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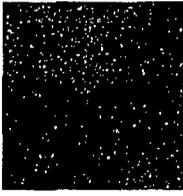
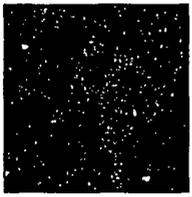
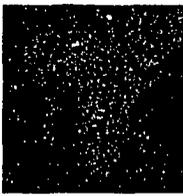
PRITECH

Technologies for Primary Health Care

REPORT ON MIS CONSULTANCY AND FINAL
REPORT

PRITECH PROJECT SUPPORT TO THE
PHARMACIE NATIONALE
D'APPROVISIONNEMENT

DAKAR, SENEGAL



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DAKAR, SENEGAL

A Report Prepared by PRITECH Consultant:
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I. PROJECT BACKGROUND

The Pharmacie Nationale d'Approvisionnement (PNA) in Senegal is currently undergoing a three-year process of privatization, which should result in the PNA's autonomy beginning in January of 1995. At the same time, the PNA has been decentralizing its operations to the level of the regional pharmacies (PRA), which were formerly attached to the Medical Regions rather than to the National Pharmacy. These important changes have required efforts to strengthen management systems, train and re-train personnel at all levels, and improve coordination between central and regional staff. Additionally, the PNA has been attempting to redress certain long-standing issues, namely the lack of resources which has often led to stockouts and therefore to a poor reputation among clients.

A. OBJECTIVE

The PRITECH Project of Management Sciences for Health, funded by A.I.D., has been providing technical assistance to the National Pharmacy of Senegal during its transition period, with the goal of developing the management and organization necessary for it to become an autonomous institution operating in a decentralized manner. MSH/PRITECH's technical assistance has focused on improving management skills and systems within the PNA in order to ensure that the logistics system for estimating, ordering, stocking, and distributing essential drugs and products throughout the country is efficient and effective.

B. BACKGROUND

MSH and PRITECH have been working with the PNA for two years to address key issues related to the PNA's information, management, and coordination needs and systems, as follows:

- The first PRITECH consultancy took place in December 1991, followed by another in February 1992. The consultant, Paul Auxila, Director of MSH's MIS Program, visited the PNA's central-level divisions, the Regional Pharmacies (PRAs), and the relevant donors in order to assess the PNA's MIS needs. The needs assessment concentrated on the procurement, warehousing, and distribution of drugs, ORS packets, and contraceptives.
- Following the needs assessment, Auxila drafted a plan for the development and implementation of management information systems at the PNA. This plan identified necessary subsystems, appropriate strategies for developing each subsystem, and the need for technical assistance in the areas of: strategic planning, organizational development and implementation of management systems, cost-accounting, financial analysis, policies and

procedures for competitive bidding, and development or customization of appropriate softwares.

- In June 1992, Auxila served as facilitator of a workshop attended by representatives of the PNA and PRAs in order to discuss the issues confronted by the PNA during its transition period and to identify appropriate strategies. The workshop was the first occasion for members of the PNA and PRAs to meet together and discuss their respective roles and responsibilities as well as their communication and coordination needs.
- In January 1993, PRITECH sponsored a senior-level workshop for national policy-makers, donors, international agency representatives, and heads of the Medical Regions, as well as central and regional Pharmacy staff, on the "Rationalization of Management and Logistics of Essential Drugs and Products in Senegal." The workshop, held at M'Bour, was organized by Margaret Watt of MSH's MIS Program, and co-facilitated by Auxila, Watt, and Maty Ndiaye, a locally hired trainer. The results of the workshop, known as the "Initiative de M'Bour," were a series of recommendations for the Government of Senegal, the donor community, and the PNA, aimed at improving the overall flow and management of essential drugs throughout the country.
- In May 1993, Watt provided assistance to the PNA in the development of an overall action plan based on and assuring the implementation of the recommendations of the "Initiative de M'Bour." At the same time, she conducted a training needs assessment at the central level and developed both a training plan and draft job descriptions for the PNA, in fulfillment of some of the recommendations of the Initiative de M'Bour.

Other activities that were funded by the World Bank and coordinated by MSH have complemented the PRITECH interventions mentioned above. The World Bank-funded activities focused on international competitive bidding:

- In March of 1992, Jean-Pierre Sallet, of MSH's Drug Management Program, developed procedures and systems for the implementation of an international competitive bidding system. He later made a follow-up visit to help the PNA conduct its first international tender, for 1993.
- In October 1992, the PNA's Director, the Chief of the PNA's Clientele Division, a Regional Pharmacist, and a representative of the World Bank's Human Resource Development Project (PDRH) participated in a study tour to MSH/Boston and the Eastern Caribbean Drug Service (St. Lucia and Dominica). In Boston, they worked with Paul Auxila and Margaret Watt to plan the M'Bour workshop on essential drugs logistics and management. In

the eastern Caribbean, with the assistance of Jean-Pierre Sallet, they observed the operations of a very successful logistics system that groups the financial resources of eight countries in the region so as to place orders and conduct international tenders regionally, in order to reduce the costs of drugs significantly.

C. DELIVERABLES

The outputs of these activities have included:

- a set of national recommendations, known as the Initiative de M'Bour, as well as an action plan and a training plan aimed at implementing those recommendations;
- the development of an MIS plan covering all major subsystems, of which the logistics information system was addressed during the most recent consultancy (discussed in this report);
- the development and implementation of an international tendering system, which successfully procured pharmaceuticals and products for the PNA for 1993 at a significantly lower cost than previously;
- two workshops and a study tour, which provided training and team development for PNA staff from the central and regional levels.

Although the initial PRITECH consultancy focused on MIS design, a broad range of activities was subsequently undertaken in support of improved PNA management, with the understanding that the overall context of the PNA was crucial to the functioning of any management and information systems.

These activities have not only led to improved collaboration between the central and regional levels of the PNA, but have also laid the foundation for better coordination among all the players in the field of essential drugs in Senegal.

II. TERMS OF REFERENCE

The objective of the present consultancy was to help develop the logistics information system by improving and computerizing the stock management system. The implementation of a computerized inventory management software (INVEC) will allow a more rapid response to client requests, facilitate tracking of stock, and provide up-to-date reports as requested on inventory, clients, suppliers, and all other pertinent information (such as expirations, stockouts, prices, etc.).

Specifically, the scope of work was to:

- install INVEC, a computerized system for logistics management which was developed by MSH and has been used successfully in various countries worldwide;
- adapt INVEC to the local environment and needs;
- provide training to central PNA staff in the use and maintenance of INVEC;
- make plans for follow-up training, evaluation of the use of the system's information, and implementation to the regional level.

III. ACTIVITIES AND LIST OF CONTACTS

The present consultancy was timed to ensure coordination with Jean-Pierre Sallet of MSH's Drug Management Program, who was carrying out a World Bank-funded assignment to the PNA at the same time. As the developer of INVEC, his presence was essential to any rewriting of the code that was needed in order to tailor the program to local circumstances. We were able to work together throughout the week-long consultancy to install INVEC, modify it as needed, and train staff. (NB: A description of INVEC is annexed to this report.)

The specific activities were as follows:

Monday, Oct. 11th

We installed INVEC on the Central Warehouse's IBM personal computer and gave an informal demonstration to Warehouse staff. We made copies of PNA spreadsheet files containing inventory data (including codes used by the Warehousing Division and standardized by the Cabinet Aziz Dieye) in order to download the data into the INVEC database and worked for the remainder of the day to make basic adaptations to INVEC (default values, etc.) and to go over the file structure. No formal meeting was held with PNA staff due to the Director's absence during his attendance at a bi-weekly Ministry of Health meeting.

Tuesday, Oct. 12th

In a meeting of key PNA staff, M. Touré, Director of the PNA, discussed the PNA's needs, especially the need for a system that would eventually permit control and consistency at the lower levels (regional pharmacies). Jean-Pierre Sallet then gave an overview of INVEC: data flow, outputs, and importance of maintenance and quality control. He also addressed the need for the system to be based on units rather than packages, so that pricing could be standardized by product. Participating in this meeting were: M Touré, the Director; Capitaine NGom, Head of the Warehouse Division; Mme Oumy Ndoye Fall, Warehouse Division and liaison to the Family Planning Project; Colonel Gilbert Bensadoun, Head of the Procurement Division; Mme Marie Sarr Gueye, Head of the Management (Accounting) Bureau; Capitaine Sy, Head of the Clientele Division; M Mangane, Regional Pharmacist for Dakar; and Mlle Socé Gassama, accounting consultant from the Cabinet Aziz Dieye who is expected to be hired by the PNA as the Contrôleur de Gestion in the near future.

There was some discussion between M Touré, Mlle Gassama, and the consultants regarding INVEC's purpose and usefulness, as the Cabinet Aziz Dieye had done some preliminary work on the design of a stock management system, which would apparently have paralleled INVEC (see concerns in my May 1993 trip report, p. 6). However, the World Bank had

ceased funding this project before the system could be developed, due to its anticipated cost. In addition, Mlle Gassama was concerned about the need for a computerized financial management/accounting system, since the system currently being implemented by the Cabinet is manual. INVEC will be able to provide many of the reports needed by the accounting department; however, in the future an accounting system will need to be developed.

Training then began for the same group of people, focusing for the most part on the entry of inventory data. In addition, the Accounting Department provided written lists of supplier and client codes, developed by the Cabinet Aziz Dieye based on government standards, which could be entered into INVEC's databases.

Wednesday, Oct. 13th - Thursday, Oct. 14th

Training of the initial group of participants continued, focusing on INVEC's main request functions (orders from facilities, purchase orders). Training was also provided to the two secretaries responsible for entering data for international bids as well as for purchase orders. In addition, other warehouse staff were given preliminary training aimed at providing them with an overview of the system. The training was aimed, however, at the primary users of the system: Ousmane Cissé (data entry) and Capt. Ngom and Mme Fall (system supervisors). The Head of the Procurement Division was also provided training related specifically to the tender management function of the software.

During this period, data entry continued, as the unit prices and stock-on-hand quantities were entered for most items from the card files. By Friday, the PNA was able to produce a "theoretical inventory" listing that represented approximately 90% of the items in stock.

Friday, Oct. 15th

In the morning, a debriefing was held at USAID to discuss the consultancy as well as to provide an update on recent changes and activities at the PNA to Linda Lankenau, the Population Officer, and then in a subsequent meeting to Fatimata Hann, in the Health Office. In part, discussion centered on the possibility that MSH could provide on-going technical assistance to the PNA over the next four years under the A.I.D.'s centrally-funded Rational Pharmaceutical Management Project (at no cost to the mission). USAID showed interest in this possibility, which would allow continuity of technical assistance to the PNA as it implements and computerizes procurement and management systems at both the central and regional levels.

In the afternoon, a similar meeting took place between Jean-Pierre Sallet and M. Diawara of the World Bank, to ensure continued coordination between donor efforts.

Training continued with the secretaries in charge of purchase ordering, as did data entry of stock information (prices and quantities on hand). The revised and adapted version of INVEC, when installed that evening, provided PNA staff with the capability to begin using the system both to place and fulfill orders as well as with a solid basis for continued data entry (for example, of the past six months' order history).

IV. RECOMMENDATIONS FOR THE PNA

The training given PNA staff addressed, broadly, the management issues inherent in the use and maintenance of a complex relational database such as INVEC. However, the theory and practice of database management can be quite different. It will be difficult for PNA staff to fully comprehend the issues involved in managing the system -- quality assurance, maintenance, data flow, security, etc. -- until they have integrated it into their daily activities for a period of time.

For this reason, it is strongly recommended that the PNA carry out the following steps:

STEP 1: RE-TRAIN AND ASSIGN STAFF

- a. Carefully assign responsibilities for different aspects of the system (orders from facilities, purchase orders, inventory data, reporting, security and maintenance, training of new staff) and closely supervise both data entry and the outputs.
- b. Retrain all Warehousing Division, Accounting, and Purchasing staff to ensure that the new unit-pricing system is understood and can be implemented immediately so that the data in the system are consistent and average prices are calculated correctly.
- c. Ensure that all appropriate staff have a copy of and have carefully read the INVEC user's manual.

STEP 2: VERIFY DATA AND BEGIN USING INVEC

- a. Immediately finish entering the last of the items and the basic stock information (unit price and quantity in hand).
- b. Complete the information in the supplier and client records, which currently consists of code and name only.
- c. Closely supervise the early weeks of system implementation, to ensure that data are entered correctly, that steps are established and followed (for example, the steps for preparing orders from facilities can be treated in three different ways using INVEC -- see manual, pp. 65-71 -- although one way should be selected and used consistently), and printouts are organized into manual files as deemed necessary.

- Data should be entered each day, as orders from facilities come in, purchase orders go out, or shipments are received.
- Once all transactions from a given month have been entered, the files should be updated by responding "yes" to the opening screen which asks whether or not to update the files after the beginning of a new month. It is important to respond "no" even after the beginning of a new month, as long as transactions are still being recorded.

STEP 3: IDENTIFY REPORTING AND FILING NEEDS AND PROCEDURES

- a. Establish and monitor strict procedures for the flow of data between those responsible for producing purchase orders and the Warehousing Division:
 - either purchase orders should be directly entered on the Warehousing Division computer (a certain time slot could be set aside each day for that purpose)
 - or purchase orders can be produced on the computer in the Director's office and re-entered in the Warehousing Division from the printout.

NB: The latter option is not desirable (though more convenient for the secretaries responsible for this duty, since they are based in the Director's office), since the existence of a paper file can easily allow data entry to be delayed or even forgotten, which would make the central database information unreliable. It is preferable for the copy of INVEC which is loaded on the computer in the Director's office to be used for training and practicing purposes only.

- b. Enact protocols for regular production and forwarding to the Accounting Office of financially related reports, such as billing information, client budget status reports, etc.
- c. Make decisions about which manual files will still be kept and which will be replaced by INVEC.

STEP 4: IMPLEMENT AND MAINTAIN SECURITY OF THE SYSTEM

- a. Protect access to the software by limiting the number of people who know the user's password and by restricting use of the supervisor's password to Capt. Ngom, Mme Fall, Capt. Ngom, and M. Touré.

- b. Back up data files to a floppy diskette at the end of every day, by inserting a diskette and selecting the "backup" feature of the software, which is found in the "Maintenance" menu. Several backup diskettes should be used on a rotating basis, so that data can be recovered up to a week later, in case problems are not detected immediately.

- c. Ensure a steady supply of electricity to the computer by repairing the uninterruptable power supply (UPS) and/or rewiring the room in the Warehousing Division where the computer is located (the latter was apparently recommended to Warehouse staff). If the electrical current is not reliable, there is a significant risk that INVEC will not be used regularly, which will affect both the quality of the data and the usefulness of the system.

If there are any questions or issues whatsoever, it is imperative that PNA staff contact MSH immediately so that the data are not compromised by attempts to fix the problem. Jean-Pierre Sallet can be reached by phone at (country code 1) 703-524-7623, or by fax at (country code 1) 703-524-7898. Margaret Watt can be reached by phone at (country code 1) 617-527-9202 or by fax at (country code 1) 617-965-2208.

V. NEXT STEPS

A. RECOMMENDATIONS FOR TECHNICAL ASSISTANCE

As discussed below, there is a need for continued technical assistance to the PNA, not only for follow-up of INVEC but also for ongoing development and improvement of the management systems in place at the central and regional levels. As the PNA works to strengthen a decentralized management approach and to become autonomous, it will be extremely important for its management systems to be fully functional and its staff to be highly trained to manage the complex operations at all levels.

The areas which require ongoing technical guidance include:

1. Follow-up and Evaluation

INVEC is expected to be of great assistance to PNA staff in the day-to-day and overall management of their inventory. However, there should be follow-up in the near future to ensure that the software is being used fully and appropriately, to control the quality of the inputs, to evaluate the use of the outputs, and to provide further training as appropriate.

2. Regional Implementation

INVEC should also be extended to the regional pharmacies, where it can be useful in ensuring compatibility of central and regional stock information, consistency of ordering procedures, and can speed up the preparation of orders. Implementation of INVEC at the PRA level will have to wait until the IBM-compatibles ordered by the World Bank earlier this year arrive and are installed. At present, it is estimated that these computers will be in place by November of 1993. If this is the case, there could be a single follow-up consultancy to do quality control at the central level and installation and training at the regional level.

3. ICB Procurement Process

In addition, technical assistance will be required when the next international competitive bid (ICB) is carried out, not only to ensure that the procedures developed last year are understood and implemented correctly, but to assist with the computerization of the entire process using INVEC. Computerizing this function will provide much of the data for the following year's inventory and will greatly facilitate the bidding process.

4. MIS Implementation

While the above activities are carried out as follow-up to the installation of and basic training in INVEC, it will be important for them to be coordinated with the development and implementation of other management information subsystems. (The need for a computerized financial management/accounting information system, for example, has been particularly emphasized by the PNA.) The PNA's Action Plan, which was developed as a result of the Initiative de M'Bour, pointed out the need for technical assistance to develop and implement various subsystems that had been identified in the MIS design drawn up by Paul Auxila in 1991-1992.

5. Training

It will additionally be necessary for the MIS technical assistance team to provide training related to the development of the subsystems. Furthermore, an organization with management training capabilities is needed to develop and implement the basic management and drug management course called for on p. 6 of the PNA's Training Plan.

B. LESSONS LEARNED: SUGGESTIONS FOR CONTINUING AND IMPROVING RELATIONSHIP

Management Sciences for Health would be interested in continuing its role with the PNA, given its existing relationship with Pharmacy staff, familiarity with the local situation and players, and involvement in various aspects of the PNA's work. Opportunities for MSH to continue its work by carrying out the above activities should be explored through the Rational Pharmaceutical Management Project, which will work on a continuing basis only where a long-term commitment has been made, as well as through the BASICS Project, which would be capable of supporting a short-term effort.

In the future, the relationship between the PNA and MSH consultants may be strengthened through more frequent two-way communication, both to provide updates on activities and to provide feedback on work that has been carried out. Such communication could be facilitated on MSH's side through use of the BASICS country officer, who could serve actively as a liaison, as well as through increased phone and fax contact from the consultants. The PNA, in turn, could send copies of its regular reports of activities (which were recommended in the Initiative de M'Bour as a means of updating the government, donor and international communities on PNA activities) to consultants to keep them apprised of any changes or issues. It would also be helpful for the PNA to be proactive in contacting consultants when necessary, which, if means are lacking, could be accomplished via the BASICS office in Dakar.

ANNEX: INVEC - PROGRAMME DE GESTION DES STOCKS

INVEC, logiciel universel de contrôle des stocks, offre une méthode révolutionnaire de gestion des entrepôts pharmaceutiques: INVEC permet d'obtenir à tout moment des renseignements parfaitement à jour sur tous les aspects des opérations d'un dépôt pharmaceutique central ou régional. Ce logiciel a été mis au point en 1990 grâce à la collaboration de Tropical Software Ltd. de Sainte-Lucie avec la société bostonienne MSH (Management Sciences for Health), dans le cadre de son programme "Gestion des médicaments". INVEC est à présent en usage dans quatre pays, et son installation est prévue sous peu dans plusieurs autres pays. Toutes demandes de renseignements devront être adressées à MSH. Le logiciel est disponible en français, en anglais et en espagnol.

INVEC est un programme de base de données relationnelle dont l'usage est à la portée de tous. Le programme est rédigé en Clipper Summer 87, et utilise le format de base de données dBase III Plus. INVEC tient un inventaire permanent de tous les articles stockés au dépôt pharmaceutique central, enregistrant d'une part les achats et les livraisons reçues des fournisseurs, d'autre part les sorties de produits en direction des structures sanitaires. Bien qu'il soit orienté vers les exigences particulières des produits pharmaceutiques, INVEC peut gérer n'importe quelle sorte de marchandises. En outre, le programme est conçu de façon que tout utilisateur puisse sans difficulté l'adapter à ses propres besoins.

Grâce à la base de données relationnelle du logiciel, l'utilisateur d'INVEC est en mesure de manipuler, de combiner et d'extraire les informations stockées dans de multiples fichiers de base de données. Tout se passe comme si l'on classait manuellement des informations à l'aide de différents registres ou dossiers. Avec un système de classement manuel, on va à la recherche d'informations dans un registre ou un classeur, et ensuite on se sert de ces informations pour la tâche du moment, ou bien pour produire un état des opérations du dépôt central. Avec INVEC, c'est le logiciel qui se charge de ce travail, et toutes les informations sont alors gérées par l'ordinateur, INVEC effectuant le transfert, la copie et l'édition des informations nécessaires à l'utilisateur. Le gros avantage est qu'INVEC peut consulter un grand nombre de fichiers différents en même temps, extraire de chacun d'eux uniquement les informations nécessaires, et les combiner pour les afficher à l'écran ou les imprimer sous forme d'états.

Bien entendu, la qualité des services rendus par INVEC sera étroitement liée à l'exactitude des données de base qui lui seront fournies et à la célérité de saisie des données, mais aussi à la façon dont on s'efforcera, au niveau de la direction du dépôt central, d'exploiter au maximum les possibilités du logiciel. Si l'on exige une tenue à jour régulière des fichiers INVEC, on obtiendra de ce logiciel toutes sortes d'informations claires, et des analyses qui seront extrêmement précieuses pour la conduite des opérations et la prise de décisions.

Le logiciel se compose des éléments suivants:

Fichiers principaux et fichiers de données complémentaires

Le système INVEC s'appuie essentiellement sur trois fichiers principaux de base de données:

- **Fichier Inventaire** - Un enregistrement pour chaque produit générique entreposé au dépôt central. Les sous-fichiers rattachés fournissent des renseignements divers: formule chimique, substitutions thérapeutiques, codes du formulaire, stock provenant de divers fournisseurs pour chaque article, contrats en vigueur.
- **Fichier Fournisseurs** - Un enregistrement pour chaque fournisseur auquel le dépôt central passe des commandes.
- **Fichier Structures sanitaires** - Un enregistrement pour chaque structure sanitaire approvisionnée par le dépôt central.

Dans chaque fichier de base de données, les enregistrements sont disposés comme dans un registre ou sur une feuille de calcul, chaque enregistrement du fichier étant l'équivalent d'une ligne ou d'une colonne. Les enregistrements INVEC se composent de champs de données, qui sont l'équivalent des espaces à remplir sur un formulaire ou sur les pages d'un registre, ou encore des différentes cellules constituant chaque ligne d'une feuille de calcul. Chaque étape du programme INVEC comporte la saisie de données dans un champ, qui fait partie d'un enregistrement, lequel est mis en mémoire dans un fichier de base de données. On ajoute aux fichiers respectifs, selon la nécessité, les nouveaux articles entrant en stock, les nouvelles structures sanitaires et les nouveaux fournisseurs.

Procédures INVEC pour l'enregistrement des opérations du dépôt central

La personne travaillant à l'ordinateur utilise l'option **Demandes d'approvisionnement** pour saisir et traiter toutes demandes reçues des structures sanitaires, à mesure de leur arrivée. INVEC peut se charger des opérations suivantes: autorisation des quantités de chaque article commandé, sélection des lots à expédier, édition de bordereaux de magasin, confirmation des quantités expédiées, impression de la facture, enregistrement des règlements.

Les bons de commande à envoyer aux fournisseurs sont préparés et imprimés, et les commandes gérées au moyen de l'option **Bons de commande**. Pour les articles sous contrat, INVEC donne accès à une liste des médicaments figurant sur les contrats des divers fournisseurs. INVEC contrôle également le libellé des factures à l'arrivée des marchandises, et tient le compte des paiements effectués. On peut utiliser simultanément plusieurs monnaies de règlement. Au moyen d'une méthode perfectionnée basée sur la consommation, INVEC calcule les quantités à réapprovisionner, compte tenu de cinq paramètres principaux (date exacte de livraison, stock de sécurité exigé, intervalle d'approvisionnement pour chaque article, période de prévision, nombre de jours de rupture de stock au cours de la période de prévision).

Toutes les options sont interactives. Lorsque les produits sont sortis et lorsque les commandes sont passées et livrées, INVEC met automatiquement à jour le niveau de stock des médicaments, l'historique des transactions avec les structures sanitaires, et tous les enregistrements comptables, notamment paiements à effectuer et à encaisser.

Etats INVEC

INVEC édite une série de 20 états standard qui fournissent des informations sur les achats, les réceptions, les sorties, l'ajustement des stocks, les quantités à réapprovisionner, les paiements. Un certain nombre de critères peuvent être spécifiés pour chaque état, ce qui multiplie le nombre d'états à obtenir. Des états mensuels, trimestriels et semestriels s'impriment automatiquement. Chaque état peut être sorti soit à l'écran soit à l'imprimante, et la présentation graphique des données est possible.

INVEC et les achats sur appel d'offres

INVEC gère toutes les opérations d'appel d'offres: enregistrement et compilation des prévisions établies par les formations sanitaires; production des documents d'appel d'offres; enregistrement des soumissions des fournisseurs; production des documents d'adjudication; création d'une liste des contrats, à consulter pour le passage des commandes.

Matériel et logiciel requis

MATÉRIEL

Ordinateur compatible IBM à 100% (XT, AT, 386)

Mémoire vive (RAM) 640 Ko

1 unité de disquette (3,5 ou 5,25 pouces), de préférence haute densité

1 disque dur avec minimum de 40 Mo disponibles. Si l'on fait usage du module de gestion des appels d'offres, un disque dur de 80 Mo est préférable.

(Il vous faudra au moins 640 Ko disponibles sur votre disque dur pour le travail d'impression des états sous INVEC).

On recommande fortement l'usage d'un onduleur pour protéger le système contre les fluctuations et coupures de courant.

Imprimante matricielle EPSON ou d'une autre marque compatible avec IBM, chariot large.

Le programme d'édition fonctionne également avec une imprimante laser.

LOGICIEL

Système d'exploitation MS-DOS, version 3.3 ou ultérieure.

Logiciel de sauvegarde "PC BACKUP" de Central Point, ou autre logiciel similaire (PKZIP) pour les copies de sauvegarde.