FLEETWOOD PHASE II

TESTS A NEW MODEL OF LONG-TERM CARE PHARMACY

INCREASED INPUT INTO CLINICAL DECISION-MAKING, LESS TIME ON DRUG REGIMEN REVIEW AND MORE TIME FOR CLINICAL INTERVENTION, ENHANCED PATIENT AND FAMILY INTERACTION, PHARMACY WORKFLOW EFFICIENCIES, IMPROVED COMMUNICATION, AND GREATER JOB SATISFACTION HIGHLIGHT THE POSITIVE OPERATIONAL CHANGES DOCUMENTED IN THE FLEETWOOD PROJECT'S PHASE II FEASIBILITY STUDY OF A NEW MODEL FOR LONG-TERM CARE PHARMACY.

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In 1995, ASCP launched the Fleetwood Project—a landmark, three-phase initiative to demonstrate the value of consultant pharmacist services. Funded by the ASCP Research and Education Foundation through contributions from ASCP members, pharmacy providers, and pharmaceutical companies, the Fleetwood Project is the most important research initiative ever undertaken on behalf of consultant pharmacy practice.

Fleetwood Phase I was the first pharmacoeconomic study to quantify the cost of medication-related problems in U.S. nursing facilities. The study found that consultant pharmacist-conducted drug regimen review improves optimal therapeutic outcomes by 43% and saves $3.6 billion annually in costs from avoided medication-related problems.[1]

This article presents the operational findings of the Fleetwood Project Phase II feasibility study, which demonstrated that a new model of pharmaceutical care for nursing facility residents at highest risk for medication-related problems could be successfully integrated into long-term care pharmacy practice. Most importantly, the new model enables the pharmacist to play a much more active role in patient care through greater interaction with other members of the interdisciplinary team, the patients and their families. A future article will describe the study design, data collection, statistical analysis, and questions for future research.

THE FLEETWOOD MODEL: RE-ENGINEERING PHARMACY PRACTICE

Fleetwood Phase II is a feasibility study of a new model for long-term care pharmacy, which includes prospective drug-regimen review, direct communication with the prescriber, pharmacist assessment of the patient, and formalized pharmaceutical care planning for elderly persons at highest risk for medication-related problems.[2]

Fleetwood Phase II is of critical importance to the pharmacy profession because it demonstrates that a new model (Fleetwood Model) of care can be introduced into practice—a model that is focused on the *patient* (rather than the patient's drug regimen alone). The Fleetwood Model represents a

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FLEETWOOD

PHASE II

THE FLEETWOOD MODEL REPRESENTS A PATIENT CARE PROCESS IN WHICH THE PHARMACIST PROVIDES PHARMACEUTICAL CARE TO IDENTIFY, RESOLVE, AND PREVENT MEDICATION-RELATED PROBLEMS.

patient care process in which the pharmacist provides pharmaceutical care to identify, resolve, and prevent medication-related problems.

The most important operational findings from implementation of the Fleetwood Model are described below.

- The consultant pharmacist, internal (i.e., dispensing) pharmacist, and even the pharmacy technicians shifted their focus from the *drug* to the *patient*. This greater sense of connection to patients led to enhanced job satisfaction.
- The internal pharmacists became more confident in their clinical skills and knowledge and more involved with clinical decision-making. Actual and potential medication-related problems were handled prospectively by the internal pharmacist prior to dispensing medications.
- The consultant pharmacist (i.e., external pharmacist) spent less time on traditional retrospective drug regimen review and more time on patient assessment, clinical interventions, pharmaceutical care planning, involvement with residents and their families, and interaction with the interdisciplinary team.
- Physicians and nursing staff viewed the consultant pharmacist as a more integral member of the interdisciplinary care team and recognized the valuable contributions of the consultant pharmacist regarding medication information, clinical expertise, and positive impact on drug therapy. The consultant pharmacist was called on to assist in clinical decision-making for high risk residents, including selection of appropriate therapies and participation in care planning. Over time the consultant pharmacist was increasingly consulted about drug therapy for all residents, not just those identified as high risk.
- The consultant pharmacist spent more time in direct contact with the residents and their families, which involved patient interviews and assessments, education on medication therapy, and discussion of alternatives to optimize drug therapy and improve patient outcomes. This interaction was often the most significant factor in successfully making changes in drug therapy.
- Communication among the pharmacy staff, and between the pharmacy and physicians and the nursing facilities improved greatly.
- Procedures allowing nurses to take orders from the pharmacist were implemented to support direct communication between the prescriber and the pharmacist.
- All pharmacists documented patient care recommendations, which were accessible to all staff.
- Pharmacy workflow was studied and many processes were streamlined for efficiency and duplicate steps eliminated. The workflow changes needed to implement the Fleetwood Model did not require additional personnel in the long-term care pharmacy.

FLEETWOOD PHASE II: BACKGROUND AND IMPORTANCE

Fleetwood Phase I found that consultant pharmacist-conducted retrospective drug regimen review improves optimal therapeutic outcomes by 43% and saves $3.6 billion annually in costs from avoided medication-related problems. In spite of the cost savings from retrospective drug regimen review, for every dollar spent on medications in nursing facilities, two dollars are spent treating medication-related problems.[1]

The question then raised is, could a different, yet feasible, model of care reduce medication-related problems and their resultant costs even further? This was the question tackled by the Fleetwood Project advisory board.

The Fleetwood Project Technical Advisory Group (TAG)—which included representatives from consultant pharmacy practice, geriatric medicine, geriatric pharmacy, nursing, health economics and health services research, and long-term care pharmacy providers—met in 1997 to develop the "intervention" to be studied in Fleetwood Phase II. The goal was to develop a model that could be operationalized in the "real world" of pharmacy, and that relied on the skills and knowledge of pharmacists currently practicing in long-term care.

The TAG identified the following fundamental hypotheses and assumptions at the outset, which served as a guide for the development of the Fleetwood Model:

Transaction-Related Payment for Pharmacist Services Is Unlikely. The underlying hypothesis for the Fleetwood Project is that routine payment for transaction-related pharmacist services (i.e., payment linked with dispensing a drug) is unlikely, and that payment will only occur when substantial cost savings or cost avoidance can be demonstrated. The TAG recognized that the Fleetwood Model must represent an intervention most likely to have the greatest impact on costs and outcomes.

Targeting Patients at Highest Risk for Medication-related Problems Achieves the Most Benefit. Not all patients will experience preventable medication-related problems that result in costly negative outcomes. It is difficult to demonstrate the value of consultant pharmacist interventions in avoiding negative outcomes and the associated costs when looking at the entire nursing facility population. In addition, it may not be feasible or reasonable to provide pharmaceutical care to all patients receiving medications, nor are payers likely to pay for this level of pharmacist services for all patients. Focusing on patients at highest risk for medication-related problems that result in the most costly negative outcomes allows pharmacists and other health care professionals to more efficiently and economically focus their attention on patients with the greatest need.

The first step in Fleetwood Phase II was the identification of factors that place frail, elderly nursing facility residents at high risk for medication-related problems (Table 1). The study was conducted by Joseph Hanlon, PharmD, Duke Center for the Study of Aging and Human Development, and published in the October 1997 issue of this journal.[3]

Intervention Must be Prospective Rather than Retrospective. The TAG believed that physicians are more likely to accept pharmacist recommendations if they are made before therapy is initiated. Therefore, the Fleetwood Model incorporates prospective review by the pharmacist to identify potential medication-related problems before the medication is dispensed. The prospective intervention will be more likely to demonstrate an impact on patient outcomes and costs through the avoidance of medication-related problems.

The Pharmacist Must Communicate Directly with the Prescriber. The intervention will be more effective if the pharmacist communicates directly with the physician—rather than communicating through a nurse—to discuss the pharmacist's recommendations to resolve actual or potential medication-related problems. This operationalizes the assumption that physicians are more likely to respond to recommendations for changes in therapy before therapy has been initiated.

Intervention Must Include Patient Assessment and Formalized Pharmaceutical Care Plan. Assessment of the patient by the consultant pharmacist provides an opportunity to glean information that might not be found in the medical record and to monitor changes in patient status over time. Direct contact with the patient also builds the foundation for a mutually beneficial professional relationship among the pharmacist, the patient, and the patient's family.

In addition, a system must be in place for the timely sharing of information with other individuals involved in the patient's care. The pharmaceutical care plan—a written, individualized, comprehensive plan of care, which includes the patient's medical condition(s), goals of therapy, actual or potential medication-related problems, interventions to resolve or prevent medication-related problems, and follow up plan and evaluation of actual patient outcomes—provides this mechanism.

Focus on Most Costly Negative Outcomes. In order to demonstrate the greatest impact on health care costs, the feasibility study should attempt to evaluate the effect of the intervention on the most costly negative outcomes due to medication-related problems. Information on these outcomes must be readily available; the Minimum Data Set was determined the most feasible source of this information.

Figure 1 is a schematic of the Fleetwood Phase II intervention that incorporates the components of the Fleetwood Model: (1) screen for high risk patients; (2) prospective

medication review; (3) pharmacist intervention and direct communication with the prescriber to resolve medication-related problems; (4) patient assessment by the consultant pharmacist; and (5) formalized pharmaceutical care planning.

Operational Implementation of the Fleetwood Model

The Fleetwood Phase II feasibility study was conducted in cooperation with Vitalink Pharmacy Services at a Vitalink pharmacy in Appleton, Wisconsin. The pharmacy serviced approximately 1,000 beds with three full-time pharmacists (one of whom was the consultant pharmacist), eight technicians, one nurse consultant, and two drivers. The study sites were six nursing facilities serviced by the Vitalink Appleton pharmacy: three intervention facilities, and three comparison facilities. Vitalink provided corporate liaisons to ensure that the pharmacy had access to resources needed for implementation of the Fleetwood Model.

Prior to implementation, the following tasks had to be addressed and accomplished:

- Define functional requirements for software
- Map current workflow, identify areas impacted by Fleetwood Model, design new workflow to incorporate Fleetwood Model
- Develop communication plan for key audiences (nursing facility staff, attending physicians, corporate and field pharmacy staff)
- Develop training program for pharmacy clinical and support staff, nursing facilities, and physicians

Software Requirements

Preliminary system specifications to accommodate the Fleetwood Model were identified by Vitalink and ASCP Foundation staff. It was initially planned to automate not only the high risk screening and tracking, but also the documentation using standard National Council for Prescription Drug Programs (NCPDP) codes. Preliminary plans also included the integration of the separate systems for dispensing and consulting to enable uploading and downloading across systems and allow for shared data between the internal pharmacists and consultant pharmacists in the field.

In the end, not all specifications could be incorporated prior to beginning the study. Careful consideration was given to what items *must* be automated, as it was was important to start with manageable tasks to avoid making automation overwhelming. Vitalink Pharmacy Services programmed its computer system to accomplish three basic tasks: (1) screen the drug regimen of the residents in the six study facilities against the identified risk factors; (2) flag high-risk residents so the pharmacist could review new orders prior to processing; and (3) track high-risk residents. If a resident screened as high risk, the technician was unable to continue

Table 1. Risk Factors for Medication-Related Problems Among Elderly Nursing Facility Residents

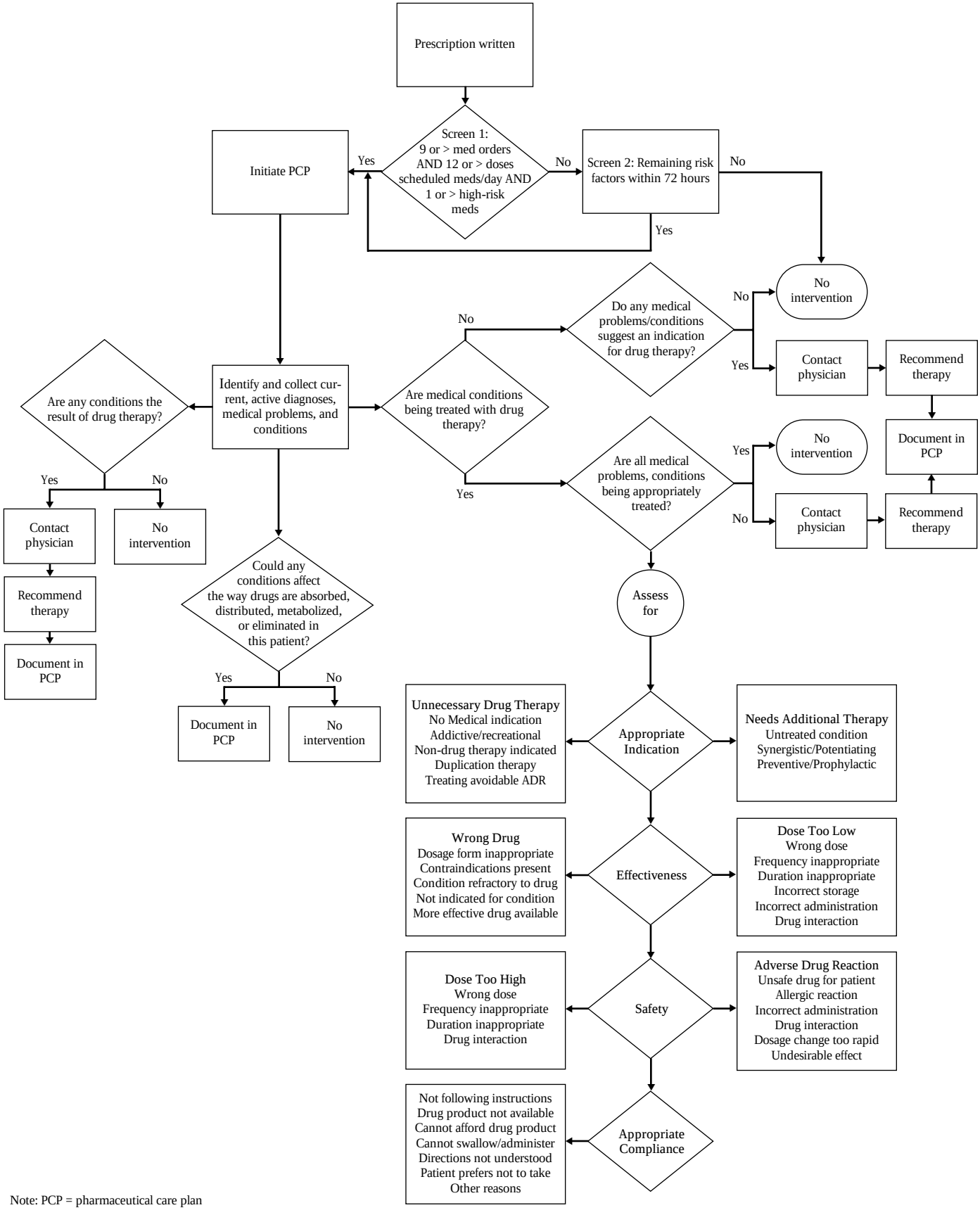
Specific Medication
Digoxin
Warfarin
Lithium
Theophylline
Chlorpropamide
Glyburide

Patient Characteristics
Number of chronic health diagnoses (> 6)
Number of doses of medications per day (> 12)
Recent transfer from hospital
Advanced age (> 85)
Prior adverse drug reaction
Cancer
Depression
Low body weight or body mass index (< 22kg/m^2)
Six or more medications
Nine or more medications
Cognitive impairment including dementia
Decreased renal function (estimated creatinine clearance < 50mL/min)

Class of Medications
Anticonvulsants
Antiarrhythmics
Antipsychotics
Antidepressants
Sedative/hypnotics
Benzodiazepines
Histamine$_2$-antagonists
Nonsteroidal anti-inflammatory drugs
Anticholinergics
Angiotensin converting enzyme inhibitors
Diuretics
New prescription for antibiotic
Narcotic analgesic

Source: Fouts M, Hanlon J, Pieper C et al.[3]

FIGURE 1. FLEETWOOD PHASE II INTERVENTION



Note: PCP = pharmaceutical care plan

filling the order until the pharmacist was notified and took action; the technician could not override the high risk alert.

Vitalink worked closely with the pharmacy system software vendor to determine a development plan and timeline to incorporate the requirements. Vitalink recognized the importance of getting an understanding from the software vendor of the impact of rules-based screening of all orders in real time. Vitalink chose to program a simple rules-based screening (if # > y = high risk) using a front-end process, in a format that did not slow the system down. The merits of using front-end screening or back-end data repository systems versus building components into the actual operating system were carefully considered.

For the Fleetwood Phase II study, a convenience sample of 13 of the risk factors identified in the previous work by Hanlon et al.[3] were programmed into the computer system:

- Specific medications—digoxin, warfarin, and lithium
- Medication classes—anticonvulsants, antipsychotics, sedative/hypnotics, benzodiazepines, anticholinergics, and narcotic analgesics
- Patient characteristics—six or more chronic health conditions, nine or more scheduled medications, more than 12 doses of scheduled medication per day, low body weight or body mass index ($<22 kg/m^2$).

The other factors in the risk model were not included either because of a low prevalance of use (e.g. chlorpropamide, glyburide, theophylline); a high incidence (e.g., age > 85 years, cognitive impairment, decreased renal function); or lack of access to the needed data (prior adverse drug reaction, recent transfer from hospital).

Patients were deemed at high risk if they had four or more of the above mentioned criteria. The number was based on a preliminary screen of residents in one nursing facility, which indicated approximately 30% of residents would screen high risk. The screen was conducted with every medication transaction (new order, changed order, discontinued medication). Patients could move into or out of the high risk category if changes occurred in their health condition and/or medication therapy.

The system generated logs of all high risk patients, the factors placing them at high risk, and a description of each action or event that altered risk status (including entering and exiting high risk status). Log codes described the transaction type that took place; for example, a new drug added, diagnosis count changed, patient discharged.

The system provided an "alert" and prevented order entry from proceeding when a resident triggered high risk; it did not allow for technician override. This feature enhanced efficiency; prescription orders would not be filled that might later be changed or discontinued based on the pharmacist's recommendation.

Pharmacy Workflow Prior to Implementation

The first step in mapping out the current workflow was to understand how prescription orders currently flowed through the system, including at what point pharmacists reviewed the orders for clinical appropriateness, and what the process was for contacting physicians when potential clinical problems were identified.

Mapping out the workflow uncovered several opportunities to gain efficiency, primarily by decreasing the amount of "rework" that occurred. For example, several staff could be working on prescription orders for the same patient. As a result, different pharmacists and/or techicians could call the nursing facility regarding issues related to the same resident rather than making one call regarding all issues related to the resident's orders. Mapping the workflow made the pharmacists recognize the importance of documentation, such as conversations with physicians, in improving communication among pharmacy staff and between the pharmacy and the nursing facility.

It also became clear that pharmacy technicians notified pharmacists of computerized alerts, such as drug interactions, in many different ways: some technicians would verbally tell the pharmacist at the point the warning appeared on the computer screen; others would process the order and write a note on the order related to the computerized warning. In addition, documentation of the process

for considering the resident-specific consequences of the "warning" was often difficult to find, and if found, was difficult to interpret.

Workflow Changes Required for the Fleetwood Model

The next step was to map out the workflow process required to implement the Fleetwood Model and compare it to existing workflow in the pharmacy. This step was necessary in order to give management an idea of the scope of the changes needed for implementation. This process also identified important procedures required prior to implementation.

The staff pharmacists and technicians were fully involved in all aspects of restructuring the workflow, and their input was critical in the successful implementation of the required changes.

Data Collection. The high risk screen required data not routinely entered into the pharmacy system, including ICD-9 codes, diagnoses, height and weight (to calculate body mass index), and pertinent laboratory values. This information needed to be obtained from the nursing facilities in a timely manner and entered into the pharmacy system.

It was often difficult to access the data needed for the high risk screening criteria. For some residents, not all data was available to the nursing facility when the resident was admitted. Over time, communication between the nursing facility and the pharmacy improved and data was more readily obtainable. The collection of ICD–9 codes and laboratory results took a substantial collaborative effort, from both the pharmacy and the nursing facilities. Timeliness and accuracy of the information was also a potential problem. The nurse consultant was instrumental in helping obtain the data needed from the nursing facilities.

Notification of Pharmacist and Documentation of Action. Because the high-risk screen was conducted at the point of order entry, the internal pharmacists were required to review the medication regimen and, where appropriate, contact the prescriber with recommendations for changes. When a patient screened high risk, the technician was unable to proceed with order processing until the pharmacist reviewed the drug regimen and determined the need for intervention. This required a standard operating procedure for notification of the pharmacist when a patient screened high-risk, and a companion procedure for how the pharmacist evaluated and documented the high risk alert. The pharmacists documented their interventions in both the computer and in the patient's pharmaceutical care plan. This was a major change for the internal pharmacist; prior to implementation of the Fleetwood Model, the consultant pharmacist would make recommendations for changes in therapy during routine drug regimen review.

Direct Communication with Prescriber. A new policy was required to implement direct communication between the physician and the pharmacist. Many nursing facilities and pharmacists believe that a nurse must take prescription orders directly from the physician and that nurses cannot take an order from a pharmacist acting as an agent of the physician. Vitalink's legal department obtained documentation from the Nurse Practice Act in Wisconsin to prove that it was permissible for a nurse to accept an order from the pharmacist.* This process required a change in policy at the participating nursing facilities to allow the pharmacist to convey orders to the nursing staff after they had received authorization from the physician. It was important for the facility medical director to understand the importance of direct communication between the pharmacist and physician, which was critical to getting their support of any changes required.

Physicians appreciated this change in communication because it eliminated an extra step in the process of resolving medication-related questions; there was no longer a need to speak with the pharmacist then call the nursing facility with an order.

Communication Plan for Key Audiences

Communication with key audiences is critical when changes in business and practice are made. It is important to consider how each player may view the change, their concerns, informa-

* Nurse Practice Acts vary from state to state; refer to your state's Nurse Practice Act to determine if a nurse is allowed to accept prescription orders from a pharmacist after the pharmacist obtains authorization from a physician.

THE FLEETWOOD PHARMACIST DISCUSSED APPROPRIATE DRUG THERAPY AND EDUCATED RESIDENTS AND FAMILY MEMBERS ABOUT ALTERNATIVES THAT COULD OPTIMIZE DRUG THERAPY AND IMPROVE RESIDENT OUTCOMES. THIS INTERACTION WAS OFTEN THE MOST SIGNIFICANT FACTOR IN SUCCESSFULLY MAKING CHANGES IN DRUG THERAPY.

tion they need to know, expectations of them, and the benefits to them and their patients.

Early in the project, prior to implementation, the principal investigators from the University of Minnesota, ASCP Foundation staff, and two corporate liaisons from Vitalink Pharmacy Services met with the Appleton pharmacy staff to reinforce the value of the Fleetwood Phase II study, the importance of staff understanding and participation, and to answer questions. The investigators provided an overview of the study design and data to be collected, and discussed the relevance of the research. The investigators, ASCP Foundation staff, and Vitalink personnel also visited with key staff at one of the study nursing facilities.

These meetings reinforced the importance of the study and fostered pharmacy staff active participation in the project. All staff were encouraged to share their ideas regarding implementation of the Fleetwood Model. Without the support of the entire staff, the project would not have been successful. In the end, all pharmacy staff took ownership of the project and its outcomes.

The consultant pharmacist provided several in-service programs at the study facilities prior to implementation, which described the goals of the project, new procedures that would be implemented, what additional information would be required and how the information would be used (such as laboratory data and ICD-9 codes), and the pharmaceutical care plan process. Improved patient care, more timely interventions (prospective versus retrospective), better documentation of recommendations made, and cost savings from fewer discontinued medications were emphasized in these presentations. This communication program fostered cooperation between the facility staff and pharmacy and actually resulted in a change in the way nursing staff perceived the role of the pharmacist.

A letter was sent to all attending physicians informing them of the project. The consultant pharmacist called key physicians at the study facilities and scheduled appointments to meet with them, introduce themselves, and discuss the project. One of the goals of the meetings was to obtain information about how the physician preferred to be contacted by the pharmacist (pager, telephone, or facsimile), and if they wanted the inquiries grouped by nursing facility (all their patients in a facility). Knowing how the physician preferred to be contacted was critical to ensuring effective communication. The pharmacist also explained how the physician could reach the pharmacist directly (cell phone, pager), rather than calling through the pharmacy.

TRAINING PROGRAM FOR PHARMACY STAFF

Prior to implementation, the pharmacists were somewhat apprehensive about the prospect of a re-engineered practice involving prospective intervention, direct communication with prescribers, and increased interaction with patients and families. The pharmacists recognized

that physicians might view the communication as confrontational.

Consequently, pharmacy staff developed a training component that simulated the high-risk screening process, so each employee could be trained on the new processes and develop a clear understanding of the goals of the project. The simulation provided the opportunity for all staff to experience the new processes and procedures in a less stressful (i.e., not "live") environment. The use of real case scenarios in the simulation reinforced the process of clinical review.

In addition, pharmacists were provided some training in communication, as well as reviews of specific disease states common in the geriatric population. The consultant pharmacist also attended the ASCP Research and Education Foundation's Disease Pharmacotherapy Traineeship to enhance clinical skills.

Not long after the initiation of the project, pharmacists' apprehension decreased as they gained experience in intervening prospectively before medications were dispensed, communicating directly with prescribers, and making recommendations to positively impact patient care.

How the Fleetwood Model Worked

The Fleetwood Phase II feasibility study was conducted over a six-month period, May 1 to October 31, 1998. Prior to implementation of the Fleetwood Model, pharmacy staff had difficulty conceiving that the pharmacy could be reengineered. The staff most challenged by the changes were the employees who had been in the pharmacy business the longest. They were accustomed to doing business a certain way, and had not questioned the way things were done in quite some time. To be successful at reengineering pharmacy practice, and get buy-in from the entire pharmacy team, an environment was created that allowed staff to try different approaches to move to the new model of patient care.

The first 30 days were critical; management allowed modifications to the process during this time, and the pharmacy staff was authorized to try new approaches until those that worked best were identified.

Teamwork was essential; participation of every member of the pharmacy staff was critical for the successful implementation of the Fleetwood Model. Staff was supported and acknowledged for their role in the project and their input was sought throughout the pilot study. This approach also gave staff ownership of the project and credit for its successes. By the end of the six-month pilot study, staff realized that the day-to-day workflow was more efficient; they felt their work was more important, and their job satisfaction was greater.

Prospective Review for High Risk Patients

Data entry technicians entered all medication orders in the pharmacy computer system. On the first day of high risk screening with the software, multiple high-risk alerts requiring pharmacist review were identified. The data entry technicians quickly learned that pharmacist interventions were required before order entry processing could be completed.

When a high-risk patient was identified, the data entry technician paged the "Fleetwood pharmacist to the data entry area." The pharmacist reviewed the drug regimen and evaluated the medication order for appropriateness and effectiveness. If no action was required, the pharmacist noted this within the computer system, which allowed the order processing to proceed. If an intervention was required to resolve a potential problem, a note describing the intervention was entered into the computer by the pharmacist. The intervention was also documented in the patient's pharmaceutical care plan.

The interventions of the internal pharmacist were typical of traditional drug regimen review. The difference was that these interventions were done *prospectively*, before the medications left the pharmacy. Examples of interventions included: identifying medications potentially inappropriate for use in the elderly population and making recommendations for more appropriate therapy; recommending dosage changes based on the age or renal function of the high risk resident; optimizing drug/disease therapies; and being more involved in choosing initial drug therapy for high risk residents.

No patient went without medication for an extended period of time if the medication-related problem could not be resolved immediately. Reports were generated at the end of the day to ensure that all orders were filled and that nothing was pending.

Direct Communication with Prescribers

Direct communication with physicians to resolve medication-related problems was by phone or fax, depending on the physician's stated preference. The consultant pharmacist attempted to engage in face-to-face communication with physicians whenever possible at the nursing facility. This was more successful if the physician was caring for numerous residents in the facility. The communication was made more efficient through the use of computer-generated reports listing the high-risk patients by physician. These reports allowed the consultant pharmacist to speak with the physician about all the physician's high-risk patients at once, instead of making separate phone calls regarding each high-risk patient.

Pharmaceutical Care Plan

A pharmaceutical care plan was developed for each high risk patient; the pharmaceutical care plan was included in the patient record within the pharmacy. The care plan, initiated by the internal pharmacist when a resident was identified as high risk, was an integral piece of information maintained in the pharmacy.

The pharmaceutical care plan included the following information: problem list, status assessment, therapies, goals of therapy, interventions, monitoring parameters, progress notes, and outcomes.

The consultant pharmacist expanded upon the pharmaceutical care plan by following up on the recommendations at the nursing facility and making additional recommendations as necessary. The consultant pharmacist also added progress notes to the pharmaceutical care plan as the high risk patient was tracked at the nursing facilities. The format was similar to the nursing care plan with the intention of eventually incorporating it into the overall resident plan of care at the nursing facility.

Consistent, accurate, and complete documentation in the pharmaceutical care plan was a primary goal so that any pharmacist could receive a call from a physician about a high risk patient and discuss the recommended plan of care, or review what approaches had been tried and what worked or did not work. Most of the documentation was not available prior to implementation of the Fleetwood Model. This increased documentation improved the workflow processes in the pharmacy; for example, many questions that pharmacy staff may have previously asked the nursing staff and/or physicians were already answered within the documentation in the computer and in the pharmaceutical care plan.

The pharmaceutical care plan also enabled the pharmacy to furnish more complete documentation of the clinical services provided, including the number of recommendations from both the prospective review and from traditional drug regimen review.

Patient Assessment

The consultant pharmacist visited the study nursing facilities at least weekly and whenever a high risk patient required an assessment. The consultant pharmacist discussed appropriate drug therapy and educated residents and family members about alternatives that could optimize drug therapy and improve resident outcomes. This interaction was often the most significant factor in successfully making changes in drug therapy.

Morning Review of High-Risk Patients

Every morning the pharmacists briefly reviewed the high-risk patients. The computer system generated reports identifying the high-risk residents by facility. These reports were used to assist the consultant pharmacist in planning which residents to visit and interact with on a daily basis.

Early in the project, the data entry technicians joined this review, which familiarized the technicians with the high risk patients. When orders came in for those patients, the technicians knew the orders would need to be handled differently. Often the orders were given directly to the pharmacist, and entered into the computer only after the pharmacist had reviewed and approved the

THE RE-ENGINEERING PROCESS SHIFTED THE PHARMACISTS' FOCUS FROM DISPENSING AND THE MEDICATION REGIMEN IN ISOLATION TO THE EFFECT OF THE MEDICATIONS ON THE PATIENT. THIS PATIENT-CENTERED APPROACH IS THE CORNERSTONE OF PHARMACEUTICAL CARE.

order. This process gave the technicians a greater sense of connection to the patients, which led to increased job satisfaction.

Weekly Clinical Rounds

The consultant pharmacist coordinated weekly clinical rounds for the pharmacy professional staff to facilitate communication between the internal pharmacists and consultant pharmacist. The status of high-risk patients, results from pharmacist interventions, and recommendations presented to physicians were reviewed and discussed. The clinical rounds also provided an opportunity for the pharmacists to discuss other clinical issues.

Results of Fleetwood Phase II

Increased Clinical Involvement of All Pharmacists

The Fleetwood Model fostered increased clinical involvement by the internal pharmacists as well as the consultant pharmacist. All pharmacists became more clinically astute, patient focused, and confident in their clinical skills and knowledge. The internal pharmacists developed a heightened awareness of clinical issues before medications were dispensed and became much more involved in problem identification and clinical decision-making.

The re-engineering process shifted the pharmacists' focus from dispensing and the medication regimen in isolation to the effect of the medications on the patient. This patient-centered approach is the cornerstone of pharmaceutical care.

Reduced Time Spent on Traditional Drug Regimen Review

Because most of the medication-related problems were handled prospectively by the internal pharmacist, the consultant pharmacist spent far less time on traditional drug regimen review. This allowed time for more in-depth clinical evaluation, pharmaceutical care planning, patient assessment, and interaction with the interdisciplinary team.

Greater Recognition of the Pharmacist's Contribution to Patient Care and the Interdisciplinary Team

Physicians had more opportunity to interact with the pharmacist and came to appreciate the pharmacist's clinical skills and knowledge, in contrast to the common perception of the pharmacist as a regulation enforcer.

Physicians and nursing staff viewed the consultant pharmacist as a more integral member of the interdisciplinary care team and recognized the valuable contributions of the consultant pharmacist regarding medication information and clinical expertise. The consultant pharmacist was frequently called upon to assist in problem identification and clinical decision-making for high risk residents, including selection of appropriate therapies and participation in care planning.

The nursing staff developed a greater recognition of and appreciation for the pharmacist's knowledge of medications and positive impact on drug therapy. The consultant pharmacist was increasingly consulted about drug therapy for all residents, not just the residents identified as high risk.

Improved Communication

Communication among the pharmacy staff, between the pharmacists and physicians, and between the pharmacy and nursing facilities improved greatly after implementation of the Fleetwood Model. This improved communication enhanced the pharmacists' ability to impact patient outcomes.

Increased Workplace Efficiency

No additional staff was required to implement the Fleetwood Model. On the contrary, improved workflow efficiencies within the pharmacy were realized. Pharmacy processes were streamlined and duplicate steps eliminated.

After the six-month Phase II feasibility study ended, Vitalink Pharmacy Services in Appleton, Wisconsin continued to identify residents at high risk for medication-related problems and track those who had previously been flagged as high risk. Pharmaceutical care planning continued on all high risk residents. In addition, the identification of high risk residents provided a means for nursing staff to target their interventions; the high risk residents were more closely monitored by the nursing staff during and

after the Fleetwood Project Phase II feasibility study.

The improved communication among pharmacy staff and among the pharmacy staff and the nurses and physicians continued after the Phase II study concluded. As a result of the implementation of the Fleetwood Model, the health care professionals had a greater appreciation of the pharmacist as an integral part of the health care team. This appreciation enhanced communication about all residents in the nursing facility after the Phase II feasibility study was completed.

Incorporating 'Pharmacist-Sensitive Outcomes' into Fleetwood Model

Fleetwood Phase I described the cost and consequences of medication-related problems in U.S. nursing facilities and the impact of consultant pharmacist conducted retrospective drug regimen review on resident outcomes and costs for nursing facility residents. Phase II of the Fleetwood Project was not intended to demonstrate the impact of consultant pharmacist services on resident outcomes and costs since the project was limited to a small number of nursing homes. Rather, Fleetwood Phase II demonstrated that a new model of care—one more effective in identifying, resolving, and preventing medication-related problems—could be implemented in long-term care pharmacy. This important step of demonstrating the feasibility of a new prospective model of care was essential in moving forward with the Fleetwood Project.

The next critical step is Fleetwood Phase III which will identify "pharmacist-sensitive outcomes'—outcomes most sensitive to pharmacist intervention—for older patients at highest risk for medication-related problems. Once this work is complete, consultant pharmacy will be ready for widespread implementation of the Fleetwood Model in Phase III.

Research on the impact of pharmacist services has been hampered by a lack of consistent outcome measures that are relevant to the practice of pharmacy. Since pharmacists can intervene only in certain ways, outcomes must be sensitive and specific to the ways in which pharmacists work. They must measure what pharmacists do on behalf of their patients. The identification of pharmacist-sensitive outcomes will substantially advance the current state of research assessing the impact of pharmacist interventions, and will enable pharmacists to measure and monitor the impact of their clinical interventions on patient care costs and outcomes.

Preliminary work on Fleetwood Phase III has begun. The initiative is funded, in part, by a grant from the Merck Company Foundation. The pharmacist-sensitive outcomes will be incorporated into the Fleetwood model prior to widespread implementation.

Each phase of the Fleetwood Project was critical to the next. The final outcome of the Fleetwood Project will be the operationalization of a pharmaceutical care model for older persons at highest risk for medication-related problems.

The Fleetwood Model provides a framework for health professionals to work together to reduce the burden of medication-related problems—a problem that has resulted in enormous economic and personal costs for people of all ages. Wide-scale implementation of the Fleetwood Model is particularly important as the population ages, the number of people at risk for medication-related morbidity and mortality increases, and consultant pharmacists expand their practice into the broader senior care market.

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