

DATABASE ON INDIVIDUAL CASES OF ACUTE POISONINGS

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Abstract. A database on individual cases of acute poisonings has been established at the Clinic of Acute Poisonings, Institute of Occupational Medicine. About 3,000 patients yearly are admitted to the Clinic and the mean period of stay is 3–4 days. On the basis of the RDBMS Professional Oracle a method has been designed to prepare, update and select data about the Clinic's patients. The system has been established with a view of developing research on diagnostics and treatment of acute poisonings. Previously, such a study was highly time and effort consuming. Moreover the retrospective material was often inadequate for a detailed analysis. Now, the computer storage of data, makes their utilization more effective and efficient.

The number of acute poisonings in Poland increases every year. The level of contemporary civilisation continuously brings new poisons and new occasions for poisoning. In 1968, there were 2518 hospitalized cases of acute poisonings in all the clinical toxicology centres. In 1987, however, the number was about double, i.e. 5001 cases. The majority of those included suicidal poisonings. During 1988 there were as many as 1757 of those cases. In the same year, 916 accidental acute poisonings were recorded as well as 200 occupational ones. The latter constitute the least numerous but very important group of acute poisonings. Their scarcity is one of the reasons why the collecting of data is so important. The document of case history is the most ample source of information on acute poisonings. Systematic collection of data including occupational acute poisonings records shall contribute to their better understanding. Statistical analyses of the patients' examination results and of the treatment methods bring about the development of acute poisoning symptomatology and therapy. Computerization of the data collection process has, therefore, proved to be, feasible and necessary, as this is the only way of ensuring easy access to such data.

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The Clinic of Acute Poisonings at the Institute of Occupational Medicine in Lodz has established a database on individual cases of acute poisonings. From the 1990 year onwards each case history has been stored in the base. The range of information stored covers:

I N P O U T	
—	CASE HISTORY DOCUMENTS
1	PATIENT'S REGISTRATION AND HISTORY
2	PHYSICAL EXAMINATION AND DAILY OBSERVATION
3	URINE EXAMINATION
4	PERIPHERAL BLOOD EXAMINATION
5	ACID BASE EQUILIBRIUM EXAMINATION
6	DETERMINATION OF ELECTROLYTES IN SERUM
7	COAGULOLOGICAL EXAMINATION
8	BIOCHEMICAL BLOOD EXAMINATION
9	DETERMINATION OF ENZYME ACTIVITY IN SERUM
10	PROTEINOGRAM
11	TOXICOLOGICAL EXAMINATION
12	X-RAY AND NEUROLOGICAL EXAMINATION
13	OTHER EXAMINATION
14	INTENSIVE CARE CARD
15	TREATMENT
16	IMMUNOLOGICAL EXAMIN. OF PROTEIN CONCENTRATION IN SERUM
99	E N D

D A T A

Form: FORMENU Block: dok Page: 1 SELECT: Char Mode: Insert

Fig. 1. Display screen of main menu.

1. Personal data, anamnesis and some other general information on the patient's stay in the Clinic (1);
2. Physical examination and daily observation (2);
3. Results of routine blood and urine analyses (3, 4, 5, 6, 8);
4. Results of non-routine blood and urine analyses e.g. immunological and coagulological testings (7, 9, 10, 16);
5. Results of toxicological investigations (11);
6. Parameters of intensive observation (14);
7. Neurological and x-ray examinations (12);
8. Other examinations (13);
9. Drugs applied and treatment methods (15);

The numbers given in parentheses correspond to those used in Fig. 1.

As an example several figures are presented:

- display screen of main menu (Fig. 1),
- display screen of general information on the patient (Figs 2 and 3),
- display screen of physical examination and daily observations (Fig. 4),
- display screen of acid-base equilibrium (Fig. 5),
- display screen of Patient's Discharge Card (Figs 6 and 7).



CASE HISTORY nr ____/____ Clinic ____

Surname _____ Name _____ Sex ____

Birth date _____ Place of birth _____

Marital status ____ Address _____

Occupation _____ Affiliation _____

Anamnesis _____

Admission date _____ Time ____:____ Discharge date _____

Treatment effect _____ Other one _____

Transfer to other hospital _____

Form: FORREJES Block: histchor Page: 1 SELECT: Char Mode: Replace

Fig. 2. Display screen of general information on the patient (A).

Death date _____ Time ____:____

Toxic agent _____

Toxic agents: _____

Toxic agents group: _____

Toxic agents subgroup: _____

Diagnosis: _____

Complications: _____

Concomitant diseases: _____

Poisoning date and time ____:____ Alcohol intoxication ____

Poisoning type _____

Form: FORREJES Block: histchor Page: 2 SELECT: Char Mode: Replace

Fig. 3. Display screen of general information on the patient (B).



DAILY OBSERVATIONS

Regist- rat. No	Admission date	Examina- tion date	Time	S Y M P T O M S:

Form: FORBADPRZ Block: tabbadprz Page: 1 SELECT: Char Mode: Replace

Fig. 4. Display screen of physical examination and daily observations.

ACID - BASE EQUILIBRIUM TEST	Registration Nr: ____/____		Admission date: _____	
	Test date: _____		Time: ____:____	
Current pH _____				
Current pCO ₂ _____ mmHg				
Current pO ₂ _____ mmHg				
Current HCO ₃ _____ mE/l				
Current HCO ₃ (TCO ₂) _____ mE/l				
Current base Excess (BE) _____ mE/l				

Form: forrkz Block: tabrkz Page: 1 SELECT: Char Mode: Replace

Fig. 5. Display screen of acid-base equilibrium.



Acute Poisonings Clinic
8 Teresy Str.
90-950 Lodz

Nr _____

Lodz, 90/04/23

P A T I E N T ' S D I S C H A R G E

C A R D

Surname and Name: OLCZAK KRYSTYNA Birth Date: 55/04/10
Address: LODZ 22 NASTROJOWA STR.
Period of Hospitalization from 90/01/01 to 90/01/09
Diagnosis: INTOXICATIO_SUICIDIALIS_MEDICAMENTOSA

L a b o r a t o r y T e s t s

BLOOD

Test date	Ht	Hb	RBC	WBC	MCHC	Granulocytes:				Platelets
						no Segmented	Segmented	Eosino-philic	Baso-philic	
90/01/03	0.38	126	3.9	8.5	33	0.06	0.76	0.01	0.02	
90/01/08	0.38	126	3.9	6.3	33	0.02	0.55	0.02	0.01	

Test date	Bilirubine in Serum (mg%)	Creatinine in Serum (mg%)	Urea in Serum (mg%)	Thymol Test (j.Mc.Lag.)
90/01/03	0.99	0.55	12.6	4.55

ACID-BASE EQUILIBRIUM TEST

Test date	pH	pCO2 (mmHg)	pO2 (mmHg)	HCO3 (mE/l)	TCO2 (mE/l)	BE (mE/l)
90/01/02	7.37	41.4	80.0	24.0	25.3	-0.7
90/01/03	7.38	39.0	64.3	23.2	24.4	-1.1

URINE ANALYSIS

Test Date	Colour	pH	Specific Gravity	Protein	Glucose	Urobi-linogen	Ketones	Blood
90/01/03	LIGHT	ACID	1.005	0	0	-	-	+
90/01/08	YELLOW	ACID	1.021	0	0	-	-	-

TOXICOLOGICAL TESTS

(T - Agent present, N - Agent absent, S - Trace absent)

Test Date	Agent	Biological Material	Presence	Quantity
90/01/02	DERIVATIVES_OF_BENZODIAZEPINES	URINE	T	

Fig. 6. Display screen of Patient's Discharge Card (A).

There are no codes in the database and the input data are in language similar to natural one. Four vocabularies have been elaborated for the sake of input data control:

1.vocabulary of poisons and their classification (groups and sub-groups of poisons);



-----ELECTROLYTES TEST-----					
Test Date	Sodium in Serum (mE/l)	Potassium in Serum (mE/l)	Chloride in Serum (mE/l)	Potassium in Erythr. (mE/l)	
90/01/03	139.0	4.25	100.0		

-----PROTEINOGRAM-----						
Test Date	Total Protein (g%)	Albumine (g%)	Globulines Alpha 1 (g%)	Globulines Alpha 2 (g%)	Globulines Beta (g%)	Globulines Gamma (g%)
90/01/03	6.57					

T r e a t m e n t :

AMPICILLIN ASPARTIC ACID ATROPINE COCARBOXYLASE DEXTRAN 40000
 GLUCOSE_20% GLUCOSE_5% GASTRIC LAVAGE KCL SOLUTION 7.4% RINGERI SOLUTION
 MULTIELECTROLYTE_PHYSIOLOGICAL SOLUTION VITAMINUM_B6 VITAMINUM_C

----- Attending Physician	----- Head of a Clinic Department
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Fig. 7. Display screen of Patient's Discharge Card (B).

2. vocabulary of terms used in description of physical examination and daily observation;
 3. vocabulary of diagnosis in Latin and Polish;
 4. vocabulary of pharmaceuticals used in therapy and treatment methods.
- These vocabularies require systematic updating.

An ORACLE Relational Database Management System has been used as the basic tool for preparing the system. ORACLE is a very friendly tool for users. The SQL*products are the main products in the ORACLE product line and offer many sophisticated means of accessing the data. SQL*FORMS, SQL*PLUS, SQL*REPORTS mean that the implementation of the database project takes less time and effort than traditional programming. A Professional ORACLE we have used, is designed to run on a stand-alone computer IBM AT (640 K bytes of random-access memory <RAM> and, additionally, about 1400K of extended memory and a fixed hard disk).

The use of "computer archives" is highly beneficial. First of all, it extends the range of possible use of rich materials on cases of various poisonings. There is a constant need for investigation of symptomatology and effectiveness of treatment in acute poisonings due to the high variability and variety of poisons appearing on the market that may become causes of acute poisoning. In each case of acute poisoning, the initial diagnosis made on the basis of the first physical examination, when the patient is admitted to the clinic, plays a very



important role. Its accuracy and correctness influence the scope of laboratory examinations, and the course of treatment applied. Finally, it may decide about a patient's life or death. Currently, preparing the selected data file for statistical analysis will not be a serious problem due to:

- easy access to data,
- feasibility of data selecting by complex conditions.

Secondly, the contents of quantitative periodical reports, e.g. annual, will be enriched. The system offers a possibility to prepare specifications on the number of acute poisoning cases by: age, sex, kind of poisoning, deaths, methods of treatment and pharmaceuticals applied, pathological laboratory tests etc.

Moreover, there is a possibility of automating the patient's discharge card (Fig. 5). It helps to save the time and effort devoted to that operation.

Last but not least, a physician is offered a possibility of rapid search of all similar cases necessary to compare them with the new case of poisoning.

Owing to the system it is possible to obtain answers to all the questions "how many..." type. Retrieval and display on the screen of any case of poisoning do not pose any problem.

The structure of the database has been thus designed to give the possibility of easy introduction of new types of documents (owing to the use of ORACLE).

Due to shortage of financial means the whole undertaking has been limited to one computer. However, the system may be expanded into a whole network but it requires additional hardware and software (Networkstation ORACLE). Network version of the system would facilitate:

- provision of current assistance to physicians, and
- extension of educational functions.

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