

## Results of the Gartner-AMDIS Survey of Chief Medical Informatics Officers

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Recent experience has demonstrated the importance of the chief medical informatics officer (CMIO) in achieving acceptance among clinicians of computer-based patient record (CPR) systems, and in dealing with the many issues and nuances of successful deployment, ongoing management and benefit realization.

### Key Findings

- In the four years that Gartner has conducted this survey, the position of CMIO has become a more accepted, more common, more formalized and more standardized one in its responsibilities relating to clinically-oriented IT systems,
- Some CMIOs are assuming management responsibility for nursing and pharmacy informatics functions and staff.
- CMIOs are also assuming more responsibility and more accountability for ensuring the business value of clinical IT.
- CMIOs are becoming more assertive about the need to define and fund appropriate staffing levels for informatics-related work — and around their own needs to delegate effectively — rather than just trying to solve the organization's needs through personal “workaholicism.”

### Recommendations

- Medical, nursing and pharmacist informatics functions need to be budgeted for and staffed appropriately. Gartner believes that, while there are several models that can work, the best configuration will usually be one that brings these roles together under a single leader, a CMIO.
- Recruit as CMIOs those individuals with very strong communication, problem-solving and leadership skills, who can garner the respect and trust of physicians, and who will work collaboratively with administrative, clinical and IT executives.
- Decide how and where a CMIO fits into an enterprise's organizational structure by assessing factors such as the organization's leaders, culture, power structure, goals for clinical IT, as well as the current relationship among administration, IT and clinicians. This will guide what options will contribute most to a CMIO's — and therefore the care delivery organization's (CDO's) — short- and long-term success.

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### 1.0 Survey Background

The position of CMIO as a key function is being recognized in many countries as health systems make major investments in clinically-oriented IT applications. The goal of the joint survey of CMIOs by Gartner and the Association of Medical Directors of Information Systems (AMDIS) is to explore the role, background, responsibilities, organizational structure, current and future priorities, contributors and inhibitors to success, and the future career aspirations of CMIOs. This survey, conducted annually by Gartner and AMDIS since 2005, presents a useful look at the evolution of this position.

Primary research was conducted in the second half of 2008 by Gartner. Gartner again solicited participation from the CMIO membership of AMDIS ([www.amdis.org](http://www.amdis.org)) via the AMDIS list serve. But the solicitation method was expanded for this year's survey when healthcare provider CIOs — who are members of the College of Healthcare Information Management Executives (CHIME) — were also contacted and asked to encourage their CMIOs to participate. As a result, 97 U.S. CMIOs in healthcare provider organizations completed the 2008 survey, compared with 56 in 2007.

Gartner and AMDIS believe the results of this survey provide a very useful description and directional perspective. In late 2008 through early 2009, following analysis of survey findings, Gartner conducted additional research, including a number of specific follow-up discussions with CMIOs and CIOs in the U.S. and eleven other countries.

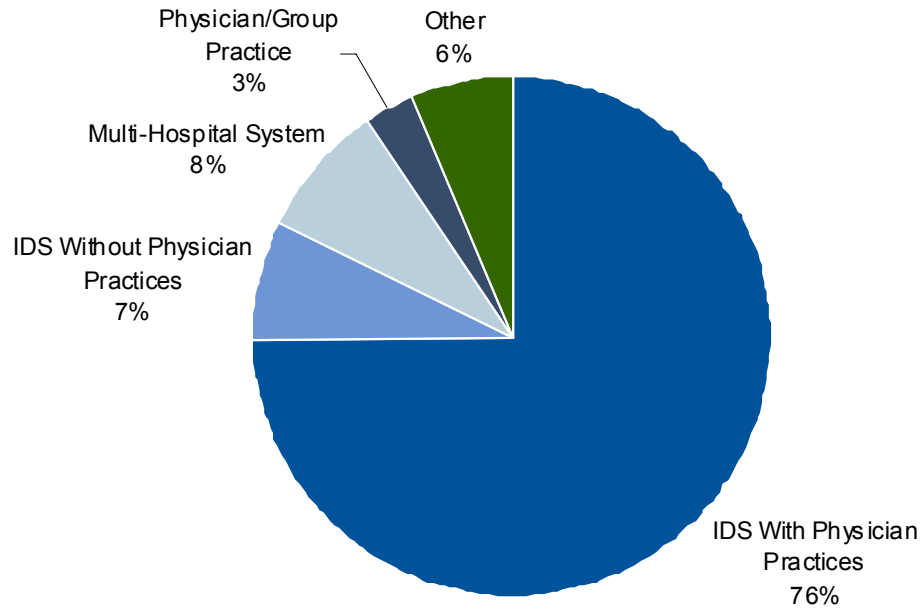
While the respondents to this survey were U.S.-based, Gartner believes that these CMIO experiences and functions are similar to those emerging in other countries, and that the findings will provide insights and key lessons benefiting many CDOs, ministries of health and shared entities in IT services.

The questions asked were a repeat of the 2007 survey. Note that, while the majority of CMIOs answered most of the questions posed, they were not required to answer all questions, so the total number of responses can vary per question.

#### 1.1 The Type and Size of Represented CDOs

Participating CMIOs represented organizations across the spectrum of midsize to large integrated delivery systems (IDSs), hospitals and a few physician practices. A substantial majority of respondents (76%) were from IDSs that included one or more hospitals, outpatient centers and owned physician practices; 15% were from IDSs or multi-hospital systems without physician practices; and 3% represented IDS-owned or independent medical practice groups only (see Figure 1).

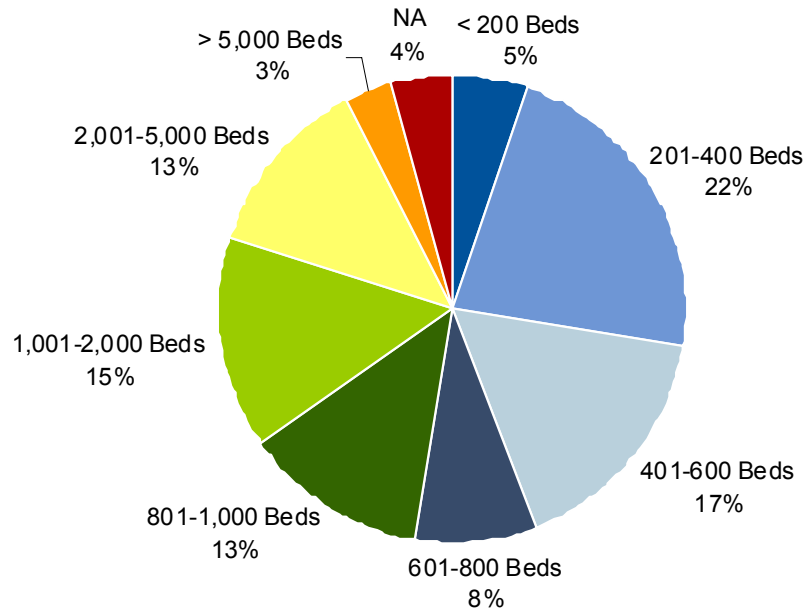
**Figure 1. Breakout of Survey Respondents by CDO Type**



**Source: Gartner (July 2009)**

Among the respondents whose organizations included one or more hospitals, 5% were from CDOs with 200 or fewer total beds, 22% were from CDOs with 201-400 beds, 17% were from CDOs with 401-600 beds, 8% were from CDOs with 601-800 beds, 13% were from CDOs with 801-1,000 beds, 15% were from CDOs with 1,001-2,000 beds, 13% were from CDOs with 2,001-5,000 beds, and 3% were from CDOs with more than 5,000 beds (see Figure 2).

**Figure 2. Breakout of Respondents by Organization Size (Based on Number of Acute Care Beds)**



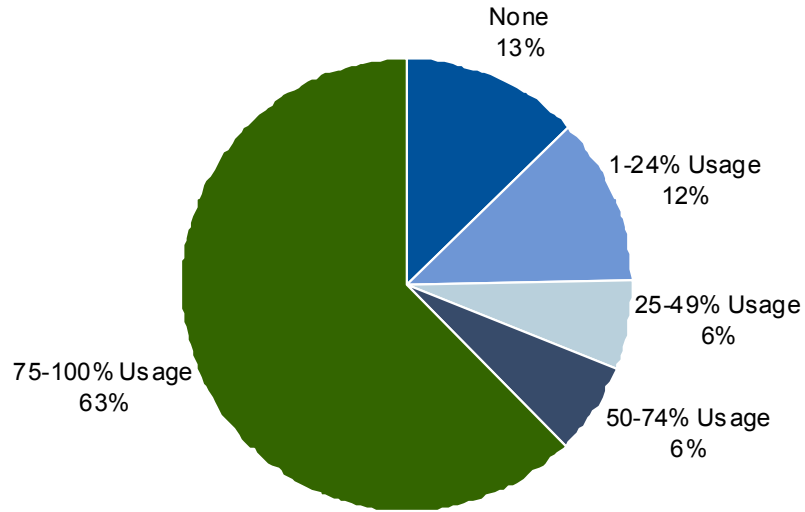
Source: Gartner (July 2009)

## 1.2 Current Level of Clinical Automation

To explore how the CMIO role is changing as clinical automation progresses, this year's survey again included a set of measures to represent the current state of clinical automation among the organizations represented. In most respondents' organizations (69%), most acute care nurses routinely document inpatient care in a CPR system. However, the usage and/or penetration of computer-based physician order entry (CPOE), electronic physician inpatient documentation, ambulatory electronic medical record (EMR) systems and electronic ambulatory physician documentation were each far less than for nursing (see Figures 3 through 6). Most of the organizations still had limited or no physician use of CPRs for in-hospital CPOE (60%) and in-hospital documentation (87%). In nearly half of respondents' CDOs (48%), the majority of physicians were using electronic medical record systems for documentation in ambulatory settings. So, while penetration and usage rates continue to rise, there is still much work for these CMIOs to do in the early phases of system deployment and clinician adoption, and this is reflected in their listing of priorities.

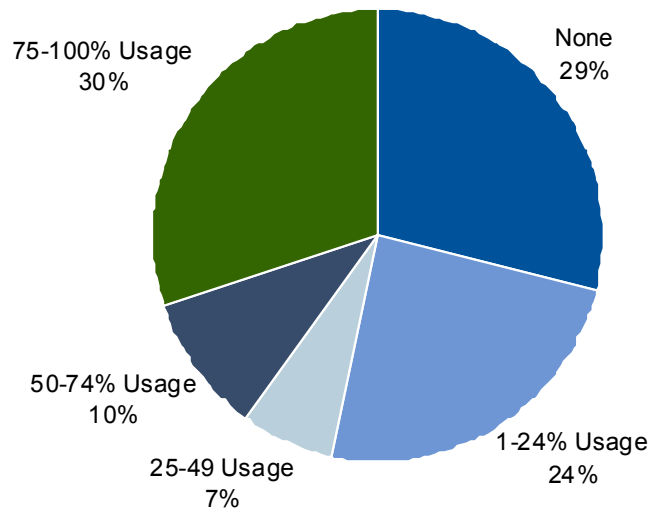
Note that the percentages detailed here do not represent overall market penetration rates for U.S. healthcare. This is because the data is only from organizations that have functioning CMIOs. Since project plans geared toward these types of clinical use are a trigger for creation of the formal CMIO role, these rates are presumed to be higher than the total universe of U.S. hospitals, IDs and physician practices.

**Figure 3. Percentage of Surveyed Organizations in Which Nurses Perform CPR Documentation (by Usage/Penetration Level)**



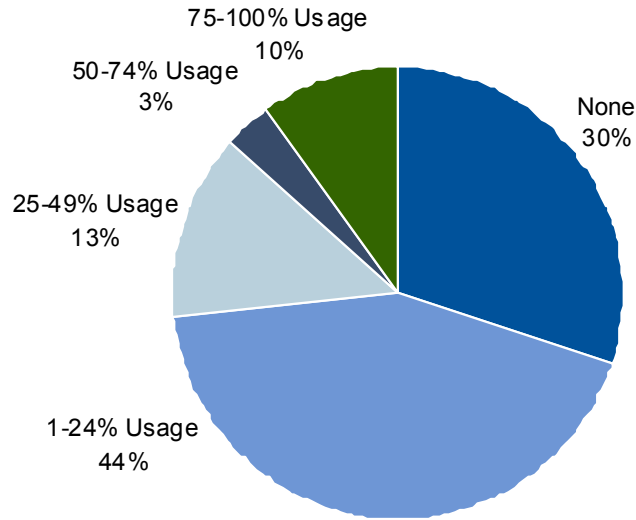
Source: Gartner (July 2009)

**Figure 4. Percentage of Surveyed Organizations in Which Physicians Place Inpatient Orders Through CPR Systems (by Usage/Penetration Level)**



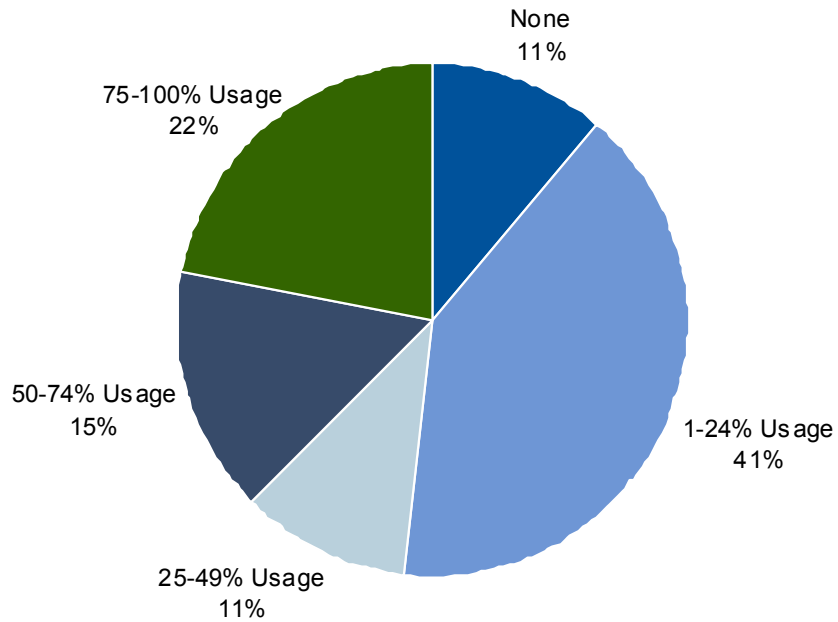
Source: Gartner (July 2009)

**Figure 5. Percentage of Surveyed Organizations in Which Physicians Perform Inpatient Documentation in a CPR System (by Usage/Penetration Level)**



Source: Gartner (July 2009)

**Figure 6. Percentage of Surveyed Organizations in Which Physicians Perform Ambulatory Documentation Using an EMR (by Usage/Penetration Level)**



Source: Gartner (July 2009)

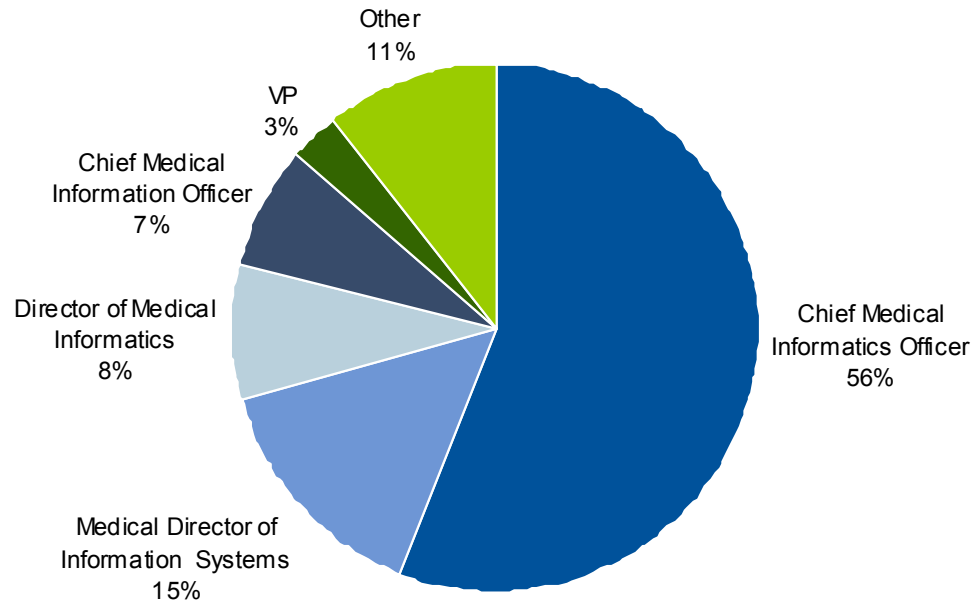


## 2.0 Survey Results

### 2.1 Common CMIO Titles

The largest percentage (63%) of respondents held the title of chief medical informatics or information officer, with chief medical informatics officer emerging as the most dominant title (56%). Medical director of information systems (15%) and director of medical informatics (8%) were also mentioned regularly (see Figure 7). Several respondents held vice president titles, including two whose titles were “VP and CMIO” (counted here under VP rather than CMIO).

**Figure 7. Survey Respondent Job Titles**



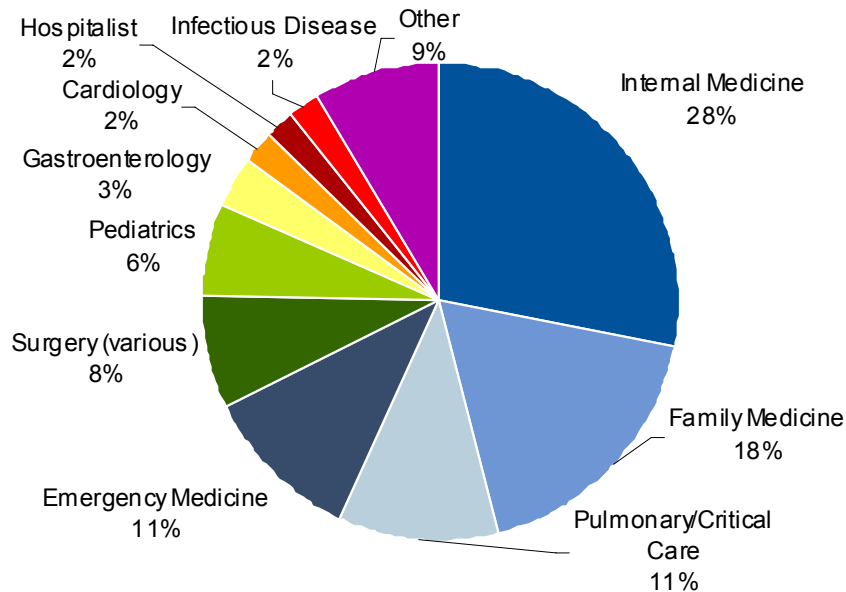
Source: Gartner (July 2009)

## 2.2 CMIO Backgrounds

### 2.2.1 Education and Experience

CMIO respondents come from a wide variety of medical specialties (see Figure 8). The four most common are internal medicine (28%), family medicine (18%), pulmonary/critical care (11%) and emergency medicine (11%). Seventeen percent of the total had a pediatric medical focus — either in general pediatrics (6%) or had a pediatric focus within another specialty, such as critical care, emergency medicine or urology. We counted these within the more generalized specialty category (for example, both adult and pediatric intensivists are counted within pulmonary/critical care) A number of CMIOs (10%) reported multiple medical specialties. For Figure 8, we counted these within the first specialty category each mentioned.

**Figure 8. Medical Specialties of Survey Respondents**



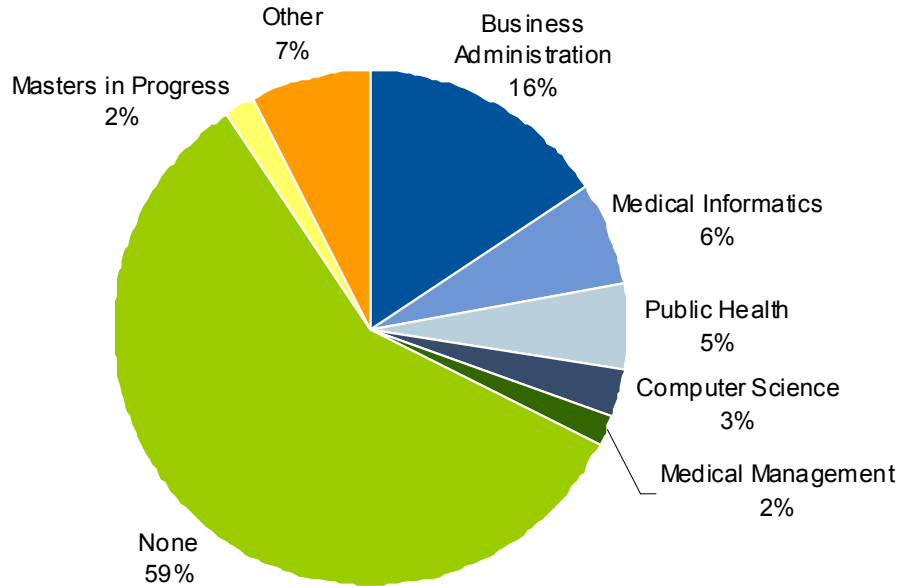
**Source: Gartner (July 2009)**

Why are these specialties more prominent among CMIOs? Partly, no doubt, it is salary based — physicians in the very highly compensated specialized fields don't aspire to become CMIOs. Equally notable is that the prominent physician specialties of CMIOs are in areas where communication and teamwork skills matter (when working with colleagues, patients and their families) in terms of success and job satisfaction. Also, since most CMIOs continue to practice, they tend to come from specialties where they can maintain competence (and sanity) while practicing only 50% to 80% of the time.

CMIOs are highly educated. In addition to their medical degrees and board certifications, 41 % are educated to masters level and another 2% of respondents have degrees in progress (see Figure 9). The most common graduate program, as in prior surveys, was business administration (16%), followed by medical informatics (6% completed and 2% in progress) and public health (5%). In the "Other" category, there are CMIOs with degrees in such varied areas as psychology, evaluative clinical sciences, theology, engineering, and ecology and behavioral biology. In addition, 8% of CIOs hold Ph.Ds, mostly in life sciences fields such as biochemistry, biophysics, molecular biology, pharmacology, and psychology.

Note that many CMIOs have also completed the American Medical Informatics Association (AMIA) 10x10 program — from information gathered outside this survey.

**Figure 9. Masters Degrees Held by Survey Respondents**

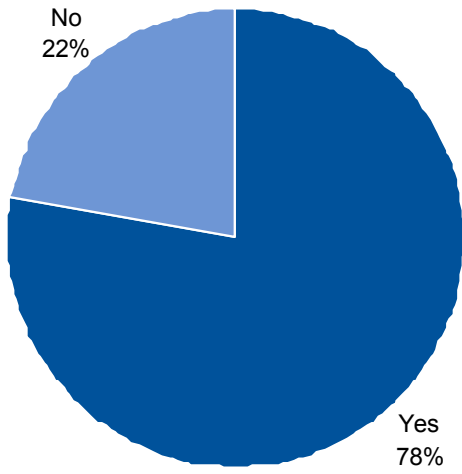


Source: Gartner (July 2009)

### 2.2.2 Prior Administrative Experience

The CMIO serves an administrative role in advocating and leading the use of IT to achieve business objectives. A substantial majority of responding CMIOs (78%) had some administrative responsibility before their current CMIO assignment (see Figure 10). There is no dominant type of administrative experience among CMIOs; many were chief or deputy chief medical directors of an emergency department, critical care service or other medical service. Some have been chief medical officers (CMOs) — sometimes at one hospital in a health system for which they are now enterprise CMIO — who became clinical IT champions and de facto CMIOs prior to formal appointment to the position.

**Figure 10. Did the Survey Respondent Have Previous Administrative Responsibilities?**

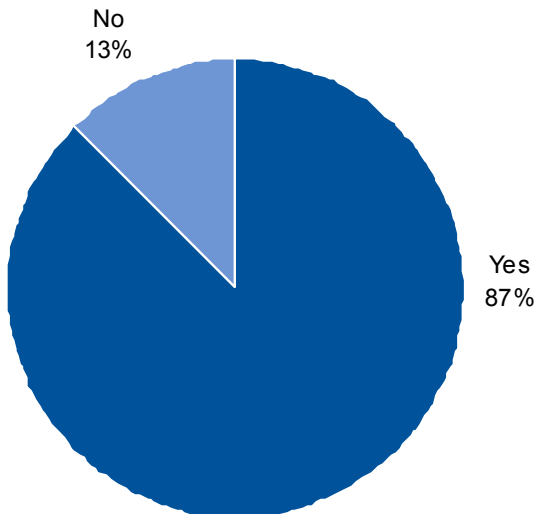


Source: Gartner (July 2009)

### 2.2.3 Tenure in the CMIO Role and With the Current Organization

The CMIO role is still relatively new, although we now see more organizations creating such positions. As in the 2005, 2006 and 2007 surveys, most respondents (87%, exactly the same as in 2007) reported that they were holding their first CMIO position (see Figure 11).

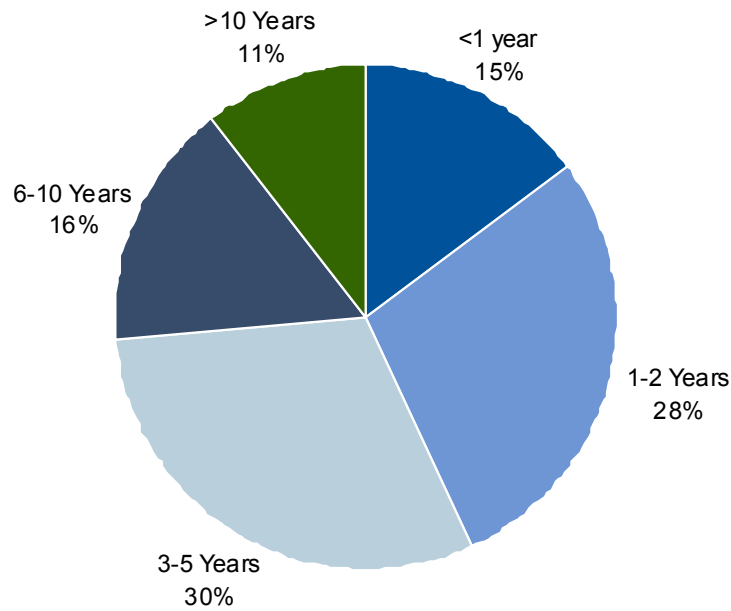
**Figure 11. Is This the Survey Respondents' First CMIO Position?**



Source: Gartner (July 2009)

There is less of a dichotomy between very senior and quite new CMIOs than was the case in the first years of the survey (2005 and 2006). While the vast majority (73%) have been in CMIO positions for five years or less, many (57%) have been CMIOs for more than three years, and over one quarter (27%) have six or more years' experience as a CMIO, as opposed to just 15% with less than one year's experience (see Figure 12).

**Figure 12. CMIO's Total Tenure as a CMIO Across all CDOs**

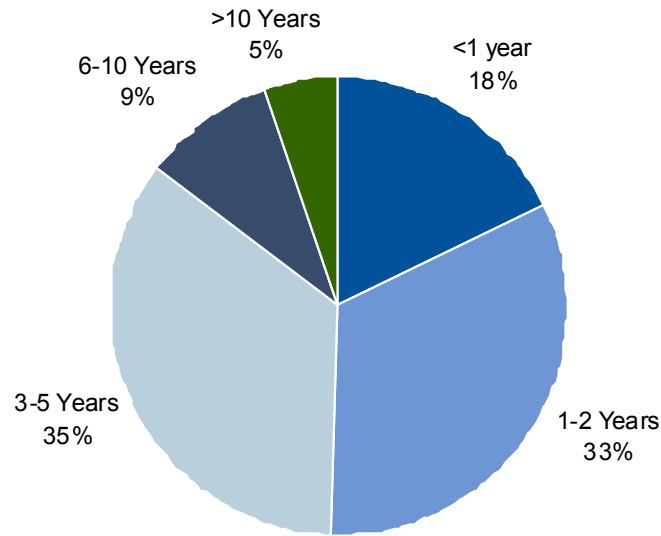


**Source: Gartner (July 2009)**

We are seeing slightly more movement of CMIOs from one position to another as the total talent pool of CMIOs increases. This is evidenced by total tenure in all CMIO positions, compared with tenure in the current position (see Figures 13 and 14). There appears to be a slight pattern in a CMIO's career path, similar to what we have often seen with CIOs — moving from smaller organizations to larger ones, such as from a children's hospital to a larger integrated delivery system, sometimes in the same area.

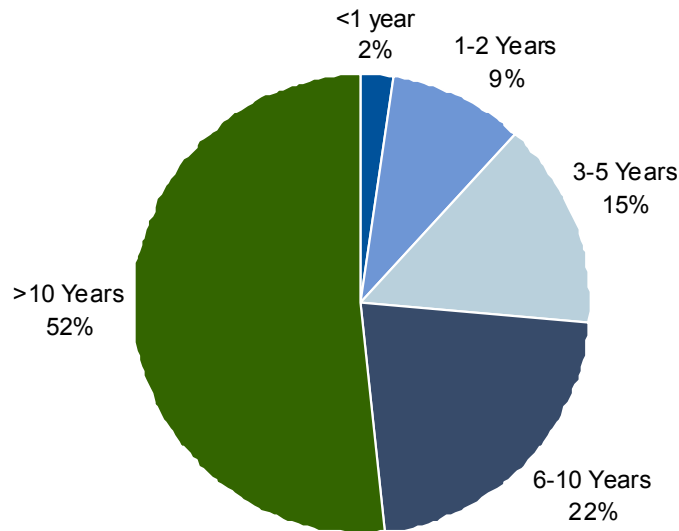
Recruiting CMIOs from physicians already affiliated with an organization continues to be the predominant source of CMIOs. Many begin their involvement in informatics by chairing IT steering or system selection committees. Nearly three-quarters of CMIOs have been with their organizations for six years or more, and more than half for over 10 years (see Figure 14). For CMIOs new to an organization, whether it is their first CMIO position or not, establishing credibility among physicians and with the administration, building a strong relationship with the CIO, and understanding the CDO's culture and "how things really work" represented significant challenges. CIOs and CMOs should plan to help new CMIOs understand the politics, power structure and potential pitfalls, in order to ensure their acceptance and effectiveness.

**Figure 13. Survey Respondents' Tenure in This CMIO Position**



Source: Gartner (July 2009)

**Figure 14. Survey Respondent CMIOs' Total Tenure With Current CDO**



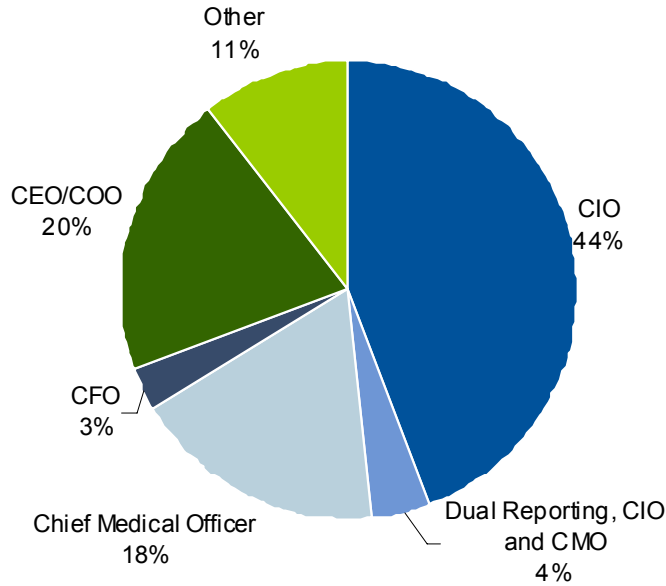
Source: Gartner (July 2009)

### 2.3 Reporting Structure

The largest group of CMIOs (48%) reported either solely to the CIO (44%) or had a dual reporting relationship to the CIO and the CMO (4%). This percentage appears to be declining over time

(54% reported to the CIO in the 2005 survey). Nearly equal percentages reported to the CEO or COO (a total of 20%) and to the Chief Medical Officer/VP-Medical Affairs (18%), while 3% reported to a CFO (see Figure 15).

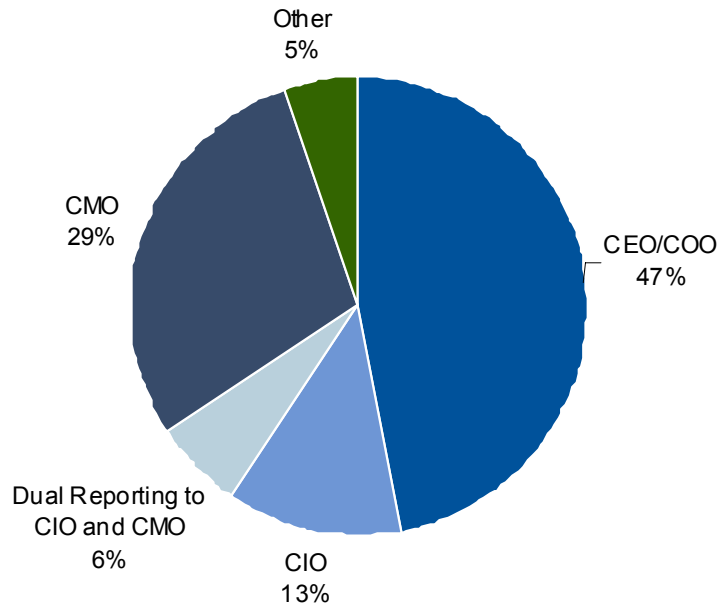
**Figure 15. CMIO Reporting Relationship**



**Source: Gartner (July 2009)**

When asked what reporting relationship they would recommend to a CDO that was recruiting a CMIO, most CMIOs (81%) recommended that an organization hiring a new CMIO should *not* have the position report to the CIO, nor to a dual reporting relationship including the CIO and another executive. Forty seven percent of respondents recommended reporting to the CEO and/or COO — about the same (46%) as in the 2007 data and up notably from 28% in 2006 — while 29% recommended reporting to the CMO (25% in 2007 and 33% in 2006), and just 13% recommended having the CMIO report solely to the CIO (see Figure 16).

**Figure 16. To Whom Would Respondent CMIOs Recommend a CMIO Report?**

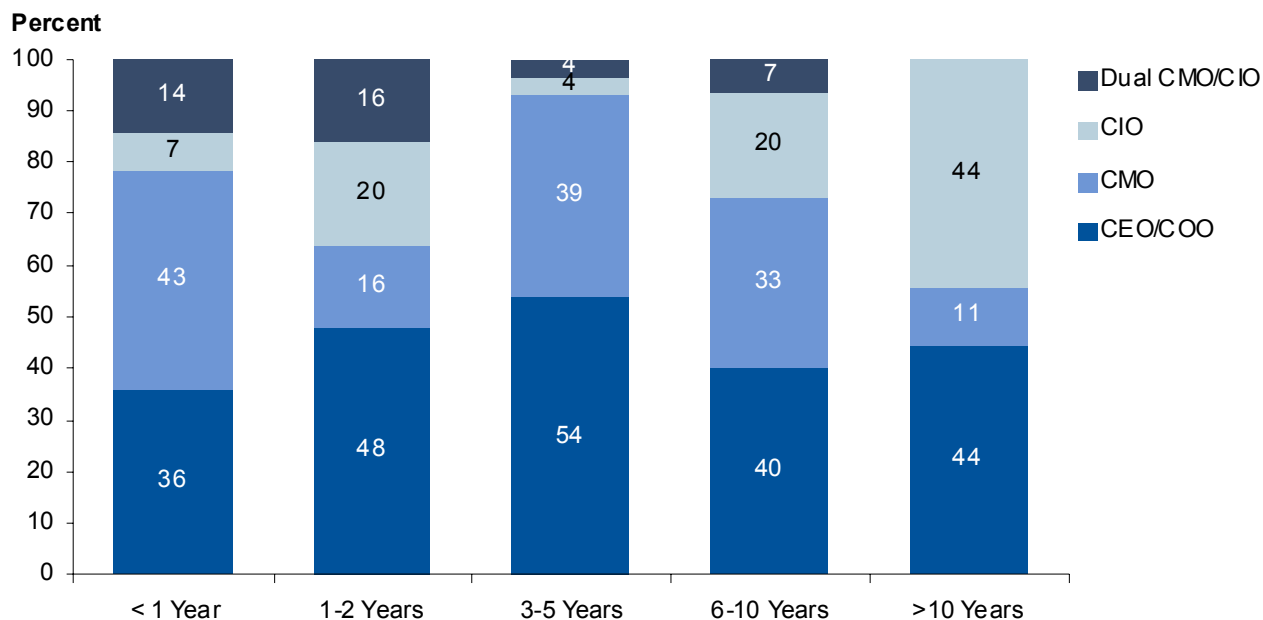


**Source: Gartner (July 2009)**

This year we also looked to see if there were any differences in recommended reporting relationships, if sorted according to the total CMIO tenure of the respondents (Figure 17). There did appear to be any notable differences. Reporting to the CIO received the least support among CMIOs with 3 to 5 years' total tenure, while reporting to the CEO or COO received the highest support from this group. Reporting to the CMO received the least support as a recommendation among the long-tenured (>10 years) group, many of whom are true pioneers in the field — reporting to the CIO received the most support among this group; equal to the number recommending CMIOs report to the CEO/COO.



**Figure 17. Recommended CMIO Reporting Relationship, by Total Tenure of Respondents in CMIO Positions**



Source: Gartner (July 2009)

Because there is still such disparity between current and recommended reporting relationships, we asked CMIOs to comment on the reasons behind their recommendation. Based on follow-up discussions with CMIOs, we believe that, in some cases, a CMIO recommends reporting to the CEO/COO when he or she may feel the incumbent CMIO is less tuned-in to the importance and potential of clinical systems. Also, the organization may have such significant cultural challenges that the CMIO feels that top-level visibility would be critical to managing change, as one respondent commented below.

It is important for executives hiring a CMIO to consider a number of the key points CMIOs raised in their rationale for reporting relationships. A number of their concerns can be addressed by ensuring information is shared freely and the CMIO has direct involvement in strategic planning, budgeting, and in IT governance and the clinical steering committee, as well as appropriate visibility at board level in conjunction with the CIO.

### 2.3.1 Gartner Evaluation

Gartner concludes that natural "forces" are at work, which continue to draw the CMIO toward the CMO's organization, which now also often includes the chief quality officer (CQO). Increasingly, the lead medical position is moving away from sometime-elected individuals whose core job is to represent the interests of physicians. Rather, the new role of the health system CMO is to provide leadership in enterprise service-line strategy, and clinical quality and effectiveness. CMOs increasingly recognize the pivotal role that IT plays in their efforts and the equally pivotal role they must play in relation to IT use. This is partly due to more experience with CPRs — including the emphasis on healthcare IT at national government level in many countries, and partly due to a generational shift in CMOs to individuals with more personal and professional familiarity with IT. Thus, CMOs will want the CMIO to be part of that team, and vice versa. Factors include the alignment of clinical systems with clinicians' workflow and productivity, the CMIO's oversight of order sets, clinical template content and clinical decision support, as well as the increasing use of

performance dashboards, business intelligence and clinical analytics derived from electronic medical records data. Additional applications such as personal health records, telemedicine and real-time location and condition sensing (LCS) technologies that contribute to coordinated care management and services expansion will further emphasize this new IT role as a core component of medical management. These same forces also align the work of medical, nursing and pharmacy informatics professionals.

In making this prediction, we mean no slight to the position of chief nursing officer (CNO). That role is elevating and changing in its importance and enhancing its focus on the entire coordinated care process as well — on health system operations, efficiency, effectiveness and patient throughput — while also overseeing key management issues for what is typically the CDO's largest hospital workforce. Nurses and nurse practitioners are also projected to play a pivotal role in new models for chronic disease management and the medical home, and will be closely tied to IT innovations there.

However, note the high percentage of CMIOs (47%) who persist in recommending that the CMIO report instead to the CEO/COO year after year (see Figure 16). A different, non-traditional structure could emerge, particularly in large health systems with a CMO, CNO, CIO and a CMIO (or chief clinical informatics officer) seated at the cabinet table — although we still think this model is ultimately less likely. In some CDOs where the CMIO reports (or feels he or she should report) directly to the CEO/COO, we believe this may reflect a continuing lack of appreciation, enthusiasm or asserted leadership by the CMO around the potential of clinical IT. In other current cases, an incumbent CMO (or the CMO of one of a health system's hospitals) has taken on the champion's role and retained the prior reporting relationship. Based on respondent comments, and on subsequent interviews with CMIOs and other CDO executives, we observe this is because the relationship between IT and medicine may be unformed or problematic or, because the physician community is deemed to be particularly resistant to CPR adoption or just plain "persnickety."

### **2.3.2 Selected CMIO Comments on Reporting Structure:**

- "We have learned that the CMIO and CIO have to work together, but I have had to learn that the CIO has much broader responsibilities than I do and he thinks about the entire organization, whereas I only think about the clinicians. I have to continue to learn from the CIO on how to focus across the organization."
- "If the CMIO's boss has either (1) no clout or (2) no positive relationship with you, you will struggle. I am thankful to have the kind of reporting relationship that I want" (reports to CIO).
- "Neither the CIO nor the CMIO can be successful without the other. The roles are so intertwined that it would be inappropriate to have them reporting to different people. Although in my current circumstance reporting to our CIO is easy (because of our relationship), in other organizations that might not be the case."
- "CMIO duties fall under the traditional purviews of both the CMO and CIO. Much of what I deal with on a daily basis involves the interface of clinical processes and the technology that supports them. As such it involves matters of hospital policies and clinician behavior as much as the more traditional IT matters of infrastructure project planning and implementation."

### 2.3.2.1 Comments From CMIOs Recommending the Position Reports to the CEO/COO

- [Reporting to CEO/COO is] “necessary to complete strategy and vision initiatives. CIO does not have [the] high level view that [a] CEO does. CIO is focused on technology as opposed to the use of technology to further aims/goals of health system.”
- “Need someone with authority to bridge any gaps between CMO and CIO. CIO holds all the money. CMO has the medical authority but no budget. Reporting to CEO may be best. CMIO often caught in middle between CIO and CMO and has little authority of own. CEO also unaware of issues, daily problems that need to be addressed.”
- “The CMIO job is only as effective as the power to back it up. The [CEO/COO] reporting relationship is necessary unless there are other anchors of power like dollars and human capital.”
- “My reporting structure is [a] direct line to the COO with a dotted line to the CMO. This works in our organization because you need to have the high-level report from an administrative and Board perspective and the clinical link to provide credibility from a medical staff perspective.”
- “The CMIO should be a senior leadership position — setting the clinical IT vision and strategy. Needs to be involved in the highest level of institutional strategic discussions. [Had previous experience with] CIOs without as much industry experience or IT vision as CMIO.”
- “There needs to be a direct link to top management in order for a system that brings such change to an organization to be implemented.”
- “This organizational transformation impacts operations, financials and quality at every level. My reporting relationship with the CMO works well, but most of what my role impacts is not under his control.”

### 2.3.2.2 Comments From CMIOs Recommending Report to the CMO:

- [The CMO] understands physicians and physician needs and hopefully as well the importance of patient care and safety. Non-physicians don't understand this and focus on the technology.”
- “The CMO is most closely aligned with the work of the CMIO. Having aligned incentives makes this a natural reporting relationship.”
- “Tight link of content, decision-support, analytics to organization's quality agenda. Appropriate to report to CIO during implementation in terms of engagement, tactical IT decisions, [and so on], but that shifts after implementation.”
- “Once the basic infrastructure and systems are in place, the investment becomes a tool for achieving quality and safety excellence. Best practices are developing nationally in which clinical IT is led by the clinical leadership. We are transitioning to clinical IT reporting to the CMO mostly, though now it is a CIO/CMO balance.
- “Goals of the CMIO and CMO are most closely aligned; CMO is empowered to facilitate the work of the CMIO.”
- “Better maintains physician alignment; allows perception of role as medical first, technology second. Should have strong "dotted line" reporting to Quality/Safety and CIO.”

- “Successful function of a CMIO is heavily dependent upon clinical relationships. Physicians are the most difficult part of that relationship.”
- “If an organization has a CMO, [he or she] should be very involved. If strong in this position, the CMO can advocate for clinical IT governance. You need a group of leadership physicians. CIOs should delegate more of clinical IT as it is beyond their workflow experience and always will be.”

### 2.3.2.3 Comments From CMIOs Recommending Position Report to the CIO

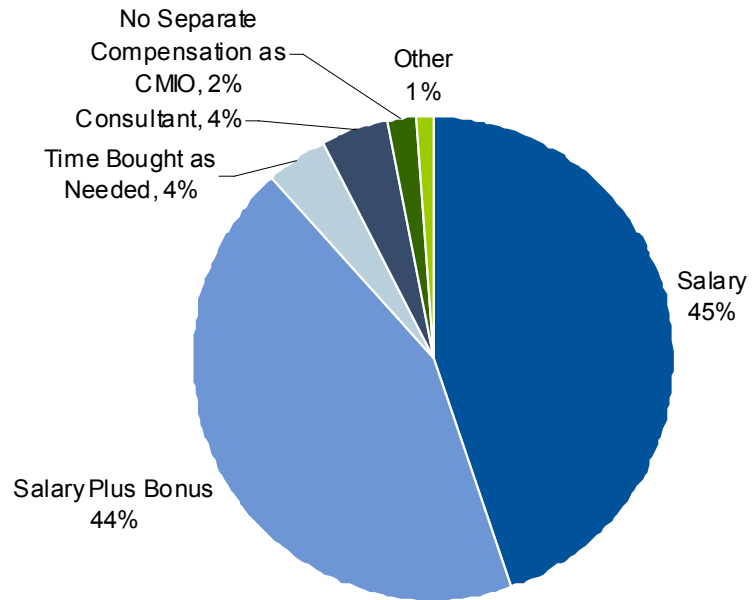
- “It really depends on the people in the organization and their relationships. Reporting to the CIO works well for me.”
- “He [the CIO] has more knowledge of the health system's medical issues with their financial implications.
- “The CIO understands how the technology affects the entire organization, whereas the CMIO is primarily concerned with the clinicians. As much as clinicians want to think ‘it is all about them’; that just isn't true. Having the CMIO report to the CIO keeps the wants and needs separate and allows for realistic goal setting.”
- “Maintains the common goals of the IT department, technological and clinical.”
- “The ability of the CMIO to improve organizational and clinical outcomes is done through the infrastructure of the CIO.”

## 2.4 Compensation

### 2.4.1 Direct Cost of a CMIO to the Care Delivery Organization

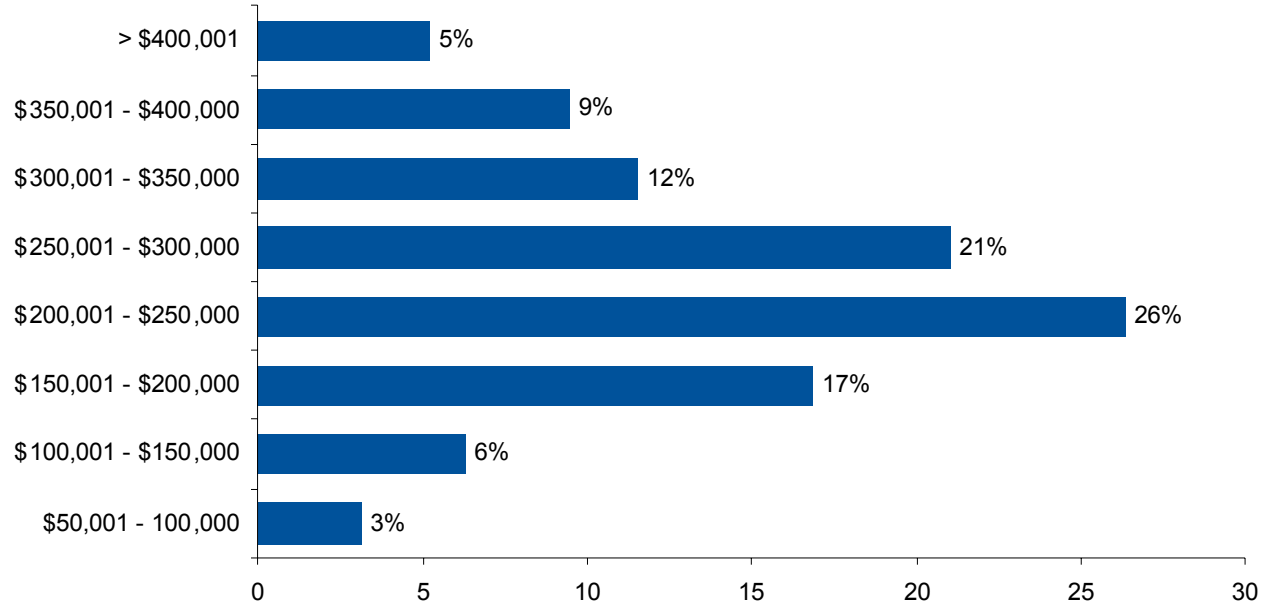
Compensation components for the CMIO are reported in Figure 18. Total compensation is shown in Figure 19, while the total salary and bonus compensation for the CMIO role alone is shown in Figure 20. As in prior years, most CMIOs are about evenly divided between salary-only (45%) and salary-plus-bonus (44%) compensation. The total compensation a CMIO may receive varies widely, depending on the other roles the CMIO may play and his or her medical specialty (see Figure 19). Nearly half of CMIOs (43%) are compensated for their work in the position at a rate of \$200,001 to \$350,000 (see Figure 20). Among CMIOs essentially working a full-time CMIO position (which we define as 80% or more time in role in Figure 21), over three-quarters of them (76%) make between \$200,000 and \$350,000 for the role, with 17% earning between \$300,001 and \$350,000, 27% between \$250,001 and \$300,000, and 32% are paid between \$200,001 and \$250,000. In terms of factors influencing compensation, there is not any particular correlation between CMIO compensation and tenure in the CMIO position, or additional advanced graduate degree. There is some limited correlation between CMIO compensation and his or her medical specialty, with the size of the CDO, and where the CMIO has management responsibility for a very large team.

**Figure 18. Compensation Model for CMIOs Responding to Our Survey**



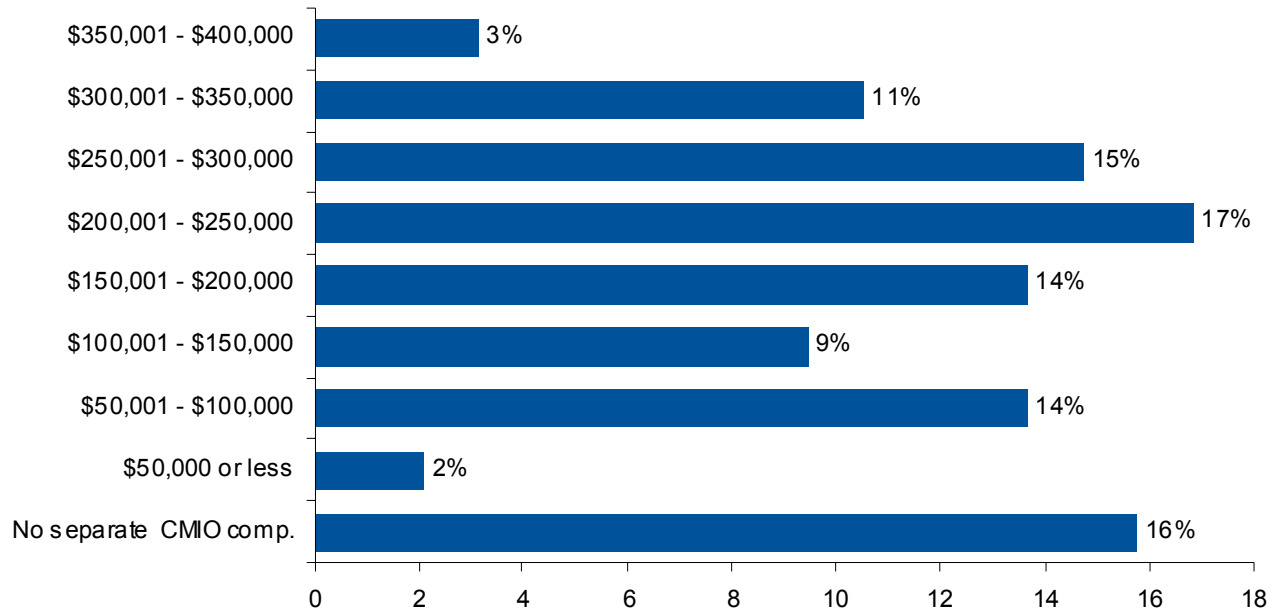
Source: Gartner (July 2009)

**Figure 19. Total Annual Compensation (Salary and Any Bonus), All Roles**



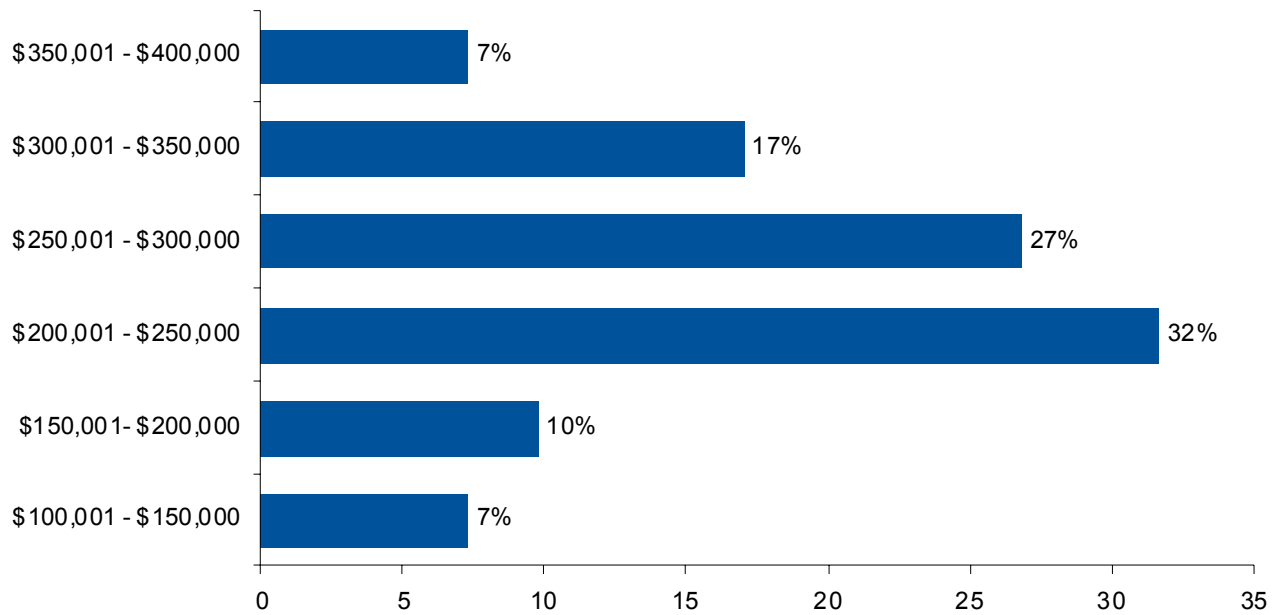
Source: Gartner (July 2009)

**Figure 20. Total Annual Compensation for CMIO Role Only**



Source: Gartner (July 2009)

**Figure 21. CMIO Role Compensation of Full-time CMIOs**



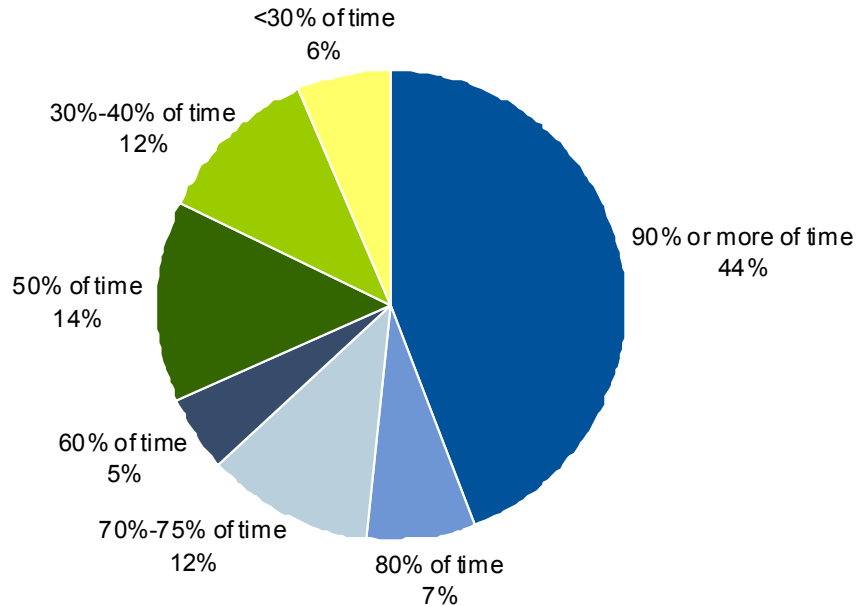
Note: Defined as CMIOs indicating 80% of more time in role

Source: Gartner (July 2009)

## 2.5 What CMIOs Do

A CMIO is a physician and/or administrator who serves as a central point for numerous processes, practices and decisions relating to the design or configuration, deployment, utilization, enhancement, and life cycle management of related content (that is, order sets, decision support and documentation templates) from clinical systems, a liaison between physicians, administrators and IT, and a champion of deriving patient-care quality and business value from clinically-oriented IT. About half of respondents (51%) spent 80% or more of their time in the CMIO role, with most CMIOs (82%) working in the role 50% or more of their time (see Figure 22).

**Figure 22. Percentage of Time Spent in the CMIO Role**



Source: Gartner (July 2009)

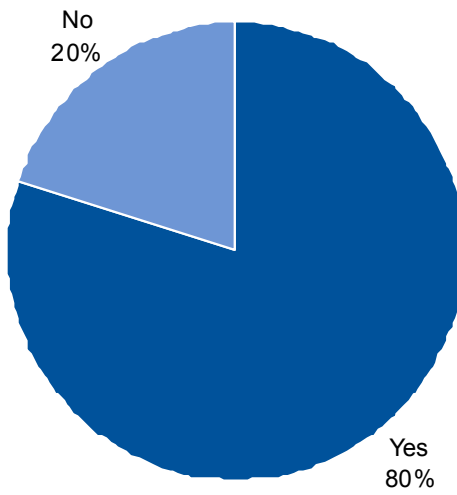
### 2.5.1 CMIOs Continue to Practice Medicine

Most CMIOs (80%) continue to practice medicine (see Figure 23). When asked if they would recommend that a new CMIO continues to practice, the exact same percentage (80%) said yes (see Figure 24), a statistic that has been consistent across the four annual surveys Gartner has conducted. A concern often expressed by CMIOs is that the CMIO role is very time-demanding. Given this, it is difficult to have enough time both to maintain a level of medical competency and to be efficient in practice workflow. However, the benefits of having hands-on experience with the information systems they are designing and of maintaining their direct connection to medical practice continue to override these concerns (see Table 25).

About three-quarters of CMIOs surveyed felt that this competency can be maintained with less than one quarter of their time spent on medical practice. Focus group discussions with CMIOs over the year have pegged this number at not less than 20%.

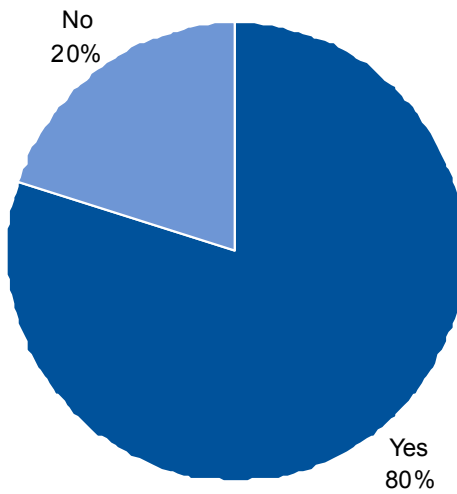


**Figure 23. Does the Survey Respondent Continue to Practice Medicine?**



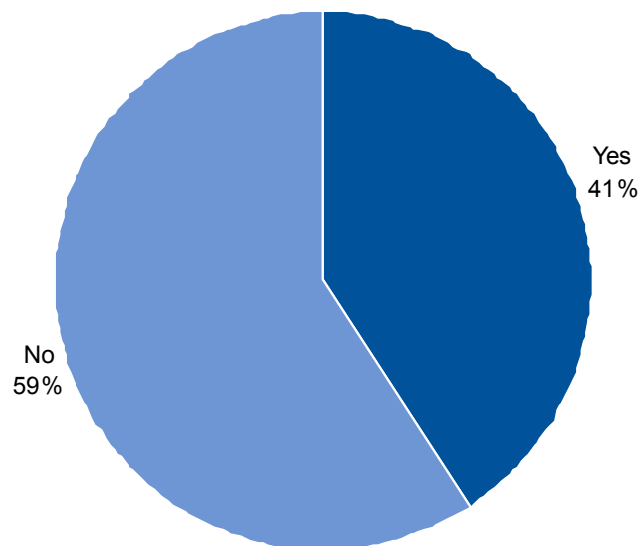
Source: Gartner (July 2009)

**Figure 24. Should CMIOs Continue to Practice Medicine?**



Source: Gartner (July 2009)

**Figure 25. Percentage of Time CMIOs Recommend Should Be Devoted to Medical Practice to Retain Competency and Medical Credibility**



Note: Taken from 80% of respondent CMIOs who feel those in the role should still practise

Source: Gartner (July 2009)

## 2.6 Current and Future Priorities of the CMIO

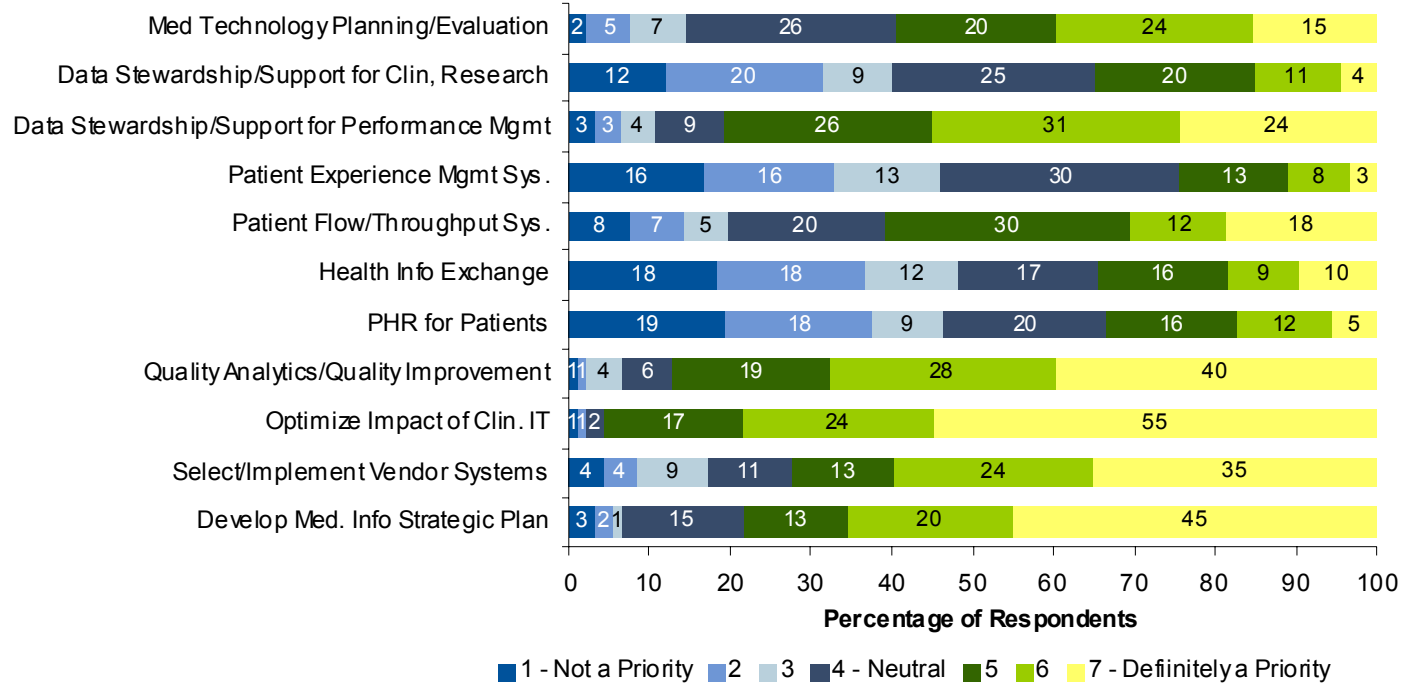
Optimizing the impact of clinical systems was again the highest-ranked priority among CMIOs responding to the survey — 79% of respondents giving it a rating of 6 or 7 out of 7 (see Figure 26 and Table 1) — followed by the related responsibilities of developing the medical informatics strategic plan, and quality analytics and quality improvement, all of which continue to rise as a priority focus of the CMIO. Many U.S. healthcare delivery organizations have moved beyond the hard challenges of initial justification, planning, vendor selection and early deployment of computer-based patient records — although system implementation is still a high priority for 60% of CMIOs. The biggest change from prior surveys is the identification by so many CMIOs of personal health records (PHRs) as a priority (see Figure 26). This was the first year we asked about data stewardship as a priority (separating out performance management and clinical research). The CMIO's role as data steward for performance management is now rated high by 55% of CMIOs; a number we expect to grow as more formalized information governance and incorporation of clinical data into enterprise business intelligence systems take hold.

The changing focus is one of the reasons Gartner has previously predicted that a CMIO's reporting relationship will move toward the CMO, and also why we have predicted (and recommended) that shared accountability for this be reflected in CMIO job descriptions and performance objectives.

A good deal of publicity and attention is being paid to PHRs, and to health information exchanges and/or regional health information organizations (RHIOs) in the U.S., and they have been identified as a high priority *for the CMIO* by a small subset of respondents. It will be interesting to see if the CMIO's organization will, over time, play a larger role in PHRs and other patient-facing IT extensions, such as patient decision aids, and advanced online chronic disease management

or telemedicine. Over time, we expect to see between 10% and 20% of CMIOs playing very visible roles in innovative medical IT experimentation.

**Figure 26. Priorities of CMIO Respondents**



Note: The level of priority was measured on a scale of 1 to 7, in which 1 indicated "not a priority" and 7 indicated "definitely a priority."

Source: Gartner (July 2009)

**Table 1. Percentage of CMIOs That Rated Priorities With Highest CMIO Ratings**

Priority	% of CMIO Respondents
Optimize Impact of Clinical IT	79%
Quality Analytics/Quality Improvement	68%
Develop Medical Informatics Strategic Plan	65%
Select/Implement Vendor Systems	59%
Data Stewardship/Support for Performance Management	55%
Note: Total rating each at least 6 or 7 out of 7	

Source: Gartner (July 2009)

### 2.6.1 Expected Future Changes in CMIO Priorities

In terms of likely future changes in CMIO priorities, the most frequent survey response was that CMIOs expected to place even more emphasis on the role of clinical IT in quality (see Table 2). Involvement in BI, clinical analytics and a data warehousing received the same number of responses as moving the focus to ambulatory EMRs (for both employed and non-employed physicians).

**Table 2. Most Frequently Named Changes in Priorities**

Priority Change	% of CMIO Respondents
More Work on Quality	18%
BI, Clinical Analytics, Data Warehousing	11%
Emphasis on Ambulatory EMR	11%
More time in the CMIO Role	9%
More Clinical Decision Support	7%
More Emphasis on Strategic Planning	6%
Work on Interoperability	5%
Patient-Centered IT/PHR	5%

Source: Gartner (July 2009)

A number of CMIOs commented that the differences between implementing an EMR for physician practices and implementing one for a hospital should be better appreciated. With the emphasis on both in The American Recovery and Reinvestment Act of 2009 (ARRA) stimulus package and its “meaningful use” criteria, this becomes important to highlight. Some organizations are creating or considering having a second CMIO or other lead medical informatics specialist (who could report to an enterprise CMIO) for their ambulatory settings. Selected other comments follow:

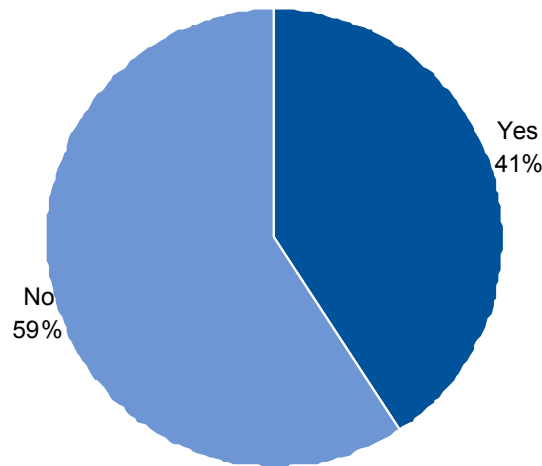
- “Maturation [...] into more of a quality-improvement role (rather than a let's-get-through-the-day role).”
- “Will use metrics to increase coordination of care across transition points.”

- “Translation of quality and safety initiatives into control structures in the [EHR].”
- “Increased emphasis on patient experience through the patient portal.”
- “Increased emphasis on data stewardship, quality improvement, and patient experience management.”
- “Getting information OUT of the systems we have put it in.”
- “More focus — in collaboration with legal department and physician engagement teams — on ensuring contractual incentives for use of IT systems to meet quality and safety goals.”
- “Stronger collaboration with business units.”
- “More governance responsibility for medical staff decision-making in automation and standardization of practice.”
- “Standardization of work process[es] across the system.”

## 2.7 The CMIO as Manager

- The majority of responding CMIOs (59%) did not have people reporting to them (see Figure 27). Of those who did, most operate with a small staff (between one and 10). Below are some of the main roles that the CMIO performs and oversees:
- Leadership and liaison with physicians in the selection and implementation of clinical systems including design, testing and related communication with clinicians.
- Clinical system training development and delivery for physicians and physician extenders.
- Overseeing the development and life cycle management of order sets, documentation and clinical decision support.
- Direct medical end-user support and/or help desk coordination.
- Physician workflow design and improvements within clinical systems.
- Lead physician input and setting of directions for new clinical IT investments in alignment with the organization’s priorities.
- Larger CMIO-led teams in health systems where clinical systems are implemented tend to assume overall coordination or management of clinical informatics personnel (including medical, nursing and pharmacy informatics), and more involvement in clinical analytics, data warehousing and clinical process improvement.

**Figure 27. Does the CMIO Have Management Responsibilities?**



Source: Gartner (July 2009)

## 2.8 CMIO Views of the Job: Satisfaction, Success and Critical Factors

We asked CMIOs to assess their current levels of personal satisfaction and success. Then we asked them to list those factors that contribute the most to, or that inhibit, their success. To gain perspective of both the organizational environment and the CMIO's personal attributes, we asked separate questions about organization and personal factors. No list was provided to choose from in order to make the topic completely open ended. The written responses were clustered into categories and weighted, depending on whether they were ranked first, second or third by the respondent.

### 2.8.1 A Current View of CMIOs' Satisfaction and Success

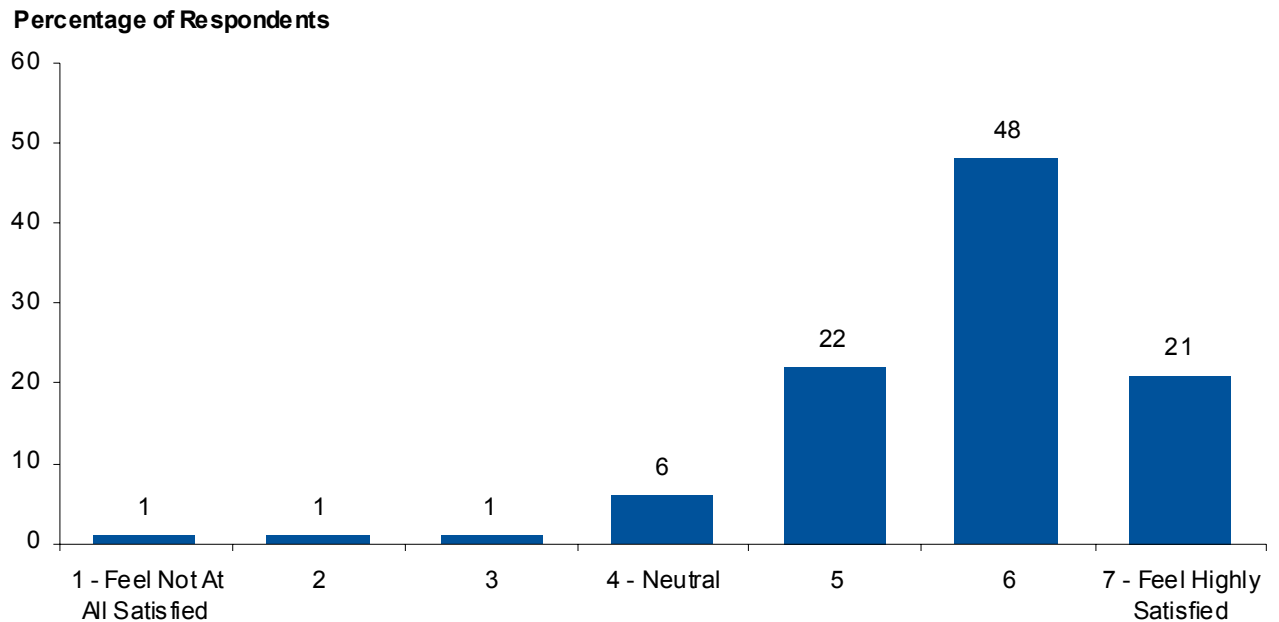
A substantial majority of CMIOs feel both satisfied and successful in their positions (see Figure 28 and Figure 29). On a scale of 1 ("not at all successful" or "not at all satisfied") to 7 ("highly successful" or "highly satisfied"), responses showed a mean score of 5.7 out of 7 for satisfaction and 5.6 out of 7 for both questions, which is 0.4 and 0.5 higher than last year respectively. In general, the two responses went hand in hand. Only five respondents had a difference of more than one point between their two ratings.

We offered CMIOs the opportunity to comment on their scores. Respondents with lower scores tended to comment more than those with higher scores. Thus, these comments are useful for CDOs working to create an environment that would be attractive for a new CMIO and could help ensure his or her success.

- "I feel appreciated."
- "A big test for me and how successful I will be is going to be with our CIS install that will be starting in the next couple months. I am expecting a true "trial by fire" experience but wouldn't have it any other way."

- “The role of CMIO affords me a highly influential point of leverage in our hospital's transition to an information-driven learning organization.”
- “I am only an internal consultant. I have no staff, no budget, no mandate, no authority.”
- “It is very difficult to move the organization unless the CEO TRULY has your back. In general, a lack of alignment in the C-suite really hurts the CMIO.”
- “Limited by financially challenged environment (hospital is in the red).”
- “Pace of change too slow. There’s a lack of buy-in/understanding at top exec level for the business case for quality and IT's role in promoting quality.”
- “First job as CMIO — I love the position, looking for another institution to do this at.”
- “Major cons are hospital IS staff who are hospital-centric and don't understand uniqueness of ambulatory space.”
- “Resource limitations and organization fortitude are the major limiters of meeting the strategic goals.”
- [My] “organization still does not value role and clinical informatics structure as it should.”
- “It is important for me to realize that the CIO has a much broader understanding of the organization as a whole, whereas I only understand the clinician's needs. Getting that fact out front and understanding the importance of the CIO's role and also understanding that I have to sometimes tell clinicians "It isn't all about YOU" was a big part of me being comfortable in my role.”
- “Never enough time!”

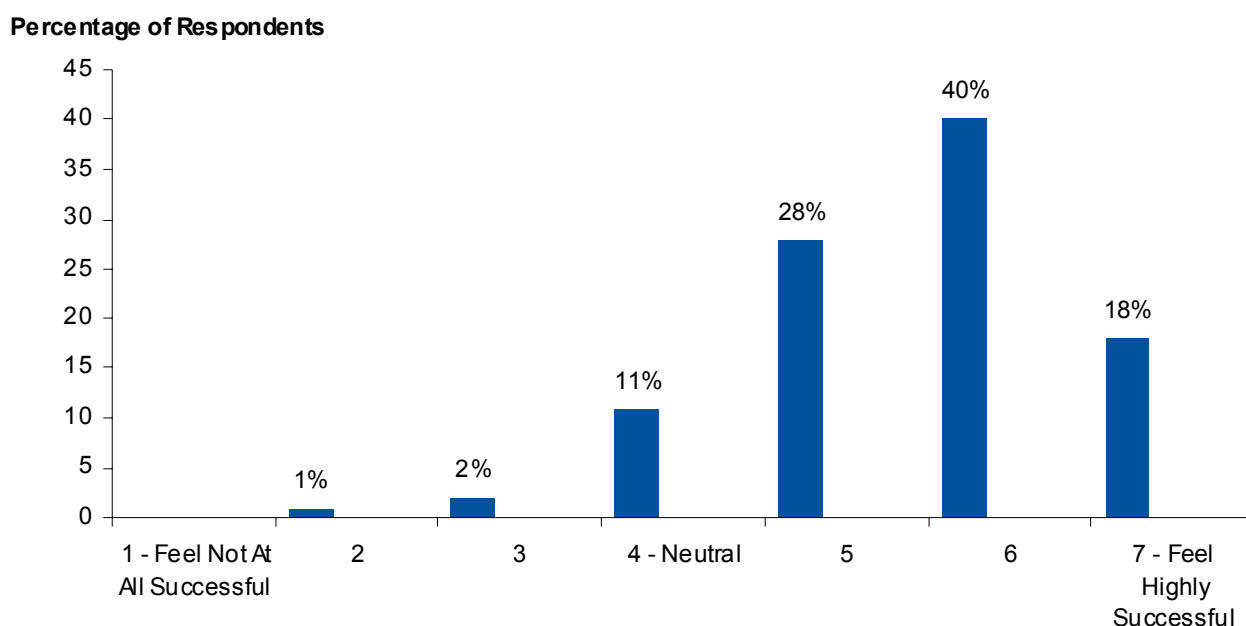
**Figure 28. How Satisfied Do CMIOs Feel?**



Source: Gartner (July 2009)



**Figure 29. How Successful Do CMIOs Feel?**



Source: Gartner (July 2009)

### 2.8.2 Organizational Factors Contributing to CMIO Success

- One factor that overwhelmingly dominated the CMIO view of organizational success factors is an appreciation and strong continuing commitment to realizing the full potential of IT in the executive suite. Over half of CMIOs cited senior administrative/executive support as being the key organizational success factor, with 29% of these specifically saying it is the CEO's support that is most important and a little under one quarter saying "senior administration" or "executive suite." Support of the CIO was specifically named as a key contribution to CMIO success by 18% of respondents, more than those that mentioned CMO support (10%).
- The other very frequently mentioned organizational ingredient was a set of responses we cluster under the theme "organization culture." This theme includes a tradition of collaboration/teamwork, a culture conducive to change, a high level of trust, and strong existing relationships between medical and administrative staff.
- Medical staff being employed by the health system was cited as a key factor by 10% of respondents. This is significant, given the surge in independent (particularly younger) physicians who are seeking an employment arrangement with their local health system, rather than being small business operators.

### 2.8.3 Organizational Factors Inhibiting CMIO Success

In this survey, lack of adequate budget, staff and related CMIO budget control were by far the top organizational factors inhibiting success, according to 36% of respondents. This is in substantial contrast to prior surveys when the No. 1 factor has been a lack of senior executive support and sustained interest in clinical IT as a priority. It is important to note that this is among those organizations that have made the commitment to a CMIO position, which is one acknowledgement of elevated attention to the medical-IT connection. The CMIO position is often

created because the intent to deploy a CPR system with CPOE, and physician documentation and decision support has been set. Senior executive commitment would be likely to have a significant correlation with the absence of a CMIO. Illustrative comments include:

- “My local organization is severely cash-strapped due to regional demographics (underinsured).”
- “Financial and human resources constraints [along with] too many initiatives with inadequate prioritization of projects and the lack of enterprisewide project management philosophy/expertise.”

Organizational process and/or cultural factors such as “highly siloed decision making” and ineffectiveness or lack of enterprisewide strategic planning and effective governance were mentioned by 22% of respondents. Comments include:

- “[We have both] national/regional decision-making issues and a poor overall organizational performance management infrastructure.”
- “[Inhibiting factors include] both organizational communication and traditional silos within our healthcare system.”
- “Poor culture of delegated decision making, a lack of successful communications mechanisms and distrust between medical staff and administration.”
- “A lack of engagement at the senior executive level, the performance improvement department’s reluctance to embrace technology, and operational issues superseding strategic plans.”
- “An academic bureaucracy with silos of excellence.”
- “Factional politics and misalignment of groups with core values of the health system.”
- “A silo approach of each hospital for itself.”

Other factors were mentioned (in almost equal numbers ranging from 10% to 12% of respondents). These included:

1. Physicians’ resistance to change, including poor relationships with administration, and specific resistance to clinical IT. Some comments being:
  - “Physicians are rushed and stressed due to the multiple changes in the practice of medicine — they have limited ‘flexibility.’”
  - “[There is] general resistance to change, although this is becoming less of an issue as we demonstrate successes clinically.”
  - “Challenge getting physicians involved because of RVU [relative value unit] basis of their compensation.”
  - “Lack of a central decision maker.”
  - “A medical staff that isn’t sure about that ‘electricity stuff’ [combined with] a culture that permits disruptive physicians to practice without consequence.”
  - [The advantages of working with] “a young medical staff that is interested in technology.”

2. CIOs and IT organizations not adequately interested in the strategic importance of clinical IT and who are too overbearing in decisions about clinical IT design. “IT’s focus on hospital systems and their need for ‘process’ and committees to make any changes.”
3. Poor software and difficult vendor relationships, particularly systems that inadequately reflect real-world physician workflow ranked next. Illustrative comments:
  - “Underdeveloped software from vendor,” and “vendors not delivering as promised.”
4. Lack of appropriate CEO or executive leadership (“more platitudes than directive”) was cited by 10% of respondents, adding such comments as:
  - “CEO seems detached.”
  - “[There is a] lack of sophistication in understanding of IT projects among some senior management.”
  - “IT not seen as a strategic asset for the company.”

#### **2.8.4 Personal Traits, Skills or Experiences Contributing to CMIO Success**

Two personal factors were by far the most common cited by CMIOs as contributing to their success:

1. The CMIO's strong relationship with the medical staff — characterized by trust, confidence, respect, and so on — was again the most frequently-cited personal factor, listed among the top three by 36% of the respondents. Trust and respect can only be built up over time, and therefore this presents one of the important challenges for a new CMIO coming into an organization. Senior leaders, particularly the CMO, need to focus on aiding new CMIOs in establishing these relationships, including support for aligned planning and IT governance processes like the clinical IT steering committee (which a CMO or CMIO would typically chair) and physician working groups. Being an “honest broker” among medical, administration and IT interests was how one CMIO described his role. Another said: “[I am] a recognized senior clinical practitioner with the respect of both medical staff and administration.” A third pointed to: “taking a very practical approach based on my clinical experience.” The ability to negotiate successfully with physicians was also mentioned.
2. The second factor was “communication skills,” mentioned by 34% of CMIOs, which was as important as “physician relationships.” Related traits included listening, presentation and teaching skills, being personable, being a good collaborator, and having a good sense of humor. The ability to be candid, yet politically “savvy” was also mentioned.

A number of respondents pointed to their “in-depth knowledge of our clinical IT system” and “complementary knowledge of technical and clinic workflow issues.” Change management experience was also referenced as an attribute helpful to them.

Many other personal attributes were mentioned by respondents, including passion and enthusiasm for the work, out-of-the-box thinking or creative problem solving, honesty and integrity, patience and persistence, vision, strategic thinking skills, and quality improvement experience.

#### **2.8.5 Personal Traits, Skills or Experiences Inhibiting CMIO Success**

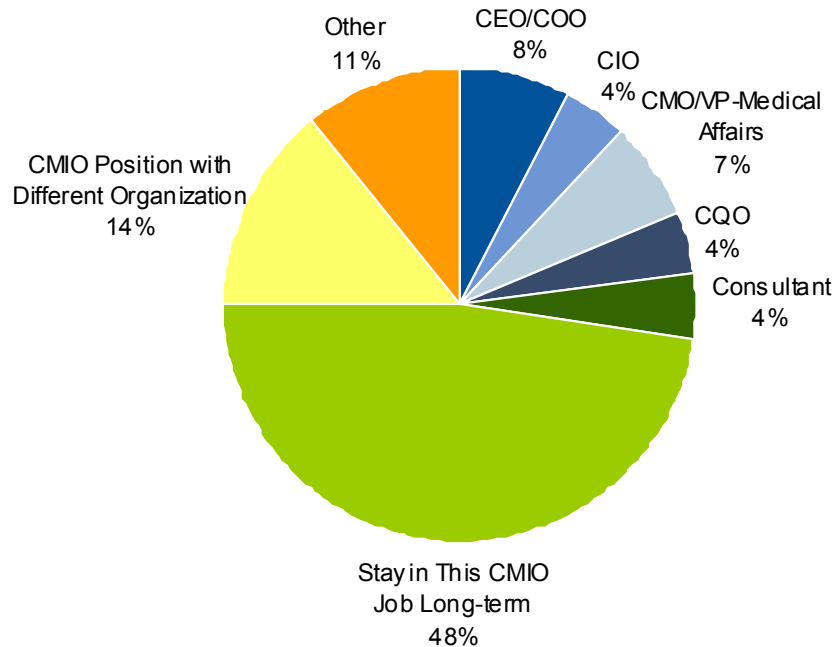
- CMIOs identified impatience as their trait most inhibiting success (20%), with comments such as “I need to see quick wins.”

- A lack of deep-enough informatics and technical knowledge (among those without either formal education or training in medical informatics, or without a history of work in the field).
- While a lack of time and the need to be more efficient was again commonly mentioned (22%), in this survey a number of CMIOs reflected further on what is realistic for one person to accomplish. They indicated the need to be more vocal and forceful in advocating for more staff, and also in delegating work to others. Several mentioned that they needed to sometimes move past their “perfectionist” tendencies.
- Several CMIOs noted that, while they felt they were good communicators, they could use more specific training and experience in making formal presentations (such as to executives and boards or to large groups). Some also mentioned that a lack of training and experience in finance, budgeting, in direct personnel management and in project management were inhibitors.

## 2.9 CMIO Aspirations for Next Job

As in previous surveys, most of the CMIOs surveyed (62%) would like to stay in the CMIO job long term, either with their current organization (48%) or at another one (14%). Only 4% express a desire to become CIO (see Figure 30). This statistic surprises some CIOs, who express concern that CMIOs want to usurp the CIO’s position or authority. In fact, over the five years we have been studying this role, Gartner has observed that the handful of CMIOs who are interested in a CIO role have a strong background and longer history of interest in medical informatics. They also take steps to pick up the broader management perspective, training and experience base necessary (such as attending a CIO bootcamp). Because the idea of an MD-CIO is an inherently appealing, although still rare, concept, these individuals usually do find their way to a CIO position. There is now a small — slowly growing — base of former CMIOs who have advanced to COO, CMO and CIO roles. For example in the past few years, one CMIO (also formerly a chief of staff) moved to a CQO position at a different health system and now is their enterprise CMO. Another moved, over time, from CMIO to CIO, and then to COO within the same organization — based, in part, on his successes with clinical IT. A third moved from CMIO at one health system to CIO at a different system in the same metropolitan area.

**Figure 30. What Would CMIOs Like Their Next Job to Be?**



Source: Gartner (July 2009)

### 3.0 Recommendations

- Hospitals, health systems and large ambulatory medical practices should align their clinical IT investment plans with the organization's aspirations and ambitions. In 2009, U.S. CDOs can no longer be "the best quality provider" without effective use of clinical information systems.
- Most hospitals and health systems will require someone in the CMIO role sooner or later. While many organization sponsors should be championing the system and defining performance metrics to measure its value, a large amount of the adoption progress and value realization will stem from the day-to-day leadership of the CMIO.
- CMIOs should be prepared to share accountability for the business impact of clinical IT and to be involved more strategically in future IT planning.
- Nursing and pharmacy informatics are also important contributors to success — particularly for hospitals — and part of the CMIO's role should be either managerial oversight or at least very strong collaboration with these functions.
- Chemistry, collaboration and communication between the CIO and the CMIO are key ingredients of success, but insufficient by themselves for long-term success. The healthcare enterprise also needs a sustained top-level commitment and engagement with the change management aspects of clinical IT, and needs to provide an appropriate level of funding for staff, not just software and infrastructure.
- Executives also need to ensure that effective decision-making processes and oversight are in place. The CIO and CMIO should work with other senior executives to build and leverage strategic planning and IT governance, as well as project/program/portfolio

management mechanisms. Regularly reassess maturity and effectiveness, and target improvements in each of these areas.

- Where needed, the CIO should be prepared to tutor the CMIO on project, budget and portfolio management. Similarly, the CMIO should tutor the CIO and/or IT department in medical processes to strengthen the CIO's ability to relate to the issues and concerns of medical executive peers and clinical users.
- In a full IT outsourcing or shared IT services environment, the CMIO functions are critical to bridging the divide between operating units and shared IT. The CMIO function should reside within the enterprise, not with an outsourcer.
- Plan and staff appropriately for the differences between hospital and ambulatory system implementations, and life cycle management.
- In recruiting a new CMIO, CDOs should look for candidates with strong communication skills, leadership qualities, and a demonstrated record of teamwork for the greater good. they should also be a problem solver who can gain and retain the respect and trust of working physicians, but also negotiate their way through many clinician adoption, change management and vendor relationship challenges.

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