

Putting the Pieces Together:
Driving Standards in the Healthcare Supply Chain
Report on the Survey and Assessment of MMIS Readiness

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Contents

- Objectives and Scope of the Study
- MMIS Market Definition
- Approach and Methodology
- Findings and Conclusions
- Conclusion Summary
- Recommendations

- Appendix: Survey document

Objectives and Scope of the Study

Overall Objective :

Meet key 2009 deliverable of CHeS's strategic focus to complete an MMIS vendor survey that will provide information on the systems' readiness to adopt GS1 standards and meet the industry's planned sunrise dates. Unify industry efforts (GS1US, AHRMM, CHeS) to achieve desired outcomes.

Specific Objectives of the Survey Work Plan:

- Determine MMIS Vendors' awareness of GS1 standards
- Gain detailed understanding of each vendor's progress (and plans) against a set of "yardsticks"
- Educate MMIS vendors on the standards as appropriate
- Encourage participation in GS1 US workgroups

Objectives and Scope of the Study

Scope of the study:

- Medical / Surgical MMIS
 - Excludes Pharmacy Management Systems
 - Included Ancillary supporting systems related to MMIS (e.g. bedside bar code, supply cabinets)
- US hospital market

Confidentiality:

- All participants agreed to allow their data to be used and published in blind aggregated form
- Participants were promised that individual data would not be released

Caution: During the course of our discussion any specific reference to an individual company must be treated as confidential to this meeting

MMIS Market Definition

While the market for MMIS software in hospitals is fragmented, a small number of systems account for a large number of installations.

Materials Management Top 10 Installed/Contracted Systems		
Vendor	# of Installations	% of Market
MEDITECH	921	18.66%
LAWSON SOFTWARE	872	17.67%
MCKESSON PROVIDER TECHNOLOGIES	734	14.87%
CPSI	390	7.90%
ORACLE CORP./PEOPLESOFT	366	7.41%
HEALTHLAND	280	5.67%
HEALTHCARE MANAGEMENT SYSTEMS, INC.	231	4.68%
SELF-DEVELOPED	216	4.38%
SIEMENS MEDICAL SOLUTIONS	189	3.83%
CHOICE SYSTEMS, INC.	102	2.07%

Source: 2008 HIMSS Analytics Report

Total Responses = 4,935

MMIS Market Definition

Four MMIS systems (Lawson, Peoplesoft, McKesson, MediTech) account for the majority of installations.

Top Ranked Vendors	Under 199 Beds			200 - 499 Beds			500+ Beds / 70% of purchase volume			200+ Beds / 90% of Purchase volume		
	Install #	Share %	Rank	Install #	Share %	Rank	Install #	Share %	Rank	Install #	Share %	Rank
MediTech	696	24%	1	206	17%	3	19	6%	4	225	15%	3
Lawson	423	15%	2	340	28%	1	120	39%	1	460	30%	1
Peoplesoft/Oracle	56	2%		103	8%	4	52	17%	3	155	10%	4
McKesson PPM	386	13%	3	276	23%	2	72	23%	2	348	23%	2
CPSI	386	13%	3									

- Material Management system market is 96% saturated
- No new entrants are anticipated
- Less than 1% anticipate replacement of current systems

Source: 2008 HIMSS Analytics Report

Total Responses = 4,935

Approach and Methodology

A survey instrument of 36 content questions was created with inputs from CHeS, GS1 Healthcare US A&I Workgroup, and AHRMM. Responses received from 19 of 32 vendors surveyed (60% response). Vendors were categorized by Primary MMIS (major market share), Secondary MMIS (lesser market share) and Ancillary which is other non-MMIS software (e.g. OR system, bedside bar code, supply cabinets).

Primary MMIS (100% Response - 4)

Lawson	Completed
McKesson PMM	Completed
Oracle (Peoplesoft, JDE)	Completed
Meditech	Completed

Secondary MMIS (58% Response -10)

Paragon	Completed
HCA/Smart	Completed
SAP	Completed
Caduceus Systems	Completed
CPSI	Completed
Mediclick	Completed
Healthland (Dairyland)	Completed
Keane	Completed
EHS Commerce	Completed
Siemens / SMS	Completed
MMS Medical Supply	No Response
HMS	No Response
Infinium Software (SSA)	No Response
Microsoft	No Response
Cerner	Promised
Eclipsys	Promised
Ormed	Promised

Ancillary (45% Response -5)

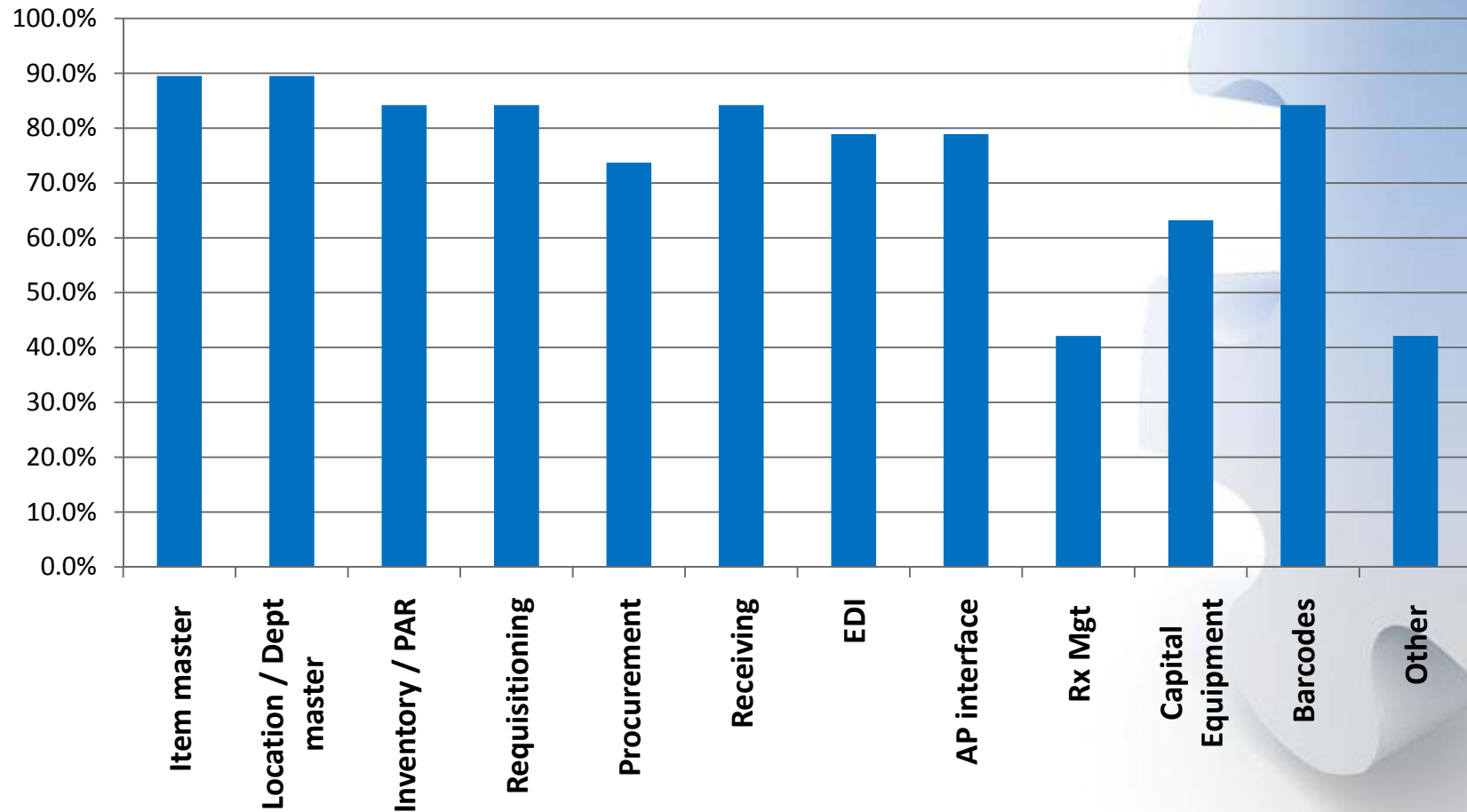
Distributor Data Solutions,	Completed
Lansa, Inc.	Completed
PAR Excellence Systems	Completed
Omnicell	Completed
Tecsys	Completed
BravoSolution	No Response
PICIS	No Response
SIS (Surgical Info Systems)	No Response
GE HealthCare	Promised
Epic Systems	Promised
Pyxis (now Carefusion)	Promised

- On-site interviews w/all Primary vendors
- Others via phone, in person, or on-line
- Notes from in person and phone informed the results of the study in addition to survey answers.
- No Conclusions drawn about Ancillary responses.

Approach and Methodology

The software included in the survey covered a full range of MMIS functionality

Functionality of software that was surveyed

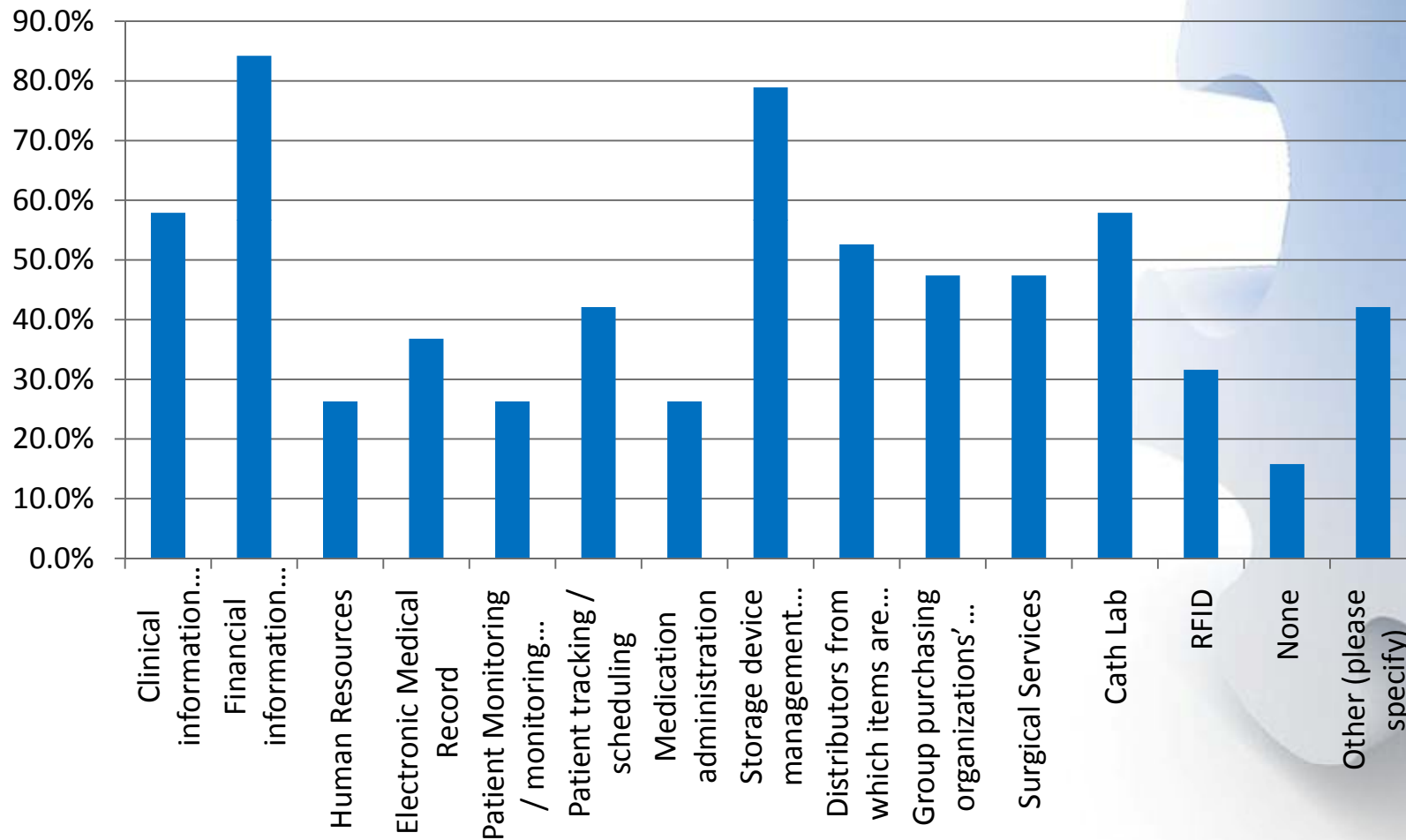


All 19 Responses

Approach and Methodology

The software included in the survey covered a broad scope of integration capabilities

System Interfaces



All 19 Responses

Approach and Methodology

Seven major yardsticks were defined against which MMIS systems were assessed

Where do MMIS vendors stand with respect to:

1. Awareness of and intent to comply with GS1 standards
2. Capability to support GS1 GLN and GTIN data standards
3. Ability to employ GLN and GTIN in EDI transactions with trading partners
4. Requiring hospitals to incur extra costs in adopting compliant software
5. Enabling hospitals to reduce and/or eliminate dual numbering systems
6. Ability to receive, send, and synchronize data with GDSN data pools or other sources using GS1 Standards
7. Publishing road-maps and time-lines for GS1 compliant features that align with GS1 Sunrise dates

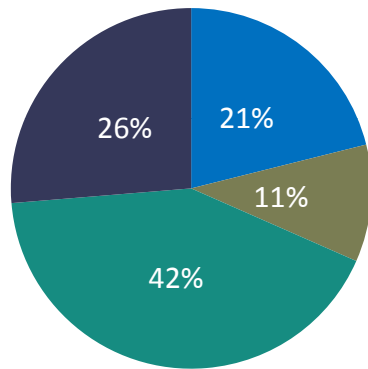
Findings and Conclusions

Yardstick 1: Awareness of and intent to comply with GS1 standards

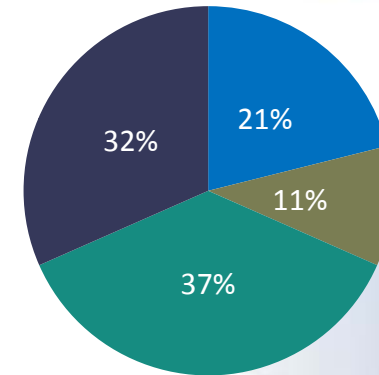
There is strong awareness of GS1 across all vendors and even higher familiarity within the top 4 MMIS vendors

Knowledge level of GTIN standards?

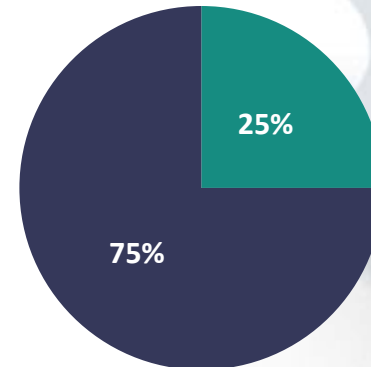
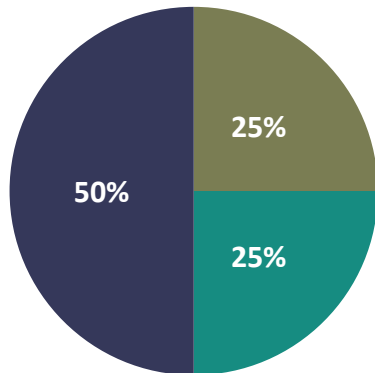
All 19 Responses



Knowledge level of GLN standards?



Top 4 MMIS Vendors



- Little to None
- Novice
- Intermediate
- Company subject matter expert

Findings and Conclusions

Yardstick 1: Awareness of and intent to comply with GS1 standards

All four primary vendors are knowledgeable about GS1 US healthcare standards and their intention is to try and meet the requirements by the sunrise dates; 2 said they are “well on their way” and 2 said have “just begun.”

- MMIS “A” Very aware of GS1 US Healthcare and committed to implementation. GTIN and GLN can be stored now in base system (and printed on the PO). Greater capability with translation to/from other identifiers with optional data management module. Will provide rules and edits for user defined fields. Entered into agreement with LANSA to provide data pool integration “adapters”. User group has GS1 US discussion sessions.
- MMIS “B” Very aware of GS1 US Healthcare and committed to implementation. Base product can now store GTIN and GLN as user defined field. October 2009 release will include system defined compliant fields and early 2010 release will recognize GS1 barcodes.
- MMIS “C” Aware of GS1 US Healthcare standards. Just beginning to study and plan how to implement. Did not have the latest attribute specifications.
- MMIS “D” Aware of GS1 US Healthcare standards; just beginning to study and understand requirements. Did not have the attribute specifications.

Secondary vendors are split evenly regarding awareness and their intent to implement for the sunrise dates

The MMIS vendors who also sold into retail / international markets are further ahead than the vendors who focused on solely on US healthcare.

Findings and Conclusions

Yardstick 2: Capability to support GS1 GLN and GTIN data standards

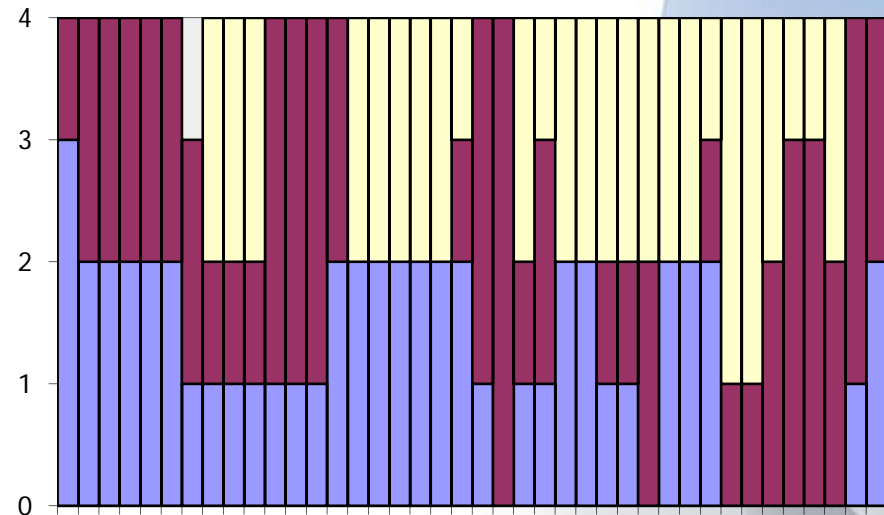
There are some signs of progress in supporting GS1 requirements...

- 9 of 14 MMIS systems (64%) can store GTINs in a system defined format including all 4 of the primary vendors.
- 7 of 14 MMIS systems can store GLNs in a system defined format, including all 4 of the primary vendors.
- No system is currently able to store all item data attributes in GS1 Healthcare standard format; some capture many of the items but not in a compliant format. Even the top 4 are incomplete in their capabilities for all the attributes.

Primary 4 MMIS Vendors

Are GDSN attributes captured in formats that comply with GTIN standards?

- No, We do not capture at all
- We capture, but not in GTIN compliant format
- Yes, in a GTIN compliant format

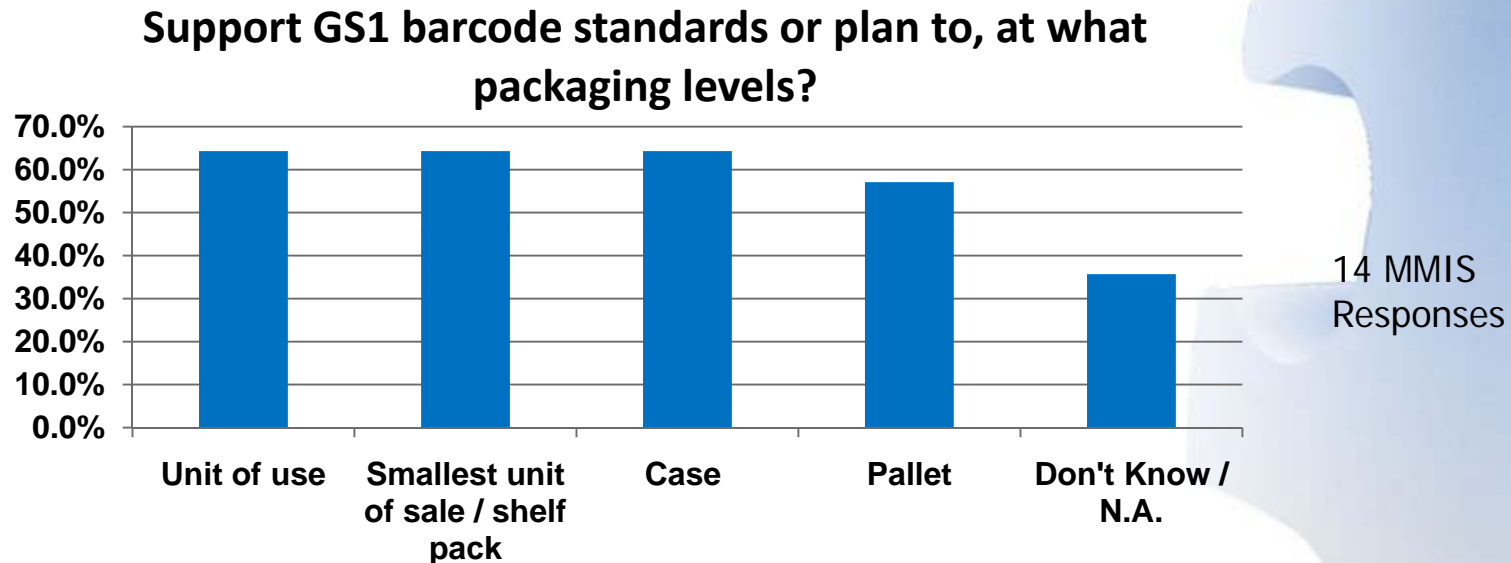


x-axis are the 40 GDSN GTIN healthcare attributes

Findings and Conclusions

Yardstick 2: Capability to support GS1 GLN and GTIN data standards

Approximately 50% of vendors support GTIN based barcodes now and most will be able to within the next two years. Most will support barcodes at all levels of packaging.



There is progress in supporting GS1 requirements. However, many vendors are not aware of the details of the system requirements (such as attributes) and need implementation guidance, clarification and assurance. For example:

- Not aware of how to obtain latest versions of GS1 specifications.
- Feel specifications are still evolving, vary by country, are different for healthcare vs. retail.
- Precisely how GLN/GTIN/GDSN should be implemented within an MMIS, what the user should do with these capabilities, and what “compliance” actually entails.

Findings and Conclusions

Yardstick 3: Ability to employ GLN and GTIN in EDI transactions

- Some MMIS systems indicated they could process EDI transactions using GLN/GTIN:

Systems support the GTIN within the EDI transaction			
	None	6	42.9%
810	Invoice	6	42.9%
816	Organization Relationships	1	7.1%
832	Price / Sales Catalog	5	35.7%
850	Purchase Order	6	42.9%
855	PO Acknowledgement	6	42.9%
856	Ship Notice	4	28.6%
857	Invoice / Ship Notice	2	14.3%
860	Order Change – Buyer	2	14.3%
865	Order Change - Seller	2	14.3%
840	RFQ	1	7.1%
845	Price Authorization	1	7.1%

14 MMIS vendors

- Overall, 42% of vendors indicated that they could do some of these transactions using the GTIN and GLN standards.
- No MMIS vendor has a default/automatic option to use GLN or GTIN in EDI transactions; users must uniquely configure the transaction to contain GTIN and GLN fields and must arrange to send/receive these fields with each trading partner (conversion to GTIN and GLN EDI transactions on a partner by partner and even an item by item basis could become quite complex).

Details on how/when standards will be part of EDI transactions is not specified and MMIS vendors are unclear on how to support and implement this capability.

Findings and Conclusions

Yardstick 4: Requiring hospitals to incur extra costs in adopting compliant software

All the primary vendors will provide GS1 compliant features as part of their normal release upgrade service

- If the user is paying the maintenance fees there is no extra software licensing fees for these features.
- However the user will incur internal costs to migrate and upgrade to new releases of the MMIS software.
- Note that in some cases MMIS systems are being discontinued (McKesson ESI Nova and Matkon) and there will be costs to migrate to a new MMIS system including perhaps additional software licensing fees.

None of the vendors viewed the “operationalizing” of standards as a major support role they intend to offer their customers.

Hospitals should expect to incur internal costs to upgrade software and implement GS1 standards:

- System upgrade installation and validation
- Enumeration of GLN
- Acquisition of data from registry and GDSN
- Data cleaning/preparation
- Integration with other systems
- Process redesign, documentation and training
- Coordination with trading partners (e.g. defining EDI transaction changes and timing)

Findings and Conclusions

Yardstick 5: Enabling hospitals to reduce and/or eliminate dual numbering systems

- Most MMIS systems can already accommodate multiple secondary identifiers (e.g. Manufacturer's Product ID, Distributor's Item Number, etc)
- GTINs and MMIS system vendors:
 - 4 plan to use as a primary identifier.
 - 6 can store as a system defined field.
 - 8 can store as a user defined field.
 - 9 can provide an automated cross-reference to the GTIN today.
- GLNs and MMIS system vendors:
 - 3 plan to use GLNs as a primary identifier.
 - 7 can provide an automated cross-reference to the GLN today.

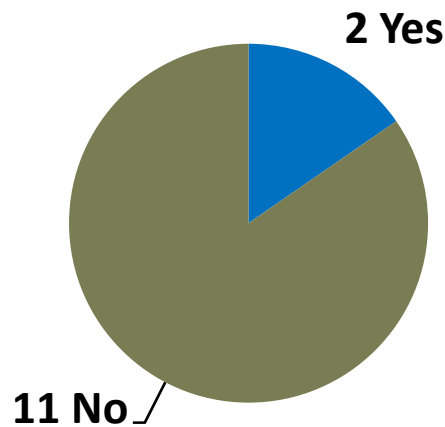
“Storing” the GTIN and GLN adds little value if the systems are not able to transact and report with the stored values – today these systems offer little functionality beyond simple storage.

Findings and Conclusions

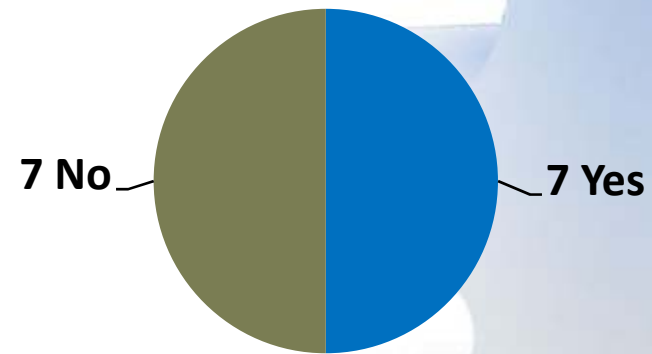
Yardstick 5: Enabling hospitals to reduce and/or eliminate dual numbering systems

- Only 2 MMIS systems can use GLN as the location ID and only 7 of 14 can translate from the existing ID to GLN.

Ability to use GLNs as the primary identifier?



If not primary, an automated cross-reference ?



- Some MMIS systems plan to store GLNs as a secondary identifier in addition to the existing hospital assigned location identifier and others (manufacturer's customer number, distributor's customer number, distributor's ship-to number).
- Some MMIS systems do not have full-function location master files.

Findings and Conclusions

Yardstick 5: Enabling hospitals to reduce and/or eliminate dual numbering systems

- While some MMIS systems *could* replace the existing item identifier with the GTIN, all primary vendors expect to support a dual numbering system for the foreseeable future because of challenges such as:
 - Exceptionally complex process due to some items having GTIN identifiers and some not – it may be many years before all items have a GTIN
 - Interfacing systems that rely on the existing item identifier
 - Non-US & non-healthcare customers' needs must be met by same system
 - Historical analysis (e.g. item usage this year vs. last)
 - Change of master file primary key may require re-installation of systems
 - Internal use of existing identifiers is highly ingrained in hospital culture and we would anticipate significant resistance to change
- If hospitals maintain a dual numbering system during a transition period, then existing identifiers would remain the primary keys for some subset of internal transactions. The first candidates for use of the GS1 identifiers are going to be those with highest safety and efficiency benefits, such as:
 - GTIN Barcode related transactions (e.g. point-of-use disbursement)
 - External EDI transactions with trading partners for GTIN & GLN
 - GDSN and GLN Registry data synchronization

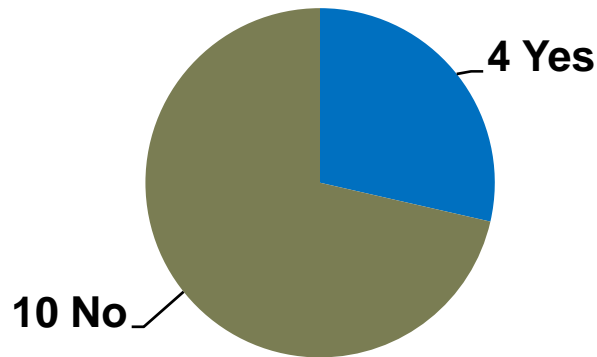
It is unclear how much of anticipated benefit of standards adoption will be realized during the transition phase(s) to GS1.

Findings and Conclusions

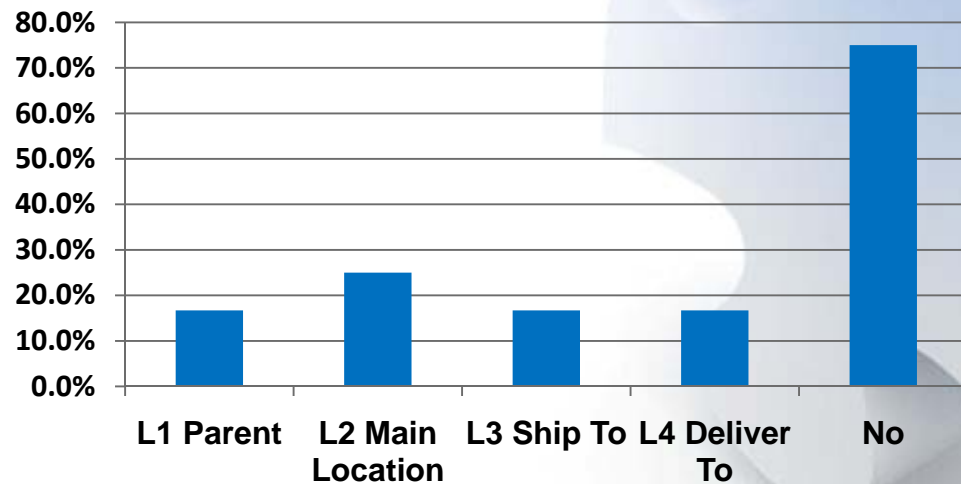
Yardstick 6: Ability to receive, send, and synchronize data with GDSN data pools or other sources using GS1 Standards

- 4 of 14 MMIS vendors (only 1 Primary) claim they can synchronize with GDSN data pools.
- 3 of 12 MMIS vendors responding claim they can interface with the GLN Registry.

Ability to synchronize with certified data pool ?



Ability to interface with the GLN Registry ?



These claims are questionable based upon vendors' current depth of understanding demonstrated in our interviews.

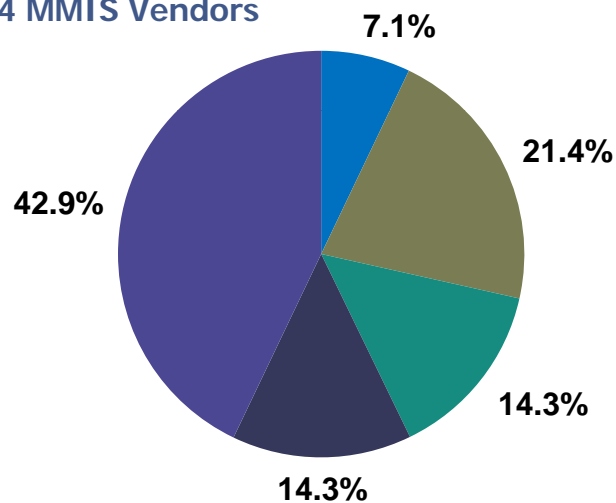
Findings and Conclusions

Yardstick 7: Publishing road-maps and time-lines for GS1 compliant features that align with GS1 Sunrise dates

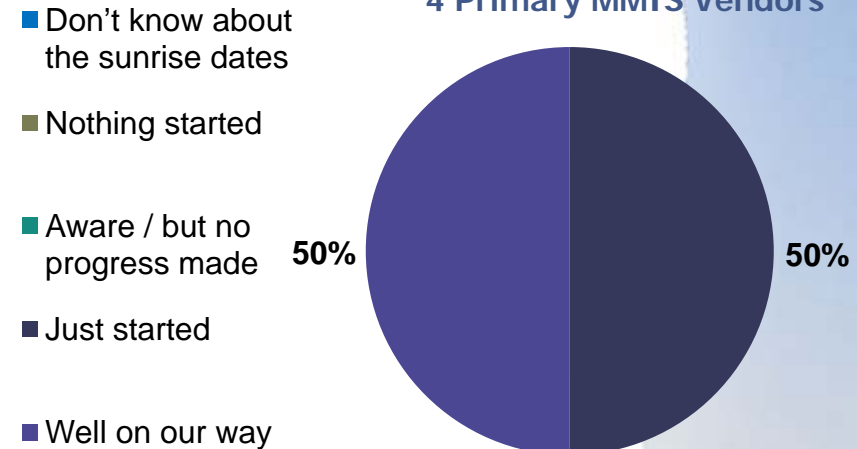
- More than half of all MMIS vendors responding, and 50% of Primary MMIS vendors, are not well along in meeting the sunrise dates.

Progress in meeting the GLN/ GTIN Sunrise dates

14 MMIS Vendors



4 Primary MMIS Vendors



- None of the respondents has published a road-map or time line to their users dealing with GS1 Healthcare standards compliance.

Given the level of understanding of what the standards and sunrise dates actual entail, we suspect the responses are still overly optimistic.

Summarized Conclusions

- General awareness of GS1 US is good and some progress is evident.
- Systems will be capable under normal maintenance fees – real cost is internal.
- MMIS Vendors are uncertain as to what they are being asked to support,
 - MMIS system requirements not yet specified beyond GLN/GTIN identifiers (Use of attributes - mandatory vs. optional, Processing functionality, Reporting, Error processing, Data translation, GLN/GDSN processing, EDI processing).
 - Timeline and priorities within and beyond sunrise dates not understood.
 - Vendors fear that standards are still evolving.
- Hospitals should require greater support from MMIS vendors and vendors need more “motivation” from customers.
 - To make use of GLN/GTIN and associated functionality.
 - To “get serious” about implementation (Data quality issues, data conversion, costs to change business processes, training, etc).
 - To deal with workload/complexity in data management
- Retirement of current IDs in is not going to happen in the foreseeable future (software must handle both GS1 and current IDs).

Recommendations

- Accelerate development of a pro-forma hospital implementation strategy and plan
 - Capitalize on work started by GS1 US A&I workgroup
 - Leading to a set of prioritized requirements for MMIS and other software (GDSN data pool providers, GHX, EDI translators, etc)
 - Enhance Toolkits
- Formally engage leading MMIS vendors
 - Push all appropriate GS1 publications to them
 - Encourage their participation in workgroups
 - Identify areas of operational support they could offer their customers (Fee for Service?)
- Evaluate impact of continued use of existing identifiers along with GLN and GTIN on projected benefits of standardization
- Assess readiness of manufacturers' and distributors' systems
- Assess readiness of hospital pharmaceutical MMIS
- Continue analysis of survey data; incorporate any additional responses

Next Steps

- Your Feedback
 - On what we have shared with you today
 - What additional is needed to support CHeS Strategic deliverables
 - What role for AHRMM

- More analysis of data planned by GS1 US A&I workgroup (October 6-8, 2009 Chicago Meeting)

- Public Relations Plan (HIGPA)
 - Release of Results (to participants prior to press)
 - Press Release
 - HIGPA Annual Meeting

- Creation of a prioritized work plan for CHeS and GS1 US