DEVELOPMENT OF CHINA DISEASE KNOWLEDGE DATABASE (CDD)

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Introduction and Background

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Most of the Chinese databases have been developed based on journals. In terms of books, they are scanned and browsed by table of contents. The result is that it is hard to search the details of contents in the book deeply, because of the lack of deep indexing.
Meanwhile, new technology creates a unique opportunity for the design of a truly integrated, multi-user, clinical content database. These evolutionary changes make client–server exchanges over different hardware a necessity.
Therefore, finding a way of indexing books based on deep contents of books became the origin of our research.
Work is actively underway on multiple phases of an integrated database system, including disease database, drug database, laboratory examination database, evidenced-based medicine database,
surgery database, surgical atlas, standard data and term definition in a feature dictionary and management system.
Researchers working at levels ranging from basic to clinical, in the fields of pharmacology must demonstrate that they can work together,
so that functional variation in the use of medicinal drugs that may play essential roles in determining drug responses can be studied, interpreted, and related to clinical research situations in a rapid and efficient manner.
The knowledge base has been developed by Medical Library of Chinese People’s Liberation Army in collaboration with many doctors from different hospitals in Beijing.
It organizes and manages knowledge using formal knowledge descriptions called ontology.
The system called CDD should ultimately encompass a variety of diseases, drugs, surgical operations, laboratory findings, surgical atlas, clinical operative procedures and evidenced-based medicine.
This would be accomplished by funding a research group and knowledge base group that were systematically organizing the information.
The researchers at the research group are of multidisciplinary, collaborating scientists.
Equipment, staffing, or resources may be needed, such as acquisition of servers and computers for data processing.
The knowledge base group is a group of computer scientists contributing to the aim of designing and developing a public disease knowledge base.
CDD links clinical data for systems where variation information is required to predict therapeutic drug responses. A secure, stable, interactive central structure is created that would link to other clinical data resources.
At present, CDD is not the final goal, and it may be necessary to develop it in stages, thus applications for significant components that complement the present CDD knowledge base will be considered.
From time to time the researchers may propose to develop computational tools to view and evaluate the data in different ways.
The goal will be to explore complex, interconnected data, and to integrate the data in order to enhance understanding of its clinical significance.
The experts committee would discuss the overall progress made within the CDD at its meetings.
The committee also discusses and advises development of CDD, and it would seek to develop common guidelines and procedures for depositing the information.
The committee would work to set standards for data format, and would also identify and discuss any issues that arise in connection with the scientific aspects of CDD.
CDD is a cross-referenced index of human disease, medications, symptoms, signs, abnormal investigation findings etc. It provides a medical textbook-like index and search portal covering different clinical areas.
The application of CDD is intended as an aide and World Wide Web springboard for medically qualified health professionals and medical students.

CDD itself provides:
Results

- Internal medical disorders
- Surgical disorders
- Common laboratory findings
- Drugs and medications
- Surgical procedures
- Surgical atlas
- Evidence-based medicine materials
Results

- A pre-loaded multiple search engine enquiry page using all item synonyms
- These facilities are tightly cross-navigable
- Subject specific hyperlinks to web information resources for many items
- A means of organizing medical knowledge electronically
Disease Database System includes nearly 7,000 kinds of diseases with description of cause of disease, epidemiology, clinical manifestations, pathogenesis, diagnosis, laboratory examinations, differential diagnosis, therapy and prognosis.
Disease database

Number of diseases
Drug Database System provides more than 5,400 kinds of drugs aiming an automated clinical drug system.
Laboratory Examination System supports the entry of about 1,300 kinds of complete physical and chemical examination including general descriptions, normal value, operating procedures, clinical significance and laboratory data.
Evidence-Based Medicine system maintains 90,000 entries of evidence-based medicine material from 200 Chinese medical journals and 18 foreign medical journals and 4 evidence-based medicine databases.
Surgery Database System provides more than 3,500 various kinds of operations with links to the disease database.
The Feature Dictionary will provide a means for transcending the medical "language barrier" by recognizing the entry of a feature into the knowledge base no matter which of the common terms the particular expert has used.
In terms of the system use, type a single symptom, sign, disease, non-branded drug name, surgery name or laboratory test name result on an in-house search engine, and it generates a list of associated subjects.
In turn, the search term can also be submitted to some highly respected external internet resources, generating an impressive range of useful links.
It provides a searchable interface that indexes (by topic) thousands of pages from reliable sources. Users can "drill down" more deeply into each topic for signs, symptoms, risk factors, and related topics.
Basic site layout and navigation instructions:

Main Search Page: Type in the name of an item and then submit the request.
中国疾病知识总库

China Disease Knowledge Total Database，简称疾病库

China Disease Database — CDD，由解放军医学图书馆与重庆维普资讯有限公司合作研发的一个面向临床医药学专业人员，同时兼顾大众的专业图书、期刊知识服务系统。作为临床教学及应用的专业工具，重点解决疾病从诊断到治疗中的大量问题。

本着服务大众健康、为大众健康负责的原则，我们组织各类专家研发了本产品，所提供的各种信息包括疾病、药品、辅助检查等信息均有效可查，由本产品研发单位负责审核发布。按照卫生部门管理规定，本产品提供的各种信息仅供参考，不指导具体医疗和用药，如果用户自行治疗出现问题，本单位不负任何责任。
<table>
<thead>
<tr>
<th>疾病名称</th>
<th>英文名</th>
<th>别名</th>
<th>疾病分类</th>
<th>ICD号</th>
<th>下载</th>
</tr>
</thead>
<tbody>
<tr>
<td>嗜血性流行性感冒杆菌脑膜炎</td>
<td>hemophilus influenzae</td>
<td></td>
<td>儿科</td>
<td>A87.8</td>
<td></td>
</tr>
<tr>
<td>流行性感冒</td>
<td>influenza</td>
<td>流感；barquat；epidemic...</td>
<td>感染内科</td>
<td>B96.3</td>
<td></td>
</tr>
<tr>
<td>副流行性感冒</td>
<td>parainfluenza</td>
<td>副流感；类流感；副流感病毒感染；仙台病毒...</td>
<td>感染内科</td>
<td>B97.3</td>
<td></td>
</tr>
<tr>
<td>老年人流行性感冒</td>
<td>senile influenza</td>
<td>老年流行性感冒；senile ...</td>
<td>老年病科</td>
<td>J11</td>
<td></td>
</tr>
</tbody>
</table>
概述：是由流感病毒引起的急性发热性呼吸道传染病，经飞沫传播，临床典型表现为突起畏寒、高热、头痛、全身酸痛、疲弱乏力等全身中毒症状，而呼吸道症状较轻。本病常呈自限性，病程一般为3～4天。婴幼儿、老年人、有心肺疾病及其他慢性疾病患者或免疫功能低下者可并发肺炎，预后较差。

流行病学：
1. 传染源 流感病毒的传播源主要是病人和隐性感染者。病后1～7天均有传染性，以病初2～3天传染性最强。病毒存在于病人的鼻涕、唾液和痰液中，随咳嗽、喷嚏排出体外。
2. 传播途径 流感主要通过空气和飞沫传播。存在于患者和隐性感染者呼吸道分泌物中的病毒，经咳嗽、喷嚏或说话等方式散布至空气中，可至少保持活性30min，易感者吸入后即受感染。人群拥挤、空气不流通的地方传播最快。接触污染的玩具或用具也可受染。
3. 人群易感性 人群对流感病毒普遍易感，病后可获得同型同株的免疫力。但3型流感病毒之间和甲型流感病毒的不同亚型之间无交叉免疫，同一亚型不同毒株之间有一定交叉免疫力。
4. 流行特征 突起发病、传播迅速、流行广泛、发病率高、流行过程短是流感的流行特征。丙型流感病毒主要以散发形式出现，多见于婴幼儿，一般不引起流行。乙型流感病毒常引起中等程度流行或局部地区和群体的小流行。甲型流感病毒危害较大，常常造成暴发流行或大流行。甲型流感大流行是因为出现了甲型流感的某种新病毒株，人群对其普遍缺乏免疫力，从而使其在短期内逐渐扩展至世界各地。20世纪以来已发生了5次世界性大流行，

内容浏览区
流行性感冒（B96.3）

概述：是由流感病毒引起的急性发热性呼吸道传染病，经飞沫传播，临床典型表现为起病急，高热、头痛、全身酸痛、疲乏无力等全身中毒症状，而呼吸道症状较轻。本病呈自限性，病程一般为3～4天。婴幼儿、老年人、有心肺疾病及其它慢性疾病患者或免疫功能低下者可并发肺炎，预后较差。

流行病学：
1. 传染源：流感病毒存在于病人的鼻涕、痰液中。
2. 传播途径：流感主要通过飞沫传播，或说话等直接接触污染的物品传播。
3. 人群易感性：人群对流感病毒的不同亚型之间无交叉免疫。
4. 流行特征：流感一年四季均有流行，但以冬春季为更多见，少数地区夏季亦可流行。甲型流感病毒危害较乙型、丙型严重，人群对其普遍缺乏免疫力，可造成广泛的流行。

头痛（R51）

概述：头痛（headache）是指额、顶、颞及枕部的疼痛。很多疾病都可能出现头痛症状，大部分无特殊意义，但反复发作或持续的头痛，可能是某些器质性疾病的信号，应认真检查，明确诊断，及时治疗。比如全身感染发热性疾病往往伴有头痛。精神紧张、过度疲劳也可头痛。烦恼和焦虑可诱发头痛，但没有精神压力也可能出现头痛。诱因者往往可加强这种作用，因此一些人发作频繁，程度严重。偏头痛一词逐渐被用来指这种症状。
Initial Search Result and information Page: displays a list of items matching the search term and types of information available on the chosen item. Choose an item by clicking on it.
Results

Result Page: displays the content of a searching item. Depending on the contents of the returned list - further options.

Links Page: Accessed via the Information Options Page. Access hypertext links to recommended web resources from these pages.
Difficulties of ensuring different users with adequate access to Internet still exist.
Conclusions

CDD is considered a reform project in the field of diseases and drugs and it is hoped that it will be changing Chinese readers’ information searching behavior. Improving the informational infrastructure of the clinical medicine will require a number of activities:
Development (including planning and subsequent design, prototypes, implementation, testing, and distribution) of databases and related software tools crucial for clinical medicine research;

Conclusions
Activities that will facilitate the exchange of ideas among those involved in clinical medicine database research.
Activities that will enhance development and use of information resources and exploration and research on alternative economic models for long-term sustainable support of important community resources.
Conclusions

- Development of new methods and tools for the construction, operation, and access of CDD databases, including research into clinical database infrastructures designed to be extendable to different medical domains.
The Health Ministry of General Logistics Department of Chinese People’s Liberation Army is supporting a 3 year project to help fund the development of CDD that will assist clinicians.
The web based system being developed will be available by a portal on a website. The knowledge base will enable individual clinician to manage data from private and public sources in both the scientific and medical communities.
A security system will allow smaller networks of colleagues to exchange ideas to test hypotheses and, later, to release the data to the public knowledge base.

4. National Electronic Disease Surveillance System – Lab Reporting
   [http://www.cdc.gov/nedss/ELR/index.html]

5. College of American Pathologists. SNOMED-CT
   [http://www.snomed.com/snomedct/index.html]
6. Federal Information Processing Standards (FIPS) Codes
[http://www.census.gov/geo/www/fips/fips.html]

Thank you!