Computerised management system of the Veterinary Service in the Slovak Socialist Republic

S. HALADEJ * and V. HURCIK **

Summary: Since 1980 a national computerised system of veterinary information processing has been routinely operated in the Slovak Socialist Republic. All veterinary surgeons in the Field Veterinary Service and laboratory personnel enter information in the form of numerical codes onto primary data sheets, which are the basis for computer processing. Information concerns veterinary diagnoses, interventions and operations, drugs and biological products used, and laboratory test results.

After monthly processing by the computer, this information is made available to managers at all levels of the Veterinary Service and also to the individual veterinarians who enter primary data into the system.

The paper gives a description of the veterinary information system, numerical codes, primary entry sheets and examples of information coded onto data sheets, as well as a review of output information and types of utilisation.

KEYWORDS: Administrative affairs - Animal diseases - Computers - Czechoslovakia - Data bank - Farm animals - Veterinary services.

INTRODUCTION

The Slovak Socialist Republic (SSR) is a part of the Czechoslovak Socialist Republic (CSSR), which is a federal state. The remainder of the country is formed by the Czech Socialist Republic (CSR).

The CSSR has an area of 127,896 km², of which the CSR covers 78,864 km² and the SSR 49,032 km². At present the CSSR has 15.5 million inhabitants, of which the SSR has 5.2 million. The capital of Czechoslovakia and also of the CSR is Prague (1.2 million). The capital of the SSR is Bratislava (400,000 inhabitants). The official languages are Czech and Slovak.

The Czechoslovak Socialist Republic borders on Poland, the Soviet Union, Hungary, the German Democratic Republic, Austria and the Federal Republic of...
Germany. Czechoslovakia ranks in size as the 92nd country in the world. In population it ranks 41st and in terms of industrial production it occupies the 11th-12th position. The basis of the Czechoslovak economy is socialist ownership, both state and cooperative.

Czechoslovakia is an industrial state with advanced agriculture and high standards of living and culture. Agriculture is of a modern large-scale production type, with the decisive role played by the socialist sector which cultivates 94.5% of agricultural land and provides a self-sufficient supply of essential foodstuffs.

**ORGANISATION OF THE VETERINARY SERVICE IN SLOVAKIA**

Veterinary activity within Slovakia is directed by the State Veterinary Administration, which is subordinate to the Slovakian Ministry of Agriculture and Food.

Veterinary activities are carried out through Regional Veterinary Administrations (RVA), which manage the veterinary work on the territory of the various regions, each of which is divided into about twelve districts.

In every district there is a District Veterinary Administration (DVA). Each DVA is divided into two or three veterinary centres, and each centre into areas entrusted to individual practising veterinarians. In addition to veterinary centres the DVA's also manage treatment stations with facilities for hospitalising small and large animals, as well as laboratories carrying out simple tests. In districts where food-processing plants are located, the DVA's also comprise veterinary food hygiene centres, providing official veterinary supervision in the plants. In border districts with crossing points, the DVA's administer veterinary stations where the import, export and transit of animals and raw materials of animal origin are controlled and supervised.

Complex laboratory and clinical diagnostic procedures are conducted by the State Veterinary Administration through the Central State Veterinary Institute (CSVI) in Bratislava, which manages State Veterinary Institutes (SVI), two or three in each region. These carry out complex laboratory and clinical diagnoses, provide specialist help, control the activity of district veterinary laboratories, and help to find direct solutions for complicated problems arising on large-scale animal farms and in food-processing plants.

Biological products, diagnostic preparations and some drugs are produced in the BIOVETA plant for the State Veterinary Administration. The testing of these preparations is carried out by the Institute of State Control of Veterinary Biologicals and Drugs.

The Institute of Animal Hygiene and Veterinary Technique is a specialised organisation for examining and approving capital construction, new technologies and development of veterinary technique.

Updating of qualifications, which is connected with promotion, is provided by the Institute for Advanced Education of Veterinary Surgeons. This education is provided free of charge.
COMPUTER PROCESSING OF VETERINARY INFORMATION

A computerised management system (CMS) for veterinary information is run by a specialised veterinary organisation, the Institute of Veterinary Information and Adult Education (IVIAE), which also implements other tasks:

- Technical control and organisation of uses and applications of computing technology for the needs of management at all levels of animal care in Slovakia.
- Development and design of programmes for computerised processing of veterinary information.
- Processing of scientific and technical information for the Veterinary Service.
- Preparation and implementation of a publishing programme of veterinary information to meet the needs of the adult education scheme.

It is evident that the manifold nature of these activities renders impossible the construction of a computerised veterinary information system as a uniform entity. Individual subsystems are therefore available in accordance with the nature of specific veterinary activities:

1. Active records of the Field Veterinary Service
2. Clinical and laboratory diagnosis of selected diseases
3. Veterinary Hygiene Service
4. Production of veterinary drugs and biologicals.

All subsystems are supplemented by relevant socio-economic information (e.g. computerised processing of work schedules, which is now routine).

In 1974-75 analytical and programming work was undertaken to implement Subsystem 1 — active records of the Field Veterinary Service. Following trial operation the subsystem was applied in the whole of Slovakia in 1980.

In 1984, Subsystem 2 — clinical and laboratory diagnosis — started to be assembled according to the type of selected diseases with regard to information on results of laboratory tests on cattle, on leukosis and its connection to Subsystem 1, as well as processing of results from laboratory tests of milk samples for mastitis. This subsystem has been in routine operation since 1 January 1985.

STRUCTURE AND GOALS OF INDIVIDUAL SUBSYSTEMS

Subsystem 1: active records of the Field Veterinary Service

This is a priority activity, involving all veterinary surgeons on the territory of the SSR. Its goal is to provide computerised processing of data on preventive, diagnostic, control and therapeutic activities of the Field Veterinary Service in state and cooperative farms, as well as by private farmers.

Veterinarians enter the system with primary entry sheets containing data in numerical codes. Entry sheet no. 1 is used in socialist farms (state and cooperative);
entry sheet no. 2 replaces the invoice of the private sector; errors are corrected on entry sheet no. 3 and the annual plan of major diagnostic and prophylactic tasks is reported on entry sheet no. 4.

The resulting output is a computerised information set, representing an extraordinarily rich data pool. Output data is distributed by the IVIAE monthly to respective management levels of the Veterinary Service in the form of printed output reports, to the extent determined by the SVA (Fig. 1).

Practising veterinarians (who fill in the primary entry sheets) receive the following information:

- a monthly survey of their daily work according to animal species;
- payment for work in the private sector;
- a survey of planned diagnostic and prophylactic actions ordered by the State Veterinary Administration;
- a survey of therapy for reproductive disorders of cattle;
- a survey of genetic aspects of cattle and sheep health;
- a survey of erroneous data.

Directors of District Veterinary Administrations and veterinary centres receive:

- a monthly survey of the work of practising veterinarians for veterinary centres and districts according to animal species;
- a survey of planned diagnostic and prophylactic actions ordered by the State Veterinary Administration for veterinary centres and districts;
- results of genetic controls of cattle and sheep health;
- results of therapy for reproductive disorders;
- survey of veterinary activities from the economic aspect.

Directors of Regional Veterinary Administrations receive:

- a monthly survey of the work of practising veterinarians for districts of a given region according to animal species;
- a survey of planned diagnostic and prophylactic actions ordered by the State Veterinary Administration for the region according to districts;
- results of therapy for reproductive disorders in farm animals.

The Director General and managers of the State Veterinary Administration receive an information survey for all regions, with processed results for the SSR as a whole.

Information on veterinary work processed into output reports for all management levels is used for:

- management of the Veterinary Service;
- strategy and policy decisions for animal health programmes;
- definition of the most effective kinds of drugs and preparations in therapy of selected diseases;
- analyses of the causes of disease in relation to various factors;
- genetic control according to animal species;
Image of a flowchart for Subsystem 1:

1. Practising veterinarian fills in entry sheets nos. 1, 2, 3
2. Head of veterinary centre fills in entry sheet no. 4
3. Recording of data on storage media
4. Computer processing in the IV1AE
5. Output reports are distributed to
   - Practising veterinarian
   - Veterinary centre
   - District Veterinary Administration
   - Regional Veterinary Administration
   - State Veterinary Administration
6. Animal owner, state or coop. farm

**FIG. 1**

Information flowchart for Subsystem 1
monitoring of costs of therapy and preventive activity of the Veterinary Service;
accounting and statistics of the whole range of veterinary work in the field;
supervision of veterinary management and control authorities in implementing plans and animal health programmes;
related economic tasks, file-keeping and statistics;
establishment of a veterinary information data bank.

Subsystem 2: clinical and laboratory diagnosis of selected diseases

On the basis of laboratory results this system supplies information, supplementing Subsystem 1 of the CMS, to practising veterinarians, laboratory workers and managers of the Veterinary Service in the SSR. It provides information on bovine leukosis and mastitis of dairy cows for the whole of the SSR.

The primary entry sheets containing data in numerical code serve as input. Entry sheet no. 5 is filled out by practising veterinarians in triplicate at sampling. The entry sheets are sent together with the sample for laboratory examination (Fig. 2).

The State Veterinary Institute enters test results on the sheet and returns one copy to the practising veterinarian. The second copy is sent for computer processing and the third remains in the Veterinary Institute.

Entry sheet no. 6 is used for correction of any errors.

Resulting output is a set of computerised information, providing monthly surveys (with summaries since the beginning of the year) on results of laboratory tests for bovine leukosis and mastitis.

This information is distributed in the form of printed output reports.

The veterinarian who requested the laboratory tests receives:

- a survey of requested laboratory tests for leukosis and mastitis in a month;
- a survey of individual animals positive for leukosis and mastitis according to enterprises, herds and farms;
- a survey of bacteriological findings in cows with mastitis.

Management staff of District Veterinary Administrations, Regional Veterinary Administrations and the State Veterinary Administration and State Veterinary Institutes receive:

- surveys on laboratory findings and on district, regional, and overall incidence of leukosis and mastitis in the SSR.

Information on laboratory results in the form of output reports for all management levels are used for:

- strategy and policy decisions for animal health plans in leukosis and mastitis;
- survey of selection in bovine leukosis;
- monitoring of seasonal frequency of positive findings;
- analysis of results according to the kind of finding, including the proportions of individual bacterial strains associated with mastitis.
FIG. 2
Information flowchart for Subsystem 2
DESCRIPTION OF SUBSYSTEMS 1 AND 2 OF THE CMS

The computerised management system of the Veterinary Service has the following features:

- uniform numerical codes for all subsystems;
- uniform methodology of information processing for all subsystems;
- uniform schedules and processing deadlines;
- information transfer among subsystems on storage media;
- vertical integration of information at all management levels of the Veterinary Service: District Veterinary Administration (DVA), Regional Veterinary Administration (RVA), the State Veterinary Administration (SVA), the Central State Veterinary Institute (CSV1), including information at the level of practising veterinarians, veterinary centres and agricultural farms;
- integration of CMS into information systems outside the Veterinary Service of the SSR (breeding information system, data bank of the Slovakian Ministry of Agriculture and Food).

CMS was constructed on an open plan. This means that the analytical design permits modular supplementation of developed and tested versions. It is also possible to delete individual non-topical programme versions from processing.

CMS can be characterised as a system with information collection on an area basis at the lowest management level — by practising veterinarians. Every practising veterinarian is required to make note of special, consultative, control and other activities. This information is recorded on primary data sheets systematically, "on the spot" and according to codes.

Numerical codes

The use of codes makes it possible to enter information on veterinary activity in numerical form. The information is written onto entry sheets by practising veterinarians in the field and in laboratory diagnosis. The sheets are included in a code book which is at the disposal of all practising veterinarians. The code book is open and can be updated when required during its use. Examples of individual numerical codes are given in Table I.

Primary entry sheets

Within Subsystems 1 and 2 of the CMS six types of primary entry sheets are used, four types within Subsystem 1 and two types within Subsystem 2. Their use, content and frequency of entry are described in Table II and in the specimens of individual entry sheets (see Appendix I).

Entry sheets nos. 3 and 6 are used in both subsystems for back reporting of erroneous data, which have been excluded by the computer from processing during the check run. The structure of these entry sheets is identical with that of entry sheets nos. 1 and 5, so they need not be dealt with in detail.
### TABLE I

*Sections of the code book used within subsystems of the CMS*

<table>
<thead>
<tr>
<th>Code</th>
<th>Code book section</th>
<th>Use within subsystems of the CMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>animal species and categories</td>
<td>yes yes</td>
</tr>
<tr>
<td>B</td>
<td>diagnoses — findings</td>
<td>yes yes</td>
</tr>
<tr>
<td>C</td>
<td>test results/therapy results</td>
<td>yes no</td>
</tr>
<tr>
<td>D</td>
<td>control characters</td>
<td>yes no</td>
</tr>
<tr>
<td>E</td>
<td>operations</td>
<td>yes no</td>
</tr>
<tr>
<td>F</td>
<td>drugs, biologicals, sanitary material</td>
<td>yes no</td>
</tr>
<tr>
<td>G</td>
<td>kinds of samples</td>
<td>no yes</td>
</tr>
<tr>
<td>H</td>
<td>types of testing</td>
<td>no yes</td>
</tr>
<tr>
<td>I</td>
<td>antibiogram</td>
<td>no yes</td>
</tr>
<tr>
<td>J</td>
<td>region, district, veterinary centre</td>
<td>yes yes</td>
</tr>
<tr>
<td>K</td>
<td>practising veterinarians</td>
<td>yes no</td>
</tr>
<tr>
<td>L</td>
<td>agricultural enterprises/farms</td>
<td>yes yes</td>
</tr>
<tr>
<td>M</td>
<td>villages and settlements</td>
<td>yes yes</td>
</tr>
<tr>
<td>N</td>
<td>laboratory personnel</td>
<td>no yes</td>
</tr>
<tr>
<td>O</td>
<td>laboratories</td>
<td>no yes</td>
</tr>
</tbody>
</table>

### TABLE II

*Use of primary entry sheets within the CMS*

<table>
<thead>
<tr>
<th>Use in subsystem no.</th>
<th>Entry sheet no.</th>
<th>Number of copies</th>
<th>Frequency of entry</th>
<th>Officer filing entry</th>
<th>Designation of entry sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
<td>Daily</td>
<td>Practising veterinarian</td>
<td>Work record of practising veterinarian</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>Daily</td>
<td>Practising veterinarian</td>
<td>Work record — Invoice *</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>2</td>
<td>Once a month</td>
<td>Practising veterinarian</td>
<td>Work record of practising veterinarian — correction of errors</td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>2</td>
<td>Twice a year</td>
<td>Head of veterinary centre</td>
<td>Plan of large-scale action for a year</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>3</td>
<td>Daily</td>
<td>One section for practising veterinarian. Another section for laboratory personnel</td>
<td>Requisition form for laboratory tests</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>1</td>
<td>Once a month</td>
<td>Practising veterinarian</td>
<td>Requisition form for laboratory tests — correction of errors</td>
</tr>
</tbody>
</table>

* This document serves as an invoice, with which the practising veterinarian obtains a fee from a private animal owner in accordance with a uniform list of prices valid for veterinary operations and drugs.
PROSPECTS OF FURTHER DEVELOPMENT OF CMS

Subsystem 3: Veterinary Hygiene Service

Subsystem 3 of the CMS is currently being developed. This subsystem will enable the systematically structured processing and storage of information on the hygiene of food of animal origin. It will include data on hygienic properties of foods (even animal feeds), their parameters, origin and application in nutrition. It is aimed to pinpoint non-standard products and to classify analysed samples. This subsystem is characterised by its internal and external integration, namely with Subsystem 2 (laboratory diagnosis), in the uniform designation of samples and test methods, numerical codes of processing plants and the origin of raw materials. Integration with Subsystem 1 is achieved mainly in relation to the disease situation in the area of origin of food animals. This relation must be close, flexible and operative. The information system will thus contribute to the production of wholesome foods.

The results should provide management authorities with objective information on quantity and quality of products and their hygienic value. Such information is important from the aspect of overall standards of food hygiene as well as for decision-making.

Subsystem 4: BIOVETA and the Institute for State Control of Veterinary Drugs and Biologicals (ISCVDB)

The BIOVETA plant produces specific preparations, vaccines and other active substances required by the Veterinary Service. The ISCVDB is responsible for the systematic control of veterinary preparations, both imported and produced in this country.

Within the subsystem it is planned to monitor the production activities of BIOVETA, the range and quality of veterinary preparations, biologicals and some drugs as well as other preparations of a therapeutic and preventive nature for veterinary use. This is important in meeting the needs of the Veterinary Service in the field.

Under production conditions certain models of veterinary supply will be adopted in regard to elaboration, optimalisation of production, product proportions, etc.

This information will be linked with that on effectiveness testing and residue control of the preparations produced and used, as carried out by the ISCVDB. The two kinds of information are closely connected and will be an integral part of the subsystem. A data bank on all veterinary preparations with their characteristics will be formed with the possibility of flexible updating. Consequently, the whole range of veterinary preparations will be available for use in the preventive and therapeutic work of veterinary organisations.

Other projects within the CMS

In addition to the above-mentioned programmes, some selected data are processed non-periodically, as needed, concerning specific problems. At present the following programmes are being processed:

a) survey of morbidity and analysis of causes of mortality, containing analytical reviews on therapy and mortality of farm animals in individual agricultural farms;
b) survey of diseases of locomotor organs of cattle, where there is numerical documentation of incidence of individual disorders of locomotor organs in different months during a year and longer time periods;

c) survey of the effectiveness of veterinary preparations in treating reproductive disorders. The results analyse the effectiveness of veterinary drugs in individual diagnoses with the aim of determining the most effective therapy for reproductive disorders;

d) analyses of frequency and number of veterinary operations, which are utilised for planning and conceptual purposes of the Veterinary Service.


Following the five-year routine run of Subsystem 1 of the CMS and the one-year run of Subsystem 2, these conclusions can be made:

a) Introduction of the CMS requires a more responsible approach by veterinarians to given tasks in general.

b) There is an increased demand for qualitative improvement of the approach to recording work, systematic and regular performance of required operations, accuracy and punctuality.

c) Introduction of the CMS has made it possible to cancel some fifteen types of veterinary forms, certificates, reports, etc. There are now favourable conditions for applying uniform methodology of statistics and file-keeping in all fields of work.

d) Most of the specialised veterinary and economic information is obtained through the CMS, and the information is processed at the level required by valid regulations on statistics.

e) Writing the codes onto entry sheets, examination of output reports and correction of errors represent almost all the paperwork of a veterinary surgeon. Apart from the entry sheets, the veterinarian does not have to fill in any other document.

f) Higher management levels – veterinary centre, DVA, RVA and SVA – do not require any other documents on the work of the subordinate unit, except data contained within the CMS. These are all the data needed for statistics, file-keeping, management and control of the Veterinary Service.

In this connection it is necessary to mention a major change: earlier methods of statistics are being modified so that the data base in the computer can be centralised. This creates conditions for building a central data bank for the Veterinary Service which is available at every management level.

Future development of the CMS in the Veterinary Service

In light of the technical possibilities of computer technology, there will be changes in the future organisation of information processing within the CMS: in the first stage, the present analytical programme approach to the tasks will change to establishment of a data bank of veterinary information, with direct access. The data bank will be
stored on a main-frame computer and there will be a network of satellite mini- and microcomputers. These microcomputers will be located at lower management levels of the Veterinary Service of the SSR — at DVA, RVA, SVI and other organisations subordinate to the State Veterinary Administration.

This decentralisation of data preparation and processing to the very place of origin of information will offer immediate access and operation to the user. Information will be collected for input into the data bank. Any errors will be operatively corrected and their impact on the results obtained will be minimalised.

Technical interface will be provided at individual working places with data remote transfer within the computer network of the veterinary information system, using unified software.

Aims of future development include:

a) Routine data processing for the central data bank of the Veterinary Service by the main-frame computer. A dialogue operation system is required, with request system of “question-answer” type. Data will be utilised for solution of common, operative, long-term and conceptual problems at all levels of management in the Veterinary Service.

b) Complex information processing within individual subsystems and projects locally by independent veterinary organisations, with the possibility of remote transfer of data among users at various levels of management as well as among individual organisations of the Veterinary Service.

Building of further subsystems and components in accordance with this conception of the CMS will create the conditions required for a complete information system which will be flexible and adaptable. The whole process of introducing the CMS is initially quite complicated with regard to many objective and also subjective aspects, because it is necessary to overcome the fallacious views of some veterinarians concerning information processing.

**EXAMPLES OF INPUT**

**Example I (see Appendix II)**

In the cooperative farm in Dubova (code no. 55101) in the Trnava district, in veterinary centre no. 1 and area no. 10, practising veterinarian no. 10 (MVDr Jan Silny) carried out the following operations in May 1986:

a) On 10 May 1986 he vaccinated 200 cows (130) in area no. 10 against FMD (code of operation: 17510). He used 800 units of preparation no. 49121. The operation and biological were supplied free of charge (control character: 101). This is written in the first line of entry sheet no. 1.

b) On 10 May he collected 100 samples for serological examination of brucellosis (code of operation: 10920) from heifers over two years of age (code: 125). The operation was performed free of charge. This is written in line 02.

c) On 15 May he vaccinated 80 calves over six months of age (112) against the respiratory disease complex and IBR (operation code: 13520). He used 80 units of preparation no. 49083. The operation and drug were supplied free of charge. This is written in line 04.
d) On 15 May he collected samples for serological testing for leukosis (operation code: 14020) from five cows (130). The sampling was free of charge. This is written in line 06 of entry sheet no. 1.

The animals (5) are then described individually in entry sheet no. 5 — Requisition form for laboratory tests. Each animal must be entered on a separate line. The identification data are the same as in entry sheet no. 1. In the column “kind of sample” he writes the code number for blood = 41, type of examination = 440, i.e. serological examination for leukosis.

On 16 May 1986 laboratory worker no. 08 (MVD Dr Dusan Maly) in laboratory no. 98101 found a positive reaction to leukosis in cows nos. 93421812 and 2756812. He writes down the code number 11224 (serological finding of leukosis) in the column “finding no. 1”. This can be seen in entry sheet no. 5, lines 1 to 5.

e) On 15 May Dr Silny administered anthelmintic (operation code: 16260) to 100 heifers one to two years old (animal species code: 124) on the same farm. He used 500 units of preparation no. 19038. The operation and the preparation were supplied free of charge. The entry is in line 08.

f) On 15 May in farm no. 52405 he examined cows (130) before insemination and found that cow no. 27504905 was positive (operation code: 20113) for diagnosis of acute endometritis (diagnosis code: 22241). The breeding cow was selected for therapy (examination conclusion: 2).

On 16 May he gave the above-mentioned cow 5 units of drug no. 11102 by one injection (operation code: 51220). The examination conclusion is code number 3 — repeated visit of the same animal.

He returned on 20 May and repeated the injection with the same drug and concluded that the cow was healthy (examination conclusion: 4; cured following repeated treatment). Treatment and drug were free of charge. This is entered in lines 10, 11 and 12 of entry sheet no. 1.

Example II (see Appendix III)

On 12 July 1986 in the village of Priekopa (00420) MVD Dr Ivan Kusy treated a complicated parturition (diagnosis code: 22251) in a cow (code: 130, complicated parturition code: 51440) of a private animal owner, Jan Drobny. Upon parturition the operation was finished (examination conclusion: 1). Being a visit to a private animal owner, this operation should be paid in cash (353) along with the price for 3 units of a drug (10564). The fee for the operation is 150 Korunas (Kcs), drug price 3 Kcs and surcharge of 70 Kcs for work outside working hours and travel costs (code 59912), making a total of 223 Kcs. This example is written in entry sheet no. 2 in lines 01 and 02. Other necessary entries will be written by the veterinarian according to pre-printed data.

From these brief examples it can be seen that a proper combination of individual numerical codes makes it possible to record any activity performed by members of the Veterinary Service. Information is explicitly defined by numerical codes, and it is then used within all subsystems of the CMS.
Entry sheet no. 1

Pracovný záznam veterinárního pracovníka

<table>
<thead>
<tr>
<th>Entry sheet no. 1</th>
<th>OVZ:</th>
<th>vet. prac.:</th>
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<td></td>
<td></td>
<td></td>
<td>Podpis veterinárního pracovníka</td>
</tr>
</tbody>
</table>

Legend:
- C: Chovatel
- G: Gazeta
- L: Lék
- D: Diagnose
- O: Obyvatel
- E: Expedice
- V: Vězni
- Vet: Veterinář
- U: Uzel
- M: Měna
- J, K, L, M, N, O, P, R: Podpis chovatelů
A Subsystem 1 of the CMS: Primary data sheet for record of work of practising veterinarian

B 1 Entry sheet no. 1
Identification data:
  2-3 Region
  4-5 District
  6 Veterinary centre
  7-8 Practising veterinarian in the field (Code book “K”)
  9-10 Month
  11-13 Serial number of entry sheet (001-999)

C 16-17 Day of operation

D 18-19 Area entrusted to a practising veterinarian where the operation was performed

E 20-24 Agricultural farm (Code book “L, M”)

Columns no. 1 to 27 must be filled in

G 28-35 Number of the individual animal (in cattle) according to owner’s record

H 36-40 Diagnosis 1 (Code book “B”)
Clinical diagnosis – column used only in case of therapy or positive testing result

I 41-45 Diagnosis 2 (Code book “B”)
Aetiological diagnosis – reason of clinical diagnosis

J 46 Test result (Code book “C”)
Always stated in cases of therapy or culling when the number of an individual animal is given

K 47-49 Control character (Code book “D”)
To be stated with the code of operations or drugs used

L 50-54 Number of animals
Supplementary index for large-scale operations (e.g. vaccination)

M 55-59 Veterinary operation (Code book “E”)
To be stated in any case

N 60-64 Number of veterinary operations

O 65-69 Kind of drug or biological used in veterinary operation

P 70-74 Quantity of drugs
To be filled in along with stating the kind of drug

R Signature of animal owner
Certifies performance of activity

S Name of practising veterinarian
Stamp

T District Veterinary Administration
(written in full, stamp)

General use: (1) within Subsystem 1 of the CMS on the work of the Field Veterinary Service, i.e. the record of all operations, interventions and drug consumption in the field, including state and cooperative farms and other animal owners; (2) all practising veterinarians of the Field Veterinary Service write out the entry sheets in accordance with valid code books; (3) monthly processing with data summary since the beginning of the year.
### PRACOVNÝ ZÁZNAM — PLATOBNÝ VÝMER

<table>
<thead>
<tr>
<th>Q. r.</th>
<th>Druh zvířat</th>
<th>Diagnóza</th>
<th>Z V</th>
<th>Počet zvířat</th>
<th>Oko</th>
<th>Počet škornů</th>
<th>Řádkové znak</th>
<th>Lékky, bioprep., zdrav. mat.</th>
<th>Čas za</th>
</tr>
</thead>
</table>

#### Notes

- **A**
- **B**
- **C**
- **D**
- **E**
- **F**
- **G**
- **H**
- **I**
- **J**
- **K**
- **L**
- **M**
- **N**
- **O**
- **P**
- **Q**
- **R**
- **S**
- **T**

**DVZ:** ____________________________
**Vet. prac.:** _____________________
**Adresa chovatele:** ________________

---

**Entry sheet no. 2**
**LEGEND**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Subsystem 1 of the CMS: Work Record and Invoice</td>
</tr>
<tr>
<td>B</td>
<td>Entry sheet no. 2</td>
</tr>
<tr>
<td>C</td>
<td>Animal species (Code book “A”)</td>
</tr>
<tr>
<td>D</td>
<td>Diagnosis (Code book “B”)</td>
</tr>
<tr>
<td>E</td>
<td>Result of examination (Code book “C”)</td>
</tr>
<tr>
<td>F</td>
<td>Control character (Code book “D”)</td>
</tr>
<tr>
<td>G</td>
<td>Number of animals (number of the individual animal receiving treatment)</td>
</tr>
<tr>
<td>H</td>
<td>Control number – to state number of lines entered</td>
</tr>
<tr>
<td>I</td>
<td>Signature and stamp Name of the veterinarian</td>
</tr>
<tr>
<td>J</td>
<td>Operation (Code book “E”)</td>
</tr>
<tr>
<td>K</td>
<td>Signature of animal owner Certification of work performed</td>
</tr>
<tr>
<td>L</td>
<td>Number of veterinary operations performed</td>
</tr>
<tr>
<td>M</td>
<td>Kind of drug or biological used (Code book “F”)</td>
</tr>
<tr>
<td>N</td>
<td>Quantity of drug or biological used</td>
</tr>
<tr>
<td>O</td>
<td>Sum total in cash (sum total of fees for operations, travel costs and drugs)</td>
</tr>
<tr>
<td>P</td>
<td>Sum for operations and travel</td>
</tr>
<tr>
<td>R</td>
<td>Drug costs</td>
</tr>
<tr>
<td>S</td>
<td>Price of veterinary operations Amount charged according to the price list in Kcs for veterinary operations performed</td>
</tr>
<tr>
<td>T</td>
<td>Price of drugs used</td>
</tr>
<tr>
<td>U</td>
<td>Address of animal owner (name and address in full)</td>
</tr>
<tr>
<td>V</td>
<td>Veterinary surgeon (name, stamp)</td>
</tr>
<tr>
<td>Z</td>
<td>District Veterinary Administration (in full)</td>
</tr>
</tbody>
</table>

**General use:** (1) within Subsystem 1 of the CMS for recording work which is payable by private animal owners according to a valid price list for operations and interventions; (2) field and hospital veterinarians fill in the entry sheets; (3) monthly processing (filling in, collection, recording, computer processing), output sets and filing of data.
Plán hromadných akcii na rok
návrh - oprava

Entry sheet no. 4
A  Subsystem 1 of the CMS: Primary entry sheet on planned large-scale actions for the year

B  1  Entry sheet no. 4
   Identification data:
   2-3  Region
   4-5  District
   6  Veterinary centre

C  a  Animal species (Code book “A”) in which an action is planned

D  b  Numerical code of planned veterinary operation (Code book “E”)

E  c  Description of animal species and planned veterinary operation

F  7-9  Index
   Pre-printed identification data for an action

G  10-11  Number of an area entrusted to a practising veterinarian, where the action is planned

H  12  Control character for computer recording reasons:
   1  = to implement the action in veterinarian’s area
   2  = to cancel the action in veterinarian’s area
   3  = to cancel all actions in veterinarian’s area

I  13-18  Number of planned actions
   In remaining positions the data are repeated according to the number of veterinarian’s areas. There are eight positions in an entry sheet.

J  Calculated price of drugs and biologicals for veterinary operations in all areas named on the line

General use: (1) within Subsystem 1 of the CMS, reporting and updating of planned large-scale prophylactic and diagnostic actions; (2) to be filled in by heads of veterinary centres according to the assignment of principal tasks to individual practising veterinarians with regard to number of animals and methodology of actions; (3) to be processed twice a year, in reporting then updating.
Appendix I (cont.)

**ŽIADANKA NA LABORATORNE VYSETRENIE**

<table>
<thead>
<tr>
<th>Entry sheet no.</th>
<th>5</th>
</tr>
</thead>
</table>

---

**Entry sheet no. 5**
A Requisition form for laboratory tests

B 1 Entry sheet no. 5

Identification data:
- 2-3 Region
- 4-5 District
- 6 Veterinary centre
- 7-8 Practising veterinarian in the field (Code book “K”)
- 9-10 Area entrusted to a practising veterinarian
- 11-15 Agricultural farm (Code book “L”)
- 16-17 Day
- 18-19 Month of sample collection on the farm
- 20-22 Serial number of entry sheet

C Competent District Veterinary Administration — in full, with a stamp

D Stamp and signature of practising veterinarian requesting the test

E Serial number of sample label on the tube

F 26-27 Pre-printed line number

G 28-35 Number of individual animal (sample)
- Number according to owner’s record or else sample numbers given to differentiate the samples

H 36-37 Samples (Code book “G”)
- Blood = code no. 41, milk = code no. 51

I Address of animal owner
- Complement to numerical code 11-15, in full

J 38-39 Number of samples
- In cases of multiple samples from the same premises

K 40-42 Testing types (Code book “H”)
- Numerical codes for serological tests = 440; bacteriological tests = 245; cytological tests = 845

L Section of primary entry sheet filled in by practising veterinarian requesting the test

M Protocol number
- To be entered into protocol book in the State Veterinary Institute for documentation purposes

N 70-73 Day, month, year — the date of sample test

O 65-69 Laboratory (Code book “O”)
- Numerical code of a laboratory within the State Veterinary Institute

P 63-64 Laboratory worker (Code book “N”)
- Actual worker who made the finding

- Sensibility of bacterial strains to examined antibiotics

S 43-47 Finding 1
- 48-52 Finding 2
- Laboratory finding is stated; up to three results can be given

T Section of primary entry sheet filled in by the worker in a State Veterinary Institute who carried out the laboratory test

U Stamp and signature of laboratory worker

General use: Within Subsystem 2 of the CMS, general form for recording the requirement for laboratory tests on samples: (1) to be filled in by the practising veterinarian in the field who requests the tests, up to column 42. Columns 43 to 73 are filled in by the laboratory; (2) monthly processing of data on laboratory tests results. At the same time the data are integrated into Subsystem 1 of the CMS on the work of the Field Veterinary Service. They give a complex review of the number of tests on cattle farms; (3) the results of laboratory tests of cattle herds for leukosis and mastitis are processed within the first stage of the subsystem; (4) the processing is done monthly with summary from the beginning of the year.
# Pracovný záznam

veterinárního pracovníka

## Example no. I (use of entry sheet no. 1)

<table>
<thead>
<tr>
<th>č. r.</th>
<th>den</th>
<th>obvod</th>
<th>postřek</th>
<th>počet</th>
<th>stav</th>
<th>počet pochodu</th>
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</tbody>
</table>

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OVĚR. TRENIVA

Vet. prac.: J. TRENIVA

Example no. I (use of entry sheet no. 1)
### Appendix II (cont.)

**ŽIADANKA NA LABORATÓRNE VYŠETRENIE**

<table>
<thead>
<tr>
<th>Sr.</th>
<th>Vztor</th>
<th>Vzduch</th>
<th>Voda</th>
<th>Počet</th>
<th>Prid.</th>
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<th>Cian</th>
<th>Kosenč.</th>
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**Poznámka a podpis medzinárodného pracovníka:**

(M. S., J. S.)

---

**Podpísavací a podpis šéfstveného pracovníka:**

(J. DUBOVÁ)

---

**Example no. 1 (use of entry sheet no. 5)**
## PRACOVNÍ ZÁZNAM - PLATEBNÍ VÝMĚR

<table>
<thead>
<tr>
<th>C. t.</th>
<th>Druh zvířat</th>
<th>Diagnóza</th>
<th>Z V</th>
<th>Různě znáz.</th>
<th>Počet zvířat</th>
<th>Okon</th>
<th>Počet úkonů</th>
<th>Lék, biprep., zdrav. materiál</th>
<th>Cena za</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>131-10</td>
<td>22.1-15</td>
<td>1</td>
<td>131-51</td>
<td>1</td>
<td>1</td>
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<td>14,5,1414141410</td>
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</tbody>
</table>

**Example no. II (use of entry sheet no. 2)**

**OVZ:** Martin

**Vet. prac.:** Dr. Ivan Kusy

**Adresa chovatelé:** Jan Dobrný

**Prihoda č.:** 98

---

**Podpis, metítko a pomocník veterinárního pracovníka:**

---

**Zaplaceno v hospitali celkem:** 223,00
Resumen: Desde 1980, en la República Socialista Eslovaca funciona, a nivel nacional y de manera regular, un sistema computarizado para el procesamiento de la información veterinaria. Todos los veterinarios que trabajan en el terreno y en los laboratorios de diagnóstico registran las informaciones relativas a su trabajo, en forma de códigos numéricos, en fichas técnicas primarias que sirven de base para el procesamiento computarizado. Dichas informaciones conciernen las actividades y los diagnósticos veterinarios, los medicamentos y productos biológicos empleados, así como los resultados de las pruebas de laboratorio.

Después del procesamiento computarizado mensual, las informaciones se ponen a disposición del personal administrativo del Servicio Veterinario, a todos los niveles jerárquicos, y de los veterinarios que introducen los datos primarios en el sistema.

Los autores describen el sistema de información veterinaria, los códigos numéricos y las fichas técnicas de captura de datos y presentan ejemplos de fichas con informaciones codificadas, así como de los resultados del proceso y los diferentes tipos de utilización.

PALABRAS CLAVE: Administración - Animales de cría - Bancos de datos - Checoslovaquia - Computadores - Enfermedades de animales - Servicios veterinarios.