General Teaching Module on Drug Policy and the Medication Pathway

Pharmacy of Geneva University Hospitals

DISPENSING AND DISTRIBUTING DRUGS IN THE HOSPITAL

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Learning objectives

At the end of this lesson, you will be able to:

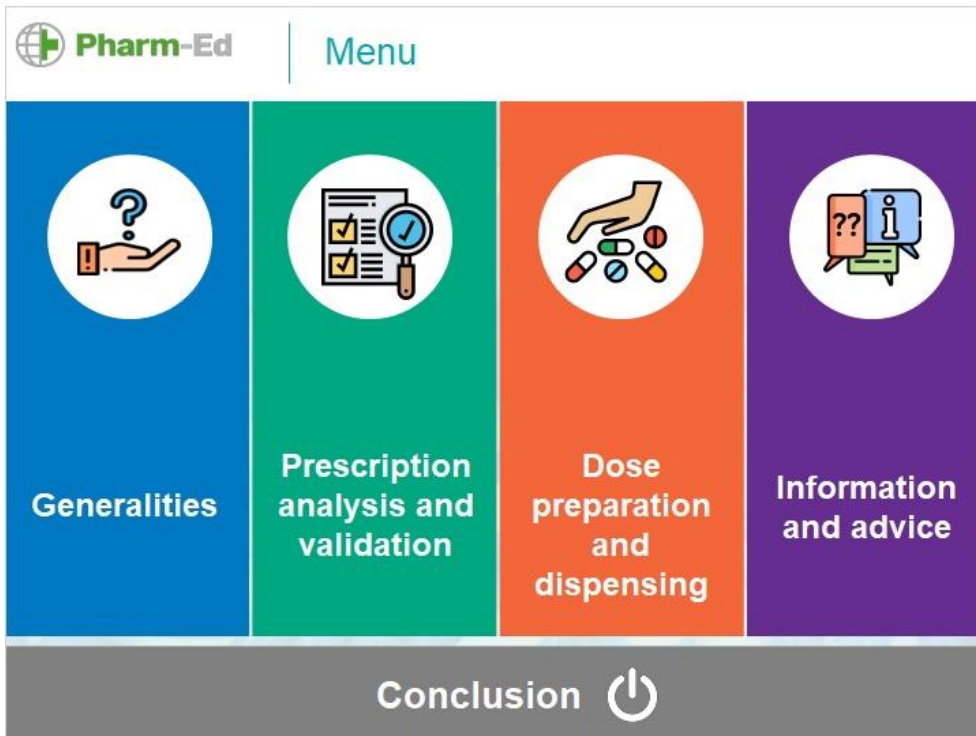☑ Describe the different stages involved in dispensing drugs

☑ Carry out a full prescription analysis

☑ Explain the different methods used in drug dispensing

☑ Provide complete, safe information on medicinal products

Dispensing course

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1. GENERALITIES

1.1 The Medication Pathway

The Medication Pathway

The medication management pathway in any healthcare establishment is a complex, transversal, multidisciplinary system made up of series of successive, interdependent stages.

This process involves:

- Prescribing
- Dispensing
- Drug administering
- Therapeutic surveillance

The Medication Pathway

Drop the names of the healthcare professionals who are responsible for each stage in the process into the appropriate boxes.

Pharmacists

Nursing staff

Physicians

| Prescribing | Dispensing |
| Administering | Therapeutic surveillance |

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The Medication Pathway

The following diagram represents the entire medication pathway, detailing each stage. The medication management pathway is an **interprofessional** responsibility.

Reference: French Society of Clinical Pharmacy 2005®
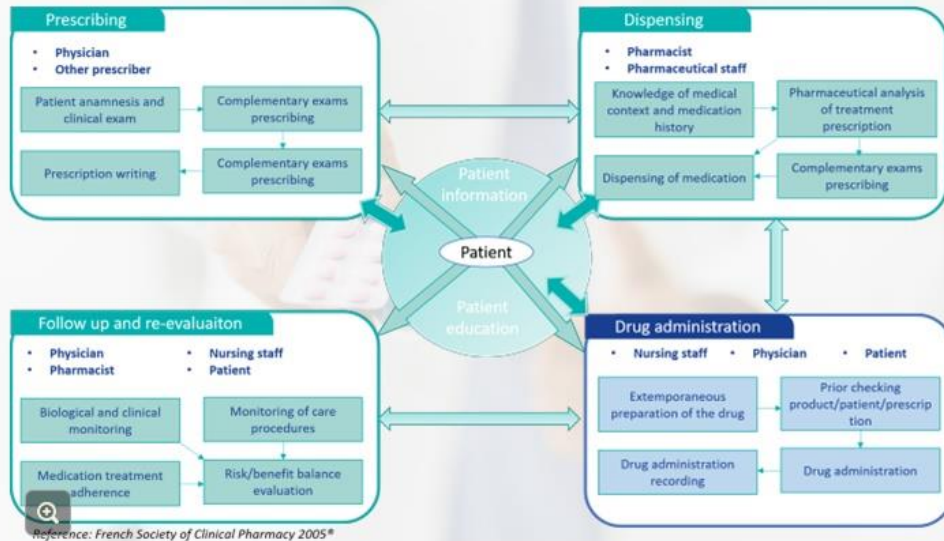
1.2 Dispensing

Dispensing

Dispensing is a **pharmaceutical act**, and only a qualified pharmacist is authorised to dispense drugs. However,
- pharmacy technicians,
- pharmacy interns,
- students in their fifth year of university hospital pharmacy studies

can help to ensure part of the dispensing process under the responsibility of the pharmacist.

The act of dispensing itself involves three stages.

The pharmaceutical analysis of the prescription	→	The preparation of the doses to administer and dispensing	→	Information and recommendations on the right use of the medication

Dispensing

Special cases

- There is no pharmacist on the site of the healthcare institution
- There are no competent personnel in the pharmacy capable of analysing the prescription
- Dispensing is carried out directly by the prescriber

In fact, strictly speaking, we should not term this as drug dispensing because three stages presented previously are not carried out in full. We should instead speak of delivery.
The term dispensing, however, is often used colloquially or casually. The appropriate terminology depends upon the legislation in place in each different country.
In any event, good dispensing practices should be applied as much as possible.

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2. ANALYSIS AND VALIDATION OF THE PRESCRIPTION

2.1 Analysing the prescription

The extent of pharmaceutical analysis carried out on a prescription depends on the human resources available in the pharmacy and that pharmacy's priorities with regards to analysis.

A pharmaceutical analysis of the prescription involves two stages:

Regulatory analysis | **Pharmacotherapeutic analysis**

Regulatory analysis

Regulatory analysis monitors the prescription's compliance with current regulations. The presence of all the required information enables a regulatory validation of the prescription. The following minimum required information must appear legibly on the prescription:

- The prescriber's identity
- The healthcare institution's identity

- Date of prescription

- The patient's identity
- Paediatrics: age and weight

- Name of the medication
  (ideally its International Non-proprietary Name, INN)
- Dose
- Galenical form
- Number of units per dose
- Number of doses per day/dosing interval
- Treatment duration
  (or number of packaging units)

- Signature

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A pharmacotherapeutic analysis can only be carried out in the presence of a pharmacist or a pharmacy intern.

This analysis involves comparing the prescription against different literature sources in order to verify that there are:
- no contraindications,
- no pharmacokinetic or pharmacodynamic interactions
- no physicochemical incompatibilities,
- and that timing of administration, dosage, treatment duration, and the precautions for use are correct.

(1)

✓ **No problem identified:**
Approve for dispensing **(2)**

✗ **Problem identified:**
└→ Developing a pharmaceutical intervention: contact the prescriber to discuss potential modifications to the prescription. **(3)**

---

(1)

Information sources (a non-exhaustive list)

- Therapeutic protocols in place in the healthcare institution, prepared by its Pharmacy and Therapeutics Committee
- National standard protocols
- WHO guidelines
- Summaries of Product Characteristics (SPC)
- Expert group guidelines
- Data acquired from scientific evidence

(2)

Possibly proposing a **generic substitution** for an equivalent drug in the healthcare institution's formulary:

- Generic substitution: substitution of the pharmaceutical product initially prescribed with a generic version or another brand name. The active ingredient, dose and galenical form stay the same.

- Or possibly proposing a therapeutic substitution, which requires the prescriber's consent:

- Therapeutic substitution: substitution of one pharmaceutical product for another compound belonging to the same pharmacological and therapeutic group of medicines.

(3)

Written or telephone contact with the prescriber, depending on the urgency of the problem.

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Pharm-Ed | Pharmacotherapeutic analysis

The French Society of Clinical Pharmacy (SFPC) defines three different levels of pharmacological analysis for prescriptions:

Type	Context	Content	Requirements
Level 1 analysis: **Prescription review**	Patient known, without new clinical interest	Choice and availability of the medicines, doses, contra-indications, main interactions.	Access to all prescriptions, basic information on the patient
Level 2 analysis **Therapeutic review**	Patient known, situation in evolution	Choice and availability of the medicines, doses, contra-indications, main interactions. **Doses adaptations, links with biological results, traking events**	Access to all prescriptions, informations on the patient and biological data
Level 3 analysis **Pharmaceutical monitoring and follow up**	New patient, situation in evolution and outcomes non established	Choice and availability of the medicines, doses, contra-indications, main interactions. Doses adaptations, links with biological results, traking events. Respect of therapeutic objectives, therapeutic monitoring, adherence. Link with conciliation, therapeutic education, patient conseling.	Access to all prescriptions, information and patient file, biological data, medication history and therapeutic objectives

A level 3 analysis should be applied whenever possible.

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To facilitate this analysis, Geneva University Hospitals have developed a tool to aid drug prescription; its objective is to detect inappropriate prescriptions for adults in internal medicine wards.

This tool-available for free-is the result of a collaborative exercise involving internists, specialist physicians, clinical pharmacologists and clinical pharmacists.

PiMCheck

Potentially Inappropriate Medication - Patients in the Internal Medicine unit

http://www.pimcheck.com/en/

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2.2 Prescription validation

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Once the prescription has been analysed, it must be validated by the pharmacist/dispenser, who:
- Assumes responsibility
- Signs and stamps the prescription
- Notes down the quantities required for each treatment
- Ensures that all the pertinent information is traceable by logging it in the stock management tools at their disposal.

The French NGO *Solthis* has developed a check list to aid prescription analysis. Click on the image to download it.
This document was developed for prescriptions linked to HIV treatments, but it is equally valid for other types of pathology.

Pharm-Ed | Validating the prescription

In a dispensing pharmacy in the community, every prescription must be analysed and validated.
In a hospital, when drugs are dispensed to a particular ward or department (we can refer to this as distribution), different validation methods may co-exist:

Validation of every prescription	Validation of certain prescriptions, based on a scoring system	Validation is limited to certain specific products
This is obligatory in some countries	*For example, if the pharmacist participates in medical rounds with a physician.*	• Sensitive drugs: narcotics, antibiotics… • Individualised drug compounding: chemotherapies, parenteral nutrition, …

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3. DOSE PREPARATION AND DISPENSING

3.1 Dose preparation

Pharm-Ed | Dose preparation

1. Selection
- Selecting prescribed products
- (do not open several packages at once)
- Verify the elements requiring a visual check
- Choose an appropriate container
- (hermetic, light resistant pill boxes, sachets, vials or bottles)
- Verify compliance with the prescription

2. Repackaging *If necessary*
- A clean, uncluttered work surface
- A clean spatula or piece of paper
- Do not touch the drugs

3. Labelling *if repackaged*
- Name of patient
- Name of drug
- Galenical form
- Dosage and timing
- Date dispensed
- Date of expiry
- Batch number

Jean PAUL
AMOXICILLINE Tablet
500 MG
One tablet three times per day
Date: 28/05/2018
Exp 09/2019   Batch: 4K2964

3.2 Types of dispensing

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Dispensing is the provision of prescribed medicines to clinical wards or departments and patients.
There are three types of dispensing:

Dispensing safety

- Global dispensing
- Prescription-based dispensing
- Nominative dispensing

Click on each type of dispensing to find out about its specificities

This chapter does not cover hospital or compounded preparations. Please refer to the lesson on "Manufacturing and quality control".

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a. Global dispensing

Figure 1 : Representation of global dispensing

Dispensing course
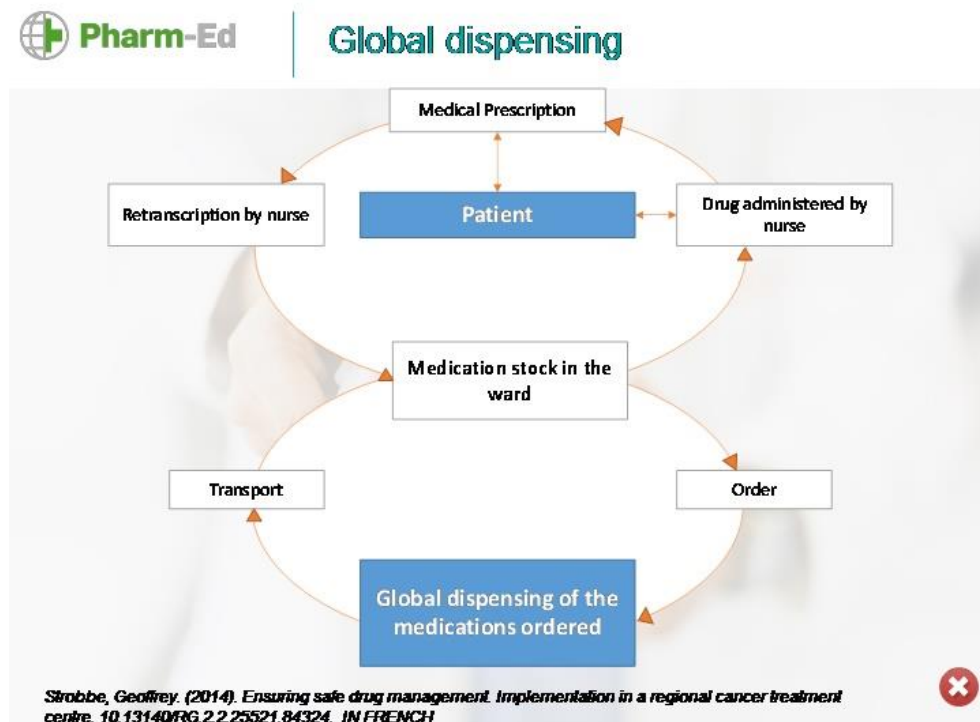
There are several means of implementing Global dispensing.

Requisition

A full-empty system

Pharmacy trolley exchange

A ward approach

Secure drug cabinets

Click on each means of implementing order-based dispensing to learn about its specificities

Requisition

In this means of resupply, it is nursing staff who define the quantities of drugs to order from the central pharmacy.

At regular, predetermined intervals, nursing staff calculate the quantities of drugs dispensed from the ward or department's drug cabinet. They send a requisition form to the central pharmacy or the pharmacy store, which then prepares the order.

This means of resupply often requires that nursing staff are responsible for physically putting the resupplied drugs into the ward's drug cabinet.

Pharm-Ed | Global dispensing

A full-empty system

Each drug product is placed in two identical trays, with each tray containing the ward or department's validated stock allocation inventory amount. To start with, both trays are full (the total quantity in the trays is equal to double the validated stock allocation inventory).

Nursing staff must always withdraw drugs from the same tray (active stock), which should have a removeable product tag (identification + maximum validated ward stock allocation). The second tray is the reserve stock. Once the active stock tray is empty, the tag or label is attached to the reserve stock tray, which now becomes the active stock tray.

The central pharmacy is informed about any empty trays (often via a shuttle tag which is placed on an order board and scanned), and it can then refill that tray. Once the empty tray is resupplied, it becomes the reserve stock tray until nursing staff have emptied the current active stock tray in its turn.

Click here to see the summary chart.

Figure 2: Representation of full-empty system

Dispensing course

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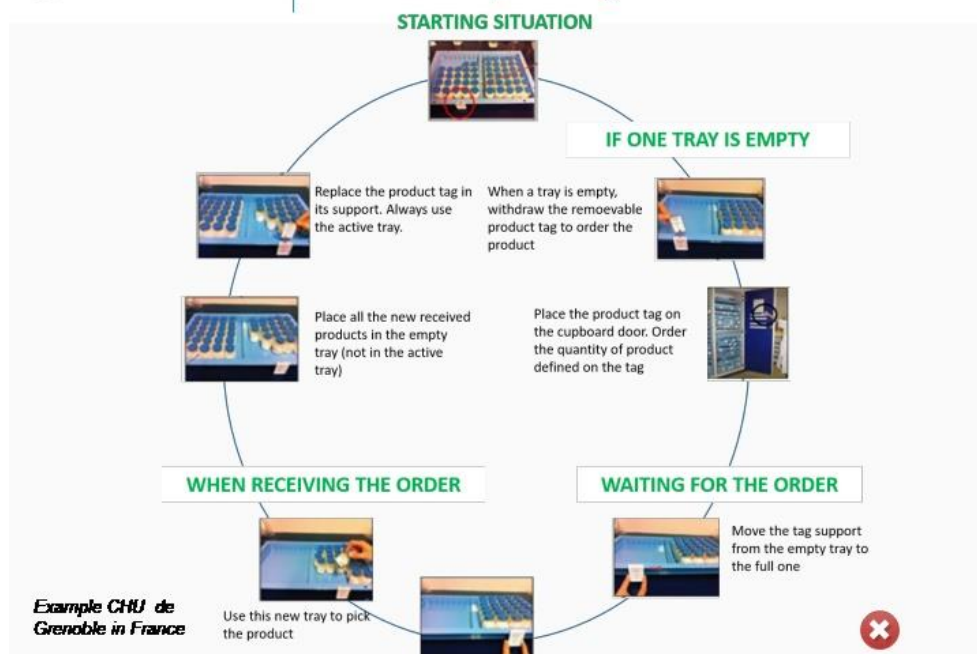
Pharmacy trolley exchange

A ward's medical products are placed in a pharmacy trolley kept in a secure location or storeroom on the ward.

Products are distributed for use directly from the trolley. The trolley is exchanged according to a predetermined schedule, for a second, identical, fully stocked trolley.

During the resupply interval, the first trolley returns to the central pharmacy storeroom to be resupplied.

At the next exchange, the fully resupplied first trolley can once again be returned to the ward or department.

A ward approach

Pharmacy staff make rounds of the wards and departments which require resupply, according to a predetermined schedule. During these rounds, they make an inventory of the medical supplies still available.

These quantities are transmitted to the central pharmacy (either electronically or manually on an inventory form) and are compared against the maximum validated stock allocations for each ward, thus generating the quantities which must be resupplied.

Orders are then delivered to wards and departments by pharmacy staff.

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Pharm-Ed | Global dispensing

Automated secure drug cabinets

This system requires computerised pharmacy stock management. Wards and departments are provided with automated secure drug cabinets which lock electronically and are directly linked to the pharmacy computer system.
The central pharmacy ensures that drug cabinets are kept stocked, via order forms generated by the system itself, based on the drug consumption logged in real-time.

Edition de la liste de réapprovisionnement

Remplissage sécurisé par scanning des emballages

Pharm-Ed | Global dispensing

Automated secure drug cabinets

Drugs can only be removed from the automated drug cabinet by nursing staff. They must first select the patient and the drug prescribed. Only the compartments containing the drug prescribed for that patient will open.

Login biométrique (empreinte digitale)

Sélection du patient, puis sélection des médicaments (écran tactile)

Prélèvement des médicaments dans les tiroirs (ouverture unique)

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b. Prescription-based dispensing

Figure 3 : Representation of prescription-based dispensing

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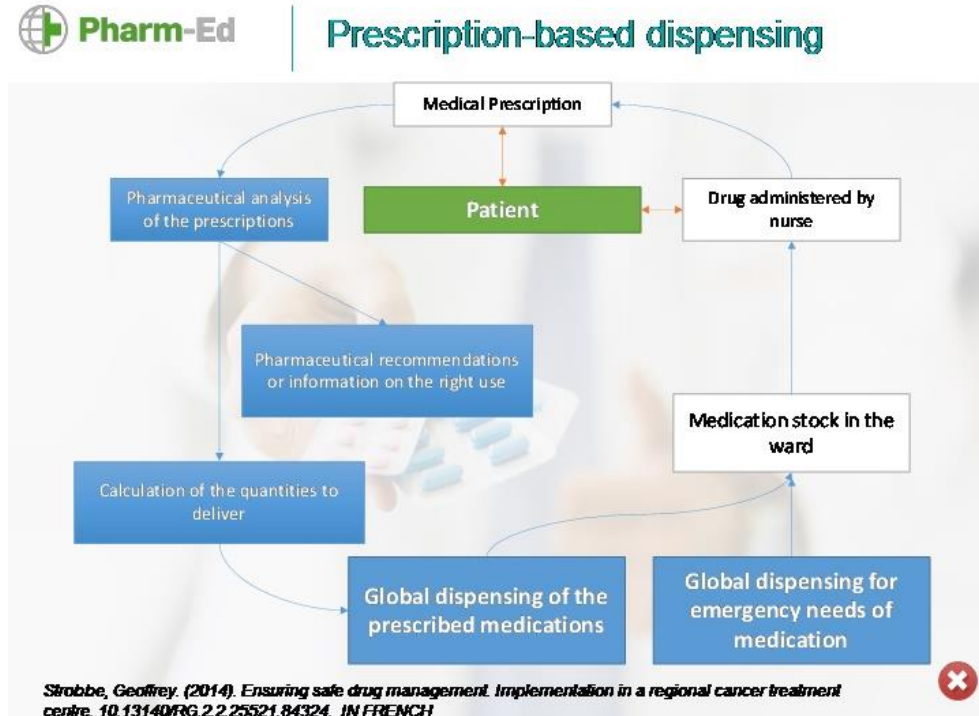
c. Nominative dispensing

Pharm-Ed | Nominative dispensing

Choose the appropriate words to complete the phrases below and slide them into place

Starting from ...., the drugs are prepared by the ...., for each patient, dose by dose, over variable time periods.

It is thus necessary to be able to deliver the smallest single dose of a drug possible.

Nursing staff do not have to .... drugs, but they must verify that they match the medical prescription.

medical prescriptions	nursing staff	administration
orders	pharmacy	prepare

Pharm-Ed | Nominative dispensing

Correct answer

Starting from **medical prescriptions**, the drugs are prepared by the **pharmacy**, for each patient, dose by dose, over variable time periods. It is thus necessary to be able to deliver the smallest single dose of a drug possible. Nursing staff do not have to **prepare** drugs, but they must verify that they match the medical prescription. This type of delivery organisation ensures maximum safety. ✚

Click here to see the summary chart.

Continuer

Dispensing course

Figure 4 : Representation of nominative dispensing

Strobbe, Geoffrey. (2014). Ensuring safe drug management. Implementation in a regional cancer treatment centre. 10.13140/RG.2.2.25521.84324. IN FRENCH
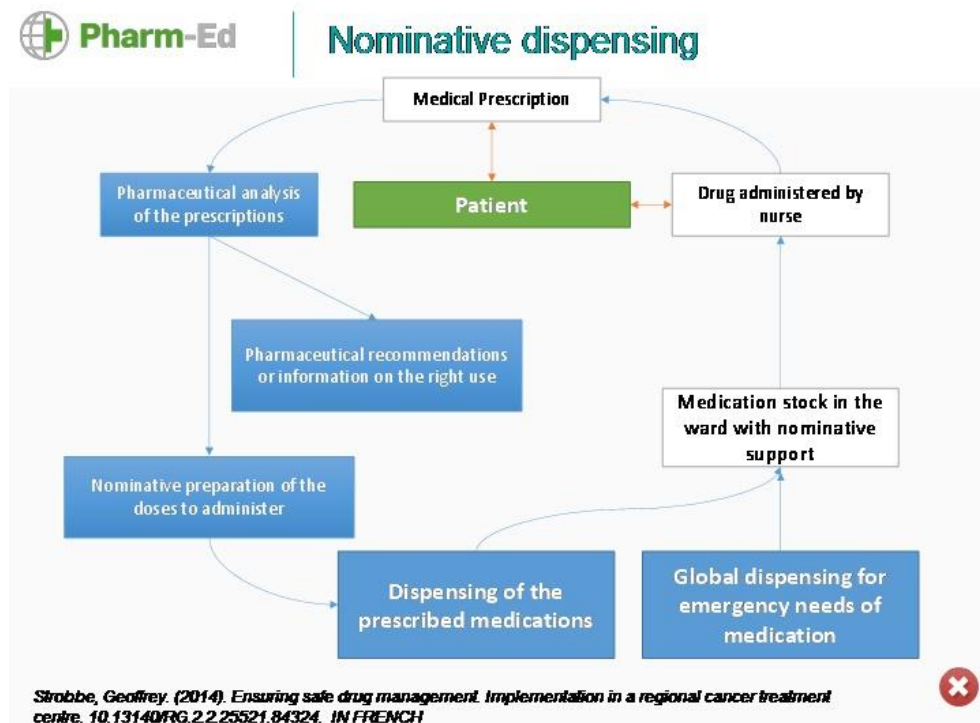
Nominative Dispensing (ND) is the dispensing type used when drugs are given directly to the patients.
Drugs can be distributed to hospital wards or departments in several ways:

Automated solutions are not covered in this course.

centralised vs decentralised

manual vs automated

Click on each type of dispensing method to discover its specificities

Manual centralised ND

Manual decentralised ND

Centralised dispensing

Decentralised dispensing

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Pharm-Ed | Dispensing

Different dispensing methods can co-exist happily. For example:

- Nominative individual dispensing may be the routine method used, whereas ward order-based dispensing may be the method used for emergency products in ward stock allocations.

- Nominative individual dispensing may be used for solid, dry oral drug formulations and ward prescription-based dispensing may be used for other forms....

In countries using cost recovery systems, the invoicing stage must be integrated into this circuit.

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	Global	Nominative

Advantages	• Flexibility in cases where prescriptions must be changed
	• Simple ordering tools
		• Making the medication pathway safer:
		  • Pharmaceutical analysis of prescriptions
		  • Final check by nursing staff before administration to the patient using the medical prescription
		• Cooperation between the actors along the medication pathway
		• Limited stock manipulation on clinical wards
		• Regulatory compliance in certain countries

Disadvantages	• Not as safe:
	  • No prescription analysis
	  • Only nursing staff check dosage
	• Ward and department stocks are managed by the central pharmacy
		• Need for many pharmacy technicians, and a highly centralised workload
		• Organisationally cumbersome: pre-division of packaging, separate ward stock allocations, preparation of unit doses…
		• Lack of flexibility in cases of new or changed prescriptions

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4. INFORMATION AND ADVICE

4.1 Generalities

Information and advice

Information and advice must go out to both **patients** and **professionals** in the different wards or areas of clinical expertise.

Click on the images below to reveal more detailed information

Patients

Professionals

Information and advice

Pharmacy staff must ensure that patients fully understand:
- all the instructions regarding their treatment (when and how to take their medication)
- how to store and adequately conserve their medication once it has been opened
- the treatment's known potential adverse effects and how to prevent or manage them

It is often a good idea to ask the patient or the person accompanying them to repeat all this information in order to ensure that there have been on errors in comprehension.

Patients

Professionals

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Professionels (Calque de diapositive)

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4.2 Information sources

Sources of information

Answering questions raised by patients and healthcare professionals is not about knowing all the characteristics and information about a drug by heart; rather it is about **knowing where to find that information**.
Sources of information must provide answers to questions.

Correct   Independent

Of high quality   Up to date

Several sources of information exist:
- Official information (e.g. Vidal)
- Scientific periodicals (MEDLINE)
- Reference works
- Computerised databases

- The internet
- Specialised consultations
- Manufacturers
- (Advertising)

To learn more about the sources of information available, you can follow the appropriate course by clicking here.

5. CONCLUSION

Conclusion

Applying best dispensing practices to every stage in the dispensing process is an effective means of making a healthcare institution's medication management pathway safer
This is consistent with the Five Rights of Medication Administration promoted by the French National Health Authority.
Dispensing activities must be combined with an overall approach to quality which ensures the traceability of the different actions carried out.
All these changes reinforce the role of the pharmacist in the overall multidisciplinary management of the patient.

Bon moment
Bonne dose
Bon patient
Bon médicament
Bonne voie

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6. BIBLIOGRAPHY

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