

# **Investigation of Patient and Medicine Flows in Thai Hospitals**

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## **Abstract**

Healthcare system in Thailand has been challenged to deliver high quality care with limited manpower. In addition, many healthcare professionals, such as nurses and pharmacists, are overloaded with logistics-related responsibilities. In order to improve services and maximize the utilization of employees' expertise, this paper attempts to identify the logistics-related work, in patient and medicine flows, that could be performed by non-healthcare professionals.

**Keywords:** hospital, medicine flow, patient flow, Thailand

## **Introduction**

Hospitals are large and complex organizations, and differ from most traditional organizations in the following areas:

- Hospital missions focus on improving community health and eliminating disease, not making profit.
- Hospitals offer an intangible product, which is unique and not widely available.
- Most hospitals are considered not-for-profit, and exist to serve the community in which they operate.
- Hospital performance is measured in terms of quality, not quantity.
- Healthcare facilities commonly work on a 24-hour-per-day basis, creating obvious labor and scheduling inefficiencies (Langabeer, 2008).

As a not-for-profit organization, hospital strives to develop systems that ensure the best possible patient care within limited resources. However, with the limited budget, it is unable to attract the most qualified physicians and other professionals. Moreover, most of them are overwhelmed with not only their professional jobs, but also other operations and logistics management jobs, such as work scheduling, patient transportation, inventory management, capacity planning, and facilities management (Hall, 2010). To improve the healthcare system, and provide a better service to patients, this paper attempts to identify the logistics-related work in two major flows, patient and medicine flows, that could be performed by non-healthcare professionals.

## **Flows in Healthcare Industry**

Healthcare supply chain is a complex system. It is different from the typical supply chain of other industries, as end users demand more than one particular product or service, such as pharmaceutical, medical devices, and radiology (Supeekit et al., 2011). According

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needed to see the doctor again, and get the prescription from doctor. Patient makes payment at finance division. Patient is allowed to go home after patient receives their medication and drug counseling.

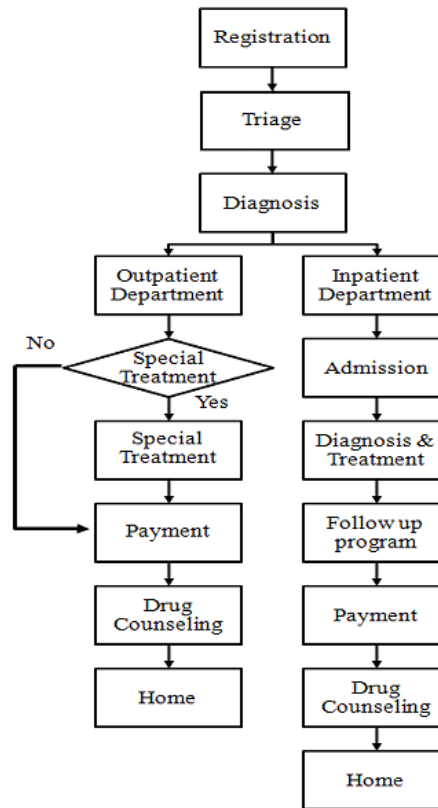


Figure 2. Patient Flows

When patient is admitted to hospital, patient is regarded as inpatient. Patient is required further diagnoses and treatment, as well as follow up program until he/she recovers. Inpatient flows encounter with variety of healthcare resources, such as medicines, medical supplies, linens, food, stationary, and cleaning supplies during the admission period. Before discharging, patient needs to contact with finance division and make payment. Patient receives medicines and home advices before going home.

### Medicine Flows

The medicine flows involve many functions, including warehouse, inpatient department (IPD), and outpatient department (OPD) (see Figure 3). Practically, warehouse is responsible for gathering the needs for medicines and medical supplies through the entire hospital. The main functions of warehouse are separated into purchase order, inventory, and distribution processes.

- In purchase order process, each department initiates the requisition of medicines and medical supplies. Accordingly, warehouse identifies the needs for medicines and medical supplies across hospital. The purchase order process ends when warehouse places order to its suppliers.

- The inventory process focuses mainly on the movement of the medicines and medical supplies. It generally includes receiving, storage decision, purchase scheduling, inventory level, and allocation of medicine flows.
- The distribution process refers to route scheduling and replenishment of the flow of medicines and medical supplies.

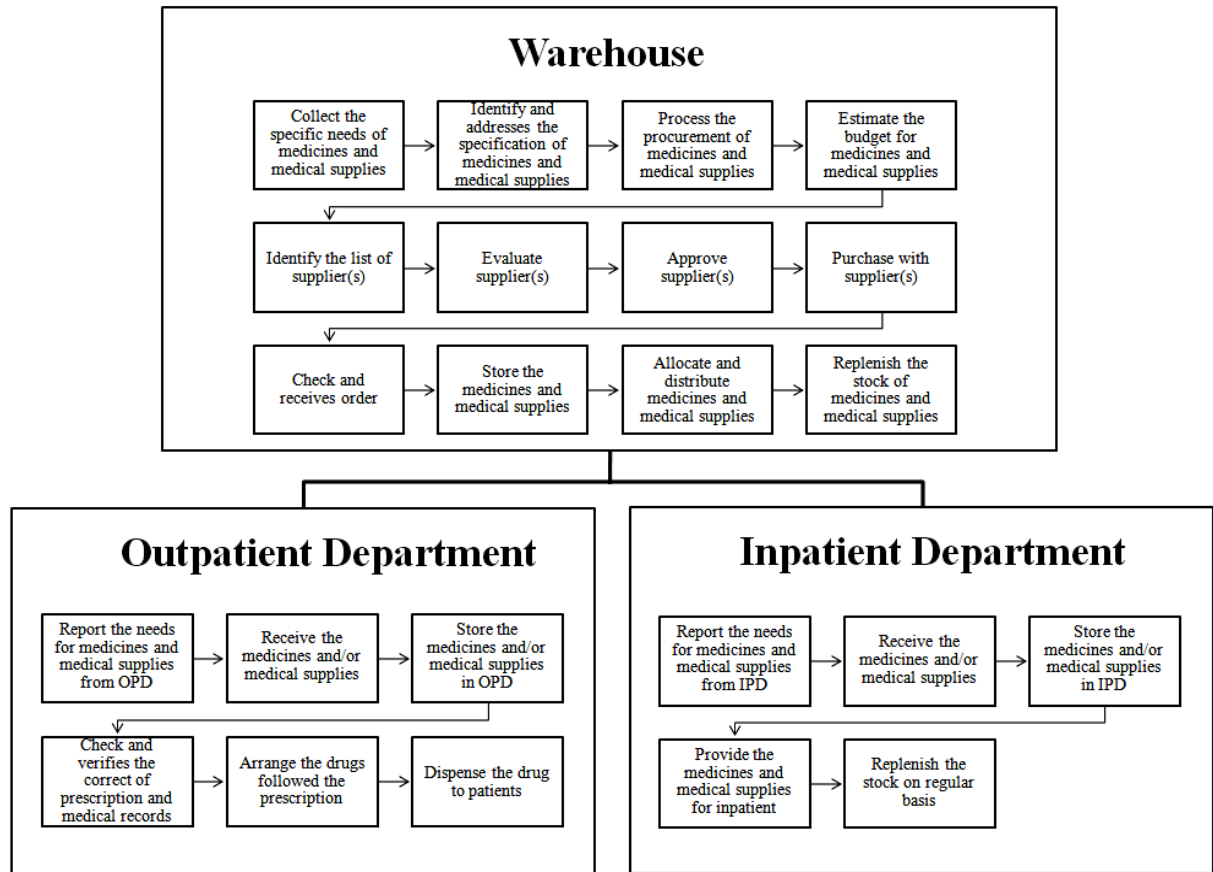


Figure 3. Medicine Flows

The medicine flows impact the patient flows. Noticeably, the outpatient department is controlled by pharmacists; while nurses take full charges of the inpatient department (see Figure 3).

### Logistics-Related Work in the Hospitals

Based on the patient and medicine flows above, the logistics-related tasks, extracted from the professional practices of nurses and pharmacists, can be summarized.

#### Logistics-Related Work of Nurses

One of the professional nursing practices is to take care of patients as patient care unit (TNC, 2011). Table 1 illustrates the professional practices and logistic-related practices of nurses. It is found that nurses are necessarily required to work with medicines and medical supplies flows, which are not considered their professional practices. These works may be delegated to non-healthcare workers.

Table 1. The Professional Practices and Logistics-Related Work of Nurses

Professional Practice	Logistics-Related Work
	<i>Patient-Related Work</i>
<ul style="list-style-type: none"> <li>• Delegate and supervise other nurses in the delivery of care</li> <li>• Conduct and record vital signs</li> <li>• Triage patients on conditions</li> <li>• Apply emergency first aids</li> <li>• Provide basic treatment for patients in compliance with patient's conditions</li> <li>• Evaluate patient's conditions to determine whether to treat or to refer</li> <li>• Perform injections to patients</li> <li>• Undertake electrocardiograms (ECGs), urinalysis, and pregnancy tests (as requested)</li> <li>• Prepare patients for medication, treatments, and diagnosis</li> <li>• Provide the pathology collection services</li> <li>• Provide education and counseling for patients in medical professional manner</li> <li>• Assist patients for lifting, transferring, and transporting</li> </ul>	<ul style="list-style-type: none"> <li>• Access and organize medical records</li> <li>• Check the rights for reimbursements</li> <li>• Schedule patients to each department or doctor</li> <li>• Manage the queue of patients on arrival basis</li> <li>• Assist and transport patients to regular diagnose and special diagnose e.g. laboratory, radiology, and surgery</li> <li>• Assist and transport patients to ward</li> <li>• Schedule the patients' visits for follow up program</li> <li>• Calculate patients' medical treatment costs</li> </ul>
	<i>Medicines and Medical Supplies-Related Work</i>
	<ul style="list-style-type: none"> <li>• Estimate the adequate medicines and medical supplies for ward</li> <li>• Conduct the procurement of medicines and medical supplies</li> <li>• Apply a document procedure for purchase requisitions and purchase orders</li> <li>• Approve the purchase order for medicines and medical supplies</li> <li>• Manage the sub stocks in ward</li> <li>• Verify the completion of the records for the use of medicines and medical supplies</li> <li>• Record the purchase requisitions of medicines and medical supplies</li> <li>• Processes the disbursement of medicines and medical supplies</li> <li>• Monitor the disbursement of medicines and medical supplies</li> <li>• Record the health summary to patient's medical records</li> </ul>

### Logistics-Related Work of Pharmacists

It is found that pharmacists are also responsible for a number of logistics-related works. Table 2 summarizes the professional practices and logistics-related practices of pharmacists. Typically, the main duty of pharmacist is to handle with medicines and medical supplies (Bureau of Health Administration, 2011). However, pharmacists are also

needed to manage the back offices, which include logistics-related tasks relating with warehouse, inpatient department, and outpatient department.

Table 2. The Professional Practices and Logistics-Related Work of Pharmacists

Professional Practice	Logistics-Related Work
	<i>Warehouse</i>
<ul style="list-style-type: none"> <li>• Delegate pharmacy activities to technical staff</li> <li>• Make professional judgments to specific situations regarding to professional practices</li> <li>• Evaluate the quality of the pharmacy services</li> <li>• Conduct the medication review, and report finding in a timely manner to the committees</li> <li>• Check and verify the prescriptions to ensure the legal and professional requirements</li> <li>• Assess and review patients' medical records</li> <li>• Ensure that patients receive the correct medicines</li> <li>• Inform and advise the use of medicines</li> </ul>	<ul style="list-style-type: none"> <li>• Collect and document the specific needs of medicines and medical supplies</li> <li>• Identify and address the specification of medicines and medical supplies</li> <li>• Process the procurement for medicines and medical supplies</li> <li>• Estimate the budget for medicines and medical supplies</li> <li>• Identify the list of suppliers based on available resources</li> <li>• Evaluate suppliers from available resources</li> <li>• Approve suppliers from the selected list of suppliers</li> <li>• Create a document from purchase requisitions and purchase orders in both electronic and hardcopy formats</li> <li>• Manage the inventory stocks in warehouse</li> <li>• Notice and process the purchase requisitions and purchase orders for medicines and medical supplies</li> <li>• Obtain stock from suppliers to warehouse</li> <li>• Manage medicines and medical supplies within warehouse</li> <li>• Control of label and barcode placing for medicines and medical supplies</li> <li>• Store stocks in warehouse</li> <li>• Create stock cards for each medicine and medical supply</li> <li>• Monitor and record details for medicines and medical supplies</li> <li>• Storage the medicines and medical supplies in accordance with professional manner</li> <li>• Handle with packing or repackaging of medicines and medical supplies</li> <li>• Distribute the medicines and medical supplies from warehouse to other departments upon requested</li> <li>• Monitor the distribution of medicines and medical supplies within warehouse, and between warehouse and other departments</li> </ul>

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- Manage work flow within warehouse
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Table 2. The Professional Practices and Logistics-Related Work of Pharmacists (Cont.)

Professional Practice	Logistics-Related Work
	<i>Outpatient Department (OPD) and Inpatient Department (IPD)</i> <ul style="list-style-type: none"> <li>• Notice specific needs of medicines and medical supplies from OPD and IPD</li> <li>• Manage and control the use of medicines and medical supplies between OPD, IPD, and warehouse</li> <li>• Store and maintain the medicines and medical supplies within OPD and IPD</li> <li>• Record purchase requisitions and purchase orders from OPD/and IPD, in both electronic and hardcopy formats</li> <li>• Check OPD and IPD patients' rights for reimbursement</li> </ul>

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## Conclusion

Many hospitals around the world strive to provide better patient cares. With the limited resources, it is necessary to ensure that nurses, pharmacists, and other professionals, have full capacity in performing their professional tasks. Other non-healthcare professional tasks, especially logistics-related works such as work scheduling, patient transportation, inventory management, capacity planning, and facilities management, should be clearly separated, and assigned to non-healthcare professionals.

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