

Senator NELSON. Are you saying 13 percent of all patients admitted?

Dr. MOSER. That is right; 13 percent of the patients who were in the hospital came in with an adverse reaction or acquired one while in the hospital.

Now, 4 percent of these patients were admitted to the general medical services with an adverse reaction. This was the cause of the admission, 4 percent. This was the admitting diagnosis. Of this particular group 30.4 percent acquired another drug reaction during the course of hospitalization. The Cluff team observed a 4.2-percent incidence of reactions among patients who were receiving six to 10 drugs while in the hospital, 24.2 percent with 11 to 15 drugs, 40 percent in patients who were receiving between 16 and 20 drugs, and astonishingly, 45 percent of patients suffered adverse reactions who were receiving 21 or more drugs in the hospital.

Now, this may seem like a lot of drugs but anytime this fact has been studied, it is found that many patients are receiving between 8 and 12 drugs while they are in the hospital, and this is a fair representation of the drugs being given to individual patients in fine university hospitals.

Now, in the Cluff study, antimicrobial agents (antibiotics), and cardiac drugs were implicated most often, accounting for 21.2 percent of all reactions each, or 42.4 percent of the total. Hypnotics, another word for sleeping medication, and sedatives, produced 13.0 percent reactions; insulin, 8.9 percent; and antihypertensive drugs, 8.2 percent.

The clinical manifestations of adverse drug reactions were: gastrointestinal, 35.6 percent; neuromuscular reactions (muscle aches and pains) 15.8 percent; metabolic disturbances, 13 percent; cardiovascular disturbance, 11.6 percent; skin rashes, 10.3 percent; hematologic, 4.9 percent; renal, 3.4 percent, and multiple systems (this would be heart, liver, kidneys, combinations of systems) were involved in about 2.7 percent. And, finally, pulmonary (that is, lung) and other miscellaneous types of reactions accounted for 1.4 percent each.

About 7 percent of all adverse reactions observed during this 3-month period of study were life threatening or fatal, and five deaths in this series were attributed to adverse drug reactions.

Over two-thirds of the in-hospital adverse reactions were detected within 4 days after the causative drug had been started. Allergic reactions usually developed between the fifth and 10th day, and some came on in an accelerated fashion. Nausea, vomiting, or diarrhea were the most common manifestations, and these occurred most frequently in women. Adverse reactions were more common in patients over 50; whites suffered more than blacks; women more than men. The average duration of hospitalization for patients with adverse drug reactions was 20.8 days. This is in contrast with 14.3 days for patients on the medical wards.

This is a significant increase.

In another well-known study of adverse drug reactions performed by five cooperating medical school hospitals in the Philadelphia area, namely, Hahnemann, Jefferson, Temple, Penn, and Women's 772 adverse drug reactions were reported during a 24-month period of study.

In this study dermatologic and allergic reactions were the most common and accounted for 65 percent of all case reports. Penicillin was