

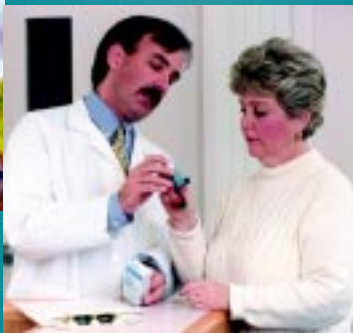
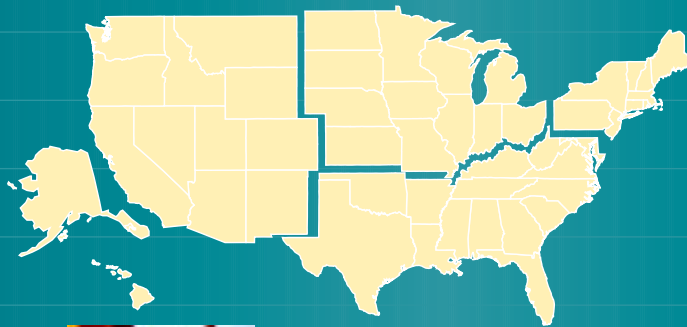


2001

ASHP SURVEY

of Managed Care
and Ambulatory Care
Pharmacy Practice

IN INTEGRATED HEALTH SYSTEMS



in cooperation with



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ASHP Center on Managed Care Pharmacy™

The ASHP Center on Managed Care Pharmacy informs, monitors and analyzes, and educates ASHP members and others on trends and developments related to managed care principles in pharmacy practice and on the role of the pharmacists in managed care.

ASHP is the 30,000-member national professional association that represents pharmacists who practice in health maintenance organizations, hospitals, long-term care facilities, home care, and other components of health-care systems.



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Ambulatory care pharmacists in integrated health systems are practicing a more active role in the management of patients with chronic diseases. The pharmacist's presence is increasingly evident in specialized clinics such as anticoagulation therapy, oncology, and diabetes management, as well as disease management. Many pharmacists are active participants in medication error reduction programs. Pharmacists enjoy solid support from medical and senior management staff; their scope of activity is being broadened by support factors such as integrated electronic medical records systems,

automated dispensing systems, and opportunities to collaborate on interdisciplinary teams.

The mean size of full-time pharmacy staff in the more closed (group and staff-model HMOs) integrated health systems is increasing. At the same time, a continuing national shortage of pharmacists is making it increasingly difficult for a majority of organizations to fill vacant slots. Even systems that offer competitive salaries and benefits are often finding it difficult to maintain their pharmacy staff at full capacity.

The effect of this workforce shortage is unclear. The dearth of candidates may be forcing some

health systems to reconfigure pharmacists' activities and functions. Evidence of this change may be seen in a contraction since 1999 in the routine performance of a great majority of 24 specific ambulatory care pharmacist functions. In addition, pharmacists are spending less time on clinical duties.

These are among the highlights of the *ASHP Survey of Managed Care and Ambulatory Care Pharmacy Practice in Integrated Health Systems—2001*. The report is the third in a series that has documented national and regional characteristics and directions for pharmacy practice in ambulatory patient care settings

about this report

The *ASHP Survey of Managed Care and Ambulatory Care Pharmacy Practice in Integrated Health Systems—2001* is the third in a series of reports that document and analyze national and regional trends in managed care and ambulatory care pharmacy practice in integrated health systems. The first two reports were published in 1997 and 1999.



The purpose of these biennial reports is to provide pharmacists, pharmacy managers, and health-care decision makers the information they need to provide high-quality care in a complex and competitive health-care market. Based on responses from pharmacy managers or administrators in nearly 400 integrated health systems nationwide, the reports also provide benchmarks that other systems may use to assess their own operations and to plan for the future. Over the years, the reports will create a longitudinal record of changes in integrated health systems and ambulatory care pharmacy. The reports can both validate and complement similar reports tracing trends in managed care and changes in pharmaceutical care in acute care settings, pharmacy benefits programs, and other areas.

The last four pages of this report provide benchmarking information that individual pharmacy facilities can use to compare data from their own organizations with specific data from this survey. This benchmarking information is presented by region and type of health system and includes data on the 24 ambulatory care pharmacist functions and the five enabling factors examined by the survey.

This report was prepared by the ASHP Center for Managed Care Pharmacy, which serves as a resource to ASHP members and others on issues and trends in managed care as they apply to pharmacists and pharmacy practice. ASHP, as the professional society of pharmacists who practice in all components of integrated health systems, is committed to collecting and disseminating information on the status of pharmacy practice in these systems.

The development of the survey tool, the collection of data, and the creation of this report were supported by an unrestricted grant from Pfizer Pharmaceuticals Group.

Additional copies of this summary report are available from the ASHP Center on Managed Care Pharmacy (301-657-3000, extension 1282) or from ASHP's website (www.ashp.org).

highlights of survey results

in managed care organizations and integrated health systems since 1997. Full results of the 2001 survey are slated to appear in the *American Journal of Health-System Pharmacy* in November. The *American Journal of Health-System Pharmacy* article is also available online at www.ashp.org. This summary report provides an overview of survey findings and discusses their implications for the future.

Survey Overview

The telephone survey was conducted in the spring of 2001. Administration, data entry, and quality control were carried out by the Gallup Organization in consultation with staff of the ASHP Center on Managed Care Pharmacy, which developed the survey. Respondents included 376 pharmacy managers or administrators representing five types of integrated health systems: hospital-based integrated health systems, network-model health maintenance organizations (HMOs), staff-model HMOs, group-model HMOs, and independent practice associations (IPAs). The largest percentage of respondents (45%) was hospital-based systems; this was followed by network-model HMOs (22%), IPAs (16%), and staff-model and group-model HMOs (8% each).

Areas of Inquiry

The survey asked respondents for information on the components of their systems (i.e., acute-care hospitals, ambulatory care centers, home health-care services, physician practices, managed care products, and long-term care facilities), staff size and composition, and mechanisms for obtaining prescriptions (i.e., in-house pharmacy, pharmacy

Pharmacy Workforce and Practice Environment

- The mean full-time pharmacist staff for most ambulatory care organizations rose by 33% since 1999. However, pharmacy staff in IPAs decreased by 28%.
- 70% of respondents had experienced difficulty in filling vacant positions.
- 81% of respondents said they offered competitive salaries and benefit packages.
- The technician component of the pharmacy staff increased in size between 1999 and 2001.
- 27% of the integrated health systems reported having a mechanism for reimbursement or compensation for ambulatory care pharmacy services.

Functions of Ambulatory Care Pharmacists

- The extent to which 20 of 24 pharmacist functions are routinely performed decreased between 1999 and 2001. Fourteen of the pharmacist functions routinely performed declined in 2001 after moderate growth between 1997 and 1999.
- The single biggest growth area was pharmacist involvement in specialized clinics. In 1997, this percentage was 33% and in 1999, it was 38%. In 2001, 67% of pharmacists were involved in specialized clinics. The percentage of time devoted to clinical activities fell from 34% in 1999 to 28% in 2001; this percentage was 30% in 1997.
- 69% of respondents reported pharmacist participation in medication error reduction programs.

Enabling Factors

- Levels for all five enabling factors have grown modestly or been maintained since 1997.
 - Integrated electronic medical records (IEMR) and automated dispensing systems have been growing at a slow pace since 1997.
 - Participation in interdisciplinary teams remained constant in 2001 after substantial growth between 1997 and 1999.
 - Support from medical staff and senior management remained at high levels through all three surveys. Higher levels of medical staff and senior management support were associated with pharmacist performance of relatively more clinical activities.
- Pharmacists' routine performance of 24 specific ambulatory care functions rose in varying degrees with respect to the enabling factors. In 50 instances, these increases were statistically significant. The enabling factor having the greatest influence on increased routine performance of the functions was pharmacist presence on the interdisciplinary team.

Performance Measurement

- Patient satisfaction and financial performance were the two most widely used performance measures.

benefits manager-managed network, mail service, and contracts with community pharmacies). The survey also sought information about the relative amounts of time pharmacists spent on three major types of activity (i.e., clinical, distributive, and administrative) and about the routine performance of 24 ambulatory care pharmacist functions. The survey inquired into the presence of five “enabling factors”—features that would be likely to facilitate pharmacist participation in ambulatory care. A key goal in data analysis was to determine relationships between health system type and the presence of enabling factors and pharmacist functions. The survey also inquired about respondents’ use of performance measures.

To pinpoint any emerging relationships between pharmacists’ activity and environmental factors, the 2001 survey included several new items. These covered such areas as workforce vacancies, competitiveness of salary and benefit packages, medication errors programs, pharmacist participation in specialty clinics, and reimbursement for services.



Conclusion

Pharmacists are widely present in integrated health systems today, and their numbers are growing. The pharmacist’s broad participation in specialty clinics, medication error reduction programs, and disease management programs is of particular note. The nationwide shortage of pharmacists, coupled with a growing patient population, may be causing a reconfiguration of pharmacist activities. Nevertheless, given the growing demand for their services, their documented impact on patient care, and the positive influence of enabling factors, pharmacists are well positioned to take a leadership role in meeting the challenges of today’s health-care environment.

integrated health systems and ambulatory care pharmacy

An integrated health system is one that brings together hospital, medical, pharmaceutical, and other health services into a single organization. This report surveyed five types of such systems: staff-model health maintenance organizations (HMOs); group-model HMOs; independent practice associations (IPAs), network-model HMOs, and hospital-based integrated health systems.

Despite differences in size, structure, and service mix, integrated health systems have a common goal: to deliver high-quality care to a defined population at a competitive cost. If desired patient outcomes and standards of fiscal performance are to be achieved, pharmaceutical care must be delivered efficiently and consistently, and drug products must be used appropriately. For these reasons, ambulatory care pharmaceutical services are an essential component of a growing number of integrated health systems today.

This survey provides a detailed picture of the roles of ambulatory care pharmacists in integrated health systems. Among its objectives were to identify and quantify the specific functions in which pharmacists are routinely engaged, to identify factors that influence pharmacist activity in the ambulatory setting, and to determine the relative amounts of time that these pharmacists spend on distributive, clinical, and administrative activities.

definitions

An **integrated health system** is a network that provides or arranges to provide a comprehensive, coordinated continuum of care to a defined population and is held clinically and financially accountable for the outcomes and health status of that population.

A **staff-model HMO** is one that employs physicians, generally on a salaried basis.

A **group-model HMO** is formed around one or more medical practice groups.

An **independent practice association** contracts with physicians in private practice.

A **network-model HMO** combines elements of the group-model HMO and the IPA model.

A **hospital-based integrated health system** is owned and operated by a hospital or group of hospitals.

survey methods

Design

The 2001 survey instrument was a modified version of the instrument used in 1999. Six new questions were added (see sidebar) and 41 items were retained, for a total of 47 items. The Gallup Organization, Lincoln, Nebraska, was responsible for survey administration, data entry, and quality control. Katherine K. Knapp, Ph.D., professor and director, Center for Pharmacy Practice Research and Development, College of Pharmacy, Western

University of Health Sciences, Pomona, California; Susan Blalock, Ph.D., associate professor, Department of Pharmacy Practice, Thomas J. Long School of Pharmacy and Health Sciences University of the Pacific, Stockton, California; and Beverly L. Black, M.H.S.A., professional practice associate, Professional Practice and Scientific Affairs Division, ASHP, were responsible for survey construction and design, data analysis, and preparation of the report on which this publication is based.

Process

Survey respondents were drawn from a list of 1,161 health-care organizations submitted by ASHP to Gallup. All the organizations were contacted by telephone to determine their eligibility to participate in the survey. There were two criteria for participation. First, the potential respondent had to meet the survey definition of integrated health-care system—that is, “a network that provides or arranges to provide a comprehensive coordinated continuum of care to a defined population and is held clinically and financially accountable for the outcomes and health status of the population served.” Second, an appropriate spokesperson had to be available to respond to the survey. This was defined as “the person who plans and directs system-wide pharmacy policy and has financial responsibility for the system’s ambulatory pharmacy services.” Only the central administrative entity for each multi-unit organization was surveyed.

After reviewing the list, Gallup and the ASHP Center on Managed Care Pharmacy identified 384 potential responding organizations. All were once again contacted by phone, and all agreed to participate in the survey.

Trained interviewers conducted the survey by telephone from Gallup’s communication facility in Lincoln, Nebraska, in the spring of 2001. After the interviews were completed, Gallup staff eliminated eight respondents because their organizations did not meet the survey definition of an integrated health system. The remaining 376 organizations completed surveys formed the data set used for analysis.

Data Analysis

Data were analyzed using the PC-SAS statistical package. The analyses paralleled those of the 1999 and 1997 surveys so that comparisons could be made. Data were analyzed primarily using descriptive statistics. The impact of work environment or infrastructural factors favoring pharmacist activity in the ambulatory sector (enabling factors) was studied in the same manner as it had been in 1999. In evaluating the association between pharmacist functions and the presence of enabling factors, a difference of more than 10 percentage points was considered as significant.

New Survey Questions—2001

One purpose of the ASHP survey is to identify emerging trends, many of which stem from external forces. Several such forces have emerged since 1999. One is the nationwide shortage of pharmacists. A second was the publication in 1999 of the Institute of Medicine (IOM) report, *To Err Is Human: Building a Safer Health System*. This report raised awareness of medical errors and set forth a plan to redesign health systems for safety and quality. Another influential IOM report, *Crossing the Quality Chasm: A New Health System for the 21st Century*, published in 2001, noted that the U.S. health-care system falls far short in routinely delivering its potential benefits to patients. A third factor is legislative support at the state and national levels for recognizing pharmacists as health providers and reimbursing them for services. To gauge the effect of these and other developments, the 2001 survey added questions on the following topics:

- Workforce shortages and the ability to fill positions
- Adequacy of pharmacists’ salaries and benefits packages
- Pharmacist participation in medication error programs
- Changes in reimbursement for pharmaceutical care services
- Ambulatory pharmacists’ involvement in specialized clinics
- Provision of areas for pharmacists to assess and counsel patients

Geographic Distribution

Figure 1 shows the geographic distribution of the 376 survey respondents. This distribution was similar to that of the earlier surveys, making it possible to compare and contrast data and identify trends.

Distribution of Health Systems

As shown in **Figure 2**, the majority of respondents were hospital-based integrated health systems. This dominance was even greater than it had been in 1999, when hospital-based systems comprised 41% of respondents.

Network-model HMOs, with 22% of respondents, ranked second in 2001. In 1999, network-model HMOs comprised 26% of respondents.

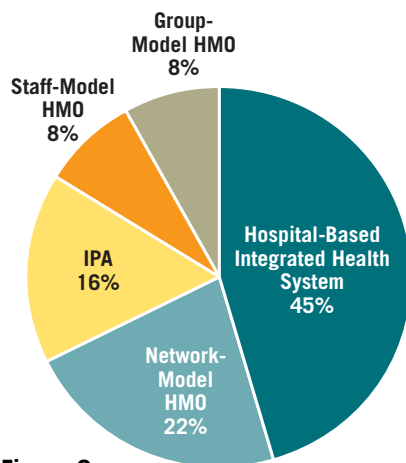
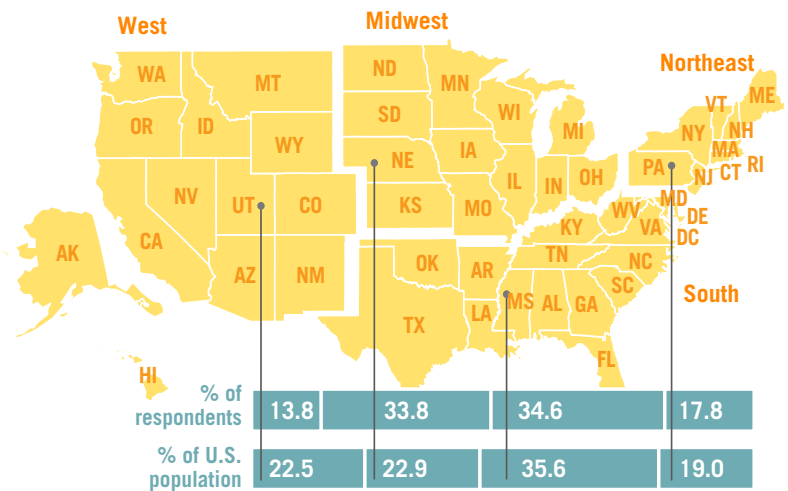


Figure 2
Types of Systems Represented

Figure 1

Geographic Distribution of Respondents

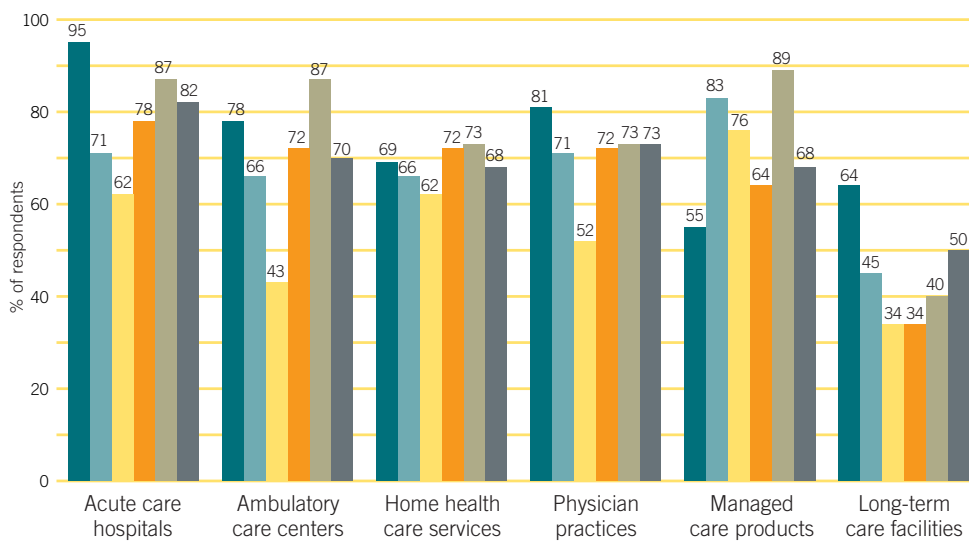


Service Components of the Systems

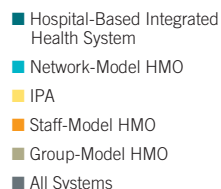
As in 1999, group-model HMOs showed a high degree of vertical integration (**Figure 3**). Eighty-five percent or more of them offered three of the six components surveyed. A relatively high percentage of hospital-based systems also offered a number of components, although their percentages were down in all five categories from the previous survey. Across systems, acute care hospitals were the component offered most frequently by far (82%); long-term care facilities were offered the least (50%). Since 1999, managed care (84% to 68%) and long-term care (59% to 50%) showed the sharpest drops. Overall, none of the components rose since 1999, thereby continuing a trend noted between 1997 and 1999.

Figure 3

Vertical Integration of the Responding Systems



In many of the figures and tables in this report, data are presented according to the five types of systems that appear in Figure 3. To facilitate understanding, the system types are consistently arranged in the same order and are displayed in the same colors throughout the survey.



pharmacy workforce and staffing issues

The size of pharmacy staffs is growing (**Figure 4**). The mean number of full-time equivalent (FTE) pharmacists on staff rose from 27 to 35 between 1999 and 2001, a 30% increase; in 1997, the mean had been 33. Hospital-based systems grew from a mean of 35 to 42 FTE pharmacists (20%). The only type of system in which pharmacy staff size declined was IPAs, where the mean staff size decreased by 28%, from 14 to 10.

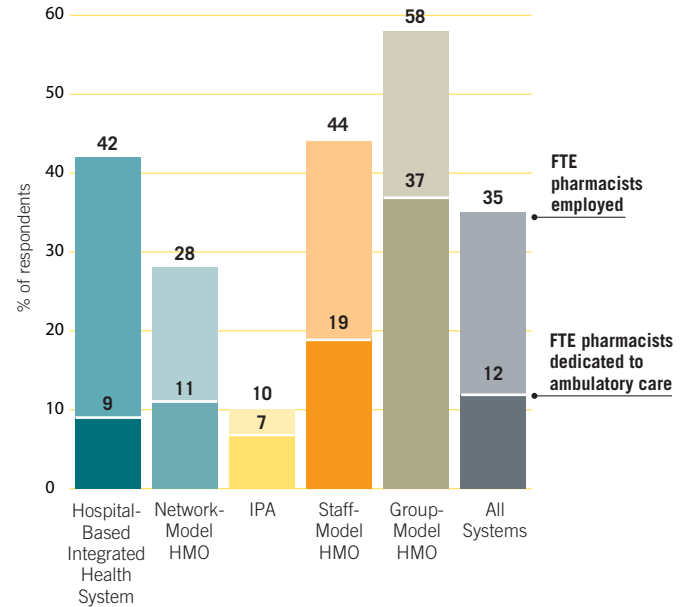
The mean FTE staff size for ambulatory care rose from 9 to 12 pharmacists (33%). The greatest increase was in group-model HMOs, where mean pharmacy staff size rose from 18 to 37 between 1999 and 2001—a 105% increase.

Thirty-three percent of the FTE pharmacy staff was pharmacy technicians in 2001, a figure comparable to that of 1999 (36%). The overall technician:pharmacist ratio was 2:1; however, technicians as percentage of the total staff varied widely across systems. Group-model HMOs reported that 44% of their staff were technicians, while IPAs reported only 17%.

For the first time, the 2001 survey asked respondents to supply information about workforce shortages and strategies to overcome them (**Table 1**). Only 30% of organizations reported

Figure 4

Pharmacy Staffing Patterns



having sufficient candidates to fill vacant open positions; the range was 8% (for group-model HMOs) to 44% (for IPAs). The ability to fill vacancies persisted, even though 81% of systems said they offered competitive salaries and benefits.

Table 1.

Ability to Fill Pharmacy Positions and Offer Competitive Salary/Benefit Packages, by System Type

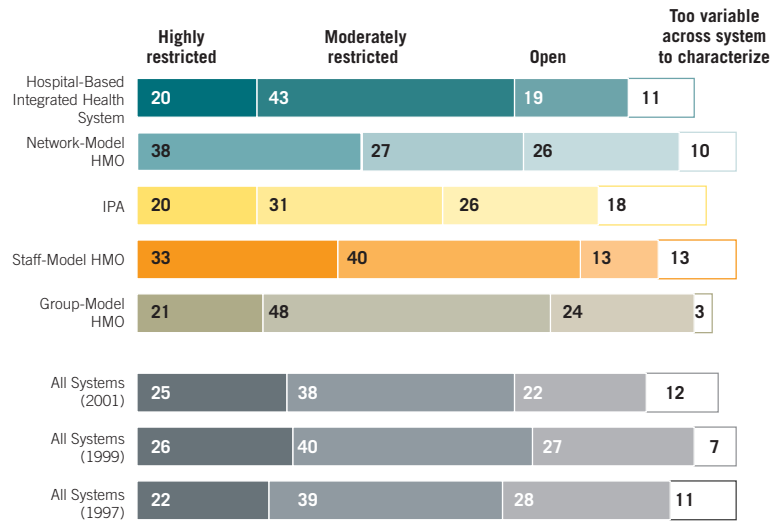
	Staff-Model HMO	Group-Model HMO	IPA	Network-Model HMO	Hospital-Based Integrated Health System	Overall
Able to fill vacant pharmacy positions	29%	8%	44%	36%	26%	30%
Able to offer competitive salary/benefits packages	84%	82%	74%	88%	79%	81%

trends in formulary systems

The largest percentage of respondents in 2001 (38%) reported operating “moderately restricted” formularies (**Figure 5**). Sixty-three percent of respondents reported a common formulary across their system for ambulatory patients. This was a slight decrease from earlier surveys (66% in 1999 and 67% in 1997).

Figure 5

Formulary Restrictiveness



delivery of ambulatory care pharmacy services

All five types of systems delivered pharmacy services in multiple sites (**Figure 6**). Inhouse pharmacies remained the most widely used point of access; however, the overall percentage of respondents offering services from this type of site dropped from 67% to 55% between 1999 and 2001. Thirty-nine percent of respondents offered pharmaceutical services through a PBM-managed network; this was

down 10 percentage points from 1999. Of those that offered services through a PBM, most continued to do so through an external entity.

Overall, PBM-managed networks remained the most widely used means of delivering pharmaceutical services to patients, and mail order was the least-used mechanism (**Figure 7**).

Figure 6

How Ambulatory Care Pharmaceutical Services Are Delivered

The percent of respondents offering in-house pharmacy services dropped to 55%, from 67% in 1999.

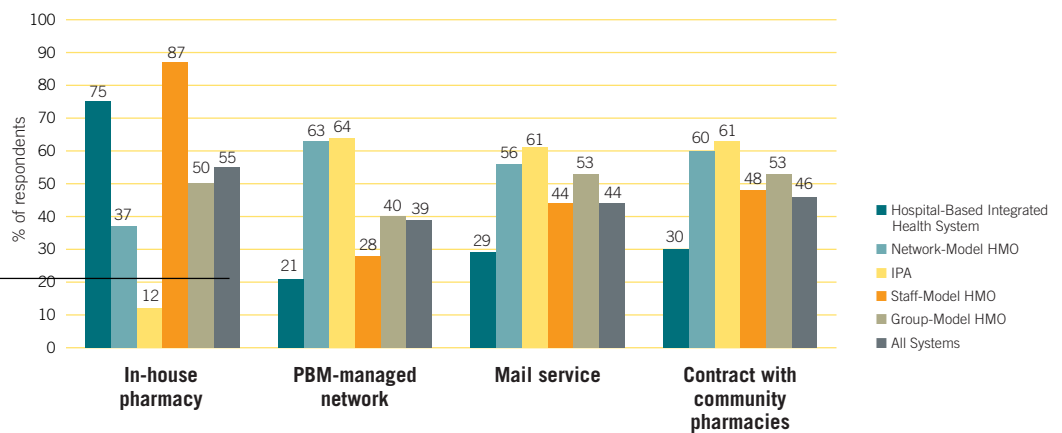
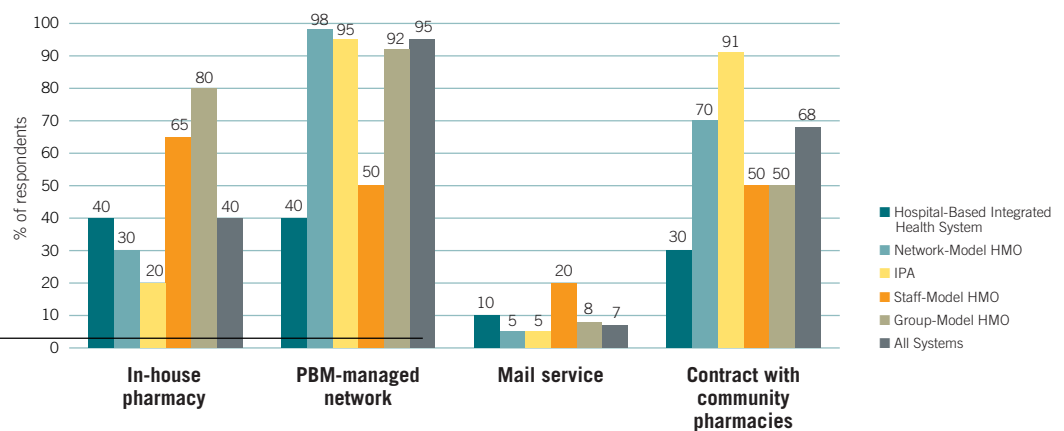


Figure 7

Mechanisms Through Which Patients Receive Pharmaceutical Services

PBM-managed networks remained the most widely used means of delivering services.



functions of ambulatory care pharmacists

Overall Functions

Respondents were asked to report the relative percentages of time that pharmacists devote to distributive, clinical, and administrative activities. Results of the 2001 survey by system type are shown in **Figure 8**, and trends in these three activities since 1997 are depicted in **Figure 9**.

Overall, pharmacists spent slightly less than half their time (45%) on distributive functions. This activity differed by system type. Staff-model, group-model, and hospital-based pharmacists spent more than 50% of their time on distribution; IPA pharmacists spent only 19%. For clinical activities, the mean percentage of time spent was 28%, a decrease from both 1999 (34%) and 1997 (30%). Percentage time spent in clinical activity decreased in all system types since 1999. Substantial differences were again noted in time devoted to administrative duties, which ranged from 7% in staff-model HMOs to 40% in IPAs.

Specific Ambulatory Care Functions

Pharmacist Functions in Ambulatory Care. Each of the reports in this series has explored in depth a set of specific functions performed by ambulatory care pharmacists. **Table 2** lists these functions by rank order of their presence as a routine function in 2001 and compares the extent to which each function was routinely performed over all three surveys.

The 2001 survey revealed a widespread contraction in functions: 20 of 24 functions decreased from 1999, and in some cases, 1997 levels. Decreases were greatest in negotiating pharmaceutical contracts (-28%), administering immunizations (-27%), and providing immunization screening (-24%).

The greatest area of growth by far was in pharmacist participation in at least one type of specialized clinic. This function rose from 38% to 67% between 1999 and 2001. **Table 3** explores this growth in detail. It reveals routine involvement of pharmacists in nine types of specialized clinics, as

Figure 8

Allocation of Ambulatory Care Pharmacists' Time by System Type

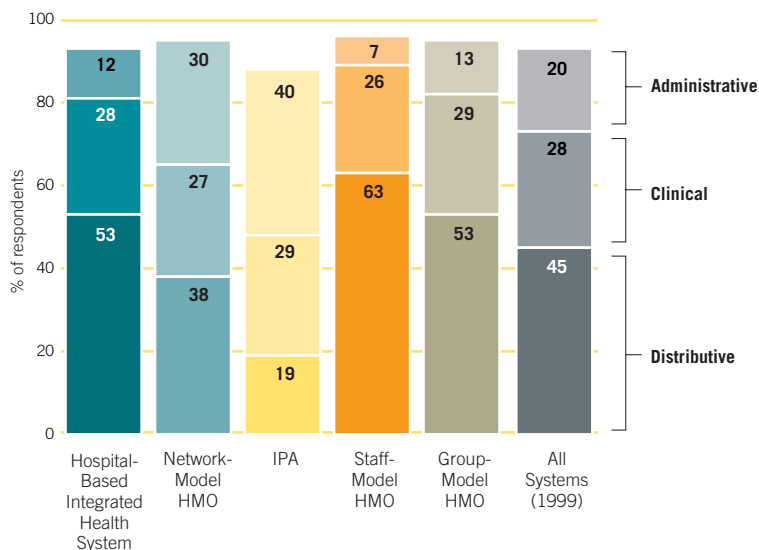


Figure 9

Trends in Allocation of Ambulatory Care Pharmacists' Time, All Systems

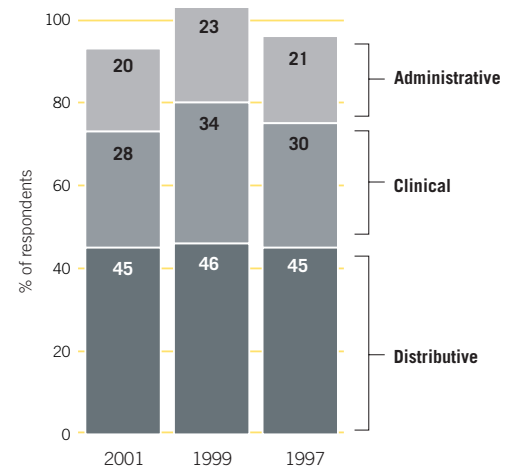


Table 2

Routine Performance of Ambulatory Care Pharmacist Functions

Function	2001 SURVEY						2001 Survey All Systems (%)	1999 Survey All Systems (%)	1997 Survey All Systems (%)
	Staff-Model HMO (%)	Group-Model HMO (%)	IPA (%)	Network-Model HMO (%)	Hospital-Based Integrated Health Care System (%)	n			
Tracking adverse drug reactions	75	83	59	67	81	367	74	79	81
Providing written information with each new prescription	87	90	44	67	79	357	73	75	75
Monitoring compliance with medication use	78	70	68	78	68	362	72	73	78
Participating in medication errors reduction program	87	68	44	64	76	353	69	NA	NA
Using pharmaco-economic data for making formulary decisions	71	76	75	74	61	364	68	82	76
Conducting medication management programs (DUR/DUE)	62	93	63	78	63	361	69	81	76
Providing oral counseling with each new prescription	87	72	35	63	78	356	68	72	75
Conducting specialized clinics						367	67	38	33
Monitoring patient outcomes	62	63	60	65	64	366	64	73	71
Conducting wellness and preventive health programs	52	72	52	63	48	360	54	61	58
Conducting academic detailing	52	62	54	63	37	354	49	57	56
Providing physician profiling or report cards	59	56	68	66	27	356	47	59	55
Making pharmaceutical decisions for large populations based upon pharmacoepidemiology	52	43	61	53	32	357	43	51	49
Designing pharmacy benefits	42	63	63	63	24	357	43	51	47
Negotiating pharmaceutical contracting	52	48	45	47	37	358	42	58	50
Providing information and/or consulting through a call center	40	56	39	49	32	350	39	36	NA
Determining patients' use of herbal products and dietary supplements	43	38	19	34	48	350	40	33	NA
Writing medication orders	53	34	7	26	47	351	36	39	35
Preparing home infusion medications	48	44	22	34	34	352	34	41	40
Collecting HEDIS data	27	52	65	47	17	336	35	45	45
Dispensing emergency contraceptives	43	31	19	27	24	345	26	28	NA
Having prescribing authority	39	18	2	12	26	350	20	21	16
Immunization screening	25	19	16	22	17	347	19	25	NA
Providing Internet prescription service	14	32	20	19	4	351	13	5	NA
Administering immunizations	14	12	2	9	8	347	8	11	NA

n = Number of systems responding to question.
 % = Percentage of systems reporting routine performance of function.
 NA = Not applicable (function not assessed in 1999 or 1997 survey).

well as in other clinic types that were added by respondents. Anticoagulation and oncology clinics were reported most frequently (39% each); clinics for patients with diabetes ranked a close second (36%). Staff- and group-model HMOs offered clinics more often than did the other three systems types. IPAs offered them the least.

In another new area of focus, 69% of respondents reported pharmacist participation in medication error reduction programs, placing this function as the fourth most prevalent activity in the 2001 survey. Routine pharmacist involvement in disease management protocols and treatment guidelines increased, as did providing Internet prescription services and determining patients' use of herbal

products and dietary supplements. Some of this growth was not unexpected, given that many 1999 survey respondents reported they were planning to implement such activities within the next 12 months. For example, 18% of 1999 respondents said they planned to expand specialized pharmacy-managed clinics.

A key ingredient in enhancing many ambulatory care functions is provision of dedicated space and mechanisms for reimbursement. Both of these areas were explored for the first time in 2001. Forty-seven percent of respondents reported having separate patient assessment and counseling areas, and 27% said they had a mechanism for reimbursement or compensation for ambulatory care pharmacy services.

Table 3

Percentage of Pharmacists Working in Specialized Clinics, by System Type

Type of Clinic	All Systems		Staff-Model HMO		Group-Model HMO		IPA		Network-Model HMO		Hospital-Based Integrated Health Care System	
	n	%	n	%	n	%	N	%	n	%	n	%
At least one specialized clinic	367	67	32	81	30	87	57	42	80	49	168	77
Anticoagulation	359	39	31	52	29	48	56	12	75	29	168	49
Oncology	358	39	32	59	28	46	55	18	76	24	167	48
Diabetes	358	36	31	48	30	50	56	23	75	28	166	39
Primary care or family practice	358	33	31	52	28	46	56	21	77	22	166	37
Cardiac or hypertension	352	25	29	38	27	37	56	14	75	17	165	27
Asthma or pulmonary	359	20	31	35	30	27	57	16	76	13	165	21
HIV/AIDS	351	20	29	28	28	25	55	16	74	11	165	24
Lipid control	353	19	31	29	29	41	55	7	74	12	164	20
Smoking cessation	355	19	30	27	30	27	56	7	75	16	164	21
Other	349	17	28	29	27	30	55	5	77	10	162	21

N = number of systems responding to question.

% = percentage of systems reporting pharmacist involvement in the type of clinic specified.

"Other" clinics included geriatrics, psychiatry, transplant, infectious disease, and pain management.

impact of enabling factors on ambulatory care pharmacists' functions

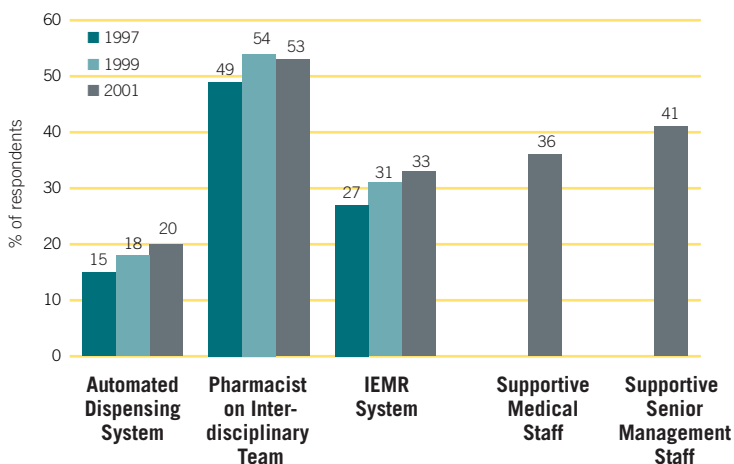
As had its predecessors, the 2001 survey sought to determine the impact of five enabling factors on pharmacist activities. These factors, seen as features that would be likely to facilitate pharmacist participation in ambulatory care, were as follows:

- Presence of an integrated electronic medical records (IEMR) system
- Availability of an automated dispensing system for ambulatory care prescriptions
- Pharmacist participation on multidisciplinary care teams
- Support from medical staff
- Support from senior management staff

The 2001 survey again explored the presence of these factors in the responding systems and sought to determine any relationships between these factors and ambulatory care pharmacist activity.

Figure 10 shows trends in the five enabling factors over 1997–2001. All five factors showed modest growth or maintenance during this period.

Figure 10
Trends in Enabling Factors 1997–2001



Note: Data on supportive medical staff and senior management staff not collected in comparable form in 1997 or 1999.

Impact of Enabling Factors on General Pharmacist Functions

Figure 11 shows the relative amount of time ambulatory pharmacists spent on distributive, clinical, and administrative responsibilities in relationship to the presence or absence of IEMR systems, pharmacist participation on interdisciplinary teams, and use of automated dispensing systems. It indicates that

- Respondents from systems where pharmacists participated on interdisciplinary teams spent relatively less time on distributive and more time on clinical activities.
- As in 1999, the presence of automated dispensing systems was associated with increased time spent in distributive and clinical functions and decreased time spent in administrative functions.
- Respondents with IEMR systems spent relatively more time on distributive functions and less time on administrative functions. These patterns were also reported in 1999.

Figure 12 shows the relative proportions of time pharmacists spend on distributive, clinical, and administrative activities in relationship to supportive medical staff and senior management staff. The report showed that

- Levels of medical and senior management support were virtually equal across systems.
- The high level of support from the medical staff and senior management mirrored the findings of both earlier surveys.
- Higher levels of support were associated with relatively more clinical and less distributive activities.

Impact of Enabling Factors on Specific Pharmacist Functions

The survey also sought to determine the existence of relationships between each of the five enabling factors and the 24 pharmacist functions displayed in Tables 2 and 3. Results are shown in **Table 4**. The impact of an enabling factor was considered significant when it was associated with a difference of more than 10 percentage points in the routine performance of a given function. Relationships in which differences were more than 10 percentage

points are highlighted in the table. A summation of the significant relationships shows that

- 16 functions rose in systems where pharmacists were on interdisciplinary teams.
- 11 functions rose in systems with automated dispensing systems.
- 9 functions rose in systems with supportive medical staff and supportive senior management staff.
- 5 functions rose in systems with an IEMR system.

Figure 11

Percentage of Time Ambulatory Care Pharmacists Spent on Distributive, Clinical, and Administrative Responsibilities in Relationship to Presence of Enabling Factors

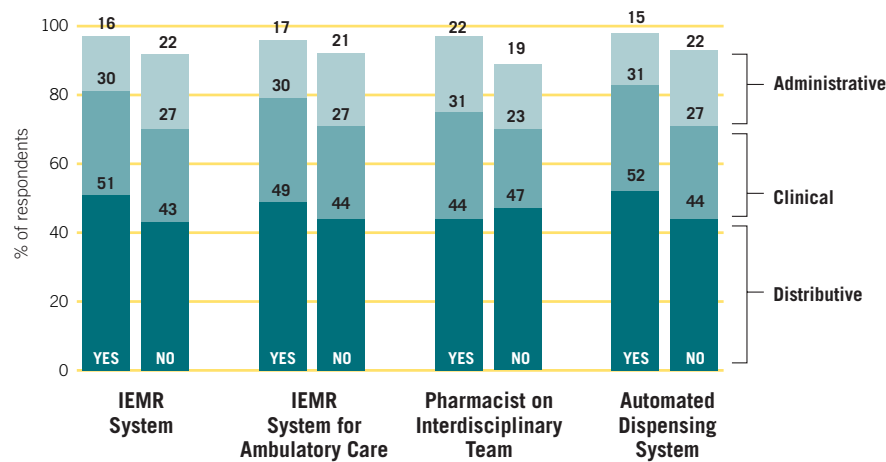


Figure 12

Percentage of Time Ambulatory Care Pharmacists Spent on Distributive, Clinical, and Administrative Responsibilities in Relationship to Presence of Support from Medical and Senior Management Staff

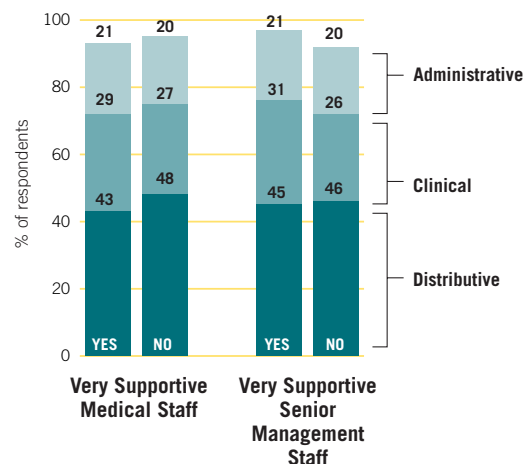


Table 4

Percentage of Respondents Reporting Routine Pharmacist Performance of Ambulatory Care Functions in the Presence or Absence of Enabling Factors

Function	Automated Dispensing System (%)		Pharmacist on Interdisciplinary Ambulatory Care Team (%)		Integrated Electronic Medical Record System (%)		Medical Staff Very Supportive (%)		Senior Management Very Supportive (%)	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Tracking adverse drug reactions	84	72	84	63	82	70	80	73	81	71
Providing written information with each new prescription	86	70	75	70	76	71	78	72	76	73
Monitoring compliance with medication use	79	70	82	59	69	71	76	72	77	71
Participating in medication errors reduction program	84	65	78	58	78	64	78	66	77	65
Using pharmacoeconomic data for making formulary decisions	76	67	76	61	68	69	75	67	75	66
Conducting medication management programs (DUR/DUE)	78	66	81	55	68	69	81	63	80	62
Providing oral counseling with each new prescription	90	64	73	63	77	64	78	66	77	65
Monitoring patient outcomes	66	63	81	44	70	60	75	59	72	59
Conducting wellness and preventive health programs	56	53	67	38	60	50	71	47	65	48
Conducting academic detailing	61	44	58	36	45	49	57	45	53	47
Providing physician profiling or report cards	42	47	53	41	42	50	51	47	51	46
Making pharmaceutical decisions for large populations based upon pharmacoepidemiology	45	42	53	33	39	45	51	40	50	40
Designing pharmacy benefits	37	44	47	39	35	47	49	41	43	44
Negotiating pharmaceutical contracting	47	41	45	40	38	44	48	40	44	41
Providing information and/or consulting through a call center	52	36	48	30	43	36	49	35	45	36
Determining patients' use of herbal products and dietary supplements	50	38	48	31	47	36	47	38	48	36
Writing medication orders	54	32	54	16	47	31	50	30	45	31
Preparing home infusion medications	31	36	39	30	35	35	42	32	39	33
Collecting HEDIS data	37	35	42	28	27	39	40	34	44	30
Dispensing emergency contraceptives	41	22	28	25	30	23	32	24	29	26
Having prescribing authority	37	16	31	7	32	14	32	14	27	16
Immunization screening	23	18	27	9	16	19	23	17	24	16
Providing Internet prescription service	20	11	15	10	14	13	14	13	16	11
Administering immunizations	12	7	12	4	12	6	9	8	10	7

patient- and population-focused functions

Beginning in 1999, the authors attempted to cluster the functions into smaller, meaningful groups for statistical analysis. In this process, two categories emerged that encompassed 16 of the original 24 functions. Based on the activities that these 16 functions described, these categories were named “population-focused” and “patient-focused.” The population-based functions describe activities related to planning or assessing care for large groups and do not address direct patient care. The patient-care functions do address direct patient care. (The remaining eight functions were statistically associated with neither group and were not analyzed further.) The population-based functions and patient-based function are listed in the sidebar below.

Continuing their analysis of these two categories, the authors in 2001 performed *t*-tests to determine whether there was a relationship between each set of functions and each of the five enabling factors.

Figure 13 depicts relationships between the population-based functions and the enabling factors, and **Figure 14** shows relationships between the enabling factors and patient-based functions. All five enabling factors were associated with significantly higher means for the patient-focused factors; this had also been true in 1999. Three of the five factors were associated with significantly higher means for the population-focused factors in 2001; in 1999, only one function had a significant association.

Figure 13

Relationship Between Enabling Factors and Mean Number of Population-Focused Functions Performed by Ambulatory Care Pharmacists

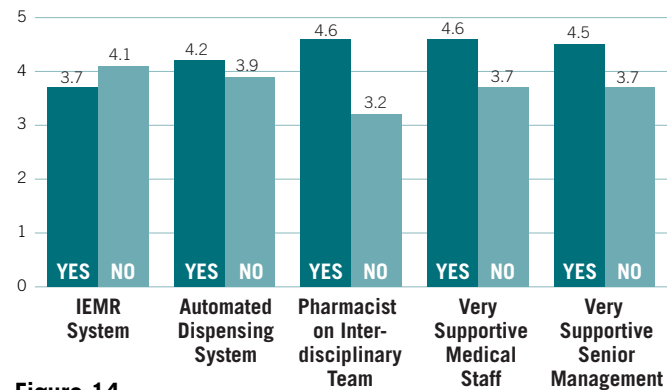
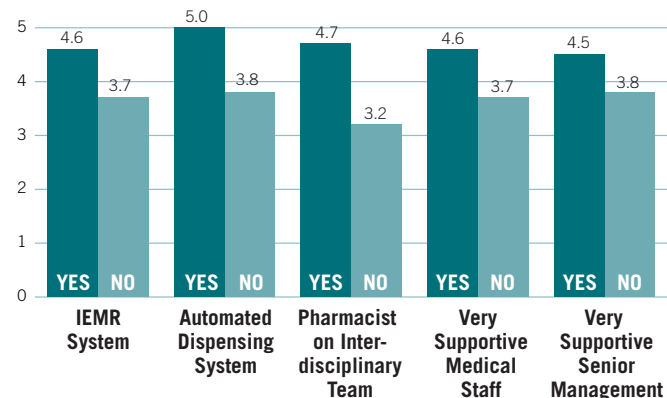


Figure 14

Relationship Between Enabling Factors and Mean Number of Patient-Focused Functions Performed by Ambulatory Care Pharmacists



Population-Based Functions

- Making pharmaceutical decisions on the basis of pharmacoepidemiology
- Conducting wellness and preventive health programs
- Using pharmaco-economic data for making formulary decisions
- Collecting Health Plan Employer Data and Information Set data
- Providing physician profiling or report cards
- Designing pharmacy benefits
- Conducting medication management programs (i.e., drug utilization review/drug use evaluation)
- Conducting academic detailing

Patient-Focused Functions

- Conducting specialized pharmacy-managed clinics
- Tracking adverse drug reactions
- Preparing home infusion medications
- Providing written information with each new prescription
- Providing oral counseling with each new prescription
- Having prescribing authority
- Determining patients' use of herbal products and dietary supplements
- Writing medication orders

measuring performance

All three surveys have explored measures that health systems use to evaluate ambulatory care pharmaceutical services. Responses to the 2001 survey are shown in **Figure 15**. As in 1999 and 1997, patient satisfaction and financial performance were the two most widely used measures of performance. Little difference was noted across systems.

A second performance-related question examined the degree to which the five performance measures drive decisions about ambulatory care pharmaceutical services. Respondents were asked to evaluate each of the performance measures on a scale of 1 (very unimportant) to 5 (very important). As shown in **Figure 16**, all five performance measures were rated above 4. Patient satisfaction and financial performance received the highest ratings. The findings are similar to those of earlier surveys.

Figure 16

Mean Relative Importance of Performance Measures in Driving Decisions About Ambulatory Care Pharmaceutical Services, All Systems

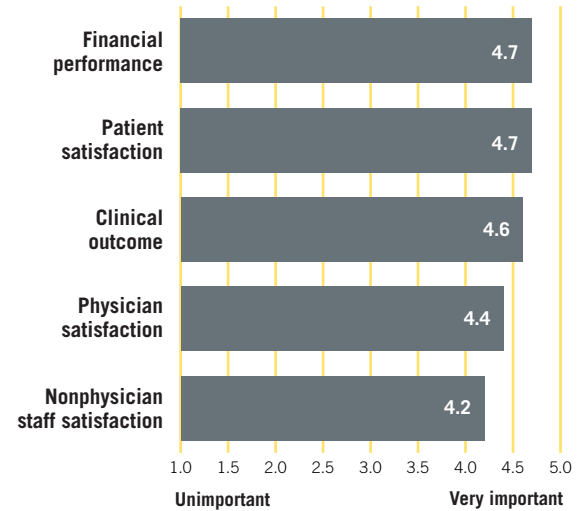
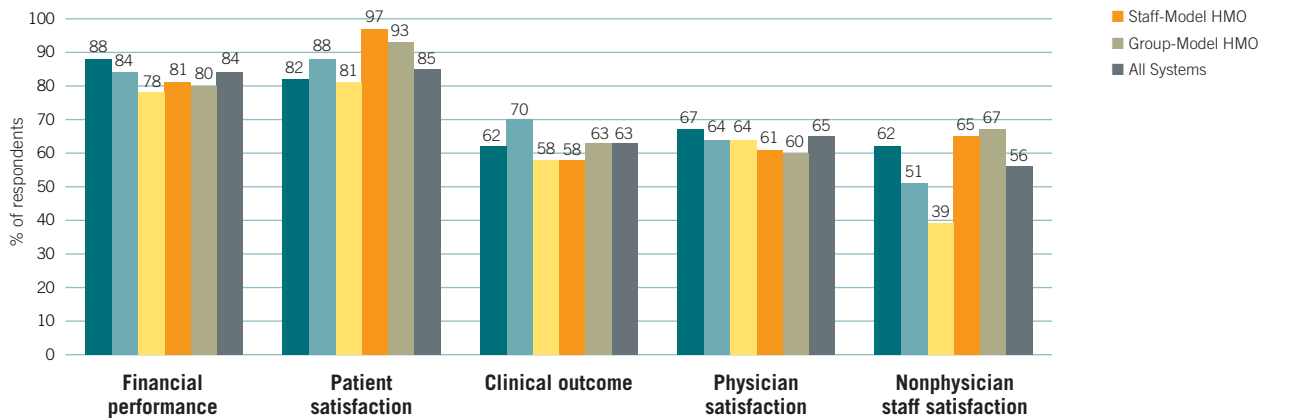


Figure 15

Use of Performance Measures to Evaluate Ambulatory Care Pharmaceutical Services



The *ASHP Survey of Managed Care and Ambulatory Care Pharmacy Practice in Integrated Health Systems—2001* validated many of the differences among types of integrated health systems revealed in 1999 and 1997. Staff-model and group-model HMOs had a larger pharmacy staff, both overall and in ambulatory care; more enabling factors; a broader scope of pharmacy functions; more specialized clinics; and more direct patient care activity. IPAs and network-model HMOs had smaller pharmacy staff, fewer enabling factors, a narrower and more administratively oriented set of pharmacist functions, less pharmacist participation in specialized clinics, and more population-focused activities. Hospital-based systems had relatively large pharmacy staffs but rather small ambulatory care staffs, intermediate levels of enabling factors and pharmacists participating in specialized clinics, and a low level of involvement in population-focused functions. As the dominant cohort in the survey, hospital-based systems strongly affected the various measures and tended as a group to have intermediate values.

The 2001 survey also showed that the enabling factors remained constant or grew since 1997 and were again associated with a broader scope of practice. Likewise, the importance of patient satisfaction and financial performance in driving decision making about ambulatory pharmacist activity was reaffirmed.

Work Environment

Since 1999, mean staff size increased by 30%. At the same time, 70% of responding systems reported that they could not find sufficient pharmacists to fill positions. The systems were having recruitment problems, despite the fact that 81% offered competitive salaries and benefits. The technician:pharmacist ratio remained at 2:1, indicating that, for a variety of possible reasons, the employment of technicians has not emerged as a significant solution to pharmacist staffing shortages.

The reasons for the growth in mean FTE staff are many. Mergers have increased the size of systems. Pharmacists are caring for more patients and filling more prescriptions. External factors, such as the publication of an Institute of Medicine report on medication error prevention, may have also been a force in this expansion.

A “Push–Pull” Phenomenon?

Growth pressures, in the context of a continuing workforce shortage, could be important factors behind three marked changes in pharmacist activity observed in the 2001 survey. The first development was a contraction in the routine performance of 20 of 24 ambulatory pharmacy functions. The second was an increase in pharmacist participation in specialized clinics and disease management programs. The third development was a decline in pharmacist time spent on clinical functions.

It may be that increases in system size and patient population, coupled with the drive for safer medication use, are fueling the creation of new pharmacy positions—positions that many systems find increasingly difficult to fill. In response, these systems may be being forced to focus on those pharmacist functions judged to be essential or to have the most value. As a result, pharmacists’ efforts may have been reallocated to support core distributive activities and programs that aid patients with chronic diseases through specialized clinics and disease management activities.

In attempting to interpret the contraction in ambulatory functions, one should also consider the possibility that pharmacists are performing the same clinical functions as they did in the past but that some of these functions are being described differently. For example, the disease management programs and specialized clinics may subsume functions formerly managed or reported individually, such as monitoring patient outcomes or participating in drug use review and drug use evaluation.

Areas of Growth

Two areas of notable growth for ambulatory care pharmacists reported in 2001 are participation in disease management programs and in specialized clinics. Other areas of expansion are providing Internet prescription services, determining the use of herbal products and dietary supplements, and providing information through a call center.

The 2001 survey also showed that 69% of integrated health systems that routinely involve pharmacists participated in medication errors reduction programs. These programs have been implemented throughout integrated health systems nationally, and pharmacists are widely present in them. This places ambulatory care pharmacists in a position to contribute to the system improvements



envisioned by the second Institute of Medicine report. With pharmacists already widely present in medication error reduction programs, the next step is for them to provide leadership in system optimization, whether this requires system redesign or incremental improvements in current systems.

Conclusion

ASHP's third biennial survey reveals that ambulatory care pharmacists are assuming a growing role in the care of patients with chronic diseases, as noted by their involvement in specialized clinics and in disease management programs. Pharmacists are widely participating in medication error reduction programs throughout the nation. They are, at the same point, showing a decline in time spent in clinical activities, as the number of prescriptions filled continues to rise. Given the increased need for clinical services from pharmacists, the ongoing shortage of these health-care professionals is a matter of serious concern. Until this problem is resolved, pharmacy managers may find themselves forced to make difficult choices concerning human resource allocation.



Function*

Function*	All Systems (%) N=67	Staff-Model HMO (%) N=2	Group-Model HMO (%) N=4	IPA (%) N=13	Network Model HMO (%) N=14	Hospital-Based (%) N=34	YOUR SYSTEM
Tracking adverse drug reactions	68	NA*	NA	50	46	82	
Providing written information with each new prescription	62	NA	NA	23	55	74	
Monitoring compliance with medication use	69	NA	NA	69	79	68	
Participating in medication errors reduction program	67	NA	NA	62	33	82	
Using pharmaco-economic data for making formulary decisions	73	NA	NA	85	86	64	
Conducting medication management programs (DUR/DUE)	67	NA	NA	69	79	62	
Providing oral counseling with each new prescription	56	NA	NA	25	33	71	
Monitoring patient outcomes	54	NA	NA	69	57	50	
Conducting wellness and preventive health programs	48	NA	NA	46	79	29	
Conducting academic detailing	42	NA	NA	46	71	26	
Providing physician profiling or report cards	50	NA	NA	69	71	32	
Making pharmaceutical decisions for large populations based upon pharmaco-epidemiology	53	NA	NA	67	64	47	
Designing pharmacy benefits	43	NA	NA	69	64	26	
Negotiating pharmaceutical contracting	38	NA	NA	38	50	33	
Providing information and/or consulting through a call center	34	NA	NA	23	46	32	
Determining patients' use of herbal products and dietary supplements	35	NA	NA	15	31	47	
Writing medication orders	29	NA	NA	0	15	41	
Preparing home infusion medications	25	NA	NA	8	38	24	
Collecting HEDIS data	27	NA	NA	54	43	10	
Dispensing emergency contraceptives	21	NA	NA	31	0	18	
Having prescribing authority	12	NA	NA	0	0	21	
Immunization screening	15	NA	NA	8	14	21	
Providing Internet prescription service	12	NA	NA	38	15	0	
Administering immunizations	6	NA	NA	0	14	6	
% reporting automated dispensing system	19	NA	NA	0	17	27	
% reporting pharmacist on interdisciplinary care team	55	NA	NA	46	46	59	
% reporting integrated electronic medical record system	32	NA	NA	23	23	35	
% reporting "Very Supportive" medical staff	38	NA	NA	42	36	42	
% reporting "Very Supportive" senior management	42	NA	NA	25	21	58	

*NA=not available; less than 5 respondents

Function ^a	All Systems (%) N=127	Staff-Model HMO (%) N=17	Group-Model HMO (%) N=11	IPA (%) N=17	Network Model HMO (%) N=26	Hospital-Based (%) N=56	YOUR SYSTEM
Tracking adverse drug reactions	79	82	82	76	65	84	
Providing written information with each new prescription	78	94	73	40	72	87	
Monitoring compliance with medication use	72	82	64	73	80	67	
Participating in medication errors reduction program	76	94	80	57	60	82	
Using pharmaco-economic data for making formulary decisions	67	50	80	67	69	69	
Conducting medication management programs (DUR/DUE)	73	59	100	67	72	74	
Providing oral counseling with each new prescription	75	88	70	37	72	85	
Monitoring patient outcomes	64	53	64	69	58	69	
Conducting wellness and preventive health programs	57	47	80	75	50	54	
Conducting academic detailing	49	25	70	67	60	42	
Providing physician profiling or report cards	49	47	56	80	67	31	
Making pharmaceutical decisions for large populations based upon pharmaco-epidemiology	41	31	56	60	50	31	
Designing pharmacy benefits	44	31	80	67	64	25	
Negotiating pharmaceutical contracting	47	50	64	47	50	41	
Providing information and/or consulting through a call center	35	24	44	43	36	35	
Determining patients' use of herbal products and dietary supplements	45	50	30	21	35	56	
Writing medication orders	34	40	20	14	24	46	
Preparing home infusion medications	38	47	44	33	37	36	
Collecting HEDIS data	35	13	62	62	43	23	
Dispensing emergency contraceptives	34	31	22	21	27	43	
Having prescribing authority	18	31	10	0	4	26	
Immunization screening	17	7	22	7	25	17	
Providing Internet prescription service	13	0	30	7	24	10	
Administering immunizations	8	20	25	0	8	4	
% reporting automated dispensing system	17	24	33	12	9	18	
% reporting pharmacist on interdisciplinary care team	51	65	50	56	50	45	
% reporting integrated electronic medical record system	36	44	30	24	20	46	
% reporting "Very Supportive" medical staff	33	41	36	24	39	31	
% reporting "Very Supportive" senior management	39	47	36	29	50	35	



Function ^a	All Systems (%) N=130	Staff-Model HMO (%) N=9	Group-Model HMO (%) N=13	IPA (%) N=24	Network Model HMO (%) N=23	Hospital-Based (%) N=61	YOUR SYSTEM
Tracking adverse drug reactions	72	78	92	48	68	78	
Providing written information with each new prescription	70	78	100	52	58	72	
Monitoring compliance with medication use	70	67	77	65	80	67	
Participating in medication errors reduction program	62	78	69	23	70	71	
Using pharmaco-economic data for making formulary decisions	69	89	85	74	82	55	
Conducting medication management programs (DUR/DUE)	65	67	100	65	81	50	
Providing oral counseling with each new prescription	64	78	69	35	58	74	
Monitoring patient outcomes	67	78	85	48	71	67	
Conducting wellness and preventive health programs	52	62	62	39	60	52	
Conducting academic detailing	47	67	67	41	60	37	
Providing physician profiling or report cards	42	67	54	52	57	25	
Making pharmaceutical decisions for large populations based upon pharmacoepidemiology	44	78	38	65	57	26	
Designing pharmacy benefits	42	56	64	52	68	21	
Negotiating pharmaceutical contracting	43	67	38	45	55	34	
Providing information and/or consulting through a call center	44	43	69	43	62	32	
Determining patients' use of herbal products and dietary supplements	38	25	54	19	32	46	
Writing medication orders	37	67	38	5	16	51	
Preparing home infusion medications	35	62	38	23	25	38	
Collecting HEDIS data	39	56	64	70	44	15	
Dispensing emergency contraceptives	21	62	33	13	37	11	
Having prescribing authority	21	44	23	5	16	25	
Immunization screening	22	71	15	22	35	12	
Providing Internet prescription service	11	25	31	17	14	0	
Administering immunizations	9	12	0	5	16	11	
% reporting automated dispensing system	19	44	23	9	18	19	
% reporting pharmacist on interdisciplinary care team	53	67	62	46	48	54	
% reporting integrated electronic medical record system	33	33	38	9	10	50	
% reporting "Very Supportive" medical staff	34	33	67	35	43	25	
% reporting "Very Supportive" senior management	44	33	50	39	43	47	

Function ^a	All Systems (%) N=52	Staff-Model HMO (%) N=4	Group-Model HMO (%) N=2	IPA (%) N=7	Network Model HMO (%) N=20	Hospital-Based (%) N=19	YOUR SYSTEM
Tracking adverse drug reactions	75	NA*	NA	67	80	79	
Providing written information with each new prescription	80	NA	NA	75	75	84	
Monitoring compliance with medication use	78	NA	NA	67	74	79	
Participating in medication errors reduction program	69	NA	NA	60	83	58	
Using pharmaco-economic data for making formulary decisions	65	NA	NA	83	65	53	
Conducting medication management programs (DUR/DUE)	72	NA	NA	33	84	74	
Providing oral counseling with each new prescription	77	NA	NA	50	74	79	
Monitoring patient outcomes	68	NA	NA	67	74	68	
Conducting wellness and preventive health programs	60	NA	NA	50	74	53	
Conducting academic detailing	61	NA	NA	83	65	42	
Providing physician profiling or report cards	55	NA	NA	100	70	16	
Making pharmaceutical decisions for large populations based upon pharmacoepidemiology	36	NA	NA	33	42	21	
Designing pharmacy benefits	45	NA	NA	83	55	21	
Negotiating pharmaceutical contracting	37	NA	NA	50	35	37	
Providing information and/or consulting through a call center	46	NA	NA	50	53	26	
Determining patients' use of herbal products and dietary supplements	37	NA	NA	25	37	37	
Writing medication orders	47	NA	NA	20	47	47	
Preparing home infusion medications	37	NA	NA	25	37	37	
Collecting HEDIS data	41	NA	NA	80	55	22	
Dispensing emergency contraceptives	26	NA	NA	0	35	21	
Having prescribing authority	33	NA	NA	0	26	42	
Immunization screening	20	NA	NA	40	11	21	
Providing Internet prescription service	20	NA	NA	20	21	11	
Administering immunizations	8	NA	NA	0	0	16	
% reporting automated dispensing system	32	NA	NA	0	21	32	
% reporting pharmacist on interdisciplinary care team	59	NA	NA	57	53	53	
% reporting integrated electronic medical record system	30	NA	NA	33	11	37	
% reporting "Very Supportive" medical staff	42	NA	NA	33	25	50	
% reporting "Very Supportive" senior management	40	NA	NA	50	35	33	



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