Patient Control

Systematic and Efficient Method of Performing Scintiscans in a Large-Volume Nuclear Medicine Department

Leo R. LaRocque

Hartford Hospital, Hartford, Connecticut

A method is described and evaluated for all patients referred to our department for nuclear medicine imaging. Maintaining a systematic and consistent format from the acquisition of the clinical consultation requests to the completion of the procedure alleviates many technical problems and, in addition, produces optimum imaging quality and patient care when large numbers of imaging procedures must be performed.

The patient is considered the central element to all diagnostic departments. Various procedures are requested in order to answer specific medical questions relating to the patient's condition. Many factors must be considered in maintaining optimum quality and efficiency when performing imaging procedures. These factors may range from the types of imaging equipment being employed to the method of reporting the procedural results to the requesting physician. Initially, we have focused on the following three items in establishing a reliable and consistent format in performing all imaging procedures: (1) clinical consultation request; (2) scheduling of patients; and (3) specificity of performing various procedures with a particular imaging device.

Clinical Consultation Request

At our institution, our in-patient volume is supplemented by a large out-patient schedule. Approximately 12–20 out-patients are scheduled on a daily basis. The clinical consultation request precedes all nuclear medicine imaging procedures. Therefore, it is imperative that all pertinent information relating to both the patient and to the procedure is completed properly. Since the majority of out-patient appointments are made verbally over the phone by the referring physician and/or his office, there is minimum difficulty and error in obtaining patient data and the proper procedure requested. Information that must be given on these request forms includes: (1) patient data (name, address, age, referring physician); (2) study requested; (3) pertinent clinical findings; (4) questions to be answered; and (5) time and date of scheduled appointment.

In-patient requisitions are sent to our department via the pneumatic tube system. The referring physician is required to provide all data except for the time of the appointment. All clinical consultation requests are reviewed by the director and/or the physician in charge of the nuclear medicine department for final approval of the procedure being requested. Requisitions are returned to their respective nursing units if the request forms are improperly completed, for example, when there is little or no clinical data.

Scheduling of Patients

Over the past few years we have used, with success, an arbitary color-coding system for identifying each of our imaging procedures. For example, liver–spleen scans are designated as red, ventilation and perfusion lung scans as yellow, and renal scans as orange. This color-coding system of identifying a particular imaging procedure is used consistently and in various ways throughout our department. A valuable adjunct to our department is the use of a magnetic scheduling board (Methods Research, Farmingdale, NJ) (Fig. 1). The patient's name and nursing unit location are written on a rectangular rubberized colored magnet with water-soluble ink. The color of the magnet shows the type of clinical procedure that has been requested. The magnet is then positioned on the board according to the following format: (1) day on which the procedure is to be performed; (2) specific imaging instrument that will be performing the procedure; and (3) approximate time of the procedure. Small colored circular magnets are placed upon the rectangular magnets to indicate that another procedure has been requested for the same patient. With the increasing number of multiple imaging procedures

For reprints contact: Leo R. LaRocque, Dept. of Clinical Nuclear Medicine, Hartford Hospital, Hartford, CT 06115.

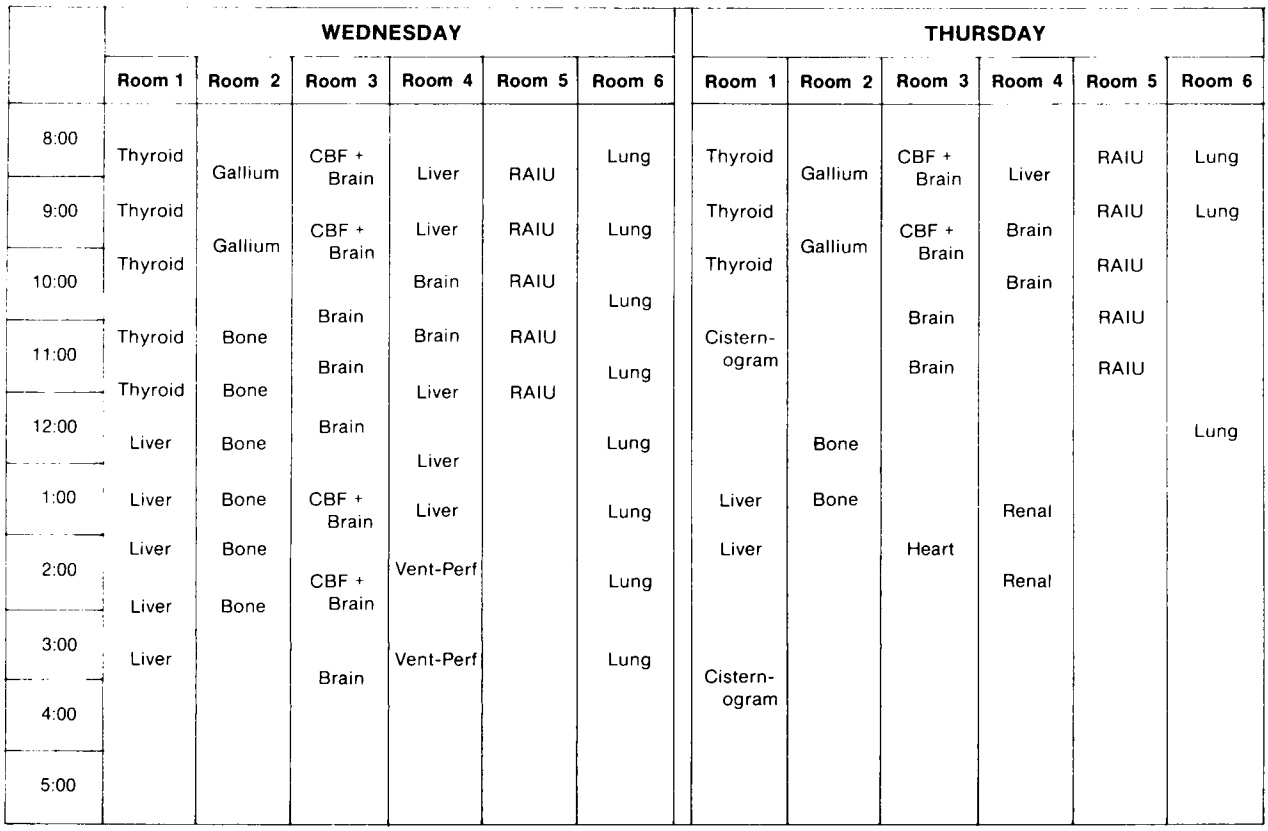

FIG. 1. Diagram of magnetic scheduling board.

being requested for patients, the color-coded magnetic board alleviates any confusion as to which procedures have been requested for individuals and to their order. Upon completion of the procedure, the technologist places a mark on the colored magnetic marker identifying it.

At our institution, the bulk of in-patient scheduling is not made up until the morning of the day that the procedure is to be performed; that is, the majority of procedures are performed on the day the requests are received. This rapid service is important in keeping both the length of stay and the cost of medical care for the patient at a minimum.

Each technologist is responsible for notifying the various nursing units and obtaining information as to the availability of the patient and the mode of transportation to be used. Once this has been accomplished, the patient's name, location, and appointment time are recorded on the daily transportation work sheet. Two aides are then responsible for transporting the patient to our department at the requested time.

By working as full-time personnel in our department, the aides have become familiar with the various imaging procedures and are helpful in explaining to each patient some general imaging principles. When arriving with the patient, the transportation aide notifies the technologist assigned to that patient. Proper identification of the patient is imperative at this point and is obtained both verbally and through wrist-band identification. In addition, all female patients of childbearing age are questioned about pregnancy and/or lactation prior to the administration of the radiopharmaceutical. The requested procedure is explained to the patient and the proper radiopharmaceutical dose is calculated, drawn up, assayed, and placed in a leaded syringe holder containing the patient's name as well as the name and amount of radiopharmaceutical. This is then placed on the patient's request form to minimize the possibility of having the patient injected with an improper compound.

Specificity of Performing Various Procedures with a Particular Imaging Device

Our equipment includes the following: a dual-rate computer, two dual-probe rectilinear scanners, and three scintillation cameras. We have assigned routine imaging procedures to a specific imaging device; that is, all thyroid imaging is performed on camera No. 1, scanner No. 2 performs the majority of lung scans, etc. (Fig. 2). This decision is based upon numerous considerations, including the functional, spatial, and temporal resolution requirements of the patient's problem, as described by Lovegrove et al. (*1*), and, in addition, a thorough knowledge of the capability of each instrument available. Comparative imaging information thus determines

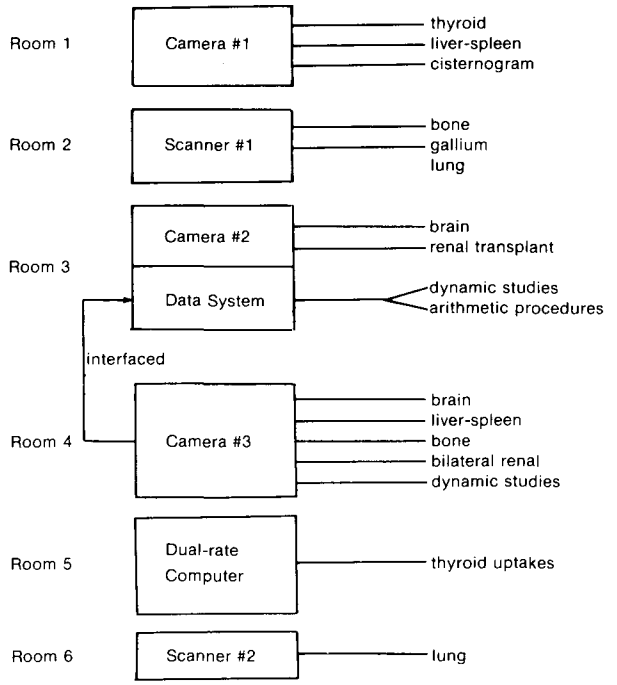

FIG. 2. Diagram illustrating consistency of performing particular procedures with specified imaging device.

which instrument may be best suited to perform a specific procedure. Dynamic studies and those procedures requiring quantitation are limited to the equipment having storage, replay, and data-processing capabilities. The patient's condition—for example, the ability to lie in a supine position—is also a determining factor.

In the event, however, that an imaging device may not be operating properly or is being serviced, an alternate plan must be considered in order to maintain image quality and performance. Located on the magnetic scheduling board is a series of six columns. The number at the top of each column corresponds to a specific room containing a particular imaging device. The board thus provides a quick overview of what instruments may be available at a given time.

Conclusion

In order to achieve diagnostic excellence and maintain a high standard of medical care to the patient, we have been receptive to improvements or revisions of the system described here. All revisions are examined extensively in order to evaluate both the immediate and long-term impact that it may have on the department prior to its final implementation. The magnetic scheduling board allows flexibility and quick adaption to changes in scheduling, including insertion of emergency procedures. In addition, both staff and hospital medical personnel can see at a glance when and where a specific procedure is being performed. This greatly facilitates prompt access to the studies and quick relaying of reports with a minimum amount of confusion.

A film-processing unit is currently being installed within our department. As this unit becomes functional, the amount of time needed in the past by each technologist to develop film will be considerably lessened. This time may then be used for more constructive purposes.

Correlation with other departments who are performing various other medical procedures on the patient is essential in order to maintain maximum efficiency in completing all requested items on the patient. In the event that the patient is not available when aides arrive at a particular unit, they are instructed to call the department and to reveal to the technologist the reasons for the patient's unavailability. The aide is then instructed to bring in another patient, possibly from another nursing unit, in order to minimize the idle time of the imaging device.

Aware that this may not be the only or the best system in operation today, we feel that it is a workable, efficient, and gratifying method of performing increasing amounts of requested imaging procedures with the best possible care to the patient.

References

1. Lovegrove F, Langan J, Wagner HN: Quality control in nuclear medicine procedures. *J Nucl Med Technol* 2: 44–51, 1974