a large-scale physical chart cleanup find the electronic-only merge to be an attractive solution.

With this method, the HIM staff completes a merge by:

- electronically merging the numbers in the main computer system
- updating any electronic chart tracking systems
- notifying ancillary departments and satellite clinics of merges

This method differs from the traditional merge in that *the physical chart folder is not updated during the cleanup*. Instead, chart folders are corrected as the patient presents for medical care.

Organizations can choose to manage electronic merges in-house or they can contract with an outside vendor.

Advantages

By eliminating the step of physically correcting the charts, the electronic-only merge is much faster. Labor costs are lower. Supply costs are also lower, since the chart folders are only updated when the patient registers after the merge. Savings can be considerable, because not every patient listed in the MPI returns for care.

Disadvantages

Charts may be unavailable or retrieval may be untimely for patient care. According to regulatory requirements and most hospital record retention policies, the medical record must be available when the patient presents for care. Since physical chart folders of the duplicate medical records are not corrected during an electronic-only merge, HIM must have a meticulous procedure in place for locating these charts in order to update them promptly. Ancillary departments, including imaging, lab, and blood bank, also need to have meticulous correction and retrieval procedures in place. Additionally, non-HIM staff need access to medical information in the chart folder. How will they locate a chart? What if the established tracking mechanism is not available due to system down time?

Additionally, some organizations may need to make system modifications to provide an indicator of which records still require folder updating.

Finally, though initially an electronic-only merge appears to be less costly, there are hidden costs to consider. After the cleanup, more labor and supply resources will be needed to correct the physical record as patients present for care.

Table 1 outlines the advantages and disadvantages of the approaches described above.

table 1—
Comparing Merge Approaches

Approach	Advantages	Disadvantages
Traditional Merge	• Risk free • Errors corrected immediately • Chart easy to locate • Chart readily available for patient care • No hidden costs	• Time consuming • Costly -Labor -Supplies
Electronic-only Merge	• Faster cleanup • Lower initial cleanup costs • Lower supply costs	• Untimely chart retrieval • Nonavailability of chart • Future costs for locating and correcting chart • Possible system modifications

Mitigating Risks for Electronic-only Mergers

Much can be done to reduce or eliminate potential risks of electronic-only merges. Planning is a critical element in reducing risks. All affected departments need to be involved in planning. Here are some suggestions for reducing the risks of electronic-only merges:

HIM Operational Issues

- Duplicate chart folders must be located in a timely manner, especially if the patient has returned for an unscheduled visit. This challenge can be effectively addressed with thorough planning and instituting comprehensive procedures for chart location and chart relabeling. Remember that staff members will be on the front line after the cleanup project and will need solid support in order to do their job successfully
- Each hospital or enterprise system needs to establish written agreement involving all departments regarding the timing of the folder updates. Chart folder updating must be coordinated with ancillary departments, especially the blood bank
- Time must be allotted for staff to perform these tasks
- Staff training must be in place. Training must be comprehensive, covering all possible concerns with emphasis on understanding written procedures to address risks

Clinical Staff Issues

- Any employee or physician using the electronic patient record and MPI must be trained to identify and understand duplicate issues
- Training is also necessary to ensure that chart tracking and location systems, as well as relabeling processes, are understood by non-HIM staff who might need to locate the physical chart folders

System Limitations

- Determine whether or not "unmerges" can be accomplished in a particular system. When errors occur, a procedure must be in place to allow for "unmerging" medical record numbers
- Determine the time frame for unmerging as well, since some software programs limit the time period for corrections. Merge speed is high during electronic-only projects, especially if auto merges are utilized. (An automatic electronic merge takes place based on criteria set up in the computer to automatically merge duplicate files into one. The criteria could be an exact patient name, date of birth, social security number, etc.) Therefore, more incorrect merges could potentially occur
- Evaluate any system restrictions regarding the number of electronic merges that can be performed during a specific time frame, e.g., only one merge per minute. This must be assessed as a potential project issue, especially if there is a strict deadline for the cleanup

Evaluating the Optimal Method

To make an informed decision about the type of merge method to use, a facility must thoroughly and systematically address, investigate, and study all of the risks and issues related to an MPI project work plan.

An assessment of this type will take much planning and energy. Remember to include all affected departments in any decisions. Both administration and legal counsel should be involved in the planning and approval phase of the assessment. If multisite integrated delivery systems are part of the project and an overlap cleanup is also included, be sure to document differences for each site. Review the relative costs of each merge method, including a combination of the two, in order to determine the true costs. This written plan will serve as a record of project assumptions and decisions that can be used in making future decisions.

Specific areas to address include:

- hospital or enterprise record retention policy
- readmission rates, both past and present
- registration error rates
- standardization and agreement for new procedures
- written sign-off for new policies and procedures by all involved departments and administration, as appropriate

- state and federal regulations regarding medical record content and chart availability

A Case Study for Duplicate Cleanup

Background

This enterprise system is composed of four acute facilities with multiple clinics. The MPI files date back to the 1970s and include 1.5 million patient files. The organization's record retention policy covers 10 years. The overall error rate is 20 percent or 158,165 duplicate pairs. (table 2)

table 2—MPI File Size by Facility

Facility	MPI Full File	# Linkages (duplicate pairs)	Error Rate
Hospital 1	476,782	78,386	33 percent
Hospital 2	535,800	45,930	17 percent
Hospital 3	410,082	20,969	10 percent
Hospital 4	125,878	12,880	20 percent
Total	**1,548,542**	**158,165**	**20 percent**

table 3—Hospital 1

Facility	# of Duplicates	Error Rate
Clinics	37,871	16 percent
Hospital	40,518	17 percent
Total	**78,389**	**33 percent**

Operational Issues

Hospital 1 has a high error rate of 33 percent (table 3). The error rate is high because the single MPI supports six separate numbering systems. Thus, a patient can have up to six medical record numbers. The goal for the hospital is to have a single medical record number for all clinics and the hospital. The clinic records are very active, and the clinicians need to have the folders corrected before conversion to the new system. Concerns have been voiced about performing an electronic-only merge because the department does not have the staff power to correct the folders later as patients present.

The remaining three hospitals have high error rates due to:

- old backloaded data
- system limitations for a name search
- nonadherence to registration procedures
- backlog of duplicate correction due to HIM staff downsizing

All facilities have records stored off site. Records are stored by the last date of service and record retrieval code. All records in the chart location system have a retrieval code if they are stored off site.

Data Analysis

Data highlights for this case study include:

- 33 percent (52,184/158,165) of the duplicates were ER records filed by account number. No physical correction needed
- 6 percent (9,396/158,165) of the duplicates were inpatient records for 1996-97. Physical correction will occur, since these records are active
- 6 percent (9,935/158,165) of the duplicates were records that have no physical record or clinical documentation. One of the two records was for a private ambulatory case. The medical record number that was used for the private ambulatory surgery cases was deleted
- 8 percent (11,900) are older than the 10-year record retention period. Records will be removed from the MPI files during conversion
- 18 percent (28,209/158,165) are clinic records that will be corrected for the years 1994 to the present
- 9 percent (13,677/158,165) of the duplicate records will not be corrected because the duplicates are questionable
- 20 percent (32,864/158,165) of the duplicates will be electronically merged and cross-indexed on the chart tracking system, for these records are stored in the off-site storage area

Comparison of Merge Approaches

The organization invited vendors to submit proposals for a cleanup project. Initially, vendors submitted the approaches in Table 4, 5 and 6 (see below). The organization realized that these approaches did not meet its needs and decided to reevaluate the project. Another solicited vendor then performed a thorough on-site assessment prior to outlining any approach for the cleanup. This vendor evaluated all the options as well as developing additional options based on the on-site assessment.

After reviewing the additional approaches, the project team selected the combination approach in Table 7 (see below), because it met the need for correcting at least two years of inpatient physical records. It physically corrected all clinic records, which was a clinical requirement. It also provided for the installation of a system to detect duplicates on a daily basis after the project was completed.

Tables 4-7 summarize the assumptions, features, costs, advantages, and disadvantages of each of the approaches that the organization considered prior to deciding on an implementation plan.

Summary

The electronic-only merge method poses a serious challenge to HIM management for ensuring that all clinical documentation for patient care is provided in a timely manner. The organization must be aware of all of the issues affecting the departments so that informed decisions can be made before, during, and after the project. This approach can be successful with comprehensive planning, meticulous procedures for record retrieval and chart folder updating, and extensive staff training.

The proactive, traditional merge approach remains the community standard. However, the reactive, electronic-only merge approach has found a niche and can be a viable, cost-effective option when faced with time and budgetary constraints.

However, a combination of these approaches may provide the best solution, depending upon an organization's resources, time requirements, and strategic goals.

table 4—Traditional Method

Assumptions

- All physical records will be merged
- All costs incurred during the project—no hidden costs later

Features

- Physical record correction of all duplicates
- Radiology jacket correction of all duplicates
- All computer systems corrected

Total MPI project cost: $956,655

Cost per pair: $6.10

Advantages

- Project is complete
- Risk-free: only one medical record number and all chart folders and systems are updated

Disadvantages

- Time and cost
- No duplicate detector for identifying new number duplicates

table 5—Electronic-only Merge Using Vendor and Auto Merge

Assumptions

- Electronically merge last 12 years
- All duplicates will be corrected
- No physical merging
- System modification for electronic audit trail

Features

- Custom programming
- Provides electronic "auto merge"
- Audit trail
- Automated detector for identifying new number duplicates
- Management reports
- Six seconds per merge

Cost

• Installation, software, hardware, and expenses	$216,000
• Hospital 1—Correct two years' duplicates for clinics	$32,610
• Hidden costs • Correct other duplicates the first year for Hospital 1	$42,000
• Correct duplicates the first year for Hospitals 2, 3, 4	$65,000

Total MPI project cost: $355,610

Cost per pair: $2.24

Advantages

- Project will be completed within eight weeks, and all duplicates will be merged
- Human intervention limited after system design

Disadvantages

- No physical merging will occur
- Facility with largest number of duplicates still a problem. Duplicates have an average of three medical record numbers
- Clinic records very active, so physical merge required
- No hours assigned for ongoing correction of duplicates when patient presents for services

table 6—Electronic-only Merge Using Vendor and Staff for Manual Merge

Assumptions

- Electronically merge the past 12 years
- All duplicates will be corrected
- System modification for electronic merge audit trail
- Clerical staff to perform electronic merge
- No physical merging

Features

- Custom programming
- Provide electronic merge
- Audit trail
- Automated detector for identifying new number duplicates
- Management reports
- No physical merging
- Six seconds per merge

Cost

• Cost for electronic-only merge	$996,000
• Hospital 1—Correct two years' duplicates for clinics	$32,610
• Hidden cost—Correct duplicates the first year for the hospital	$42,000
• Hospitals 2,3,4—Correct duplicates the first year	$65,000

Total MPI project cost: $1,135,610

Cost per pair: $7.17

Advantages

- Project will be completed within seven to 10 weeks, and all duplicates will be merged

Disadvantages

- No physical merging will occur
- Facility with largest number of duplicates still a problem. Duplicates have an average of three medical record numbers
- Clinic records will be physically corrected due to high activity
- No hours assigned for ongoing correction of duplicates when patient presents for services

table 7—Combination Merge

ELECTRONIC-ONLY MERGE/PHYSICAL CORRECTION OF CLINICS AND HOSPITALS/CUSTOM MODIFICATIONS TO EXISTING SYSTEM/INSTALLATION OF DUPLICATE DETECTOR

Assumptions

- System merge for previous 10 years
- All duplicates will be corrected
- Some physical merging
- System modification for electronic merge audit trail

Features

- Custom programming
- Electronic-only merge of all duplicates
- Physical correction of two years' inpatient chart folders
- Physical correction of clinic chart folders
- Audit trail
- Automated detector for identifying new number duplicates
- Management reports
- Six seconds to merge

Total project cost: $571,000

Cost per pair: $3.60

Advantages

- Clinics will have four years of physical records corrected
- Hospitals will have two years of physical records corrected
- MPI will be synchronized with the record retention policy
- Duplicate detector will be installed at all sites for daily new number duplicates and management reports
- Custom modification to HIM chart location system will identify chart folders needing updating
- Staff in place to handle updating duplicates as each patient presents

Disadvantages

- Facility cleanup will take anywhere from 12 weeks to a maximum of 20 weeks

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