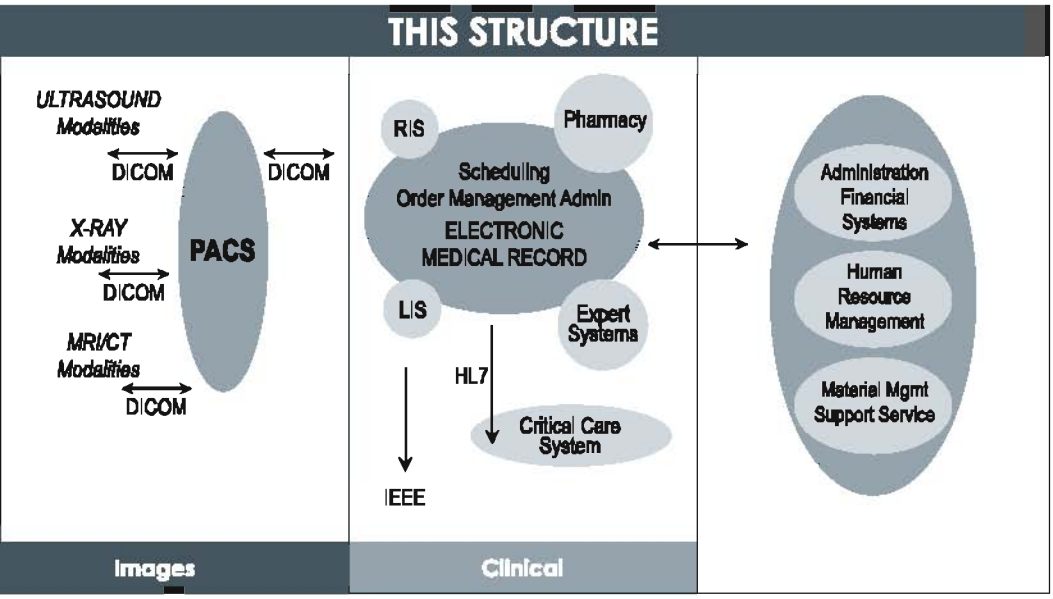

PHARMACY INFORMATION SYSTEM

CLINICAL BASED | NON CLINICAL

Functional Requirements Brief Hospital Information System

Health Informatics Standards
Ministry of Health, Malaysia

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Ministry of Health, Malaysia
FRB/HIS/PhIS/2006/Version 1.1
ISBN: 983-9417-53-3
Date Created: August 2005
First Edition: July 2006

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FOREWORD

Tan Sri Datuk Dr. Haji Mohd. Ismail Merican
Director General of Health, Malaysia

Malaysia being progressive in the adoption of Information communication “Technology in Health Care” has embarked in the creation of ICT enabled facilities. The Telemedicine blueprint “Leading Healthcare into Information Age” has laid the foundation for the planning and implementation of ICT initiatives in the country. Amongst the building blocks that has been recognised as vital for interoperability was the development and adoption of Health Informatics Standards.

The Ministry of Health has played a leading role in the development of Health Informatics Standards. In collaboration with stakeholders in the public and private sector, several standards have been developed for adoption in the country. Amongst them include the “Functional Requirements Brief” that has been prepared to provide functional requirements of the core business of the hospital as an entity. The business functional model including business functions, operational policies, high level work flows and system functionalities are well documented. This document would provide the health care personnel as to how the work processes and procedures are streamlined in a computerised working environment and for the system developers, it provides an in depth understanding of the user needs.

The documents that have been developed includes the

- Person Management System
- Pharmacy Information System
- Laboratory Information System
- Radiology Information System
- Blood Bank Information System
- Oral Health Information System
- Operation Theatre Management System

I wish this document be used as a generic standard in the development and customization of hospital information system being deployed in the hospitals in the country. I take the opportunity to congratulate the expert group that has put in countless number of man hours for the preparation of the document and all members of the consensus meeting for their participation and contribution.

TAN SRI DATUK DR. HAJI MOHD. ISMAIL MERICAN
DIRECTOR GENERAL OF HEALTH, MALAYSIA

VISION FOR HEALTH

Malaysia is to be a nation of healthy individuals, families and communities, through a health system that is equitable, affordable, efficient, technologically appropriate, environmentally-adaptable and consumer-friendly, with emphasis on quality, innovation, health promotion and respect of human dignity and which promotes individual responsibility and community participation towards an enhanced quality of life.

MISSION OF THE MINISTRY OF HEALTH

The mission of the Ministry of Health is to build partnership for health to facilitate and support the people to :

- Attain fully their potential in health.
- Motivate them to appreciate health as valuable asset.
- Take positive action to improve further and sustain their health status to enjoy a better quality of life.

PHARMACY INFORMATION SYSTEM

BUSINESS FUNCTION MODEL

MEDICATION ORDER MANAGEMENT MODULES

Contents

BUSINESS FUNCTION MODEL PHARMACY INFORMATION SYSTEM

1. Name of the department: Pharmacy Department.

2. Business Function: Medication Order Management.

3. **Range of services:-**

   3.1. Outpatient Order.
   3.2. Inpatient Order.
   3.3. Inter Pharmacy Order.

4. **Types of Services:-**

   4.1. Outpatient Medication Order:-

      4.1.1. Dispensing.
      4.1.2. Counselling.

   4.2. Inpatient Medication Order:-

      4.2.1. Unit Dose/Unit of Use.
      4.2.2. Discharged/Bedside Dispensing.

5. **Clients:-**

   5.1. Internal Clients:-

      5.1.1. Within Hospital.
      5.1.2. Within Enterprise (Pharmacy to Pharmacy).

   5.2. External Clients:-

      5.2.1. Other than MOH Healthcare Facilities.

6. **Operational Policies:-**

   6.1. Medication Order:-

      6.1.1. All medication orders must be prescribed by authorised personnel only and in compliance with guidelines on prescribing in the drug formulary (drug category, discipline / speciality) as defined by MOH.

      6.1.2. All patients must be registered before medication orders are raised and drugs prescribed must be specific for the registered patient only (This is to ensure that the therapeutic need of the respective patient is captured in the discharged summary and LHR, and is unique for the patient).

6.1.3. The Medication Order shall consist of the following data elements:-

6.1.3.1. Patient biodata (name, age, sex, weight, height, MRN).
6.1.3.2. Diagnosis / problems.
6.1.3.3. Generic name of drug.
6.1.3.4. Dosage.
6.1.3.5. Frequency.
6.1.3.6. Duration.
6.1.3.7. Route of administration.
6.1.3.8. Known allergy.
6.1.3.9. Name, designation and location of prescriber.
6.1.3.10. Date and time of medication order.

6.1.4. The medication order of a particular drug is considered valid for the duration prescribed from the date of prescribing.

6.1.5. For medication orders of non registered drug, coding shall be assigned by the Pharmacy Division, MOH.

6.1.6. The system shall be able to provide information to specify the ordered items as per local drug formulary, MOH and non-MOH including registered & non-registered drugs. This function is to enable data mining.

6.1.7. The pharmacist shall be given access to relevant clinical information as contained in EMR.

6.1.8. The pharmacist shall be authorised to make clinical entries into the EMR as and when necessary during patient consultation or clinical intervention.

6.1.9. Modification or cancellation of the order can only be done by the prescriber himself or by another personnel assigned to cover his duty during his absence.

6.1.10. The pharmacist shall be authorised to modify the medication order upon consultation with the prescriber.

6.1.11. If medication orders are received for refill purposes from facilities outside the enterprise, data entry shall be made by authorised pharmacy personnel.

6.2. Dispensing:-

6.2.1. All prescribed drugs shall be verified / screened by the pharmacist before dispensing (where applicable). In situations where there is no pharmacist, the pharmacy assistant is given this authority. However, role assignment shall be dependent on the hospital policy in relation to the supervisory task that needs to be performed by specific staff.

6.2.2. All dispensing tasks should be carried out by trained personnel.

6.2.3. Bedside dispensing shall be practised for inpatient discharges.

6.2.4. Data capture for LHR / MyKAD shall be triggered at the point of dispensing for outpatient medication orders and at the point of discharge for inpatient medication orders.

6.2.5. Queried medication orders shall be rerouted to the care provider for reorder/cancellation of medication order.

6.2.6. Valid medication orders refers to the period of care plan for which the medication is prescribed.

6.2.7. Transaction for partial medication order and from those outside the enterprise shall be registered prior to dispensing.

6.2.8. Request for refill medication orders from outside the enterprise shall be accompanied by SPUB R1 Form and medication order/transcription signed by authorised personnel.

6.2.9. Request for refill medication orders shall be confirmed via MyKad/LHR/ appointment slip.

6.2.10. A proxy may be allowed to collect medication on behalf of the patient under special circumstances.

6.2.11. An audit trail shall be provided for the medication order cycle:-

6.2.11.1. place order.
6.2.11.2. receive order.
6.2.11.3. screen order.
6.2.11.4. verify order.
6.2.11.5. fill medication.
6.2.11.6. verify medication against order.
6.2.11.7. dispensing.

6.2.12. The process of medication supply shall start upon patient's arrival time at the pharmacy counter.

6.2.13. Drugs dispensed must be appropriately labelled with the following information:-

6.2.13.1. Name of patient.
6.2.13.2. Generic name of drug.
6.2.13.3. Dosage.

6.2.13.4. Frequency.
6.2.13.5. Batch number.
6.2.13.6. Manufacturer Name.
6.2.13.7. Amount.
6.2.13.8. Cautionary information.
6.2.13.9. Storage condition.
6.2.13.10. Dispensing date.
6.2.13.11. Expiry date.
6.2.13.12. Hospital/Clinic name and contact number.
6.2.13.13. The phrase 'Ubat Terkawal'.

6.2.14. Medication not collected within the allowable period must be designated as 'uncollected medication'. However, uncollected medication can still be dispensed if the medication order is still valid.

6.2.15. For medication orders using standard packs, the amount/ quantity dispensed shall be subjected to predetermined local policy.

6.3. Management Report:-

The following reports shall be generated for the management of the Pharmacy Department. All the frequency shall be weekly, monthly and yearly.

6.3.1. Statistic report:-

6.3.1.1. Prescribing pattern/trend.
6.3.1.2. Frequently / not frequently ordered drugs.
6.3.1.3. Slow moving items.
6.3.1.4. Drug usage by item, cost , discipline and prescriber.
6.3.1.5. The most expensive drug used.
6.3.1.6. Near expiry items.

6.3.2. Management report:-

6.3.2.1. Quality Assurance Programme.
6.3.2.2. Pharmacy Management.

6.3.3. Operational report:-

6.3.3.1. Partial supply.
6.3.3.2. List of medication orders.
6.3.3.3. Patient waiting time.
6.3.3.4. Outstanding order(s).
6.3.3.5. Uncollected item(s).
6.3.3.6. Patient medication profile.

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6.4. System Requirement:-

6.4.1. Ability to capture data for LHR/MyKAD shall be triggered at the point of supply for all outpatient medication order and upon discharge for inpatient medication order.
6.4.2. The system shall be able to provide information to specify the ordered items as per local drug formulary, MOH and non- MOH list including registered & non registered drugs. This function is to enable data mining.
6.4.3. The system shall be able to indicate the availability of stock for all items listed in the orderable list.

6.5. The system shall be able to update inventory and charges (if applicable) upon dispensing. Medication cost shall be available.

6.6. The system must be able to identify prescribed drugs according to:-

6.6.1. Drug category as defined in MOH Drug List.
6.6.2. Discipline / Specialty.
6.6.3. Doctor specific Medication order.

6.7. The system must be able to retrieve partial medication orders, activate the medication order based on date of patient arrival and assign patient to queue.

6.8. The system shall enable the user to enter the details of medication order from outside the enterprise e.g. SPUB. The referral document shall consist of the following data:-

6.8.1. Referring healthcare facility.
6.8.2. Patient bio data (name, age, sex, weight, height, MRN).
6.8.3. Medication order details (name of drug(s), dosage, frequency, duration, route of administration).
6.8.4. Diagnosis / problems.
6.8.5. Name, designation and location of prescriber.
6.8.6. Date and time of medication order.
6.8.7. Duration of supply.
6.8.8. Next supply date.

6.9. The system shall be able to capture collector's identification (name/contact number) during medication collection by proxy.

6.10. The system should capture the identity of persons involved in the process of dispensing (screening, filling, dispensing) and recognize single or multiple roles for the process of dispensing.

6.11. The system must be able to arrange the patient's medication order based on arrival time at the pharmacy counter.

6.12. The system should be able to generate medication order slip if required.

6.13. The system must be able to generate drug labels with the following data:-

6.13.1. Name of patient.
6.13.2. MRN.
6.13.3. Name of drug.
6.13.4. Dosage.
6.13.5. Frequency.
6.13.6. Amount/quantity dispensed.
6.13.7. Cautionary information.
6.13.8. Storage condition.
6.13.9. Dispensing date.
6.13.10. Expiry date.
6.13.11. Batch Number.
6.13.12. Manufacturer Name.
6.13.13. Hospital/Clinic name and contact number.
6.13.14. The phrase 'Ubat Terkawal'.

6.14. The system shall provide options for editing of drug label when extemporaneous preparations/partial medication orders are dispensed/refilled.

6.15. The system shall be able to identify all filled Medication orders for uncollected medication. The status shall be reported to CIS.

6.16. The system shall be able to denote all standard packing medication and the amount to be dispensed shall be defaulted to predetermined amount.

6.17. The system shall be able to denote Dangerous Drug and Psychotropic Substances dispensed and provide the information as required by Dangerous Drug Act 1952.

6.18. The system shall provide adequate security features in medication orders.

6.19. The system shall provide decision support for medications orders which will be made available in both CIS and PhIS.

6.20. The system shall use Malaysian drug database for decision support for drug information function and other pharmacy management activity.

7. High Level Workflow (depend upon scope of work of hospital):-

7.1. Outpatient Medication Dispensing Flow (Patient Flow)
– PhIS/OP/WF/1.

7.2. Outpatient Pharmacy Queue Management (Electronic Medication Orders) Workflow
- PhIS/OP/WF/2.

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7.3. Outpatient Pharmacy Queue Management (External Clients) Workflow -PhIS/OP/WF/3.

7.4. Outpatient Pharmacy Receiving And Screening of Medication Orders Workflow – PhIS/OP/WF/4.

7.5. Outpatient Pharmacy Preparation of Medication Orders Workflow – PhIS/OP/WF/5.

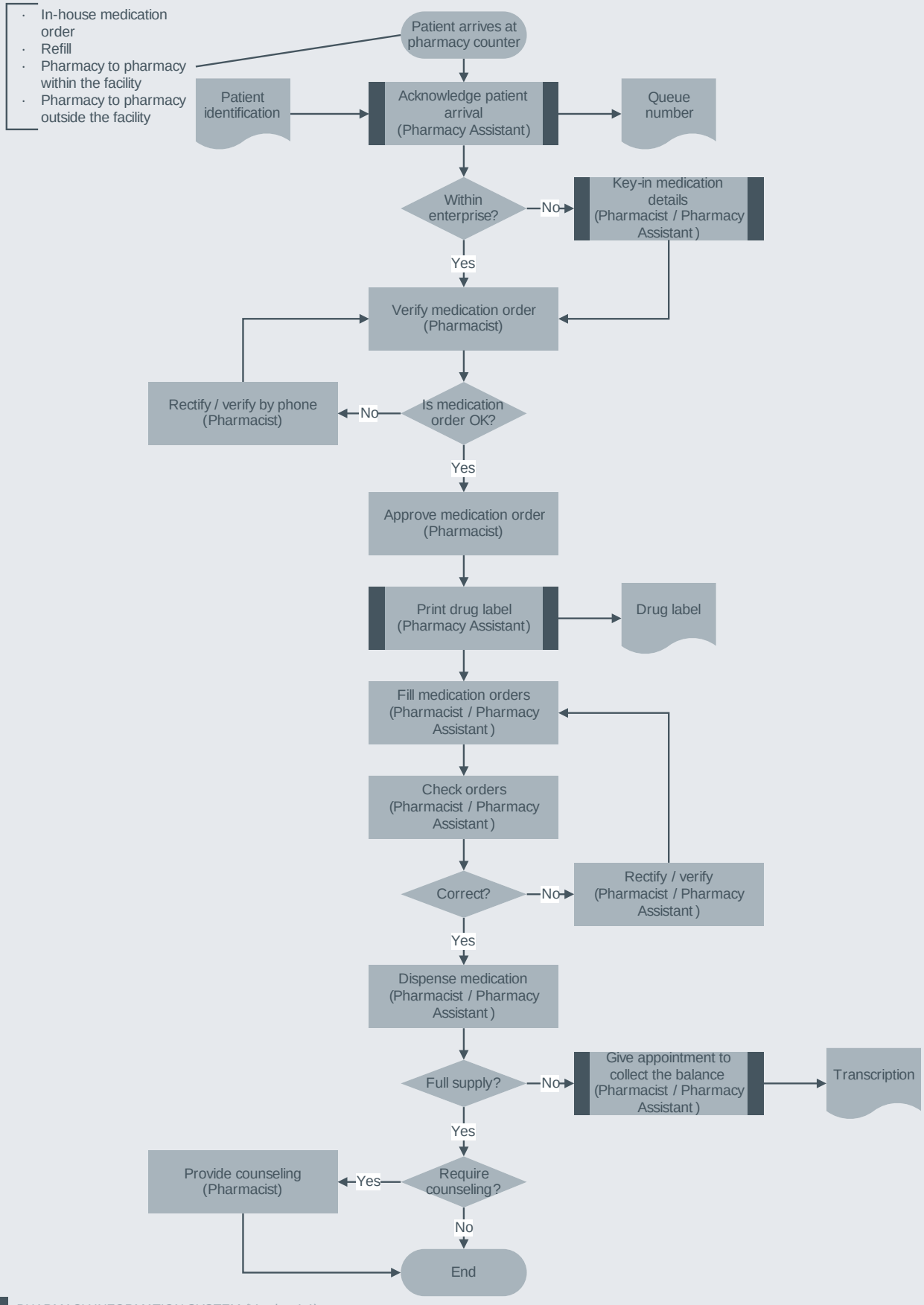
7.6. Outpatient Pharmacy Dispensing Of Medication Workflow – PhIS/OP/WF/6.

7.7. Inpatient Pharmacy Screening Of Medication Order Except For Dangerous Drug Orders (Unit of Use/ Unit Dose) Workflow – PhIS/IP/WF/1.

7.8. Inpatient Pharmacy Supply of Medication (Unit Of Use/ Unit Dose) Workflow – PhIS/IP/WF/2.

7.9. Inpatient Pharmacy Dispensing Of Medication for Discharged Patient – Including Bedside Dispensing Workflow – PhIS/IP/WF/3.

OUTPATIENT MEDICATION DISPENSING FLOW (PATIENT FLOW)
PhIS/OP/WF1



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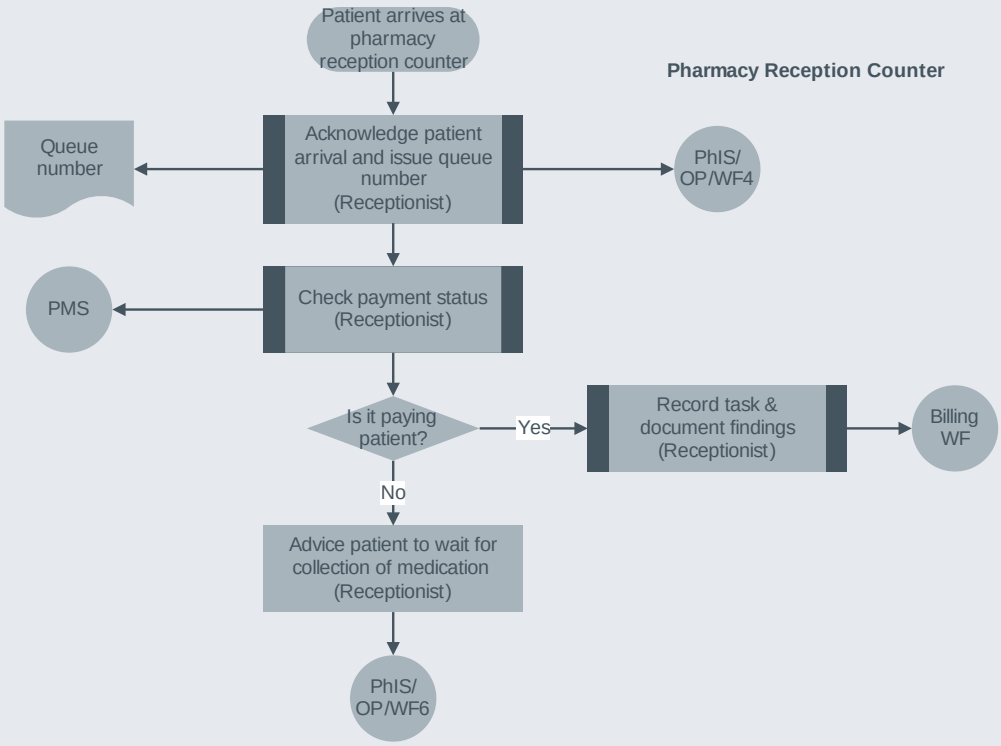
OUTPATIENT PHARMACY QUEUE MANAGEMENT WORKFLOW (ELECTRONIC MEDICATION ORDER)
PhIS/OP/WF2



Note:

1. Check pharmacy display board to determine the order status for medication orders generated on the same day
2. Uncollected / refill medication order: to be registered at pharmacy registration counter
3. Billing module is not applicable in current pharmacy practice

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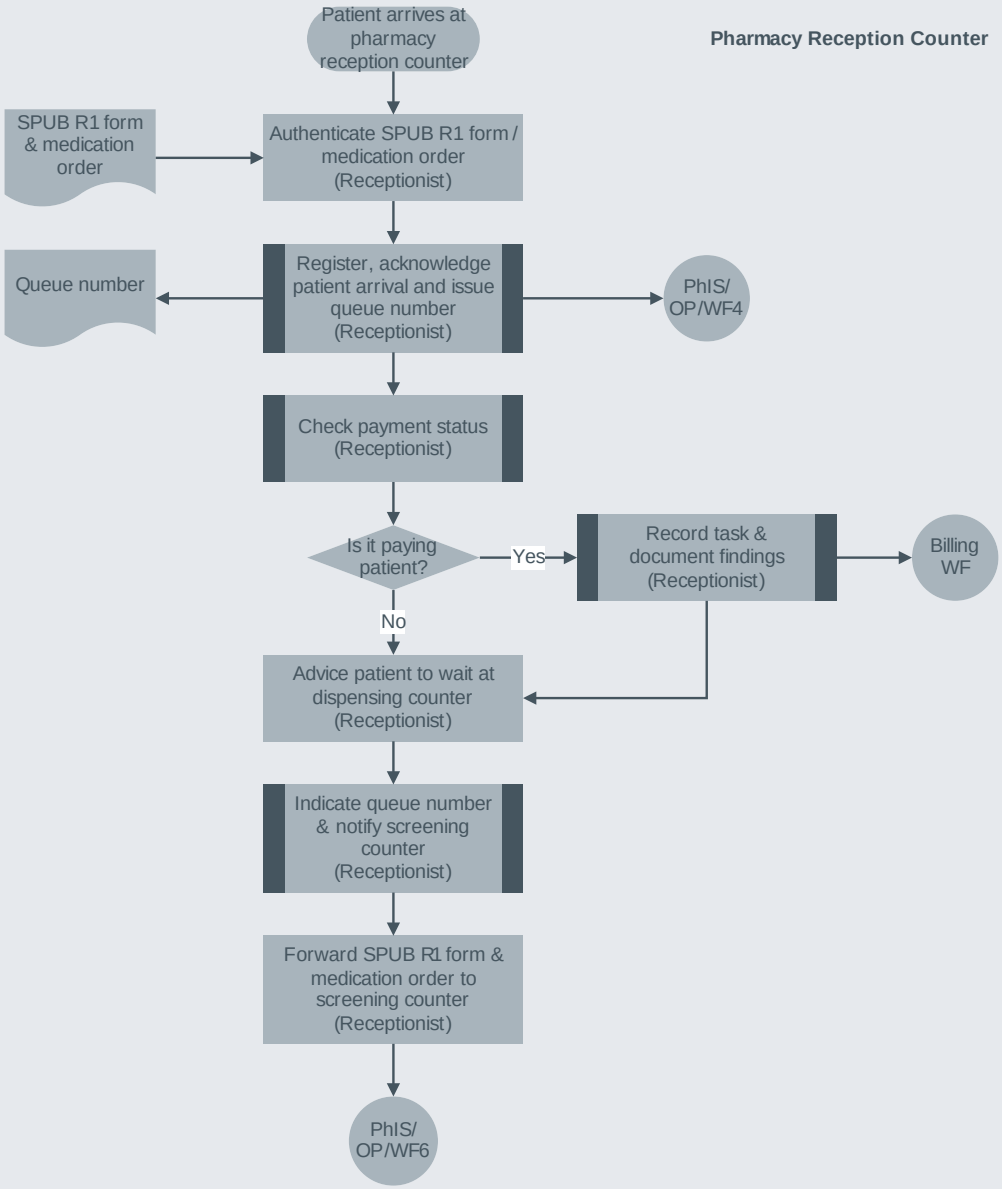
OUTPATIENT PHARMACY QUEUE MANAGEMENT (EXTERNAL CLIENT) WORKFLOW PhIS/OP/WF3



Note: External medication order need to be registered at the pharmacy counter

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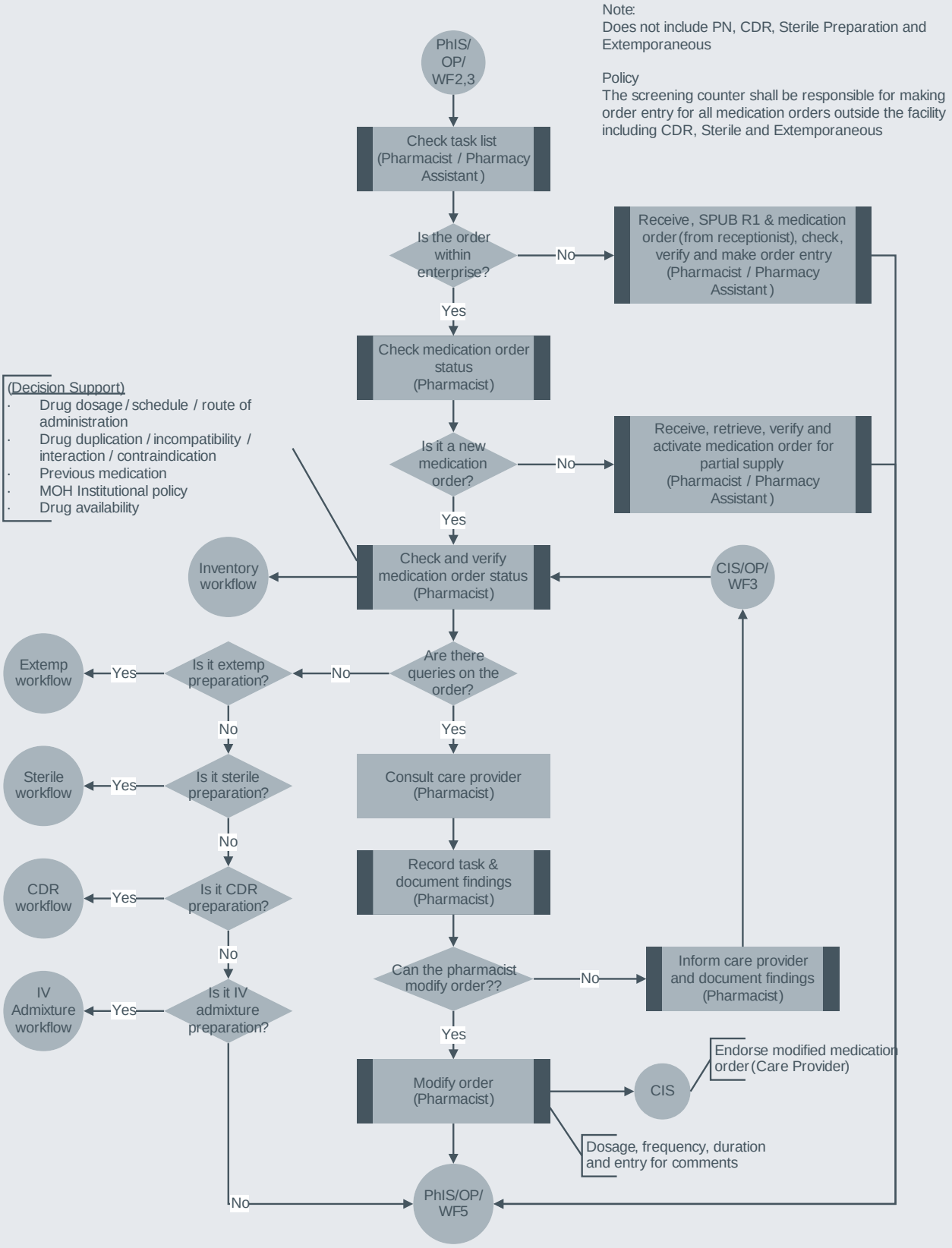
OUTPATIENT PHARMACY RECEIVING AND SCREENING OF MEDICATION ORDERS WORKFLOW
PhIS/OP/WF4



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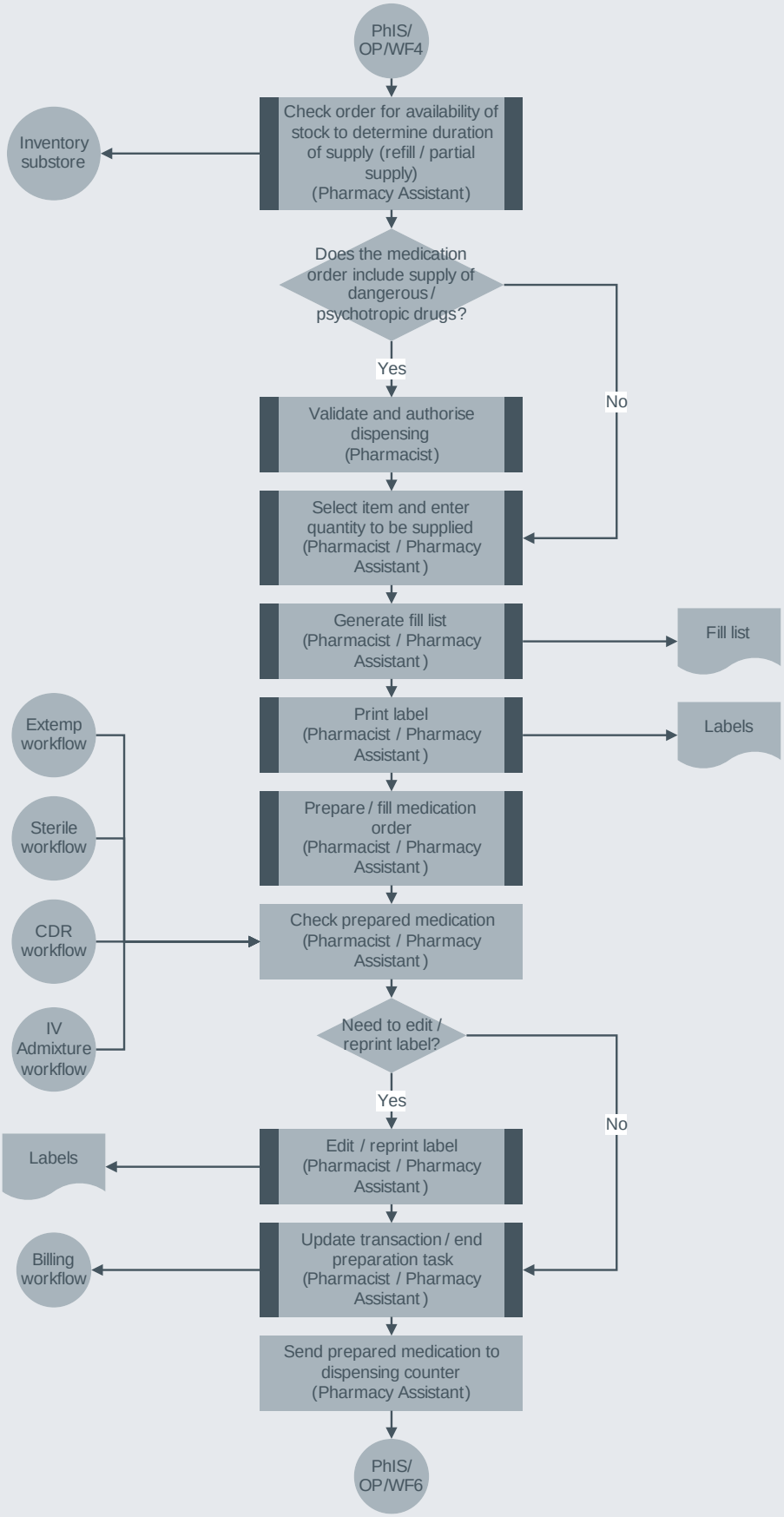
OUTPATIENT PHARMACY PREPARATION OF MEDICATION ORDERS WORKFLOW
PhIS/OP/WF5



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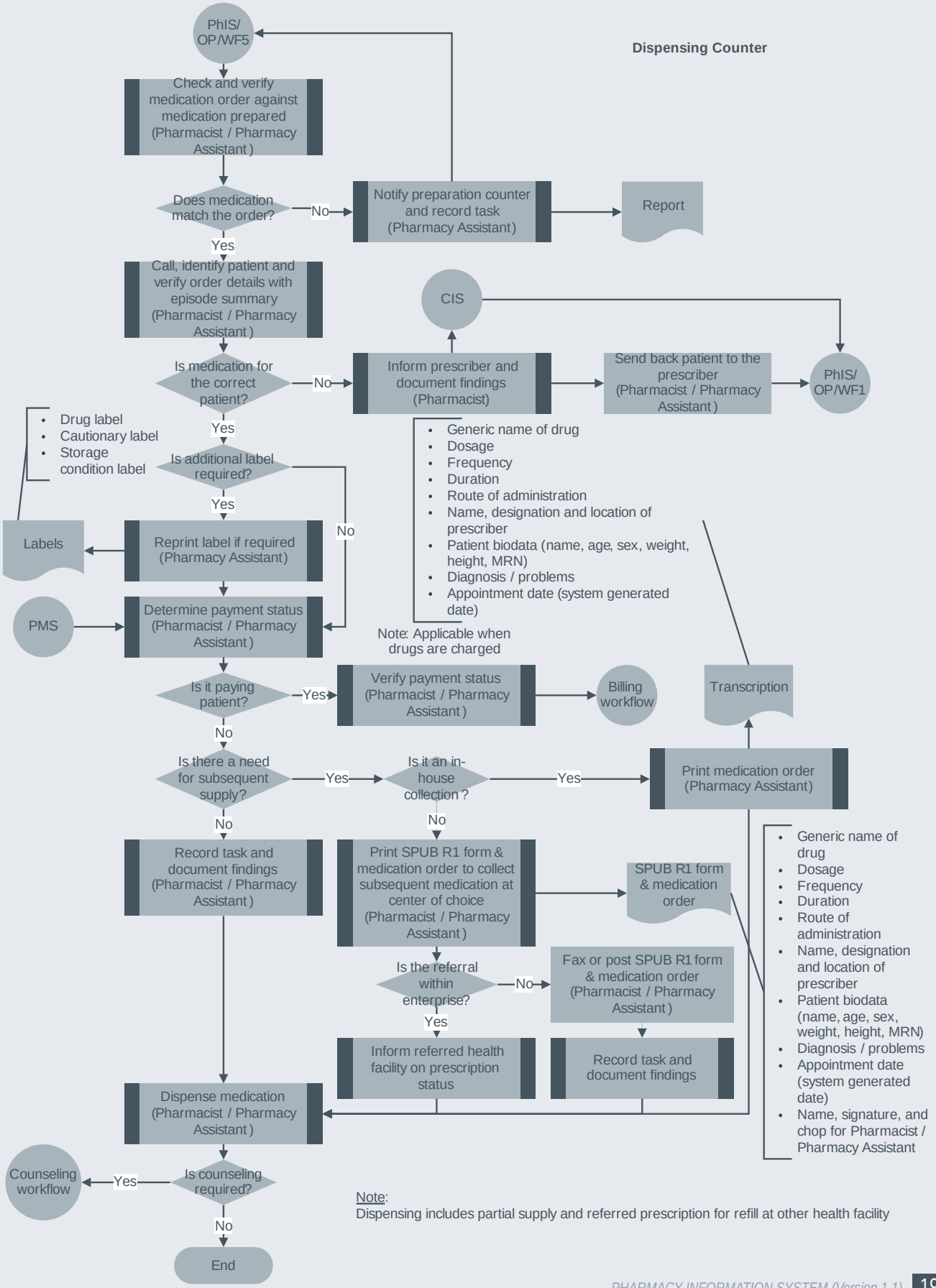
OUTPATIENT PHARMACY DISPENSING OF MEDICATION WORKFLOW
PhIS/OP/WF6



Note:
Dispensing includes partial supply and referred prescription for refill at other health facility

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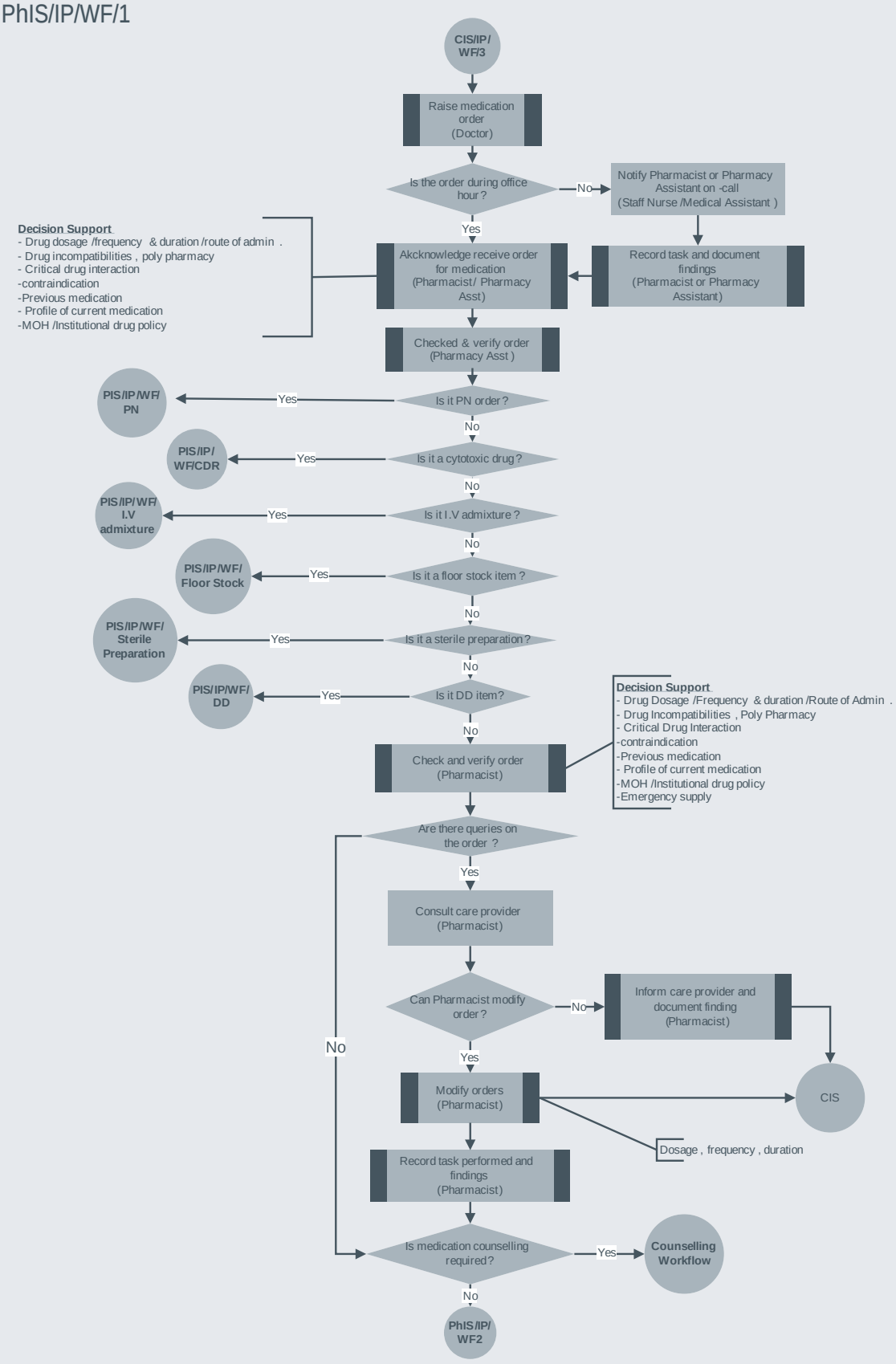
Inpatient Pharmacy Screening of Medication Order Workflow
PhIS/IP/WF/1



Note: Extemporaneous preparations are excluded from this flow because screening is performed at the inpatient pharmacy.

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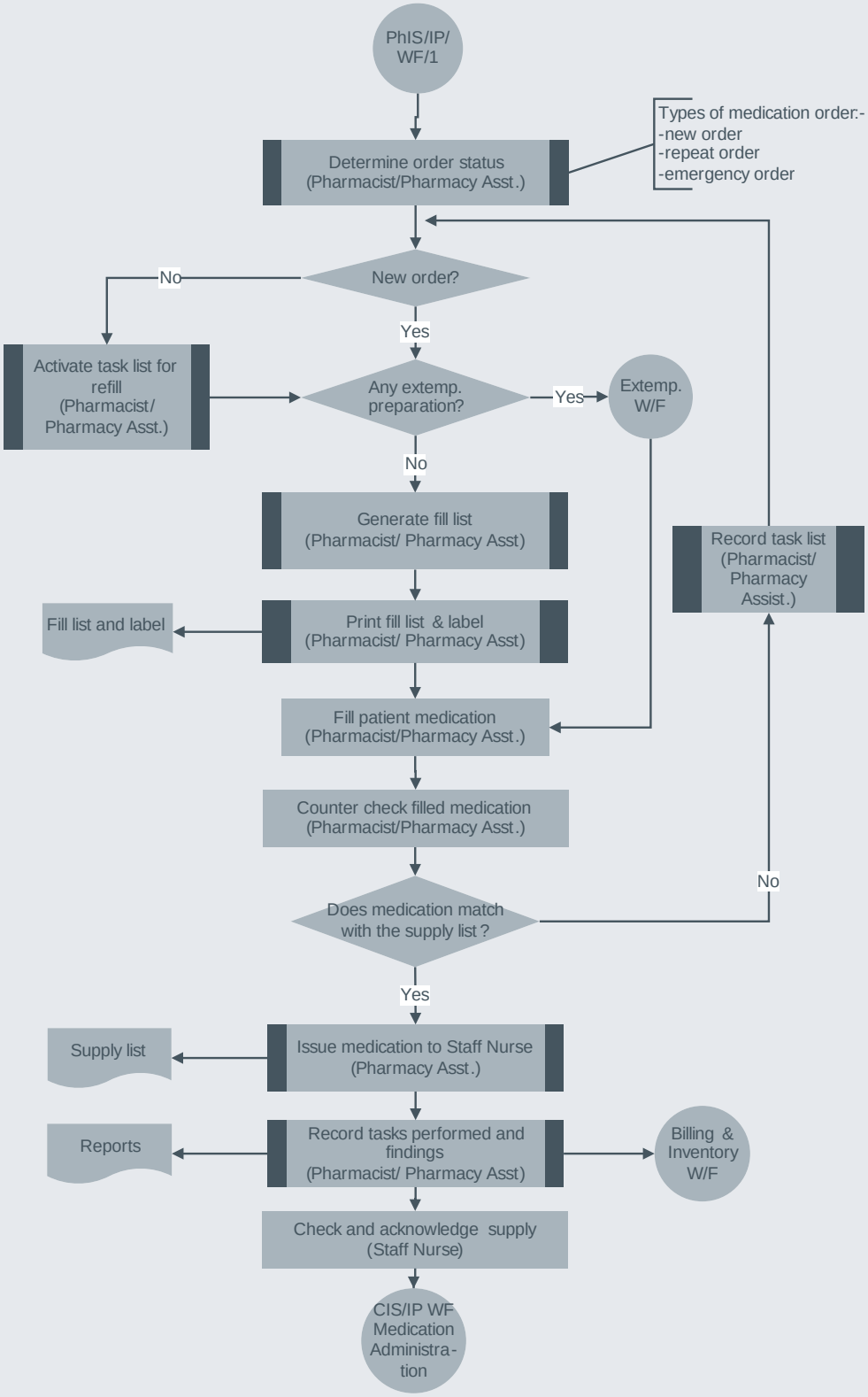
Inpatient Pharmacy Supply of Medication (Unit of Use/ Unit Dose) Except For Dangerous Drug Orders Workflow
PhIS/IP/WF/2



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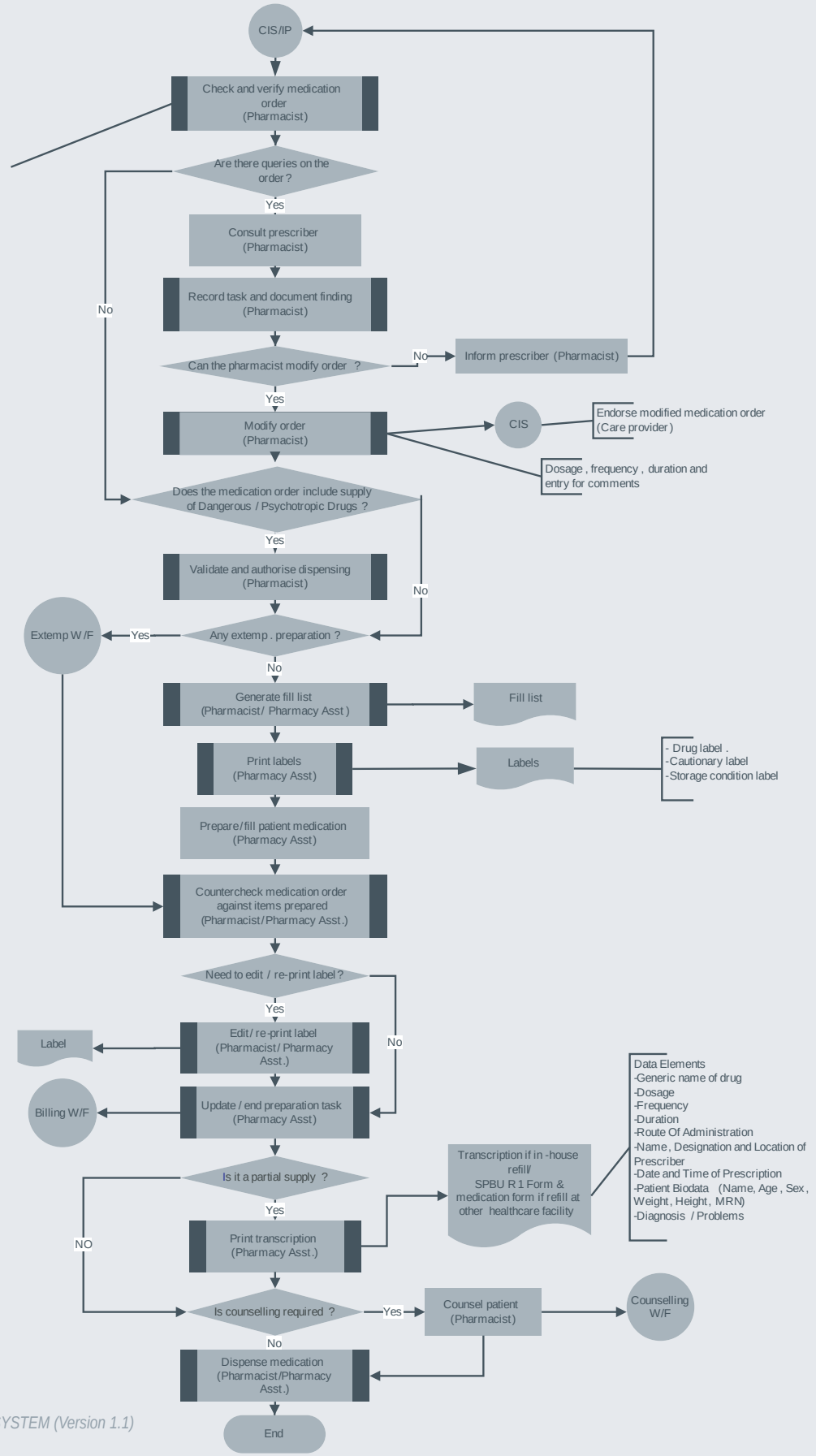
Inpatient Pharmacy Dispensing of Medication For Discharged Patient - Including Bedside Dispensing Workflow
PhIS/IP/WF/3

Decision Support
-drug dosage/schedule/route of admin.
-drug duplication/ incompatibility/ interaction/contraindication
-previous medication



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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Outpatient Pharmacy - Queue Management (Electronic Medication Order) - PhIS/OP/WF/2.			
1.	Acknowledge patient arrival and issue queue number.	• Ability to acknowledge patient arrival at pharmacy counter, using MyKAD, barcode (patient identification) or transcription. • Ability to activate all medication orders for refill purposes and assign patient to queue. • Ability to provide mapping of encounter number with queue number and medication orders. • Ability to capture time of patient acknowledgement when queue numbers are issued. • Ability to show average waiting time at the display monitor. • Ability to provide listing of medication order according to acknowledgement time so that staff manning respective preparation workstation will prioritize dispensing. • Ability to provide listing of patient waiting at various location/clinics within specific time period in order to justify needs of pharmacy staff.	• All in-house medication order status from the clinics shall be displayed on a monitor prior to registration at pharmacy counter. • The priority of medication supply will be based on patient's arrival time at the pharmacy counter. • All patients arriving at the pharmacy department shall be acknowledged and be given the pharmacy queue number. • Queue management system must be interfaced with order management. • Status of the medication order and average waiting time shall be made known to the patient. • Medication order task list shall remain active until expiry date and for uncollected medication orders.

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
2.	Check payment status.	• Ability to link with PMS to check on payment status. • Ability to link with HRMIS to check on patient eligibility and verify employment status of government servant.	• Patient shall be required to produce guarantee letter upon registration. • Online guarantee letter shall be accepted subject to MOH policy.
3.	Record task and document findings.	• Ability to facilitate entries for documentation of activities carried out.	

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Outpatient Pharmacy - Queue Management (External Clients) - PhIS/OP/WF/3.			
1.	Register patient.	• Ability to access registration module for registration of patient from outside the facility. • Ability to provide encounter number for refill medication orders from outside the enterprise.	• All outpatients referred from outside the facility shall be registered prior to dispensing of medication. • All patients registered at the pharmacy shall be provided with an encounter number.
2.	Acknowledge patient arrival and issue queue number.	• Ability to acknowledge patient arrival at pharmacy counter, using MyKAD, barcode (patient identification) or transcription. • Ability to provide mapping of encounter number with queue number and medication orders. • Ability to capture time of patient acknowledgement when queue numbers are issued. • Ability to show average waiting time at the display monitor. • Ability to retrieve medication orders within the facility for dispensing via Integrated Supply (Pendispensan Ubat-ubat Bersepadu) and assign patient to queue. • Ability to provide listing of medication orders according to acknowledgement time so that staffs manning respective preparation workstation are able to prioritize dispensing. • Ability to provide listing of patients waiting at various location/clinics	• The priority of medication supply will be based on patient's arrival time at the pharmacy counter. • All patients arriving at the pharmacy department shall be acknowledged and be given pharmacy queue number. • Status of the medication order and average waiting time shall be made known to the patient.

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		within a specific time period in order to assure adequate pharmacy staff needs.	
3.	Check payment status.	• Ability to link with PMS to check on payment status. • Ability to link with HRMIS to check on patient eligibility and verify employment status of government servant.	• Patient shall be required to produce guarantee letter upon registration. • Online guarantee letter shall be accepted via HRMIS subject to availability. The screening counter shall be notified.
4.	Indicate queue number & notify pharmacy screening counter.	• Ability to alert the screening counter at point of registration for all refill medication orders including those from outside the facility.	• All refill and referral for SPUB medication orders shall be notified to the screening counter.
5.	Forward SPUB R1 form & medication order to screening counter.		• All SPUB R1 form & medication order shall be filed accordingly.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Outpatient Pharmacy - Receiving And Screening Of Medication Orders - PhIS/OP/WF/4.			

1.	Check task list.	• Ability to view medication orders/ task list according to:-
		  • In-house medication order status.
		  • Refill medication orders.
		  • Medication orders within the facility for dispensing drug as per Integrated Supply Policy (Pendispensan Ubat-ubat Bersepadu).
		• Ability to alert and redirect medication orders to relevant work station for the following:-
		  • Sterile preparation.
		  • Extemporaneous.
		  • CDR.
		  • IV Admixture.
			• All medication orders shall be screened for completeness and appropriateness.
			• All medication orders within or outside enterprise shall conform to Integrated Supply Policy (SPUB).
			• The screening counter shall be responsible for making order entry for all medication orders outside the facility including CDR, sterile and extemporaneous, IV admixture.

2.	Check medication order status.	• Ability to denote new, refill and outside the facility (SPUB) medication orders.	
3.	Check SPUB R1 form & medication order and make order entry.	• Ability to enable pharmacy personnel to enter the details of medication order from outside the enterprise (SPUB).	• All order entries made for SPUB shall be verified by the pharmacist in-charge.
4.	Check and verify medication order.	• Ability to access patient EMR if required. • Ability to provide decision support on drug dosage, schedule to, route of administration, incompatibility, interaction.	• Pharmacist shall be given access to relevant clinical information. • All drugs must be prescribed by authorized personnel

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		• Ability to provide search functionality for patented proprietary drugs. • Ability to provide a summary of all previous medications and their status such as refill dispensed "unattended" and "uncollected". • Ability to repeat previous medication orders (to be provided under CIS also). • Ability to provide alert on drug duplication for drugs supplied and duration ordered within a specified period of six months. • Ability to link and access drug monograph information database. • Approved drug list and all other DCA approved drugs with functions to update, activate and inactivate, discontinue formulary as and when required. The system shall be able to maintain and indicate the orderable items according to the local drug formulary, MOH and non-MOH.	as defined by MOH. • Access policy shall be determined by the National Policy. • All drugs must be appropriately coded with ATC/MDC as approved by MOH. MDC code shall be maintained and updated by a dedicated unit in the Pharmacy Division, MOH. • All drugs shall be categorised according to pharmacological classifications. • The maximum period of each supply of any medication shall not be more than three months.

		• The system shall be able to indicate the orderable items according to drug category as defined by MOH.
		• Ability to provide search function for medications according to alphabetical order in general and pharmacological classifications (items within the groupings to be arranged in alphabetical order).
		• Ability to search and map generic
			• All medication order shall contain mandatory data element as defined by MOH.
			• Medication order shall be categorised as follows based on MOH local policy:-
			  • Drug category.
			  • Discipline/ Specialty.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES

		name of drugs with its common trade name and generate medication orderable in generic term by default.
		
		• Medication order to provide the following data element:-
		  • Patient bio data (name, age, sex, weight, height, MRN, encounter number, queue number.
		  • Diagnosis / episode summary.
		  • Generic name of drug.
		  • Dosage.
		  • Frequency.
		  • Duration.
		  • Route of administration.
		  • Name, designation and Location of prescriber.
		  • Date and time of medication order.
		
		• For all medication orders on 'when necessary basis' (prn), the instruction from the prescriber should be defaulted in the system.
		
		• Ability to indicate status of verified medication order as screened.
			• Doctor specific medication order.
			
			• All medication orders shall be verified in accordance with MOH or local policy.

5.	Retrieve, verify and activate medication order for partial supply.	• Ability to retrieve partial medication orders and activates the medication order. • Ability for the system to invalidate medication order upon expiry of validity period for the medication order.	• Medication order of a particular drug is considered valid for the duration prescribed from the date of prescribing. • Maximum and minimum stock level shall be determined by local policy.

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES

6.	Check order for availability of stock.	• Ability to indicate stock availability at counter and sub-store level.
		• Ability to link to Inventory Management Module for:-
		  • Checking of stock availability.
		  • Online indenting to main store.
			• Indenting of medication to the main store shall be done in accordance to local policy.

7.	Record the consultation and findings.	• Ability to provide entry for documentation of task and relevant findings during consultation activities. • Ability to provide audit trail from medication order to dispensing.	
8.	Modify order.	• Ability to provide function for modification of medication orders by Pharmacist and entry for any relevant reason. • Ability to process the modified medication order for dispensing prior to co-sign. • Ability to map modified or created new medication order upon queried with the original medication order number and queue number given to the patient. • Ability to indicate the modification made to order to minimize any error in the process of supplying the drugs.	• Modifications made to medication orders must be carried out in consultation with the prescriber or based on approved local policy. • Modification or cancellation of the order can only be done by the prescriber himself or by another personnel assigned to cover his duty during his absence. • For modification done by Pharmacist (dosage, frequency, duration) such order shall be confirmed by prescriber or his/her representative and

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
			shall be recorded in EMR and authorised by prescriber. • Orders modified by Pharmacist /Pharmacy Assistant after consulting the prescriber must be endorsed. • For all medication orders sent back to the care provider for modification or writing of new order, the queue number patient should be mapped with the original and modified medication order number.

9.	Inform care provider and document findings.	• Ability to support template for reports on various type of queries.
		• Ability to provide alert in CIS for:-
		  • Endorsement of modified orders.
		  • Queried medication orders.
		  • Endorsement according to MOH drug categories.
			• All queries that relate to medication order shall be comprehensively and appropriately documented.

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Outpatient Pharmacy - Preparation Of Medication Orders - PhIS/OP/WF/5.			

1.	Check order for availability of stock to determine duration of supply (refill/partial supply).	• Ability to link with the Inventory Management Module to denote stock level.
		• Ability to alert Pharmacy Assistant on the availability of stock according to:-
		  • Minimum stock level.
		  • Maximum stock level.
		  • Status of stock level in main store.
			• Stock level at the outpatient pharmacy shall be maintained at the sub-store.

2.	Validate and authorise dispensing.	• Ability to capture essential information for validating issuance of Psychotropics / Dangerous Drugs:-
		  • Name of person validating and issuing of the drug.
		  • Date and time of issuing.
			• Validation and issuance of Psychotropics / Dangerous Drugs must be in accordance to Poisons (Psychotropic Substance) 1989 and Dangerous Drugs Act 1952 respectively.

3.	Select item and enter quantity to be supplied.	• Ability to interface with billing module to provide itemised/ total costing of medication supplied. • Ability to update stock level upon filling.	• Itemized costing of medication orders shall be made available as and when required according to local policy.
4.	Generate fill list.	• Ability to generate fill list for all medication ordered.	

5.	Print labels.	• The system must be able to generate drug labels with following data:-
		  • Name of patient.
		  • Name of drug.
		  • Dosage.
			• All drugs issued and dispensed must be appropriately labelled.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		• Frequency. • Cautionary advice. • Amount/quantity dispensed. • Total cost of drug. • Dispensing date. • Expiry date. • Hospital/Clinic name and contact number. • The phrase 'Ubat Terkawal'. • Ability to provide option for selecting language of preference for labels (Bahasa Malaysia/ English).	
6.	Edit /reprint label.	• Ability to print and reprint drug cautionary label and storage condition label at the preparation and dispensing level. • Ability to edit, modify instructions on label.	• Only authorised personnel are allowed to edit, modify and reprint labels in accordance with MOH/local policy.
7.	Update transaction / end preparation task.	• Ability to notify dispensing counter on status of medication preparation such as:- • Not attended yet (by default). • Being processed. • Ready for dispensing. • Ability to capture user identification and password upon completion of filled medication orders.	• All preparation of medication orders must be authenticated by the personnel involved.

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Outpatient Pharmacy - Dispensing Of Medication - PhIS/OP/WF/6.			

1.	Check and verify medication order against medication prepared.	• Ability to display all medication orders and details of the medications filled.
		• Ability to indicate dispensing status according to the following:-
		  • Not attended yet (by default).
		  • Being processed.
		  • Ready for dispensing.
		• Ability to provide entries for incident reporting on errors occurring during filling. (According to MOH predefined format).
			• All patients must be registered before medication orders are raised and drugs prescribed must be specific for the registered patient only (This is to ensure that the therapeutic need of the respective patient is captured in the LHR which is unique for the patient).

2.	Call patient, identify and verify order details with episode summary.	• Ability to view episode summary to verify patient's medication order.	• Patient episode summary shall be made available to relevant pharmacy personnel.
			• Patient shall be identified by at least two of the following:-
			  • Queue number.
			  • PMI.
			  • MyKad/IC.
			  • Follow-up /appointment card.

3.	Notify preparation counter and record task.	• Ability to alert preparation counter personnel on any discrepancy pertaining to fill medication and change status to 'on hold'. • Ability to support template for documentation of wrongly filled medication order.	• Discrepancy pertaining to wrongly filled medication orders shall be appropriately documented.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
4.	Reprint label if required.	• Ability to print label as and when necessary.	
5.	Inform prescriber and document findings.	• Ability to support template for reports on various type of queries. • Ability to link and provide alert in CIS for all queried medication orders. • Ability to denote all reviewed medication orders as modified, cancelled or amended. • Ability to re-send to screening counter and prioritise the medication order.	• All queries on medication orders shall be comprehensively and appropriately documented.
6.	Determine payment status.	• Ability to indicate the payment status such as paying or free as rule base from the FIS.	
7.	Verify payment status.	• Ability to indicate the payment status such as paid or free.	• All payments shall be done according to MOH or local policy.
8.	Dispense medication.	• Ability to integrate with MyKAD functionalities to record medications dispensed. • Ability to update stock level upon dispensing. • Overlapping of supply within the previous six months. • Ability to indicate dispensed orders as complete and partial. • Ability to purge and retrieve dispensed order whenever required. • Ability to provide a list of all partially filled or uncollected medication orders.	• Data captured for LHR for the purpose of medication supplied shall be at the dispensing level. • Reminder for refill medication order shall be made through PLHP services.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		• Ability to track the status of partial filling of orders by patient and type of medication such as name/code of drug, pharmacological group.	
9.	Print transcription.	• Ability to have an option to print transcription either in full or for selected items only for balance medication. Transcription details are as follows:- • Patient bio data (name, age, sex, weight, height, MRN). • Diagnosis / problems. • Generic name of drug. • Dosage. • Frequency. • Duration. • Route of administration. • Duration and quantity supplied and balance to be supplied. • Name, designation and location of prescriber. • Date and time of medication order. • Next collection date (for partial supply only).	• Transcription shall consist of the following data:- • Patient bio data (name, age, Sex, weight, height, MRN). • Diagnosis / problems. • Generic name of drugs. • Dosage. • Frequency. • Duration. • Route of administration. • Duration and quantity supplied. • Name, designation and location of prescriber. • Date and time of medication order. • Next collection date (for partial supply only).
10.	Record task and document finding.	• Ability to provide entry for documentation of task and relevant findings during dispensing activities. • Ability to provide audit trail on drugs prescribed and dispensed. • Ability to capture user identification and password upon completion of filled medication orders.	

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		• Ability to indicate uncompleted tasks and their reasons (for example patient does not turn up to collect). • Ability to purge the uncompleted task on expiry of medication order.	
11.	Print SPUB R1 form & medication order to collect subsequent medication at centre of choice.	• Ability to generate SPUB R1 form & medication order for collection of medication at centre of choice.	• All collection of medication at patient's centre of choice must be issued together with SPUB R1 form & medication order as accordance to Integrated Supply (SPUB) policy. • All SPUB R1 form must be signed by the authorised personnel.
12.	Inform referring health facility on prescription status.	• Ability to transmit medication order status electronically to the referred health facility (within enterprise only).	• Medication order status for all subsequent collection of medications at patient's centre of choice (within enterprise) must be notified.
13.	General function of dispensing.	• Ability to provide access to Just In Time – Continuing Pharmacy Education (JIT – CPE) and JIT-MCPHIE. • Ability to enable end user to operate the application as single or multiple users. • Ability to generate report for	• All dispensing activities shall be counterchecked by a second person whenever the situation permits.

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		statistic, management and operational purposes. • Ability to generate report on medication order and issuance of Psychotropics/ Dangerous Drugs. • Ability for reissue of medications against loss or damage upon dispensing if necessary.	

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Inpatient Pharmacy - Screening Of Medication Orders (Unit Of Use/ Unit Dose) - PhIS/IP/WF/1.			
1.	Place medication order.	• Ability to provide search function for medications according to alphabetical order in general and pharmacological classifications (items within the groupings to be arranged in alphabetical order). • Ability to search and map generic name of drugs with its common trade name and generate medication orderable in generic term by default. • Ability to indicate all medication brought by the patient during the stay in ward/unit. • For all medication orders on 'when necessary basis' (prn), the instruction from the prescriber should be defaulted in the system.	• All medication orders must be prescribed by authorised care provider according to MOH drug prescribing policy. • All medications brought by patient during the stay in the ward/unit should be surrendered back to patient upon discharge.
2.	Acknowledge, receive, check and verify medication order.	• Ability to receive and view medication order which shall consist of the following data:- o Patient bio data (name, age, sex, weight, height, MRN). o Patient location (ward/ bed number). o Diagnosis / problems. o Generic name of drug. o Dosage. o Frequency. o Duration. o Route of administration. o Name and designation of prescriber and discipline (unit) prescriber is attached to. o Date and time of medication order o Medication order number. • Ability to indicate the source of drug	• Drugs dispensed to the ward shall be in conformity with unit dose/unit of use local policy. • Medication orders shall consist of the following data:- o Patient bio data (name, age, sex, weight, height, MRN). o Patient location (ward/ bed number). o Diagnosis / problems. o Generic name of drug. o Dosage.

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		to be supplied such as floor stock, patient's own drug, investigational drug. • Ability to generate a unique medication order number as defined by local policy. • Ability to view relevant clinical information:- o LHR. o Clinical summary from CIS. • Ability to denote new and refill medication orders. • Ability to provide decision support on drug dosage, schedule/route of administration, incompatibility, interaction (including CIS). • Ability to link and access drug monograph information database. • Ability to receive medication orders for patient referred from hospitals within the enterprise (to consider under CIS – day care).	o Frequency. o Duration. o Route of administration. o Name, designation and location of prescriber and discipline (unit) prescriber is attached to. o Date and time of medication orders. o Medication order number.
		• Ability to provide alert on drug duplication for drugs supplied and duration ordered within a specified period of one week. • Ability to override the previous order if there is a change in dosage for same drug.	• The maximum period for supply of any medication shall not exceed a period of one week. Further supply shall be made after review.
		• The system shall be able to maintain and indicate the orderable items according to the local drug formulary, MOH and non-MOH approved drug list and all other DCA approved	• All drugs must be appropriately coded with ATC/MDC as approved by MOH.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		drugs with functions to update, activate and inactivate, discontinue formulary as and when required. • The system shall be able to indicate the orderable items according to drug category as defined by MOH. • Ability to receive and view screened current medication orders for processing supplies.	• Medication orders of a particular drug are considered valid for the duration prescribed from the date of prescribing. • Medication orders shall be governed by MOH or local policy based on:- o Drug category. o Discipline / Specialty. o Doctor specific prescription.
		• Ability to view patient current medication profile detailing the following:- o Current medication, amount supplied previously and duration of supply. o Change of medication, (dose, frequency, duration) and medication that has been stopped. o Category A and A* drugs prescribed. • Ability to provide a summary of all previous medications and its related clinical summary with option to view relevant EMR if required. • Ability to allow pharmacist performing clinical pharmacy function to make entries into the EMR as and when necessary during medication counselling and all relevant clinical pharmacy interventional activities.	• Supply of all category A drugs shall be endorsed by consultant in accordance to MOH or local policy. • Pharmacist shall be given access to relevant clinical information as contained in EMR. • Pharmacists performing clinical pharmacy function shall be allowed to make entries into the EMR as and when necessary during medication counselling and all relevant clinical pharmacy interventional activities.
		• Ability to link to Inventory Management Module for:-	• Indenting of medication to the main store shall

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		o Checking of stock availability. o Online indenting to main store.	be done in accordance to local policy. • Medication orders arriving after pharmacy working hour (subject to local policy) will be processed the following day. During this period supplies can be obtained from the floor stock.
		• Ability to indicate status of screened order as verified.	• All medication orders shall be verified in accordance with MOH or local policy.
3.	Determine the type of order.	• Ability to indicate types of order such as:- o PN. o CDR. o IV Admixture. o Sterile preparation. o Floor Stock (DD & Non DD). o Counselling. o Emergency stock. • Ability to enable the Pharmacist or Pharmacy Assistant to redirect medications order to relevant workstations as above.	• Only authorized personnel are allowed to redirect medications order to relevant work stations.
4.	Inform care provider and document finding.	• Ability to support template for reports on various type of queries. • Ability to link and provide alert in CIS for all queried prescription.	• All queries that relate to medication order shall be comprehensively and appropriately documented.
5.	Modify order.	• Ability to provide function for modification of medication orders by Pharmacist and entry for any relevant remarks.	• Modifications made by Pharmacist to medication orders must be carried out in

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		• Ability to process the modified medication order for dispensing prior to co-sign. • Ability to indicate modified medication order to prevent any error in the process of supplying the drugs.	consultation with the prescriber or based on approved local policy. • Modification or cancellation of the order can be done by the prescriber himself or by another personnel assigned to cover his/her duty during his absence or his/her supervisor. • All modification of the orders as entered by the Pharmacist shall be endorsed by the care provider for designated person.
6.	Record tasks performed and findings.	• Ability to facilitate entries for documentation of activities carried out. • Ability to capture details of the personnel on call and provide audit trail for after office hour inpatient dispensing.	• Details of the personnel on call and medications dispensed shall be documented.

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Inpatient Pharmacy - Supply Of Medication (Unit Of Use/ Unit Dose) - PhIS/IP/WF/2.			
1.	Determine order status.	• Ability to indicate types of order such as:- o New order. o Refill. o Extemporaneous Order.	• The maximum period for supply of any medication shall not exceed a period of one week. Further supply shall be made after review.
2.	Activate task list for refill.	• Ability to automatically retrieve medication orders for refill and activate the medication order based on due date.	
3.	Generate fill list.	• Ability to indicate all medication orders that require immediate supplies.	• Supply of medication ordered will be in accordance with pre determined supply time as defined by local policy. Any new order (including change in dosage, frequency and duration) will be attended to at subsequent supply time. • For drugs ordered between the supply time requiring immediate supply, the pharmacy needs to be informed by phone or other means. • The care provider shall determine the status of medication order to indicate emergency immediate routine supply.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
4.	Print fill list.	• Ability to print fill list with system generated unique serial number based on requested interval supply time.	• Printing of fill list can only be done by authorised personnel.
5.	Print label.	• Ability to provide option for selecting language of preference for labels (Bahasa Malaysia/ English). • Ability to print and reprint labels. - Unit of Use/ Unit Dose Label:- o Name of patient. o PMI number. o Bed number and ward. o Name of drugs. o Dosage and frequency. o Amount supplied. o Dispensing date. • Ability to print and reprint drug cautionary label and storage condition label at the preparation and dispensing level. • Ability to provide options for editing or to modify instructions on drug label when required.	• All drugs dispensed must be accurately labelled.
6.	Notify preparation counter and record task.	• Ability to alert preparation counter personnel on any discrepancy pertaining to filled medication and change status to “on hold’. • Ability to support template for documentation of wrongly filled medication order.	• Discrepancy pertaining to wrongly filled medication orders shall be appropriately documented.
7.	Fill medication order.		• All medication supplied must be correctly filled and labelled and placed in a designated container labelled with patient’s name and

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
			Inpatient Registration Number (IRN).
8.	Countercheck filled medication.	• Fill list should incorporate name and designation of personnel involved in screening, preparation and supply of medication.	• The person filling the medication should enter their name and sign on the fill list. • Counter checking and filling medication should be done preferably by different persons.
9.	Issue medication to staff nurse.	• Ability to record the identity of the receiver. • Ability to generate and print medication administration schedule (if required). • Ability to indicate the status of medication administration schedule (e.g. time administered, time due). • Ability to capture data for LHR/ MyKAD shall be triggered at the point of supply for in-patient. Medication order should be triggered at the point of administration. • Ability for reissue of medications against loss or damage upon dispensing if necessary.	• All medication issued shall be acknowledged and signed by receiving personnel. Supply list shall include date and time of receipt. • Data regarding medication given to patient for LHR shall be captured on discharge.
10.	Record tasks performed and findings.	• Ability to document findings for all supplied medication. • Ability to provide audit trail on medication order and supply status from the time when medication order is raised to time of dispensing.	

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Inpatient Pharmacy - Dispensing Of Medication for Discharged Patient - Including Bedside Dispensing - PhIS/IP/WF/3. Note: Medication order screening and medication preparation process for bedside/discharge dispensing are the same as for outpatient dispensing. As opposed to outpatient dispensing where patients receive their medication at the counter, medication for all bedside/discharge dispensing are prepared in the satellite pharmacy and supplied to the patient in their respective wards.			
1.	View and check medication order.	• Ability to view discharge medication orders. • Ability to indicate and provide alert on additional orders for the same patient. • Ability to view request from prescriber for medication counselling (checklist required). • Ability to provide a summary of all previous medications and its related clinical summary with option to view relevant EMR if required. • Ability to provide decision support on drug dosage, schedule/route of administration, incompatibility, interaction (including CIS). • Ability to provide a summary of all previous medications. • Ability to repeat previous medication orders (to be provided under CIS also). • Ability to provide alert on drug overlapping of supply. • Ability to access drug information database. • Ability to maintain the list of orderable	• All drugs must be prescribed by authorized personnel as defined by MOH. • All drugs must be appropriately coded with ATC/MDC as approved by MOH. • All patients must be registered before orders (medication orders) are raised and drugs prescribed must be specific for the registered patient only (This is to ensure that the therapeutic need of the respective patient is captured in the LHR which is unique for the patient). • The maximum period of supply for any medication shall be in the range of two weeks to three months and depends on status of availability of stock. • Medication orders shall consist of the following data:-

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		items according to changes made to the local drug formulary, MOH and non-MOH approved drug list and all other DCA approved drugs with functions to update, activate and inactivate, discontinue formulary as and when required. • Ability to indicate the orderable items according to drug category as defined by MOH. • For all medication orders on 'when necessary basis' (prn), the instruction from the prescriber should be defaulted in the system.	o Patient biodata (name, age, sex, weight, height, MRN). o Diagnosis / problems. o Generic name of drug. o Dosage. o Frequency. o Duration. o Route of administration. o Name, designation and location of prescriber. o Date and time of medication order. • Pharmacist shall be given access to relevant clinical information as contained in EMR. • Pharmacist shall be authorised to make entries into the EMR as and when necessary during medication counselling and all relevant clinical pharmacy interventional activities. • Modification or cancellation of the order can only be done by the prescriber himself or by another personnel assigned to cover his duty during his absence.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
			• Pharmacist shall be authorised to modify the medication order upon consultation with the prescriber. • Medication order of a particular drug is considered valid for the duration prescribed from the date of prescribing. • Medication orders shall be governed by MOH/ local policy based on:- o Drug category. o Discipline / Specialty. o Doctor specific prescription.
		• Ability to indicate status of screened order as verified.	• All medication orders shall be verified in accordance with MOH or local policy.
2.	Record task and document findings.	• Ability to provide entry for documentation of task and relevant findings during preparation and dispensing activities. • The system should capture the identity of persons involved in the process of dispensing (screening, filling, dispensing) and recognize single or multiple roles for the process of dispensing.	
3.	Modify order.	• Ability to provide function for modification of medication orders by Pharmacist and entry for any relevant remarks. • Ability to process the modified	• Modifications made to medication orders must be carried out in consultation with the prescriber or based on approved local policy.

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		medication order for dispensing prior to co-sign.	• All modification shall be endorsed by the care provider. • Modification or cancellation of the order can only be done by the prescriber himself or by another personnel assigned to cover his duty during his absence. • For modification done by pharmacist such order shall be confirmed by prescriber or his/her representative and shall be recorded in EMR and authorised by prescriber.
4.	Validate and authorise dispensing.	• Ability to capture essential information for validating issuance of Psychotropics/ Dangerous Drugs:- o Name of person validating and issuing of the drug. o Date and time of issuing.	• Validation and issuance of Psychotropics/ Dangerous Drugs must be in accordance to Poisons (Psychotropic Substance), 1989 and Dangerous Drugs Act 1952 respectively.
5.	Make entry for medication supplied.	• Ability to interface with billing module to provide itemised/ total costing of medication supplied.	• Itemised costing of medication orders shall be made available as and when required according to local policy.
6.	Print, edit or reprint labels.	• Discharge Medication Label:- • Name of patient. • PMI number. • Name of drug.	• All drugs issued and dispensed must be appropriately labelled.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		• Dosage. • Frequency. • Amount/quantity dispensed. • Batch Number. • Cautionary information. • Dispensing date. • Expiry date. • Cost. • Hospital/Clinic name and contact number. • Ability to provide option for selecting language of preference for labels (Bahasa Malaysia/ English).	
7.	Check medication supplied against medication orders.	• Ability to provide entries for incident reporting on errors occurring during filling (according to MOH predefined format).	
8.	Update/ end preparation task.	• Ability to capture user identification and password upon completion of filled medication orders. • Ability to indicate uncompleted task and reasons (for example patient does not turn up to collect). • Ability to purge the uncompleted task on expiry of medication order.	• All preparation of medication orders must be authenticated by the personnel involved. • Uncompleted task will remain active until expiry date of medication order according to the local policy.
9.	Print transcription.	• Ability to have an option to print transcription either in full or for selected items only for balance medication. Transcription details are as follows:- • Patient bio data (name, age, sex, weight, height, MRN). • Diagnosis / problems. • Generic name of drug. • Dosage. • Frequency.	• Transcription shall consist of the following data:- • Patient bio data (name, age, sex, weight, height, MRN). • Diagnosis /problems. • Generic name of drug. • Dosage.

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		• Duration. • Route of administration. • Duration and quantity supplied and balance to be supplied. • Name, designation and location of prescriber. • Date and time of medication order • Next collection date (for partial supply only). • Ability to generate transcription if required. • Ability to reprint transcription by authorized personnel.	• Frequency. • Duration. • Route of administration. • Duration and quantity supplied. • Name, designation and location of prescriber. • Date and time of medication order • Next collection date (for partial supply only).
10.	Dispense medication.	• Ability to indicate dispensed orders. • Ability to purge and retrieve dispensed order whenever required. • Ability to provide a listing of all partially filled orders. • Ability to track the status of partial filling of orders by patient and type of medication. • Ability to denote all standard packing medication and the amount to be dispensed shall be defaulted to predetermined amount. • Ability for reissue of medications against loss or damage upon dispensing if necessary. • Ability to provide alert on discontinued medication order, stoppage of partial supply order, indication on balance available in the ward and update inventory when medication is returned.	

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		• Ability to provide staff management function on day-to-day basis based on workload. • Ability to provide audit trail on drugs prescribed, dispensed and administered.	

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9 ASSUMPTIONS

9.1. Provision of adequate security features for medication orders.

9.2. Decision support for medications orders will be made available in both CIS and PhIS.

9.3. Malaysian drug database shall be used for decision support for drug information function and other pharmacy management function.

9.4. All medications supplied to patients shall be updated in the EMR upon dispensing for outpatient medication orders and upon discharge for inpatient medication orders.

GLOSSARY

No	Terms	Definition
1.	Floor Stock.	Floor stock items are common user drugs such as Paracetamol and Vitamins.
2.	After office hour stock.	After office hour stock items are drugs kept in respective ward which can only be used when needed after pharmacy working hour.
3.	Unattended medication order.	An unfilled medication order, which has to be reactivated when patient comes to collect the medication.
4.	Uncollected medication order.	A medication order, which has been filled but patient has not collected the medication.
5.	Medication Order.	An order that has been prescribed by authorized personnel.
6.	MOH Drug Category.	Category of drugs as specified by MOH Drug List.
7.	Transcription.	A system generated document for activation of medication orders for refill within enterprise.
8.	SPUB R1 Form.	A system generated document for collection of refill medications outside enterprise.
9.	Authorised personnel.	Doctors, Pharmacists, Medical Assistants, Staff Nurses, Community Nurses.
10	Within enterprises.	Within hub in term of system infrastructure.
11.	Within Hospital.	In hospital.
12.	Unit Of Use.	Supply of medications to inpatient through medication order on individual basis for a fixed period of time.
13.	Unit Dose.	Supply of medications to inpatient through medication order on individual basis and daily basis.
14.	Single Role.	Refers to a single end user who is involved in the entire process of dispensing (screening, filling and issuance of medication).
15.	Multiple Role.	Refers to different end users who are involved in the process of dispensing (screening, filling and issuance of medication).
16.	Waiting Time.	Period from acknowledgement time to dispensing time.

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11 ABBREVIATIONS

No	Terms	Definition
1.	CDR.	Cytotoxic Drug Reconstitutions.
2.	CIS.	Clinical Information System.
3.	DCA.	Drug Control Authority.
4.	DD.	Dangerous Drugs.
5.	EMR.	Electronic Medical Record.
6.	HRMIS.	Human Resource Management Information System.
7.	JIT – CPE.	Just In Time – Continuing Pharmacy Education.
8.	JIT- MCPHIE.	Just In Time – Mass Customised Personalised Health Information & Education.
9.	LHR.	Lifetime Health Record.
10.	LHS.	Lifetime Health Summary.
11.	MOH.	Ministry Of Health.
12.	MRN.	Medical Record Number.
13.	MyKAD.	Malaysian Kad Akuan Diri.
14.	PhIS.	Pharmacy Information System.
15.	PLHP.	Personalised Lifetime Health Plan.
16.	PMS.	Person Management System.
17.	PN.	Parenteral Nutrition.
18.	SPUB.	Sistem Pendispensan Ubat-Ubatan Bersepadu (Integrated Drug Dispensing System).
19.	TDM.	Therapeutic Drug Monitoring.

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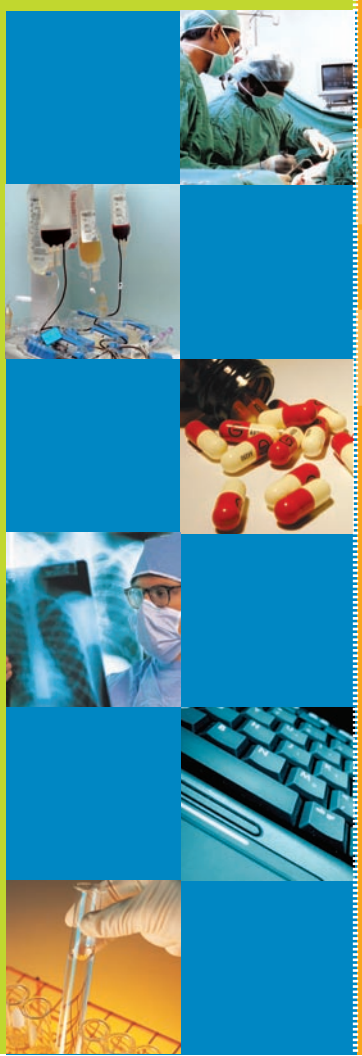
PHARMACY INFORMATION SYSTEM

BUSINESS FUNCTION MODEL

CLINICAL PHARMACY AND MANUFACTURING MODULES

Contents



BUSINESS FUNCTION MODEL PHARMACY INFORMATION SYSTEM

1. Name of the Department – Pharmacy Department.

2. Business Function – Clinical Pharmacy and Manufacturing.

3. Ranges of Services:-

   3.1. Drug Information Service.
   3.2. Counselling.
   3.3. Clinical Patient Management.
   3.4. Manufacturing – Applies for compounding, reconstitution, dilution and storage of sterile and non sterile drugs, repacking of bulk products.

4. Type of Services:-

   4.1. Drug Information Service:-

      4.1.1. Dissemination of information to healthcare providers and public.

   4.2. Counselling:-

      4.2.1. Inpatient.
      4.2.2. Outpatient.

   4.3. Clinical Patient Management:-

      4.3.1. Clinical Pharmacokinetics Services.
      4.3.2. Monitoring Medication Management.
      4.3.3. Adverse Drug Reaction Monitoring.

   4.4. Manufacturing:-

      4.4.1. Sterile Products:-
         4.4.1.1. Parenteral Nutrition.
         4.4.1.2. Cytotoxic Drug Reconstitution.
         4.4.1.3. Intravenous Admixture.
         4.4.1.4. Eye Drop.

      4.4.2. Prepacking Medicine:-
         4.4.3. Extemporaneous Preparation.
         4.4.4. Manufacturing Galenical Products.

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5. Clients:-

5.1. Internal Clients:-

5.1.1. Within Hospital.
5.1.2. Within Enterprise (Pharmacy to Pharmacy).

5.2. External Clients:-

5.2.1. Other than MOH Healthcare Facilities.

6. Operational Policies:-

6.1. Drug Information Services:-

6.1.1. To provide information for the users at the point of care:-

6.1.1.1. List of drugs the Healthcare Provider is allowed to prescribe.
6.1.1.2. Dosage (dosage form, doses in various disease conditions such as liver failure, renal failure, geriatrics, paediatrics, pregnancy.
6.1.1.3. Indications.
6.1.1.4. Contraindications.
6.1.1.5. Drug interaction/incompatibility.
6.1.1.6. Adverse reactions.
6.1.1.7. Precautions/caution.
6.1.1.8. Stability (e.g.: expiry date).
6.1.1.9. Reconstitution.
6.1.1.10. Diagnosis related drug list.
6.1.1.11. Availability.
6.1.1.12. Pharmacodynamics/Kinetics.
6.1.1.13. Monitoring Parameters.

6.1.2. To trigger information regarding:-

6.1.2.1. Drug to drug interaction.
6.1.2.2. Contraindication.
6.1.2.3. Precaution.
6.1.2.4. Alert on refills and non-compliances.
6.1.2.5. Poisoning.
6.1.2.6. Over dosages.
6.1.2.7. Sub therapeutics drug levels (Therapeutic Drug Monitoring - TDM).

6.1.3. To provide information automatic dosage calculation based on body weight, body surface area (BSA), creatinine clearance (CrCL), body mass index (BMI).

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6.1.4. To provide information on drug availability on-site (stock inventory) and update MOH and Instituitional Formulary.

6.2. Decision Support Services:-

6.2.1. Use of Standard Reference for Drug Information Service through the National Drug Database (NDD):-

6.2.1.1. The database shall be updated minimum twice yearly by Pharmaceutical Division, MOH.
6.2.1.2. In the event the drug name is not available from the database, the decision support information shall be obtained from the Third Party Database to be made available in the Pharmacy Information System.

6.2.2. Access to Data Elements for Decision Support
Access to National Drug Database shall be provided to the following category of healthcare providers:-

6.2.2.1. Doctors.
6.2.2.2. Pharmacists.
6.2.2.3. Pharmacy Assistants.
6.2.2.4. Medical Assistants.
6.2.2.5. Nurses.

6.2.3. Data elements for dosage calculation shall include the following parameters:-

6.2.3.1. Age group.
6.2.3.2. Body weight and Body Surface Area. (BSA) and Height.
6.2.3.3. Creatinine Clearance in Renal impairment.
6.2.3.4. Specific data elements for preparation of PN, CDR, IV Admixture and TDM.
6.2.3.5. Unit of Measure is in metric.

6.2.4. Data elements for parameters for indication to include the following:-

6.2.4.1. Complaints.
6.2.4.2. Diagnosis.
6.2.4.3. Signs and symptoms.
6.2.4.4. Procedures (i.e. Therapeutics, prophylactic or diagnostics).
6.2.4.5. Comparative drugs.
6.2.4.6. Poisoning.

6.2.5. Data elements for parameters for contraindication, precaution/caution to include the following:-

6.2.5.1. Allergy.
6.2.5.2. Pregnancy.
6.2.5.3. Breast feeding.
6.2.5.4. Age group.
6.2.5.5. Glucose -6- Phosphate Dehydrogenase (G6PD) deficiency.
6.2.5.6. Hypersensitivity.
6.2.5.7. Disease conditions.

6.2.6. Data elements for parameters for drug interaction:-

6.2.6.1. Drug to Drug.
6.2.6.2. Drug to Food.
6.2.6.3. Drug to Alcohol.
6.2.6.4. Drug influencing lab tests.

6.2.7. Data elements for detecting incompatibility between the ingredients used in the preparation of CDR/PN / IV Ad & Eye Drop:-

6.2.7.1. Type of drugs/ingredients.
6.2.7.2. Type of solutions/medium.

6.2.8. Data elements for automatic calculation of ingredients used in the preparation of CDR/PN/IV Ad/& Eye Drop:-

6.2.8.1. Automated calculation modules based on predetermined parameters.
6.2.8.2. Data elements for Clinical Pharmaceutical Services (CPS).
6.2.8.3. Pharmacokinetics of relevant drugs according to predetermined lists as approved by KKM.
6.2.8.4. CPS calculation modules.

6.2.9. For Adverse Drug Reaction (ADR) reference shall be made in the National Drug Database and knowledge database. e.g. MICROMEDEX, LEXICOMP:-

6.2.9.1. Stability of extemporaneous preparation and sterile preparation (e.g. expiry date) shall be provided by knowledge database e.g. Micromedex, Lexicom.
6.2.9.2. Stock availability of drugs by locations.

6.2.10. The decision support should be provided in the following work process of medication function in CIS:-

6.2.10.1. Plan medication treatment.
6.2.10.2. Order medication.
6.2.10.3. Administer medication.

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6.2.10.4. Record medication.
6.2.10.5. Monitoring of Adverse Drug Reaction.

6.2.11. The decision support for clinical pharmacy should be provided in the following:-

6.2.11.1. Monitor medication administration and reaction for specified drugs.
6.2.11.2. Monitor medication administration and reaction for certain condition.
6.2.11.3. Monitor medication administration for certain types of patients.

6.3. Drug Counselling:-

6.3.1. Drug counselling shall be made available at the point of care.
6.3.2. Counselling shall be provided in accordance to the care plans (individual/ group counselling).
6.3.3. Pharmacist shall be available for patient counselling.
6.3.4. Pharmacist shall counsel hospital registered patients as per request.
6.3.5. Documentation of external clients requesting counselling shall be done manually.
6.3.6. Counselling materials i.e. drug leaflet, counselling guide and tools will be determined by local policy but later should be standardized nationally.
6.3.7. Priority status of patient to be counselled shall be determined by pharmacist according to patient's needs.
6.3.8. All hospitals shall use Standard Counselling Medication Forms (individual and group).
6.3.9. The standardized Medication Counselling Forms (individual and group) template form shall be created by MOH.

6.4. Clinical Pharmacokinetic Services (CPS):-

6.4.1. Clinical Pharmacokinetic Services encompass Therapeutic Drug Monitoring (TDM) and pharmacokinetic consultation.
6.4.2. Pharmacist shall have the privilege to place TDM order and relevant blood test.
6.4.3. Pharmacist should have the privilege to view the result as soon as possible.
6.4.4. Only pharmacist should interpret the TDM result.

6.5. Adverse Drug Reaction:-

6.5.1. All ADR cases shall be reported to pharmacist.
6.5.2. The required information format must be in accordance to the National ADR format used by MOH.
6.5.3. Emphasis on monitoring of ADR should be on:-

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6.5.3.1. New drugs in hospital formulary.
6.5.3.2. Generic substitution.
6.5.3.3. Non- formulary drugs (the above criteria may change from time to time).
6.5.3.4. Only doctors and pharmacist are authorized to fill ADR report forms.
6.5.3.5. Pharmacist shall check and verify all completed forms before sending to MADRAC.
6.5.3.6. Pharmacist shall disseminate ADR information within the enterprise.
6.5.3.7. Pharmacist should disclose ADR findings in Drug Committee Meetings in the facility.

6.6. Clinical Monitoring Medication:-

6.6.1. All hospitals shall use a Standard Medication Monitoring Form.
6.6.2. The Standard Medication Monitoring Form template shall be created by MOH.
6.6.3. Reports shall be handled only by pharmacist.

6.7. Manufacturing:-

- All pharmacy personnel shall be trained appropriately according to their job functions. There shall be sufficient personnel for efficient and effective operational of the Manufacturing Pharmacy Unit.
- Pharmacist shall be in charge of manufacturing unit and shall be responsible to ensure all products are manufactured in accordance with Good Manufacturing Practice (GMP) and stored in accordance with Good Storage Practice (GSP).
- Stock level shall be monitored and controlled by the pharmacist.
- “Ready to dispense” packs shall be made available when ever possible.
- Compounding of extemporaneous and manufacturing of galenical products shall only be carried out if commercial products are not available.
- Supply of manufactured product can be made to other health facilities that do not have manufacturing facilities.
- All finished products shall be approved by responsible pharmacist before release to use.
- All quality control test (on products or environments) should be done if necessary either using in-house or private Quality Control Laboratories.
- The validation, calibration and maintenance of equipment and clean rooms shall be done by qualified service providers and shall be carried out on a scheduled basis.
- Preparations and manufacturing records shall be maintained for a period of 2 years from the date of production.
- All non-sterile preparations shall be performed in a controlled environment.

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6.7.1. Pre-pack:-

6.7.1.1. Pharmacist shall be responsible for usage planning and indenting of bulk medicine from Pharmacy Store.

6.7.1.2. Pharmacy Assistant shall be responsible for identification of indented bulk medicine, inter unit pre-packing and maintaining par level of pre-pack stock:-

6.7.1.2.1. The labels of pre-pack medication shall contain code number, drug name, strength, quantity, expiry date, and batch number.

6.7.1.2.2. The pre-pack medicine shall be checked and verified by Pharmacy Assistant prior to storage.

6.7.1.2.3. Storage of the pre-pack medicine shall be according to specifications of the manufacturer and sufficient storage area shall be provided and arranged accordingly for easy access.

6.7.1.2.4. Pharmacy Assistant shall determine par level of pre-pack packages based on demand.

6.7.1.2.5. Pre-packing procedures work sheets shall be in accordance with MOH guideline, documented and stored in hard and soft copy.

6.7.2. Extemporaneous Preparations:-

6.7.2.1. All extemporaneous preparations must be in the MOH drug list.

6.7.2.2. Under certain circumstances, extemporaneous preparations not in the MOH drug list can be prepared only if supported by stability data.

6.7.3. Sterile Preparations:-

6.7.3.1. Aseptic Processing:-

- All aseptic processing activities shall be done under appropriate clean room conditions.
- Aseptic technique procedures shall be handled by trained and qualified personnel.

6.7.3.1.1. Eye Drops:-

6.7.3.1.1.1. Only approved eye drop formulation shall be prepared.

6.7.3.1.1.2. All manufactured eye drops shall be updated in the inventory and stock level shall be monitored.

6.7.3.1.1.3. Eye drops preparation work sheets shall

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be in accordance with MOH guideline, documented and stored in hard and soft copy.

6.7.3.1.2. Parenteral Nutrition (PN) and Intravenous Admixture (IV Ad):-

6.7.3.1.2.1. All components of PN preparation shall be as listed in the MOH Drug List or special approval should be obtained for non- MOH Drug prior to procurement.

6.7.3.2. Cytotoxic Drug Reconstituition (CDR):-

6.7.3.2.1. All cytotoxic drugs shall be reconstituted by Pharmacy Department.

6.7.3.2.2. CDR shall be conducted in appropriate clean room facilities with due consideration given to personnel and environmental protection.

6.7.3.2.3. Dispensing and disposal of hazardous material shall be done appropriately.

7. HIGH LEVEL WORKFLOWS (depend upon scope of work in the hospital):-

7.1. Clinical Pharmacokinetic Services Workflow – PhIS/CP/WF/1.

7.2. Monitoring Medication Managements of In-Patients Workflow – PhIS/CP/WF/2.

7.3. ADR Monitoring & Reporting Workflow - PhIS/CP/WF/3.

7.4. Enquiries From Consumers & Healthcare Providers Workflow – PhIS/CP/WF/4.

7.5. Counselling for Outpatient and Inpatient (Individual & Group) Workflow – PhIS/CP/WF/5.

7.6. Manufacturing Workflow:-

7.6.1. CDR/PN/IV AD & EYE DROP Workflow:-

7.6.1.1. Receiving Request Order For CDR/PN/IV Ad & Eye Drop – Internal Client Workflow - PhIS/CP/WF/6.

7.6.1.2. Receiving Request Order For CDR / PN /IV Ad & Eye Drop – External Client Workflow – PhIS/CP/WF/7.

7.6.1.3. PhIS/CP/WF/8 Aseptic Technique Compounding of Request

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Order For CDR/PN/IV Ad & Eye Drop Workflow – PhIS/CP/WF/8.

7.6.1.4. Requesting & Receiving Prepared Medication For CDR/PN/IV Ad & Eye Drop from Other Healthcare Facilities (Out Source) Workflow – PhIS/CP/WF/9.

7.6.2. Pre-packing of Medicines Workflow – PhIS/CP/WF/10.

7.6.3. Preparation of Extemporaneous Product Workflow – PhIS/CP/WF/11.

7.6.4. Manufacturing of Galenical Preparations Workflow – PhIS/CP/WF/12.

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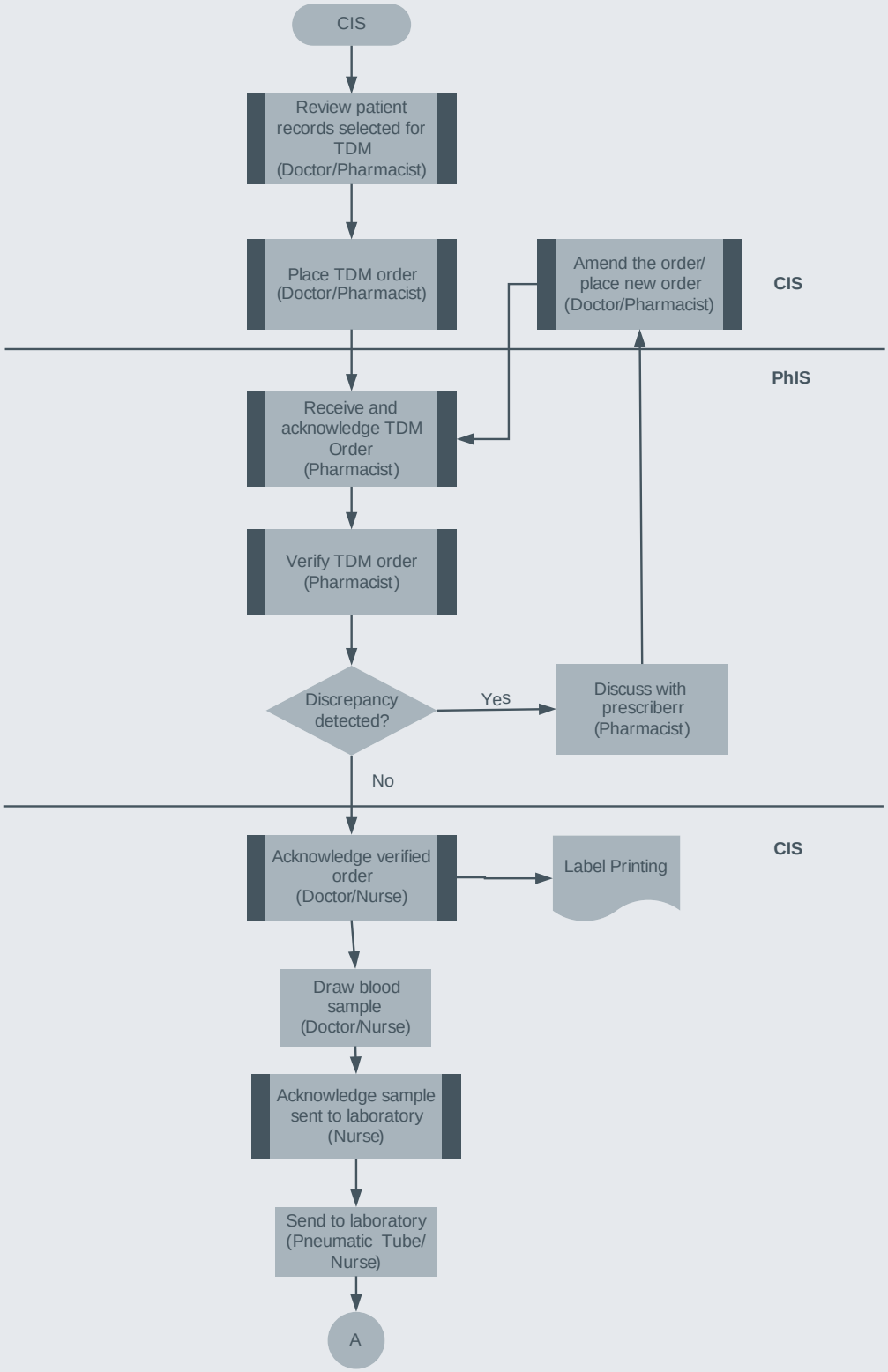
Clinical Pharmacokinetic Services Workflow
PhIS/CP/WF/1



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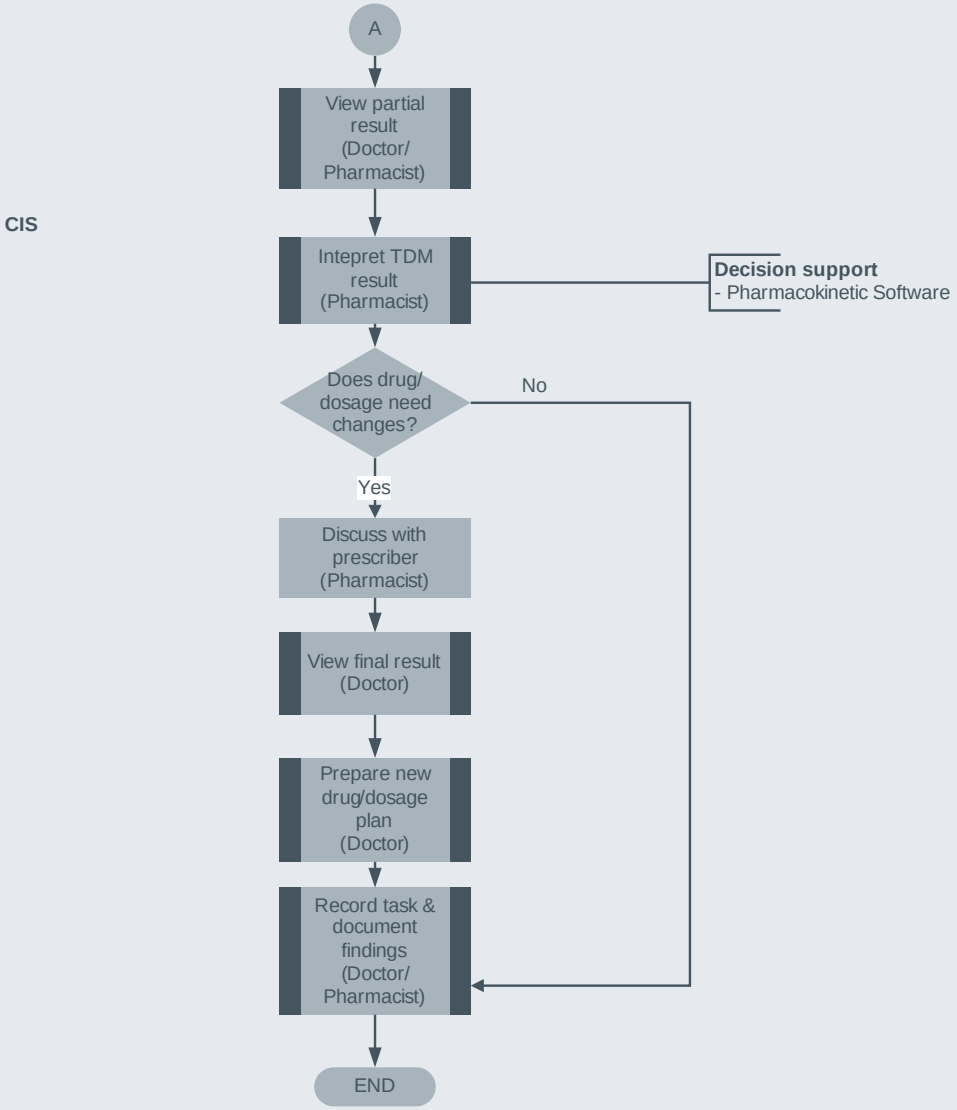

Note: For external request for CPS , pharmacist shall transcribe the order into PhIS

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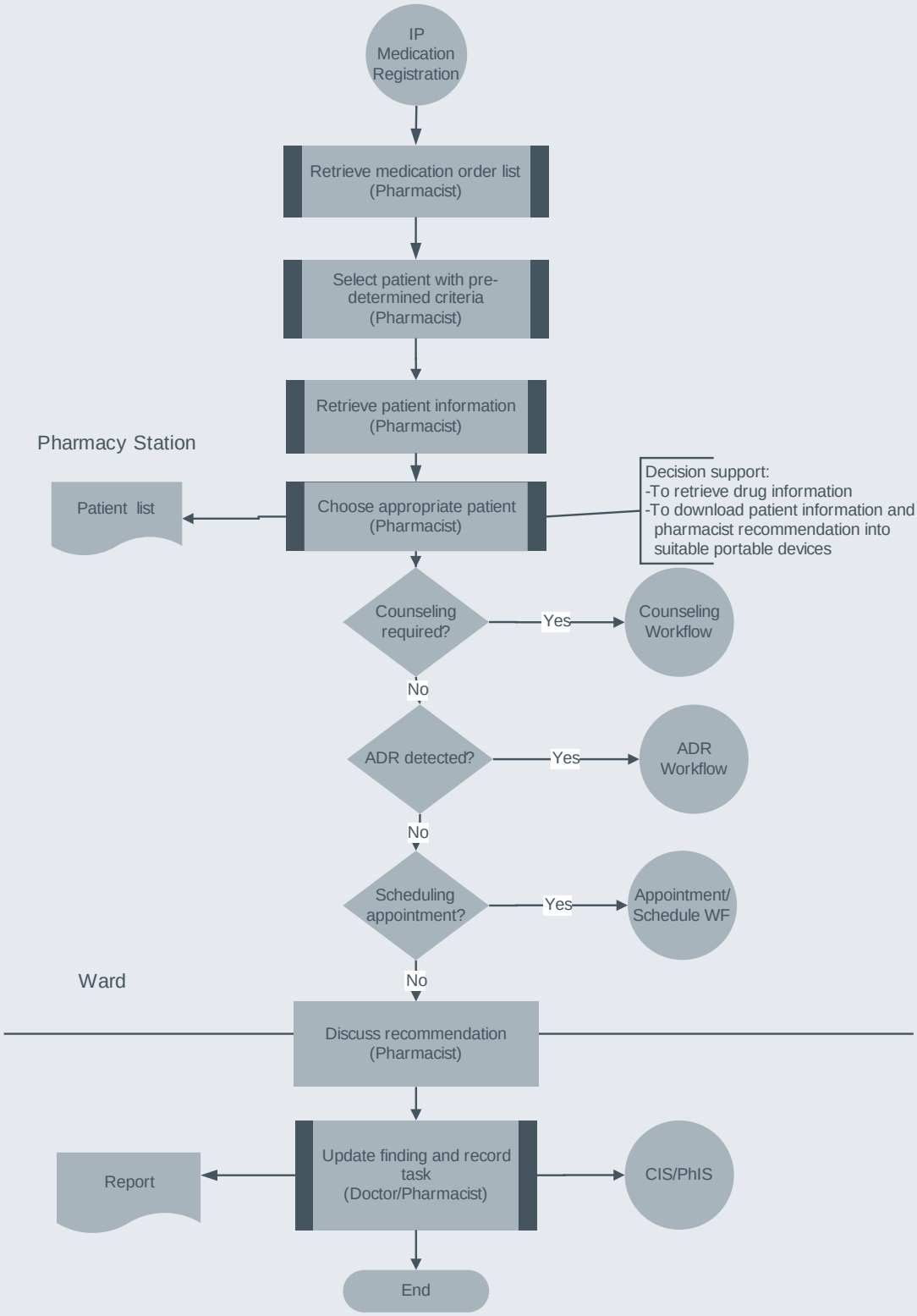
Monitoring Medication Managements of In - Patients Workflow
PhIS/CP/WF/2



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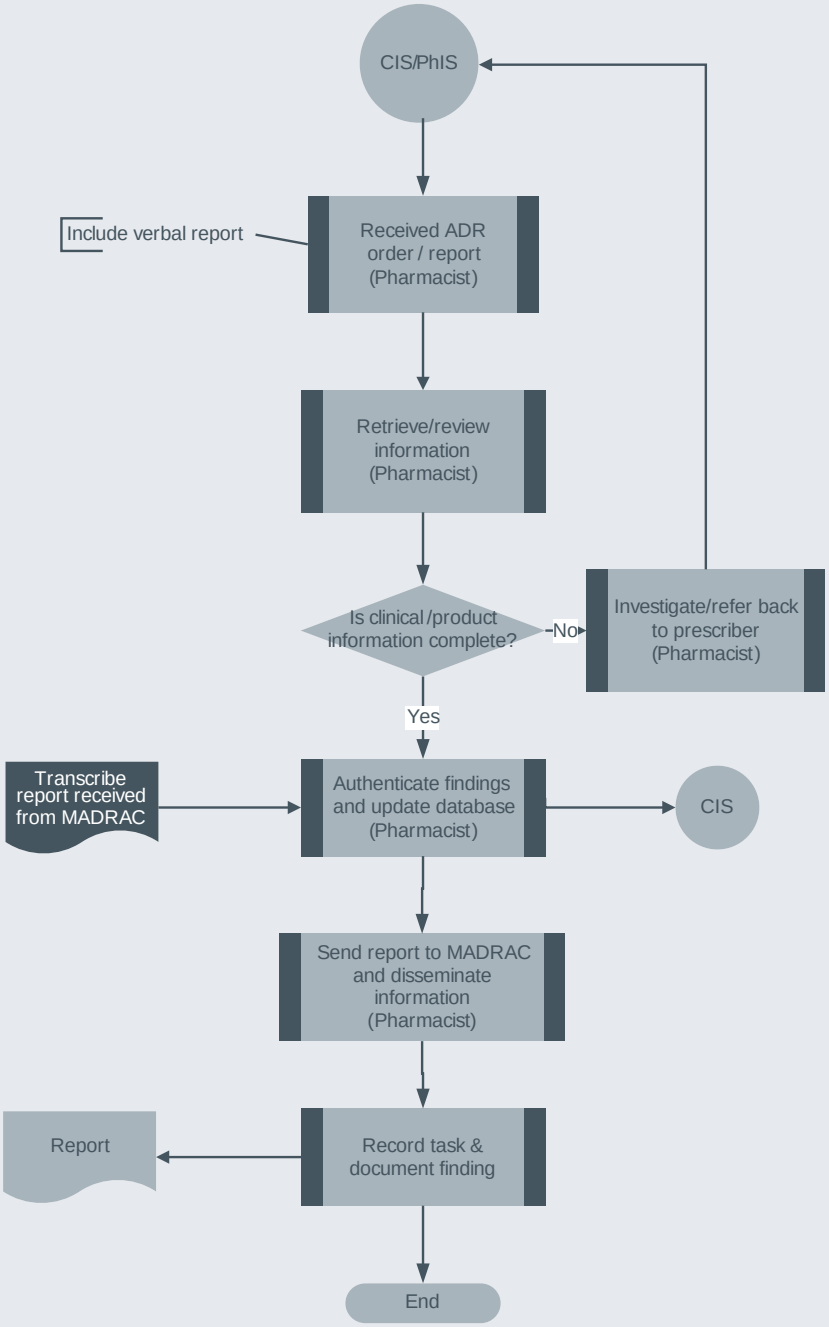
ADR Monitoring and Reporting Workflow
PhIS/CP/WF/3



This Workflow is applicable for suspected or reported cases of ADR)

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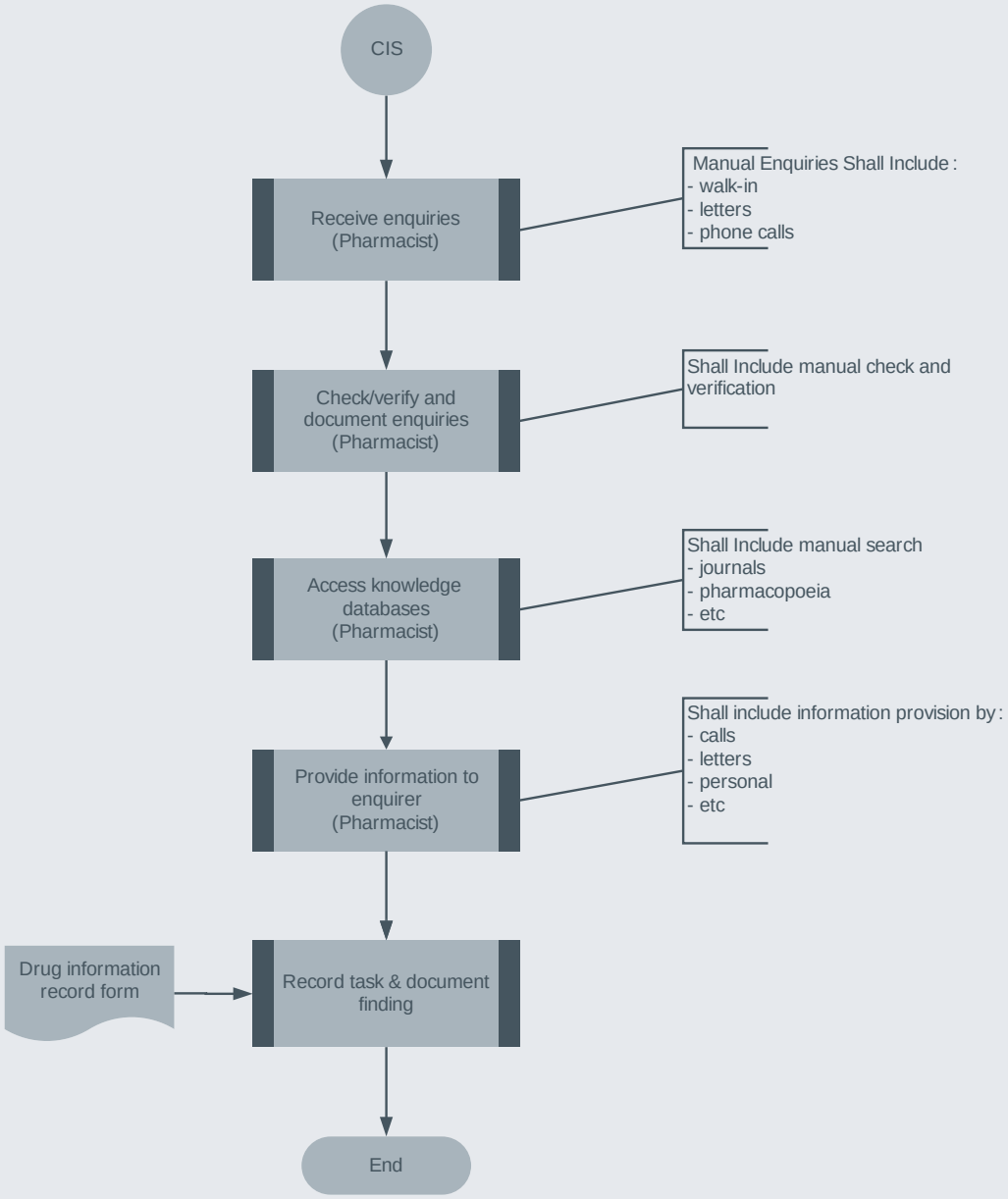
Enquiries From Consumers & Healthcare Providers Workflow
PhIS/CP/WF/4



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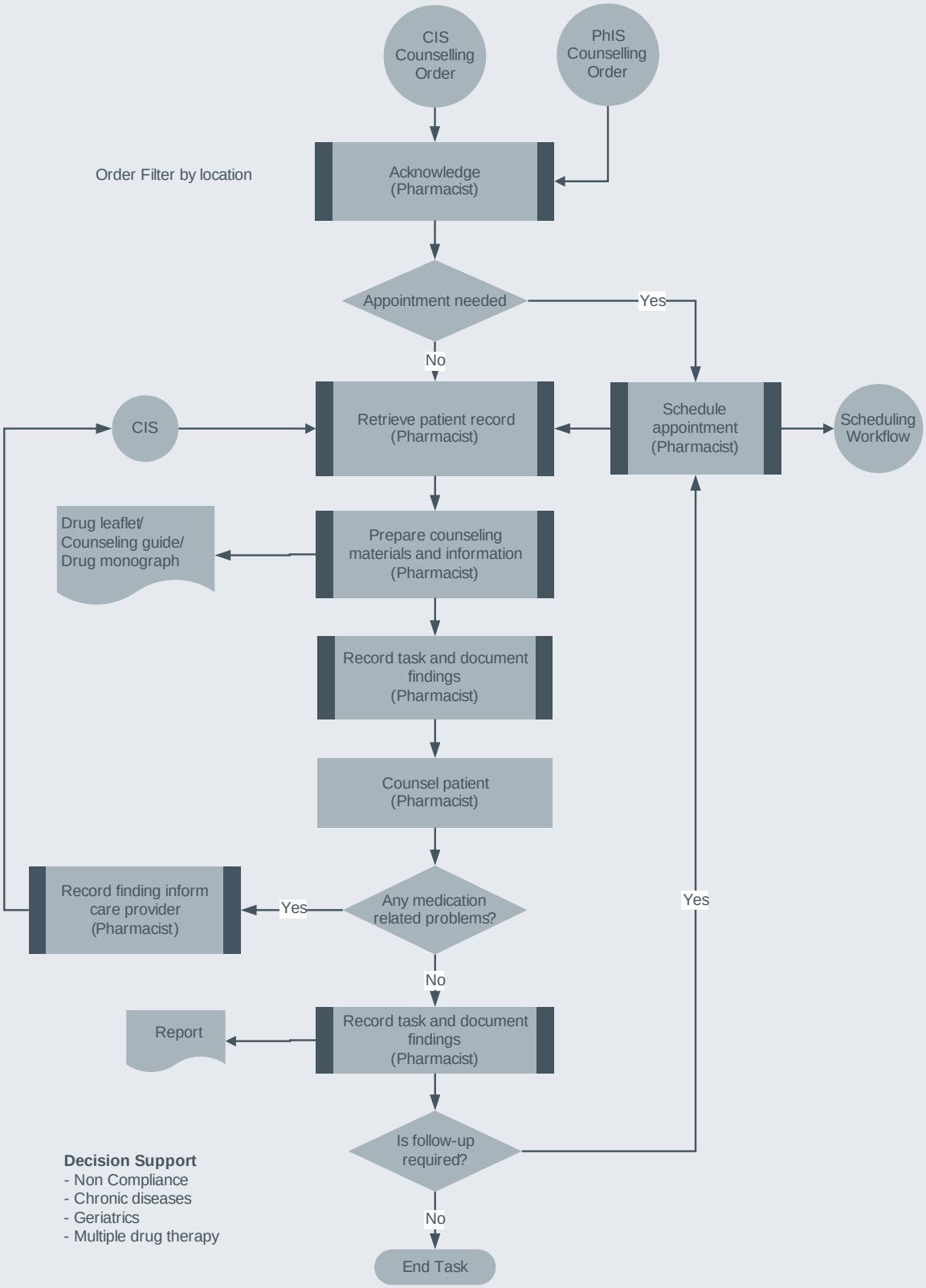
Counselling for Outpatient and Inpatient (Individual & Group) Workflow
PhIS/CP/WF/5



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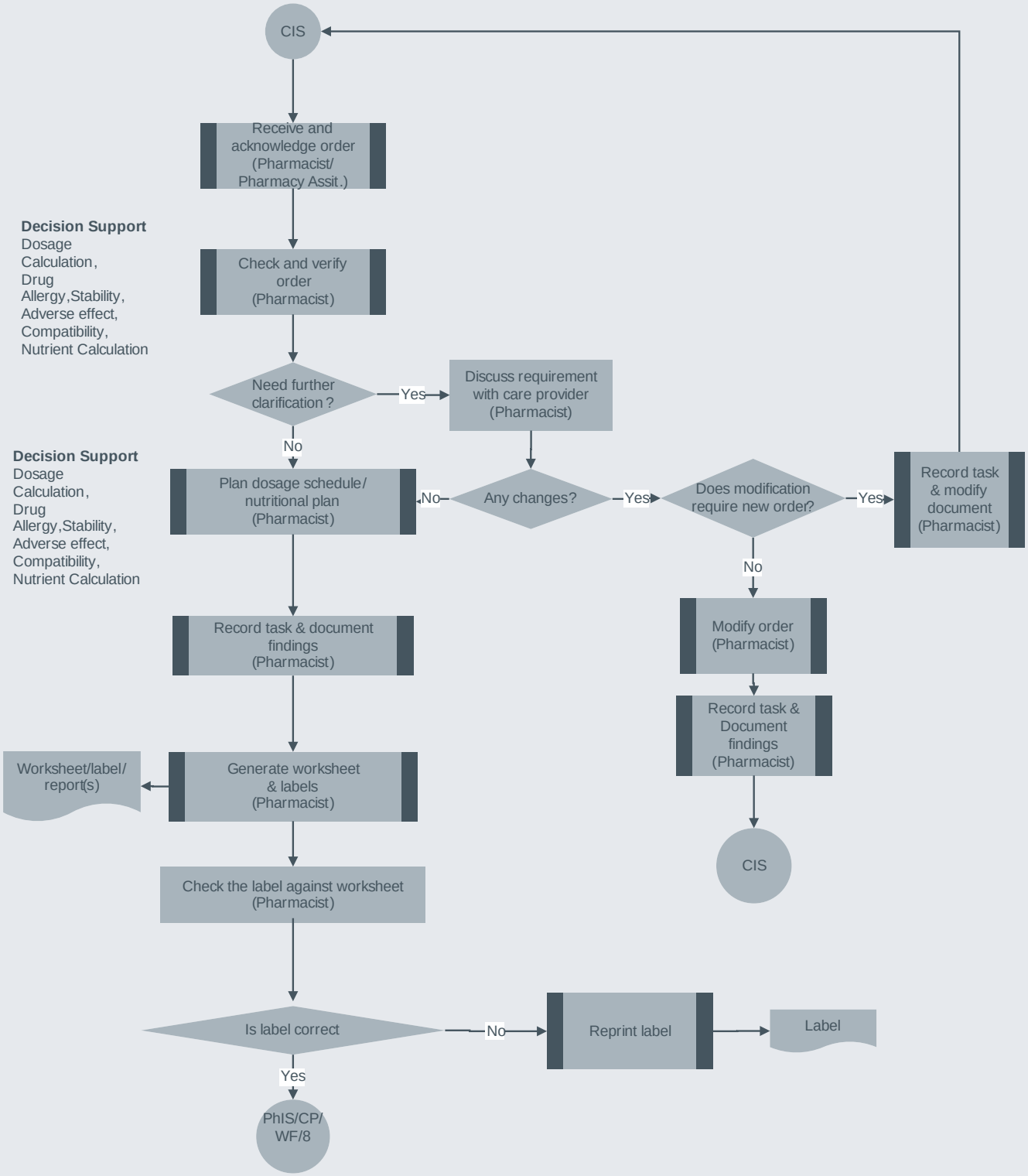
Receiving Request Order For CDR/PN/IV Ad & Eye Drop - Internal Client Workflow PhIS/CP/WF/6



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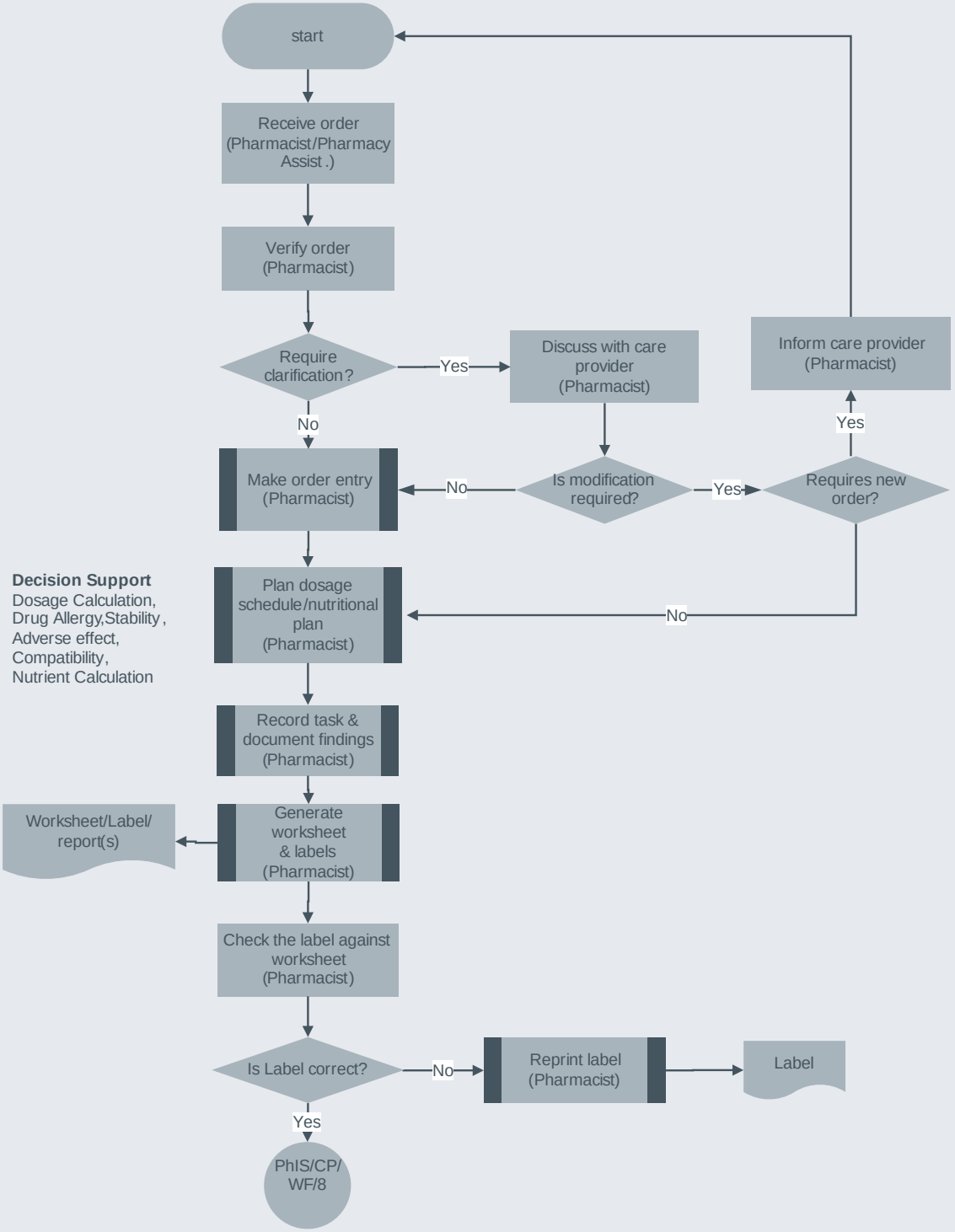
Receiving Request Order For CDR / PN / IV Ad & Eye Drop - External Client Workflow PhIS/CP/WF/7



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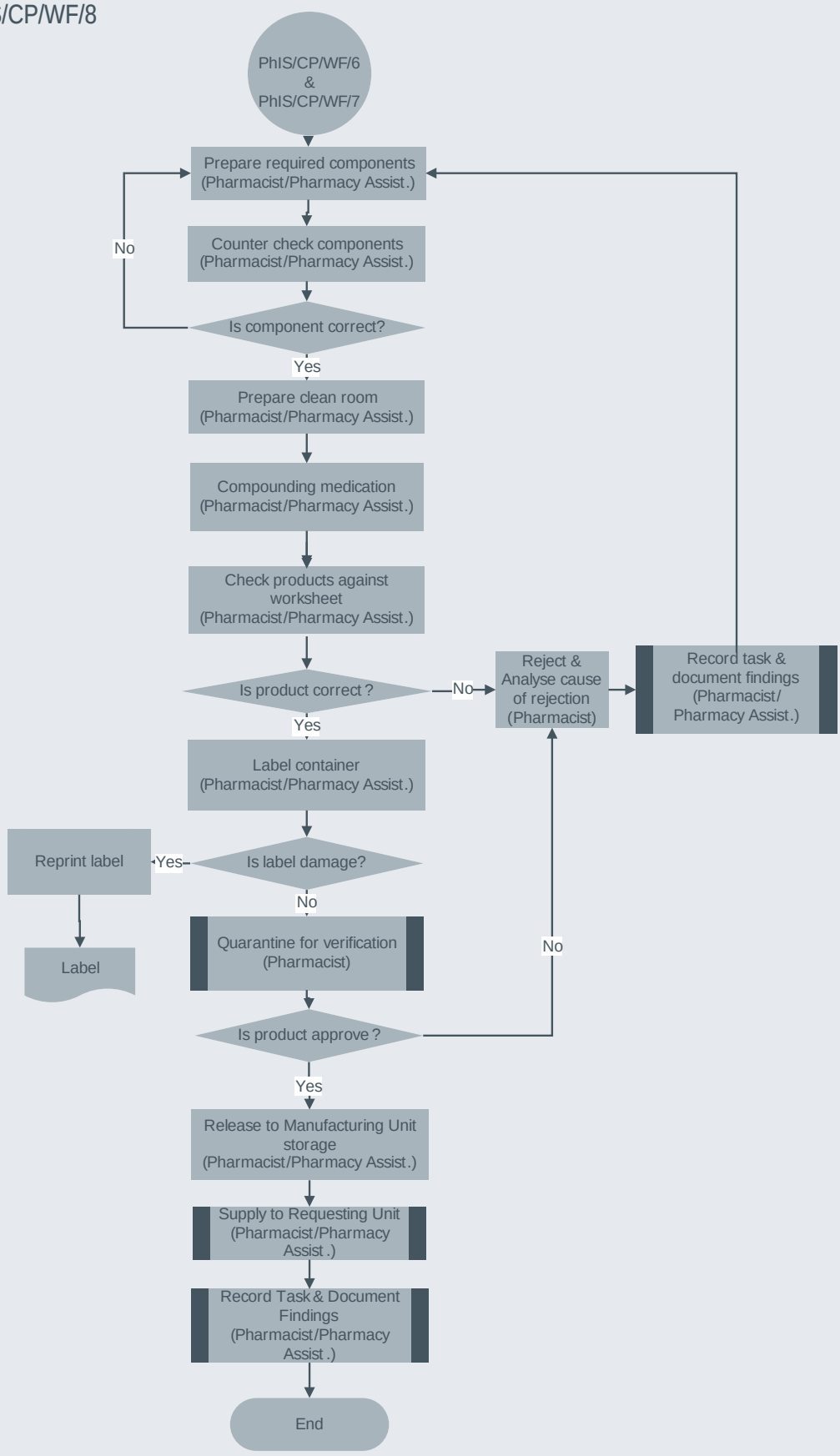
Aseptic Technique Compounding of Request Order For CDR/PN/IV Ad & Eye Drop Workflow

PhIS/CP/WF/8



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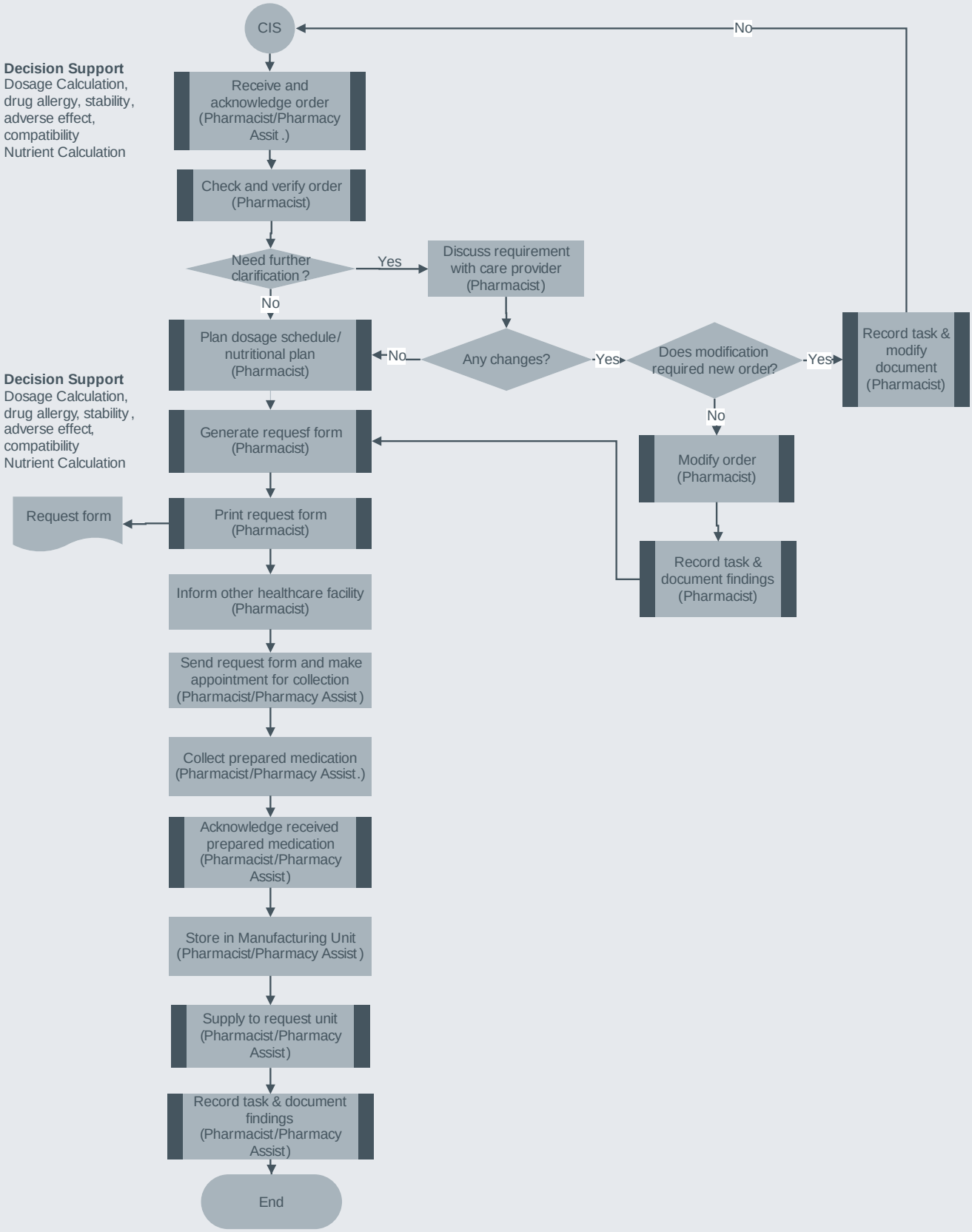
Requesting & Receiving Prepared Medication For CDR/PN/IV Ad & Eye Drop from Other Healthcare Facilities (Out Source) Workflow
PhIS/CP/WF/9



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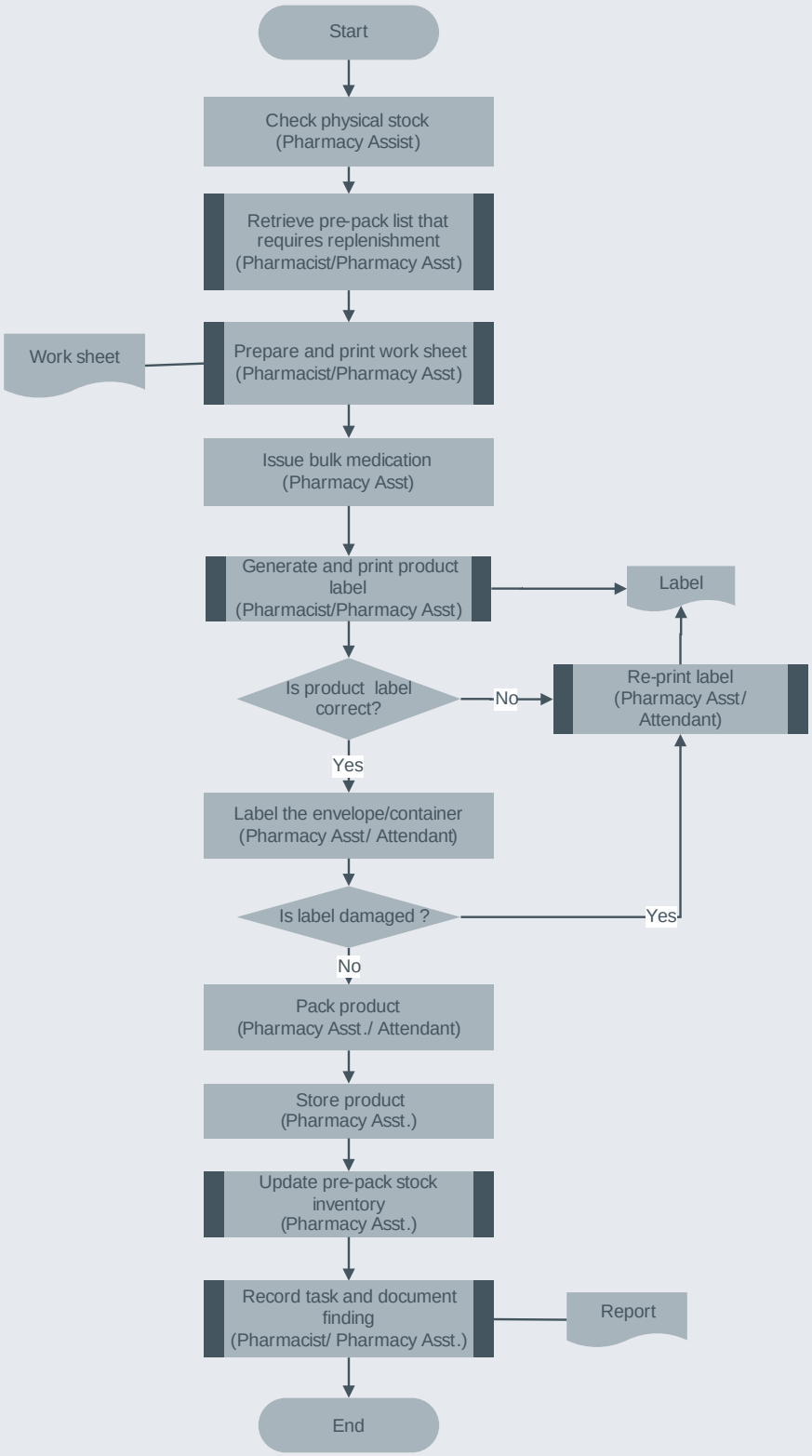
Pre-packing of Medicine Workflow
PhIS/CP/WF/10



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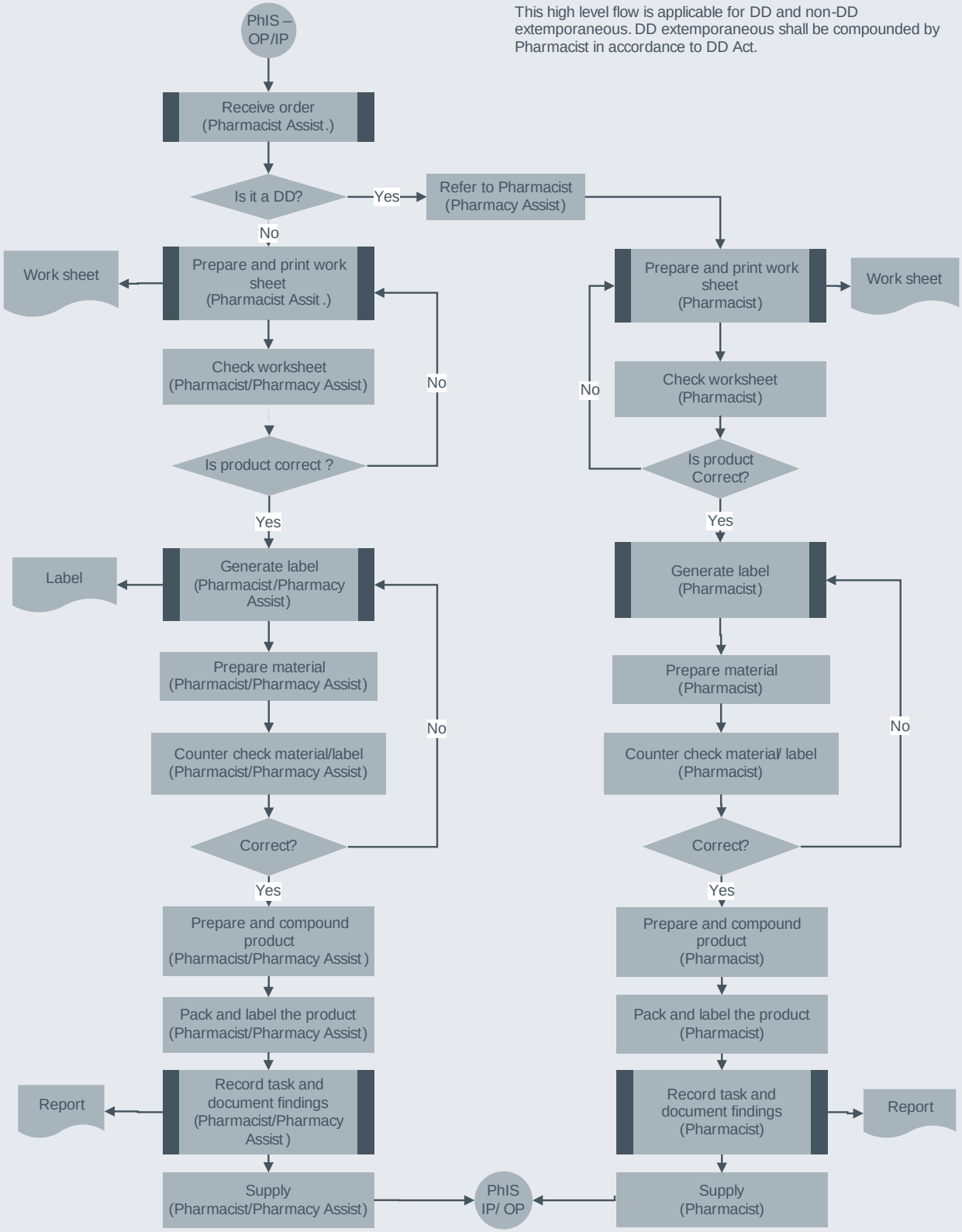
Preparation of Extemporaneous Product Workflow
PhIS/CP/WF/11

This high level flow is applicable for DD and non-DD extemporaneous. DD extemporaneous shall be compounded by Pharmacist in accordance to DD Act.



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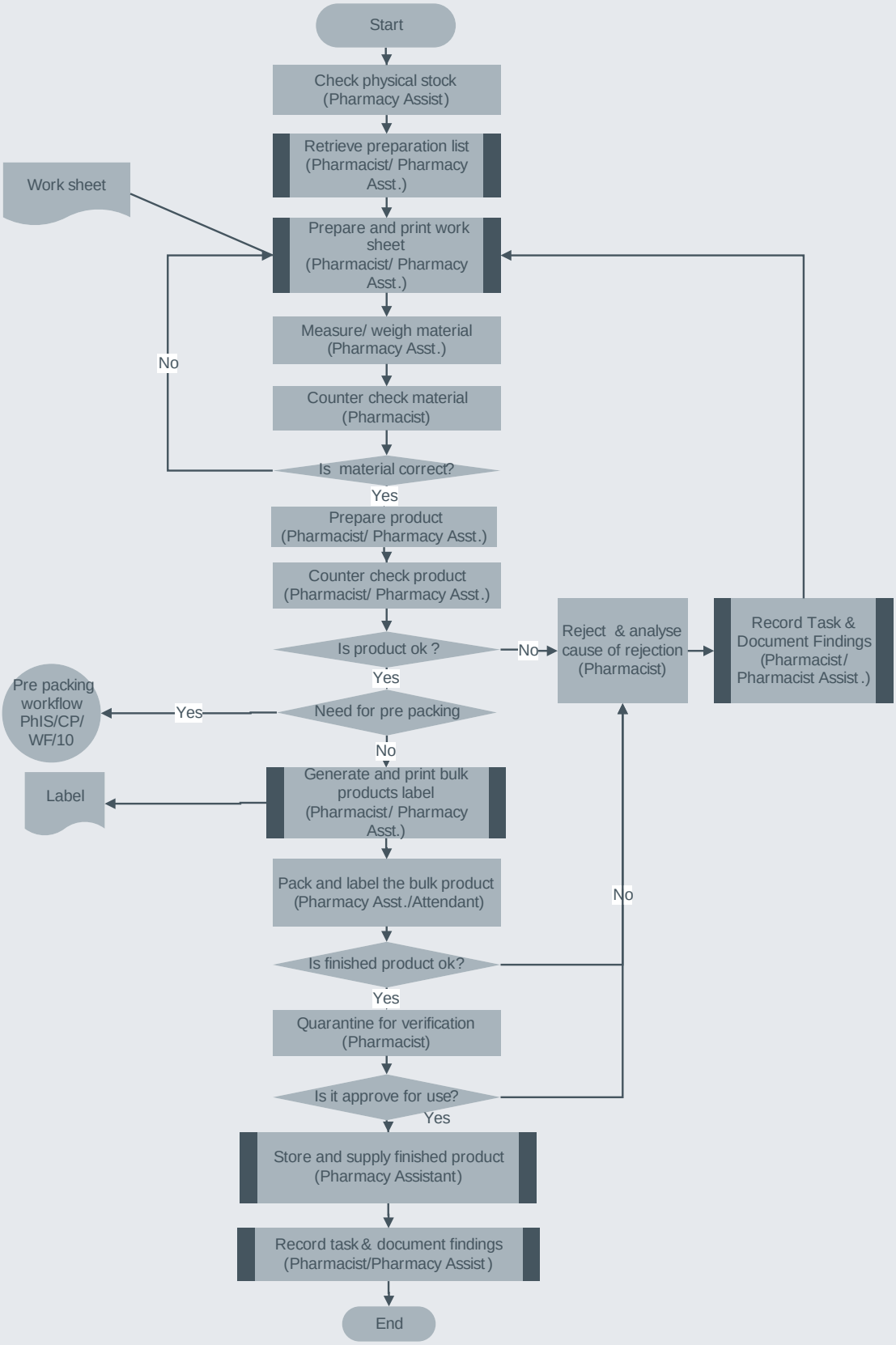
Manufacturing of Galenical Preparations Workflow
PhIS/CP/WF/12



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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Clinical Pharmacokinetic Services - PhIS/CP/WF/1			
1.	Review patient record selected for TDM.	• Ability to view patient's record. • Ability to view TDM information (e.g. sampling guideline).	• Pharmacist shall have access CIS however any recommendation or intervention in the PhIS should be integrated in the CIS.
2.	Place TDM order.	• Ability to place TDM order. • Ability to schedule blood sampling time according to drug database and individual drug requested.	• Pharmacist shall have the privilege to place TDM order and relevant blood test.
3.	Receive and acknowledge TDM order.	• Ability to receive online TDM order. The system shall able to display the list of the order. • Ability to alert incoming order. • Ability to capture date, time, name of pharmacist who acknowledge and verify the orders. • Ability to transcribe all external TDM request.	• Pharmacist shall be authorised to receive and acknowledge TDM orders. • Pharmacist shall be transcribed all external TDM request.
4.	Verify TDM order.	• Ability to verify TDM order. • Ability to audit trail all TDM orders received. • Ability to link and access drug information database.	• Pharmacist shall be authorised to verify TDM orders.
5.	Amend the order /place new order.	• Ability to amend/cancel TDM order. • Ability to place new order.	• Pharmacist shall be authorised to amend/ cancel and place new TDM order.

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		• Ability to do audit trail.	
6.	Acknowledge verified order.	• Ability to acknowledge order which had been verified by pharmacist. • Ability to enter data for actual time and date blood sample taken from patient.	• Prescriber and nurse shall be authorised to acknowledge the verified order.
7.	Acknowledge sample sent to laboratory.	• Ability to acknowledge sample which had been sent to laboratory.	• All samples sent to laboratory shall be acknowledged.
8.	View partial TDM result.	• Ability to inform the prescriber /pharmacist to review the partial result (without interpretation by pharmacist). • Ability to alert drugs which are sub-therapeutic or toxic level. • Ability to close the partial result after the result has been interpreted by pharmacist. • Ability to view the previous last two TDM results within six months from the latest date.	• Prescriber and pharmacist shall be authorised to view the partial result.
9.	Interpret TDM result.	• Ability to calculate the suggested dose based on the laboratory result. • Ability to interface the result from LIS to Pharmacokinetic Software.	• Only pharmacist should interpret the result.
10.	View final result.	• Ability to inform the doctor to review completed result which had been interpreted by pharmacist.	
11.	Record task and document findings.	• Ability to do audit trail - person login, time and date of recommendation.	

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		• Ability to print weekly, monthly and yearly statistics (graph) and summary reports base on. • Number of interpretations done. • Number of recommendation accepted by prescriber. • Number of toxicity and patient categories. • Number of interpretation made within 2 hours (for toxic levels). • Number of interpretation made within 24 hours (for normal levels).	

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Monitoring Medication Managements of In-Patients – PhIS/CP/WF/2.			
1.	Retrieve medication order list.	• The system shall be able to display and print relevant demographic information and should include outstanding tasks related to the following:- o PN. o Clinical Pharmacokinetic Services. o CDR. o IV AD. o Counselling. o ADR. o Medication Related Problems. • The system shall be able to link any orders made and to be displayed as outstanding, once the orders are submitted by the doctor. • The system should be able to convert the status of the order as "completed" once the task(s) has been carried out.	• The pharmacist shall access the CIS to convey to the attending doctor any recommendation or intervention. • Emphasis on monitoring of ADR should be on:- o new drugs in hospital formulary. o generic substitution. o non- formulary drugs.
2.	Select patient with pre-determined criteria.	• The system shall be able to display and print relevant demographic information and should include outstanding tasks related to the following:- o PN. o TDM. o CDR. o IV AD. o Counselling. o ADR. o Medication Related Problems.	• All pharmacists will have access to CIS. However any recommendation or intervention in the PhIS should be integrated in the CIS.
3.	Retrieve patient information.	• The system shall be able to display any latest / updated episode summary in the system. • The system should provide search	• The chronological order of episode summary by default shall be determined by local policy.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		functionality by location, patient's particulars, episodes, date of admission or others, to view episode summary.	
4.	Choose appropriate patient.	• The system shall be able to indicate and print the list of selected patients. • The system shall be able to transmit any updates by pharmacist into suitable portable devices (this is based on the assumption that all pharmacist doing the medication monitoring are to have a suitable portable device). • The main system should be able to capture information from the palm top/suitable portable devices and make necessary update in the main system.	• The wards shall be provided with a common workstation to be used by health professionals such as pharmacist, dieticians, therapists and counsellors.
5.	Schedule appointment.	• Enable authorized user to schedule appointment in Scheduling module (HIS). • Ability to schedule appointment by location, discipline, priority status and by pharmacist name and availability.	• Hospital shall update the pharmacist list to provide medication monitoring.
6.	Update findings and record task.	• Ability to update any findings relevant to medication monitoring. • Ability to do audit trail - person login, time and date of recommendation. • Ability to support textual information up to 2000 words during medication monitoring. • The system shall support a standard	• All hospitals shall use a Standard Medication Monitoring Form. • The Standard Medication Monitoring Form template shall be created by MOH.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		medication monitoring format with pre determined data elements.	
7.	Statistical report.	• The system shall be able to generate statistical reports with the following data:- o Pharmacist intervention. o Time and date of intervention. o Person who intervened. o Number of rounds. o Pharmacy rounds. o Follow-up cases. o Types of interventions. • Ability to view and print the required report.	• Reports shall be handled only by pharmacist.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Adverse Drug Reaction (ADR) Monitoring and Reporting-PhIS/CP/WF/3			
1.	Received ADR order/report.	• Ability to alert the pharmacist on ADR incidences within enterprise.	• All ADR cases shall be reported to pharmacist.
2.	Retrieve/review information.	• Ability to retrieve and review the required information. • Ability to access to ADR form in a user friendly and quick access.	• The required information format must be in accordance to the National ADR format used by MOH. • All medical staffs are allowed access to and fill ADR form. • Emphasis on monitoring of ADR should be on:- o new drugs in hospital formulary. o generic substitution. o non- formulary drugs.
3.	Investigate/refer back to healthcare providers.	• Ability to update ADR findings into CIS. • Ability for doctor to rectify and complete report. • Ability for to amend and cancel ADR report. • Ability to send back complete report to pharmacist. • Ability to indicate amended or new ADR report.	• The responsible pharmacist shall investigate all ADR cases. • Pharmacist shall have access to CIS for investigation. • Pharmacist shall relay findings to doctors. • Only the reporters are allowed to make amendments or to cancel ADR report.
4.	Authenticate findings and	• Ability to create mandatory response field based on the information which	• Only doctors and pharmacist are

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
	update database.	will be determined by MADRAC. • Ability to enter incomplete information. • Ability to provide an ADR registry. • Ability to generate database containing:- o Date. o Reference number. o Reporter. o Drug name. o Summary of adverse drug reaction. o Classification of causality (certain, probable, possible, unlikely, unclassifiable) entered by reporter. • Ability to transcribe report received from MADRAC containing. Classification of causality (certain, probable, possible, unlikely, unclassifiable) and MADRAC report number.	authorised to report ADR. • Pharmacist shall check and verify all completed forms before sending to MADRAC. • All the filled forms should be sent directly via the system to MADRAC through the pharmacy department.
5.	Send report to MADRAC and disseminate information.	• Ability to send ADR report online to MADRAC. • Ability to share the information of ADR report through the system within enterprise. • Ability to disseminate information received from MADRAC.	• Pharmacist shall disseminate ADR information within the enterprise. • Pharmacist should disclose ADR findings in Drug Committee Meetings in the facility.
6.	Record task and document findings.	• Ability to provide summary/list of statistics based on the following:- o Number and types of ADR and name of drugs to be displayed and sorted according to month/year. o Number / type of healthcare providers reporting ADR reports	

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		o Number of pharmacists reporting ADR reports. • Ability to send filled forms through website. Able to sort suspected drugs which cause ADR including information such as manufacturer, batch number and registration number. • Ability to do audit trail - person login, time and date of ADR reported.	

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Enquiries from Consumers and Healthcare Providers-PhIS/CP/WF/4.			
1.	Receive enquiries calls/e-mails/ walk-in/system activated.	• The system shall be able to capture the following information:- o Priority. o Category of enquiries (poisoning, interaction, dose, ADR etc.). o Category of enquirer (healthcare providers, consumers etc.). o Enquirer particulars (name, address, phone number etc.). o Receiving and reply Date and Time. o Response time. o Receiving personnel. o Responding personnel. o Request summary. o Receive and reply mode by verbal, e-mail, telephone, fax or letter. o Purpose of enquiries. o References used.	• All medical staff are allowed access to the system to make enquiries. • The required information format must be in accordance with the standard format used by MOH. • Drug information for consumers and healthcare providers shall be provided at each hospital depending on hospital service level. • If more information is required, a higher level reference centre shall be consulted (such as National DIC/Tertiary Level DIC). • All Drug Information Enquiries (Internal & External Client) shall be attended to.
2.	Check/verify and document enquiries.	• Ability to generate task list and provide alert on incoming enquiries. • Ability to categorize enquiries according to pre-determined criteria and generate report. • Ability to provide status of enquiries	• The pharmacist shall be responsible for checking and verifying all enquiries.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
3.	Access knowledge database.	• Ability to access an internal and external knowledge database.	• The hospital shall make available knowledge databases according to the requirement of hospitals. • Pharmacist shall be allowed access to subscribed electronic databases at MOH level.
4.	Provide information to enquirer.	• Ability to provide information at the point of care.	• Pharmacist shall be responsible to provide information searched from knowledge database.
5.	Record task & document finding.	• Ability to do audit trail - person login, time of query and response time. • Ability to transcribe into the system enquiries received and recorded manually. • Ability to generate summary of queries, answers and responses transaction for the specified period. • Ability to generate frequently asked question. Details of the query should be based on the following:- o Priority. o Category of enquiries (poisoning, interaction, dose, ADR etc.). o Category of enquirer (healthcare providers, consumers etc.). o Enquirer particulars (name, address, phone number etc.). o Receiving and reply Date and Time.	• Pharmacist shall be responsible to maintain, record task and document finding.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		o Response time. o Receiving personnel. o Responding personnel. o Request summary. o Receive and reply mode by verbal, e-mail, telephone, fax or letter. o Purpose of enquiries. o Reference used. • Ability to view and print the required report.	

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Counselling for Outpatient & Inpatient (Individual & Group)-PhIS/CP/WF/5			
1.	PhIS counselling order.	• Ability to display and filter patient by location and priority based on medications and disease conditions. • Ability to alert for any outstanding counselling by clinical care setting or by patient. • Ability to receive counselling orders from all location.	• Pharmacist shall be available for patient counselling. • Only pharmacist shall have access to counselling applications. • Pharmacist shall counsel hospital registered patients as per request. • Documentation of external clients requesting counselling shall be done manually.
2.	Acknowledge counselling task list.	• Ability to create and acknowledge counselling task list by day, date, time, location and name of pharmacist. • Ability to track counselling order status by received, pending and completed.	
3.	Retrieve patient information.	• Ability to retrieve the following patient's details as per CIS/PMS/ LIS such as patient demography, social history, medication history & diagnosis, drug allergies, pregnancy and lactation, lab results.	• Only pharmacist shall be authorised to view and document the medication counselling records.
4.	Prepare counselling materials and information.	• System shall be able to allow pharmacist to access relevant knowledge databases. • Ability to print information such as:- o Drug Information.	• Authorised personnel shall have access to counselling materials. • Counselling materials i.e. drug leaflet,

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		o Adverse Drug Reaction. o Special Instructions. o Interactions. o Pharmacokinetics. o Storage.	counselling guide will be determined by local policy but later should be standardised by National Drug Information Centre/ Patient Counselling Committee MOH.
5.	Record task & document finding.	• Ability to indicate order status in CIS for medication counselling. • Ability to generate a template for recording medication counselling to include structured and textual data. • All documentation of counselling must include the following:- o Compliance status. o ADR. o Allergy. o Drug Interaction. o Alternative medicine.	• Only authorised personnel shall be allowed to record task.
6.	Schedule appointment.	• Enable authorized user to schedule appointment in Scheduling module (Patient Management System). • Ability to schedule appointment by location, discipline, priority status and by pharmacist name and availability.	• Hospital shall update the pharmacist list to provide counselling. • Appointment for follow up counselling shall be determined by pharmacist.
7.	Print report and record tasks and finding.	• Ability to generate and print statistic reports as required by MOH through appropriately designed query tools. • Ability to create user defined format of reporting when necessary. • Ability to provide textual information (up to 2000 words) during medication counselling.	• Only authorised personnel shall be allowed to access the statistics and reports.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		• The system shall support a standard counselling format with pre determined data elements.	• All hospitals shall use Standard Counselling Medication Forms (individual and group). • The standardised Medication Counselling Forms (individual and group) template form shall be created by MOH.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Receiving Request Order For CDR/PN/IV Ad & Eye Drop - Internal Client PhIS/CP/WF/6 Receiving Request Order For CDR / PN /IV Ad & Eye Drop - External Client PhIS/CP/WF/7 Aseptic Technique Compounding of Request Order For CDR/PN/IV Ad & Eye Drop PhIS/CP/WF/8.			
1.	Receive, acknowledge and transcribe order.	• Ability to receive order from all clinical settings. • The system shall be able to display the list of orders with status (new order, continuous order) and name of hospital/healthcare facilities where the order comes from. • Ability to capture date, time, name of pharmacy personnel who receive and acknowledge orders. • The ability to trigger automatic order for the continuous order. • Ability to route of all orders to respective preparing unit.	• Receive and acknowledge orders can be done by pharmacy assistant. • Pharmacy assistant can view patients' record - patient's name, MRN, age, body weight, BSA (Body Surface Area), BMI (Body Mass Index), demographic, doctor's name. • List of preparations shall be governed by MOH policy. • Only complete orders from other healthcare facilities shall be processed. • Make order entry, check and verify order from other healthcare facilities shall be done by pharmacist only.
2.	Check and verify order.	• The ability to view patient's record patient's name, RN, age, body weight, BSA (Body Surface Area), BMI (body mass index), demographic, diagnosis, allergies, relevant lab results, prescriber's name.	• Pharmacist can view patient's record - patient's name, RN, age, body weight, BSA (Body Surface Area), BMI (body mass index), demographic,

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		• Ability to capture date, time, name of pharmacy personnel involved in checking and verifying orders. • Ability to nullify the orders upon patients' discharge, death or when treatment is discontinued.	diagnosis, allergies, relevant lab results, doctor's name. • Only pharmacist shall be allowed to verify order. • Only authorised personnel are allowed to nullify orders.
3.	Modify order.	• Ability to edit & update any dosage changes. • Ability to capture all modifications made into patient's record.	• Only pharmacist is authorised to edit & update changes.
4.	Plan dosage schedule/ nutritional plan.	• Ability to link and access drug information database such as drug interaction, incompatibility and dosage. • The ability to alert when:- o The dosage is not within the range based on body weight or body surface area (for CDR). o Incompatibility with other drugs or diluents based on the establish database or reliable drug resources. • Ability to integrate with Pharmacy Store inventory to determine the availability of the drugs.	• Only pharmacist is authorised to plan dosage schedule/ nutritional plan.
5.	Generate worksheet & labels.	• Ability to create, view and print/ reprint pre-defined CDR/IV AD (including care sets) and PN worksheet. • Ability to auto calculate the total number of vials/ampoules/volumes	• Only Pharmacist is authorised to make changes on the worksheet. Pharmacy Assistant can only view the worksheet.

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		of solutions to be used based on the dosages prescribed for all the patient with an ability to manually override recommended calculation. • Ability to capture the quantity of the materials/drugs used for all the preparation done. • Ability to capture quantity and type of spillages. • Ability to generate, view and print/ reprint label according to different type of preparations. • Ability to generate labels whenever required with the following components:- o PN:- • Name of patient. • Patient Identification. • Ward/Clinic/Room No/Bed No. • Healthcare Facilities. • Date and time of manufacture. • Date and Time of expiry. • Infusion rate. • Electrolyte Content. • Trace Element. • Vitamin • Lipid Content. • Dextrose, amino acid, glucose content. • Infusion Rate. • Total Volume/Bag. • Total Calorie/Bag. • Storage Condition. • Cautionary label. • Prepared by: • Checked by: • Product No: o CDR:-	• Work sheets of preparations shall be documented and maintained in hard and soft copy. • Label sample shall be pasted to the worksheet.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		• Name of patient. • Patient ID. • Ward/Clinic/Room No/Bed No. • Healthcare Facilities. • Drug Name. • Strength. • Volume. • Frequency. • Diluents. • Reconstitute Date and time. • Date and Time of expiry. • Storage Condition. • Cautionary label. • Prepared by: • Checked by: • Product No: o IV Ad:- • Name of patient. • Patient Identification. • Ward/Clinic/Room No/Bed No. • Healthcare Facilities Name. • Name of Product. • Strength. • Volume. • Frequency. • Date and time of compounding. • Date and Time of expiry. • Storage Condition. • Cautionary label. • Prepared by: • Checked by: • Product No: • Ability to reprint label when required.	
6.	Quarantine for verification.	• Ability to show and adjust to the current status of the finished products as rejected, quarantine, released. • Ability to change status of the preparation only by the responsible pharmacist.	• All finished products shall be verified and approved by responsible pharmacist before release. • The responsible

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
			pharmacist shall not be the person who is involved in the preparation of the product.
7.	Stage of process.	• Ability to document the stage of process (from order to completion).	
8.	Supply to requesting unit.	• Ability to identify the collection date, time and identity of the collectors.	• All finished products shall be collected from manufacturing store and within specified date.
9.	Record task & document findings.	• Ability to record and document the followings:- o Any dosage changes, counter check of materials/ingredient used, counter check of label pasted on product. • Ability to do audit trail for any changes and/or process. • Ability to indicate the preparation of the product is complete and captures time of completion.	• Only pharmacist is authorized to record and document findings on dosage changes, counter check of materials/ingredient used, counter check of label pasted on product. • Pharmacy assistant can record task and document findings for collection of finished product and capture any spillages/extra materials during reconstitution.
10.	Reporting.	• Ability to generate, view and print daily, weekly, monthly, quarterly and yearly workload reports. • Statistics (graph) and summary reports based on:- o Location, prescriber, drug, dose (CDR), No of patients, PN bags for paediatrics and adult preparation,	

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		quantity of materials used. • Ability to report any spillages during reconstitution of cytotoxic drugs.	

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Requesting & Receiving Compounded Medication for CDR//PN/IV Ad from Other Healthcare Facilities (Out Source) – PhIS/CP/WF/9.			
1.	Receive & acknowledge order.	• The ability to receive order within the hospital and from other healthcare facilities. The system shall be able to display the list of orders with status (New order, continuous order) and name of hospital/healthcare facilities where the order comes from. • Ability to capture date, time, name of pharmacy personnel who receive and acknowledge orders. • The ability to trigger automatic order for the continuous order. • Ability to route all orders to respective preparing unit. • Ability to register orders from other healthcare facilities at point of care.	• Receive and acknowledge orders can be done by pharmacy assistant. • Pharmacy assistant can view patients record - patient's name, MRN, age, body weight, BSA (Body Surface Area), BMI (Body Mass Index), demographic, doctor's name. • Preparation of orders will be guided by local policy. • Only complete orders from other healthcare facilities shall be processed.
2.	Check and verify order.	• The ability to view patient's record - patient's name, RN, age, body weight, BSA (Body Surface Area), BMI (body mass index), demographic, diagnosis, allergies, relevant lab results, prescriber's name. • Ability to capture date, time, name of pharmacy personnel who checked and verified orders. • Ability to nullify the orders upon patients' discharge, death or when treatment is discontinued.	• Pharmacist can view patient's record - patient's name, RN, age, body weight, BSA (Body Surface Area), BMI (body mass index), demographic, diagnosis, allergies, relevant lab results, doctor's name. • Only pharmacist shall be allowed to verify order. • Only authorised personnel are allowed to nullify orders.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
3.	Plan dosage schedule/ nutritional plan.	• Ability to link and access drug information database such as drug interaction, incompatibility and dosage. • The ability to alert when:- - The dosage is not within the range based on body weight or body surface area (for CDR). - Incompatibility with other drugs or diluents based on the established database or reliable drug resources. • Ability to integrate with Pharmacy Store inventory to determine the availability of the drugs.	• Only Pharmacist is authorised to plan dosage schedule/ nutritional plan.
4.	Modify order.	• Ability to edit & update any dosage changes. • Ability to capture all modifications made into patient's record.	• Only pharmacist is authorised to edit & update changes.
5.	Prepare request form.	• Ability to generate request form according to the order made by doctor.	• Only pharmacist is authorised to prepare request order. • All request orders shall be counter checked prior to being sent to other healthcare facility.
6.	Print request form.	• Ability to view and print request form. • Ability to reprint request form when ever necessary.	
7.	Inform healthcare facility involved.		• Only pharmacist shall be allowed to communicate with other healthcare facility involved.

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
8.	Collect compounded medication.		• Only authorised personnel shall allowed to collect prepared medication. • All prepared medication shall be handled in a proper way during transportation.
9.	Acknowledge receipt of compounded medication.	• Ability to capture date, time and personnel who received the prepared medication. • Ability to show and update the status of order as pending or complete.	
10.	Supply to requesting unit.	• Ability to identify the collection date, time and identity of the collectors.	• All finished products shall be collected from Manufacturing Unit and within specified date.
11.	Record task and document findings.	• Ability to record and document the followings:- o any dosage changes. • Ability to do audit trail for any changes and/or process.	

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Pre-Packing of Medicine – PhIS/CP/WF/10.			
1.	Retrieve pre-pack list that requires replenishment.	• Ability to retrieve, display and print list of low-level pre-packed items.	• Only authorised personnel are allowed to access PhIS. • Pharmacist shall be responsible for usage planning and indenting of bulk medicine from Pharmacy Store. • Pharmacy Assistant shall ensure the continuous supply of pre packed items for dispensing.
2.	Prepare and print work sheet.	• Ability to generate a work sheet. • Ability to allow free text to enter comment/remarks in worksheet. • Ability to print a work sheet.	• Work sheets of pre-packed items shall be documented and maintained in hard and soft copy. • Worksheet format shall contain the relevant information required for traceability.
3.	Issue bulk medication.	• Ability to integrate with Pharmacy Store and Sub-Store inventory to determine the availability of the drugs used.	• Issued bulk medication for pre packing shall be checked and verified.
4.	Generate and print product label.	• Ability to generate and print label. The label shall contain the following:- o Name of medication. o Strength of medication. o Volume/ weight/ quantity of individual pack. o Expiry date. o Date Packing. o Packing Batch Number.	• Label sample shall be pasted to the worksheet. • All prepared labels shall be secured. • Reconciliation of labels shall be recorded and

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		o Manufacturer Name. o The phrase 'Ubat Terkawal'.	discrepancies shall be investigated and reported.
5.	Pack product.		• The pre-pack medicine shall be checked and verified by Pharmacy Assistant prior to storage. • Quantity of pre packed items shall be reconciled with labels. • Only one batch shall be packed at any one time. • Preparation from different batches shall not be pre packed together. • Production line clearance shall be practised.
6.	Reprint label.	• Ability to reprint product label if required.	
7.	Store product.		• Storage of the pre-pack medicine will be according to specifications of the manufacturer.
8.	Update pre-pack stock inventory.	• Ability to update pre-pack stock inventory. • Ability to enter name of staff.	• Only authorised personnel is allowed to update the pre packed stock inventory. • Distribution of finished products shall follow

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
			EEFO and FIFO basis.
9.	Record task and document finding.	• Ability to generate and print report based on MOH requirement.	

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Preparation of Extemporaneous Product–PhIS/CP/WF/11.			
1.	Receive order.	• Ability to display order from requesting unit. • Ability to identify type of drug (DD and non-DD products).	• Only authorised personnel are allowed to access PhIS. • All extemporaneous preparations must be in the MOH drug list. • All extemporaneous preparations shall follow Standard Operating Procedure. • Extemporaneous preparations shall be prepared only if supported by stability data.
2.	Refer to pharmacist.		• DD for extemporaneous preparation shall be issued out by registered pharmacist.
3.	Prepare and print work sheet.	• Ability to generate and print work sheet. Work sheet shall contain:- o Volume manufactured. o List of all ingredients in the formulation and weight required. o Name of person who prepared and counter checked the preparation. • Ability to auto calculate the weight of ingredients, based on the total volume manufactured. • Ability to create template for structured and textual data entry. • Ability to display worksheet print preview.	• Only responsible pharmacist shall be allowed to update extemporaneous formulations database.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		• Ability to maintain and update extemporaneous formulation database.	
4.	Generate label.	• Ability to generate and print label. The label shall contain the following:- o Patient's name. o Drug name. o Drug strength, dosage, frequency. o Lot number. o Preparation date. o Expiry date. o Storage condition. o The phrase 'Ubat Terkawal'.	
5.	Record task and document findings.	• Ability to generate and print report as per MOH requirement. • Ability to purge/delete completed worksheet.	• Record to be maintained in the system for 2 years from the date of expiry date and can be purged/ deleted thereafter.

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Manufacturing of Galenical Preparations - PhIS/CP/WF/12.			
1.	Retrieve preparation list.	• Ability to retrieve the list of preparations. • Ability to enter new formulary preparations.	• Only authorised personnel are allowed to access PhIS.
2.	Prepare and print work sheet.	• Ability to generate and print work sheet. Work sheet shall contain:- o Volume manufactured. o List of all ingredients in the formulation and weight required. o Name of person who prepare and counter check the preparation. • Ability to calculate the weight of ingredients, based on the total volume manufactured. • Ability to integrate with Pharmacy Store and Sub-Store inventory to determine the availability of the drugs/ingredients used for preparation and update the inventory accordingly. • Ability to maintain formulation manufacturing database for galenical products.	• Only responsible pharmacist shall be allowed to update galenical products formulations database.
3.	Counter check material.		• All materials should be counter checked by another pharmacy personnel before preparation.
4.	Generate and print bulk products label.	• Ability to generate and print label. The label shall contain the following:- o Name of medication. o Strength of medication. o Volume of weight of individual pack.	

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		o Manufacturing date. o Expiry date. o Batch No. o Storage conditions.	
5.	Quarantine for verification.	• Ability to track the order status of the finished products as rejected, quarantine, released. • Ability to deny access to change status by personnel other than the responsible pharmacist. • Ability to calculate and generate report on percentage of yield. • Ability to add free text for investigation report.	• All finished products shall be verified and approved by responsible pharmacist before release. • The responsible pharmacist shall not be the person who is involved in the preparation of the product. • Percentage of yield shall be in the range 95-100%, otherwise discrepancy shall be investigated and reported.
6.	Store and supply finished products.	• Ability to view list of finished products and expiry date according to chronological orders/reverse chronological orders. • Ability to issue the near expired finished products first.	• Distribution of finished products shall follow EEFO & FIFO basis.
7.	Record task and document finding.	• Ability to update inventory. • Ability to do audit trail of identity of person involved in the manufacturing of the product. • Ability to generate and print a report as per MOH requirement. • Ability to generate list of items to	• Record to be maintained in the system for 2 years from the date of expiry date and can be archived.

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		be condemned in the specified template. • Ability to generate report of slow moving and near expiry date stock based on specified duration of time. • Ability to enter free text for comments e.g. any possible remarks during counter check of material.	

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ASSUMPTIONS

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9.1. Drug Information will be made available in both CIS and PhIS.

9.2. Malaysian Drug Database shall be used as decision support for Drug Information function.

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10 GLOSSARY

No	Terms	Definition
1.	Clean room.	Special preparation room according to GMP standard.
2.	Continuous order.	Same order that has made before with no changes.
3.	Cytotoxic Drug Reconstitution (CDR).	Refers to reconstitution of toxic compounds that are carcinogenic, mutagenic, and/or has teratogenic potential (refer to drugs only).
4.	Dosage Schedule/ Nutritional Plan.	Regimes that are suggested by Pharmacist.
5.	Extemporaneous Preparation.	A compounded, reconstituted or diluted preparation, freshly prepared due to instability of the compound.
6.	Extemporaneous non-sterile external.	Refers to compounded preparations for local applications.
7.	Extemporaneous non-sterile internal.	Refers to compounded preparations to be consumed orally by the patients.
8.	Good Manufacturing Practice (GMP).	A set of standard guidelines to ensure that products are consistently produced and controlled by the quality standards appropriate to their intended use and as required by the marketing authorization or product specification.
9.	Good Storage Practice (GSP).	The special measure that needs to be considered in the storage, transportation and distribution of products, such that the product will be of the nature and quality intended when it reaches the consumer.
10.	Internal clients.	Clients in the hospital only.
11.	IV Admixture Service.	Refers to compounding of an active ingredient with a compatible diluent to form a ready to use preparation.
12.	Other healthcare facilities.	Outside the hospital.
13.	Parenteral Nutrition (PN).	Complete form of nutrition, containing protein, sugar, fat and added vitamins, minerals and trace elements which are given through parenteral route to the patient with conditions where enteral nutrition is not tolerated, insufficient or likely lead to complication.
14.	Production line clearance.	Completion of the pre-packing process for any one type and batch of medicine.

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15.	Quality Control Test.	Recommended tests that shall be carried out for galenical preparations to ensure that product manufactured is safe and efficacious.
16.	Tertiary Level DIC.	Drug Information Centre at higher level (National, University, State Hospitals).

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11 ABBREVIATIONS

No	Terms	Definition
1.	ADR.	Adverse Drug Reaction.
2.	BMI.	Body Mass Index.
3.	BSA.	Body Surface Area.
4.	CIS.	Clinical Information System.
5.	CP.	Clinical Pharmacy.
6.	CPS.	Clinical Pharmacokinetic Services.
7.	DD.	Dangerous Drugs.
8.	DIC.	Drug Information Centre.
9.	EEFO.	Early Expiry First Out.
10.	FIFO.	First In First Out.
11.	IP.	In Patient.
12.	IV Ad.	Intravenous Admixtures.
13.	LIS.	Laboratory Information System.
14.	MADRAC.	Malaysian Adverse Drug Reaction Committee.
15.	MOH.	Ministry of Health.
16.	MRN.	Medical Record Number.
17.	NDD.	National Drug Database.
18.	OP.	Out Patient.
19.	PhIS.	Pharmacy Information System.
20.	PMS.	Person Management System.
21.	TDM.	Therapeutic Drug Monitoring.
22.	WF.	Workflow.

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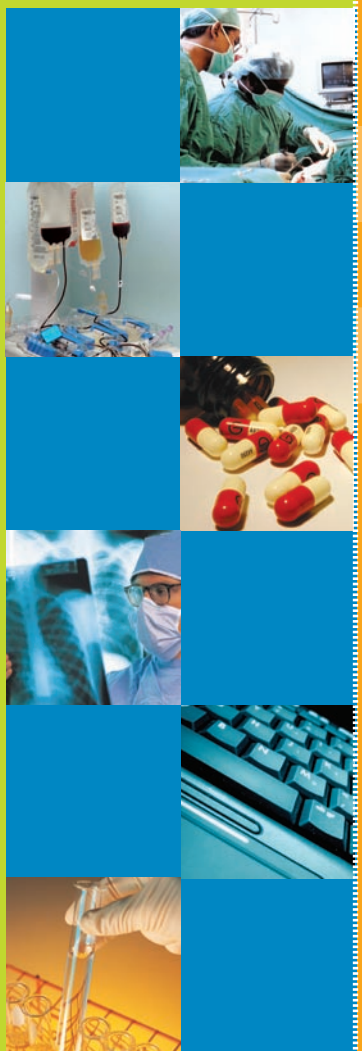
PHARMACY INFORMATION SYSTEM

BUSINESS FUNCTION MODEL

INVENTORY MANAGEMENT MODULES

Contents



BUSINESS FUNCTION MODEL – PHARMACY INFORMATION SYSTEM

1. Name of the Department – Pharmacy Department.

2. Business Function – Inventory Management.

3. Range of services:-

   3.1. Procurement.
   3.2. Supply.
   3.3. Transportation.
   3.4. Inventory Management.

4. Type of services:-

   4.1. Store Management:-

      4.1.1. Procurement:-
      4.1.2. Storage.
      4.1.3. Supply.

   4.2. Supply to hospitals and health centres.

5. Clients:-

   5.1. Internal:-

      5.1.1. Departments in the hospitals and health centres within the district.

   5.2. External:-

      5.2.1. Other organisation within Ministry of Health(MOH).
      5.2.2. Concession Company.
      5.2.3. Other suppliers.

6. Operational Policies:-

   6.1. Services Standards:-

      6.1.1. The Chief Pharmacist shall be the system administrator for the Pharmacy Information System (PhIS).
      6.1.2. The highest level of security shall be provided to all stores.
      6.1.3. There shall be one database for monitoring the procurement and supply of pharmaceutical products in the hospital.
      6.1.4. All procedures and regulations shall follow the Treasury Instructions and Government Procedures and MOH guidelines for procurement.

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6.1.5. The Pharmacy Store shall be responsible for procurement and supply of all pharmaceutical products to the hospitals and health centres.
6.1.6. The Pharmacy Store shall procure APPL items from Concession Company and shall follow a standard procurement procedure.
6.1.7. For non-APPL items, procurement shall be made through local purchase order.
6.1.8. The Pharmacy Store shall supply pharmaceutical drug products through pharmacy sub-store and medical consumables shall be supplied directly to the wards and units.
6.1.9. Such supply shall be made in accordance to the institution policy.

6.2. Service hours:-

6.2.1. Service hours shall be in accordance to the institution policy.
6.2.2. Only authorised personnel shall be allowed to enter Pharmacy Stores.

6.3. Pharmaceutical Inventory Management:-

6.3.1. Pharmacy Store:-

6.3.1.1. The Pharmacy department shall be responsible for purchasing requirements for the hospital and other institutions under its responsibility.
6.3.1.2. The purchasing requirement shall only include drug and medical items.
6.3.1.3. All purchases in the Pharmacy Store shall be authorised by Chief Pharmacist.
6.3.1.4. All products shall have standardized code as a unit identifier.
6.3.1.5. Stock keeping and control shall be maintained by the use of system. Stock level shall be updated all the time.
6.3.1.6. Bar codes shall be made available for electronic identification and inventory management.
6.3.1.7. All transactions shall be reflected / integrated with General Ledger in the account system.
6.3.1.8. The Pharmacy Store shall not issue inventory items directly to patients.
6.3.1.9. Stock verification by stock verifier appointed by the Hospital Director shall be carried out periodically.
6.3.1.10. Stocktaking shall be done periodically.

6.3.2. Procurement:-

6.3.2.1. Purchase requisition shall be generated from Pharmacy Store, sub-stores and units.
6.3.2.2. Non-standard items requisition shall be made upon request from the requesting unit.
6.3.2.3. Drugs to be included in the hospital formulary must be in the

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MOH drug list or approved by the Director General of Health.

6.3.2.4. New medical item shall be approved by Head of Department and Chief Pharmacist/Hospital Director

6.3.2.5. The Procurement of inventory items shall practice Just In Time (JIT) Delivery to avoid overstocking and slow moving stocks.

6.3.3. Standard Items:-

6.3.3.1. Procurement of Standard Items shall be according to schedule.

6.3.3.2. All orders shall be authorised by the pharmacist.

6.3.3.3. Confirmation of ability to supply from Concession Company shall be within 7 days after receiving the order.

6.3.3.4. Purchase order shall be generated upon receiving the confirmation online from Concession Company.

6.3.3.5. All transactions with the Concession Company shall be interfaced with the Pharmacy Information System.

6.3.4. Central Contract:-

6.3.4.1. Selected standard items shall be purchased under Central Contract.

6.3.4.2. Items purchased above the amounts pre-determined by Treasury Instruction shall be proposed for tender.

6.3.5. e-Perolehan (Electronic Procurement):-

6.3.5.1. List of companies under e-Perolehan shall be made accessible to the pharmacy department in the hospital.

6.3.5.2. Items purchased under e-Perolehan shall be made online upon approval of the chief pharmacist, pharmacist or authorised personnel.

6.3.5.3. The Pharmacy Information System shall be interfaced with e-Perolehan .

6.3.6. Non-standard items:-

6.3.6.1. Items shall only be made available upon request and approval of the chief pharmacist.

6.3.6.2. Drugs that are not in MOH Drug List shall be made available upon request and approval from Director General of Health.

6.3.7. Payment:-

6.3.7.1. All processes for payment shall be made by Financial Unit of the respective institution.

6.4. Inventory Distribution:-

- All requesting units and authorised personnel shall be registered in the system.
- Authorised staff from requesting unit shall be responsible for indenting and collection of the supplies.
- All requisitions shall be submitted and supplied on scheduled days.
- Replenishment shall be based on par level or according to the unit requirement.
- Supplies of DD from Pharmacy Store shall be made only to pharmacy sub-store.
- In circumstances of acute shortage of stock in pharmacy sub-store, during/after office hour, supply shall be made possible with approval of the Pharmacist in-charge. This supply shall be recorded as advanced issue.
- Stock transfer of pharmaceutical items within or inter-hospital pharmacy sub-store shall be documented for tracking purposes.
- All supplies to the requesting unit shall be charged. Report on total charge for the unit shall be generated monthly.
- All stores must practice “First in First out (FIFO)” and “Early Expiry First Out (EEFO)” method of issuing inventory items.
- Fixed location of storage item shall be practiced in all stores.

6.4.1. Community Polyclinics/Clinics:-

6.4.1.1. Supply of pharmaceutical products and medical items shall be based on the budget allocated to the hospital by the community polyclinics/clinics.

6.4.2. Transportation of Pharmaceutical Products from Pharmacy Store:-

6.4.2.1. All vaccine shall be transported following “Cold Chain” procedure.

6.4.2.2. All perishable items shall be transported using cold-box:

6.4.2.3. All hazardous drugs shall be properly labelled and packed in separate box.

6.4.2.4. The pharmacist at the sub-store shall collect all dangerous drugs and selected psychotropic drugs.

6.5. Stock Management for Pharmacy Sub-store:-

- The pharmacy sub-store shall be responsible for supplying pharmaceutical products to the units in the Hospitals.
- Supply of pharmaceutical products through satellite pharmacy shall be determined by institution policy.
- Minimal stock shall be stored according to the requirement upon the approval of the pharmacist in charge.
- List of low or nil items shall be provided to the prescribing officer.

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6.5.1. Imprest Stock Supply:-

6.5.1.1. "After office hour stock (AOH)" and imprest stock par level shall be decided by pharmacist. Items and quantity of imprest stock shall be reviewed from time to time.
6.5.1.2. The ward/unit personnel shall be responsible to check, update and maintain stock level. Counter checking shall be done by the pharmacy personnel periodically.
6.5.1.3. Request order shall be triggered based on imprest stock availability.
6.5.1.4. Replenishment shall be done on "top-up" basis.
6.5.1.5. AOH shall be used strictly after office hours. Stock level shall be checked daily and replenished as per scheduled decided in the hospital policy.
6.5.1.6. Supplies issued from pharmacy shall be checked and signed by the receiving personnel.
6.5.1.7. Supply of disinfectant will be triggered based on the period of utilization as determined by the institution policy.

6.5.2. Supply for inpatient:-

6.5.2.1. Supply of inpatient order medication shall follow unit of use/unit of dose as a policy in accordance to institutional policy.
6.5.2.2. All Medication order shall have complete details of patient and prescribing officer.
6.5.2.3. Patient's name, RN and bed number, ward status shall be updated daily by ward staff.
6.5.2.4. Drugs prescribed shall be checked for availability and the prescribing officer shall be contacted for alternative drugs if needed.
6.5.2.5. Medication shall be prepared accurately and correctly according to Medication order.
6.5.2.6. Every pack should be individually labelled according to patient's name, bed number, RN, ward, name of medication, dosage, date and quantity supplied.
6.5.2.7. Pharmacists shall review patient medication profile from time to time.
6.5.2.8. Discontinued medication shall be updated daily by ward staff. Daily list of discontinued medication shall be generated.
6.5.2.9. Drugs that had been prescribed shall be returned to pharmacy if unused.
6.5.2.10. Inventories shall be updated upon completion of medication administration.

6.5.3. Supply for Discharged Patient:-

6.5.3.1. All medication order for discharged patient shall be completed with patient details and medication order details.
6.5.3.2. Availability of the medication prescribed shall be checked and the prescribing officer shall be contacted for clarification if needed.
6.5.3.3. Medications shall be prepared accurately and dispensed according to the prescribed dose.
6.5.3.4. Bedside dispensing shall be practised.
6.5.3.5. Pharmacist shall provide bedside counselling for selected patients.

6.5.4. Supply of Dangerous Drugs (DD) to Requesting Unit:-

6.5.4.1. Supply of Dangerous Drugs medications shall follow imprest stock topping up system.
6.5.4.2. Imprest stock par level shall be decided by pharmacist.
6.5.4.3. Topping up of Dangerous Drugs from pharmacy sub-store to requesting unit shall be carried out by pharmacy staff depending on pharmacist availability.
6.5.4.4. Dangerous Drugs can only be received by authorised personnel as mentioned in the Dangerous Drug Act 1952.
6.5.4.5. All DD used in pharmacy sub-store and the requesting units must be written in the Record Book in accordance to the requirements in DD Act.
6.5.4.6. All storage of DD in the requesting unit must be kept in a locked cabinet and under control by authorised staff only.

6.6. Product Recall:-

6.6.1. Notification of recall products shall be through electronic or written letter.
6.6.2. The pharmacist shall take immediate action to disseminate to all pharmacy units.
6.6.3. Monitoring of product recall is maintained up to sub-store level only. However, this may vary based upon hospital policy.
6.6.4. All details of the recall products shall be matched with the information provided from the NPCB/company concerned. All the related products shall be withdrawn immediately from all stores and updated from the respective supply inventories.
6.6.5. Recalled products shall be quarantined and returned back to the company.
6.6.6. The details of recall product shall be documented and reported to NPCB/ company concerned.

6.7. Procurement Process:-

6.7.1. Procurement shall be made through:-

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6.7.1.1. Concession Company.
6.7.1.2. LPO.
6.7.1.3. Central Contract.

6.7.2. Supply Chain:-

6.7.2.1. Supplier to Pharmacy Store.
6.7.2.2. Pharmacy Store to pharmacy sub-store/units/wards.
6.7.2.3. Pharmacy Store to Community Polyclinics/Clinics.
6.7.2.4. From pharmacy sub store to inpatient/outpatient work station.
6.7.2.5. From inpatient work station to wards and units:-
6.7.2.5.1. Imprest stock.
6.7.2.5.2. Inpatients medication supply.
6.7.2.5.3. Discharge medication.

7. HIGH LEVEL OF WORKFLOWS (depend upon scope of work of hospital):-

7.1. Supply of Pharmaceutical Products and Medical Items from Pharmacy Store to Pharmacy Sub-Store and Units Workflow - PhIS/IN/WF/1.

7.2. Supply from Inpatient Workstation to wards – Imprest Stock and AOH Workflow – PhIS/IN/WF/2.

7.3. Back Order from Pharmacy Store to Pharmacy Sub-Store and Units Workflow –PhIS/IN/WF/3.

7.4. Receiving from Supplier and other MOH Facilities to Pharmacy Store Workflow -PhIS/IN/WF/4.

7.5. Supply of Dangerous Drug (DD) from Pharmacy Sub-Store to Requesting Unit Workflow – PhIS/IN/WF/5.

7.6. Replenishment of Stock from Pharmacy Sub-Store to Work Station (supply counter) Workflow - PhIS/IN/WF/6.

7.7. Inventory Transfer From One Pharmacy Sub-Store To Another Pharmacy Sub-Store Workflow – PhIS/IN/WF/7.

7.8. Stock Taking at Pharmacy Store and Pharmacy Sub-Store Workflow – PhIS/IN/WF/8.

7.9. Stock Verification at Pharmacy Store Workflow– PhIS/IN/WF/9.

7.10. Recalled Products Workflow – PhIS/IN/WF/10.

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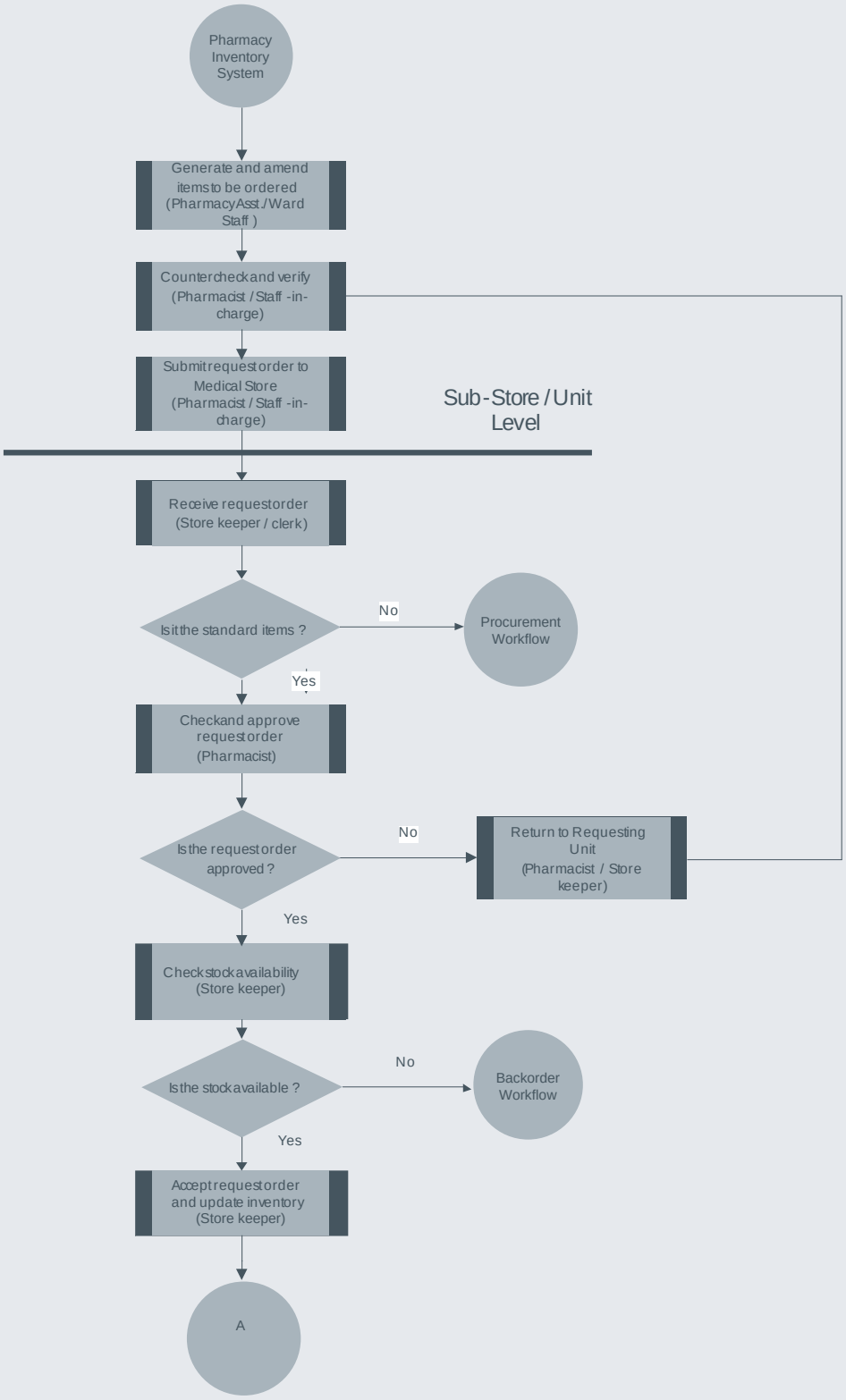
Supply of Pharmaceutical Products and Medical Items from Medical store to Pharmacy Sub-Store and Units Workflow
PhIS/IN/WF/1



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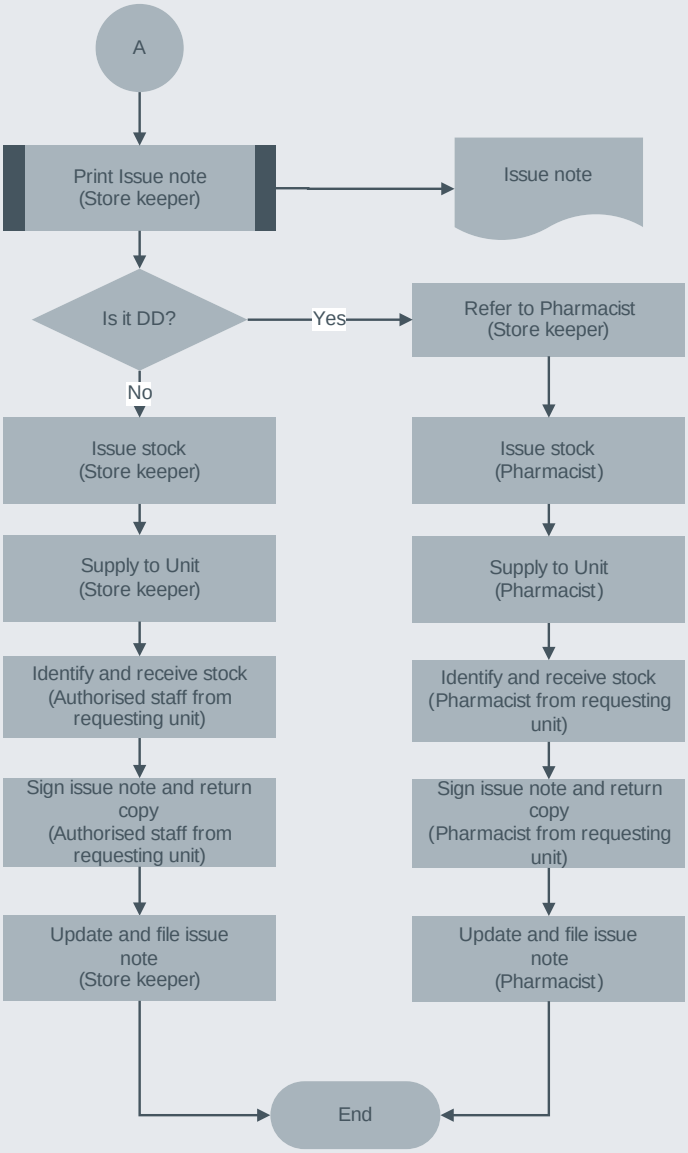
Supply of Pharmaceutical Products and Medical Items from Medical store to Pharmacy Sub-Store and Units Workflow
PhIS/IN/WF/1

-continued



Note:The inventory of Medical Store , pharmacy sub-store and unit must be updated automatically by the system .

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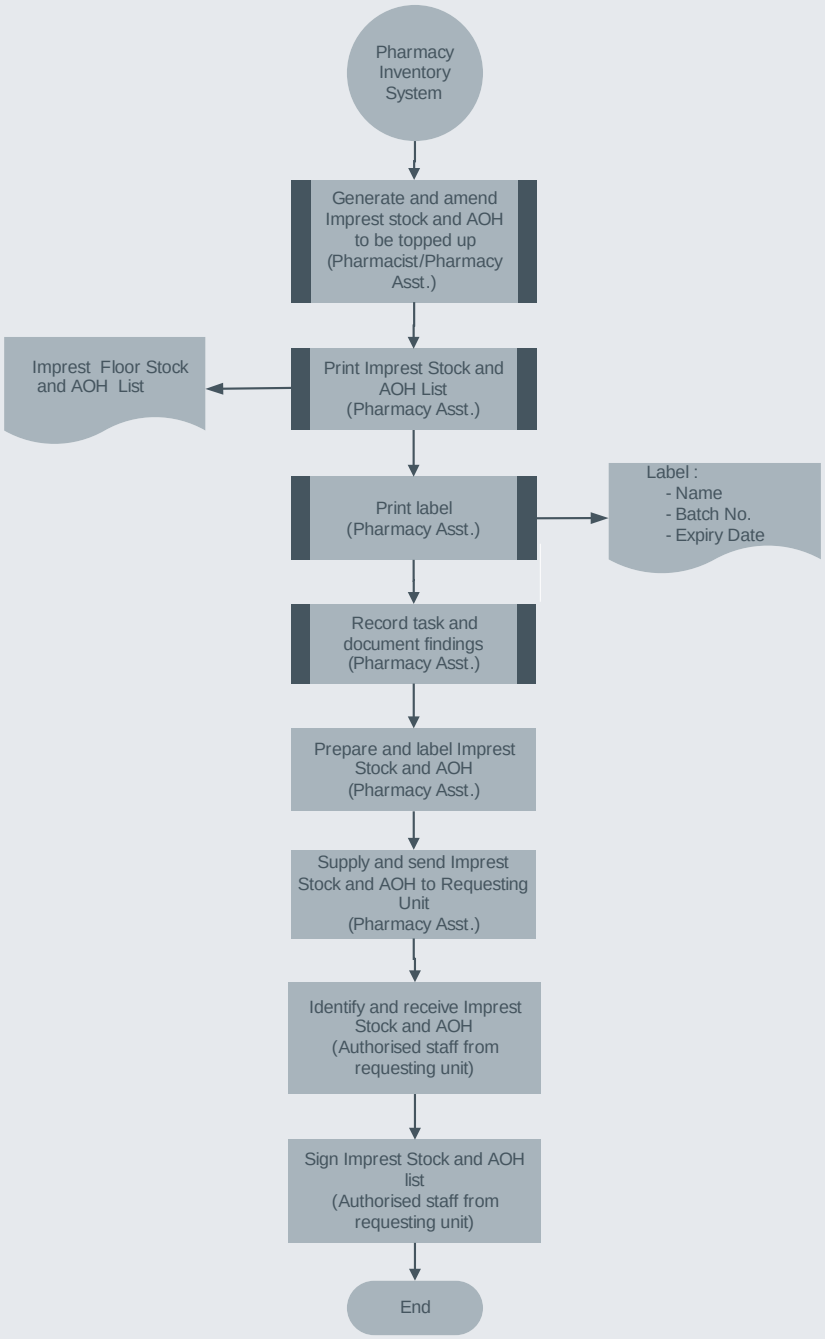
Supply from Inpatient Workstation to wards - Imprest Stock and AOH Workflow PhIS/IN/WF/2



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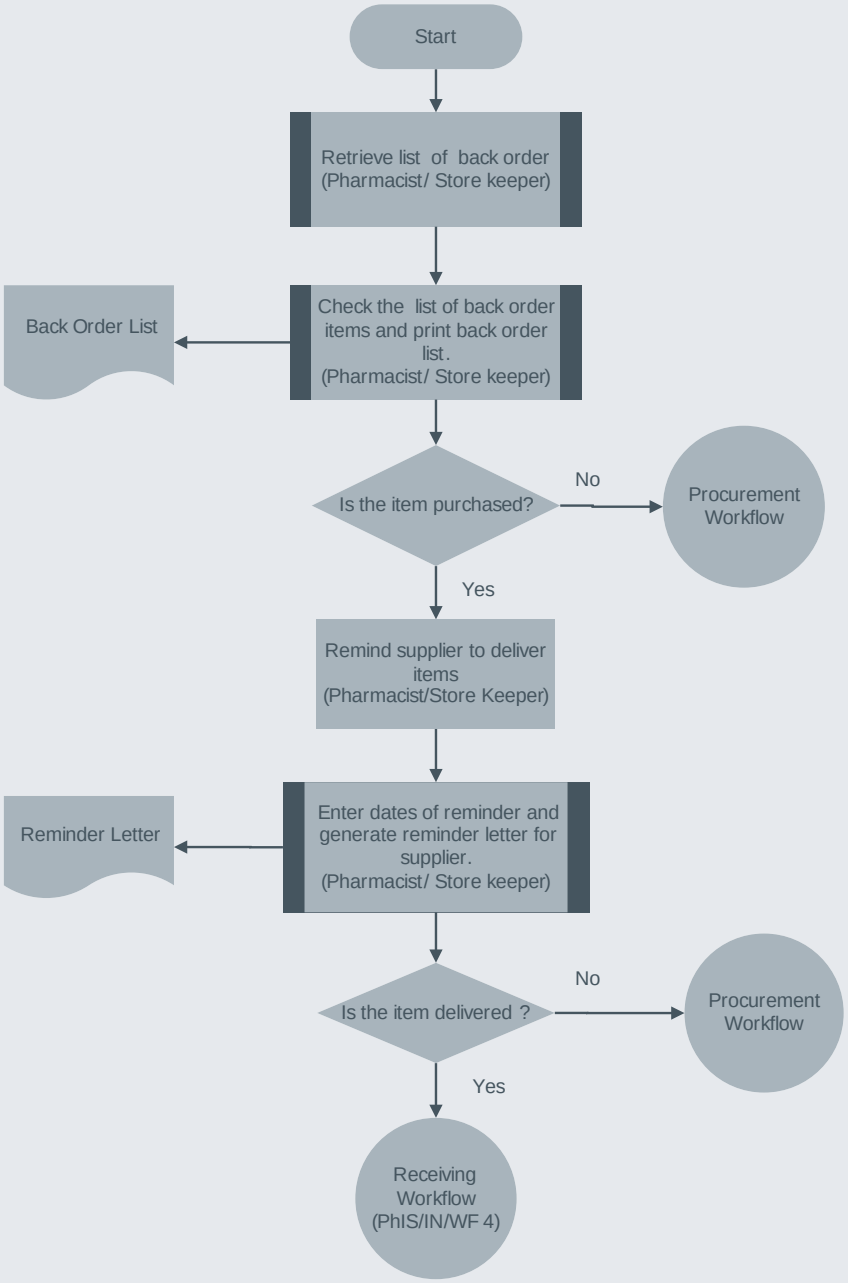
Back Order from Medical Store to Pharmacy Sub-Store and Units Workflow PhIS/IN/WF/3



Note : Back order refers to request from sub-store/units to Pharmacy Store

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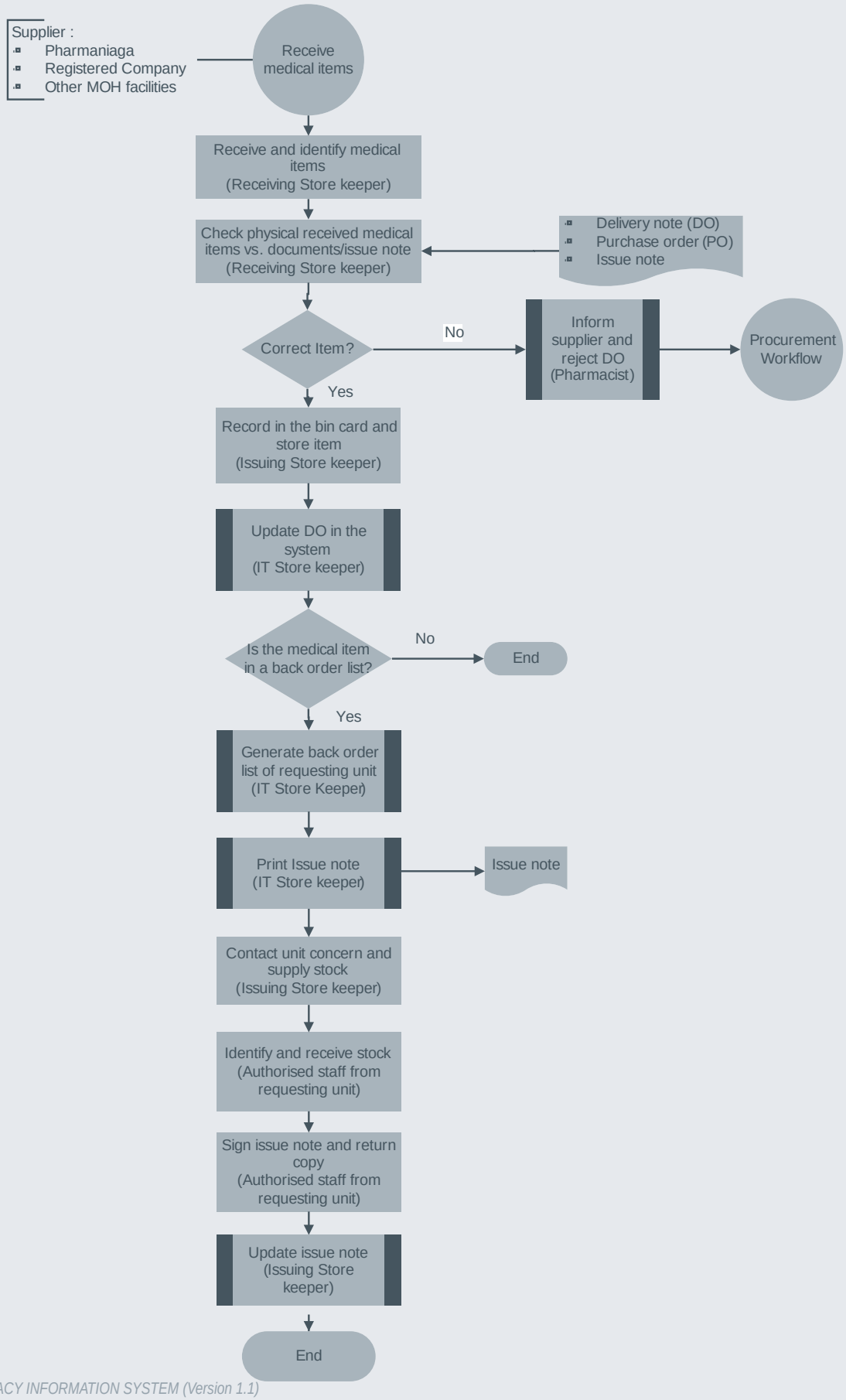
Receiving from Supplier and other MOH facilities to Medical Store Workflow PhIS/IN/WF/4



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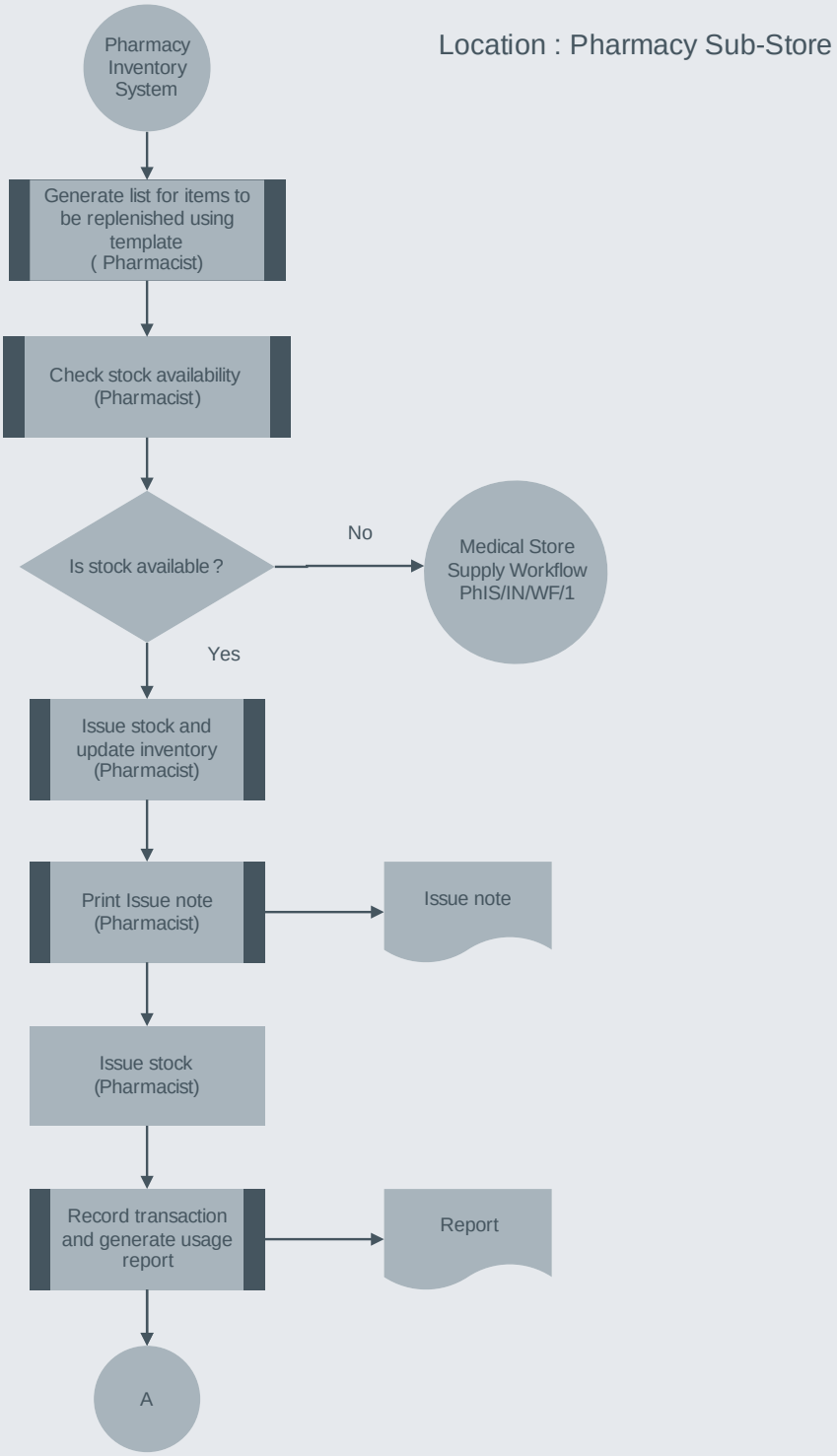
Supply of Dangerous Drug (DD) from Pharmacy Sub-Store to Requesting Unit Workflow PhIS/IN/WF/5



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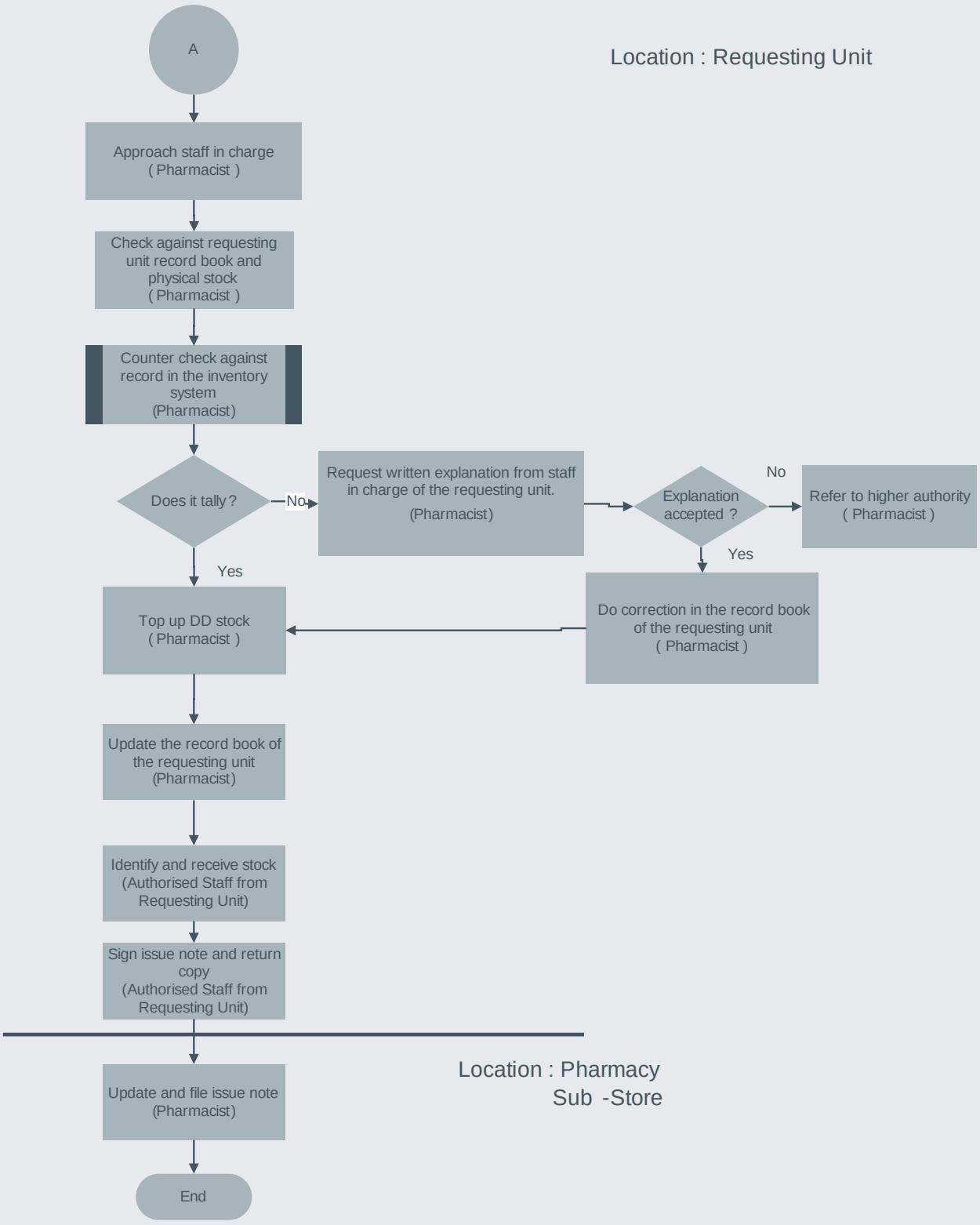
Supply of Dangerous Drug (DD) from Pharmacy Sub-Store to Requesting Unit Workflow - continued
PhIS/IN/WF/5



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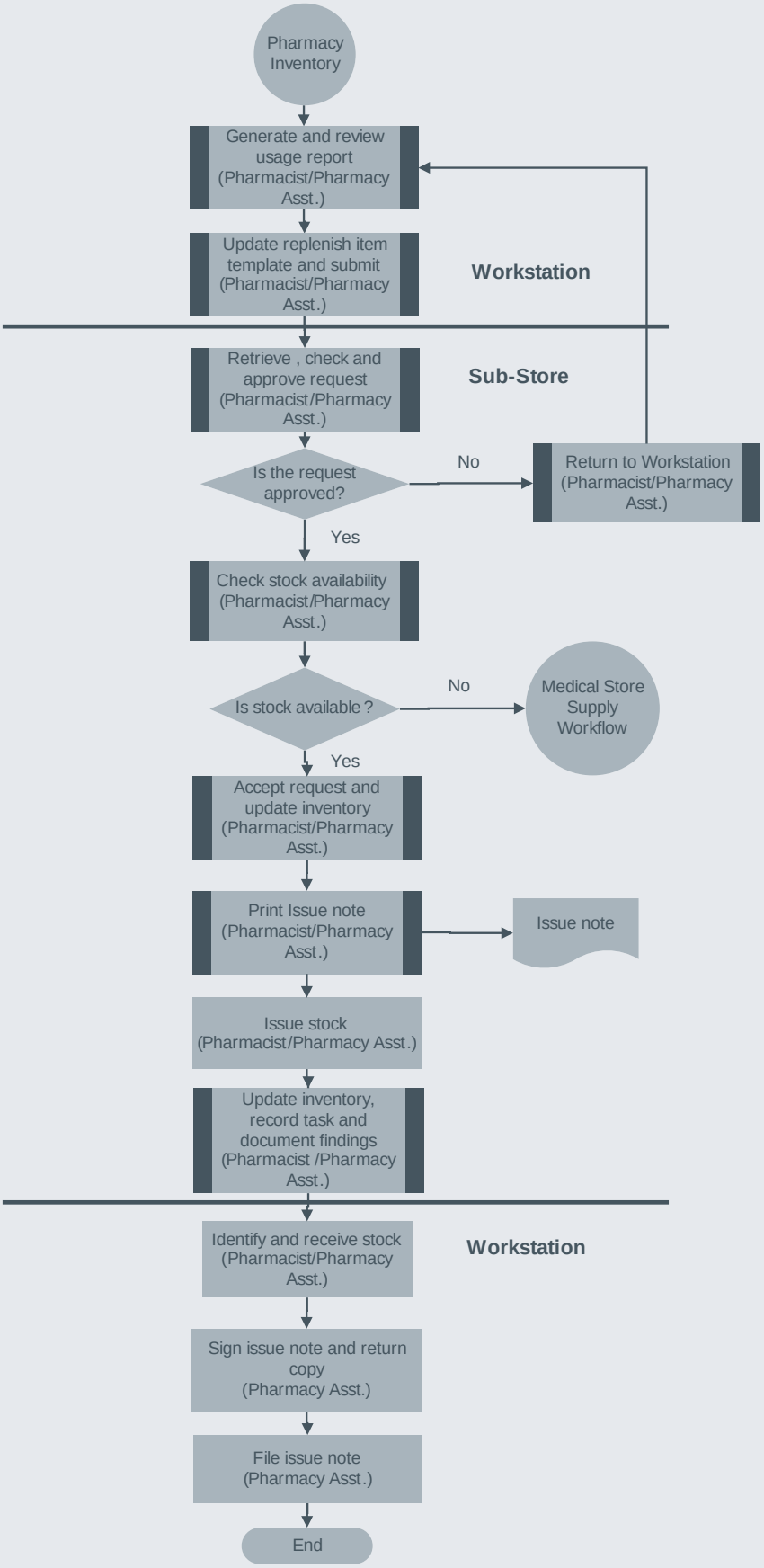
Replenishment of Stock from Pharmacy Sub-Store to Workstation (supply counter) Workflow
PhIS/IN/WF/6



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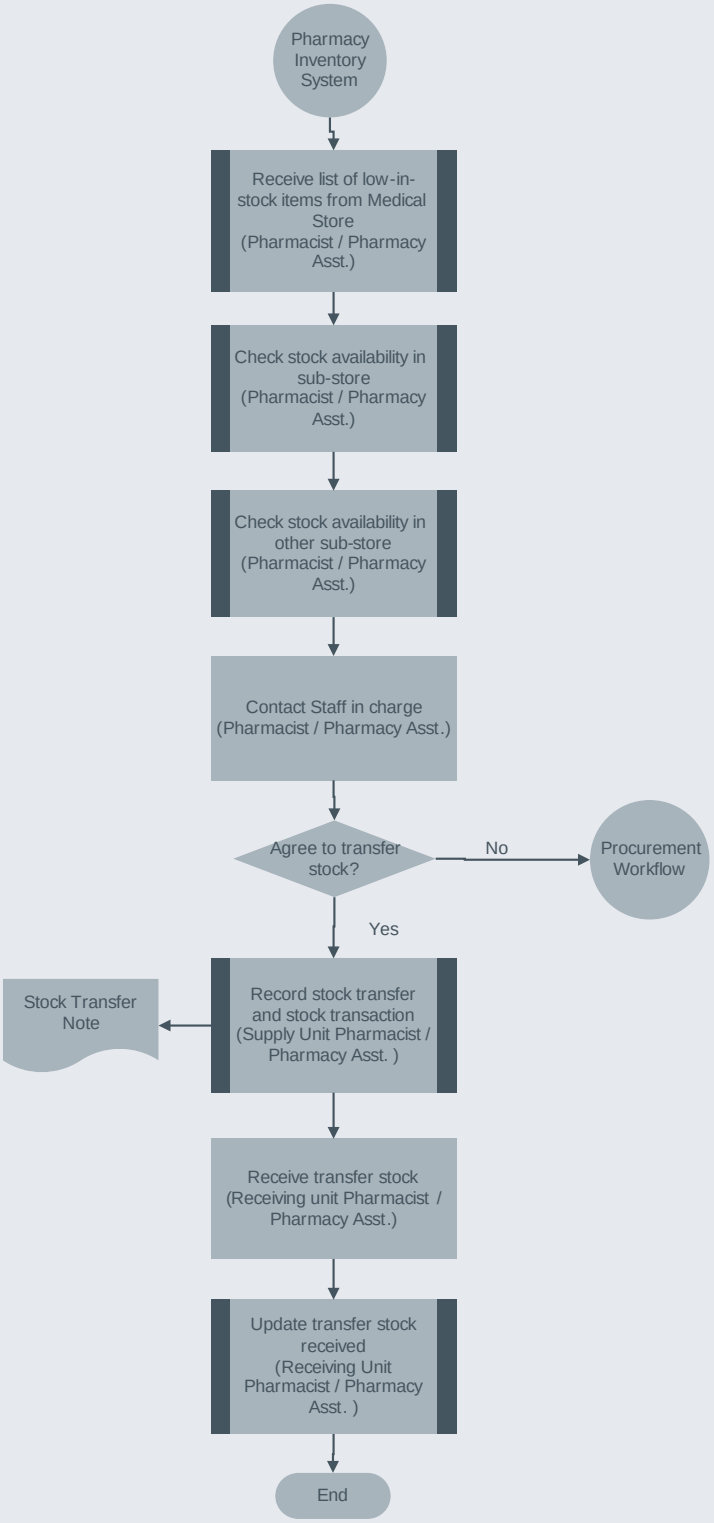
Inventory Transfer From One Pharmacy Sub-Store To Another Pharmacy Sub-Store Workflow
PhIS/IN/WF/7



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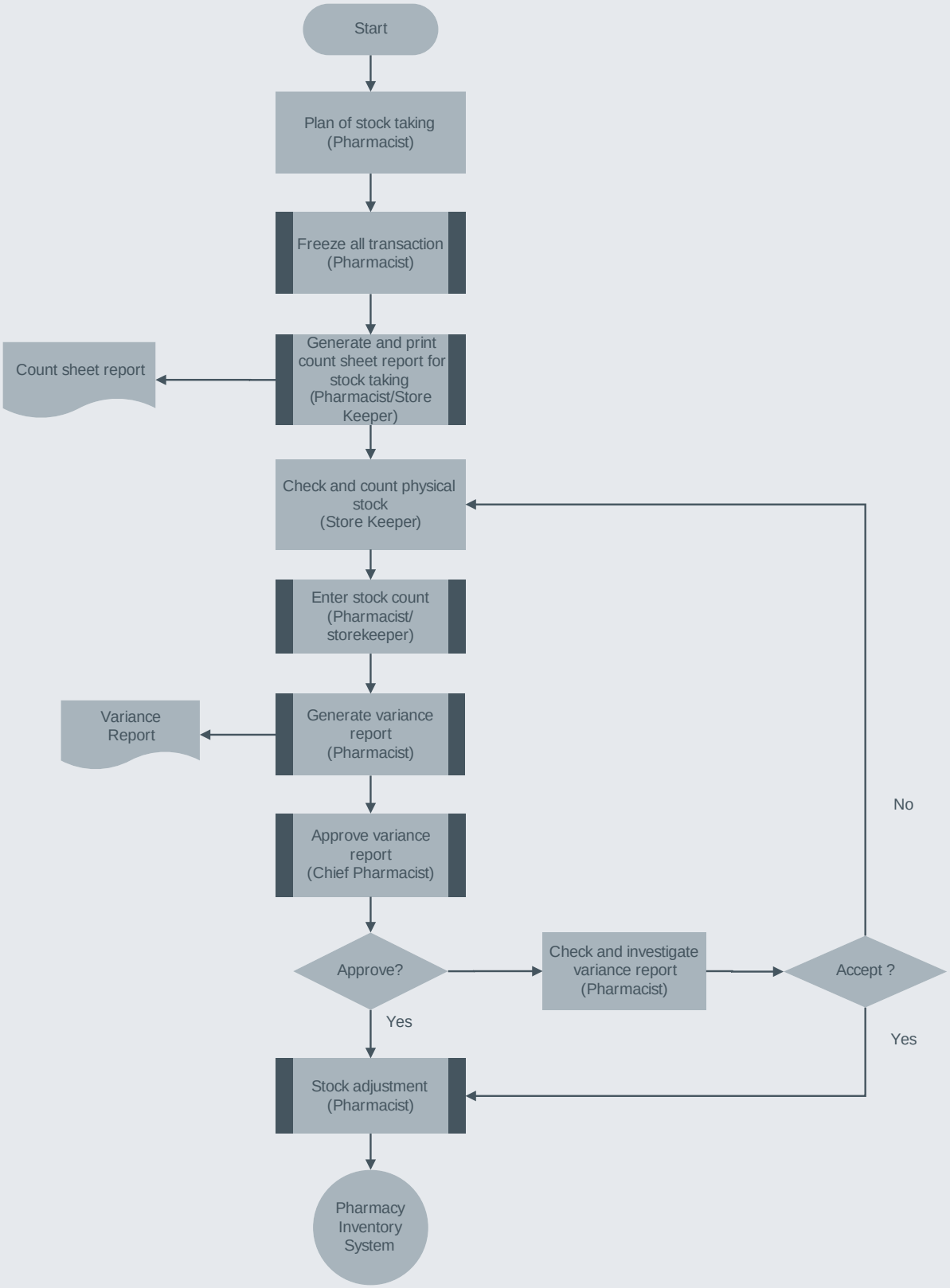
Stock Taking at Medical Store and Pharmacy Sub-Store Workflow
PhIS/IN/WF/8



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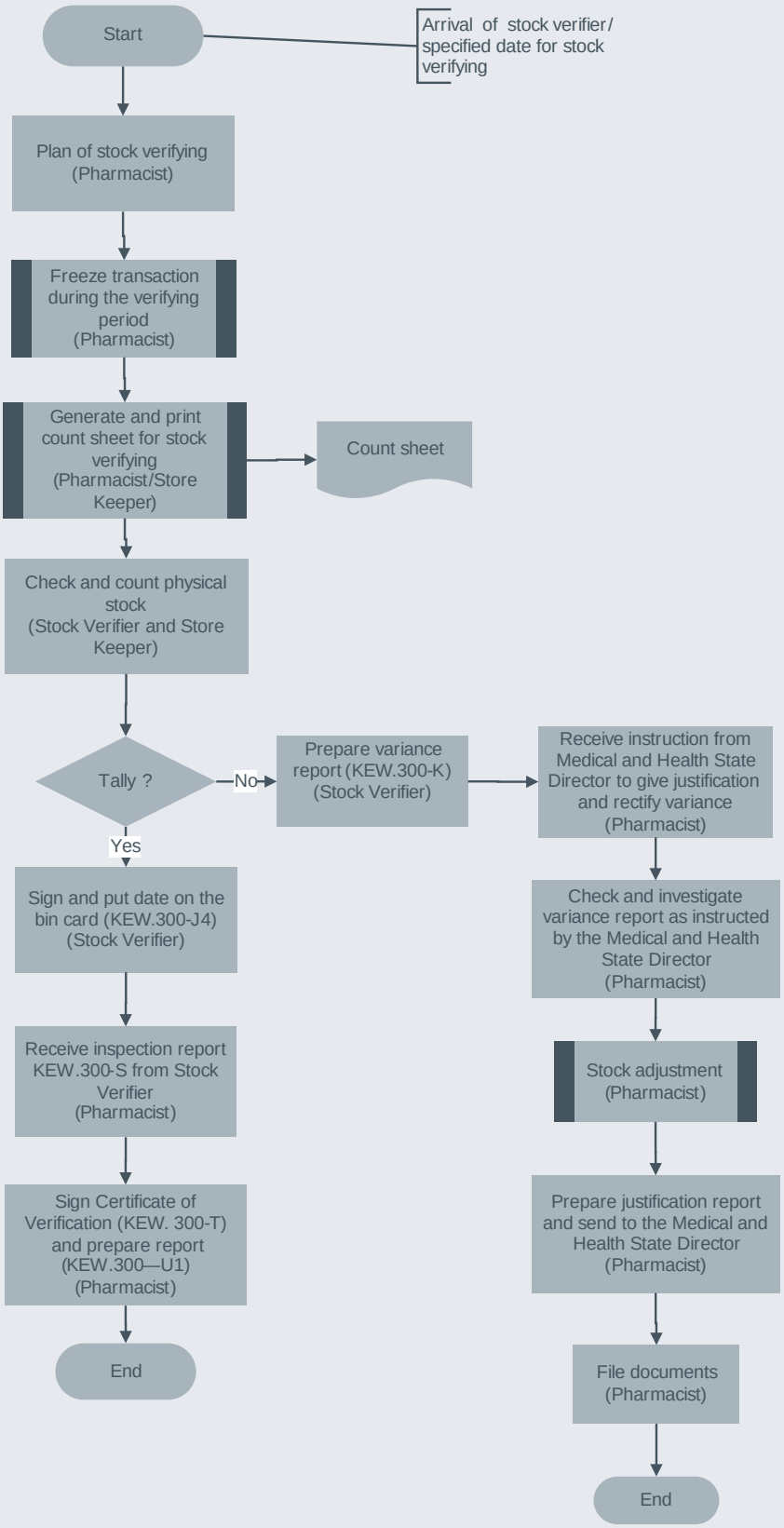
Stock Verification at Medical Store Workflow
PhIS/IN/WF/9



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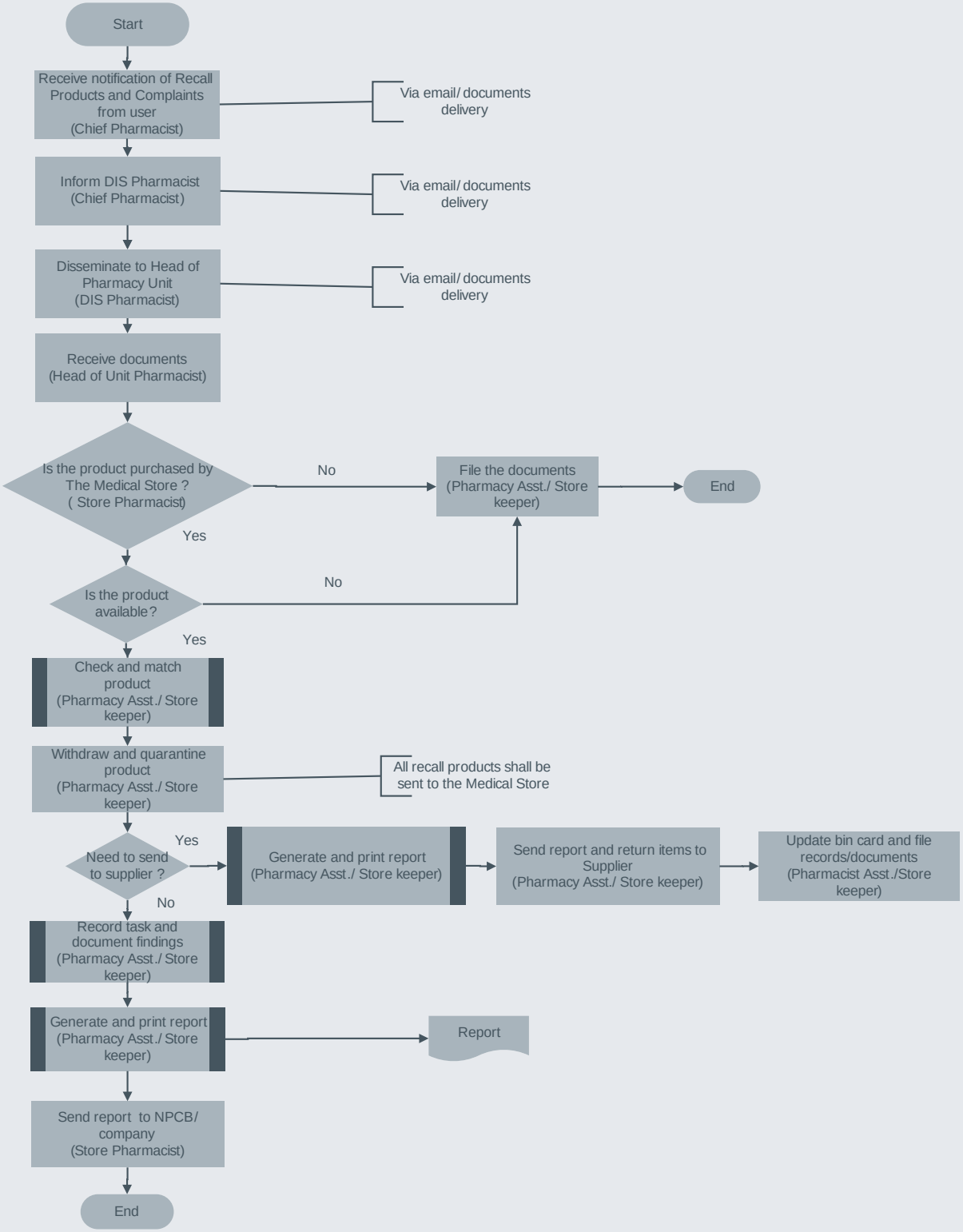
Recalled Products Workflow
PhIS/IN/WF/10



Note:-
All quarantined products shall not be allowed to be used in the hospital.
Product recall shall be at done at the healthcare facility level.

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8 MAPPING OF WORK PROCESS/SYSTEM FUNCTIONALITIES AND OPERATIONAL POLICIES

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Supply of Pharmaceutical Products and Medical Items from Pharmacy Store to Pharmacy Sub-Store and Units – PhIS/IN/WF/1.			
1.	Generate and amend items to be ordered.	• Ability to add new items in the template. • Ability to provide and update template on par level of all items. • Ability to select items that need to be ordered.	• Only authorised personnel shall be allowed to generate and amend items to be ordered.
2.	Submit request to Pharmacy Store.	• Ability to alert Pharmacist/Staff-in-charge of incoming request.	• Only authorised personnel shall be allowed to submit request.
3.	Receive request order.	• Ability to integrate with OMS. • Ability to alert the incoming request. • Ability to specify items i.e. APPL, Central Contract, Direct Issue, etc. • Ability to identify type of drug (DD and non-DD products).	• Only authorised personnel are allowed to access PhIS. • All requesting unit and authorised personnel must be registered in the system. • Authorised staff from requesting unit is responsible for identification and collection of the supplies. • All requisition shall be submitted and supplied on scheduled days. • Replenishment shall be based on par level or according to the unit requirement.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
			• Supplies of DD are allocated to pharmacy sub-store only. • In circumstance of acute shortage of stock in pharmacy sub-store after office hour, supply will be made possible with approval of pharmacist in charge. This supply will be recorded as advanced issue and deducted from stock inventory.
			• Borrowing of pharmaceutical items within or inter-hospital pharmacy store shall be documented for tracking purposes. • All supplies to the requesting unit shall be charged. Report on total charge for the unit shall be generated monthly. • All DD products shall be handled by Pharmacist.
4.	Check and approve request order.	• Ability to view and approve request order.	
5.	Check stock availability.	• Ability to check stock inventory.	
6.	Return to	• Ability to return the disapproved	

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
	requesting unit.	order back to the requesting unit. • Ability to alert the requesting unit that the order has not been processed and probably need to be counter checked and verified once again.	
7.	Accept request order and update inventory.	• Ability to accept request from OMS. • Ability to update inventory.	• All stores must practice “First in First out (FIFO) “and “Early Expiry First Out (EEFO)” method of issuing inventory items. • Fixed location of storage items shall be practiced in all stores.
8.	Print Issue note.	• Ability to generate and print issue note. The issue note shall contain the following items:- o Date of request. o Name of requesting unit. o Name of item/ drug. o Strength of drug. o Formulation. o Quantity request. o Quantity supply. o Storage condition. o Date of supply. o Name of issued person. o Name of receiver.	
9.	Update and file issue note.	• Ability to update issue note. • Ability to generate Work Load report i.e:- o No of request received. o No. and list of items supplied. o No. and list of items transferred to back order.	• The inventory of Pharmacy Store, pharmacy sub-store and unit must be updated automatically by the system.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
		• Ability to generate and print slow moving items report. • Ability to generate and print near expired items report.	
10.	General function.	• Ability to view and print costing report of each individual department/ unit for selected period. • Ability to view and print costing report of total drug or medical disposable or medical equipment usage for selected period. • Ability to generate report of slow moving and near expiry date stocks based on specified duration of time and mass email to sub-stores and other hospitals. • Ability to generate report of expired stocks item. • Ability to auto generate list of items to be condemned in the specified template. • Ability to generate report on total stock out (zero stock) at a scheduled period. • Ability to generate detailed report on items unable to be supplied or partial supply based on sub-store workstation or requesting unit.	

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Supply from Inpatient Workstation to wards – Imprest Stock and AOH – PhIS/IN/WF/2.			
1.	Generate and amend imprest stock and AOH to be topped up.	• Ability to display and generate imprest stock and AOH list for imprest stock top-up. • Ability to alert PhIS once AOH items have been used. • Ability to alert PhIS once imprest stock is below par level. • Ability to confirm the replenishment amount.	• Only authorised personnel are allowed to access PhIS. • Pharmacist and staff-in-charge in ward shall be responsible to determine the par level of imprest stock and "after office hour stock (AOH)". • Items and quantity of imprest stock shall be maintained and reviewed from time to time. • The pharmacy staff is responsible to check, update and maintain stock level. • AOH shall be used strictly after office hours. • Ward staff shall update the usage of imprest stock and AOH immediately. • Details of prescription have to be recorded to control usage. • Checking and supply of imprest stock shall be scheduled based on local policy.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
			• Replenishing the imprest stock shall be done on “top-up” basis.
2.	Print imprest stock and AOH list.	• Ability to generate and print Imprest Stock and AOH list.	
3.	Print label.	• Ability to generate and print label. The label shall contain the following:- o Patient name. o Drug name. o Drug strength, dosage, frequency. o Batch number. o Manufacturing date. o Expiry date.	• Quantity supplied will be according to amount used up from stock level.
4.	Identify and receive imprest stock and AOH.		• Supplies received from pharmacy have to be checked and signed by the receiving staff for correct specification, integrity and quantity.
5.	Record task and document findings.	• Ability to update inventory. • Ability to generate report of usage and cost by unit and discipline.	
		• Ability to view and generate report of number, list and cost of imprest stock and AOH to individual ward for specified time. • Ability to generate report of slow moving and near expiry date stocks based on specified duration of time. • Ability to generate report of expired stocks item. • Ability to auto generate list of items to be condemned in the specified template.	

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Back Order from Pharmacy Store to Pharmacy Sub-Store and Units – PhIS/IN/WF/3.			
1.	Retrieve list of back order.	• Ability to retrieve list of back order. • Ability to cancel back order items.	• Only authorised personnel are allowed to access PhIS.
2.	Check the list of back order items and print back order list.	• Ability to view list of items ordered. • Ability to print back order list.	
3.	Enter date of reminder and generate reminder letter for supplier.	• Ability to allow free text to enter date of reminder and reason of delay in the procurement system. • Ability to generate reminder letter.	

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Receiving from Supplier and other MOH facilities to Pharmacy Store - PhIS/IN/WF/4.			
1.	Inform supplier and reject DO.	• Ability to access procurement system. • Ability to document remarks for rejecting product in procurement system.	
2.	Record in the bin card and store item.		• As stated in 'Tatacara Pengurusan Stor' (TPS).
3.	Update DO in the system.	• Ability to update inventory record.	
4.	Generate back order list of requesting unit.	• Ability to generate back order list of previous requesting orders.	
5.	Print Issue note.	• Ability to print issue note.	
6.	Update issue note.	• Ability to update issue note.	

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Supply of Dangerous Drug (DD) from Pharmacy Sub-Store to Requesting Unit– PhIS/IN/WF/5.			
1.	Generate replenish item using template.	• Ability to alert incoming request. • Ability to retrieve list of request. • Ability to capture the usage of dangerous drugs for replenishing purposes.	• Authorised personnel shall be allowed to access PhIS. • All requisition shall be submitted and supplied on scheduled days. • Topping up of dangerous drugs from pharmacy sub-store to requesting unit shall be carried out by pharmacist. If topping up cannot be carried out, all empty ampoules used shall be retained for exchange. • All DD used in the ward must be written in the record book with patient detail according to the requirement in DD Act. • Replenishment shall be based on minimum-maximum stock level. • The pharmacist in-charge shall be responsible to update and maintain min/ max stock level. • Report on total usage for the requesting unit shall be generated monthly.

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
2.	Check stock availability.	• Ability to check availability of stock in pharmacy sub-store.	
3.	Issue stock and update inventory.	• Ability to issue out stock through the system and update inventory.	
4.	Print issue note.	• Ability to generate and print issue note.	
5.	Record transaction and generate usage report.	• Ability to record transaction. • Ability to generate report on usage of DD by date.	
6.	Counter check against record in the inventory system.	• Ability to check the transaction status of the requesting unit in the system.	
7.	Update the record book of the requesting unit.		• All supplies to the requesting unit shall be recorded and updated accordingly in the record book.
8.	Sign issue note and return copy.		• Only authorised staff shall sign issue note.
9.	General function.	• Ability to view and generate report of number, list and cost of DD supplied to individual department/ unit for specified time. • Ability to generate report of slow moving and near expiry date stocks based on specified duration of time. • Ability to generate report of expired stocks item. • Ability to auto generate list of items to be condemned in the specified template.	

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Replenishment of Stock from Pharmacy Sub-Store to Workstation (supply counter) - PhIS/IN/WF/6.			
1.	Generate and review usage report.	• Ability to generate usage report from OMS.	• Authorised personnel shall be allowed to access PhIS.
2.	Update replenish item template and submit.	• Ability to update replenish items. • Ability to convert quantity usage to the minimal stock keeping quantity.	
3.	Retrieve, check and approve request.	• Ability to alert incoming request. • Ability to retrieve list of request. • Ability to view and approve request.	• All requisition shall be submitted and supplied on scheduled days. • Replenishment shall be based on min-max stock level. • The work station personnel shall be responsible to update and maintain minimum/ maximum stock level. • All supplies to the work station shall be charged. Report on total usage for the work station shall be generated monthly.
4.	Return to Workstation.	• Ability to return the unapproved request back to the workstation.	
5.	Check stock availability.	• Ability to check stock inventory.	
6.	Accept request and update	• Ability to accept request from work station.	

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
	inventory.	• Ability to update inventory.	
7.	Print issue note.	• Ability to update issue note. • Ability to generate and print total usage and cost of items issued to work station by date or month report.	
8.	Update inventory, record task and document findings.	• Ability to update inventory records. • Ability to generate report of stock received.	

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Inventory Transfer from one Pharmacy Sub-Store to another Pharmacy Sub-Store – PhIS/IN/WF/7.			
1.	Receive list of low-in-stock items from Pharmacy Store.	• Ability to display and print list of low-in-stock items. • Ability to alert incoming list of low-in-stock items.	• Only authorised personnel shall be allowed to access PhIS.
2.	Check stock availability in sub-store.	• Ability to view stock level of other sub-store. • Ability to alert Pharmacy Store once the items not available in all sub-stores.	• Only authorised personnel shall be allowed to view.
3.	Check stock availability from other sub-store.	• Ability to view stock level of other sub-store.	• Only authorised personnel shall be allowed to view stock availability.
4.	Transfer stock.		• Only authorised personnel shall be allowed to transfer stock.
5.	Record stock transfer and stock transaction.	• Ability to record stock transfer and generate stock transfer note. • Ability to generate report of stock transfer.	
6.	Update transfer stock received.	• Ability to acknowledge receiving of stock. • Ability to update transferred stock.	
7.	General function.	• Ability to view and generate report of number, list and total cost of stock transferred.	

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Stock Taking at Pharmacy Store and Pharmacy Sub-Store – PhIS/IN/WF/8.			
1.	Freeze all transaction.	• Ability to freeze any transaction.	• Stocktaking shall be done in accordance to 'Tatacara Pengurusan Stor' (TPS), at least once a year.
2.	Generate and print count sheet report for stock taking.	• Ability to view, generate and print count sheet report for stock taking. • The count sheet report should contain the following information:- o Detail item description:- • Code. • Description. • Batch Number. • Packing. • Quantity. • Type of item. • Location. o Detail transaction of receiving stock, issuance of stock and cost involved. o Stock expiry date. o System balance stock and a column for physical stock to be filled during stock taking.	
3.	Enter stock count.	• Ability to update stock count and match with the inventory stock.	
4.	Generate variance report.	• Ability to generate variance report of excess or deficit stock.	
5.	Approve variance report.	• Ability to alert Chief Pharmacist on stock inventory adjustment. • Ability to allow approval of stock inventory adjustment of the variance report.	• Only authorised personnel shall be allowed to approve stock adjustment.
6.	Stock adjustment.	• Ability to adjust stock.	• Only authorised

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
			personnel shall be allowed to do stock adjustment.
7.	General function.	• Ability to view and generate report of number, list and cost of adjusted stock items for specified time. • Ability to generate report of annual turn over rate for all standard items.	

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Stock Verification at Pharmacy Store – PhIS/IN/WF/9.			
1.	Freeze transaction during the verifying period.	• Ability to freeze all transactions.	• Stocktaking shall be done twice a year i.e before the end of June and December respectively, in accordance to 'Tatacara Pengurusan Stor' (TPS).
2.	Generate and print count sheet for stock verifying.	• Ability to view, generate and print inventory report for stock verifying. • The report should contain the following information:- o Detail item description:- ▪ Code. ▪ Description. ▪ Batch Number. ▪ Packing. ▪ Quantity. ▪ Type of item. ▪ Location. o Detail transaction of receiving stock, issuance of stock and cost involved. o Stock expiry date. o System balance stock and a column for physical stock to be filled during stock taking/ stock verification.	
3.	Stock adjustment.	• Ability to adjust stock.	• Only Chief Pharmacist / Pharmacist shall be allowed to do stock adjustment.
4.	General function.	• Ability to view and generate report of number, list and cost of adjusted stock items for specified time. • Ability to generate report of annual turn over rate for all standard items.	• Stock Verifier shall be appointed by Hospital /Institutional Director.

NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
Recall Products – PhIS/IN/WF/10.			
1.	Receive notification of recall products and inform DIS Pharmacist.	• Ability to alert on incoming information regarding recall product.	• Only authorised personnel shall be allowed to access PhIS. • NPCB shall be responsible for informing all hospitals regarding information on recalled products through electronic communications followed by written letter and action taken accordingly. • For those received directly from the company, the hospital shall take immediate action. • All product complaints from users have to be filled in the Product Complaint Form (Borang Laporan Aduan).
2.	Disseminate to head of pharmacy unit.	• Ability to auto generate list of recall product on specified template.	
3.	Receive documents.	• Ability to alert on incoming information regarding recall product.	
4.	Check and match products.	• Ability to check and match the product recall. • Ability to capture products bar code.	• All details of the recall products will be matched with the information provided

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NO	ACTIVITIES	SYSTEM FUNCTIONALITIES	POLICIES
			from the NPCB or the company concerned. These include type of medication and batch number.
5.	Withdraw and quarantine products.		• All the related products shall be withdrawn immediately from all stores and deducted from the Pharmacy Store or consuming units' inventory. • Withdrawn products shall be quarantined until replacement stock is available.
6.	Record task and document findings.	• Ability to update stock inventory.	• All recall products from the respective stores shall be deducted from the respective stores inventory.
7.	Generate and print report.	• Ability to generate and print report.	
8.	Send report to NPCB / company.	• Ability to send the report electronically i.e. via email.	• The type and number of recalled products shall be documented and reported to NPCB and the company concerned.
9.	General function.	• Ability to view and generate report of number, list and cost of recall products.	

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9 ASSUMPTIONS

9.1. Only authorized personnel shall be allowed to access to PhIS.
9.2. Interface with concession and e-perolehan will be made available.
9.3. Inventory system will be mandated to use bar coding functionality.

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GLOSSARY

No.	Terms	Definition
1.	After Office Hour stock.	Items that are kept in the ward but only allowed to be used strictly after office hour. These items are drugs that are used frequently, life saving drug and category A drugs.
2.	Approved Product Purchase List.	A list of items to be purchased from Concession Company under concession agreement.
3.	Back order.	Items that has been ordered / purchased and has not been supplied/received.
4.	Bar code.	Product identification.
5.	Consuming Units.	All locations that store and use the pharmaceutical products.
6.	DD stock.	List of dangerous drugs (DD) or selected psychotropic that is kept under lock and key.
7.	Direct Issued.	Products supplied direct to requesting unit.
8.	Emergency stock.	Emergency drugs that are kept in emergency trolley.
9.	Formulary items.	Items in MOH Drug List and available in the hospital.
10.	Imprest stock.	Common drugs that are kept in the ward at all time.
11.	Issuing Store Keeper.	Store keeper in charge of issuing stock from Pharmacy Store.
12.	IT Store Keeper.	Store keeper in charge of inventory computer system.
13.	Just In Time Delivery.	Stocks to be purchased according to minimal stock level and to be delivered on time by the supplier as scheduled.
14.	KEW 300-K.	Stock Variance Report ('Penyata Perselisihan Stok').

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No.	Terms	Definition
15.	KEW 300-T.	Stock Verification Certificate ('Sijil Verifikasi Stok').
16.	KEW 300-U1.	Stock Verification Report ('Laporan Verifikasi Stok').
17.	Medical item.	Pharmaceutical, medical and surgical items including disposables and small equipment.
18.	Non-formulary items.	Items that are not in MOH Drug List and shall be only made available upon request and Director General of Health approval.
19.	Non-standard items.	Items that are not regularly used and not stored in Pharmacy Store.
20.	Out of stock items.	Items that are in MOH Drug List but not available during the period when needed.
21.	Par Level.	Minimum and maximum level.
22.	Pharmaceutical products.	Drugs.
23.	Product Recall.	Product recall is a process taken by the NPCB, manufacturer, importer or wholesaler to remove or withdraw a particular drug or product from all links of distributions.
24.	Receiving Store Keeper.	Store keeper in charge of receiving stock from the supplier.
25.	Registered Company.	The list of company approved by Ministry of Finance for procurement with all government agencies.
26.	Return drug.	Unused drug that is returned because of discontinuation prior to discharge. These drugs are usually costly e.g. list A or uncommon drug.
27.	Standard items.	Items that are made available in the Pharmacy Store including APPL and non-APPL.
28.	Stock level.	Amount of drugs maintained as imprest stock.

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No.	Terms	Definition
		The amount is determined by the ward sister and pharmacist.
29.	Sub-store.	Store located in individual unit, i.e. outpatient, inpatient, satellite, PN, CDR, TDM, IV admixture, sterile, non-sterile and etc.
30.	Unit of use.	Supply of medications to inpatients through medication order on an individual basis for a fixed period of time.
31.	Unit dose.	Supply of medications to inpatients through medication order on an individual and daily basis.

11 ABBREVIATIONS

No.	Terms	Definition
1.	AOH.	After Office Hour Stock.
2.	APPL.	Approved Product Purchase List.
3.	CDR.	Cytotoxic Drug Reconstitution.
4.	DD.	Dangerous Drug or selected psychotropic drug.
5.	DIS.	Drug Information Service.
6.	DO.	Delivery Order.
7.	EEFO.	Early Expiry First Out.
8.	FIFO.	First in first out.
9.	IN.	Inventory.
10.	LPO.	Local Purchase Order.
11.	MOH.	Ministry of Health.
12.	NPCB.	National Pharmaceutical Control Bureau (Biro Pengawalan Farmaseutikal Kebangsaan).
13.	OMS.	Order Management System.
14.	PhIS.	Pharmacy Information System.
15.	PN.	Parenteral Nutrition.
16.	PO.	Purchase Order.
17.	RN.	Registration Number.
18.	TDM.	Therapeutic Drug Monitoring.
19.	WF.	Workflow.

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PHARMACY INFORMATION SYSTEM

BUSINESS FUNCTION MODEL

APPENDIX – MEMBERS OF EXPERT GROUP

MEMBERS OF EXPERT GROUP:-

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