



SURVEY ON HUMAN RESOURCE CAPACITY IN PUBLIC HEALTH SUPPLY CHAIN MANAGEMENT IN SENEGAL

April 30th to May 19th, 2011



Table of Content

ABBREVIATIONS / ACRONYMS	4
SUMMARY	6
1. METHODOLOGY	6
2. MAIN RESULTS	6
3. RECOMMENDATIONS	7
INTRODUCTION	8
1. BACKGROUND	8
2. CREDITS	8
RESULTS	9
1. PART I. COUNTRY AND PROGRAMS' GLOBAL PROFILE	9
a. Country Profile	9
b. Economic Context	9
c. Regions	9
d. Financial Challenges	10
e. Healthcare System	11
f. The National Health Information Service (SNIS)	19
2. PART II. SURVEY	20
a. Objectives	20
b. Methodology	20
3. PART III. THE SUPPLY CHAIN'S ORGANIZATION AND PERSONNEL DISTRIBUTION	23
a. Supply Chain Organization	23
b. Distribution of Drugs	26
c. The Private Sector	27
d. The Parallel Market	28
4. PART IV. CHAMPION SYSTEMS	28
a. The Directorate for Pharmacy and Laboratories (DPL)	28
b. The National Supply Pharmacy (PNA)	29
c. Hospitals	31
d. Health Districts	33
e. The Health Post Level	33
f. OPTIMIZE Program	33
5. PART V. POLICIES AND PLANS	34
a. Health Policy	34
b. Health Care Financing	35
c. Pricing Policy and Cost Recovery	36



6.	PART VI. WORKFORCE DEVELOPMENT	37
a.	Pre-service Training	37
b.	Diourbel National Hospital Technicians and Maintenance Officers Training Center (CNFTMH)	39
c.	The Higher Institute for Transport (IST)	42
d.	The National School of Health and Social Development (ENDSS)	43
e.	The African Management Institute (IAM)	44
f.	Conclusions about the Three Above-mentioned Establishments	45
7.	PART VII. WORKFORCE EFFICIENCY	45
a.	Recruitment of Health Workers	45
b.	The Human Resources Evaluation System	46
c.	Distribution and Deployment of the Health Workforce	46
d.	The Health Workforce's Work Environment	46
8.	PART VIII. PROFESSIONALIZATION EFFORTS IN THE PUBLIC HEALTH SUPPLY CHAIN	47
	RECOMMENDATIONS	51
	BIBLIOGRAPHY	53

ABBREVIATIONS / ACRONYMS

AGE: Students' General Association (Association Générale des Etudiants)

ARV: Antiretroviral drug

BFEM: Certificate of Completion of Middle Studies (Brevet de Fin d'Etude Moyennes)

BTMH: Vocational Training Certificate in Hospital Maintenance (Brevet de Techniciens en Maintenance Hospitalière)

BTS: Advanced Technician Certificate (Brevet de Technicien Supérieur)

CHNU: National University Hospital (Centre Hospitalier National Universitaire)

CHR: Regional Hospital (Centre Hospitalier Régional)

CHW: Community Health Worker

CDSMT: Mid-term Framework for Sector-based Expenses (Cadres de Dépenses Sectorielles à Moyen Terme)

CNFTMH: National Hospital Technicians and Maintenance Officers Training Center (Centre National de Formation des Techniciens en Maintenance Hospitalière)

CRFS: Regional Centers for Health Training (Centres Régionaux de Formation Sanitaire)

DEBS: Basic Health Sciences Studies Department (Département d'Études de Base en Sciences de la Santé)

DEM: Directorate for Equipment and Maintenance (Direction des Equipements et de la Maintenance)

DES: Directorate for Health Structures (Direction des Etablissements de Santé)

DESS: Social Sciences Studies Department (Département d'Etudes en Sciences Sociales)

DESSS: Specialized Health Sciences Studies Department (Département d'Études Spécialisées en Sciences de la Santé)

DETR: Road Transport Operator Diploma (Diplôme d'Exploitant de Transport Routier)

DITI: IT Technical Engineering Diploma (Diplôme d'Ingénieur Technologue en Informatique)

DPL: Directorate for Pharmacy and Laboratories (Direction de la Pharmacie et des Laboratoires)

DPM: Directorate for Medical Prevention (Direction de la Prévention Médicale)

DRH: Directorate for Human Resources (Direction des Ressources Humaines)

DS: Directorate of Health (Direction de la Santé)

DTSMB: Advanced Hospital and Biomedical Maintenance Technician's Diploma (Diplôme de Technicien Supérieur en Maintenance Hospitalière et Biomédicale)

DTS: Advanced Transport Technician Diploma (Diplôme de Technicien Supérieur des Transports)

DUT: Technological University Diploma (Diplôme Universitaire de Technologie)

EGD: Essential Generic Drug

ENDSS: National School of Health and Social Development (École Nationale de Développement Sanitaire et Social)

EPI Expanded Program on Immunization

EPS: Public Health Establishment (Etablissements Publics de Santé)

FDI: Foreign Direct Investment

GF: Global Fund to Fight AIDS, Tuberculosis and Malaria

GTZ: German Agency for International Cooperation (Gesellschaft Technishe Zusammenarbeit¹)

¹ The GTZ's name changed between the writing of the report and its translation to the GIZ (Gesellschaft für Internatinonale Zusammenarbeit)



*For a world of solidarity where humans have the capacity for action,
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IAM: African Management Institute (Institut Africain de Management)
INN: International Non-proprietary Name
ITS: Higher Institute for Transport (Institut Supérieur du Transport)
MA: Marketing Authorization
MDG: Millennium Development Goals
MoH: Ministry of Health
MR: Medical Region
MSPHP: Ministry of Health, Prevention and Public Hygiene (Ministère de la Santé, de la Prévention et de l'Hygiène Publique)
NGO: Non-Governmental Organization
PADRHS: Project for Support to Human Resources Development of in the Health Sector (Projet d'Appui au Développement des Ressources Humaines dans le domaine de la Santé)
PNA: National Supply Pharmacy (Pharmacie Nationale d'Approvisionnement)
PNDS: National Health Development Plan (Plan National de Développement Sanitaire)
PNLP: National Program for the Fight against Malaria (Programme National de Lutte contre le Paludisme)
PNT: National Program for the Fight against Tuberculosis (Programme National de lutte contre la Tuberculose)
POCL-Health: Local Authority Operational Plan (Plan Opérationnel des Collectivités Locales)
PRA: Regional Supply Pharmacy (Pharmacie Régionale d'Approvisionnement)
PTA: Annual Action Plan (Plan de Travail Annuel)
SCM: Supply Chain Management
SG: Secretariat-General
SNIS: National Health Information Service (Service National de l'Information pour la Santé)
Sup de CO: Higher Business School (Ecole Supérieure de Commerce)
TB: Tuberculosis
UEMOA: West African Economic and Monetary Union (Union Economique et Monétaire Ouest Africaine)
UNFPA: United Nations Population Fund
UNICEF: United Nations Children's Fund
UNITAID: Mechanism for financing ARVs with flight ticket levy
USAID: United States Agency for International Development
WHO: World Health Organization

SUMMARY

1. METHODOLOGY

This survey is part of a series of the eight country surveys realized in the context of the *People that Deliver* Initiative. The joint methodology used for these surveys is based on the “assessment guide for capacity in public health supply chain management” elaborated and validated by Initiative members in 2011, in accordance with the USAID model:

<http://www.peoplethatdeliver.org/sites/files/People%20that%20Deliver/files/Literature%20Review%20EN.pdf>.

The survey was prepared at the Bioforce Institute headquarters in Vénissieux (France), and on the field from April 30th to December 30th, 2011, with a highlight moment from April 30th to May 19th. It was conducted by a Bioforce logistics expert, an international consultant, and a Senegalese consultant, as well as by the Bioforce team at the headquarters and in Bobo Dioulasso. 23 structures were visited.

2. MAIN RESULTS

Hospitals are confronted to management issues, especially in terms of finances (debts), which compromise their operations in terms of human resources and hospital logistics. However, since the reform and establishment of Public Health Establishments (EPSs), management improved in both hospitals and the National Supply Pharmacy (PNA). Still, the quality of management varies from one structure to another.

As in other sub-Saharan countries, the human resource situation is critical in peripheral structures. Staff is largely concentrated in Dakar.

85% of drugs are imported and distributed through two supply chains, a public supply chain and a private supply chain. The supply chain pattern is therefore complex, and as it is modeled on the international donor system, it is also highly compartmentalized. A cost recovery system is in place. The private sector, better organized, provides more than 85% of the drug market. 5 wholesalers supply 921 private pharmacies (*officines*). Apart from vaccines managed by the UNICEF, drugs are managed by the PNA. The private sector cannot import drugs without approval from the Ministry of Health (MoH) and from the Directorate for Pharmacy and Laboratories (DPL). All generic drugs are managed by the PNA.

The survey highlighted strong systems. The DPL is in charge of pharmacovigilance inspection and delivers marketing authorizations, which are the determining levies of the drug channel. The PNA is autonomous in its management. However, despite its excellent territorial network, it does not manage to cover more than 15% of national demand. Apart from pharmacists fulfilling administrative functions, the remaining workforce does not have the appropriate skills to meet PNA missions' requirements. The logistician position, which should be at the heart of the system, is not clearly identified. Personnel suffer from a certain loss of motivation. Additionally, constraints linked to the new articles of the Public Markets procurement regulation lead to blockages.

The central level, conscious of these issues, is now developing an important human resources (HR) plan with a significant budget attached to it. However, this goodwill is not enough known and perceived yet at the peripheral level.

At the peripheral level, hospitals and districts are also confronted to important challenges linked to management and HR, especially in terms of maintenance and drug supply. The absence of professional logisticians complicates relations between doctors and pharmacists.



The OPTIMIZE project is another strong (“champion”) system which is currently experimenting an innovative system of mobile warehouses and, as such, constitutes a real asset for the future of logistics. National and Regional Supply Pharmacies see it as an opportunity to undertake deep reforms of their management methods.

In terms of policies and plans, the National Health Development Plan (PNDS), currently in its second phase (2009-18), focuses on human resources and rapid dissemination of information. Regional training centers specialized in paramedical professions have the objective of improving the availability of in-office health professionals at the local level.

The National Training Center for Hospital Maintenance Technicians (CNFTMH) in Diourbel is a real asset for the sub-region. It is affiliated to the Health Ministry’s Directorate for Human Resources (DRH).

Health workers are affected by the low quality of technical equipment, as well as by their mobilization on logistics tasks, which proves to be inefficient (particularly when using technical medical equipment). In addition to this, in certain areas, opportunities for schooling are very limited and it is extremely difficult to find adequate accommodation. These factors contribute to the low motivation to work there.

3. RECOMMENDATIONS

The recommendations detailed at the end of this report relate to the following points:

- + Improvement of the coordination and complementarities between public and private supply channels;
- + Improving of the articulation between the DPL and the laboratory for drug control in order to improve the performance of the control service;
- + Increasing coordination between directorates and SNIS (National Health Information Service) programs;
- + Launching of a national initiative to strengthen health logistics HR with the aim of designing and implementing sustainable HR policies which will provide the logistics system with sufficient numbers of motivated, competent personnel able to make decisions. The different sections of such a plan could include:
 - o Pre-service and in-service training of the health workforce in charge of logistics functions;
 - o Structuring of the health logistician position in accordance with the work of WHO/AFRO: job description, assessment system, annual action plans, objectives, and evaluation of results.

The HR reinforcement policy could be based on the deployment of multi-skilled health logisticians, with priority to the intermediary and peripheral levels.

Most of these recommendations could be applied to many countries of the sub-region. In Senegal, they would find particularly fertile ground for the improvement of health performance through logistics reinforcement because of the country’s specific assets: more particularly, increasing awareness observed at the central level, in performing directorates whose coordination could be improved, and in leading schools which are already sub-regional in scope (i.e. Diourbel, IAM, etc.).

INTRODUCTION

1. BACKGROUND

This survey is part of a series of the eight country surveys conducted in the context of the *People that Deliver* Initiative (peoplethatdeliver.org). This global initiative, which brings together the world's largest organizations, aims to improve health services performance through the professionalization of logistics managers.

As recognized by the WHO in 2006, health workforce performance is one of the six constituent components essential to strengthen health systems, and thereby to reinforce the supply chains which health workers need for their mission. Reinforcing supply chains implies hiring the *right number* of the *right people* with the *right skills*, at the *right place* and at the *right time*, to implement procedures regulating supply chain operations. In order to operate with the greatest efficiency, public health supply chains need trained and skilled staff, experienced in the standard operational procedures required for each logistics function, but also able to make decisions or take part in the decision-making process or in the elaboration of policies having an impact on health supplies and supply chains. The lack of a trained workforce, with appropriate skills, is often the cause of dysfunction or poor performance of the supply chain management (SCM) system, as in the case of misinformed information systems and stock-outs. Besides, many health institutions do not recognize the cause-effect relationship between health system performance and public health supply chain performance, which in turn depends on the level of technical and managerial skills of the supply chain workforce.

2. CREDITS

The survey, financed by the OPTIMIZE project, was conducted by the Bioforce Development Institute on the basis of the assessment guide designed for the *People that Deliver* Initiative: USAID DELIVER PROJECT and the Reproductive Health Supplies Coalition (RHSC), 2011, *Human Resources Capacity for Public Health Supply Chain Management Assessment Guide*, Arlington, Va.; on behalf of the United States Agency for International Development, Washington DC.

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The cover page photograph and all subsequent photographs were taken by Jean-Philippe Lézeau in Senegal during the assessment.

RESULTS

1. PART I. COUNTRY AND PROGRAMS' GLOBAL PROFILE

a. Country Profile

The Republic of Senegal is a West African country in sub-Saharan Africa. Senegal's area is 196,722 km².

Senegal's population was estimated at nearly 12 million inhabitants in 2008. It could reach 13,709,845 by the end of 2015, with a 2.7% annual population growth rate.

Senegal's urbanization rate was 41.5% in 2005. Urban center development is absorbing a major part of this demographic growth. Senegal's population is characterized by its extreme youth, in addition to its rapid growth, disparate geographic distribution, and the trend towards rural exodus in favor of urban centers: in 2005, the under-20 age group represented 54% while the 65 years and over group represented only 4% of the population. There is great ethnic diversity: Wolof (43.3%), Peul (23.8%), Serer (14.7%), Diola (11.1%), Malinke (3%), Soninke (2.1%), Manjack (2%).

Senegal, which is present in all the major international community institutions, is also part of the African Union and the Community of Sahel-Saharan States.

Since the year 2000, Mister Abdoulaye Wade is the country's President².

b. Economic Context

Senegal, with a GDP of 1.066 USD per inhabitant has, for many years, experienced one of the highest growth rates among the UEMOA (West African Economic and Monetary Union) countries. However, nearly 50% of the population live below the poverty line.

Structural reforms have brought significant changes to Senegal's economy, particularly the privatization of many state-owned companies in the agricultural sector and in infrastructure.

Apart from the agricultural sector, growth slowed rapidly in 2008. In 2009, the global economic crisis began to affect Senegal's economy with a drop in migrant workers' remittances (8% of GDP in 2008), and a reduction in exports and FDI.

Senegal's economy is the third largest in West Africa after Nigeria and Ivory Coast. As a result of its geographic location and political stability, Senegal is one of Africa's most industrialized countries with the presence of multinationals primarily of French origin and, to a lesser extent, American.

c. Regions

Senegal comprises:

- + 14 regions
- + 45 departments
- + 121 borough
- + 113 municipalities
- + 46 borough municipalities
- + 370 rural communities

² Between the writing of the report and its translation, Macky Sall has been elected President of Senegal (March 2012).

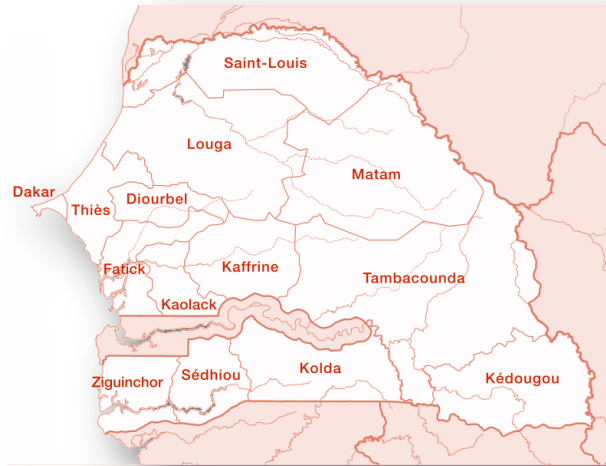


Diagram 1 – Map of the Regions of Senegal (source: Wikipedia)

d. Financial Challenges

Senegal's government has now, in its global response, decided to progressively increase the national health budget. Since 2003, this budget has surpassed the WHO standard (which stipulates that 9% of overall national budget should be allocated to health care) by one half point (0.5%). Furthermore, the country, whose life expectancy has not yet exceeded 54 years for men and 57 years for women, has also decided to prioritize health promotion in the strategic orientations of the second phase of the National Health Development Plan (PNDS).

The government’s total operating budget for 2011 is 1.800 billion CFA francs. The MoH budget is 106.3 billion.

Labor costs for public service personnel represent 13% of budget to which about 1 billion CFA francs must be added for contractual staff (around 204 individuals).

In 2009, the Ministry of Health and Prevention received a budget of 97,022,102,580 CFA francs for the districts.

This budget was distributed as follow:

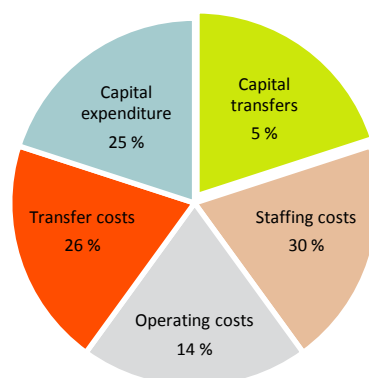


Diagram 2 – Breakdown of Districts’ Budget in 2009
(source: Statistical Yearbook 2009 – Ministry of Health, Senegal)

Each year, the state allocates a budget for the purchase of medicines for public health facilities. These budgets are essentially executed by the National Supply Pharmacy (PNA). Since the transfer of certain responsibilities however, health facility budgets are being administered by local authorities and there are some difficulties with mobilization.

The government budget and support from partners allow a number of drugs, like ARVs and TB drugs, to be provided for free and also for others, such as human insulin and the malaria drugs, to be subsidized.

List of main partners: Global Fund, World Bank, USAID, UNITAID, UNFPA.

e. Healthcare System

Administrative Organization

The health care system is organized in a three-tier pyramid:

- + Central;
- + Intermediary: Medical Regions;
- + Periphery: Health Districts.

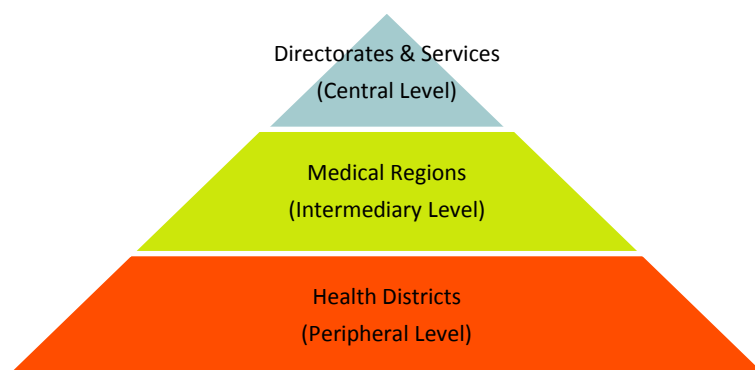


Diagram 3 – Administrative Health Pyramid

The Central Level

The central level includes, apart from the Minister's office and the Secretariat-General, 8 directorates and affiliated services.

Directorates:

- + Directorate of Health
- + Directorate for Pharmacy and Laboratories
- + Directorate for Health Establishments
- + Directorate for Medical Prevention
- + Directorate for Human Resources
- + Directorate for Equipment and Maintenance
- + Directorate for Individual and Collective Prevention
- + Directorate for General Administration and Equipment

Affiliated Services:

- + Health Inspection

- + IT Cell
- + National Drug Monitoring Laboratory
- + National Health Development Plan Support and Monitoring Cell
- + National Health Information Service
- + National Health Education and Information Service
- + Public Health Establishments
- + National Supply Pharmacy

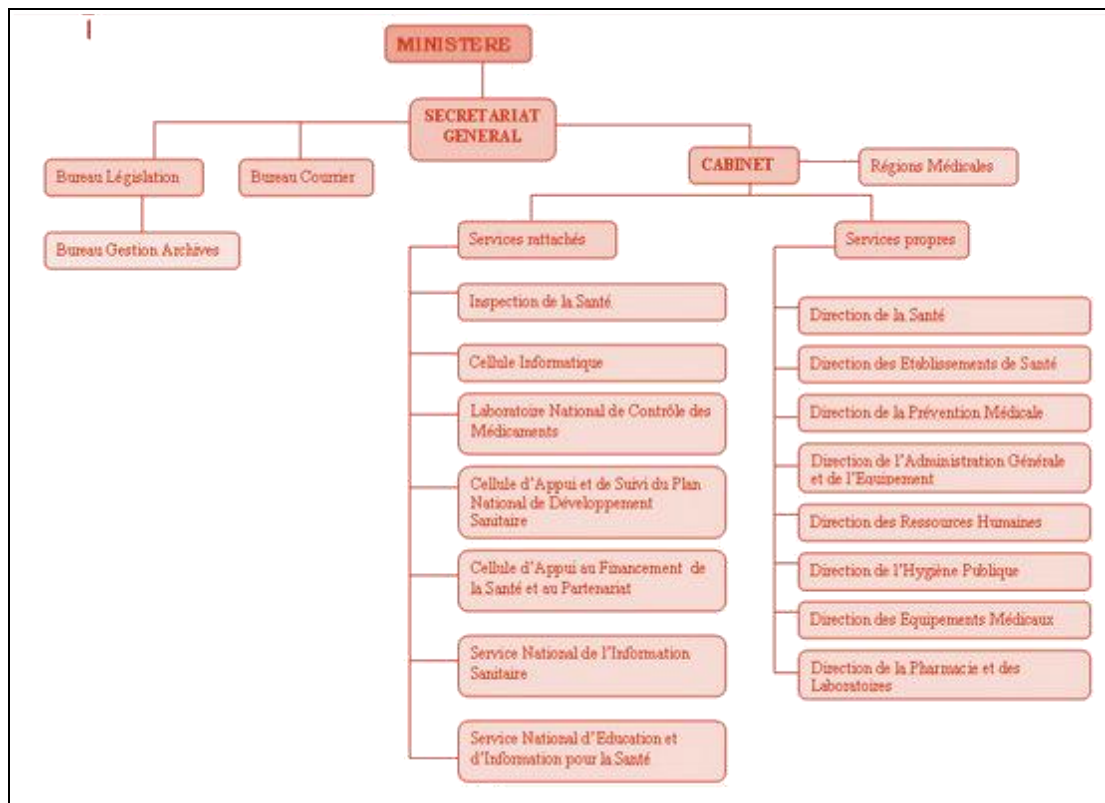


Diagram 4 – Senegal’s Healthcare System (source: Ministry of Health, Senegal)

The intermediary level

Senegal is composed of 14 medical regions.

The medical region, which covers the same area as the administrative region, is responsible for the coordination, supervision, inspection, and monitoring of public and private health facilities in the region.

It oversees the technical collaboration between all the regional health facilities and supports them in their administration, management, and planning activities.

It is governed by a public health doctor who is the leader of the managing team composed of all the heads of service affiliated to the medical region.

In each region, the regional reference is a hospital or level-two Public Health Establishment (EPS).

The MoH initiated performance contracts with regional chief doctors, which heavily prioritizes indicators linked to HIV/AIDS, malaria, and tuberculosis.

The Peripheral Level

The peripheral level is to the health district.



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The health district is an operational zone including at least one health center and a network of health posts. It covers a geographical area that can correspond to an entire department or to part of a department only.

Each district or operational zone is managed by a chief doctor. Health posts are located in districts, rural communities, or villages, and are run by nurses.

Senegal has 69 health districts.

The health district is the most peripheral operational unit of the health care pyramid.

The medical care provided there is curative, preventative, social, and educational.

The district comprises one or several health centers and rural maternity centers.

Organization of the Health Care Delivery System

The health care delivery system is a three-tier pyramid system:

- + The hospital level,
- + The health center level,
- + The health post level.

Coverage ratios for health facilities in terms of population distribution in Senegal are currently:

- + 1 hospital for 495,598 inhabitants;
- + 1 health center for 152,492 inhabitants;
- + 1 health post for 9,953 inhabitants.

WHO standards are:

- + 1 hospital for 150,000 inhabitants;
- + 1 health center for 50,000 inhabitants;
- + 1 health post for 10,000 inhabitants.

Source – Statistical Yearbook 2009 – Ministry of Health, Senegal

The Hospital Level

Senegal has 22 hospitals. Three hospitals are currently under construction and are not yet operational.

At the top of the pyramid are the National University Hospitals (CHNUs). They are the referral hospitals for regional hospitals (CHRs).

CHRs are the referral health centers at the regional level.

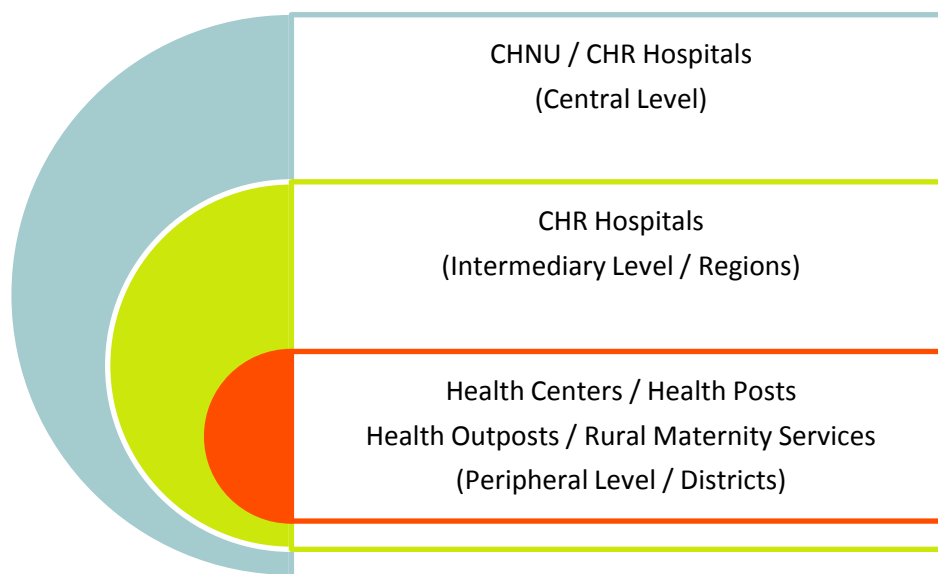


Diagram 5 – Organization of the Health Care Delivery System

Hospitals, which now have EPS status, are autonomous in their management. To ensure this autonomy, structures are governed by a board of directors.

Although budgets are balanced, discrepancies observed between forecasts and actual income calculated based on hospital invoices raises questions. There is no operating profit, and there are no other subsidiary activities either, that could reduce operating expenditure to this extent. Expenses are often minimized and income exaggerated. Revenue objectives are never reached while forecast expenditure is often exceeded. Consequently, as soon as the budget is adopted, the hospitals incur expenses, giving little or no consideration to the hospital's available treasury before committing. Hospitals do not establish a cash flow forecast to manage their incurred expenses. No strategy to reverse budget deficit or debt settlement plan exists except for a few rare exceptions. In general, a hospital which incurs debts in year N does not take this debt into account when preparing its budget for the year N+1.

The Health Center Level

There are 76 health centers, 23 of which are referral health centers.

Health centers are the referral point for health posts.

The Health Post Level

1,195 health posts are recorded in the districts, of which 1,035 are operational (the 1,195 figure includes health posts with and without maternity services and isolated maternity services).

At the community level, health posts supervise health outposts and rural maternity services which are the first port of call for health care. They are mostly located in rural areas and conduct many preventative and promotional health activities.

Human Resources in the Health Care System

According to data from the Directorate for Human Resources (DRH), the health department employs 13,110 people including all socio-professional categories, 52% of which are women.

Some 46% of the total workforce is employed by the government, 22% by the communities, 20% by EPSs, 10% by local authorities, and 2% by other actors.

The medical workforce makes up around 7% of the entire public sector health workforce (Ministry of Health and Medical Prevention, 2007).

Senegal, like most African countries, is facing a problem in the geographical distribution of its health care workforce. The majority are concentrated in certain regions of the country, and particularly in the Dakar Region.

The figures illustrate this clearly: 70% of specialist doctors and 39% of general practitioners work in the Dakar Region alone, while the percentages in the other regions such as Sédhiou, Fatick, Kaffrine, Kedougou, Kolda and Matam are minute, struggling to reach 1%. A similar situation can also be observed in other categories of health care service providers such as midwives and nurses.

Institutional Framework

There are a number of problems with the management of the MoH due to the large number of affiliated services and the non-application of decrees relating to its organization.

- + The mandates of the directorates, divisions, and regional services are not clearly defined.
- + There is jurisdictional conflict between directorates and services.
- + The SNIS provides data which is often incomplete and lacks quality and exhaustiveness (cf. paragraph f.).

Finances

Today, it seems clear that no hospital will be able to survive the extortionate expenses they are facing, in particular, wage costs and labor charges. Massive recruitment is observed of both competent and non-competent personnel across all health care institutions. The total wage bill absorbs almost 90% of hospital revenue.

Example: the Aristide le Dantec Hospital, which brings in nearly a billion CFA francs in annual revenue, has a total wage bill that breaks down as follows:

Sections	2005	2006	2007
Salaries	73,184,274	845,244,859	1,026,138,162
Profit share bonuses	306,279,427	356,100,278	430,662,195
Holidays	37,180,097	45,002,525	58,417,020
Temporary labor	13,691,985	21,340,861	25,505,378
On call and on duty charges	24,160,088	58,159,010	57,531,475
Transport		32,184,000	62,352,000
Responsibility allowances	88,096,750	35,298,500	56,640,000
Meal allowances		17,951,150	25,825,140
Accommodation allowances		6,450,000	35,100,000

TOTAL	1,242,592,621	1,417,731,183	1,778,171,370
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Table 1 – Evolution of Total Wage Bill 2005-2007 (Source: Ministry of Health, Senegal)

VAT is deducted without being paid to the tax authorities.

Social security contributions are not transferred either. Clearly, this situation will lead to social confrontation if measures are not taken.

Aristide Le Dantec Hospital	3,076,874,673
Général de Grand Yoff Hospital	3,104,142,278
Thiaroye Hospital	Nothing to report
Abass NDAO Hospital	1,211,490,170
Fann Hospital	592,401,008
Albert Royer Hospital	760,386,469
Louga Regional Hospital	679,411,880
Amadou Sakhir NDIEGUENE de Thiès Hospital	189,000,000
Kaolack Hospital	169,528,745
Tambacounda Regional Hospital	378,336,444
Ouorossogui Hospital	189,924,496
Kolda Hospital	187,712,750
Saint Louis Hospital	1,060,257,904
Diourbel Hospital	87,955,549
Ziguinchor Hospital	165,475,582
Mathlaboul Fawzaini National Hospital	309,813,747
National Blood Transfusion Center (Centre National de Transfusion Sanguine)	44,221,162
National Centre for Prosthetics and Orthopedics (Centre National d'Appareillage et d'Orthopédie)	77,005,949
SAMU (Emergency medical service)	9,969,913
NDIOUM	172,110,035
Saint Jean De Dieu Hospital	387,436,516
Total Debts	12,801,760,779

Table 2 – Summary of Hospital Debts (source: Ministry of Health, Senegal)

Section	Amounts
PNA /PRA + suppliers	6,843,675,111
Social debts	2,056,162,742
Fiscal debts	1,795,913,847
Investment debts	1,023,729,061

Table 3 – Breakdown of the National Supply Pharmacy's Debt (source: Ministry of Health, Senegal)

Health care system facilities are more or less swallowed up by debts which prevent them from operating effectively. However, since the reform and the introduction of the ESP status, the management of hospitals and the PNA has improved. An institution with ESP status has a board of directors and a certain level of autonomy. It therefore has greater freedom to manage the facility, without being subjected to the heavy red tape of public service administration. Several facilities that we visited are being managed by a good board of directors. Several target facilities were headed by good administrators. In other facilities, management was simply increasing the level of debt they had already inherited.

The table below represents the breakdown of the health workforce:

Occupational groups	Dakar	Diourbel	Kaffrine	Fatick	Kaolack	Kédougou	Louga	Saint Louis	Sédhiou	Tamba	Thiès	Ziguinchor	Matam	Kolda	Total
Doctor	77	13	6	7	10	6	12	11	4	10	27	12	6	4	205
Dentist	33	4	2	0	1	2	3	0	1	3	5	4	1		59
Pharmacist	14	0	0	1		0	0	0	0	0	2	1			18
Advanced technician	102	20	12	15	10	36	13	8	8	11	17	5	5	7	269
Pharmacy technician	ND*	ND*	0	0	0	1	0	0	0	0	2	0	0	0	3
State nurse (mobile health worker)	207	93	41	101	117	29	89	125	49	96	225	96	53	41	1,361
Social worker	ND*	ND*	3	4	4	1	6	4	2	8	10	2	2	3	49
State midwives	252	32	10	24	29	9	33	24	14	29	109	20	10	11	606
Nurse with certificate	ND*	ND*	0	7					0	6		28	9	10	60
Nurse assistant	ND*	ND*	1	1		17	2	5	0	0	13	1	1		41
Lower hygiene officer	17	21	2	1		1	0	1	0	0	4	1			48
Physiotherapist	ND*	ND*								1					1
Others	ND*	ND*	35	61	18	20	62	54	32	73	131	47	23	17	573

*Undefined

Table 4 – Staff in Public Health Care Facilities (source: Statistical Yearbook 2009 – SNIS – Ministry of Health, Senegal)

There are a number of different explanations for this concentration of health care personnel in the Dakar region. Firstly, this region is home to a relatively large number of hospitals, and consequently, health care personnel.

Furthermore, greater numbers of specialist doctors are often found in major cities, particularly those with a university hospital. Dakar also offers more opportunities for the private sector, and therefore centralizes the majority of private sector health care personnel too. More than 80% of private sector doctors are concentrated in the region of Dakar (MoH, 2008).

Lastly, the concentration of doctors in certain regions is also down to the fact that doctors' positions are more often found in hospitals and health centers, and less often in health posts.

Other Infrastructures

Other ministries also play a major role in the implementation of health policy. The army for example runs facilities throughout the country including the garrison's military centers, as does the Ministry of National Education with its medical education centers.

f. The National Health Information Service (SNIS)

- + The SNIS does not take into consideration the medical information system used by hospitals and is not open to other sectors implementing health activities, whether it be the private sector, other ministries, or international organizations.
- + Data collected is often incomplete and lacks quality and exhaustiveness.
- + Programs do not respect the frequency of the reporting required at the different levels, resulting in a lack of coordination.

The SNIS is a system composed of several sub-systems established by different programs (AIDS, TB, malaria) and institutions.

The assessment led to the following observations (in substance):

- Senegal uses several methods to collect data, for census and household surveys depending on available funds.
- Services' statistics are made on a regular basis and are compiled appropriately. Disease control is more frequent. Methods and tools allow the collection of epidemiological data, health indicators, and health expenditures.
- However, the system's architecture leads to a number of dysfunctions; for example, the Statistics Division in charge of the SNIS is hosted by the Directorate for Studies, Research and Training while all the other sub-systems are under the responsibility of other directorates of the same level. There is no information sharing and coordination between these different directorates and the SNIS. Health programs have their own information systems, which creates duplication of human and material resources.

The present report highlights structural and economic problems which explain the fact that hospitals' statistics are not taken into account. This results in:

- Very low consideration of data from the private and para-public sectors;
- Weakness of the SNIS and the information sub-systems managed by the different programs;
- Lack of personnel in charge of the SNIS's management, particularly at the intermediary and peripheral levels;
- Finally, poor command of the information tool linked to resource deployment.

The assessment of the SNIS led to a number of recommendations to improve the situation:

- Define a model for the incorporation of data from the private and para-public sectors;
- Assimilate the different programs' data collection tools (sub-systems) at the regional and peripheral levels;
- Develop human resource capacity at the regional and peripheral levels to improve management of health information;
- Simplify data collection tools as far as possible at the regional and peripheral level.

In addition to this, withholding of information has been observed for years by the health workers' union (much represented in hospitals). This is the main reason why data collected from hospitals and the SNIS is not taken into account.

In conclusion, the exchange of data is informal and generally depends on the quality of interpersonal relationships between actors.

2. PART II. THE SURVEY

a. Objectives

General Objective of the Survey

The general objective of the survey is to generate a complete picture of the supply chain in its entirety, including operating procedures, health teams, human resources management and information systems (HRM and HRIS), and education and certification systems for the logistics chain.

Specific Objectives

- + To measure the country's human resource capacity in SCM, and the efforts undertaken to professionalize public health supply chains.
- + To identify professionalization efforts spearheaded by the Ministry of Health and its partners, as well as areas for improvement of supply chain capacity building.
- + To produce a narrative summary report of the survey's findings both nationally and at the intermediary level (regions, districts and peripheries).

b. Methodology

Locations and Work Plan

The Assessment

The field survey took place from April 30th to May 19th, 2011.

It was conducted in three phases:

- + Phase 1 – Analysis and strategic orientation in the capital city;
- + Phase 2 – Visits and meetings in the capital and the regions;
- + Phase 3 – Report writing.

Work Plan

Project Title	Tasks
SENEGAL Country Survey	Review assessment guide
	Technical notes



*For a world of solidarity where humans have the capacity for action,
The Bioforce Institute supports actors involved with underprivileged populations.*

	Program/Schedule
	Approval
	National consultant contract
	Number of days / national consultant
	Number of days / international consultant
	Approval
	Meeting organization
HEALTH MAPPING	Meeting organization – Institutional organizations
	Meeting organization – Ministry of Health
	Meetings/Visits – Health facilities (hospital-district...)
EDUCATION MAPPING	Meeting organization - Ministry of Education
	Meetings/Visits – Universities – Professional Training Schools
	Pre-report preparation / field data
	Meetings/Visits with actors from the logistics management chain
REGIONAL/DISTRICT MAPPING	Field visits: in the capital and regions + report writing
	Field visits: in the capital and regions
	Meetings – National coordination in the capital and in regions/districts...
	Meetings – Health facilities (hospital-district...)
	Meetings/Visits with actors from the logistics management chain
	Preparation of draft report + field data
	Final Report
	Approval

The Survey's Targets

Number of Visits	Establishment and Location	Date of Visit
1	National Supply Pharmacy (PNA) / DAKAR	05/05/2011
2	Directorate for Pharmacy and Laboratories / DAKAR	05/05/2011
3	Ministry of Health / DAKAR	05/05/2011
4	National Training Center for Hospital Maintenance Technicians (CNFTMH) / DIOURBEL	06/05/2011
5	Medical Region / SAINT LOUIS	09/05/2011
6	LABOREX / SAINT LOUIS	09/05/2011
7	PRA / SAINT LOUIS	09/05/2011
8	Hospital / SAINT LOUIS	09/05/2011
9	Hospital / SAINT LOUIS	09/05/2011
10	Health District / SAINT LOUIS	09/05/2011
11	PODOR Health District / SAINT LOUIS	10/05/2011
12	NDIOUM Hospital / SAINT LOUIS	10/05/2011
13	Hospital /TAMBACOUNDA	11/05/2011
14	PRA / TAMBACOUNDA	11/05/2011
15	Hospital / TAMBACOUNDA	11/05/2011
16	Hospital / KAOLACK	11/05/2011
17	DAGE / Ministry of Health / DAKAR	12/05/2011
18	Directorate for HR / DAKAR	12/05/2011
19	Directorate for EPSs	12/05/2011
20	Hospital / Mbour / THIES	12/05/2011
21	PNA / DAKAR	13/05/2011
22	UNICEF	13/05/2011
23	OPTIMIZE	19/05/2011
24	National School of Health and Social Development (ENDSS) / DAKAR	
25	Higher Institute for Transport (IST) / DAKAR	
26	Higher Business School (Sup de CO) / DAKAR	

Method

This is a cross-sectional survey based on the assessment tool developed in 2011 for the *People that Deliver* Initiative.

Key Informants

Names and First Names	Establishment and Location	Level in Health Pyramid	Position
Dr Leyti GNINGUE Tel: 77 536 02 99	National Supply Pharmacy (PNA)	Central	Supply Manager
Dr Madické DIAGNE Tel: 77680 77 34	Directorate for Pharmacy and Laboratories / DAKAR	Central	Head of Administrative Drug Control Division
Dr Aliou DIALLO Tel: 77 64085 24	Ministry of Health / DAKAR	Central	Logistics Manager – Directorate for Prevention
Saliou DIONE Tel: 33 971 13 42	National Training Center for Hospital Maintenance Technicians (CNFTMH) / DIOURBEL	National & Intermediary	Director
Dr Fulgence NDIAYE Tel: 77 632 58 87	Medical Region / SAINT LOUIS	Intermediary Coordination	Deputy Chief Doctor
Dr Thierno NDIAYE	LABOREX / SAINT LOUIS	Intermediary	Branch Manager
Mr Mbagnick SARR Tel: 77 516 99 53	PRA / SAINT LOUIS	Intermediary	Accountant
Mr Modou DIARRA Tel: 77 209 72 14	Hospital / SAINT LOUIS	Intermediary	Head of Maintenance Department
Mr Babacar Fall DIOP	Hospital / SAINT LOUIS	Intermediary	Head of Quality and Logistics Department
Dr Seynabou Ndiaye FALL Tel: 77 545 80 98	Health District / SAINT LOUIS	Peripheral Operational	Chief Doctor
Dr Maodo Malick DIOP Tel: 77 655 94 08	PODOR Health District / SAINT LOUIS	Peripheral Operational	Chief Doctor
Mr Amadou SALL Tel: 77 579 60 57	NDIOUM Hospital / SAINT LOUIS	Intermediary	Head of Administration and Finance Department
Dr Ndième TOURE Tel: 77 645 61 15	Hospital / TAMBACOUNDA	Intermediary	Pharmacist
Mr Cheikh GUEYE	PRA / TAMBACOUNDA	Intermediary	Inventory Accountant
Mr Babacar MANE Tel: 77 548 05 88	Hospital / TAMBACOUNDA	Intermediary	Director
Mr Issa SAVARE Tel: 77 502 63 66	Hospital / KAOLACK	Intermediary	Director
Youssef SAGNA Tel: 77 542 31 47	DAGE / MoH / DAKAR	Central	Budget Controller
Ibrahima Souka Ndella DIOUF Tel: 77 511 37 24	Directorate for HR / DAKAR	Central	Personnel Manager
Mr Ibra WANE Tel: 77 643 40 60	Directorate for EPSs	Central	Technical Advisor
Dr Mor DIAW Tel: 77 450 82 51	Hospital / Mbour / THIES	Intermediary	Director
Mactar DABO Tél: 77 636 03 60	PNA	Central	Head of the Directorate for HR
	UNICEF	Central	Logistician
Mr Emmanuel COURT	OPTIMIZE	Central	Program Coordinator
Mr Mamadou DIALLO	OPTIMIZE	Central	Logistics Manager

3. PART III. THE SUPPLY CHAIN'S ORGANIZATION AND PERSONNEL DISTRIBUTION

a. Supply Chain Organization

There are several drugs supply channels depending on the program, donors, and whether it is in the private sector. Channels are complex. (See Diagram 6 on the next page).

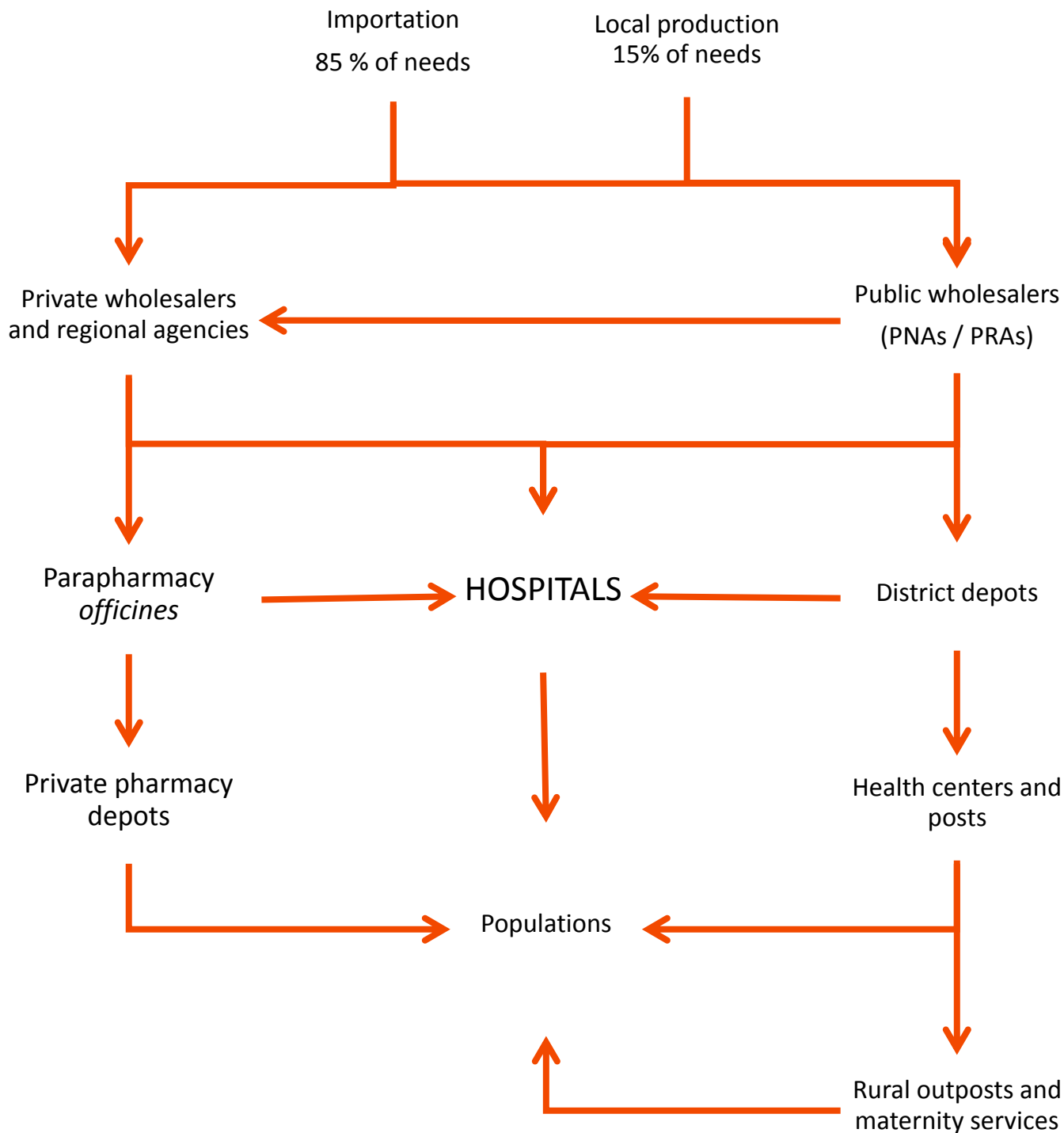


Diagram 6 – The Drug Distribution Channel in Senegal (Private - Government)

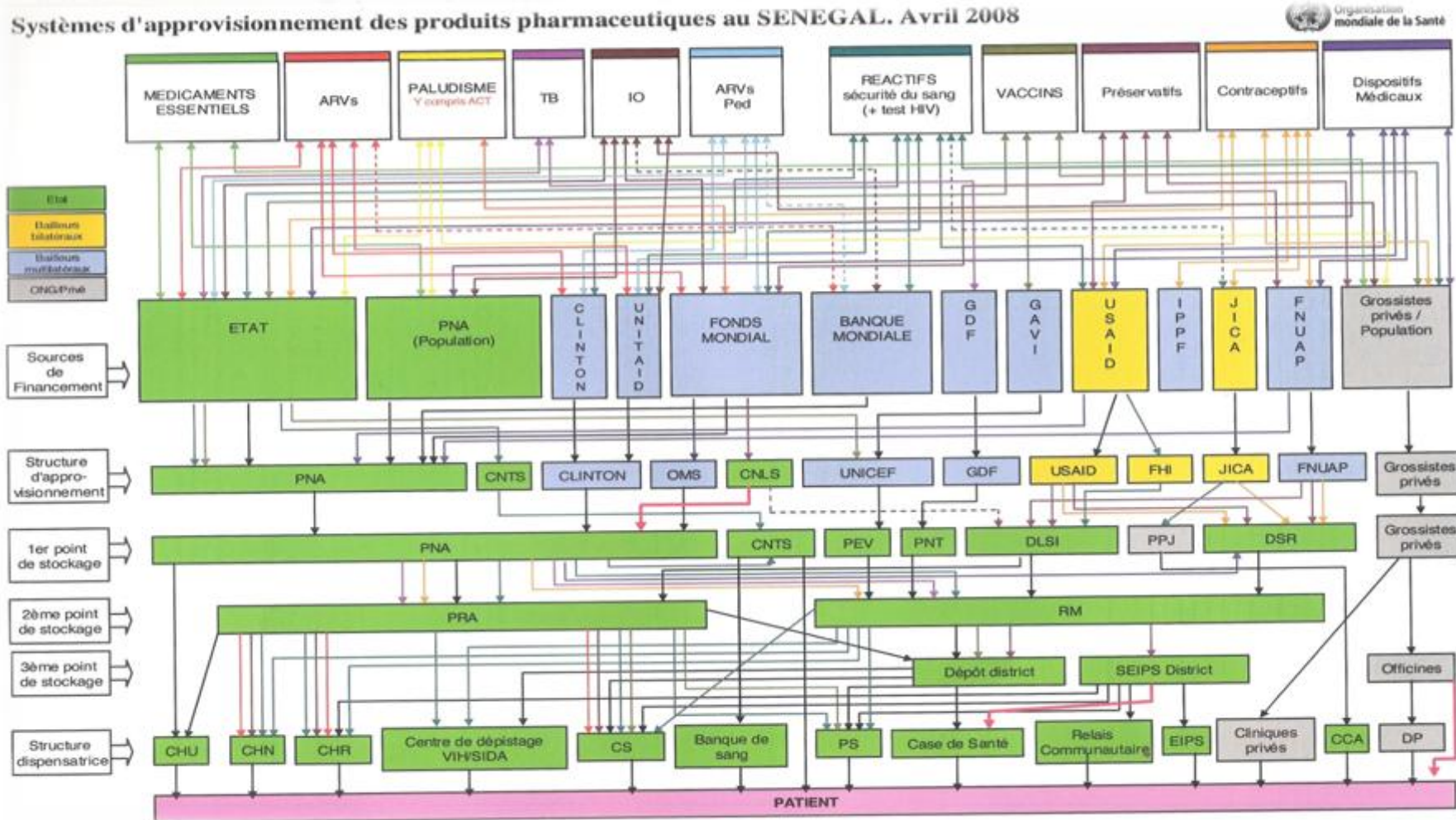


Diagram 7 – Pharmaceutical Supply System in Senegal (April 2008 – WHO)

b. Distribution of Drugs

Populations have access to drugs via public health care facility depots that apply the cost recovery system.

In the private sector, wholesalers and regional offices supply private pharmacies (*officines*) which supply private depots.

As part of efforts to improve the population's access to high quality drugs, the National Supply Pharmacy supplies the private sector with essential generic drugs (EGDs). These drugs are therefore sold in both sectors at the same price, the private sector having accepted the lower margins as a demonstration of its desire to support the government's efforts to improve access to these drugs.

In the public system, drugs are distributed via the following channel:

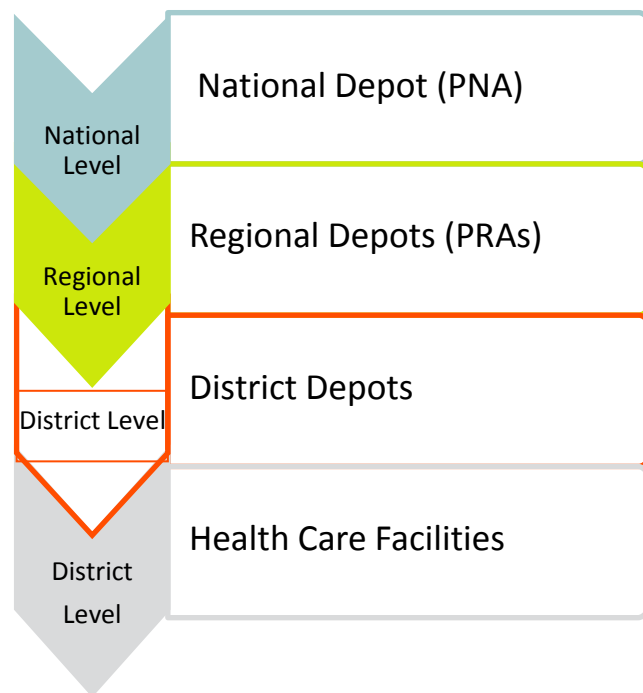


Diagram 8 – Drug Supply Circuit

In value, the private sector controls more than 85% of the drug market. Private sector distribution is assured by 5 wholesalers which supply the 921 private pharmacies (*officines*). Around 4,000 proprietary medicinal products are listed.

Most of the budget reserved for medicines and vaccines breaks down as follows:

- + Vaccines: 900 million CFA francs. This amount is paid in installments to UNICEF which purchases the vaccines and transports them to Senegal.
- + Malaria: 265,000,000 CFA francs.
- + Tuberculosis: 260,000,000 CFA francs.
- + Diabetes (Insulin): 300,000,000 CFA francs.
- + ARV: 1.3 billion CFA francs.

Drug distribution breaks down as follows (in million CFA francs):

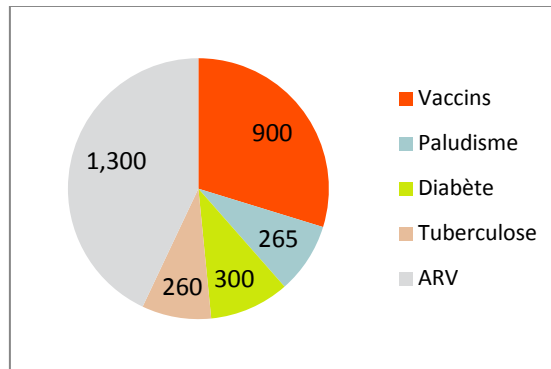


Diagram 9 – Breakdown of the Budget Reserved for Drugs and Vaccines

Apart from vaccines, all drugs pass via the National Supply Pharmacy (PNA) which places the orders.

c. The Private Sector

The private sector, largely concentrated in Dakar, also plays an important role. A distinction must be made between the commercial private sector and the non-profit sector (faith-based organizations and company medicine). It includes:

- + 1 private religious hospital
- + 32 clinics
- + 70 maternity centers
- + 131 medical practices
- + 76 private dispensaries
- + 843 private pharmacies (*officines*)
- + 12 private medical laboratories
- + 10 private imagery services
- + NGOs and associations providing health care

The private sector remains by far the best organized in terms of its drug supply system (5 wholesale distributors). We were able to visit one of LABOREX warehouses, LABOREX being the private enterprise with the biggest market share in the private sector. It alone covers 40 to 50% of the total drug market shared among these private wholesalers. Wholesalers import, transport, and deliver drugs to all the *officines* across all the regions. There are 834 *officines* registered. LABOREX alone delivers to 800 *officines*.

These companies have sophisticated tools allowing them to monitor stock levels in real time across all their warehouses at the national and regional levels. Orders are tracked in real time.



Photo 1 – LABOREX Truck Delivery to its Saint-Louis Warehouse



Photo 2 – Order Preparation Room + LABOREX Saint-Louis Warehouse

The system is professionally managed with equipment that is in good condition and with efficient transport means and ordering systems.

The private sector may not import drugs without approval from the MoH and the DPL. All generic drugs pass via the National Supply Pharmacy. The price of generic products is subsidized by the government. All other so called "specific" products are imported and sold by the private sector (4,000 references to this day).

d. The Parallel Market

The most remote regions which have difficulties being supplied by Regional Supply Pharmacies (PRAs) are affected by the parallel trade that exists with neighboring countries. It is difficult to quantify an exact figure, but information about this market was given during several of our interviews. Some *officines* that are close to a border, such as that with Mauritania, Gambia, Guinea, and Mali, sell generic drugs to these countries. These traders cross the Senegalese border to buy certain products that are subsidized by the government (generic drugs), to then sell them in their own countries. This illegal trade is a dead loss of income for the Senegalese government.

As wholesale distributors control 85% of the market, and with more than 843 *officines* throughout the country, it is difficult to know whether, in regions that are further from the capital, counterfeit drugs are imported by these same parallel channels.

The DPL is responsible for monitoring and regulating the drug market. It suffers from a serious lack of human resources and material and financial means to be able to effectively conduct its inspections. Insufficient numbers of sworn pharmacy inspectors (there are currently only two at the DPL) make it impossible to conduct regular inspections of all facilities in the country.

4. PART IV. CHAMPION SYSTEMS

a. The Directorate for Pharmacy and Laboratories (DPL)

The role of the DPL is to determine, monitor, and implement policy and programs related to pharmaceuticals and medical analyses.

It is responsible for ensuring that pharmaceutical-related legal and regulatory texts are applied for:

- + Drugs;
- + Laboratory reagents for medical analyses;
- + Poisoning substances;
- + Alcohol and medical materials.

It is also responsible for:

- + Regulating the practices of the pharmaceutical professions;
- + Promoting and monitoring public and private medical analysis laboratories;
- + Regulating and promoting the traditional pharmacopoeia.

Pharmacovigilance inspections are one of the DPL's important functions, as is issuing authorizations for new pharmaceutical products entering the market.

b. The National Supply Pharmacy (PNA)

General Points

The PNA is autonomous in its management as it is a Public Health Establishment (EPS). To assure this autonomy, it is governed by a board of directors.

The PNA coordinates all activities related to drugs and reagents in health care facilities. The PNA is the wholesale distributor for the public sector. It is composed of the headquarters in Dakar and 11 Regional Supply Pharmacies (PRAs). It supplies and supervises PRAs which fulfill the same role for districts.

The PNA procures most of the drugs for the different programs and for the public sector by conducting an international tender every two years. The pharmaceuticals purchased satisfy the national list of essential drugs and medical materials. These tenders allow the government to procure high quality products at lower prices, within a transparent system that adheres to strict regulation. ARV drugs, drugs used for treating Opportunistic Infections (OIs), and screening and monitoring reagents, are free and integrated into the essential drugs circuit.

Nearly 99% of purchases are of essential drugs. The PNA supplies the private sector with essential generic drugs (EGDs) and the private sector sells these drugs at the same price as in the public sector. No medicine can be imported or commercialized in Senegal without having received a marketing authorization issued by the Ministry of Health.

This distribution channel through both sectors means that dispensing points for drugs are close to the population. The public service (government) only supplies the equivalent of 15% of the drug market. The remaining 85% are shared among private sector actors.

The PNA's asset resides in its EPS status which gives it a certain level of autonomy.

A Structural and Economic Crisis

However, the PNA is plunged into a both structural and economic crisis which it alone symbolizes the situation that prevails in health care system.

Structural Crisis

Despite its excellent territorial network (the PNA is present in 11 of the country's 14 regions), the PNA is only able to satisfy 15% of national demand, leaving 85% of this market to private distributors or, put another way, a market worth nearly 75 billion CFA francs.

The PNA is equipped with a sophisticated information system which is able to monitor stock levels in every PNA depot in real time. However in practice, is not used to its full potential as staff have not received the necessary training and there is little monitoring of results.

Apart from the pharmacists working in administrative positions, none of the pharmacy workforce profiles correspond to the requirements of the PNA's mandate. The logistics role, which should be at the heart of the system, is not clearly identified. It is spread between the role of the inventory accountant and the store keeper who, to add to the problem, have no specific training. During our visits to the PRAs, the problems arising from the lack of training of warehouse managers were blatantly obvious. Staff are not trained, and basic cleanliness and storage regulations are not respected. It is also worth mentioning that staff that have held their positions for several years are discouraged. The problems are well known but no solutions are introduced, which lowers staff motivation. The staff evaluation system is, for the moment, based on the same system used to evaluate civil servants. It is a points system only and does not assess or capitalize on results and objectives.



Photo 3 – Shelving at the TAMBACOUNDA Regional Supply Pharmacy



Photo 4 – TAMBACOUNDA Regional Supply Pharmacy Storage Rules not Respected



Photo 5 – No Maintenance and Cleaning in the Warehouse (TAMBACOUNDA PRA)

The EPS status, with all its constraints, remains an obstacle for the PNA. The management required for an institution that executes a budget of 25 billion per year is far from current practice in this structure which still employs public service management methods, with all their defects (lack of staff assessment, unmotivated personnel, etc.).



Photo 6 – St Louis PRA – Empty Warehouse



Photo 7 – St Louis PRA – Empty Shelves

Economic Crisis

Constraints imposed by the new articles of the Public Market procurement regulation are hampering the PNA's health commodity supply system. The PNA has been unable to launch a tender process because its application is continually rejected by the Public Procurement Regulatory Authority. This situation has resulted in a complete system dysfunction across the entire national territory where public health care facilities like hospitals and health posts are only receiving around 20% of their orders from PRAs. The PNA's last drug tender bid dates back to 2007. This year, a tender bid will be launched.

Orders based on erroneous figures: pharmaceutical product orders are calculated based on consumption figures supplied by the PRAs in the different regions. In spite of a sophisticated information system (real-time information system), the numbers submitted are far from the reality. Some PRAs do not take into account orders not delivered to hospitals, health centers and *officines*. Orders that have not yet been closed are not taken into account in the centralization process. The PNA therefore has inaccurate figures on needs, automatically resulting in products running out very rapidly because requirements were incorrectly estimated from the outset.

HR Plan

The central level is conscious of the different dysfunctions at all levels. A training plan for staff at every level has recently been put in place. A budget of nearly 116 million CFA francs for 2011 has just been approved. A thorough system with job descriptions, assessment, action plans, training plans, and objectives is being prepared for all the National and Regional Supply Pharmacies. Both the HR director and the Department, aware of the existing problems, are investing in the human resources they have in an attempt to remedy the well-known operational problems.

c. Hospitals

Some observations regarding the hospitals of Saint-Louis, Ndioum, Tambacounda and Kaolack:

Limited Resources Allocated to Cleaning and Maintenance

These rarely exceed 1% of the overall budget of each hospital visited while the recognized norm is at least 10% of the total value of the equipment present in the facility. This is one explanation for the

extremely high number of equipment breakdowns observed in these hospitals, particularly for highly technical medical equipment. Numbers and profiles of personnel assigned to the maintenance service vary from one hospital to another. Very few facilities allow the maintenance manager to fulfill his/her role to full capacity. Technicians trained at Diourbel have the skills to be involved in technical decisions over equipment to be purchased for the facility, the installation of this equipment when it is delivered, the training of personnel that will use the equipment and of course, its maintenance. Maintenance officers are also able to deal with manufacturers directly and to decide whether maintenance contracts should be outsourced or not. We only visited two facilities that fully exploited the skills of its maintenance officers. Most often, the maintenance manager is not involved at all at this level. He is called only when something has broken down.

The HR policy challenge

A large portion of hospital budgets is assigned to staffing costs (at Saint-Louis, it is around 80% of the budget). However, in most cases, health workers have not received the appropriate training and profiles do not correspond to real needs. No performance-based assessment is in place. The system is based on the public service annual evaluation. A score below 18 or 20 is considered poor. The entire workforce is therefore given between 18 and 19.50 every year. 15 is considered a bad score. When a supervisor gives a 15, (s)he must justify why in writing. This score has no other purpose but to determine career progression in the public health service and the bonus the person will receive.

Poor Administrative and Financial management of Resources

During a visit to a hospital that officially had 5 vehicles, 4 vehicles were not in working order. Only one was drivable, and we counted 9 drivers. The other vehicles had been off the road for more than a year, but the hospital still employs 9 drivers. Of these 9 drivers, 3 are public service employees and 6 are contractual employees. The hospital has a deficit of more than 600 million CFA francs.

Drug Management often a Source of Tension between Pharmacists and Doctors

The lack of any real upstream co-operation between hospital pharmacists and doctors often brings about situations that are detrimental to the facility. Doctors frequently change the drugs they prescribe to patients when orders have been calculated based on historical consumption data. Consequently, pharmacies' stocks usually expiry in the meantime, which constitutes a loss of income for the hospital. This situation is partly caused by a lack of recognition of the role of the pharmacist in hospital facilities. More often than not, the pharmacist's personality is the determinant factor. Another observation is the absence of standardized treatment protocols across all hospital facilities. Standardized protocols would restrict the prescription of different drugs by the doctor to treat the same pathology. This would make drug supply management easier for pharmacists in the different hospital facilities.



Example here of the stock of Betadine ordered by the Ndioum hospital from the Saint-Louis PRA. Only 4 bottles were delivered by the PRA out of a total order of 30 bottles. The rest will be purchased on the local market because the hospital is not able to operate without Betadine.

Photo 8 – Bottle of Betadine in Warehouse at the Ndioum Hospital

Hospitals on the Brink of Bankruptcy due to their Debts but also due to Unbalanced Accounts

The drug management system leaves hospitals caught between the hammer and the anvil. Hospitals experience regular drug stock-outs as they are unavailable at the PRA level. As they are unable to purchase them from the private sector, doctors are obliged to write a prescription for a patient who will then go to an *officine* to purchase their medicines. Generic drugs are therefore not available for patients. This loss of earnings has an impact on the hospital's revenue. The private sector, once again, comes out as the clear winner.

d. Health Districts

The two districts visited, Saint-Louis and Podor, present two paradoxical situations which emphasize the extent to which leadership quality is essential and determinant for an establishment to operate effectively, over and above the structural and cyclical economic problems it may face.

Problem of Drug Supply in PRAs

The problem of drug supply in Regional Supply Pharmacies: PRAs are forced to turn to the black market to keep their depots running. As community health workers are essentially paid by pharmacy revenue, health districts are forced to procure the drugs they require on the black market, exposing themselves to all the risks that that implies in terms of drug quality. This problem is the most marked in the border regions that are far from a PRA. Once again, the private sector is the clear winner here. Patients tend to look outside the public health system to purchase their medicines. The result is reduced revenue for the health facility.

Lack of Trained Staff to Manage Pharmacies

There are very few pharmacists and even fewer pharmacy assistants at this level, but many community health workers (CHWs) with no professional qualifications at all managing pharmacy depots.

There is strong community involvement in the management of health posts and health centers, which can lead to tension with medical staff.

The almost entire non-existence of maintenance personnel: across the two districts, which include 70 health posts and two health centers, there are no more than two or three trained technicians. All other maintenance activities are left to trainees or private maintenance service providers. Consequently, most of the refrigerators and cool boxes that are supposed to guarantee the vaccine cold chain are not in working order and are left stacked up at health posts.

e. The Health Post Level

Around 85% of health posts that provide maternity services are not equipped with all of the following at the same time: an examination table, a delivery table, a sphygmomanometer, a baby weighing scale, and a motorbike (Ministry of Health and Medical Prevention, 2005).

f. OPTIMIZE Program

OPITMIZE is a five-year collaboration between the World Health Organization (WHO) and PATH, financed by the Bill & Melinda Gates Foundation, which aims to identify innovative ways of creating a logistics chain that is flexible and robust enough to handle an increasingly large and costly portfolio of vaccines.

In Senegal, the OPTIMIZE program is a pilot program to improve the logistics of the supply chain for and transport of vaccines.

In Senegal, the Expanded Program on Immunization (EPI) is characterized by decentralization, the strengthening of the health care system, and the outsourcing of certain services to the private

sector. The EPI has been able to increase immunization coverage in DTP3 from 60% in 2002 to 94% in 2007. The national budget finances 10% of the cost of the pentavalent DTP-HEP b-Hib combination vaccine and 100% of all other EPI vaccines. However, the logistics chain that made such progress possible has now reached saturation with the introduction of the new single combination BTP-Hep B-Hi vaccine. In this context, the introduction of new, additional vaccines for the EPI presents many major challenges. The overarching goal of OPTIMIZE's collaboration with Senegal is to pilot technologies and vaccine supply system interventions that will improve the logistics chain both now and in the future, and to prepare for any future challenges that may arise over the next 10 to 15 years.

A glimmer of hope exists in the form of the pilot program being introduced by OPTIMIZE to improve health care logistics. It is a real opportunity for the National and Regional Supply Pharmacies to initiate deep reforms in their management methods. In the program, the PNA's central position is more strongly affirmed and its role reinforced, particularly in the vaccine supply chain. The availability of trainers to support the project at PNA level could be a real opportunity.

5. PART V. POLICIES AND PLANS

a. Health Policy

The government's National Health Policy was defined in the constitution and has been executed since independence through a series of five-year plans. The government is responsible for the health of the population, and at the end of the 1990s, it worked with development partners to produce a National Health Development Plan (PNDS) which is currently in its second phase (2009-2018).

The country's health policy continues to be formulated around primary health care and takes into account Senegal's international commitments to sub-regional, regional and international organizations in the field of health, including the Millennium Development Goals (MDGs).

The following elements form the backbone of this health policy:

- + Guaranteed access to high quality health care for the entire population, regardless of socio-economic status;
- + Deepening of the decentralization policy and local health care governance;
- + Development of health insurance coverage;
- + Protection of vulnerable groups;
- + Reinforcement of public-private partnerships;
- + Promotion of cross-sector collaboration;
- + Aligning foreign aid with national health priorities;
- + The culture of results-based management.

To confront the heavy disease burden (including several which have devastating epidemic potential) which is being compounded by the emergence of chronic non-communicable diseases, the government has decided to concentrate efforts on:

- + Training and capacity building needs for health care personnel and other health sector actors;
- + The rapid dissemination of information for effective national and community responses to tackle these crucial public health issues.

Health sector planning includes a 10-year annual plan (PNDS), a three-year rolling plan (CDSMT), and an annual action plan (PTA) which includes local authority operational plans (POCL-Health).

The CDSMT enables resources to be better allocated in order to achieve predetermined objectives, and represents an important step in the implementation of results-based management. It has the potential therefore to address some of the difficulties arising from the non-alignment of budgetary allocations with national priorities and from the very low level of funding predictability. On a

different note, the CDSMT also develops a sense of responsibility, fosters a performance-based culture, and establishes the obligation for accountability in the use of public sector resources. The tool clearly indicates budgetary allocations for a three-year period, by program and in function of funding sources. The CDSMT is used in the preparation of the annual budget, for which it is the convergence between the resources, objectives, and targets for the given period.

The Annual Action Plan (PTA) is the operational reflection of the first year of the CDSMT, broken down into detailed action plans at every level of the pyramid. The Health Ministry's budget is prepared based on these PTAs. The process for health districts is different; planning is initiated by local authorities with the elaboration of the district level operational plan, the POCL-Health. These local operational plans form the framework of the district's annual action plans which in turn, are consolidated at the regional level by the regional health authority.

b. Health Care Financing

Several entities contribute to the health care financing system:

- + The Ministry of Finance, which allocates a budget to the Ministry of Public Health and several other ministries (Defense, Education) to run public health care services.
- + The municipalities and rural communities which use their own funds to support their health care services.
- + Local cells of Health Protection Organizations which are each linked to a health center or to another specific unit and receive patients' consultation fees. Funds collected are then used by the unit in question.
- + Some public and private businesses which offer free or subsidized health services to their employees (and often to their families), for example by developing an internal health care delivery service.
- + Several insurance and social security regimes that exist both in public and private companies; the majority of the charges are borne by the employer.
- + Most service providers propose paying services: public hospitals (which do however make an exception for the very poor), private hospitals, private clinics, pharmacies and of course, traditional medicine practitioners.
- + Foreign donors, both governmental and non-governmental, which provide funds and technical assistance to a number of selected establishments in the health sector.

Consequently, the Senegalese consumer pays for health care services through a combination of local and national taxes, social security contributions, funds collected by health promotion organizations, and direct payments to service providers.

Many people are unsatisfied with the current health care financing system. Allegations of bad management and irrationality are legion. The health care delivered by the system is often of a lower quality and unfairly distributed. Some believe that changes to the financing system could engender major improvements in the quality and fairness of the care provided.

Since 1990, the national list of essential drugs and products has been revised every two years by the Ministry of Health and more specifically, the National Committee for the Elaboration and Revision of the List of Essential Drugs and Products.

This list underpins public sector supply.

It includes the list of:

- + Health outposts
- + Health posts
- + Health centers
- + Regional hospitals

+ National University Centers (CHUs)

The list of essential drugs was last revised in 2008.

As recommended in the Bamako initiative, drugs are sold in public health facilities to, among other things, replenish stocks. A large majority of drugs are financed by the cost recovery system.

c. Pricing Policy and Cost Recovery

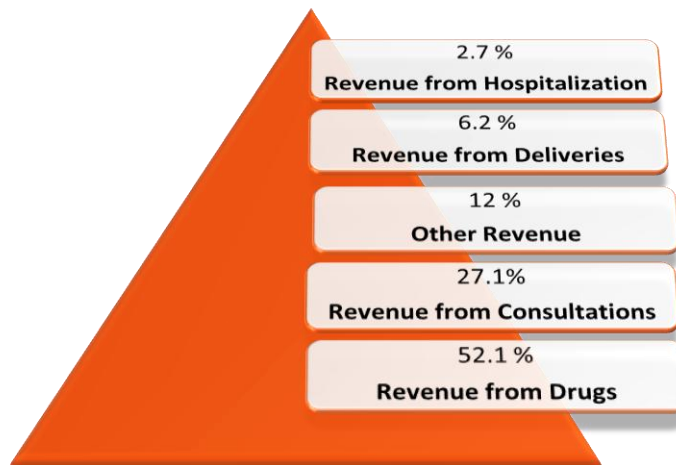
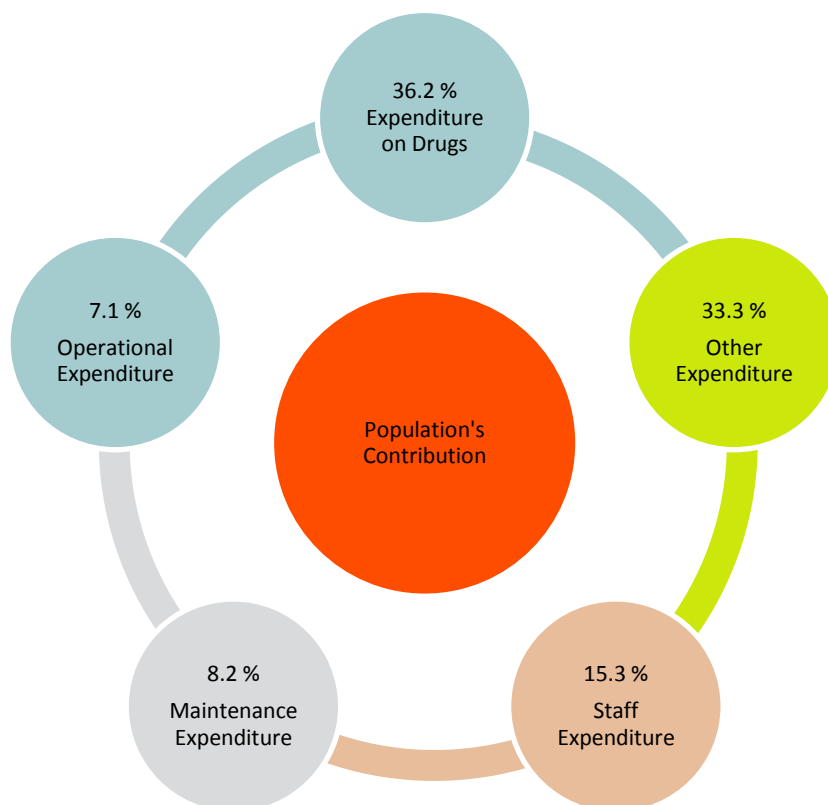


Diagram 10 – Breakdown of Population’s Financial Contributions in Districts (source: Statistical Yearbook 2009 – Ministry of Health, Senegal)

Prices are fixed for generic drugs in both the public and private sectors by the government.

Public Sector

The PNA procures drugs by conducting an international tender. Consequently, prices remain extremely low. The sales margin is fixed across the board for all drugs procured through the PNA in both the public and private sectors. The public price is the price multiplied by 1.5.



**Diagram 11 – Breakdown of Expenditure from Population’s Financial Contribution in Districts
(source: Statistical Yearbook 2009 – Ministry of Health, Senegal)**

Private Sector

In the private sector, the pricing structure is presented as follows: the wholesale price before tax (also called the ex-works price) is the basic price accepted in the marketing authorization decree.

- + For the so-called “social drugs” (lowest profit margin), the coefficient is 1.32 (certain malaria and hypertension drugs)
- + For the so-called “normal drugs”, it is 1.8586
- + For drugs packaged for hospital use, it is 2.12
- + For INN generics sold by the PNA, the PNA price multiplied by 1.5

6. PART VI. WORKFORCE DEVELOPMENT

a. Pre-service Training

In 1996, the Ministry of Health and Medical Prevention developed a national training plan for a five-year period. This was in response to the low numbers of staff coming out of health training centers and the non-adaptation of training programs to the skills required in health care facilities. Consequently, some twenty private schools providing para-medical training courses (nursing and midwifery) were created.

To accompany this initiative, the government decided to include provisions for grants for private health care training institutions in the general budget.

Since 2002, thanks to this liberalization, the number of midwifery and nursing graduates from both public and private training centers has increased.

In 2005, the MoH initiated a process to create regional health training centers (CRFSs) for the para-medical professions with the aim of recruiting health professionals living in the region where they were trained, and increasing the availability of health care professionals on the market.

Centers were opened in Kaolack, Saint-Louis, Tambacounda, Thiès, Kolda, Matam, Ziguinchor.

In 2007, these schools opened new courses to train public sector nurses and midwives.

The mandate of these CRFSs is:

- + To provide pre-service and in-service training to health care personnel;
- + To participate in the organization, supervision, and coordination of students' internships;
- + To initiate and encourage studies and operational research promoting health.

The development of program content has been partly financed by the Japanese International Cooperation Agency (JICA) through the PADRHS (project to support HR development in the health care sector) and Spanish partners through the NGO "Infermeras par el mundo". CRFSs receive support from regional pools of trainers.

Cadre	Nbre des inscriptions			
	2006	2007	2008	2009
Médecins	2313	2635	2953	2983
Infirmières	143	170	350	686
Sages femmes	224	234	465	778
Dentistes	211	239	251	267
Pharmaciens	1142	1194	1382	1323
Total	4033	4472	5401	6037

Table 5 – Number of Inscriptions to Health Care Training Institutions (source: African Health Workforce Observatory – March 2009)

Another measure aims to motivate teachers from public sector health training institutions by bringing their compensation in line with that of teaching staff in the national education system. Consequently, teaching and hardship compensation has been attributed to permanent teachers working in public sector para-medical training centers in Dakar and in the regions.

Categories de diplômés	Nombre annuel de sortants			
	2006	2007	2008	2009
Médecins	168	133	115	140
Infirmières	96	151	274	468
Sages-femmes	174	130	291	455
Dentistes	29	28	-	-
Pharmaciens	67	107	-	-
Médecins Interne	7	10	25	36
Total	541	559	705	1099

Table 6 – Number of Graduates from Health Care Training Institutions (source: African Health Workforce Observatory – March 2009)

In terms of the financial support available to students, the number of training grants available per year and their amounts have risen for public sector training establishments.

Students attending regional training centers have been able to access these grants.

Training allowances for rural placements for interns (students in their 7th year of medicine) have been financed, and health care workforce capacities have improved.

The increase in the budget allocated to health care human resources has resulted in an increase in the grants available to students and an improvement in the skills of teaching staff.

b. Diourbel National Hospital Technicians and Maintenance Officers Training Center (CNFTMH)

The Diourbel CNFTMH is the product of a partnership between the government of Senegal and the government of the Federal Republic of Germany. It was created in 1983 and received official recognition in 1993.

The CNFTMH has been the WHO's partner center for training and research in hospital maintenance since 1994.

The CNFTMH is affiliated to the Ministry of Health's Directorate for Human Resources.

Its mandate is:

- + To train multi-skilled hospital maintenance technicians;
- + To provide in-service training to improve the skills of technicians and users of biomedical equipment already working in health facilities.

Its team is composed of 4 permanent professors including:

- + 2 professors in hospital and biomedical equipment maintenance;
- + 1 electro-technician;
- + 1 mechanical equipment manufacturer;
- + And 10 temporary teachers from the Ahmadou Bamba High school, the public administration and the Senegal-Japan training center.

Teaching resources:

- + 1 electronic laboratory;
- + 1 biomedical laboratory;
- + 1 cold and air conditioning workshop;
- + 1 electrical engineering workshop;
- + 1 IT room;
- + 1 sterilization room;
- + 1 water treatment room;
- + 3 teaching rooms;
- + 1 set of audiovisual equipment;
- + 2 libraries: teaching staff and students.

Pre-service training courses

Vocational Training Certificate in Hospital Maintenance (BTMH)

The CNFTMH recruits both through public health entrance exams and a professional recruitment process. The level of study required is the Certificate of Completion of Middle Studies (BFEM) or any equivalent diploma.

Foreign students are admitted under partnership agreements.

The BTMH is a three-year course.

Students completing this multi-discipline course receive a *diplôme d'Etat*: the BTMH.

Course objectives: To train multi-skilled technicians to be able to perform preventative and corrective maintenance, and install and manage equipment.

The training program includes:

- + General teaching;
- + Technical theoretical and practical teaching in biomedical and hospital technology and maintenance management;
- + A work placement of six weeks each year.

Detailed program of the BTMH pre-service training course:

	1 st year	2 nd year	3 rd year
Mechanical construction			
Mechanical fitting			
General technology			
Electrical technology			
Practical electronics work			
Automation diagrams			
Automation			
Hospital technologies / medical equipment			
Hospital technologies / biomedical equipment			
Practical work in hospital technologies / biomedical equipment			
Healthcare plumbing			
Industrial cold and air conditioning			
Practical work in cold and air conditioning			
Maintenance management			
Mathematics			
Physical sciences			
Physical and sports education			
Hospital hygiene / public health			
Occupational safety and administrative law			
English			
French			
IT			
Internship	45 days of in-house practical work in a hospital environment	45 days of in-house practical work in a hospital environment	End-of-year examination to obtain the <i>diplôme d'Etat</i>

Table 7 – Detailed Program of BTMH Trainings

Advanced Hospital and Biomedical Technician's Diploma (DTSMB)

The CNFTMH recruits course participants via an entrance exam. The level of study required is the technical or scientific baccalaureate or any other accepted equivalent diploma.

Existing health workers may also apply via a professional recruitment procedure. Professional applicants must have a DUT or BTS in electronics/industrial IT/automation or a BTMH with at least two years professional experience. Foreign students are admitted under partnership agreements.

The DTSMB is a two-and-a-half-year course (3,400 hours). It is broken down as follows: theoretical and practical training at the CNFTMH (2,800 hours); a practical work placement in a hospital environment; and finally an end-of-study project (600 hours).

Course objectives: To train advanced-level technicians specialized in biomedical maintenance. Students explore the technology, quality control, and management of the maintenance of medical devices. Theoretical and practical teaching equips them with a two-fold technical and medical knowledge base.

Detailed program of the DTSMB pre-service training:

	1 st year	2 nd year
French		
English		
Mathematics		
Physics		
Chemistry		
Biochemistry		
Biophysics		
Automation		
IT		
Medical IT		
Electronics		
Electrical technology		
Medical sciences		
Maintenance management		
General mechanics		
Refrigeration technologies		
Laboratory		
Operating block and sterilization		
Medical devices in the operating block		
Odontology		
Endoscopy		
Function exploration and monitoring		
Ophtalmology equipment		
Medical imaging		
Medical technology		
Internship	"Operator" placement at the end of first year. Integrated into a maintenance team under the responsibility of a supervisor. Participation in corrective and preventative maintenance activities.	Work placement offering the opportunity to complete a "technical end-of-course project".

Table 8 – Detailed Program of the DTSMB Pre-service Training

c. The Higher Institute for Transport (IST)

In addition to a network of more than 400 professionals essentially coming from the enterprise sector, the IST employs 70 teachers.

The Institute’s estimated number of students across all courses is 250 for the current academic year.

Its estimated budget is 200 million CFA francs, mainly raised from schooling fees. The IST is not granted any government subsidy.

The Institute is interested in opening a health logistics and humanitarian logistics branch of courses through cooperation with other actors or institutions. It already provides sophisticated undergraduate and graduate programs (BTS, Bachelor and first-year Masters), postgraduate programs in logistic transport (second-year Masters and engineering degrees), and short specialization programs for professionals through its in-service training programs.

“Bac+2” diplomas:

- BTS in Transport and Logistics (Bac+2)
- Advanced Transport Technician Diploma (DTS) (Bac+2)
- Road Transport Operator Diploma (DETR) (Bac+2)

Bachelor degrees:

- Bachelor in Transport and Logistics (Bac+3)
- Professional Bachelor in Transit Transportation (Bac+3)
- Professional Bachelor in Shipping Agency (Bac+3)
- Professional Bachelor in Cargo Handling (Bac+3)

Masters degrees:

- First-year Masters in Transport and Logistics (Bac+4)

Second-year Masters degrees:

- Transport and Logistics (Bac+5)
- Air Transport Management (Bac+5)
- Cargo and Shipping Management (Bac+5)
- Transport and Territorial Planning (Bac+5)
- Humanitarian Logistics (Bac+5)
- Agro-industrial and agro-business Logistics (Bac+5)
- Transport Engineering Diploma (Bac+5)

A new second-year Masters degree in logistic transport recently opened and provides students with sound management skills to enable them to hold several functions in an enterprise. The different specialization courses available are, among others:

- Hotel Logistics Manager
- Industrial Logistics Manager
- Hospital Logistics Manager
- Humanitarian Logistics Manager
- Supply / Procurement
- Transport

d. The National School of Health and Social Development (ENDSS)

The ENDSS is a public training establishment for personnel associated with health in Senegal. It provides both pre-service and in-service training and has now acquired international prestige.

In 2011, the ENDSS had 607 students. However, it is now facing difficulties in the harmonization of its training courses and in the competency level of its graduates. A new experience capitalization project is currently being tested in order to facilitate the reclassification of public health agents.

Thanks to its cooperation with Japan, the ENDSS is developing into a reference center for the entire sub-region in terms of educational tool development, HR management, and community health care.

Diplômes d'état are reserved for students completing a pre-service training course; education certificates are awarded to professionals wishing to attend additional in-service training courses.

3 departments propose 18 courses (the following titles are to those mentioned on the internet website):

Basic Health Sciences Studies Department (DEBSS)

- Health Engineering Technician's training
- Nurse's training
- Midwifery training
- Pharmacy Assistant's training
- Dental Prosthetics Laboratory Technician's training
- Hygiene training, option Sanitation Officer
- Hygiene training, option Auxiliary Sanitation Officer

Specialized Health Sciences Studies Department (DESSS)

- Anesthetics-Resuscitation
- Biology
- Administrative Training
- Medical Imaging
- Physiotherapy
- Odontology
- Ophthalmology
- Nephrology

Social Sciences Studies Department (DESS)

- Social Assistance's training
- Social Worker's training

Logistics courses are marginally provided as part of the management courses (amount of hours).

e. The African Management Institute (IAM)

The IAM was created in 1996. While it is based in Dakar, it is of regional scope. Its programs respond to demands from various groups of people ranging from students to confirmed managers and company directors. It mainly draws upon the high quality of its teaching staff and the links it has developed with North American enterprises and universities. The IAM has 35% of foreign students and the diploma that it delivers is supported by more than 50 partner enterprises in Senegal and Africa.

It provides a variety of courses which are among the most respectful of contemporary business and management requirements: Master of Business Administration (MBA), Bachelor of Business Administration (BBA), IT Technical Engineering Diploma (DITI), and other specialization courses (HR, marketing, quality, bank and finance, etc.).

Candidates eligible for the Bachelor program can be awarded several grants financed by different donors. Among these, the following can be mentioned:

- IAM grants: from 50,000 to 70,000 CFA francs. These are excellence grants awarded on the basis of the excellence of academic records and on the recommendation of the program's Director;
- *Mercure* grants: 20,000 CFA francs per month. These grants are reserved for the candidates following the "Profil Mercure" program. They are awarded by the BA EAU and BAB international;

- The Sponsor grant: 20,000 CFA francs per month. This grant is awarded by the President of the Students' General Association (AGE);
- Research grants: from 250,000 to 1,000,000 CFA francs. They are awarded by local or foreign partner enterprises;
- National grants: about 50,000 CFA francs per year. They are awarded by the Ministry of National Education.

f. Conclusions about the Three Above-mentioned Establishments

Several points are worth mentioning regarding the structures we visited (the IAM being the third one, although we were only able to get its training documentation):

- All these schools are gaining awareness of the importance of logistics; yet they face difficulties in providing clear content;
- The training provided does not always correspond to the market's needs, hence a low integration rate; no reliable statistics exist in this regard;
- The logistician position, as defined in the supply chain, is still far from being integrated into the training provided, hence difficulties faced by graduates in integrating the national economy;
- However, real cooperation opportunities exist for either one-off or pre-service and in-service training, and these structures are willing to develop such training;
- Health authorities could seize this opportunity to engage into a real public-private partnership in terms of training of human resources in health logistics.

7. PART VII. WORKFORCE EFFICIENCY

a. Recruitment of Health Workers

The health worker recruitment and deployment process involves different actors and can be managed at different levels of the administrative system. Four main recruitment processes can be distinguished:

- + Health workers are recruited as civil servants by the Ministry of Public Services and made available to the Ministry of Health and Prevention for deployment;
- + Contractual recruitment by the Ministry of Health and Prevention;
- + Recruitment directly by Public Health Establishments;
- + Recruitment by local authorities and communities.

Recruitment as Civil Servant

The recruitment of health workers via the Ministry of Public Services is the main form of recruitment. Each year, an annual quota of health worker positions is established by the Ministry of Public Services in conjunction with the Ministry of Health and Prevention. In this system, applicants apply for a function, for example doctor or nurse, and not for a specific position in a specific location. Consequently, when applicants apply, they do not know where they will be deployed if they are selected.

The deployment process is managed in a number of ways. Health workers recruited via the Ministry of Public Health are made available to Ministry of Health and Prevention for deployment. Deployment decisions are taken either by the Ministry of Health and Prevention directly, or at the regional level.

The Ministry of Health and Prevention is directly responsible for the deployment of doctors and hospital staff. For health center and health post positions however, health workers are made available to the regions by the Ministry of Health and Prevention.

Responsibility in the region then lies with the Regional Commission for Health Worker Deployment and Redeployment (*Commission régionale d'affectation et de redéploiement du personnel*) which is made up of regional and district chief doctors, unions and the director of the regional training center, to post health workers in the region, with the Governor's approval. This commission can also redeploy health workers within the region.

At the district level, the chief doctor can decide to redeploy staff, with approval from the prefect.

Contractual Recruitment by the Ministry of Health

As opposed to recruiting via the Ministry of Public Services, the employment contracting system allows the Ministry of Health and Prevention to recruit health workers directly for a specific position, particularly in terms of its geographic location.

Recruitment by Public Health Establishments

EPSs may also recruit their staff directly.

Recruitment by Local Authorities and Communities

Local authorities and communities can also recruit health workers directly.

b. The Human Resources Evaluation System

Every year, public sector employees are evaluated on the previous year in their position. The evaluation score determines progression within the public health system.

Motivation

Health workers suffer from the low quality of technical equipment as well as from their mobilization on logistics tasks. According to them, these are major factors of loss of motivation, particularly for specialized professionals who have to take on duties that are very far from their original expertise.

This situation is compounded by problems linked to schooling and accommodation, which exacerbates existing challenges in workforce deployment, recruitment, and retention. In certain areas indeed, opportunities for schooling are very limited and it is extremely difficult to find adequate accommodation. These factors largely contribute to the low motivation to work.

c. Distribution and Deployment of the Health Workforce

Imbalances in the distribution of health workers have, over recent years, been a major source of concern for the Ministry of Health.

Different measures have been introduced in an attempt to improve deployment, recruitment, and retention in the so-called "difficult" areas. These measures relate as much to ensuring a satisfactory supply of qualified personnel as to their management.

Among proposed measures, the implementation of a health workforce recovery and mobility plan and the reinforcement of financial and non-financial incentives figure highly.

A more cross-sector approach would also be highly adapted to the circumstances of Senegal, bringing into the process considerations such as accommodation, access to running water and electricity, highway infrastructure, and schooling for health workers' children.

d. The Health Workforce's Work Environment

The feeling of isolation, or even of complete abandon, is one of the characteristics associated with the work environment of many health workers deployed in rural and remote areas. In Senegal, the recruitment and deployment system in place for health workers can also compound this sentiment.



*For a world of solidarity where humans have the capacity for action,
The Bioforce Institute supports actors involved with underprivileged populations.*

The lack of technical equipment in many health centers creates a disparity between the training a person has received and the work they are required to perform. This lack of technical infrastructure can also create relatively challenging working conditions.

8. PART VIII. PROFESSIONALIZATION EFFORTS IN THE PUBLIC HEALTH SUPPLY CHAIN

The National School of Health and Social Development (ENDSS) is affiliated to the Ministry of Health's Directorate for Human Resources.

The ENDSS proposes pre-service and in-service training.

Diplômes d'Etat are reserved for students completing a pre-service training course while education certificates are awarded to professionals wishing to attend additional in-service training courses.

3 departments propose 18 courses:

Basic Health Sciences Studies Department (DEBSS)	Specialized Health Sciences Studies Department (DESSS)	Social Sciences Studies Department (DESS)
Health Engineering Technician's training	Anesthetics-Resuscitation	Social Assistance's training
Nurse's training	Biology	Social Worker's training
Midwifery training	Administrative Training	
Pharmacy Assistant's training	Medical Imaging	
Dental Prosthetics Laboratory Technician's training	Physiotherapy	
Hygiene training, option Sanitation Officer	Odontology	
Hygiene training, option Auxiliary Sanitation Officer	Ophthalmology	
	Nephrology	

Courses fees:

Senegalese Students	Foreign Students
20,000 CFA francs per year of study to be paid at the beginning of each academic year for those having passed the entrance exam	600,000 CFA francs per year of study to be paid at the beginning of each academic year 20,000 CFA francs for the preparatory year. Grant-holders must provide an introduction letter from their government, or the organization or person who will be paying the fees

Table 9 – Course Fees

Other costs:

- + Insurance: 1,000 CFA francs
- + Private health insurance: 5,000 CFA francs

Number of Foreign Students Enrolled at the ENDSS in 2006/2007:

PAYS	Années d'études			Total
	1ère	2ème	3ème	
Belgique		1	1	2
Bénin	1	2	1	4
Burkina Faso				
Cameroun	11	4	2	17
Cap vert		1	1	2
Comorres	2	1	2	5
Congo	3	3	1	7
Côte d'Ivoire	3	1	1	5
Djibouti	1			1
France	2	3	1	6
Gabon	11	2	1	14
Liban	1		2	3
Mali	1	1		2
Maroc	9	2		11
Mauritanie	2	1		3
Niger	2	5		7
R.C.A.	6	2		8
Palestine	1			1
Tchad	3	10		13
Togo	3	2	2	7
Total	62	39	14	115

Table 10 – Number of Foreign Students Enrolled at the ENDSS 2006-2007 (source: ENDS website)

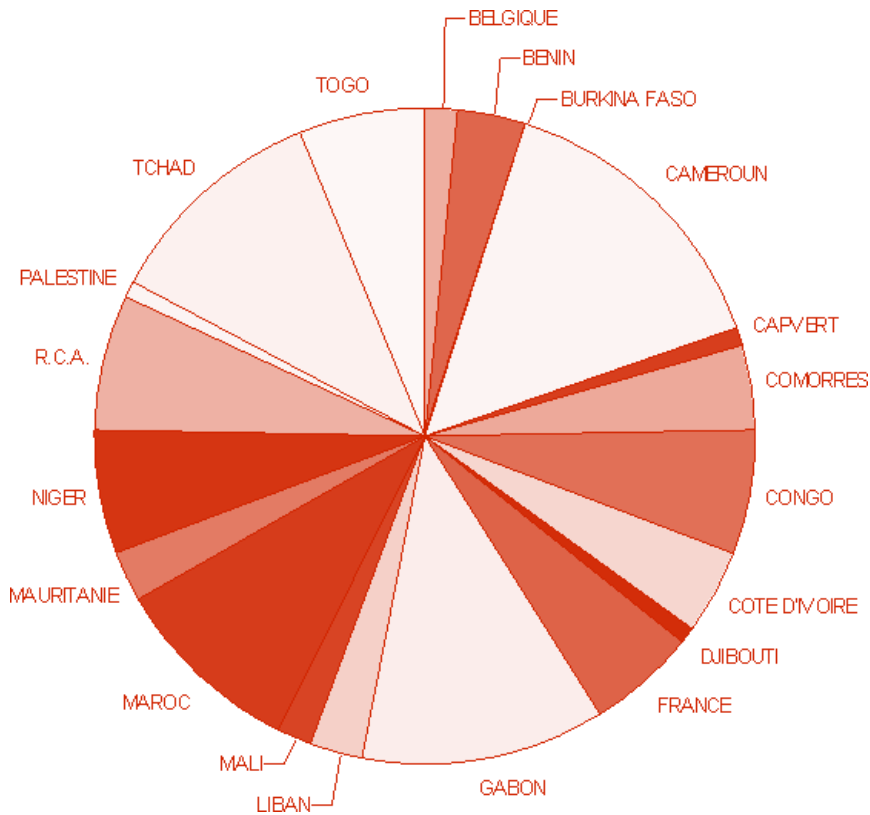


Diagram 12 – Breakdown of Foreign Students Enrolled at the ENDSS (source: ENDS website)

In-service Training

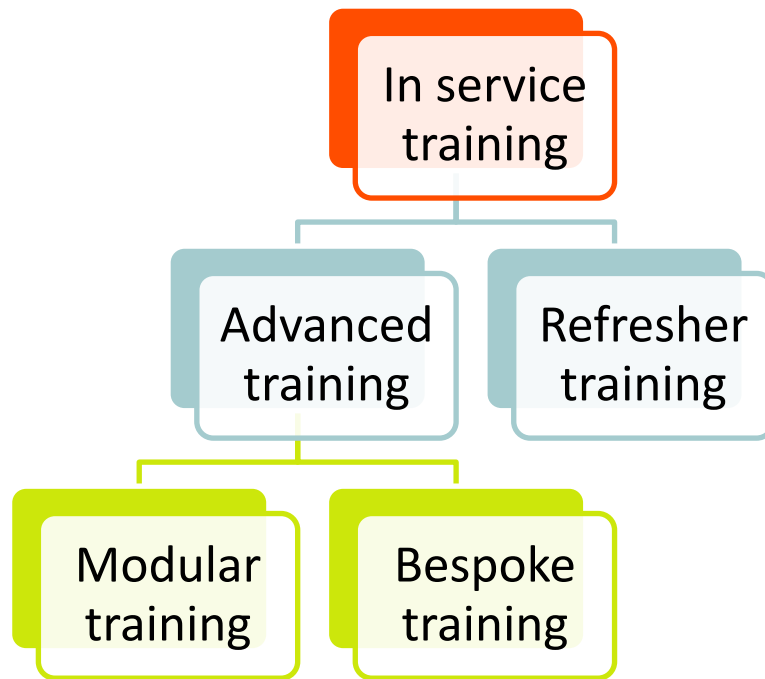


Diagram 13 – Different Possibilities within the In-service Training System

Modular Training

Students are admitted based on the submission of a complete application and having paid their entrance fees. The minimum level of study required is the technical baccalaureate, the Maintenance Technician's Certificate or the Advanced Technician's Diploma.

The duration of modular training varies from 3 to 6 months.

The training program includes a common core and 10 modules.

Details of the Advanced Training Course

Common Core	Modules
Mechanical construction Hospital technologies Cold – Air conditioning Electronics Electrical technology IT Safety	Maintenance and quality management Operating block and sterilization Medical imaging Function exploration and monitoring Laboratory Odontology Endoscopy Dialysis IT Hospital case study

Table 11 – Details of Advanced Training Courses

A two-month practical work placement in a hospital or biomedical maintenance company is required.

On completion of the course, students will receive a Hospital and Biomedical Maintenance Certificate (*Certificat de Capacité en Maintenance Hospitalière et Biomédicale*) approved by the WHO.

Two new professional bachelors have recently been developed:

- + Professional Bachelor in Medical Imaging (12 months / for advanced technicians)
- + Professional Bachelor in Biomedical Equipment Maintenance (12 months / for advanced technicians)

Bespoke Training

Students are admitted based on the submission of a complete application and having paid their entrance fees. Bespoke training is designed for technicians already in service in a health care facility.

The duration of the training varies according to the modules selected. It can run from 1 to 6 months.

The CNFTMH is able to propose a training program based on the requirements expressed by the applicants. Applicants can choose one or several modules from the training program.

On successful completion of the course, students are awarded a course attendance certificate.

Refresher Training

This type of training is designed for technicians, manual workers, and laborers already in service in a health care facility.

Courses run for between 5 and 15 days.

Applicants can send a training program based on their needs to the CNFTMH.

On successful completion of the course, students are awarded a course attendance certificate.

Pre-service training results (1987 to 2010):

- + 135 Senegalese students
- + 34 foreign students

In-service training results (1987 to 2010):

- + 192 Senegalese students
- + 90 foreign students

RECOMMENDATIONS

Senegal's health care system benefits from remarkable infrastructure and coverage. Potential exists. However, medical cover is poor and there have been recurrent problems in drug supply, especially since the introduction of new vaccines.

One major challenge is linked to the fact that while the supply system is based on two different pillars, i.e. the public and the private sectors, there is no clearly defined relationship between them and they rather operate in parallel. Therefore, it appears important to establish an integrated system with connections and complementarities between these two channels.

In terms of control, a functional link can be developed between the Directorate for Pharmacy and Laboratories in charge of regulation and the Laboratory for Drug Control in charge of technical and quality drug control. However, these structures are not affiliated to the same authority and this situation impedes collaboration. Their missions should be better articulated in order to improve performance in drug inspection.

In addition to recommendations on the organizational structure of supplies and controls, major improvements can be made on human resources which are generally undertrained and lack motivation and integration within the supply chain.

The fact that ESP status has been granted to the National Supply Pharmacy (PNA) and to hospitals is a positive step. Among all the structures assessed, the PNA is the one that really puts substantial efforts into training and the structuring of the HR department, with a rigorous approach to logistics.

Real awareness is also emerging thanks to the competent individuals who now manage these structures. Unfortunately, they inherited high levels of debt accumulated through poor management before the EPS reform.

Human resources management must remain a priority at every level of the public sector. In terms of logistics, organizational deficiencies, more particularly the lack of job descriptions, evaluation systems, annual action plans, objectives, and performance-based assessment are the main causes for failure. At every level of the logistics chain, no one is really held accountable for their actions. Such a vicious circle impedes good performance of the public supply chain, in favor of the private sector.

With new challenges in terms of costs and volume while population grows rapidly, it is feared that the public health supply system may be increasingly affected by the lack of consideration of the human factor. Whatever the technical solutions provided, a national initiative for the reinforcement (professionalization) of logistics seems to be appropriate.

Training remains a priority. Today, there is no up-to-date mapping with an action plan for training and the career management of individuals working in the public health system. Requests for training and refresher training are submitted on an as-and-when basis at different levels without any real correlation with an analysis of requirements.

An HR reinforcement policy could largely draw upon the deployment of logisticians at the intermediary and peripheral levels. Indeed, we think it is very important to correct unbalances in the distribution of staff between the central and the regional level.

This implies the implementation of an HR policy focused on training and the definition of career plans, but also on the training of the existing health workforce in logistics functions. It is important to raise awareness of this issue among pharmacists, doctors and nurses; this can be done during their pre-service training. Indeed, although they are in the front line of the drug supply system, they generally do not receive specific training in stock or technical equipment management.

One of the resources currently underused is the hospital maintenance technician. These technicians are very well trained and their role has much in common with that of the logistician. All that remains

is for their status to be recognized in the current system and that they may be allowed to play a more important role.

This could be the basis for a national initiative to strengthen human resource capacity in health logistics.

BIBLIOGRAPHY

- Politique Pharmaceutique Nationale*, 2006 [National Pharmaceutical Policy]
- Plan Directeur Pharmaceutique National* [National Pharmaceutical Directive Strategy]
- Evaluation du secteur pharmaceutique au Sénégal*, 2003 [Assessment of Senegal's pharmaceutical sector]
- Cartographie et évaluation approfondie des systèmes d'approvisionnement pharmaceutique sénégalais*, 2007 [Mapping and thorough assessment of Senegalese supply systems, 2007]
- Plan National de Développement Sanitaire*, 2009-2018 [National Health Development Plan 2009-2018]
- Carte sanitaire du MSPHP*, 2008 [MoH health care mapping]
- Plan stratégique PNDS* [Health Development National Strategic Plan]
- Plan stratégique PNLN* [Malaria Strategic Plan]
- Plan stratégique PNT* [Tuberculosis Strategic Plan]
- Plan National d'Approvisionnement Pharmaceutique (stratégie 2010-2014)* [National Pharmaceutical Supply Plan, strategy 2010-2014]
- Plan de formation RH de la pharmacie Nationale d'approvisionnement* [PNA's HR training plan]
- Profil en ressources humaines pour la santé*, observatoire africain des ressources humaines pour la santé, 2009 [HR health profile, African Health Workforce Observatory, 2009]
- Annuaire Statistique 2009*, Service National de l'Information Sanitaire, 2009 [Statistical Yearbook 2009, National Health Information Service]
- Présentation du Centre National de Formation des Techniciens en Maintenance Hospitalière* [CNFTMH presentation]
- Présentation d'Optimize Sénégal* [Optimize Senegal presentation]
- Plan quinquennal de réhabilitation de la logistique du programme élargi de vaccination, 2010-2014* [5-year improvement plan for EPI logistics, 2010-2014]
- Liste des sources de financement au Sénégal*, Ministère de l'Economie et des Finances [List of financing sources in Senegal (Ministry of Economy and Finance)]
- Rapport sur les dettes des hôpitaux* [Hospital debt report]
- Rapport global, Direction des établissements de santé, 2008* [General report – Directorate for Health Establishments, 2008]
- La réforme hospitalière six ans après, 2004* [The hospital reform six years later, 2004]
- La réforme Hospitalière au Sénégal. Une évaluation 10 ans après, juillet 2008* Senegal's hospital reform - An assessment 10 years later, July 2008]
- PtD Global conference including preparation:* www.peoplethatdeliver.org
- Projet Optimize Vision 2020 :* <http://www.resolog.org/?q=content/cr%C3%A9er-une-vision-pour-les-syst%C3%A8mes-dapprovisionnement-en-vaccins-de-2020>
- WHO "Increasing access to health workers in rural and remote areas through improved retention".* <http://www.who.int/hrh/retention/guidelines/en/index.html>
- WHO: Health Workforce resource centre.* <http://www.who.int/hrh/resources/en/>

CapacityPlus: Rapid methodology for developing evidence-based incentive packages to retain health workers. <http://www.capacityplus.org/retaining-health-workers-rapid-methodology-develop-evidence-based-incentive-packages>

CapacityPlus: Professionalization framework

WHO/AFRO and partners: competency framework and job description at the district and regional levels. <http://www.resolog.org/?q=content/ressources-humaines>