

# Tracking a Decade of CIS

A vendor survey tracks 10 years of CIS use in the obstetrics department of a nationally renowned medical center with some stunning results.

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**T**he California Pacific Medical Center (CPMC) in San Francisco is a Sutter Health affiliate and one of the largest not-for-profit, academic medical centers in Northern California. CPMC is a tertiary referral center providing acute, post-acute and outpatient hospital care, home care and hospice services, preventive and complementary care.

Physicians, nurse practitioners, nurse managers and staff in the obstetrics departments are realizing significant benefits from automated clinical data delivered through Site of Care Systems' (SOC) information system with management tools that have simplified the reporting, tracking and statistical generation of all perinatal data. Easy access to pertinent data has enabled us to measure current practices and outcomes, to implement changes in practice when needed, and to re-measure quality indicators to determine best practices.

In 1991, Site of Care Systems was first installed in our obstetrics department and has been in use ever since, although the system has undergone upgrades and improvements since installation. In 2000, Site of Care began a study based on interviews with physicians, nurse managers and other senior staff to determine the return on investment and the benefits realized at CPMC. The study revealed the following benefits.

**Figure 1 — Dictation and Transcription**  
Reduction of Costs

Department	Annual Admissions	Documents No Longer Dictated and Transcribed	Annual Savings
NICU ICN			
Admissions neonatal	600	Admission notes	\$35,700
well baby service	1400	Progress notes	\$23,800
Labor and delivery			
	5000	Discharge summary Delivery notes	\$85,000
Total annual savings			\$144,500

*Dictation and transcription Costs: assuming an average cost of \$8.50 per page.  
NICU average LOS: 7 days.  
Average no. pages per NICU admission: 7 (Admit H&P-2pg., progress notes- 5 pg.)  
Average no. pages per neonatal well baby service: 2 (progress notes)  
Average no. pages labor & delivery: 2 (discharge summary and delivery note)*

### Reduced Transcription Costs

The most dramatic cost savings occurred in the area of dictation and transcription costs, which were reduced by \$144,500 in the first year and in each subsequent year, as illustrated in Figure 1.

### Chart Preparation

Physicians saved substantial time by using SOC in chart preparation compared to manual entry, as seen in Figure 2. These savings were reported at 33 percent to 50 percent for all patient discharge summaries and daily progress notes.

**Figure 2 — Chart Preparation**  
Physician Time Study Utilizing the Daily Baby Center

Category	Manual	Automated	Time Savings	% Improvement
Complex NICU Patient				
• Discharge summary	120-180 mins.	30-45 mins.	90-135 mins.	75%
• Daily progress note	30-60 mins.	20-40 mins.	10-20 mins.	33%
Non-Complex NICU Patient				
• Discharge summary	15-30 mins.	10-15 mins.	5-15 mins.	33%
• Daily progress note	10-30 mins.	5-20 mins.	5-10 mins.	50%
Ad Hoc Queries—Outcomes				
• GA 35-38 weeks	All inquiries involved several man-hours of research	5 minutes to set up search 10 minutes to run report	Estimated 5 hours saved for each ad hoc query	100% Having data vs. not having data
• Elective C/S delivery				
• RDS acquired vent or oxygen > 50%				

*MD Time—Time range to chart a NICU patient and time involved to search simple outcomes.*

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**Figure 3 — Report Generation**

Automated Reports Generated from the Perinatal Data Center Offer Data for Evidence-based Clinical Decision-making

Daily	Weekly	Monthly	Quarterly	Annually
Delivery log well baby nursery log	Maternal hepatitis + report for Dept. of Public Health	Perinatal committee statistics	ORYX report	Neonatal transport reports
Visiting nurse summary sheets	Notification ltr to pedi of baby to hep+ mom	Baby name list for medical records	HEDIS measures (C/S, VBAC...)	Maternal transport reports
Patient contact list for MD group	Admin summary stats for ambulatory surg	General anesthesia reports	Fetal demise report (State)	NCPDC reports

*Time savings: Seconds to generate reports compared to hours for manual compilation.  
Decision making: Facilitates evidence-based decision making; many reports would never be compiled manually.  
Completeness: Have become standard in QA committee meetings, management meetings, case review meetings.  
Accreditation/Compliance Process: JCAHO reporting, ORYX reporting, Vermont Oxford Measures.*

Ad hoc queries, essential to develop and refine evidence-based medical protocols, required on average 15 minutes to set up and run, compared to several hours of labor to conduct the same studies manually. It is very likely that many of these reports simply would not have been run, or smaller patient samples would have been used, in a manual environment.

### Ease in Report Generation

The flexible databases enabled us to develop a series of template-driven reports generated on a daily-to-annual basis for compliance with external monitoring organizations, like the Joint Commission on the Accreditation of Healthcare Organizations (JCAHO), and provided an internal resource for creating departmental statistics and reports generated from census information. As a result, our clinicians were able to query the data in ways that would have been impossible in a manual environment. The major reports are shown in Figure 3.

### Chart Abstracting and Coding

Using the auto-coding feature of Site of Care Systems, the medical records department experienced an 80 percent improvement or four minutes per chart compared to the previous manual abstracting and coding system. This resulted in an estimated savings of 329 man-hours annually, as illustrated in Figure 4.

### Benchmarking Activities

In fiscal year 2000, CPMC delivered 5,530 infants. The ability to quickly compare data associated with this entire patient population (moms & babies), which now totals more than 50,000 patients, gives us

a significant clinical advantage, enabling nurse managers to analyze large amounts of data automatically. As part of CPMC's perinatal quality assurance activities, hospital outcomes are readily available and can be compared to other institutions, in an effort to improve care based on evidence rather than historical precedents.

Results of these outcome studies have led to the development of new and refined protocols. One such study looked at obstetric hemorrhaging and perinatal hysterectomy incidences. The sample population consisted of 56,316 low risk pregnancies. Ten cases of perinatal hysterectomy were identified and reviewed in detail. As a result, an educational tool, the *OB Hemorrhaging Protocol*, was developed to describe the step-by-step approach to this obstetrical complication and has now become the basis of a Sutter Health Network-wide protocol for management of massive hemorrhaging. Data aggregation and analysis at CPMC are required for many other purposes including outcome statistics, unit statistics, quality review, cost analysis, resource utilization and trend analysis.

Data captured by the system has resulted in the implementation of new policies, procedures, protocols and educational programs that were implemented as part of our quality improvement efforts.

**Figure 4 — Chart Abstraction and Coding**

Time Savings Compared to Manual Processes

Activity	Manual	Automated	Time Savings	% Improvement
Chart abstracting and coding of uncomplicated deliveries	5 mins. per chart	1 min. per chart	4 mins. per chart	80%

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### JCAHO Preparation

The Joint Commission is very focused on credentialing and competency practices. At CPMC, credentialing based on data captured and ease in reporting has been highly commended in the last two JCAHO department surveys. The Joint Commission has also recognized the department's efforts in documentation of procedures and competencies.

Department managers utilize the system to monitor individual skill practices, who uses the system, how often and the type of procedures they perform. Staff report cards for obstetricians are routinely generated through the Perinatal Data Center. The report cards have allowed the OB chairman to compare individual outcome performances to other members of the department at the time of recredentialing. Leveraging Site of Care Systems reporting capabilities has virtually eliminated the self-reporting, handwritten tracking or chart review necessary to support documentation for the JCAHO survey process.

Risk managers and department managers at CPMC utilize the system to support quality management improvement projects, streamlining the tedium of chart reviews. Individual parameters are set per hospital guidelines, triggering individual patient reviews, outcome reviews and process improvement opportunities.

### Future Benefits

As a result of improvements in clinical practice at CPMC, discussions are now underway with insurers that may lead to the reduction of malpractice insurance premiums. In 1999, the median award for child-birth negligence suits was \$2 million, the highest for any malpractice category (The Jury Verdict Research, June 2001). By demonstrating improved patient outcomes through the use of clinical information, additional cost savings from reduced medical malpractice premiums may be possible.

Efficient access to reliable, comprehensive data is paramount in meeting today's healthcare challenges of providing the highest possible quality of care while controlling costs. Utilizing Site of Care Systems Application Suite, we realized significant clinical and financial returns for the OB department, while the data management tools assisted our care providers in optimizing clinical management so practice changes may be measured, communicated and remeasured in a timely manner.

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