

Clinical Pharmacy and Medication Safety

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While medication safety and preventive adverse drug event strategies have been more prominently reported in the medical literature over the last decade, the pharmacist's role in improving the safety of medication use has been a part of the pharmacy literature since the 1960s. The inaugural issue of *The Annals of Pharmacotherapy* was published in January 1967 as *Drug Intelligence*, and over the years the journal has undergone a few more name changes. *The Annals of Pharmacotherapy* was started by a dedicated group of pharmacists as an independent journal of hospital pharmacy to highlight best practices for US and foreign pharmacists.¹ According to Don Francke's editorial, one of the objectives of *Drug Intelligence* was to encourage hospital pharmacists to "relate more directly to the patient, the physician, and the nurse and to take his place on the health-care team as a practitioner of clinical pharmacy...." Many of the early issues of *Drug Intelligence* were focused on what the practice of "clinical pharmacy" should be and were a forum for discussion of the development of clinical pharmacy practice at many hospitals.²⁻⁸ The education of pharmacists and pharmacy students to prepare them for "clinical pharmacist" roles was also discussed; these clinical pharmacy roles continue to evolve and have expanded from hospital practice to ambulatory and other settings.

In another editorial, Don Francke described the multidisciplinary nature of medication errors.⁹ He was very timely in identifying solutions for medication errors and improving medication safety. He emphasized that improved communication and automation of decision-making of the medication use process by physicians, pharmacists, and nurses, as well as cooperative interdisciplinary action, were key to providing better patient care and reducing medication errors,⁹ or what we now term adverse drug

events. Gloria Francke authored an early article on the definition of clinical pharmacy and listed the multidisciplinary process of medication error prevention as 1 of 5 factors influencing the development of clinical pharmacy practice.³ Gloria Francke called for pharmacists to work more closely with nurses and physicians to improve provision and control of medications from the time of procurement to the time of administration to improve medication safety.

Several articles and editorials in *The Annals* discussed the direction and roles that pharmacists should take in providing better patient care as practitioners of clinical pharmacy. Medication distribution in US hospitals in the 1960s now seems almost primitive, with pharmacists overseeing the distribution of drugs from the pharmacy to the patient-care units and nurses being responsible for stocking and preparation of medications, often with duplication of effort by pharmacists, physicians, and nurses,^{7,8} compared with current distribution systems that use robotics, computers, and other technology to control the medication use process within the institution. Improved medication technology and control of the distribution process enhance medication safety and free pharmacists to perform more professional tasks related to patient care.

New hospital pharmacy services in the 1960s and 1970s, such as pharmacy-based unit-dose distribution and intravenous drug admixture programs, reduced medication errors and were justified based on the premise of doing "what is best for the patient," according to a 1969 article by Smith¹⁰ on clinical pharmacy. These new distribution and clinical pharmacy services, including pharmacist participation on patient rounds, staffing drug information centers and satellite pharmacies, and use of medication profiles, were established in the 1960s and 1970s because of problems identified in traditional pharmacy distribution systems and increasing concern by pharmacists about their responsibilities to provide direct patient care and improve drug utilization.

Smith reported on the use of patient medication profiles to consolidate information related to a patient's drug therapy and improve medication safety, which allows the phar-

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macist to review the profile for potential drug-related problems and render a judgment about the safety and efficacy of drug therapy for a specific patient, considering patient demographics, diagnosis, medical comorbidities, allergies, laboratory values, and prior drug therapy.¹¹ A medication profile allows the pharmacist to provide a recommendation to the physician for the best drug therapy for a patient. One of the strongest forces for using patient medication profiles in hospital pharmacy was the increasing complexity and number of drugs prescribed, which have been directly related to the number of adverse drug events.

There were early reports that pharmacists effectively interviewed hospitalized patients and communicated the history of previous and current drug usage and prior allergic reactions to the physician.^{12,13} Medication history interviews conducted by trained pharmacists were judged by a stakeholder physician at one hospital as one of the most useful services provided by pharmacists.¹³ An unexpectedly high percentage (25%) of pharmacist-interviewed patients reported a drug hypersensitivity,¹² which decreases the potential for prescribing errors, compared with lower allergy report rates elicited in medication histories taken by other health professionals.

Provision of drug information to physicians and nurses was identified as an excellent responsibility for the developing clinical pharmacist role; early articles discussed ways for pharmacists to provide unsolicited drug consultations on patients in the hope that physicians would eventually rely on pharmacists as a useful drug information source, rather than relying on limited drug reference books and nursing drug knowledge.^{7,13,14}

Another early forum provided by *Drug Intelligence* for improvement of medication safety was a section titled "Drug Actions, Interactions, and Reactions," which briefly discussed a myriad of drug-related topics including therapeutic pearls, drug interactions, and adverse drug reactions. Drug Information Analysis Service (DIAS) Rounds appeared later in the journal and was developed from interesting drug questions posed to the University of California–San Francisco Drug Information Center. DIAS Rounds provided the publication of well-researched responses to questions about unusual adverse drug reactions, drug interactions, alteration of laboratory values by drug therapy, and interesting patient case experience with medications, as well as medication safety issues. Both forums

provided pharmacists who were developing clinical practice roles an educational resource beyond that furnished in traditional pharmacy school curricula, particularly concerning adverse drug events. Articles titled "Drug Information Rounds" still exist in *The Annals* as a useful source of information to pharmacists.

For 40 years, *The Annals* has provided a forum for the discussion and exchange of information on the changing roles of clinical pharmacists and the impact of pharmacists on improving medication safety of patients who are taking an increased number of prescribed, over-the-counter, complementary, and alternative medications. *The Annals*, during its tenure, has grown from a small monthly issue discussing a few topics succinctly written by a small group of visionary pharmacists, to the well-respected, peer-reviewed publication of today, with increasing emphasis on medication safety and error prevention.

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