

Introduction to Drug Information

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* في سؤال جاي بالامتحان عنا ال Syllabus

الشكل العام للمادة :-

1 Introduction

4 Codes

2 resources of information

← مصادر المعلومات بشكل عام
ابن هني ووين موجودة

3 evidence based science

5 Professional & advanced drug informatic

* رح نتعلم الطريقة الصحيحة لتحليل المعلومات، والمصادر الصحيحة للمعلومات،
* هل كل المعلومات التي نبتحصل عليها موثوقة؟ اولها لو انت وهاولك معلومات متعاكسان على
مين بترو؟ ~~معلومات~~ → احنا بالمادة رح نتعلم نخطم على هاي المواضيع. (عظا حطاه الان بناءً على

الحلم الآن بتغير بعد 5 سنوات)
* المادة تتكلم عن مصادر المعلومات وتقييم هذه المصادر (مين اخوي ما بين المصادر، ومعلومات احتياجات كيف ابراميا)
← هاد كله رح نتكلم عنه بار audience based science

Objectives

- Define the term drug information, use it in different contexts, and relate it to the term medication information. 4 في Codes
- Describe the importance of drug information centers in the evolution of pharmacy practice. لستخدم للتغير عند الادوية والامراض لارحم نعرفهم
- Identify the services provided by drug information centers.
- Identify medication information functions performed by individual pharmacists. * لما انت تسال سؤال بضموم معلومات معينة ليهم جوابك رح يكون
- Describe the skills needed by pharmacists to perform medication information functions. Professional
- Identify major factors that have influenced the ability of pharmacists to provide medication information. advanced
- Describe practice opportunities for a medication information specialist اما الجواب الي عالم ربح بين تفكير من جواب طالب فتعلم علم حقيقي

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التي في المحاضرات اخذنا
* في ال assessment للاشياء وفي الاشياء بتحل drug Related Problems

في tools يكون implicit وفي explicit ، في tools يتحقق على تقسيم الاشياء في tools
 على الـ object ، في criteria وفي الـ criteria الانسانية ، اخذنا جدول ، tools وكيف وصلنا لهم
 بالاعتماد على المراجع ، ~~كنا~~ احنا Consumer لا tool (احنا نقيمها) ، tools هي مخصصة ولا

Summery

- The pharmacist's role in providing information on drugs and medicines is not new. When drugs were few in number and generally of relatively low potency the number of inquiries was small and could usually be answered quickly by reference to pharmacopoeias and formularies.
- In recent years, the number of drugs and medicines has increased enormously which are usually more potent and more selective and also the literature relating to drugs has expanded at a staggering rate.
- The literature covers a wealth of information on these newer drugs, their actions, clinical uses, unwanted effects, interactions with other drugs, comparative efficacy, etc.
- A quick reference to pharmacopoeia and formularies is no longer sufficient, in many cases, to provide an adequate answer.

10/1/2019

اول نشأه لـ information center كيف هارت ؟
 لا عند فجر التاريخ والصيدلي هو مصدر المعلومات <http://slideplayer.com> للدوية ، ابن حيان و ابو قرايم
 كيف جدت الامور و غلو اول مركز عرضها هناك يكون مركز للمعلومات ، لرواية ؟
 لا نشأت من خلال الجامعات (التعليم هو عندهم لفهمه الخدمات)

Drug Information Center → DIC

الـ drug information center هو المقارنة ، فاحيانا الـ data ، المعلومات ، لرواية
 History

- The term drug information developed in the early 1960s when used in conjunction with the words center and specialist. ~~specific~~ بكل DIC ~~اول جامعة العصر الحديث~~ (1)
- In 1962 the first drug information center was opened at the University of Kentucky Medical Center. An area separated from the pharmacy was dedicated to provide drug information. The center was to be "a source of selected, comprehensive drug information for staff physicians and dentists to evaluate and compare drugs" as well as to provide for the drug information needs of nurses. The center was expected to take an active role in the education of health professional students including medicine, dentistry, nursing, and pharmacy. A stated goal was to influence pharmacy students in developing their role as drug consultants. Several other drug information centers were established shortly thereafter. Different approaches to providing drug information services included decentralizing pharmacists in the hospital, offering a clinical consultation service, and providing services for a geographic area through a regional center. The first formal survey, conducted in 1973, identified 54 pharmacist operated centers in the United States.

بعد هيك همارو يدرو طلاب الصيدلة الهم بيكون مصدر معلومات و غلو الامهات
 والـ الجبار ، الاسنان والمخربين كيف يعطو على معلومات من الصيدلة .
 1973 وجدو انه في امريكا 74 هيلاني و هيلاني مرتبط بالـ drug information (DI Provider)
 (انتقال هاي لفكرة خلال الـ 11 سنة يعتبر انتقال ملموسا ، فكانت فكرة ناجحة عليها اقبال)

على اليمين

ليس المعلومات الروائية مطلوبه ؟ (لكن احنا بنفوض drug information)

عشان ال rational use of drug وهو مرتبط بجمهورين اساسيان
 Cost ← ال
 error ← ال
 ← تشمل الاستخدام، العقاقير، التفاعلات الدوائية +

ليه الدواء يلي بيتوزل جدير بيكون
 سعره عالي ؟

Why drug information concept is important?

- Availability of authentic drug information is the key to promote rational use of drugs, a well-accepted concept in clinical practice in the developed world. (يكون
الي نذبح خلال
الابحاث)
- The concept is fast catching up in several developing countries because of the sharp rise in the medical costs and increasing instances of medication errors. (كان بلطفه ههنا بال clinical)
لصه همار بالسوق لو شفتنا المبالغ الي دفعناها
وكانت X
فحكوا بههم
يحطوا ريجي (5X)
لكن سعر الدواء
رج يكون جدي عى 5X اعلى
ليه ؟ لانه مثلاً عطلنا بحث على 20 molecules او اى
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Cost related issues:

- An important reason for the rising costs of medical costs in developed countries is the marketing exclusivity enjoyed by pharmaceutical companies for their latest life-threatening drugs.
- And the drugs continue to be the major part of the total healthcare costs.
- With high prices of **patented drugs** and the strong influence of pharmaceutical companies on medical practitioners, the healthcare costs can only rise in future.

عشان بتطلع phase 1 الى ملحق هو دوا واحد (طب)
 عشان بتطلع دوا جديد ؟ فاشركان همارو نزيدو ال Cost عشان ال ابحاث، نقاسم ال ادوية ليوافقنا
 Patency (معي 5 سنين) ريجي
 Pricing عتا ال
 Strategy
 approval . عى عتا كمان ال
 اح نيزل سعر الدواء

Sales (شركان ادوية بتحمل على نشاطات ال (marketing))

- For pharmaceutical companies, pushing up their sales is the sole aim whereas a large majority of the physicians can be easily coaxed into indulges in irrational prescription to serve the interests of these companies. (مصحف
قعد 5 سنين
يتايح
موتجرات
الادوية
لملح انه لاشركان
على موقد قران
وتجزم المبالغ
وزوجات تقيم فالاراي
حاليه حنرو)
- The absence of insurance cover for a large number of poor people both in the undeveloped and developing world also adds to overall healthcare costs.
- Medication errors by the physicians is another serious problem confronting the patient community today as knowledge level about new drugs and adverse drug reactions (ADR) is extremely poor amongst physicians.
- Thus, several hundreds of cases of complications and deaths are being reported every year in various parts of the world on account of medication errors.

الموت تفر ، فالظلمة الي ملحق فيها انه مشعب بديتوي ادوية غالية جزء منه بيرجع على رفاية الارباء
 نحن وقتها ملحق ~~transparency~~ ~~transparency~~ ال transparency (هذا المصطلح مش متأكد
 فجدية الشركان اكسيرة همارن نزل اجراءات ههنا السواء همارو يمشقو بظافة
 للطبيب ل حاله وحسب افكان الموتجرات ب ~~transparency~~ همارت مش افاكى ترفيدية سياحية ، حتى المهاديا
 10/1/2019 http://slideplayer.com

(Product reminder) (هذا المصطلح مش متأكد) ال transparency (هذا المصطلح مش متأكد) ال transparency (هذا المصطلح مش متأكد)
 (نشان كانوا يطلو الدكاترة هاديا بحجة ال transparency (هذا المصطلح مش متأكد) ال transparency (هذا المصطلح مش متأكد)
 همارو مستغلو على تقليل كلفة ال transparency (هذا المصطلح مش متأكد) ال transparency (هذا المصطلح مش متأكد)
 marketing عشان يخفضو اسعار الدواء

[٤] شركات التأمين (لها أثر كبير على أدوية) (محاذاة لها تقلل التكاليف) للنجاح تشتري الدواء للعدد الكبيرة مما الناس فيج تدير تكلفتهم على الشركة.

كلا شركة التأمين والصيد والصيد كل واحد عنده مجموعة معلومات وطلوبان وكل واحد له هدف، لكن عندهم الكهمل الرئيسي يبيحهم شو

In conclusion

One way to control medical costs and medication errors is to promote the concept of rational use of drugs by

providing authentic drug information to doctors, pharmacists, nurses, researchers, other professionals in health care, committees and patients

بسيط بالتأمين وسو ما بيدخل في الـ DIC ، فراكز المعلومات الدوائية لها دور كبير في مواجهة التأمين. (عنا بالاردن في Pharmacy one عندهم مركز معلومات + مستشفى الملك عبد الله + المدينة الطبية فيها)

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Drug Information Center

- Drug information is an essential element in achieving health goals and should, therefore, form a part of any national drug policy.
- Information is an aid to decision making. As mentioned before the first information center to be set up was at the University of Kentucky Medical Center, USA, its objectives were

to collect information,

to evaluate and compare drugs,

to provide an education and teaching aid for health care personnel,

to assist clinicians in the selection of safe and effective medication

and to enable pharmacists and pharmacy students to develop their abilities in providing information on drugs and medicines.

Objectives drug center جامعة كنتاكي - بتفراهم وبعظهم

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Large hospitals have developed and staffed a new division of the department of pharmacy which is commonly referred to as 'Drug Information Center'.

This new concept in hospital pharmacy operation is usually located in a separate section of pharmacy, containing large number of reference texts, journals, reprints and brochures.

They are also equipped with electronic data processing equipment and have a full time director and adequate secretarial assistance.

Now computers have possible networking of regional drug information centers made located in different hospitals.

Networking on regional, national, sub continentals, intercontinental levels had placed Drug Information Services at a global level.

هار في عنا مراحل لما عرفنا الدواء تاغ ار DI

Pharmacy Practice

- The description of pharmacy practice was expanded from that of pharmacy as a "knowledge system" to "a system (framework) of concepts dealing with the acquisition, translation, transmission, and utilization of drug knowledge".
- As a specific component of pharmacy, the drug information role is characterized by

the ability of the pharmacist to perceive, assess, and evaluate drug information needs

And : retrieve, evaluate, communicate,

And : apply data from the published literature and other sources

As: an integral component of pharmaceutical care.

- The ability to **fulfill the drug information role** is essential to successful pharmacy practice.

DI فيها ممارسة استقبال السؤال حتى نقول جواب صحيح ، مش كل سؤال يجاوبه انا
لو كان السؤال ناقص مخرج يطلع جوابك غلط ومش بيجعله ، (زي لما اخذنا عن الFeedback لازم تسأل
سؤال (specific

① drug information (body of knowledge)
 knowledge (كيفية التعامل مع الدواء)
 skills (مهارات)
 and the ability (القدرة)
 to find, access, understand, interpret, apply and communicate information and acquire knowledge.
 وكيفية التعامل مع الدواء

A broad definition of DRUG INFORMATION

Drug information is both:

- a body of data and information) about medications
 ← evidence based
- and a set of skills and tools that provide pharmacy professionals with the ability to find, access, understand, interpret, apply and communicate information and acquire knowledge.
 → resource
- The body of facts and information pertaining to medications is generally referred to as **"the drug literature"**.
- The literature of pharmacy and pharmaceuticals encompasses all aspects of drugs, beginning with isolation or synthesis, including physical analysis, bioactivity, toxicology, clinical research, market research, and economic and social considerations.
- The drug literature, reflecting all the individuals who create it and use it, such as chemists, biomedical scientists, all the various health care professionals, attorneys, and patients, is vast and complex.

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- Different kinds of publications are available in the library like journals, abstracting and indexing publications, books, compendia, monographs, patents proceedings, reviews, FDA-approved labeling (package inserts), house organs, newsletters, promotional literature, government documents, and analysis by consulting services.
- Drug information skills coupled with the processes and technology offered by informatics are part of the solution to mastering information overload and maintaining the knowledge system that improves patient care outcomes.

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Information Needs

لن نهار في انفجار بالمعلومات
الدوائية ؟

- The growth in the role played by science in medicine as reflected in:#
- the amount of published work,
- the number of journals
- and the vast range of drug products in the market,

الصح تقدم العلم
وكيفية ال Journals

وال Products علي بالسوق

خاصنا صرنا بحاجة لمصدر موثوق للمعلومات

has meant that practioners of medicine and pharmacy, in common with other scientific disciplines, have experienced difficulty in keeping up with advances in knowledge.

- The doctor's response, increasingly, has been to turn to the pharmacist for help.
- Most problems presented by the doctor are concerned with a particular patient, his disease-state and therapy.
- The information requested is usually required within few hours, so that treatment may be changed or started and is needed in the form of data, rather than lists of references or paper reprints.
- Production of an answer therefore involves selection, interpretation and evaluation of information.
- The type of information requested may include any of the chemical or biological properties of a compound or a comparison of the suitability of several compounds for a specific case, where for instance, renal or hepatic disease may complicate choice.

كل الناس يحتاج المعلومات

- **The pharmacist too, may require immediate information on drugs**, this may concern straightforward matters such as dosage or availability but also involve formulation or availability data which may not be found in the manufacturer's literature.
- **Quality controllers** may require an alternative assay or stability data.
- **Nurses** need to know the effects and dangers of drug therapy so as to be able to assess the appearance of adverse effects, they must also know enough about preparations to teach patients to use them.
- **Researchers** need to retrieve a particular report, or search the literature.
- **Committees** need information to help them decide policies, produce 4 hospital formularies and award contracts.
- **Patients** need to know how to take the medicines they are given, what they will feel if the drug works, likely adverse effects and what to do about them.

Measuring and accurately identifying the nature of the need is, however, not easy.

عن سلايد 15 ل 22 خاتمة بهم
(لقدام ح تفهمم اكل بعد
(ما نخلص الحادة :)

Drug Literature

- The concept of drug information service or drug information center is an attempt to document drugs by abstracting information about them.
- The information about drugs is collected from various sources which are available.
- In 1972 **Walton and colleagues** modeled the drug literature as a pyramid with the **primary literature** forming the base of the pyramid, the **secondary literature** interfacing and serving as a bridge from the primary literature to reference works (**tertiary literature**).

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Information Retrieval Systems

- As a drug moves along the path from discovery to the market and into worldwide use, data and information about the agent are created and accumulate. When this information is published, its value and usefulness to scientific, professional, and patient communities becomes known.
- Publication of research results at each step of the path is essential. There is tendency particularly in clinical research, not to publish "negative" results. When this happens we are left with only research that is favorable to the drug, resulting in a skewed picture of the drug's place in therapy.
- The path of drug development and marketing offers a structure that is useful to scientists and practitioners concerned with compounds of potential therapeutic value.
- The resources themselves are classified as primary (original research), secondary (indexing and abstracting services), and tertiary (textbooks and evaluated information).
- Individual resources are now generally available in more than one physical format; for example, a journal may be available as a paper publication or as an electronic publication (either individually or as part of a publisher's electronic journal collection or content collection).
- Primary, secondary, and tertiary resources are available for each step in the path of drug development, but reporting time increases from each step to the next.

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(1) Preclinical Drug information

At this point a compound is recognized and then considered for potential pharmaceutical or therapeutic usefulness; researchers will be both consumers of and contributors to the data-information-knowledge cycle that characterizes science. Initially, in the synthesis and purification phase of drug development, information about the compound's chemistry and physical properties may be both sought and created. Whether or not the compound has been of interest to other researchers may be determined by searching public records of grant and contract awards and also by searching resources that cover preliminary and early research results. The patent status of the compound may need to be established.

(a) Physical and chemical data:

i) AIDSDRUGS: Published by the US National Library of Medicine, AIDSDRUG is a dictionary of chemical and biological agents currently being evaluated in the AIDS clinical trials covered in the companion AIDSTRIALS database.

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ii) Beilstein: Beilstein, a structure and factual database covering organic chemistry.

iii) CAS Registry: CAS Registry, is a substance database containing structures and chemical names. iv) Chemcyclopedia: It is an annual supplement to Chemical and Engineering News (C&EN), provides a listing of chemicals, trade names, packaging, special shipping requirements, potential applications and CAS Registry Numbers.

v) ChemFinder: ChemFinder WebServer is a WWW search engine that works from a single master list of chemical compounds covering all areas of chemistry and also provide information on physical property and two-dimensional chemical structures.

vi) Chemical Abstracts: Chemical Abstracts is a collection of chemical information with nearly 16 million abstracts of journal articles, patents, and other documents.

vii) ChemIDplus: Published by the US National Library of Medicine, it's a web based search engine, that provides free access to structure and nomenclature authority files used for identification of chemical substances cited in National Library of Medicine databases.

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viii) Chemindex plus: Database contains 8000 pharmaceutical ingredients linked to 300,000 preparations.

ix) Ei CompendexWeb: It's a comprehensive bibliographic database of engineering research literature containing references to over 5000 engineering journals and conferences.

x) The Merck Index: The Merck Index is an encyclopedia of chemicals, drugs, and biological that contains more than 10,000 monographs.

xi) NIST Chemistry WebBook: The National Institute of Standards and Technology (NIST) Chemistry WebBook provides free access to chemical and physical property data for chemical species via the internet,

xii) RTECS: The Registry of Toxic Effects of Chemical Substances (RTECS) is a database of toxicological information compiled, maintained, and updated by the National Institute for Occupational Safety and Health (NIOSH).

xiii) The USP Dictionary of USAN (U.S. Adopted Names) and International Drug Names: The USP Dictionary provides comprehensive information on chemical and brand names of drugs. It includes USAN and International Nonproprietary Names (INN). It also lists drug manufacturers, therapeutic uses, and molecular and graphic formulas.

(b) Patents: through the granting of a patent the U. S. Patent and Trademark Office (PTO) provides intellectual property protection to the inventor for 20 years. U. S. Patent and Trademark Office Web Patent Databases offer free WWW access, to a bibliographic patent database that uses the most current patent classification system.

The Delphion Intellectual Property Network (IPN) is a research tool for patent information.

Derwent World Patents Index (DWPI) is a comprehensive database of patent documents published worldwide.

IMS world Drug Patents International database provides access to the patent status of over 1200 molecules. The database contains information on patents due to expire (over a given time period), patents by therapy class, and patents by country.

(2) Phase IV Studies and Post Marketing Drug Information

During the Phase IV Studies and Post Marketing Drug Information stages a thorough literature search is required to find material relevant to the clinical use of the drug.

This will require not only searching the basic bibliographic databases such as Biological Abstracts, EMBASE, IDIS, IPA, MEDLINE, and Science Citation Index, but also searching the patent literature, using Patent and Trademark

Office Web Patent Databases. The following bibliographic databases provide access to the full span of life- science periodical literature, including all stages of a compound's development from early brief reports to comprehensive assessments after years of clinical use.

i) **BIOSIS**: BIOSIS processes approximately 5,50,000 items each year, from primary research and review journals, books, monographs and conference proceedings. It is available in several formats. These include Biological Abstracts/RRM (Reports, Reviews, Meetings), the companion reference to Biological Abstracts

ii) **EMBASE**: EMBASE, the Excerpta Medica database is a biomedical and pharmacological bibliographical database that provides access to medical and drug related subjects from over 4000 biomedical journals from 70 countries. The EMBASE database combined with unique MDLINE records back to 1966 are available in EMBASE.com.

iii) **International Pharmaceutical Abstracts**: IPA published semimonthly, is an abstracting/indexing publication which covers all pharmaceutical literature.

iv) **MEDLINE**: MEDLINE (Medical Literature Analysis, and Retrieval System Online) contains over 11 million references to journal articles in life sciences with a concentration on biomedicine from 1966 to the present. MEDLINE is available on internet through the National Library of Medicine (NLM) home page at and can be searched free of charge.

v) **Pubmed Central**: Pub med Central (PMC) which encompasses Medline is a web-based archive of journal literature for all of the life sciences. Access to PMC is free and unlimited.

vi) **Science Citation Index**: Science Citation Index (SCI) provides access to current and retrospective bibliographical information, author abstracts, and cited references found in various scholarly science and technical journals covering more than 150 disciplines