Practice Management Systems for Safety-Net Clinics and Small Group Practices:
A Primer

February 2009

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Prepared for
CALIFORNIA HEALTHCARE FOUNDATION

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February 2009

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I. Executive Summary

RECENT CHANGES IN HEALTH CARE DELIVERY, reimbursement, and information technology are prompting many outpatient care providers to reassess their practice management systems (PMSs). Motivating factors include a desire to take full advantage of transaction standards under the Health Insurance Portability and Accountability Act (HIPAA), a need to better integrate with electronic health record (EHR) systems, and an interest in outsourcing administrative processes such as insurance billing and information technology maintenance.

Safety-net clinics and small physician offices in California, which deliver primary care services to much of the state's population, are among provider organizations considering their PMS options. Although the clinical workflow at these organizations is comparable to other ambulatory care settings, their special administrative needs and financial constraints play a key role in the type of PMS they consider purchasing. For clinics, these stem from the broad range of health services they provide and their unique sources of public and private funding. For small physician offices, the needs and constraints are related to management of billing and collections, and the typically limited resources available to them for purchasing and operating information technology.

More than 300 vendors in the United States sell PMS products. Most revenues accrue to the 10 largest suppliers, but the market also supports many small, local firms. Products vary in a number of ways. Architecturally, purchasers can choose an on-site client/server system, subscribe to a Web-based system hosted by a third party, or a combination of the two.

PMSs also vary in terms of their degree of support for appointment scheduling, electronic eligibility checking, advanced claims editing, automated payment posting, configurable reporting, and specialized Medicaid claims handling. In particular, not all PMSs support the full set of HIPAA transaction standards, some of which can significantly improve administrative efficiencies. Another PMS variation is the extent to which the systems integrate with EHRs, ranging from no integration to seamless integration of data and workflow. Oftentimes, the degree and cost of integration depend on the business relationship between PMS and EHR vendors.

Lastly, PMS vendors offer a variety of services in addition to software, ranging from basic training and technical support to fully outsourced insurance billing and even appointment scheduling.

Safety-net clinics and small physician offices face many decisions in evaluating their choices. However, several factors warrant careful consideration. First, safety-net clinics must bear in mind that new products with advanced capabilities for electronic data exchange and EHR integration may not necessarily meet their idiosyncratic billing and reporting needs, at least not without significant customization. Second, the increasing availability of Web-based systems gives physician offices an opportunity to offload more of their information technology support and to more easily outsource management of their revenue cycle. But outsourcing also raises potential problems, including the continued availability of software and their data if the relationship with the vendor changes.

Third, clinics and offices upgrading their PMS to prepare for a future EHR should select a PMS

based on their timeframe and strategy for EHR implementation. If implementation of a complete EHR is imminent, they should concurrently evaluate PMSs and EHR systems, while a deferred or partial EHR implementation favors the selection of a PMS that maximizes future flexibility.

Finally, clinics and offices should bear in mind upcoming developments in the health care system, including Medicare payment incentives for e-prescribing, the growth of high-deductible insurance plans, the advent of the "medical home" concept in primary care, and the proposed transition from ICD-9-CM to ICD-10 billing codes.

Although a rapidly changing health care and technology environment has created incentives for safety-net clinics and small physician offices to upgrade their PMS, such upgrades also entail significant costs, both financial and operational. Each organization must assess its own circumstances and needs in deciding whether and when to upgrade. Nevertheless, for many clinics and offices, the evolution of technology and the health care system warrants at least a closer look at PMS products.

II. Introduction

CHANGES IN HEALTH CARE DELIVERY, reimbursement, and information technology (IT) are prompting many outpatient care providers to reassess their practice management systems (PMSs). Among the motivating factors are these:

- Clinics and practices are planning to implement an electronic health record (EHR) and seeking PMSs that will more smoothly integrate with it;

- Many older PMSs do not adequately support electronic data exchange according to specifications in the Health Insurance Portability and Accounting Act (HIPAA). Clinics and medical practices are recognizing the value of such transactions in streamlining administrative tasks;

- Newer PMS products based on the application service provider model have created opportunities for clinics and practices to outsource IT maintenance tasks they previously had to perform themselves;

- Clinics and practices that want to outsource their billing functions are becoming aware of the ability of Web-based PMSs to facilitate information exchange between their staffs and billing firms; and

- The changing business fortunes or acquisitions of some PMS vendors have caused their products to be discontinued, orphaned, or minimally supported. These products are no longer upgraded, which creates problems for users in a rapidly changing health care environment. For example, health plan support for electronic eligibility checks under HIPAA and recent implementation of the National Provider Identifier have created new requirements that only updated PMSs can meet.

Given the hundreds of PMS vendors and dozens of product variations on the market, providers considering a PMS upgrade face many choices. Safety-net clinics (SNCs) and small physician offices (SPOs) are among outpatient providers navigating the market. These two practice settings, which play an important role in providing primary care to both underserved and mainstream populations in California, have a number of special PMS needs.

This report examines those needs and provides an overview of the related technical architectures, functional differences, integration capabilities, and service offerings of PMSs. It does not evaluate or compare individual products, but rather offers a framework for understanding current PMSs and evaluating the differences among them. The report also highlights specific factors that bear on the PMS purchasing decisions of SNCs and SPOs, including whether and when an organization plans to adopt an EHR, and makes several recommendations.

III. Background

PMSs are software systems that support administrative workflow in outpatient medical settings. Administrative staff use them to manage patients' demographic and insurance information, arrange appointments, support billing and collections, and track the practice's productivity and financial status. Nearly all outpatient facilities now use some type of computerized PMS, a critical tool in supporting billing and payment.

A variety of SNCs provide outpatient health care services to Californians who cannot easily find care elsewhere because they are uninsured, underinsured, or have state-funded health insurance not accepted by all providers.[1] Most SNCs are private, not-for-profit, community-based clinics and free clinics licensed by the state Office of Statewide Health Planning and Development. In 2003, more than 750 such clinics were operated in California, serving 3.2 million patients (about 9 percent of the population at the time) and conducting more than 10 million patient visits. More than 80 percent of patients at these clinics had family incomes at or below 200 percent of the federal poverty level, and most were women, children, and racial/ethnic minorities.[2]

Many SNCs are licensed as federally qualified health centers and rural health clinics. These designations confer additional funding opportunities and entail greater federal oversight.

SNCs differ from traditional medical practices in several ways, some of which have implications for their administrative processes and PMS requirements:

Most receive much of their revenues from state-funded health insurance programs, especially Medi-Cal, and public and private grants.[3] These funding sources have billing and payment practices that differ significantly from those of commercial fee-for-service, managed-care, and Medicare health plans;

They provide a wider range of services than do many traditional practices, given their mission to meet the broader health care needs of the underserved. For example, an SNC may provide adult primary, pediatric, prenatal, behavioral health, and HIV-related care as well as dentistry, podiatry, and ophthalmology/optometry services;

Because private SNCs receive public funding and a favorable tax status, they must file annual reports to government agencies and other funders. These reports must substantiate that clinics are meeting licensing requirements and using funds appropriately.

Small physician offices—those with five or fewer doctors, for the purposes of this report—still provide most outpatient care in the United States. Recent data indicate that 67 percent of all office visits take place in such offices and that 75 percent of all office-based physicians work in these settings.[4,5] An estimated 78 percent of all office practices are very small, consisting of only one or two physicians.[6] Data are not available specifically for California, but the proportion of small practices is likely to be lower, though not substantially so, due to the presence of Kaiser-Permanente and several other large health care systems.

Small practices are typically owned and operated by member physicians. A national survey found that 75 percent of all office-based physicians own their practices, and a small survey of members of the American Academy of Family Physicians (AAFP) suggests that smaller practices are more likely to be physician-owned than are larger ones. [7,8]

Hence, for the most part, the PMS market consists of many small, physician-owned purchasers. The implications of this are two-fold. First, the cost of purchasing and operating a PMS at most practices directly affects the take-home pay of their physician owners. Second, most purchasers are too small to be able to support full-time staff to maintain and operate PMSs and other information technologies.

IV. PMS Needs

AN UNDERSTANDING OF THE GENERAL administrative workflow in outpatient settings provides context for the specific PMS needs of SNCs and SPOs. The workflow entails a series of sequential tasks associated with each patient encounter (Figure 1 and related descriptions in Table 1).[9]
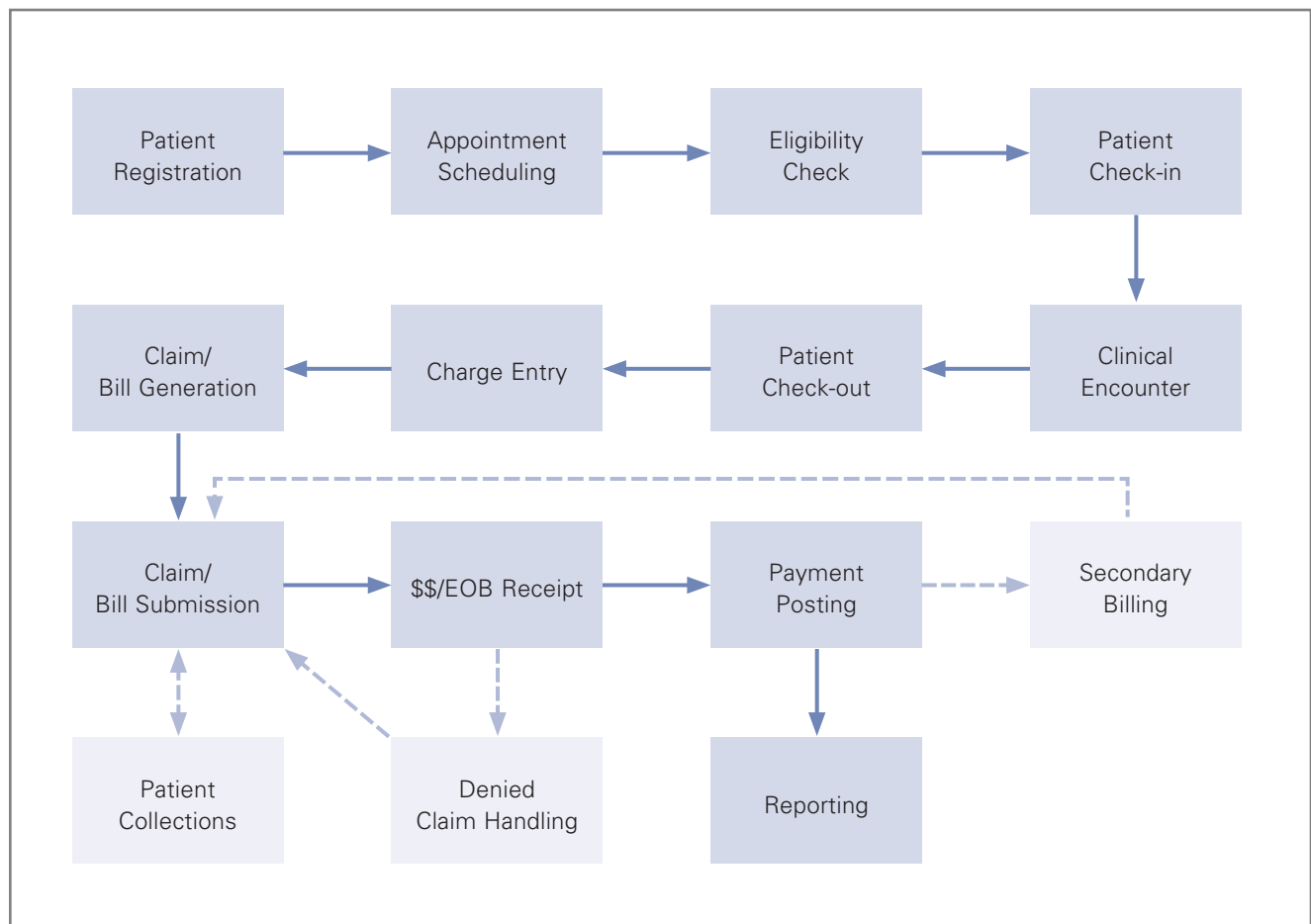
Safety-Net Clinics

As noted earlier, SNCs differ from conventional practice settings in a number of ways, particularly in terms of their range of services and revenue sources.

These differences create variations in administrative tasks and, in turn, PMS needs. The following are tasks that vary most.

Registration

Reports submitted to federal and state agencies must include certain socio-economic data that other health care providers typically do not record. SNCs record and report these data, including family income and size, and employment, homeless, and migrant-worker status, for each patient they serve.

Figure 1. Administrative Workflow in Outpatient Encounters

Table 1. Administrative Tasks in Outpatient Encounters

TASK	DESCRIPTION
Patient registration	• Record patient's demographic and contact information. • Record information about guarantor (person responsible for bill payment). • Record details of insurance coverage (if applicable).
Appointment scheduling	• Locate an available time slot for an appointment with the requested clinician at the appropriate location. • Record the appointment. • Remind the patient about the appointment shortly before the scheduled date. Note: For new patients, scheduling may precede patient registration.
Eligibility check	• Contact the insurance carrier of record to confirm that the patient is currently covered and eligible for benefits. • For specialist care, confirm that a referral has been authorized (if the insurer requires this) and record the referral information to support later billing.
Patient check-in	• Verify current demographic and insurance information. • Record the patient's arrival and notify clinical staff. • Prepare documentation for the clinical encounter (typically, a "super bill" for recording charges, a progress note form, lab and imaging order forms, and/or patient identification labels). • Collect co-payment (if applicable).
Clinical encounter	• At the end of an encounter, the clinician: • Records the relevant diagnosis, procedure, and level-of-service codes for billing purposes (typically using the super bill form or an electronic equivalent). • Instructs administrative staff to arrange follow-up activities, such as future appointments or referrals (also often recorded on the super bill form or an electronic equivalent).
Patient check-out	• Give patient the relevant test order forms, prescriptions, patient education materials, etc. • Schedule follow-up appointment or record patient recall information (a reminder to schedule the patient later).
Charge entry	• Enter the recorded diagnosis and procedure codes, procedure modifiers, and level-of-service codes into the billing system to generate an insurance claim or patient bill. • Adjust codes or charges based on the specific insurance carrier of the patient. For example, uninsured patients may receive a sliding-scale discount. • Perform edit checks to catch errors or omissions in the entered charges that could prevent or delay insurance payment.
Claim/bill generation	• Review the entered charges and generate a claim for the appropriate insurance carrier in the appropriate format. • Perform edit checks to catch errors or omissions in the claim that may prevent or delay insurance payment. Alternatively, this "claims scrubbing" may be performed by a third party if the practice submits claims through an electronic clearinghouse. • For uninsured patients, generate a patient statement requesting payment.
Claim/bill submission	• Mail or electronically transmit the claim (individually or in batches) to the insurer. • The practice may submit an electronic claim directly to the insurer or, more commonly, to a clearinghouse that forwards the claim to the carrier. The clearinghouse may also validate the claim and/or convert it to a standard format before forwarding. • Mail the bill to uninsured patient or collect the deductible and/or co-insurance amounts.

Table 1. Administrative Tasks in Outpatient Encounters, continued

TASK	DESCRIPTION
$$/EOB receipt	• Receive an explanation of benefit (EOB), otherwise known as the remittance advice, from the insurer. An EOB reports the amount paid for the submitted charges and/or explains any denied charges. Note: EOBs may be paper documents accompanying individual checks or they may be electronic records transmitted in batch files. Electronic EOBs are known as "electronic remittance advice.") • In parallel, receive the corresponding payment (if any) from the insurer in the form of a check or electronic funds transfer.
Denied claim handling	• Review EOB/remittance advice for an explanation of the denied charges. • Revise the claim to address the errors/omissions (if possible). Revisions may include changes to or the addition of diagnosis and procedure codes, changes to or the addition of administrative information, and/or addition of clinical attachments required to justify the services. Insurer requirements for correct claims may vary. • Resubmit the revised claim to the insurer. • If applicable, submit an appeal to the insurer to contest denied charges.
Payment posting	• Record the payment received against the corresponding charge(s) in the patient's account. This is a bookkeeping function necessary for tracking accounts receivable and aging of patient balances, for verifying payment per contracted fee schedules, and for generating appropriate claims/bills for secondary payers. • For insurance payment, the posted information appears on the paper EOB or the electronic remittance advice.
Secondary billing	• Generate and submit claims for secondary insurers (if applicable). • Generate and mail statements for residual charges the patient owes (for example, co-insurance).
Patient collections	• Identify overdue patient accounts. • Contact the patient, discuss the collection issue, and record a payment commitment and/or plan follow-up action. • Follow up at the scheduled time. • Prepare and mail collection letters according to a practice-defined collection strategy.
Reporting	• Generate management reports for internal use (for example, total accounts receivable, aging of patient balances, timeliness of insurance payments, patient no-shows, etc.). • Generate reports to meet funders' and government agencies' requirements (for example, reports of services rendered and the patient population served).

Additionally, state and federal agencies frequently change their data requirements. PMSs must be able to store the currently required data and, ideally, enforce the recording of these data during patient registration.

Scheduling

SNCs are more likely than private physician practices to offer group visits for prenatal counseling, behavioral health care, and social-support services. Consequently, their PMS must be able to schedule group visits.

Patient Check-in

Because SNCs provide a greater range of services than most private practices and clinics, the check-in process generates appropriate documentation for a variety of visit types, ranging from adult medical care to prenatal care and vision care. This means their PMS must be able to print customized patient-specific and visit-specific super bills.

Charge Entry and Claim/Bill Generation

The billing process accounts for the greatest differences and idiosyncrasies in SNC administrative processes. SNC-specific billing processes include:

- **Federal sliding scale billing.** Unlike private practices, licensed federally qualified health centers are obligated to serve all patients regardless of ability to pay, and to discount charges for uninsured indigent patients according to a sliding scale. One of five sliding scales may apply, depending on the patient's income and family size relative to the federal poverty level. Determining and applying the correct sliding scale often is done manually. Ideally, however, the PMS supports multiple sliding scales and automates this process;

- **Split billing.** Because SNCs offer a variety of services and their funding comes from multiple sources, they sometimes split the charges for a patient visit among two or more claims, which they submit to separate payers. For example, Medi-Cal may cover only the treatment of a medical illness; if a patient receives an immunization or reproductive services during a visit, the charges must be billed to one or more other payers. Similarly, Medi-Cal reimburses for professional services; if a clinic also provides drugs, equipment, immunization serum, or other materials, which often are paid for with grant funds, it must split the charges. Otherwise, Medi-Cal will deny the entire claim. PMSs need to support split billing—and be able to report the number of patient encounters regardless of this task—without clumsy workarounds;

- **Roll-up billing.** Certain state programs, such as Medi-Cal and the Expanded Access to Primary Care (EACP) program, pay a flat fee for all outpatient visits, regardless of the services provided. For example, the EACP program pays a uniform statewide reimbursement rate of $71.50 per encounter, which covers all professional services as well as ancillary pharmacy, laboratory, and x-ray services.[10] When SNCs bill for encounters under these programs, they must aggregate, or "roll up," all of the individual charges incurred during a visit into one charge. Commercial health plans rarely require roll-up billing for outpatient claims, but because clinics also receive reimbursement from other sources, their PMSs must support this function conveniently and reliably;

- **Wrap-around billing.** SNCs receive a monthly capitation payment for patients enrolled in Medi-Cal managed care plans. However, as federally qualified health centers (FQHCs), they also are guaranteed a flat rate for each Medi-Cal patient encounter, regardless of whether it is capitated or fee-for-service. If the sum of the annual capitation payments for Medi-Cal HMO enrollees falls short of payments the SNC would have generated for the same enrollees' had their visits been billed at the FQHC flat rate, Medi-Cal reimburses the difference.[11] Because such deficits are common and clinics cannot wait until the end of the year to recoup the difference, FQHCs submit claims to Medi-Cal for each encounter. For each encounter with a Medi-Cal HMO enrollee, a clinic submits an encounter report to the Medi-Cal HMO (essentially a claim with all charges forced to $0) and a claim to Medi-Cal to "pre-collect" a portion of the anticipated deficit. Therefore, clinics need a PMS that enables duplicate claims to be submitted to two different payers with two distinct sets of charges;

- **Payer-specific edit checks.** Medi-Cal and other public funding sources impose rules and

requirements on claims that differ from those of other insurance carriers. For example, claims submitted under the state Family Planning-Access-Care-Treatment program must include a primary diagnosis encoded with one of several "S" codes defined by the payer rather than the typical ICD-9-CM codes. (ICD stands for International Statistical Classification of Diseases and Related Health Problems.)[12] In addition, Medicare Part B reimburses FQHCs for physical exams they perform on Medicare beneficiaries; other providers are not reimbursed for such exams.[13] Clinic PMSs should accommodate specialized edit checks to catch errors or omissions in the claim that may prevent or delay insurance payment;

- **Dental billing.** Although the administrative workflow for dental visits is similar to that for medical encounters, there are different coding systems for documenting dental diagnoses and procedures, and different rules and requirements for submitting correct dental claims. SNCs that provide dental services need a PMS that supports both medical and dental billing, or separate PMSs for these two functions. The latter approach requires an interface between the two systems to avoid duplicate entry of diagnosis and insurance information, and to enable consolidated reporting;

- **Payment posting.** Although roll-up claims are billed and paid as a single charge, payments must be posted such that the proportion of payment for each service is specified. For example, under roll-up billing, a clinic would bill $150 for three services valued at $100, $30, and $20. However, after it receives the contracted $75, the clinic should post that amount as a 50 percent payment applied to each of the three charges. The PMS must automatically support proportional posting of roll-up payments;

- **Reporting.** SNCs that receive public and/ or grant funding must file a variety of reports documenting the population they served and the services they rendered. For example, FQHCs must annually submit a Uniform Data System report to the federal Health Resources and Services Administration and a utilization report to California's Office of Statewide Health Planning and Development.[14,15] They may also have to submit reports to certain grant agencies to account for funds received, substantiating that they were used appropriately (for immunizations or family planning, for example). Each agency has its own requirements for the content and format of these specialized reports, which are unlikely to be used elsewhere. Clinics' PMSs must have the built-in capability to produce the reports or to support custom report writing.

Small Physician Offices

Administrative workflow related to patient visits in small physician offices (SPOs) is generally similar to that in larger medical groups, or those with more than five doctors. However, there are some differences when larger groups have multiple locations, business entities, and/or specialties. The number of subunits in these practices means they need a PMS that can segregate financial and operational activities by subunit and also share patient information, help coordinate services, and aggregate reporting data across subunits.

Another difference has to do with non-functional requirements, especially those related to PMS installation and operational costs. Unlike larger practices (and many SNCs), small practices typically do not have a dedicated IT support staff to configure, customize, and maintain PMS hardware and software

or back up data, train staff, and provide technical support.[16] They depend more on their software vendors and independent consultants for these services, which can be relatively expensive. The cost of on-site training from several PMS vendors that the American Academy of Family Physicians surveyed in 2002 ranged from $800 to $1,500 per day.[17]

SPOs need a PMS that is minimally complex to reduce configuration and training costs; that gives users access to online training sessions or pre-recorded training modules, and to comprehensive online help and thorough documentation to minimize the need for support and training services; and that allows remote maintenance, including routine software upgrades and data back-ups.

State, Funder, and Managed Care Requirements of SNCs and SPOs

SNCs in California must adhere to the specific reporting requirements of state agencies and the idiosyncratic billing rules of Medi-Cal and other state and local funding sources. The requirements and rules vary from those in other states and even among regions in California. In addition, SNCs in California receive funding from entities, such as the California HealthCare Foundation and the California Endowment, that only award in-state grants. A SNC or its software vendor often must customize the PMS to address the entities' billing and reporting specifications.

For SPOs, different requirements and rules arise from the greater number of managed care plans in California than in many other states. In 2007, 17 million Californians, or about 58 percent of the state's insured population, were enrolled in HMOs compared to 66 million nationwide, or about 26 percent of the insured population.[18,19] SPOs in HMO networks must meet referral management

and utilization reporting requirements imposed by managed care.

Price Sensitivity

Relative to the capital budgets of large private medical groups for information technology, those of SNCs and SPOs are limited. Typically, neither type of organization generates sufficient cash surpluses from operations to finance large capital outlays or to support expensive consulting and training services. SNCs are in a somewhat better position than SPOs because they attract grant funding from government agencies and private philanthropies. Clinics often use these grants to finance IT procurement.[20] When available, grants may enable them to purchase relatively sophisticated and costly systems. The Tides Foundation and the California Endowment awarded grants to more than 150 community clinics between 1999 and 2006—an average of $176,000 per clinic—to buy PMSs and other information technologies.[21]

SPOs, in contrast, are still largely physician-owned and must finance IT with cash flows that would otherwise accrue to the physicians as compensation.[22] Although debt financing for this purpose is available (sometimes arranged through software vendors), physicians in SPOs are often reluctant to invest in new IT when, in their view, the existing administrative systems and processes work adequately, if not optimally.[23] To motivate SPOs to upgrade their PMS, there usually must be significant incentives—higher revenues, reduced costs, or secondary gains, such as a system that enables use of an EHR.

V. PMS Market Overview

SNCs AND SPOs SEEKING TO UPGRADE their PMS have many choices today. Products vary in terms of general architecture, specific features, vendors' service offerings, and pricing models. This section assesses the PMS market and the choices purchasers have. It does not review or compare individual products, but rather provides information that will help buyers understand general product differences. It also discusses PMS attributes relevant to their specific needs.

In 2007, according to a market report, 331 vendors offered PMS products for the U.S. ambulatory care setting.[24] There was considerable market concentration by sales revenue: The 10 largest vendors commanded almost 60 percent of the market and the top 25 commanded 75 percent (Figure 2). Recent corporate acquisitions—such as General Electric's purchase of IDX, McKesson's purchase of Practice Partner, and Sage's purchase of the products Intergy, MedWare, HealthPro, and Medical Manager—consolidated the market to some extent, although many of these vendors offer multiple PMS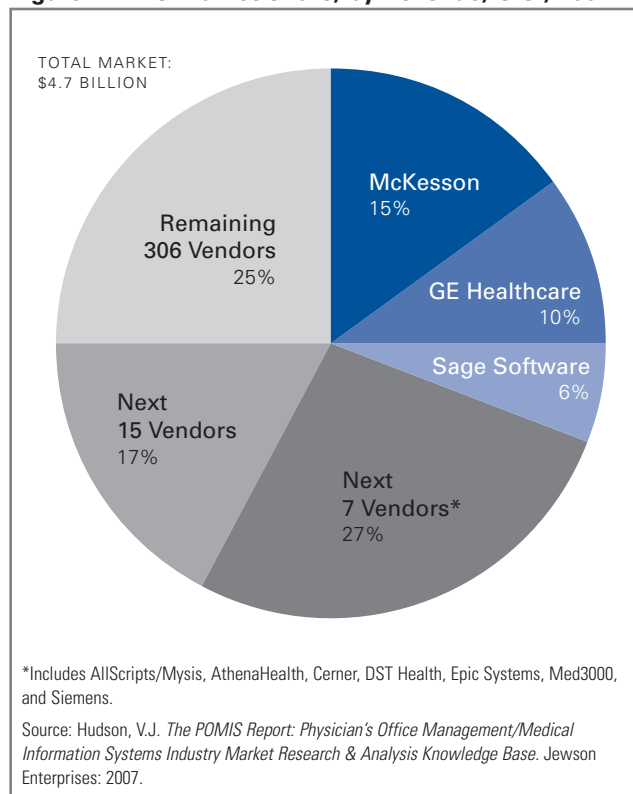s. There was significant fragmentation at the lower end of the market, where more than 300 smaller vendors shared the remaining 25 percent of sales. The market is apparently large and varied enough to support many small vendors, which differentiate themselves by providing products to a specific market and/or offering local support. One noteworthy fact is that the PMS market ($4.7 billion) is more than twice as large as the ambulatory EHR market ($2.2 billion).

System Architectures and Pricing Models

A fundamental difference among PMS products is whether they are client/server systems that a practice installs and operates on site, or Web-based systems remotely hosted and operated by an application service provider (ASP). There are also variations and combinations of these two architectures. For example, depending on the purchaser's preference, some Web-based PMSs are installed on-site, while others are hosted remotely by a software vendor or third party. In California, it is not uncommon for a non-profit consortium of SNCs to host a Web-based PMS on behalf of its member clinics as a way to share hardware, maintenance, and

Figure 2. PMS Market Share, by Revenue, U.S., 2007

TOTAL MARKET: $4.7 BILLION

McKesson 15%
GE Healthcare 10%
Sage Software 6%
Next 7 Vendors* 27%
Next 15 Vendors 17%
Remaining 306 Vendors 25%

*Includes AllScripts/Mysis, AthenaHealth, Cerner, DST Health, Epic Systems, Med3000, and Siemens.

Source: Hudson, V.J. *The POMIS Report: Physician's Office Management/Medical Information Systems Industry Market Research & Analysis Knowledge Base.* Jewson Enterprises: 2007.

support costs. Other architectures involve an on-site computer (client) that accesses a remotely hosted computer (server). This facilitates data sharing and communications among practice sites.

On-site and remotely hosted PMSs also are different in a business sense. Users of on-site systems typically purchase licensed software up-front and pay an annual maintenance fee for updates. Users of remotely hosted systems, in contrast, pay a flat monthly subscription fee to use the software and receive data back-ups, support, and periodic updates via an architecture called "software as a service" (SaaS). Although there are no data for the PMS market specifically, about 75 percent of the 433 vendors that sold PMS and/or EMR systems in 2007 offered the software-licensing architecture and 25 percent offered the SaaS architecture.[25] These figures do not reflect the market shares of the two approaches, but they do indicate that SaaS is a widely available alternative today.

Functional Scope

Different PMS products offer different functions, ranging from basic bookkeeping to sophisticated decision support, workflow automation, and electronic data exchange. The following sections describe features and capabilities that, from the perspective of SNCs and SPOs, differentiate these products.

Practice Management Features

Nearly all PMSs available today offer the basic set of features listed in Table 2, which may vary in terms of ease of use, effectiveness, and reliability. Only certain products have newer and more advanced features (Table 3).

Some of these features are described in greater detail below.

Graphical User Interface

Although the vast majority of PMS products marketed today offer graphical user interfaces, many legacy products and a few new products still have character-based user interfaces.

Table 2. Common PMS Features

FEATURE	CAPABILITIES
Basic registration	Records demographic, guarantor, and insurance information for each patient.
Charge entry	Records diagnosis codes, procedure codes, procedure modifiers, and level-of-service codes for an encounter from a super bill.
Basic claims generation	Applies appropriate charges to each service based on the practice's fee schedule, performs at least minimal error checking, and generates a complete claim.
Electronic claims submission	Generates an electronic claim and transmits it to the appropriate payer. Although nearly all PMSs on the market support this function, some still necessitate a clearinghouse to translate claims into the standard HIPAA 837 format and/or forward claims to the payer.
Manual payment posting	Enables manual entry of payment information from an EOB, with automated updates of claim balances.
Patient statement generation	Generates and prints billing statements for patients.
Basic reporting	Provides a set of pre-defined reports, with minimal or no ability to customize report parameters or to drill down into report results.

Table 3. Differentiating PMS Features

FEATURE	CAPABILITIES
Graphical user interface (GUI)	Facilitates use by new users and infrequent users, such as physicians. In the best-designed PMSs, keyboard shortcuts supplement GUI menus and buttons to accelerate tasks for experienced users.
Appointment scheduling	Integrated calendars record patient appointments and help staff locate available time slots. The most sophisticated systems include an integrated patient-recall feature.
Advanced registration	Allows the addition of custom fields. Enforces entry of required fields. Also enforces payer-specific rules for populating fields—for example, recording of a health ID number in a specific format so it will later appear on claims correctly.
Electronic eligibility checks	Sends electronic eligibility inquiries to payers via the standard HIPAA 270/271 transactions, in batch and/or real-time modes.
Referral and authorization management	Primary care physicians can maintain and look up lists of the providers in various managed care networks, and look up the referral authorization rules of various payers. Specialists can inquire electronically about authorized referrals via the HIPAA 278 transaction and track the number of authorized services used and remaining.
Printing of encounter-specific super bills	Prints a super bill when patient checks in. A super bill includes patient-specific demographic information and all billing codes relevant to the type of patient visit.
Integrated credit card processing	Automatically records credit card payments against the patient's account in the PMS, obviating the need to later post payments manually (for credit card payment of co-payments or patient balances at the time of care).
Scanning of super bills	Scans a paper super bill and automatically records the charges against the patient account, obviating the need for manual charge entry.
Advanced edit checks	Provides payer-specific rules for detecting errors in claims. Rules are updated automatically.
Electronic remittance advice	Receives electronic EOBs from payers via the standard HIPAA 835 transaction and automatically posts payment information against the corresponding claims.
Patient collections tools	Screens and query features enable billing staff to easily identify patient accounts that require collection efforts per practice-defined criteria. Tools support workflow for contacting patients, tracking patients' compliance with commitments to pay, and scheduling follow-up collection tasks.
Advanced reporting	Configures reports via a user-friendly interface. Drills down into report results. Includes a real-time "dashboard" of key performance indicators. Exports report data to other software, such as Excel. A relational database supports ad hoc reporting using third-party reporting tools. Enables Uniform Data System and Office of Statewide Health Planning and Development reporting (if applicable).

Appointment Scheduling

The better scheduling modules are fully integrated with the entire PMS and allow administrative staff to easily review demographic information and payment history at the time of scheduling. The most sophisticated systems include rule-based alerts that automatically notify staff of certain conditions at the time of scheduling, such as an outstanding balance or the need to update insurance information. These systems may also display recalls and referral authorizations when a patient is scheduled.

Electronic Eligibility Checking

Most health plans now provide electronic eligibility information in response to HIPAA 270 eligibility inquiries. A recent survey showed that electronic eligibility checks are significantly more efficient than inquiries made via phone, fax, or a Web portal.[26] Some PMS products support HIPAA 270 and 271 (eligibility response) transactions, enabling electronic eligibility checks with a single click. A subset of these systems can automatically batch and send multiple eligibility inquiries for upcoming patient appointments. The most effective products store the 271 response in the patient record for future reference.

Not all payers and PMS products support the 271 transaction identically. Some systems support only a basic eligibility response (a "yes/no" as to whether the patient is currently covered), while others support inquiries regarding patients' specific deductible, co-payment, and co-insurance amounts. Although electronic eligibility checking based on HIPAA 270 is not yet 100 percent reliable nor fully standardized by health plans, it is a useful adjunct to other methods for eligibility checking and will become increasingly valuable as health insurers, clearinghouses, and PMS vendors work out the remaining interoperability issues.[27]

Advanced Edit Checks

Some PMS products include sophisticated "claims scrubbing" modules with payer-specific rules. The modules can evaluate a claim against the specific coding rules of the relevant health plan and detect errors before the claim is submitted, thereby preventing denials and accelerating payments. For example, a claims scrubber would flag a Medicare claim that includes charges for a physical exam because Medicare does not typically cover that service. Detecting errors as a medical practice prepares claims can minimize payment delays and provide useful coding feedback to physicians. Claims clearinghouses also offer scrubbing services.

The most sophisticated PMSs remotely update payer-specific rules in real time as the rules change or new ones arise. These systems enable practices to apply the new rules immediately without having to wait for periodic software upgrades.

Electronic Remittance Advice

All health plans must now offer electronic remittance advice to their contracted providers via the HIPAA 835 transaction. Many PMSs can receive HIPAA 835 remittances and automatically post the payment information against the corresponding claims. This process is steadily replacing manual entry of payment information from paper EOBs (the traditional method of posting payments) and has obvious advantages in terms of workflow efficiency and reducing human errors. For a busy practice, automated payment posting can literally reduce hours of work to a single click.

Advanced Reporting

More sophisticated PMSs allow reports to be customized using "report wizards"—if, for example, a pre-defined report does not meet the owner's specific needs—and other user-friendly graphical tools. These systems also may be able to export reports in standard file formats for analysis by other applications that the PMS does not support. Alternatively, many modern PMSs store data in relational databases, which third-party reporting and analysis tools can directly access.

Advanced reporting is a more useful function for SNCs and larger facilities that must meet complex reporting requirements than it is for small physician offices, where basic reporting features are often adequate. However, small practices may benefit from

other advanced reporting features, such as the ability to drill down into report results to see underlying details, such as individual patients who are more than 120 days in arrears on payment or real-time "dashboards" that display various key performance indicators for the medical practice.

Electronic Data Exchange Features

The federal government's mandate that health insurers support electronic HIPAA transactions is an opportunity for SNCs and SPOs to significantly streamline certain administrative processes. Such transactions can replace the following inefficient communication and data entry tasks.

Eligibility Checks

Electronic eligibility checks can be faster and reduce personnel costs and claim denials. Some PMSs support batch eligibility inquiries that are automatically submitted before scheduled patient visits. Others support ad hoc inquiries that users can submit with a single click from the patient's demographic profile; they receive a response in real time. However, not all payers currently support real-time eligibility checks.

Claims Submission

The HIPAA 837 transaction standardizes the way claims for professional services are submitted to insurers. Such transactions can largely eliminate the need to mail paper claims and generate different electronic claim formats for different payers. Historically, claims clearinghouses translated claims to the various electronic formats. PMSs that directly generate HIPAA 837-compliant claims eliminate this step and any errors or delays it may cause.

Many small SNCs and SPOs will still need a clearinghouse for electronic connectivity to their payers because some payers do not connect directly with providers and prefer to interact with a small number of clearinghouses.

Claims Status Checks

HIPAA 276/277 transactions enable practices to inquire about the status of submitted claims electronically and in a standard format that all payers support. Payers also use the 277 response to communicate the status of a claim to a practice, especially when there are errors.

This standardized transaction streamlines status checks relative to inquiries made by telephone, fax, or even a Web portal, which, although electronic, requires re-entering patient and claim information stored in the PMS. Indeed, the 276/277 transaction could replace the entire claim inquiry process, but few PMS systems have been enhanced to fully exploit this capability.

Receipt and Posting of Remittance Advice

The HIPAA 835 transaction standardizes the format of electronic EOBs and facilitates the electronic receipt and automated posting of EOBs from any payer. Most payers now support this process. When a PMS supports both electronic EOBs and automated posting, a practice can eliminate a lot of keystroke entry and manual claims reconciliation.

However, not all systems have these features. In addition, many products ostensibly provide automated posting, but they do not adequately handle complex situations in which the remittance advice differs from the submitted claim—for example, differences due to bundling or downcoding by the payer.

Referral Authorization

The HIPAA 278 transaction enables practices to electronically submit a referral authorization request to a health plan and receive an electronic response.

It can replace less efficient request channels, such as telephone, fax, mail, email, and Web portals, all of which are slower and require repeating or re-entering patient and provider information.

Many PMS products do not provide fully automated support for such transactions and many payers do not support them yet.

HIPAA — The Bottom Line

Although electronic HIPAA transactions can streamline administrative processes, even newer PMSs may not support all of them. For example, in the small survey of AAFP members cited earlier, 10 of 22 physicians who had purchased a PMS within the previous three years (45 percent) reported that their system did not yet support electronic eligibility checks or electronic remittance advice.[28] In addition, not all payers support the full set of transactions, or the response times are slow during peak business hours.[29] Nonetheless, it is likely that all payers will ultimately offer complete and reliable support for the transaction set.

Prospective PMS purchasers who want to realize the efficiencies of electronic HIPAA transactions should determine which transactions are supported by the system they are considering, by their major payers, and, if applicable, by their claims clearinghouse. They should also ascertain the extra set-up and/or maintenance costs, if any, for HIPAA-based electronic data exchange, including charges their clearinghouse assesses.

Integration With EHRs

Another reason many SNCs and SPOs consider purchasing a new PMS is that they want better integration with an existing or planned EHR system.[30] Integration of the two systems is essential in order to take full advantage of their electronic capabilities and avoid duplicate data entry. One study found that lack of integration with a PMS is among the causes for EHR implementation failures in small practices.[31] According to the National Association of Community Health Centers, 85 percent of centers in California reported that the inability to integrate an EHR with their PMS was a key barrier to adopting EHRs. (Only 12 percent of these centers were using EHRs as of 2006.)[32]

PMSs support EHR integration in various ways and to varying degrees. Support levels range from no integration to data interfacing, data integration, and workflow integration.

No Integration

Some basic PMSs cannot integrate with EHRs. They are neither part of a tightly integrated PMS/EHR system nor can they interface with an EHR to exchange data. In most cases, staff must input the same information into two separate systems.

Data Interface

This entails transmitting electronic data between separate PMS and EHR applications. Patient demographic and insurance data collected in the PMS can be transferred to the EHR, and charge data captured in the EHR can be transferred to the PMS. This level of interoperability is the minimum necessary for efficient use of both a PMS and EHR. Data transfers are typically based on the Health Level 7 (HL7) data exchange standard. In some cases, data interfacing occurs via non-standard messaging protocols or batch file exchanges.

Data interfaces can preclude duplicate data entry, but the separate systems are susceptible to errors if one or the other is altered. For example, changes to the master file of one system, such as the addition of new billing codes or new physicians, may result in errors if corresponding changes are not made to the other system.

Data Integration

Data integration means a PMS and EHR system share a single database, including patient data and master files. This approach obviates the need to build and maintain an HL7 interface between two systems and to synchronize changes in master files. An integrated database also ensures that all patient data stored in one system are available to the other system. For example, the lab-ordering component of an EHR requires access to patients' insurance information from the PMS, but not all HL7 interfaces can exchange this information. With data integration, the lab-ordering component of the EHR can access the information directly from the PMS database. Similarly, the billing component of a PMS can access all of the clinical information in the EHR database, enabling staff to ensure that all relevant charges are included in claims. PMS and EHR products that share one database are typically sold by a single vendor.

Workflow Integration

PMS and EHR systems that share a database can also provide workflow integration — that is, help clinical and administrative staff communicate or share information. Workflow integration can take several forms. They include messaging between users — for example, a clinician can communicate with staff about a follow-up appointment for a patient while documenting the patient's encounter — and maintaining patient context when switching between PMS and EHR functions. Such integration can even improve the clinical process — for example, by allowing an appointment scheduler to track and reinforce a physician's care plan. Although relatively few PMS/EHR combinations support it, workflow integration offers the greatest efficiencies in practices that have both a PMS and EHR.

PMS/EHR Vendor Relationships

PMS purchasers who intend to integrate it with an EHR immediately or eventually should consider the type of business relationships a PMS vendor has with one or more EHR vendors. These arrangements will dictate not only the potential level of integration, but also integration costs and the EHR choices, if any. There are three general types of arrangements between PMS and EHR vendors (summarized in Table 4 on the next page):

- **Same vendor.** The PMS vendor also sells an integrated EHR system. This model is rapidly emerging, especially among medium and large vendors of PMS and EHR products. They typically offer an EHR system as an option that can be bundled with or later added to the PMS at additional cost. When a vendor sells and maintains both the PMS and EHR, the potential for sharing one database and integrating workflow is greatest. But purchasers should carefully evaluate the nature and extent of integration because it is not guaranteed. For example, when a vendor has added a PMS or EHR system through acquisition, the integration between the systems may be marginally better than that of PMS and EHR systems from separate vendors. And because a vendor's PMS and EHR products usually are "pre-integrated," there is no related integration time or cost. On the other hand, pre-integration between a PMS and EHR from the same vendor may mean that integration with an EHR from a different vendor is not possible;

- **Different vendor — partnered.** Many PMS vendors partner with one or more EHR vendors to achieve better interfacing and to leverage cross-marketing opportunities. In these cases, the products usually have separate databases that can exchange data via pre-defined HL7 interfaces, but

Table 4. Arrangements Between PMS and EHR Vendors

IMPLICATIONS FOR PMS/EHR INTEGRATION	SOURCE OF EHR SYSTEM		
	SAME VENDOR	DIFFERENT VENDOR — PARTNERED	DIFFERENT VENDOR — INDEPENDENT
Data interfacing?	Sometimes, but data integration may also be available	Almost always (via HL7)	Frequently (via ad hoc HL7 or file exchange)
Data integration?	Often, but sometimes only data interfacing is available	Unlikely	Very unlikely
Workflow integration?	Often, although to varying degrees	Unlikely	Very unlikely
Integration costs	None (typically)	None to low ($5,000)	Medium to high ($5,000–$50,000)
EHR options	One (occasionally two)	One to several	Many

workflow integration is rarely available. A PMS vendor with multiple partners can offer a choice of EHR systems. Because the interfaces have been largely pre-defined, the integration costs are typically lower than those for PMS and EHR products whose vendors do not partner;

■ **Different vendor — independent.** When PMS and EHR vendors do not partner, the integration process typically entails developing an ad hoc interface, usually based on HL7 if both products support this messaging standard. Occasionally, the interface will consist of only automated file exchange. Although these interfaces may be just as functional as those between partnered vendors, the costs will be higher — sometimes prohibitively high for small clinics and medical practices. If a purchaser can bear the cost of an ad hoc interface and forgo workflow integration, it will have the most options when selecting an EHR. Smaller clinics and practices with modest budgets may prefer to focus instead on pre-integrated solutions.

Service Offerings

PMS products also vary in terms of the supplemental services that vendors offer. For SNCs and SPOs, the availability or unavailability of certain services may affect a product's appeal and suitability.

Training, Maintenance, and Support

Nearly all PMS vendors offer some type of training, maintenance, and support. In some cases, the vendor's employees provide the services; in other cases, contractors or local distributors provide them. Either approach can work well, but for SNCs and SPOs with a limited budget and support staff, there are several important considerations.

First, the design and the complexity of a PMS affects training and maintenance requirements. Systems with complex features designed for larger clinics, such as multiple-site support or complicated patient scheduling rules, may unnecessarily add to training or configuration costs in a small clinic or practice that does not need those features. In addition, GUI-based client/server systems with relational databases may require more maintenance and support than simpler systems with "dumb terminals" and proprietary databases.[33] Because most

new PMSs are GUI-based, this added complexity may be a consideration for clinics and practices contemplating an upgrade.

Second, training, maintenance, and support may be less costly if they are provided remotely. Many PMS vendors now offer online training via Web meetings or pre-recorded training modules. Remote network access also enables vendors to upgrade or troubleshoot PMS software without on-site visits.

Third, Web-based PMSs enable vendors to remotely upgrade and maintain server hardware and software, and to back up data. The availability of remote maintenance and support can reduce costs for smaller clinics and practices that do not have IT support staff.

Outsourced Billing and Collections

A recent trend in practice management is the integration of PMS software with outsourced billing and collections services. Outsourced billing services have been available for a long time. These firms take responsibility for revenue cycle management—generating clean insurance claims, submitting claims to payers, addressing and resubmitting denied claims, and posting received payments. Such firms generally charge a percentage of the medical practice's collected billings, typically between 3 percent and 10 percent. The percentage depends on the firm's pricing strategy and the practice's overall collections, such that percentage charged to smaller practices is usually higher.

Traditionally, outsourced billing services have used their own software for revenue cycle management, separate from the PMS systems their clients use. This separation of technologies meant that practices had to send their paper super bills to the billing service or periodically transmit electronic or paper reports of their charges. The separation also limited practices' ability to review their accounts

receivables, aging reports, reasons for denied claims, and up-to-date patient accounts in a timely fashion. More recently, the business of PMS software development and outsourced billing have started to merge. Now, some PMS vendors also offer outsourced billing services and some billing firms offer PMS software, creating a software-plus-services combination that can better integrate in-office administrative processes with outsourced billing services. Such integration enables practice staff to enter charges directly into the PMS that the billing service uses and to track patient accounts, claims status, and various financial indicators in real time. There are at least two business models in this software-plus-services approach:

- **A PMS software vendor provides outsourced billing as an optional service.** Medical practices may purchase the PMS software alone, which their staff uses in the traditional manner, or they may purchase the software along with outsourced billing and collections services. In either case, patient, insurance, and billing data reside in one PMS database to which staff members have access. If a practice buys only the software, it pays the vendor a software licensing fee or a monthly subscription fee. If it also purchases the billing and collections services, the practice often pays only a percentage of the revenues collected and the software licensing or subscription fees are waived;

- **An outsourced billing firm provides PMS software as a required component of its services.** Clients must purchase the PMS software and billing services as a package deal. These arrangements tightly integrate the practice's front-office processes and the billing firm's back-office services. Because payments to the firms are based solely on the billings they collect, their PMS

software is designed to optimize the entry of charges, the generation of clean claims, and the resolution of denials. Oftentimes, using the PMS alone is not an option; if a practice stops using the vendor's billing services, it may have to find another PMS.

Although most small practices still do their own billing and collections, they can free up staff time for other tasks, reduce their administrative costs, and/or improve their claims payment rates by outsourcing the two functions.[34] Many practices that outsource their billing achieve these goals, but others are less satisfied. Problems reported in the AAFP survey included the inability of certain services to do billing effectively and reliably, their lack of familiarity with the practice's internal processes, and excessive cost.[35] Obviously, quality and cost-effectiveness vary depending on the billing firm and medical practice characteristics. SPOs must assess quality and cost-effectiveness carefully when they consider a combined PMS/billing solution.

Additional Administrative Services

Beyond revenue cycle management, some PMS vendors offer additional administrative services a la carte. Such services may include mailing patient statements, analyzing billing processes, collecting payments, and developing Web sites for practices. Some vendors even perform various front-desk functions—patient registration, patient scheduling, and eligibility verification, for example.[36] Web-based PMSs, especially, enable SNCs and SPOs to outsource more of their administrative tasks because the vendor that hosts the PMS application has direct access to much of the practice's administrative data.

VI. PMS Selection Factors

Special Considerations for SNCs in California

Given the needs of SNCs and SPOs, and the PMS product choices, a number of factors warrant consideration when purchasers select a system.

As discussed earlier, SNCs have special PMS needs that are unlike those at most ambulatory practices. The most important of these include support for multiple sliding scales; split, roll-up, wrap-around, and dental billing; and claims edit checks and reporting that are specific to safety-net payers.

A small number of PMS products specifically targeted to the SNC market have built-in support for these functions. Other vendors configure or customize their products to meet SNCs' needs, although the process may entail significant additional cost. Most products, however, cannot explicitly support all of these functions; they require various work-arounds, such as the creation of duplicate encounters to support split billing. SNCs that are considering a new PMS to better support EHR integration or HIPAA transactions involving electronic data exchange should carefully assess a system's ability to support important payment and reporting processes specific to safety-net care in California.

Application Service Provider Versus Client/Server

Numerous PMS vendors offer the application service provider (ASP) architecture and software-as-a-service (SaaS) payment model, an alternative to the traditional software licensing model.[37] In ASP arrangements, data and the PMS software reside on servers at the vendor's data center; practice staff access the system remotely via an Internet connection and Web browser. The practice pays a flat monthly subscription fee to "rent" the software, and an initial set-up fee. The subscription typically covers use of the software, system maintenance, routine back-ups, periodic upgrades, and technical support. In addition, many ASP hosts offer a service level agreement that guarantees minimum availability and responsiveness of the system. If the host does not provide service as agreed, it owes the practice a refund. This model has advantages and disadvantages, summarized in Table 5.

For SPOs with fast and reliable Internet access, ASPs offer substantial benefits. The complexity and cost of maintaining hardware and software, and electronic data exchange with payers and clearinghouses, can be entirely outsourced to the vendor. In addition, because small practices need little customization of the PMS database, rule base, or built-in reports, a shared application may be entirely adequate. Finally, if the vendor provides robust physical and network security, patient data may be more secure in a monitored data center than in a small medical office left unattended during non-business hours.

The ASP model may be less compelling for SNCs. First, they need customized features to support their payers' idiosyncratic billing and reporting requirements. A shared application may not provide sufficient flexibility for customization compared to a dedicated on-site implementation. Second, many SNCs have their own IT personnel or access to such personnel through local consortia of community clinics, so the need to outsource

Table 5. ASP Advantages and Disadvantages

ADVANTAGES	DISADVANTAGES
• Faster implementation times, lower implementation costs, and lower maintenance costs because there is no need to purchase, install, and maintain server hardware and software, and no need to install and maintain PMS application software on local workstations.	• PMS functions and data may not be available when Internet connectivity is disrupted.
• Periodic updates to PMS software provided promptly, automatically, and at no additional cost.	• PMS may function slowly if network servers or the vendor's servers become overloaded.
• Periodic updates to billing codes and edit-check rules occur centrally and become available promptly and automatically.	• PMS data may be lost if the vendor goes out of business.
• Data back-ups performed automatically at no additional cost.	• PMS patient data may be compromised if the vendor suffers a network security breach.
• PMS data are at less risk of loss due to theft of computer hardware because most data centers have enhanced security.	• Practice-specific customization may be less possible because many practices must share the same remotely hosted application.
• Access to PMS application and data often is available from any location with an Internet connection and Web browser.	• Integration with existing information systems in the practice or clinic, such as an EHR, disease registry, or document scanning software, may be more difficult or impossible.
• The ASP vendor arranges, implements, and remotely maintains electronic data exchange with payers.	• The total lifetime cost of software use may be greater than the cost of licensed software due to ongoing subscription (i.e., software is never paid off).
• If the same vendor provides an EHR, later EHR implementation and integration may entail minimal cost and effort.	
• No large up-front expenditure necessary to procure the software.	

hardware and software maintenance is less pressing. Third, SNCs can attract grant funding for IT capital outlays, a luxury few small practices enjoy. To the extent that such funding is available, there may be financial advantages in the long run to license software rather than subscribe to an ASP/SaaS service.

ASP for Outsourced Revenue Cycle Management

As mentioned earlier, many vendors that combine PMS products with outsourced billing services do so via an ASP model. A centralized and remotely hosted PMS enables a practice's front-office staff and the billing service's back-office staff to share one application and one database, which can facilitate communication and data sharing. Furthermore, by combining software development and billing, vendors can rapidly update claims edit checks and

billing codes as claims are denied or payer rules change. The ASP model also enables some vendors to achieve economies of scale and reduce costs to a point where they can offer the PMS software at no cost (beyond an installation fee) if a practice uses the vendors' outsourced billing services.

This arrangement warrants a close look if a practice is interested in purchasing a PMS and outsourcing revenue cycle management. However, both the PMS and the billing services must meet its needs. And if the practice is considering purchasing an EHR in the near future, it must assess the vendor's EHR product during the PMS selection process because integrating the PMS with a different vendor's EHR in the future may not be practical.

Table 6 summarizes the combinations of PMS architectures and medical billing services available today. The emerging ASP practice management/outsourced billing combination is a compelling

Table 6. Combinations of PMS Architectures and Medical Billing Processes

BILLING PROCESS	PRACTICE MANAGEMENT SYSTEM	
	CLIENT/SERVER	ASP
In-house	Most common model today. Practice staff perform all front-office tasks and billing using an on-site PMS. Updates to PMS codes, rules, and application must be made to the on-site system during periodic upgrades.	Traditional model for ASP practice management systems. Practice staff perform front office tasks and billing using a remotely hosted PMS. The vendor updates PMS codes, rules, and the application remotely.
Outsourced	Traditional model for outsourced billing. Practice staff perform registration, scheduling, and charge entry using an on-site PMS. Charges must be physically transported or electronically transmitted from the practice to the billing service, which uses a different PMS.	The emerging model of outsourced billing based on an ASP practice management system. Practice staff performs registration, scheduling, and charge entry using a remotely hosted PMS provided by the billing service. A bill service does billing and collections using the same PMS, which facilitates information sharing. Updates to PMS codes, rules, and the application are applied to the remote system by the billing service.

approach to streamlining this administrative process at SPOs.[38] It allows a practice to focus instead on clinical care and only those administrative tasks that require interaction with patients or physicians.

Expanding from Administrative to Clinical Functions

Many SNCs and SPOs that are upgrading their PMS to improve administrative processes may also be considering an EHR to facilitate clinical care. Depending on the timeframe and strategy for EHR adoption, there are different ways to jointly evaluate PMS and EHR products.

Implement an EHR in the Future

For clinics and practices that are generally interested in implementing an EHR sometime in the future but have done little product research to date, the goal is to avoid limiting their EHR choices when they select a new PMS. They have three options, all of which minimize the likelihood that a future EHR selection will require another PMS upgrade:

■ Defer PMS selection until they choose an EHR, and then consider only those PMS products that the same or a partnered vendor offers;

■ Select a PMS that has demonstrated it is compatible with multiple EHR products and hope that one of them will be satisfactory when the time comes to implement a clinical system; or

■ Select a PMS that supports HL7 connectivity and plan to spend more money on a custom interface when an EHR is purchased.

Partially or Gradually Implement an EHR Now

For clinics and practices that want to implement an EHR with a limited number of functions, such as e-prescribing, lab result reporting, or electronic charge capture, and then add functions later on, the goal is to select a PMS compatible with an EHR that has this flexibility. Oftentimes, subsets of EHR functions cannot be activated or vendors charge for the full system regardless of which functions are activated. There are products that enable activation of just some features, and vendors who are willing to charge only for those features. Many of these products have an ASP architecture, which means functions can be activated remotely as the clinic or practice needs them.

Fully Implement an EHR Now

For clinics and practices that want to implement a full EHR immediately, the strategy is relatively simple. They must vet PMS/EHR pairs for their respective features and the level of integration they support. Strategies for product selection include:

- Developing a short list of EHRs and then evaluating the PMSs with which they integrate;

- Developing a short list of PMSs and then evaluating the EHRs with which they integrate;

- Targeting vendors that offer EHRs and PMSs as a pre-integrated package and evaluating these systems as a unit; or

- Evaluating EHR and PMS products separately and then selecting the best of breed in each category if the cost of a custom interface is not a factor.

Impact of Health Industry Trends

Several recent trends in the health care industry also affect the decision to upgrade a PMS and the selection of one or another product.

Medicare Incentives for E-Prescribing

Through legislation and regulations, the federal government is actively promoting the adoption of e-prescribing. The 2008 Medicare Improvements for Patients and Providers Act (MIPPA) authorized the Centers for Medicare & Medicaid Services to pay a bonus to physicians for "successful electronic prescribing" beginning in 2009.[39] That year, physicians will receive a 2 percent incentive payment for e-prescribing, an amount that will gradually decrease to 0.5 percent by 2013. (The incentive amount is based on allowed charges during the previous reporting period for all professional services rendered under the Medicare/Medicaid physician fee schedule.) Additionally, physicians who are not successfully prescribing electronically by 2012 will be assessed a 1 percent payment penalty, which will increase to 2 percent by 2014. Although MIPAA leaves the definition of "successful electronic prescribing" to the discretion of the secretary of the Department of Health & Human Services, at a minimum, successful e-prescribing will entail the electronic generation of prescriptions, drug interaction checking, and formulary compliance checking.

MIPPA excludes most SNCs from these financial incentives because Medicare does not pay federally qualified health centers and rural health clinics per its normal fee schedule. However, there will be financial incentives for SPOs that treat Medicare beneficiaries to acquire IT that supports e-prescribing. In response, some practices may purchase a full EHR while others may opt for a stand-alone e-prescribing system with limited additional clinical use. In either case, practices' need to integrate their PMS with these clinical applications may prompt many of them to upgrade the PMS. And, conceivably, PMS vendors might add an integrated e-prescribing application to their products, creating an alternative for practices that want to qualify for the bonuses without implementing a separate clinical information system. SPOs will have to carefully consider their preferences and options as the e-prescribing incentives and penalties are phased in.

High-Deductible Health Plans

Enrollment in high-deductible health plans (HDHPs) has grown significantly over the last several years. As of April 2008, more than 6 million Americans were enrolled in such plans, a sixfold increase since 2005.[40] HDHP enrollees now represent 3.4 percent of all Americans younger than 65 years old who are enrolled in private health

insurance. The proportion in California is 3.1 percent.

The implications for PMSs are twofold. First, the growth of out-of-pocket payments among HDHP enrollees, particularly for less costly outpatient services, will favor information technologies that allow immediate point-of-service payments via credit or debit cards. PMSs with integrated electronic payment capabilities will enable workflow efficiencies and accelerated revenue cycle management. Second, practices with HDHP enrollees will benefit from real-time eligibility checking via HIPAA 270/271 transactions, which provide information on patients' deductibles and co-insurance. This information can also accelerate revenue cycle management by enabling practices to determine a patient's payment responsibility at the time of the visit and thereby avoid the usual wait until the insurance claim is adjudicated and a patient statement is mailed. To the extent that enrollment in HDHPs continues to grow, these PMS features may become increasingly important in helping SPOs better manage their cash flow.

Patient-Centered Care

A recent trend favors improved patient-physician communication and greater patient participation in outpatient medical care. In 2007, a group of professional medical organizations, including the American Academy of Family Physicians and the American College of Physicians, published a joint statement espousing the "patient-centered medical home."[41] The basic premise of this model is that better health outcomes will result if a patient's care is managed and coordinated by his or her personal physician with the right tools. Many facets of the medical home model require EHRs, but PMSs with appropriate features also play an important role. Specifically, these PMSs should support the model's

goals of enhanced access to care through open-access scheduling (described in more detail below) and new options for patient-practice communication.

Some PMSs now offer Web-based patient portals that enable patients to schedule appointments, submit registration information, request medication renewals, and ask administrative questions. Online communications with a practice can be faster and more convenient for patients than telephone calls to busy front-office staff. Many of the PMSs offering patient portals are ASP systems because this architecture allows both the PMS and the patient portal to be hosted remotely, which facilitates integration of the two. Some client/server PMSs also offer patient portals for scheduling, patient registration, and other functions. However, because these systems reside at the physician practice, integration with a remotely hosted Web portal is often limited to messaging between patients and practice staff. Less information is available to patients, and the amount of work for administrative staff is greater.

The patient-centered medical home concept includes open-access scheduling, which can reduce patients' wait times during appointments and increase their satisfaction.[42] Most practices that support open-access scheduling designate special types of appointments on their calendars for same-day visits. PMSs with scheduling modules support this process adequately when office staff books these appointments. However, when Web portals enable patients to do the scheduling, staff is no longer in the loop and the scheduling system must know which appointments have been allocated for same-day visits and enforce them. The scheduling modules in most PMSs cannot do this; nevertheless, they will become increasingly important if the current trend toward open access-scheduling and patient portals continues.

ICD-10 Code Sets

On August 15, 2008, the U.S. Department of Health & Human Services issued a proposed rule that would require health care providers to adopt the ICD-10 code sets for electronic health transactions by October 2011.[43] If the rule is adopted, it will spark a wholesale change in outpatient diagnosis coding and in many PMSs. Health care providers now use the ICD-9-CM code set, which comprises about 17,000 numeric codes with a maximum length of five digits each. The proposed ICD-10 code set comprises more than 155,000 alphanumeric codes with a maximum length of seven characters. Beyond differences in scope and syntax, ICD-10 differs in the clinical specificity of diagnosis codes and the rules for constructing them correctly. Therefore, the transition to ICD-10 will entail a greater change to legacy PMSs than simply replacing the old code set with the new code set in a master file. By one estimate, 95 percent of medical practices will need to upgrade their PMS or purchase a new one to accommodate ICD-10.[44]

The implications for SNCs and SPOs considering a PMS upgrade are twofold. First, if the transition to ICD-10 occurs in 2011 as proposed, health care providers that purchase a new PMS now will need to upgrade again at that time. In addition, it will be difficult to ascertain the future effectiveness of a PMS product with respect to ICD-10 coding until vendors begin designing the features necessary to support ICD-10.

Second, the increased specificity and complexity of ICD-10 coding may require tighter integration between administrative and clinical systems. For example, clinicians may need computerized decision support to tell them which ICD-10 diagnosis code they should enter on a super bill; ICD-9-CM comprises a much smaller code set and simpler coding rules. Until Medicare and other payers publish their coding requirements for ICD-10, SNCs and SPOs will not know how clinically specific the ICD-10 diagnosis codes must be and, in turn, what their PMS must support. This uncertainty about the necessary degree of administrative and clinical integration for ICD-10 may justify delaying a PMS upgrade. Alternatively, SNCs and SPOs that want or need to upgrade now might consider ASP systems, which facilitate future software upgrades and data conversions.

Upgrade Considerations and Recommendations

Despite uncertainty about future requirements, various factors are motivating many SNCs and SPOs to upgrade their PMS sooner rather than later. Some that have an older system cannot take full advantage of HIPAA standards for electronic data exchange, and others need a system that integrates with EHRs better. Still others want to improve their bottom line by upgrading to a PMS that streamlines administrative processes, optimizes insurance claim collections, and/or allows them to outsource certain billing functions.

Many other SNCs and SPOs are keeping their current PMS. They think their administrative processes and tools are adequate for seeing patients and receiving payments. Even if such organizations could optimize processes and/or improve financial performance through PMS replacement, they may believe that the cost would be prohibitive or at least daunting. Furthermore, replacement also entails numerous disruptions:

■ Patient demographic and insurance data must be moved to the new system;

■ Because many SNCs and SPOs cannot move claims data to the new PMS, they operate both the old and new systems in parallel (and

consolidate all reporting) until outstanding claims and patient balances are paid;

- Many organizations cannot move scheduling data to the new system, so they must operate both the old and new systems for awhile;

- An existing EHR interface must be re-implemented;

- Existing interfaces with payer or clearinghouse systems must be re-implemented;

- Staff must be retrained and, in some cases, administrative workflows must be modified according to the new system's capabilities. For example, a new system that offers better integration of front-office and back-office functions may require that scheduling staff be retrained to check outstanding patient balances at the time of appointment scheduling; and

- A more complex PMS may require additional IT support to maintain it. For example, switching to a GUI-based system with a relational database from a system in which "dumb terminals" rely on a host computer may necessitate more support to maintain the database server and to update client software on each workstation.

Each organization, based on its own circumstances, must decide if and when investing in a PMS is justified. The following recommendations may help guide those in one of four situations:

- For SNCs and SPOs embarking on EHR implementation, smooth and reliable integration with the PMS is essential to the EHR's effectiveness and acceptance among staff. If the current PMS does not support at least the real-time exchange of patient demographic and insurance information, as well as encounter-

charge information, the organization should consider purchasing a new PMS;

- Those whose PMS cannot support HIPAA-compliant electronic claims submission and remittance advice should consider upgrading to a system with these capabilities. The time savings achieved through automatic payment posting, versus manual posting, is a compelling rationale in and of itself;

- Those whose PMS enables electronic claims submission and remittance advice but lacks support for other HIPAA transactions may be better off delaying a PMS upgrade until there is more consistent electronic eligibility checking and referral authorization among health plans;

- Small practices whose PMS does not offer sophisticated edit checks and/or electronic data exchange should think about switching to a HIPAA-compliant ASP system. At a minimum, the savings on IT support and the increase in claims revenue that could be achieved using an ASP system with better support for revenue cycle management are worth considering. If outsourced billing is feasible, a practice may want to look at an ASP-based PMS that also offers this as an option. Unlike billing services that include integrated PMS software, optional billing enables a practice to continue using the PMS if it later decides to do its own billing.

VII. Summary of Key Considerations

MANY FACTORS INFLUENCE THE DECISION TO UPGRADE A PMS AND THE SELECTION OF AN appropriate product. Because the circumstances and needs of individual SNCs and SPOs vary, there is no "one size fits all" advice. The general guidelines in Table 7 provide a starting point.

Table 7. Key PMS Purchase Considerations

ISSUE	CONSIDERATIONS
Safety-Net Clinics	
Support for specialized billing/reporting	• Clinics with limited funds and IT staff may want to focus on PMSs with built-in specialized billing and reporting support. Although these systems may offer fewer state-of-the-art features and integrated EHR capabilities, they will facilitate mission-critical business processes. However, the product choices are limited.
	• Clinics with ample resources to fund product customization and configuration can seek a PMS that supports all of its other functional needs (EHR integration, electronic data exchange, advanced edit checks, etc.) and ask the vendor to make modifications that will support the clinic's billing and reporting needs. This requires a careful assessment of the product's and vendor's capabilities to ensure that such modifications are possible. The vendor and product choices are more numerous in this instance.
EHR integration	• Clinics with limited funds and IT staff may want to focus on integrated PMS/EHR products from one vendor. They should first ensure that the products are truly integrated at the database level and, ideally, the workflow level, which is not always the case.
	• Clinics with more funding and IT staff can likely support an HL7 interface and therefore seek best-of-breed PMS and EHR products from multiple vendors. However, they should also evaluate integrated products from one vendor, given the advantages of database and workflow integration.
Support for electronic data exchange	• Clinics should ensure that a PMS supports HIPAA-compliant electronic claims submission and electronic remittance advice with automated posting. A clinic should also confirm that its safety-net payers, including Medi-Cal, support electronic data exchange in a manner compatible with the PMS.
	• All clinics should keep in mind the idiosyncratic needs of automated payment posting in the safety-net environment, such as the reconciliation of roll-up charges, when they evaluate the electronic data exchange and electronic remittance advice features in a PMS.
Small Physician Offices	
Remotely hosted ASP vs. on-site client/server	• Practices with limited capital and IT support can benefit the most from remotely hosted, subscription-based ASP systems. This solution enables outsourcing of most IT maintenance and support to the vendor, and offers greater flexibility for gradually implementing an EHR and outsourcing billing services in the future.
	• ASP solutions may be more costly than lower-end client/server PMSs, but the conveniences may justify the expense.

Table 7. Key PMS Purchase Considerations, continued

ISSUE	CONSIDERATIONS
EHR integration	• Because interfaced PMS and EHR systems require more maintenance to keep the interface working and the systems synchronized, small practices may want to focus on integrated PMS/EHR products from one vendor. Practices should first ensure that the products are truly integrated at the database level and, ideally, workflow level, which is not always the case with systems advertised as "integrated."
Support for electronic data exchange	• Practices should ensure that a PMS supports HIPAA-compliant electronic claims submission and electronic remittance advice with automated posting. If their major payers support HIPAA-compliant eligibility checking, practices may want that feature in their PMS. • All practices should ask their payers and/or clearinghouse how electronic connectivity will be established and about any additional costs.
Support for outsourced billing	• If a practice is strongly committed to outsourced billing, it should seek the best billing firm available that is integrated with an ASP-style PMS service. Because the firm will perform billing, the focus of PMS evaluation should be on front-office features, charge entry, and reporting. • If a practice is only considering outsourced billing, it should seek the best PMS that offers integrated outsourced billing as an optional service. This will enable the practice to bring billing back in-house if necessary without having to change its PMS software.

VIII. Conclusion

SAFETY-NET CLINICS AND SMALL PHYSICIAN offices play a critical role in California's health care system, and practice management systems play an important role in their operation and management. IT developments and health care administration trends have created opportunities for organizations to improve efficiency and quality. But to fully leverage these opportunities, SNCs and SPOs must have a modern PMS that can integrate effectively with electronic health records and HIPAA transaction standards, and/or support the outsourcing of billing and IT maintenance. Although upgrading a PMS can entail significant expense and effort, and may not be warranted in all cases, SNCs and SPOs using an older, less functional PMS should at least consider the upgrade benefits and costs. Awareness of key considerations, including support for billing and reporting, support for outsourced billing, electronic data exchange, EHR integration, and the application service provider model versus the client/server model, are an appropriate starting point in deciding whether to upgrade and, if so, what type of PMS solution will best meet the organization's needs.

Appendix A: Vendors, by Product Category

Vendors listed below are a representative sample only; there are many others in each product category. The online directories cited in Appendix B provide more complete lists of vendors and products.

PMS with Built-in Support for SNCs (Billing and Reporting)

HealthPort
www.healthport.com/pm_overview.aspx

Sage Software
www.sagesoftware.com/products/healthpropd

PMS with Option to Outsource Billing Services

CureMD
www.curemd.com/services_curebilling.htm

Med3000
www.med3000.com

Outsourced Billing Service with Integrated PMS (ASP Model)

Athenahealth
www.athenahealth.com

Medrium
www.medrium.com/our_services/pms.jsp

MDSynergy
www.mdsynergy.com/index.asp

PMS (ASP Model) without Integrated EHR

Avisena www.avisena.com	MedSuite www.medsuite.net/billing.asp
Devington Technologies www.devington.com/sys/index.html	PracticeOne www.practiceone.com/practicemanager
Kareo www.kareo.com	ZirMed www.zirmed.com

PMS (ASP Model) with Integrated EHR

AdvancedMD www.advancedmd.com	LeonardoMD www.leonardomd.com
Athenahealth www.athenahealth.com	NextGen www.nextgen.com/pro_epm.asp
CureMD www.curemd.com/curemdprs.htm	NueMD www.nuemd.com
eMedSoft www.emedsoft.com	Raintree Systems www.raintreeinc.com
HealthHighway www.healthhighway.com/products.htm	WEBeDoctor www.webedoctor.com/new/products.htm

Appendix B: Additional Resources, by Type

Online Directories of Practice Management Systems

Capterra
www.capterra.com/medical-practice-management-software

HIPAA
www.hipaa.org/pmsdirectory/directory.php

Medical Download
www.medicaldownload.com/practicemanagementsystems/practicemanagementsystems.htm

Medical Group Management Association
www.mgma.com/pm/default.aspx?id=11130

Physicians Practice
www.physicianspractice.com/index/fuseaction/productservices.category/categoryid/54.htm
www.physicianspractice.com/files/pdfs/theguide_nov07.pdf

PMS Buyer Guides

American College of Physicians*
www.acponline.org/running_practice/technology/pms

BuyerZone
www.buyerzone.com/software/mpm/buyers_guide1.html

On-Line Consultant Software
www.olcsoft.com/physician_practice_management_software_requirements.htm

PMS Market Research Reports

Frost & Sullivan Research Service
www.frost.com/prod/servlet/report-brochure.pag?id=F822-01-00-00-00

Jewson Enterprises
www.jewsonenterprises.com/products.html

SK&A Information Services
www.skainfo.com/physician_analytical_survey/medical_practice_management_software.php

*Requires ACP membership.

Endnotes

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8. AAFP Member Survey on Practice Management Systems. Sujansky & Associates: August 2008. The 37 participants in this online survey were in the practice management systems and electronic health record systems special interest groups at the American Academy of Family Physicians.

9. Certain tasks in the gray area between clinical and administrative functions, such as prescription renewal requests, are omitted from the typical workflow because developers and marketers of EHRs and PMSs have delegated these functions to EHRs.

10. Expanded Access to Primary Care (EAPC) Program. Medi-Cal: December 2007 (files.medi-cal.ca.gov/pubsdoco/publications/masters-mtp/part2/expand_o05.doc).

11. Lisa Daigle, personal communication, July 2, 2008.

12. Claim Completion: UB-04. Centers for Medicare & Medicaid Services: October 2007 (files.medi-cal.ca.gov/pubsdoco/publications/masters-mtp/fpact/claimub_f00.doc).

13. *Medicare Claims Processing Manual.* Chapter 9: Rural Health Clinics/Federally Qualified Health Centers. Centers for Medicare & Medicaid Services: March 2008 (www.cms.hhs.gov/manuals/downloads/clm104c09.pdf).

14. *2008 Uniform Data System Reporting Manual.* Health Resources and Services Administration: September 2008 (bphc.hrsa.gov/uds/2008manual/default.htm).

15. Automated Licensing Information and Report Tracking System (ALIRTS). Office of Statewide Health Planning and Development: January 2008 (www.oshpd.ca.gov/hid/alirts/index.html).

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27. Ibid.

28. *AAFP Member Survey on Practice Management Systems.* Sujansky & Associates: August 2008.

29. Bill Hashmat, personal communication, August 12, 2008.

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