

# Burden of Disease in South Africa, Its Effect on the Health Care System and Addressing these Challenges

## Abstract

Burden of a disease is important to know for any country's health and Political System. It is this specific burden on the socio-economic structure that needs to be reduced for a country to progress and experience a vibrant and healthier living. A developed and developing country will have its own specific burden depending upon macro structural causes.

- Diseases of marginalisation and deprivation.
- Diseases of Modernisation and Work.
- Diseases of Marginalisation and Modernisation.

## Introduction

South Africa being a unique developing country which has a young democracy since 1994 has its own burden of diseases which needs to be faced considering health access is unequal and the proposed National Health Insurance needs to be implemented for countering and reducing disease burden pattern. Burden of diseases are quantified by assessment of morbidity, mortality, injuries, disabilities and other risk factors. The Global Burden of Disease Study explained a new system of measurement [1]. "Disability Adjusted Life Years (DALY) It measures the future stream of healthy years of life lost due to each incident case of disease or injury by adding together Years of Life Lost (YLL) due to premature mortality and Years of Life Lived with Disability (YLD) and also considering the severity of the disability." [2].

Considering HIV AIDS as the primary burden of disease in South Africa, the first attempt to record DALYS was published in an article in 2003, 'Initial Burden of Disease Estimates of South Africa'. It calculated DALYS for the year 2000 [2-5]. There is a lack of AIDS death statistics causing a debate whether AIDS should be a notifiable with

## Review Article

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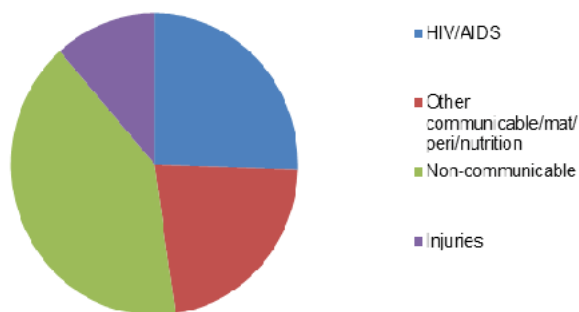
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anonymous reporting to a national database [6] Verbal Autopsies in the form of a questionnaire shows adequate sensitivity and specificity for a wide range of causes of adult death from AIDS and Tuberculosis [7]

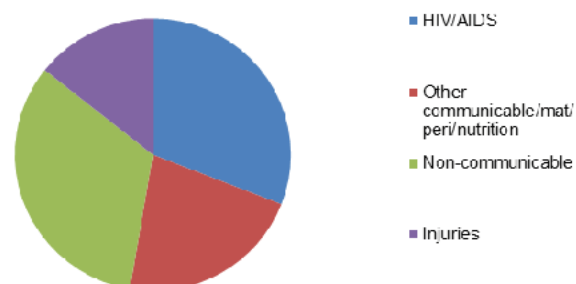
The Global Burden of Diseases classified causes of death in three broad categories:

1. Communicable Diseases Maternal and Prenatal Conditions, Nutritional Deficiencies, these diseases are related to underdevelopment and poverty.
2. Non-Communicable Diseases.
3. Injuries [Figure 1 and Figure 2].

HIV AIDS (It should have been in Group 1 but due to its enormous burden in South Africa, this was considered a 4th Group) South Africa's quadruple burden is specifically because of deaths from all four categories [2].



**Figure 1.** Estimated Deaths by board group for South Africa 2000.



**Figure 2.** Estimated Disability-Adjusted Life-Years (DALYs) by board group for South Africa 2000.

### Burden of non-communicable diseases

There is an emergence of Non-Communicable Diseases in rural and urban areas, more in poor people living in urban areas. Demographic changes show a rise in people living beyond 60 years, there is a challenge posed by combined by growing burden of HIV/AIDS and Non-Communicable Diseases. Cardiovascular Disease, type 2 Diabetes, Cancer, Chronic Lung Disease and Depression are major non-communicable diseases [8]. WHO estimates that the burden of disease from Non-Communicable Diseases in South Africa is 28 percent of the total burden of diseases measured in 2004 [9].

### Risk assessment for south Africa in 2000

The Medical Research Council project called the first South African National Burden of Disease Study. 17 risk factors were identified of which the leading cause of mortality included Sexually Transmitted Diseases from unsafe sex accounting for 26.3 percent of the estimated 521000 deaths in South Africa in 2000 followed by High Blood Pressure 9.0 percent and tobacco smoking 8.5

percent. STI from Unsafe Sex accounted for the highest burden which is 31.5 percent of the 16.2 million DALY's in 2000. Interpersonal violence as a risk factor shows 8.4 percent of DALY's, Alcohol 7 percent and tobacco smoking showed 4 percent of all DALYS [10].

### Interpersonal violence as a burden of disease in south africa

Interpersonal Violence due to rapid urbanization and economic disparity remains a challenge in South Africa. Injuries due to IPV caused 27563 deaths in South Africa in 2000. The age-standardised homicide rate is 65 per 100,000 was more than seven times the global average declaring South Africa as the most violent country. IPV accounted for 1.4 million DALYs or 8.4 percent of all DALY's in 2000 [11].

### Burden of disease due to Alcohol use in South Africa in 2000

Alcohol harm resulted in an average of 7.1 percent of all deaths and 7 percent of total DALYs in 2000. Household surveys show that currently 50 percent of men and 20 percent of women drink alcohol in South Africa. 37000 deaths were attributable to alcohol in 2000 [12].

### Burden of disease attributable to Smoking in South Africa in 2000

Smoking caused deaths between 41632 and 46656 deaths in South Africa accounting 8.0 to 9.0 percent of deaths and 3.7-4.3 percent of DALYs in 2000. Smoking ranked third in terms of mortality among 17 risk factors. Lung Cancer is caused by smoking. A large number of cardiovascular diseases are cause due to smoking. The government has taken a legislative action to discourage tobacco use since 1994 [13].

### Burden of disease attributable to high blood pressure in south Africa in 2000

High blood pressure has been estimated to cause 46888 deaths of all deaths in South Africa in 2000. 390860 DALYs or 2.4 percent of all DALYs were due to High Blood Pressure in 2000. High Blood Pressure causes a great burden to Cardio Vascular Disease in South Africa [14].

## **Diabetes as a burden of disease in south Africa in 2000**

Diabetes has estimated to cause 22412 of all deaths in South Africa or 4.3 percent of all deaths in South Africa in 2000. Diabetes is a burden directly or indirectly and therefore primary prevention is required at Primary Health Care Levels [15].

### **Effect on the health care system**

The study done by D Bradshaw and P Groenwald estimates that the burden of disease due to HIV AIDS will predominantly grow in the next few years unless interventions are done. The number of orphans is growing due to HIV consequences. Therefore, basic needs and psychosocial support is needed for these children. National Government Expenditure for HIV AIDS for 2001 and 2002 was 236 Million Rand and in 2002/2003 the budget went over Rand 1 Billion and 2 Billion for 2003 and 2004. Implementation of prevention and treatment programme will likely reduce the impact, but this cannot be expected in short to medium terms.

### **Addressing the challenges**

South Africa has more sick people than compared to any other developing or developed countries. The burden of disease is 4 times larger than that of developed countries and doubles that of developing countries. It's natural now that we have a burden on finances, facilities and human resources compared to other countries. Therefore, a national health system is needed to look into South Africa's burden of disease. We cannot develop a National Health Insurance in comparison to UK's NHS or other Advanced Economies Health System simply because we have a unique problem different from others. The Challenge is to debate, develop and implement the NHI in South Africa which will take care of the quadruple burden without burdening the ordinary citizen for further financial contributions [3].

## **Challenges**

### **Social determinants and racial disparities**

Past two decades South Africa has to confront poverty, unemployment, sexism and socioeconomic inequity. Integration and Coordination – Integration of public

and private sectors, vertical and community outreach programmes will be challenging. Integration of tuberculosis and HIV services and service delivery for maternal, neonatal and child health and Non-Communicable Diseases still needs to be looked into.

### **Surveillance and information**

The National Department of Health in South Africa established a Health Data Advisory and Coordinating Committee which identified key indicators and data sources to be used to monitor the performance of health ministry. Information system was further strengthened but still data systems are not truly representative, good quality information in a timely manner is still lacking.

### **Scaling up of innovative interventions**

Innovations planned like NHI, their scale will be uneven in different provinces and there might even be a widening of the equity gap unless the very infrastructure could be changed [8].

The following interventions should be urgently done:

- To reduce HIV transmission and delay mortality from AIDS in Adults by improving the treatment of Sexually Transmitted Infections, voluntary counseling and testing services, provision of Anti-Retroviral Treatment to Pregnant HIV-positive women and HIV-positive patients and promotion of safe sex.
- Improving TB Control considering that a portion of TB sufferers is a part of HIV disease.
- Develop strategies for reducing violence and injuries.
- Promoting healthy lifestyles (Diet/Physical Activity/Alcohol and Substance Abuse).

### **World health organisation and emergency medical care**

The World Health Organisation has its headquarters in Geneva. Established in 7th April 1948, its prime function is concerned with international public health. The World Health Organisation is a member of the United Nations Development Group [16-19]. World Health Assembly Resolution 60. 22 titled-Health Systems: Emergency Care Systems provides guidelines for a policy tool in improving

Emergency Health Care and its provision globally. It specifically mentions about efforts and concrete steps by all governments to strengthen the Emergency Medical System so that burden of diseases from acute illnesses and injuries in population of all socioeconomic spectrums can be reduced.

The WHO recognises the public health role in Emergency Care Systems and this resolution remains the pivotal role of an international body in recognising the importance of Emergency Medical System. Secondary prevention of acute illnesses and injuries are inadequate in middle-and low-income countries, cost effectiveness in implementing policies with the assistance of WHO can reduce morbidities and mortalities [20]. The development of tools as Emergency Medicine Education, System Assessment, Quality improvement and Evidence Based Clinical Practice provides a structural base for the development of Emergency Medical Care in any country [17].

### **Example of international collaboration in emergency medicine**

Karoli Lwanga Hospital in rural Uganda and Global Emergency Care Collaborative (GECC) opened the first functional Emergency Centre in rural Uganda. GECC is in the process of developing a training program for mid-level Emergency Care Practitioners for this project [18,19].

### **USAID and its involvement in emergency medical care**

USAID is the leading US Government agency that works to end extreme global poverty and enable resilient, democratic societies to realize their potential [20]. President John F Kennedy created the United States Agency for International Development by an executive order in 1961. He formed this single agency responsible for administering aid in promoting social and economic development.

#### **USAID in the 1970s focussed on:**

- Food and nutrition
- Population planning
- Health

- Education
- Human Resource Development

**USAID in 2000 focussed on:** War and Rebuilding. It was only then that they partnered for the development of Emergency Medicine in War-torn countries, Natural catastrophes and Complex Humanitarian Emergencies

**USAID in Syria:** 378 Million Dollars US Humanitarian Assistance for those affected in War in Syria [21-23].

**USAID in Liberia:** 10000 sets of Protective Clothing for Health Workers involved in containing Ebola and building of Ebola treatment centres. Total USAID – Dollar 10945, 896.

**USAID's involvement in conflict mitigation and prevention [24]** USAID gave 60 million US Dollars following the bombing of US Embassies in Kenya and Tanzania for the development of the Pre-Hospital Care and Incident Command structure in both these countries [22].

**USAID's involvement in Cholera prevention and treatment to Djibouti [23]** World Bank, Its Involvement in Emergency Medical Care. The World Bank is a Global Financial Institution providing loans to developing countries for capital programs. The World Bank is a component of the World Bank Group and a member of the United Nations Development Group. Its main goal is reduction of poverty and that is done via foreign investment, international trade and capital investment [25] The World Bank's minimum package of Health Services includes six cost-effective interventions, one of which is a series of non-specialised interventions for Emergencies, known collectively as Limited Care [26] World Bank has invested in the development of Basic Emergency Care Services in the Republic of Moldova. There is a Health Sector Reform Project started by the World Bank in Romania in improving Emergency Medical Services [26,27].

World Bank categorised Global health into four categories. Economic Indicators like the per capita gross national product. Some of the highly developed economies like Japan have limited Emergency Medical Systems and Training. The Intermediate countries like South and

Central America, the Middle East, parts of Asia and Eastern Europe. These countries are able to sustain and develop an Emergency Medical System. The countries with least developed economies and health infrastructure include Sub Saharan Africa, South Asia and Central American Countries. Transportation and Communication infrastructure is lacking and therefore these components need development rather than Advanced Emergency Health Care Services [28]. World Bank has also partnered with UNAIDS for providing leadership in countering AIDS

### **Public-private partnerships**

With increasing globalization and accompanying changes in the health sector, formulation and implementation of Health policies are becoming increasingly difficult, particularly for Low Income Group Countries. The present global environment is mostly shaped by private actors for the sustenance of social, political and health reform. Multi-centric Governance which includes private organisations is being increasingly used for governing global problems. One must admit that with increasing public-private partnerships, the role of the United Nations is being increasingly challenged [29]. An Example of Public Private Partnership is The International AIDS Vaccine Initiative is a partnership between World Bank, The Joint United Nations Programme for HIV AIDS (UNAIDS) and Levi Strauss, private Laboratories, development agencies of the Swiss and UK Governments and various academia.

The other examples are:

- European Malaria Vaccine Initiative
- Global Alliance for Tuberculosis Drug Development
- Drugs for Neglected Diseases Initiative
- Pneumococcal Vaccine Accelerated

The private funding has always come with its own woes like looking for profits and various ethical dilemmas, Public Health Emergency Preparedness in the United States acts with partnerships of private and non-profit organisations [30] Poorly performing Government Hospitals in Brazil has been given a Public Private Partnership for the revival and efficient running of the hospital. The model altered governance and financing arrangements in ways that generated the key changes in human resources, financial

and procurement management. In other words, the entire package of governance reforms created an enabling incentive and accountability environment for managerial practices that improved performance. In our view, the changes in human-resource practices and management are the most critical [31].

### **Describe your views on the NHI as it pertains to South Africa (using the NHI white paper as a guide). What are its strengths and what are its weaknesses? How would you address these?**

Health Care Financing has been the object of much research and policy making in South Africa. There is an imbalance of rights to health purely because imbalance in socioeconomic priorities. Design and Implementation of an adequate health financing system are essential in the pursuit of universal coverage. This was a WHO plan of 2005 but then the organisation found out that the Health Financing System in many developing countries do not meet the prerequisites of universal coverage. It was specially mentioned and I would quote 'Universal coverage does not only relate to generation of Health Care Funds but implies equity in access and guaranteed financial risk protection [32]

It was desired that a social solidarity that encompasses African Cultures allow cross subsidisation of the poor by the rich (Income Cross Subsidy) and the sick by the healthy (Risk Cross Subsidy). South Africa has the highest income inequality, such that the poorest 10 percent of the population shared only Rand 1.1 billion (0.1 percent of total incomes) compared with R 381 billion (representing 51 percent) by the top 10 percent of the population. This misdistribution has a high poverty and unemployment [33,34].

Well off provinces like Gauteng and Western Cape have the lowest poverty rate, highest medical scheme coverage, public health spending per capita and better access to potable drinking water as compared to other relatively poor provinces [35,36]. It was in 2007, the ruling African National Congress at its meeting in Polokwane decided in establishing the National Health Insurance System. There was a growing concern for the poor who cannot utilize the health system due to high costs and employees complaining of the increasing cost of Medical Schemes which gets higher at regular intervals. The proposed NHI

scheme believes in restructuring of the South African Health System for ensuring better performance and allows accessibility to all.

The scheme will have funds pooled in a single unit National Health Insurance Fund. The pool will get funds from General Tax revenue and Health Insurance Contribution. The pooled funds will then be used to quality health services for all residents in South Africa.

### **Principles of NHI – summarised:**

- Improve access to quality health care services for the entire population
- Provide Financial Risk Protection against health-related catastrophic expenditures
- To procure services on behalf of the entire population and efficiently mobilise and control key financial resources
- To strengthen the under resourced and strained public sector so as to improve health systems performance
- Global experience has shown us that Primary Health Care (PHC) is the centre for service delivery

### **Three components have been isolated**

- Ward Based PHC Agents Approx. 25 percent of the 40, 000 Community Health Workers have been retrained in the new community oriented PHC
- School Health Services Disadvantaged Schools will have Mobile Health Services
- District Clinical Specialist Teams Will focus on Mothers, New-borns and Children- Family Physicians, Gynaecologists, Midwives and Paediatric Nurses are being placed [37].

### **Risks**

1. As the quality of public sector services improve, there will be a greater use and therefore requires further analysis and consultation. The vision of NHI needs to be discussed with a wide range of stake holders.
2. Formal Evaluation and Operational Research will be required for implementing business plans in NHI districts.

### **My opinion**

- NHI is a dynamic idea which the government should definitely implement. Primarily for the following reasons:
- The gap between haves and have nots are increasing at an alarming rate.
- Public Sector Hospitals are poorly run because of lack of human resources.
- Human Resources abandoning the public sector for Private and overseas for job dissatisfaction, overburdening and poor salaries.
- Strengthening of Primary Health Care with the assistance of local community and benefits for the Medical Doctor and Nurses.
- The increase in Medical Schemes prices randomly also is an added benefit for the Public Sector to be strengthened.
- The HIV AIDS Pandemic also is an important contributory factor for the implementation NHI.

### **Weaknesses**

- GPs are not clear about their stand in NHI. GPs being contracted to serve has been looked by them suspiciously. The success of NHI will depend on inventiveness and empowerment by the GPS
- The central objective of the reform which seeks to rise up to 5% of Gross Domestic Product (GDP) in additional taxes to achieve a total public spend equivalent to 8% of GDP. There has yet to be seen an international precedent such as this for such a proposal, with no other developing countries spending anywhere close to this level on public health. Were such a proposal to be implemented it would require that personal tax rates rise to extremely high levels, with a general doubling tax rate. Other than from the general financial considerations the institutional proposals, involving the implementation of what is termed a “SARS-like” organisation, raise serious financial concerns. There remains a lack of clarity over why this organisation is necessary and what institutional weaknesses it seeks to address, the ambitious list of proposed functions

suggest that it will be far more expensive than indicated. This chapter largely concludes that the ANC proposals would be difficult to implement as proposed and possibly can't address existing weaknesses in the health system.

- South Korea and Taiwan are the only countries that are single payer NHI arrangement. Despite having NHI, the total health spending in both countries 3.6 and 3.7 percent of GDP. Both South Korea and Taiwan are industrialised nations and are not dependent on expensive imports nor do they have a pandemic of HIV AIDS.
- De-politicisation of the administration of the health service and subsequently the NHI is required. This will bring more proposals and bold interventions [38,39].
- My personal feeling about contracting doctors from Cuba is not a comfortable one. The Cuban Medical Education is of socialist pattern being taught in Cuba, USSR and East European Countries. South Africa being a commonwealth nation does not fit with their knowledge, experience and language barriers.

### Recommendation

- Establishment of large single multispecialty group practices
- The structure would be such that deployment to public hospitals can be done
- Private hospitals would tender for clinical case load from these group practices.
- Establishment of alternative reimbursement models.
- Capitation models for Risk and Diagnosis related group can be utilized where appropriate.
- A proper construction of GP to Specialist referral network, optimising and sharing of data and better coordination of patient care.
- Training of Clinical Nursing Assistants and other categories of Health Workers including those that work in the PHC setting
- Encouraging retired doctors to return to practice.

- Termination of Practice of Remunerative Work outside the Public Service
- Establishing properly constructed Designated Service Provider Networks for the benefit of patients and not third parties.
- Use of Public Private Partnership for contracting to the public sector
- Further consolidation of all Medical Schemes
- Water Service and Sanitation must receive top priority
- Establishment of Low-Income Medical Schemes should be a priority for access to GPS and PHCs all over the country [40].

EMS systems are complex and have multiple components within them that are required for system success. Describe any 2 of these components in detail and evaluate their role in the success (or failure) of an EMS system in a developing country. Use examples as appropriate. Emergency Medical Services involving Pre-Hospital Care have been a recent evolvement. The need for Pre-Hospital Care was understood way before the First World War and even the eighteen-century royals in India had rudiments of Pre-Hospital Care in the form of first aid by laymen and Hakeem that quickly did whatever possible at the site before taking the patient to a definitive centre or a doctor. William Darlymple's books, *The City of Djinns* and *The Last Mughal* are a riveting read about eighteenth century India, the 1857 mutiny against the English colonialists and Pre-Hospital Care in the English Regiments and the rebels, a forgotten entity in the annals of Emergency Medicine. As a Medical Doctor and an Orthopaedic Surgeon, I travelled since 1983 to many developing and least developed countries and found although a developed Orthopaedic Care was available in hospitals but Pre-Hospital Care seemed to be non-existent.

Democracy came to South Africa in 1994 and I witnessed an EMS system in place, although it has evolved to a far more advanced profession than before. I must admit during my work in the former Transkei and Ciskei, EMS was never non-existent. The EMS was more attached to regional and district hospitals as compared to being a complete department of its own. Today the EMS in South

Africa is the most developed professional service in Africa. There are 15 different components which make up an EMS system to work smoothly. EMS in Developing countries doesn't have all these 15 components. South Africa, a developing country is in the process of strengthening all these 15 components. Being stationed in a tertiary hospital complex in East London, Eastern Cape, I would like to discuss the Education and Training, Equipment and Communication part of these EMS personnel.

### **Present status of EMS education in South Africa – EMS personnel [41]**

There are several levels of training available for EMS personnel. The first one being a Basic Ambulance Assistant Course recognised by the Health Profession Council of South Africa.

#### **Basic Ambulance Assistant Course**

Period–1 month of training.

Course details – Use of Ambulance Equipment.

- CPR.
- Use of Automated External Defibrillators (AED).
- First Aid
- Vehicle Extrication.
- Packaging.
- Simple Trauma Management.
- Oxygen.
- Entonox.
- Oral Glucose.
- Activated Charcoal.
- Recommendation–Every EMS vehicle should have 2 BAA qualified professionals.

#### **Intermediate life support practitioner**

Period–4 plus months training program

Qualification–Ambulance Emergency Assistant

Course details–In addition to BAA protocols

- Learning to Nebulise
- Intravenous lines for Crystalloids
- Oral Aspirin when needed
- Manual Defibrillator use
- Advance Life Support Practitioner
- Period–12-month full-time plus road time
- Qualification – Critical Care Assistant also known as the Paramedic
- Paediatric Advanced Life Support Course
- Advanced Cardiac Life Support Course
- Advanced Trauma Life Support Course
- Advanced Airway Management
- Synchronised Cardioversion

Use of 27 different medication, benzodiazepines, intravenous analgesics and emergency cardiac medication [41,42].

#### **Diploma course**

- Period - 3 years Full Time
- Cape Peninsula University of Technology
- Durban Institute of Technology
- University of Johannesburg

#### **Role in success and failure**

After 1994, there has been an interest and enthusiasm generated in learning and becoming a paramedic. Unfortunately, this interest still seems to be in a small group of population, the majority after finishing school prefer joining other professions. I believe this is purely because of lack of public awareness. Emergency Medicine Professionals are now under a single joint umbrella of Doctors, Nurses and Paramedics. Yet the community still seems to misunderstand the EMS professionals as 'Ambulance Guys' and therefore the lack of feeling to

join this profession. I believe that the Head of EMS of provinces of South Africa in association with universities should visit schools and give PowerPoint presentations on the benefits and challenges in taking EMS as a career. There is also a lack of Government initiative to train the BAA personnel to Advanced courses. Bursaries for further studies are limited by different provincial governments for continuing professional developments

The Golden Hour which is the basis of Emergency Medicine is unrecognised because of lack of trained personnel. Trained EMS personnel from South Africa are in great demand overseas and private EMS services. Due to patient overload, under financing and lack of equity in distribution of resources, EMS Training and their employment in the right notch have lagged behind. The recommendation of one team to 50000 people as suggested by McSwain for a response time as low as 5-6 mins is not possible due to limited EMS personnel available in provinces like Eastern Cape in South Africa [43].

### **Equipment and communication**

This is an important tenet of the EMS system. Even with trained and qualified EMS personnel, lack of state-of-the-art equipment and communication system devalues the EMS profession. South Africa as a developing country continues to replace outdated equipment's with modern ones [42]. After Government legislation on the development of Emergency Medical Service as a profession, it has become a department on its own under the Department of Health in various provinces. Before 1994, the EMS was clubbed with Fire-fighters and its independence and consequent development was stunted

### **Basic resources**

- Stretcher – foldable
- Splints of all size
- Bandages/Gauze/Cotton
- Fluids – Crystalloids
- Glucose
- Cervical Collars
- Two Way Radio and Mobile Phones

### **Advance Life Care Ambulances**

- ECG Monitors
- Entonox
- Extrication Kit
- Intubation Kit
- Nebulisation Kit
- Cric Kit
- Two Way Radio/ Mobile Phones

Central Station with a three-digit number which has personnel around a computerised platform directing EMS personnel to sites and hospitals

### **Role in success and failure**

Several factors are to be considered:

- Geography
- Referral Hospitals
- Effectiveness

**Geography:** Rural/Urban environment, each will have its decisive approach, considering trauma, disease age and health factors.

**Referral Hospitals:** The effectiveness of communicating in advance with a regional hospital whether such a patient can be treated or stabilized before taking the patient to a tertiary center. Poor communication equipment, ineffective computerization of call centers and non-logging of calls have given us poor statistics. Effectiveness of responding to a call only to find the patient needs only palliative care. Patient with poor outcomes should not be pushed and forced by EMS to intervene.

Information and Communication Technology to coordinate Emergency Medical services and the Emergency Medicine Dept, the following were brought to notice

- Inter team Coordination is difficult during crisis situation
- Most Information and Communication Technologies (ICT) are designed to support Intra Team and not Inter team Coordination

- The major challenges to inter team coordination between Emergency Medical Service Team and Emergency Medicine Department teams have a strong socio technical aspect.

Finally, Professor Lee Wallis, Head of Emergency Medicine University of Cape Town and Stellenbosch writes about Components of EMS System in South Africa in his Guest Editorial in Continuing Medical Education– Essential components of emergency care have not been determined and there is no consensus on how to define success. To date, there has been no systematic analysis of the emergency care delivery systems most appropriate to our context. While there are scattered examples of successful interventions, little is known about what makes these centres effective or how others might replicate their success. Impact is often quantified by the number of providers trained, rather than by any measure that incorporates patient outcome, quality or performance assessment [44].

### Comparing to EMS system in India

India has evolved in the recent years as an economic giant among South Asian Countries. It has the state-of-the-art medical technology and professionals in public and privately-owned tertiary care hospitals. Primary Health Care still lags behind as much as Emergency Medical System which is actually non-existent. India lags far behind in having a comprehensive Emergency Care System that would cover the whole country. From 1972 to 1983, I did not find any government regulated body in different provinces of India. Post 1983 till today EMS has become

more privatised in India with private companies attached to private hospitals running a Basic Care Emergency Services in major cities. Apollo Care Hospitals which are the biggest private tertiary care hospitals in India and South East Asia has a rudimentary EMS system attached to it. The Tata Memorial Cancer Hospital in Mumbai, the biggest tertiary cancer care hospital attached to British and American Universities do not have any EMS system that could stabilise and bring cancer patients from peripheries to the centre.

The 2010 Commonwealth Games in India brought in the revelation of the poor existence of EMS at Delhi. It was only then; committees were formed at the national level to oversee the development of an EMS system. Private sector organisations like Emergency Management and Research Institute (EMRI) and Ambulance Access for All (AAA) are independent fragmented organisations working without any licence or legislation from the government. A nation of a billion people does not have an EMS system nor there are any data's available to enforce immediately by the elected government to bill a legislation at the national parliament to develop the rudimentary pre-hospital care to an advanced EMS System [45,46]. 'The EMS Agenda for the Future' project undertaken by the dept of Emergency Medicine, University of Pittsburgh, a multidisciplinary committee, collaborated with hundreds of EMS professionals to create a vision for future. They concluded that its value in public service network must not be neglected along with its integration with services to maintain community health, new partnerships within the health system must be explored [47,48].

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