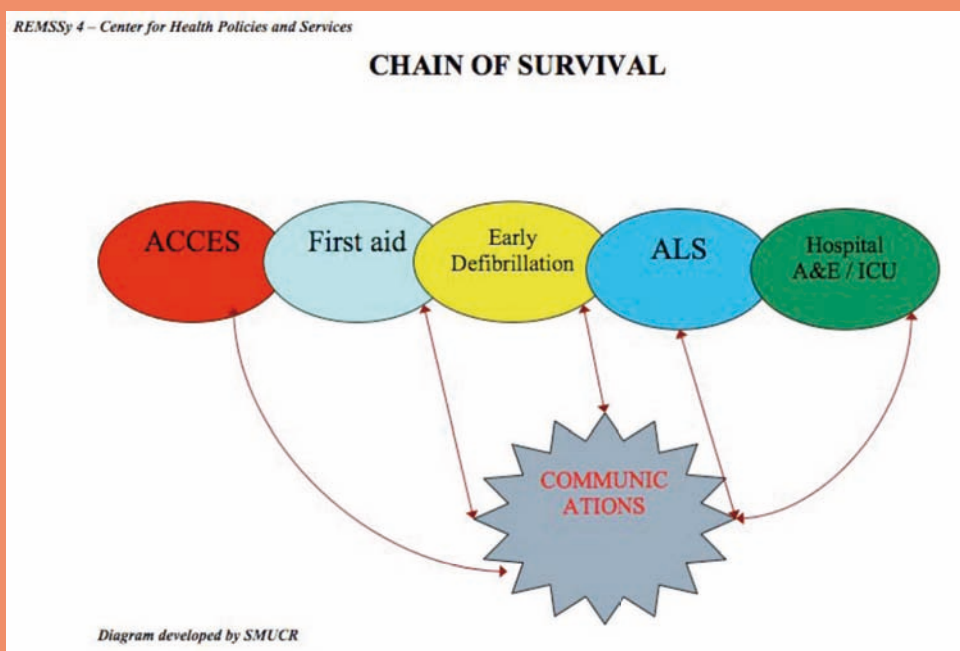


REMSSy

An SDC project for the development of the Romanian Emergency Medical Services



Report of the external project review,
which took place from February 6-16, 2007

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List of abbreviations

EM	Emergency Medicine
ED	Emergency Department
EMS	Emergency Medical Services
EMA	Emergency Medical Assistance
OH-EMS	Out-of-hospital EMS
PH-EMS	Pre-hospital EMS
c-PHA	County Public Health Authority or Directorate
CBI-ES	Community based integrated emergency services
DAS	District Ambulance Service
FIRST	First intervention team in rural areas
SMURD/SMUCR	Mobile resuscitation and extrication emergency services
SMURD-First	Fire-brigade based SMURD in rural areas
'Judets'	Counties: administrative districts (41 and 1=Bucharest)
MOPH	Ministry of Public Health
MOI	Ministry of Interior
WB	World Bank
EIB	European Investment Bank
HSRP	Health Sector Reform Project
RHSR	Romanian Health Sector Reform
BEMSSy	Bucharest EMS System (Project B)
REMSSy	Regional EMS Systems (Projects R2/R3/R4)
SDC	Swiss Development Cooperation
SECO	State Secretariat for Economic Affairs (CH)
CHPS	Center for Health Policy and Services (=EA)
CAD	Computer Aid Dispatch
FAST	Focused Assessment Sonography in Trauma
TOT	Training of Trainers
QAIB	Quality Assurance and Improvement Bureaus / Boards
BS-CPR	By-stander CPR (\approx first aid)
C-CPR	Citizen CPR (\approx first aid)
CPR	Cardiopulmonary Resuscitation
OH-CAV	Out-of-hospital Cardiac Arrest Victims
ME	'Major emergency' ('grandes urgences')
H	At the level of the Hospital
PH	At the pre-hospital level

INTRODUCTION

REMSSy is the acronym for an SDC project in Romania that has its roots in a commitment of the Swiss government ('Osthilfe' and SECO, not belonging to SDC at that time) back in 1994. It stays for a support in the development of 'Regional Emergency Medical Services Systems', starting with a first phase (1994–1996) as project 'BEMSSy' in the capital Bucharest, extended than in a second phase (1998–2001) to six other regions or counties as 'REMSSy 2' and in a third phase (2002–mid 2005) to further seven counties as 'REMSSy 3'. Since October 2005 the project runs a fourth phase as 'REMSSy 4', continuing the support in the 14 counties but extending some activities to the whole country.

This long commitment is an implicit proof for the confidence of the Romanian government in the Swiss support, expressed in its reiterated demand for continuation at each end of a phase. Another implicit expression of trust in the high quality of project performance was the fact that the World Bank joined the endeavor with a loan for equipment for emergency service delivery, complementing ideally the efforts of SDC, which focused increasingly on human resource development, conceptual work and legislation.

With the adherence of Romania to the European Union, SDC's mandate must come to an end, the country office being closed in the first months of 2008. This new development did influence the scope of the present review: initially planned as focusing mainly on REMSSy 4, SDC's interest is now more on a comprehensive appreciation of the outcome and impact of the whole project, in order to learn and capitalize from the experiences made (see ToR appended).

As stated above, the success of the project – implicitly as well as through information and impressions gathered during the review mission – seems evident. While at the inception of the project 1994, according to testimonies of physicians and health authorities cited in former reports and collected during this mission, the destiny of severely ill or injured patients was uncertain, emergency services being limited to simple transportation. Hospitals were merely equipped with simple emergency rooms. Today, the alert system is professionalized, well-equipped ambulances with trained staff are able to treat and stabilize 'severe emergencies' already on site and hospitals offer up-to-date medical interventions in specific 'emergency departments'. Laws and by-laws have been promulgated, guaranteeing standards and procedures of Emergency medical services; curricula for emergency personal are drafted and training accredited. The picture of emergency medicine has changed dramatically in the past decade – and SDC's REMSSy project has played surely a catalytic, but probably an even more crucial role in this progress.

Besides this qualitative and impressionistic appreciation of the project, this review tries to fulfill some quantitative expectations related to project outcomes and impacts. This attempt might contribute to SDC's general effort in the current year 'to develop and use innovative, standardized instruments for measuring the quantitative efficiency of its activities' (Director Fust in 'SDC: Change and continuity').

While project outputs in all phases were well documented in reports, monitoring sheets and audits about activities and expenses, quantitative outcome indicators are more difficult to obtain. The project's overall goal being 'to increase the chances of survival of patients utilizing emergency medical services', direct quantitative indications demonstrating a positive impact on it should be obtained. But this evidence isn't so easy to get, too many 'confounding factors' influencing it.

Nevertheless, since 2002, the project has initiated a big effort to collect EMS–performance and quality data nationwide, through very comprehensive questionnaires that cover partly the required information on emergency related morbidity and mortality. Despite the limited reliability of these data, with quality variations among the regions with different project exposure, this review will present the results of the analysis: not only to assess the performance of the project, and even less that of the project implementers, but rather to give an example for the challenges of such a quantitative evaluation, its limits and traps on one side, and its potential – if it’s well done – on the other side (see chapter ‘OUTCOMES of former phases’).

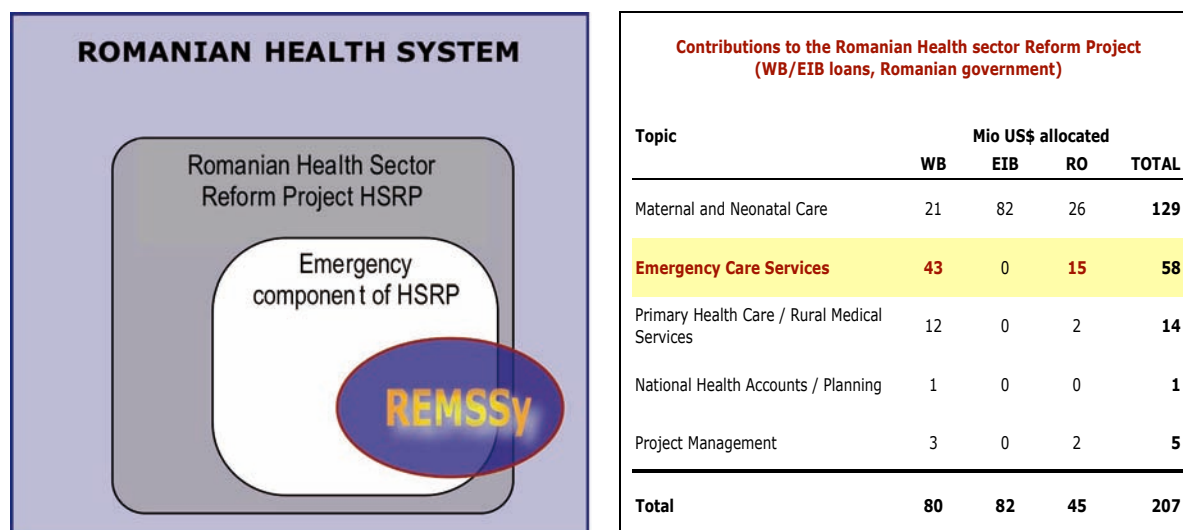
The professional commitment of the team of the REMSSy implementing agency, the ‘Center of Health Policy and Services’ (since 2003), has contributed strongly in preparing this mission and especially in collaborating with the information gathering and data analysis.

GOAL of REMSSy

Support the improvement of the Regional Emergency Medical Services in Romania, in order to:

- ⇒ *Increase the probability to survive in case of a severe medical emergency;*
- ⇒ *Increase the access of the population to high quality emergency medical services.*

Through the various phases, the project objectives and mode of functioning have changed: from the support of the Bucharest ambulance service with training and equipment towards a project integrated in the complex and comprehensive process of Romanians health sector reform, with a shift to the 'soft' aspects of a nation-wide EMS development (human resources, concepts, planning, legislation). The two figures below illustrate today's position of REMSSy within the Romanian Health System and the financial resources available for its reform through (a) the joint World Bank and European Investment Bank loan APL 2 and (b) the Romanian contribution.



Within the new loan, the EMS component is covered entirely by the World Bank (43 Mio. US\$). It has two sub-components:

- *Upgrade hospital emergency areas, which still are lacking the minimum equipment needed to cope with trauma and emergency medical care (a total of about 61 emergency rooms will be included in the project).*
- *Establish a modern integrated ambulance dispatch system, by upgrading the existing communication systems of District Ambulance Service dispatches, linking them to Central Emergency Call Centers (where patients get by dialing the new single emergency number 112) and enabling voice and data communication between dispatchers and ambulances sub-stations; this should lead to a nation-wide*

communication system encompassing all actors in emergencies (ambulance, police, defense and fire-brigades).

The REMSSy 4 project¹ has been designed – on request of both, the Romanian government and the World Bank – to complement these investments with the necessary ‘soft’ components. The R4-objectives – built on experiences and achievements of former phases – have therefore been organized into the two main areas ‘training’ and ‘quality of care’:

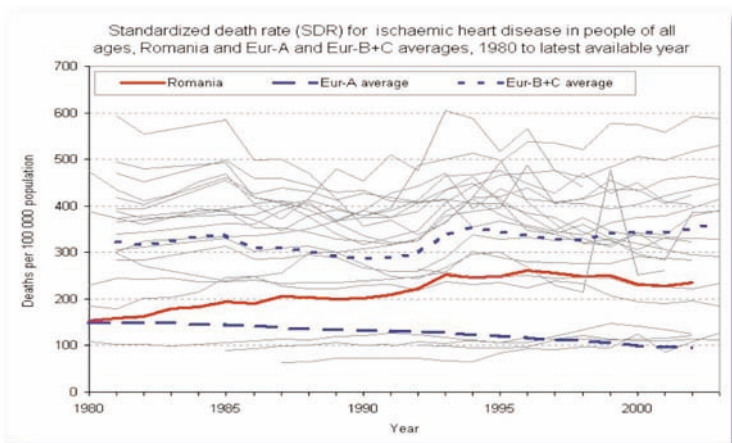
- ***Specific objective 1: By the end of 2007, a sustainable basic and continuous medical education system in emergency medicine is in place in Romania.***
- ***Specific objective 2: By the end of 2007, tools and mechanisms for quality assurance and monitoring are fully functional in 14 REMSSy districts and disseminated at national level.***

The budget allocated by SDC for this phase is 2.8 Mio SFr. Additional 868'500 SFr have been promised by the Romanian Ministry of Public Health.

A challenging ENVIRONMENT

Romania is a country in transition, especially in urban areas. The pace of this process is rapid and affects the public and private life of Romanians. But not all regions and all sections of the population profit equally from economic progress, inequalities are growing. Political instability is jeopardizing the necessary adjustments in the public sector. Decision processes for structural reform, for legislation and public investments are slow, due to frequent changes in public administration and government: in the past 16 years, the post of Health Minister was occupied by 16 different persons, directors of hospitals or public health directorates are changed frequently.

As a result, public services and infrastructure do not meet by far the expectations of a society that orients itself on living standards of occidental Europe – after the adhesion to the EU even more than before. One of these standards is a modern and efficient emergency medicine service.



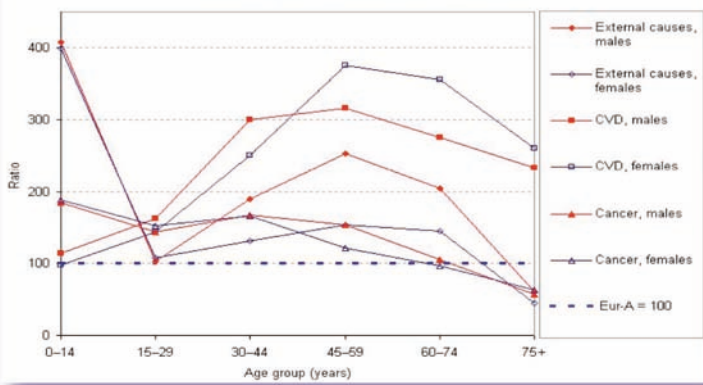
Development of cardiovascular disease mortality:
Western Europe (decrease) versus Romania (increase)

The transition has an influence on disease patterns, too. Increased traffic density in combination with out-dated road infrastructure and weak application of traffic rules leads to more traffic accidents with severe trauma patients. Changing habits (alimention, smoking) and increased stress, resulting from uncertain life-perspectives, are leading to an increased morbidity of cardio- and cerebro-vascular diseases. This shift in burden of disease leads to more severe, life-threatening medical emergencies, more poly-trauma patients, and more heart attacks with risk of

¹ Annex to contract with CHPS May 2005 and SDC credit proposal, June 2005

cardiac arrest and strokes. To avoid an increase of premature death among the Romanian population, a rapid life-saving intervention system is crucial, encompassing several essential components: family members or by-standers with minimal knowledge about first aid, efficient alert and dispatch systems, adequate pre-hospital ambulance services and professional in-hospital emergency medicine.

Main causes of mortality by sex and age group in Romania in comparison with Eur-A (Eur-A = 100), 2003



Mortality for 'external causes' and 'cardiovascular diseases' 2-4 times higher than in Western Europe (WHO)

The high excess death rates reported for the year 2003 (compared with Western Europe) is an indication that (a) more should be done to prevent these deaths and (b) that the life-saving intervention system needs still more attention to cope with the raising demand. For the decision maker in health it's certainly a difficult task to allocate resources in the most cost-effective way. But intuition and common sense must lead to one conclusion at least: The Romanian society needs and deserves an emergency medical system satisfying modern standards.

Another challenge for the Romanian health sector is the growing problem of migration of

health professionals. There is not only a move of nurses and physicians from rural towards urban areas, but increasingly – since Romania belongs to the European Union – a migration to European countries where higher salaries are paid. This phenomenon is not specific for the health sector, but it affects people's health in a very direct way – particularly that of the poor, rural population. It is a tricky task for a capacity building project like REMSSy to keep staff, who got training through the project, on duty – especially in remotely located institutions.

CONCEPTS and DEFINITIONS

1) EMS and Romanian Health Sector Reform (HSR)

'Between 1990 and 1995, government and MoPH issued a series of decrees and orders, which practically changed the entire structure of the health care system and established the legal framework for the shift from an integrated, centralized, state-owned and tax-based system to a more decentralized and pluralistic social health insurance system, with contractual relationships between health insurance funds as purchasers and health care providers' (cited from the 2001 edition of the 'European Observatory on Health care Systems: volume Romania').

After this initial reform phase, the important law on Social Health Insurance (1997), the law on Public Health (1998) and the law on Hospital Organization came into vigor. All these laws had a significant influence on the Emergency Medical Services (EMS), especially after 1999, when a series of specific MoPH orders were issued (ED-regulation, ambulance service regulation, QAIB's order, and even a REMSSy 2 ministerial order). While these regulations were continuously transformed up to 2005, a new 'Health Reform Law' with a specific chapter on EMS (chapter 4: 'Emergency Medical Services Title on National EMS and first aid system') was prepared and issued 2006. This law and some secondary regulations basically endorsed the new structures, functions and financing procedures put in place since 1999.

2) The legal framework for EMS² for 2007 is now as follows:

Structure & Delivery:

- **Hospital EDs:**
EDs are autonomous entities, categorized in different groups based on EMS level of provision (from regional to local, tertiary to primary level). Special regulations were issued for ED organization/functioning and transfer of critical care patients; regulation for the EM residency drafted, approval pending.
- **Public Ambulance Services:**
2 major functions (and structures): emergency interventions and medical consultations and transportation; private ambulance services expanded, mainly in Bucharest and big cities. Type of interventions, teams, responsibilities, vehicles and equipment described in a separate MoH order listed below ("legislation")
- **SMURD:**
Functional relationships defined in the Law, as public services operating under the MoH (hospitals EDs) and the MoI (local authorities and Fire Brigades) coordination. Two types of teams are already identified in the law text: Intensive Care (ICU SMURD, level II; vehicle or helicopter) and First Aid (SMURD-first, level I, based on paramedics). Details about organization and functions pending for approval, draft based on existing REMSSy model operational in the following counties: Mures, Iasi, Dolj, Sibiu, Cluj, Dolj, Timis, Hunedoara, Galati, Bihor).
- **Dispatch Centers:**
Integrated dispatch centers (alerted by single 112 number) mentioned as part of the national EMS system.
- **Private Ambulance Services:**
Need MoH accreditation; are not involved in public interventions for emergency care; can be contracted by the HIF or subcontracted by the ambulance services for home visits and medical transportation of non critical patients.

Financing:

Some EDs financed from the state budget through MoH/ DPHAs/Hospitals' budgets; details of payment model still in the design process (up to now retrospective); the rest still contracted through Hospitals by HIFs; yearly volume capped contracts.

SMURD component financed through the ED/hospital budget, contributions from the Fire Brigade (staff, maintenance), Ministry of Interior or local government (helicopter staff and maintenance).

Ambulance services: contracts based on number of km and type of interventions (tariffs); volume capped yearly contracts; refinements of the payment model ongoing.

Investments in equipment and ambulances are under the responsibility of the government through MoH; some local administrations and councils approved investments in SMURD and/or EDs.

Legislation:

- **Level 1 laws**
Health Reform Law (95/2006), Emergency Medical Services Title (IV) " National EMS and first aid system"
Gov. Decision for 2007: yearly contracting of providers with the HIF (1942/21.12.2006); refinement of detailed application norms ongoing.
- **Level 2 laws (by-laws, orders)**
MoH issued orders:
 - Classification of Hospitals from the EMS delivery point of view,
 - Classification and competencies of pre hospitals medical intervention teams,
 - Transfer of the critically ill patients.**Common MoH/HIF issued order:**
 - Evaluation of providers for contracting.**MoH pending orders:**
 - Organization and functioning of the EDs,
 - Organization and functioning of the SMURD teams (with MoI),
 - Organization of the EMS residency.**Common MoH/HIF pending order:**
 - Monitoring quality/performance of health services providers contracting with HIF.

² Compilation from a CHPS document prepared by Dana Burduj

3) The Emergency department and the specialized EM-physician

Prior to the Romanian health sector reform, emergencies were dealt with at all levels of the health system by physicians of various training levels and specializations: by general practitioners (GPs) in community-ambulatories, in out-patient and clinical departments of hospitals by specialized doctors. Some hospitals had meagerly equipped emergency rooms for the reception of patients.

Based on the Anglo-Saxon model and under the influence of Scottish support for the development of an emergency service in Tergu Mures in the early 90's, a concept of a modern EMS was developed based on well-equipped 'Emergency Departments' (ED's) and specially trained 'Emergency Physicians' (EM-doctors). This concept has progressively been integrated into the HSR-process. From the beginning and in all phases, REMSSy has supported this concept and strongly contributed to the establishment of laws and regulations (see above) stipulating the establishment of 'autonomous' ED's and the postgraduate training in emergency medicine. While the legislation on residency and EM-specialist accreditation and the regulations concerning standards and financing of ED's is still pending, an increasing number of medical students are already enrolled in postgraduate training in emergency medicine.

4) FAST: ultrasound diagnosis in emergency situation

The diagnostic methodology FAST (Focused Assessment Sonography in Trauma) is a diagnostic procedure allowing a very rapid differential diagnosis and triage in critical care medicine. This methodology has been introduced first in USA and came to Romania via Western Europe, where the Romanian Ultrasound Society started to promote it, under the guidance of two renowned ultrasound specialist from the University Hospital in Cluj³. The FAST method has some very convincing advantages: by focusing on a limited number of crucial diagnostic questions, it allows to start adequate life-saving treatments or procedures within minutes after the arrival of a critically ill patient; it is like the enlargement of the classical acoustical stethoscope; it can be learned rapidly because its limited scope; it is available 24 hours and much cheaper (up to 10'000 US\$) than alternative tools like CT-scans or MRIs; it's even available in portable form to be carried along in ambulances; it allows a very efficient triage in mass casualties.

As a result of the strong case for FAST, the MoPH has issued an ordinance declaring FAST a common procedure in ED's and an integral part during EM-physician's residency; the equipment of 62 ED's with ultrasound machines is part of the WB loan for EMS. REMSSy has been involved in these developments and has made the training for FAST an integral part of its 4th project phase.

5) Role of GPs within the EMS

In Romania it is possible to start practice directly after graduation from medical school, as general practitioner. On the other hand there exists a 3-year residency on general practice and a residency on family medicine. Theoretically, all these doctors have a gate-keeping function in order to refer patients to a specialist outpatient service or directly to an inpatient clinic. In addition, these doctors should play a role in dealing with emergencies. In reality, these functions seem to be rather badly fulfilled. The distribution of GPs in private practice or dispensaries is very inhomogeneous, rural areas being under-served, there is no 24 hour presence and diagnostic or treatment equipment non-existent. This 'primary care-based service' has been identified as one of the most neglected in the

³ Prof. Badea and Dr. Ducea , Medical Faculty, University Juliu Hatieganu, ultrasound training and research center

Romanian health system, a reason why the second focus besides EMS of WB-loan APL2 is Primary Health Care and Rural Medical Services, with a sub-loan for family doctors.

The reason for an overload of ED's with 'small emergencies' is precisely the weakness of this Primary care part of the health system. The difficulty to obtain a referral towards a clinical service (as required) results in a big influx of patients to the ED's. While in other countries GP's play an important role as first responders at least in minor emergencies, this seems not to be the case in Romania. Whether alternative emergency care structures and efficient ambulance services can palliate this gap, is a challenging issue, to which REMSSy 4 has decided to contribute with its pilot project on 'paramedic first response teams'.

GP's (with or without residency) are frequently employed as physicians by ambulance services, especially for home-visits, an important field of their activity. These GP's didn't get specific emergency care training for severe emergencies, which was and still is a serious concern of EMS-planers and decision-makers. As a response, the training of ambulance staff was an integral part of REMSSy project, since its start in Bucharest.

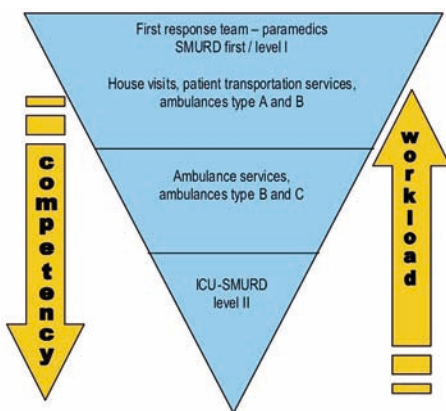
6) Emergency phone numbers: from 961 to 112

In Romania, people were used to call the number 961 in case of a medical emergency, or various 7-digit numbers, in less urgent cases, for patient transports, home visits, etc. But since several years, in line with European standards, a unique number for all types of emergencies should be used, i.e. the number 112. This number communicates the caller to a dispatch center where identity, location and the type of emergency is registered. The dispatcher then directs the call further to the concerned actors, police, fire brigade or ambulance/physician.

Despite the fact that 112 should be used today, less than half of the Romanian population is aware of it and 40% don't know where to call (result of a poll end of 2006 by CHPS). In addition, the advantage of the unique number for all emergencies is debated. The problem is an incompatibility of the IT-technology of the central call centers and ambulance dispatch centers resulting in a prolongation of the time from call to allocation of ambulance/staff (duplication of data entry, risk of communication error, impossibility of direct contact of dispatch physician with patient or by-stander). In some counties this problem has been resolved, in others (Bucharest DAS) the debate is ongoing.

7) The pre-hospital EMS:

The pre-hospital EMS pyramid:



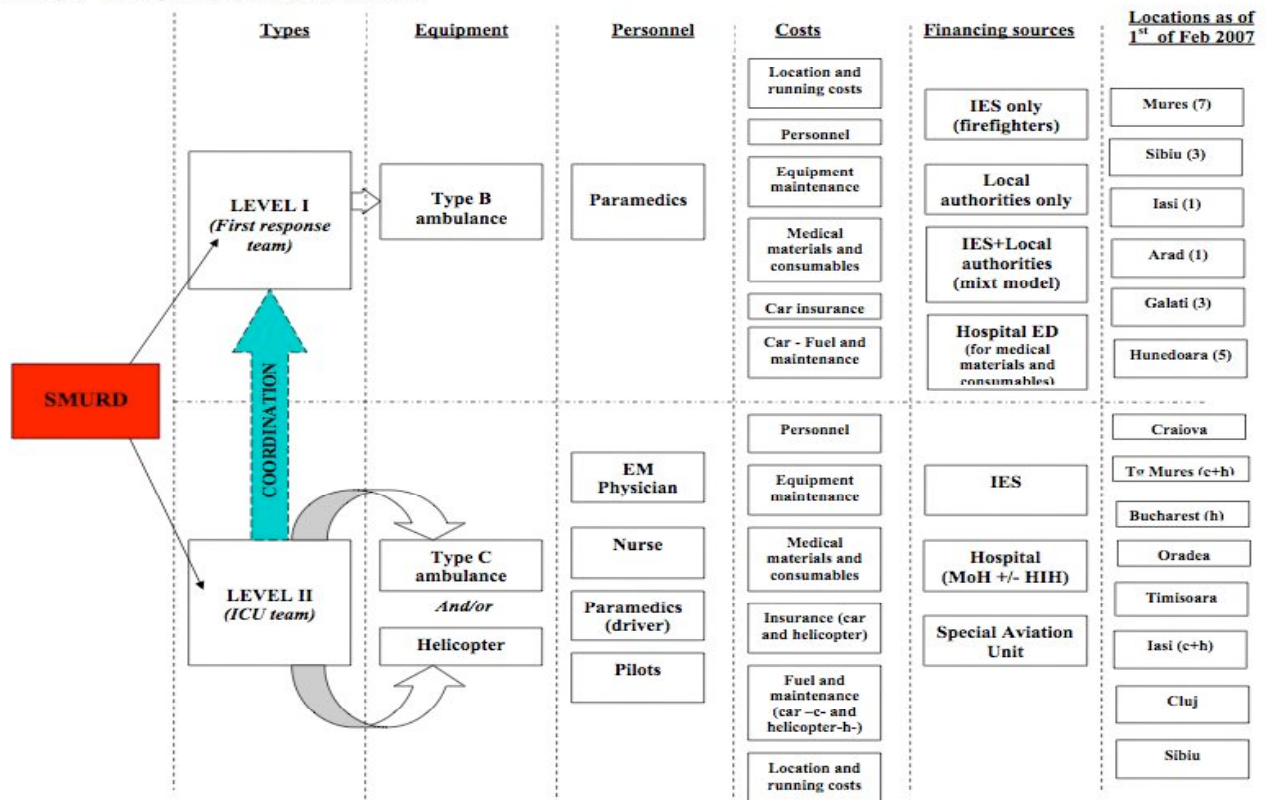
The Romanian pre-hospital emergency service has several components with different capacities and competencies.

In each county there is a District Ambulance Service (DAS) with its own dispatch, in charge of the pre-hospital emergency care. The primary health care not coping effectively with the needs of the population, especially in rural areas, the pre-hospital emergency services is also providing home visits and transport to hospitals for the chronic patients. This activities are performed with different types of vehicles: visits/transports with old Dacia ambulances (type A), less severe emergencies with Fiat, Mercedes and other type B ambulances (B1 less, B2 better equipped), and the best equipped type C ambulances, with a physician, a nurse and the driver on board. Some counties have, in addition, an emergency service called SMURD (*Serviciu Mobil de Urgenta Resuscitare si Descarcerare*), organized together with the fire

brigades, public services and hospital Emergency Departments (ED). SMURD are top level emergency ambulance services, dedicated only to severe medical emergency cases, especially for car accidents with poly-trauma patients, where extrication capacity is frequently necessary. Recently, the SMURD-component has been complimented by an element at the community level (first-SMURD or level I SMURD): fire-fighters of community fire-brigades are trained as paramedics in basic life support techniques and included in the chain of PH-ambulance services. These paramedics are enrolled in REMSSy training activities, together with staff of other ambulances services.

The following scheme shows this SMURD concept, the types of ambulances, staff and financing sources, as well as the locations where they will be (or are already) operational:

REMSSy 4 – Center for Health Policies and Services



8) Financing of EMS:

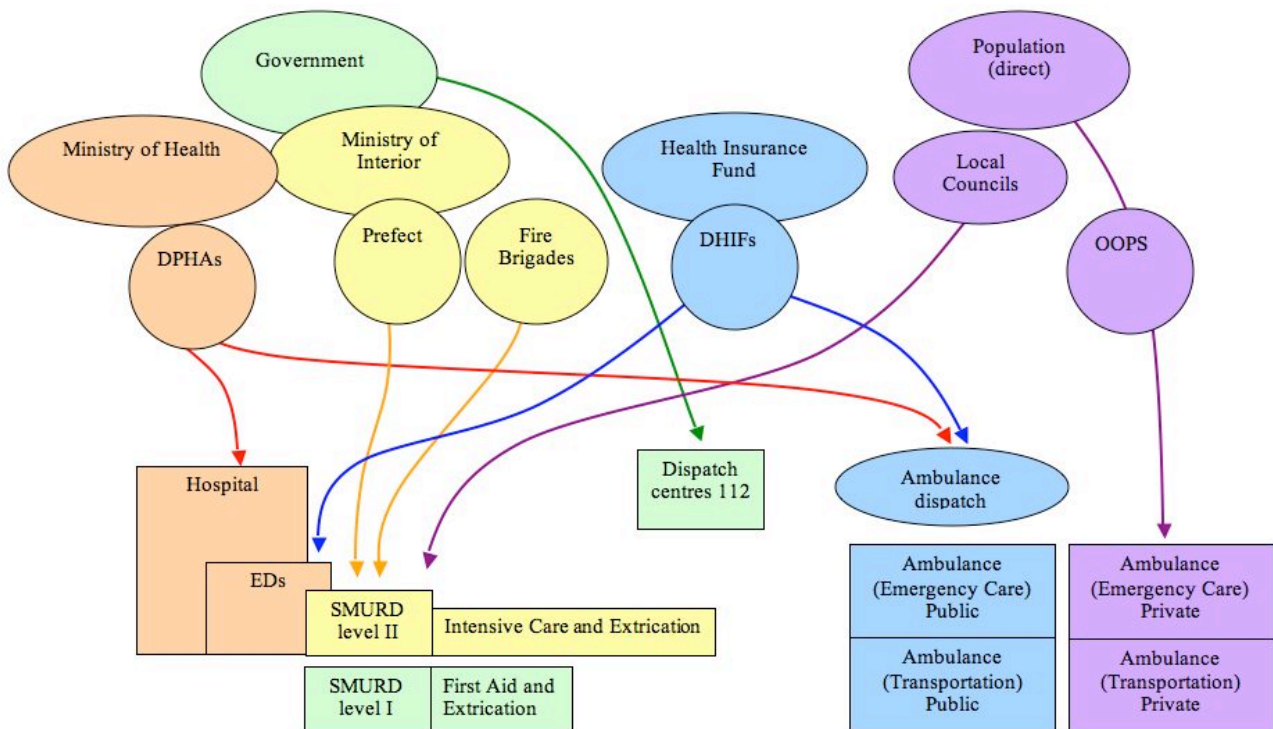
Starting in 1995, the financial resource allocation for health care provision underwent fundamental changes, from a state controlled tax-based system to a pluralistic health insurance system, with contractual relationships between health insurance funds and health care providers. This is still an ongoing process, leading sometimes to uncertainties concerning funding responsibilities for given services or investments. The total expenditure on health has increased from 4% of GDP in 1998 to 6.1% in 2003 (540 US\$ per capita; Switzerland about 4000 US\$; WHO data). The major sources for funds are taxes and compulsory health insurance contributions, district health insurance institutions being responsible for collecting the contributions (employer and employee 7% of salary each). According to the (former⁴) director of the National Health Insurance House, Christian

⁴ Just some days after the review mission, he has been replaced by Dr.Vasile Chiruchea from the MoPH

Vladescu, the problem of low collection rates of insurance fees has diminished and the overall health budget, taxes and insurance funds, has been doubled in the past year (the actual GDP share might reach the 10% mark).

Despite these perspectives at central level, the payment procedures for expenses of ambulance services and ED's at district level are not satisfactory. Ambulance services, e.g., are paid on a km/mission base, which is discouraging efforts for short intervention times, e.g. by establishing decentralized sub-stations. ED chief physicians complain about a lack of clarity in the definition of the funding-split among the different contributors (MoH funds through the District Public Health and Hospital Authorities, insurance funds through the DHIF); their notion of 'being autonomous' contradicts with the fact that their formal budget holder is still the hospital-director. The final definition of payment models is in the design process. This process is further complicated by the recent introduction of the DRG-system ('disease related groups' as basis for in-patient service payments, a financing tool to be introduced equally in Switzerland in the coming year). But according to the (former) director of the NHIH, DRG's would not be used for the financing of ED's.

The following graph shows the various sources of funds for the various elements of the Romanian EMS:

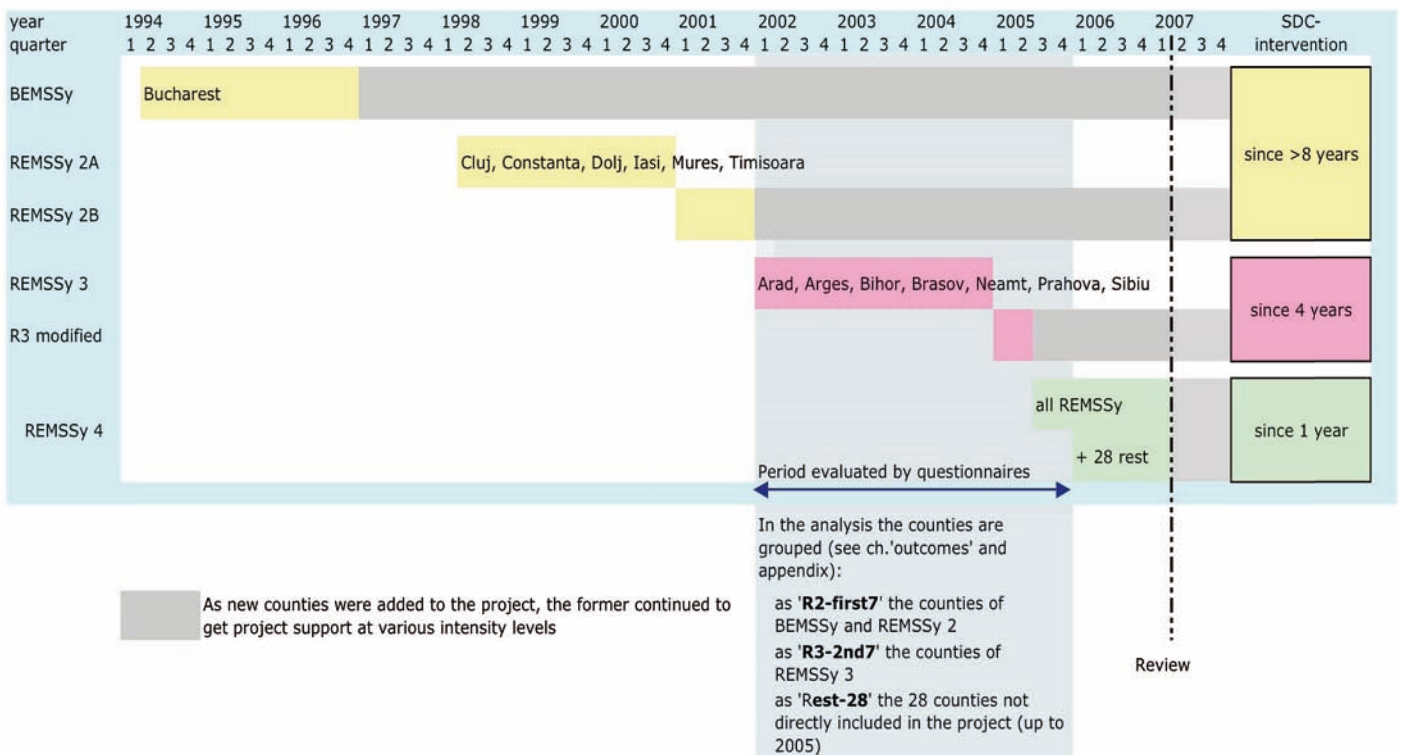


Areas of INTERVENTION of the project

Romania is divided into 42 districts or counties ('judets'), one being the capital Bucharest.



Since 1994, Switzerland was involved in EMS-development, as shows the following timeframe:



VISITS

During the mission, the following six 'Judets' have been visited, i.e. their emergency hospitals with ED's and ambulance services, exchanging with the respective ED-physicians (9+4FAST trainers), hospital (6) and ambulance service directors (11), as well as local health authorities and dispatch staff (16):

- *Iasi*
- *Timisoara*
- *Arad*
- *Mures*
- *Sibiu*
- *Bucharest*

In four judets staff of decentralized, rural health services could be met: in Tibanesti/Iasi a developing 'paramedic first response team', in Barsava/Arad the fire-fighters of a 'SMURD-level I' substation under construction, in Sighisoara/Mures the paramedics of a fully operational level-I SMURD service and in Agnita/Sibiu a planned SMURD substation.

In Bucharest, meetings were held with representatives of the MoPH (3), NHIH (2), WB (2), the College of Physicians (1) and the 18 members of the Committee for Emergency Medicine and Disaster.

For a comprehensive list of contacts and travel schedule see appendix.



OUTCOMES of former REMSSy phases

A) Outcomes of R2-first7 (= BEMSSy and REMSSy 2)

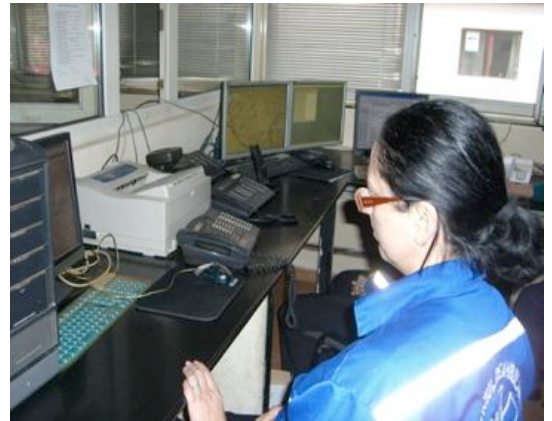
1) Bucharest 1994-96

- *Communication system modernized*
- *Dispatch personal / physicians / ambulances staff trained*

2) REMSSy: first regional project starts 1998

Bucharest model disseminated in 6 counties with:

- *Communication systems modernized*
- *EMS-reform launched*
- *Training efforts increased*
- *Training centers established*
- *Basic ED- and Ambulance equipment procured*



B) Outcomes of R3-2nd7 (= REMSSy 3)

1) Training

- *Standard curricula and material for three week courses developed (1300 folders + videos on BLS/ALS)*
- *14 training centers equipped, 80 EMS instructors available*
- *1327 staff trained (426 physicians + 901 nurses)*
- *EMS DL-course developed + 94 physicians enrolled*
- *Training in M&E methodology developed*

2) EM-Services models developed

- *Peer evaluators / councilors supporting new counties, EMS status and needs assessed*
- *QAIBs established and members trained in Q-mgmt*
- *Standards, protocols, EMS development/telecom plans developed and approved*

3) Legislation / dissemination

- *College of physicians and Order of nurses adopt REMSSy CME system*
- *Ministerial ordinance imposes QAIBs*
- *MoH allocates budget to REMSSy (12 bill Lei)*
- *Dissemination conferences (27 counties)*

C) OUTPUTS, OUTCOMES and IMPACT assessed by questionnaires

This chapter is about a questionnaire-based assessment of the REMSSy project, covering the years 2002 to 2005.

While in theory the three terms 'output', 'outcome' and 'impact' are clearly defined (see below), in practical life the limits among them are not always so crystal clear. From 2002 to 2005, during 4 years, CHPS-staff has collected EMS-data, using questionnaires sent to dispatch centers, ambulance services and ED's in all counties.

OECD-Definitions used:

OBJECTIVE (or purpose): The intended (physical, financial, institutional, social, environmental) development results that a project is expected to contribute to and that lies in its own sphere of influence (should be "smart", that means: simple, measurable, achievable, realistic, time bound).

OUTPUTS: The tangible products (project deliveries like goods, services, etc.) of a project; measures the efficiency of a project.

OUTCOMES: Results of a project, relative to its objectives that are generated by its outputs; measures the effectiveness of a project.

IMPACT: Positive and negative, primary and secondary long-term changes/effects produced by a project, directly or indirectly, intended or unintended; measures the relevance of a project.

In these questionnaires, quantitative and qualitative data concerning different aspects of the Romanian EMS were collected, concerning equipment and human resources, activities and performance. An analysis of this data with the aim, to assess REMSSy achievements, produced therefore results related to output, outcome as well as impact level.

A comparison of the data from the three different intervention zones (R2, R3 and rest28) would have been tempting - 'in order to reject the *zero-hypothesis* that REMSSy interventions had no effect', as statisticians would call it. But the facts that the data was not reliable (frequently incomplete or biased by self-reporting etc.) and the reporting discipline different from one 'intervention area' to the other (generally higher in R2- than in rest28-counties) brought such high-flying expectations quickly down to earth. It was thus concluded that due to un-controllable confounding factors this analysis would not lead to a safe assessment of efficiency, effectiveness and relevance of the REMSSy-project.

Despite this weakness, an effort has been done to present the results - less to document achievements of the project, but rather to demonstrate the complexity of outcome and impact assessments and to make the case for

- (a) The collection of baseline data early in a project-cycle and
- (b) The development of a well thought 'minimum basic data set' capable to determine outcome and impact of a project.

Some examples of results of this analysis are shown below, and the complete work⁵ is attached in the appendix.

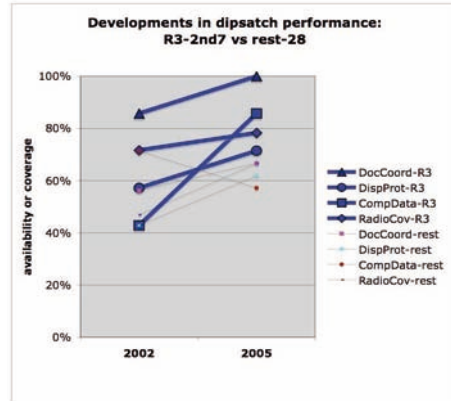
⁵ Work done mainly by Daniel Ciurea from CHPS, with some modifications by the consultant for presentation purposes

1) Dispatch performance indicators

The objective is to have (a) availability of physicians as dispatch coordinators, (b) explicit dispatch protocols, (c) computer-supported emergency data collection and (d), coverage of the counties with radio communication reaching 80–100%.

Both intervention zones (R3–2nd7 shown here) have steadily improved since 2002 (and seem to perform better than the rest of the 28 counties).

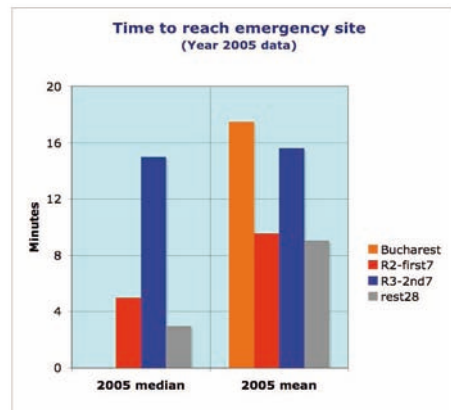
The assumption seems legitimate that this success is due to REMSSy interventions.



2) Ambulance reaction time indicators

The objective is to 'optimize the time between the emergency request and ambulance departure and decrease the time between the call and the arrival at the case' (to 10 minutes max. in urban or 30 minutes in rural areas – according to some planning documents). These data (presented as means and as median values) show the questionable data quality. Most reliable are the reaction times reported by the Bucharest DAS, but they are – for the year 2005 – at the same time the worst with 17 minutes average (a constant increase due to traffic).

These data are difficult to interpret and cannot demonstrate the achievement of project objectives. It can be assumed that in some areas, especially where SMURD ambulances are operating, good reaction time indicators are achieved.

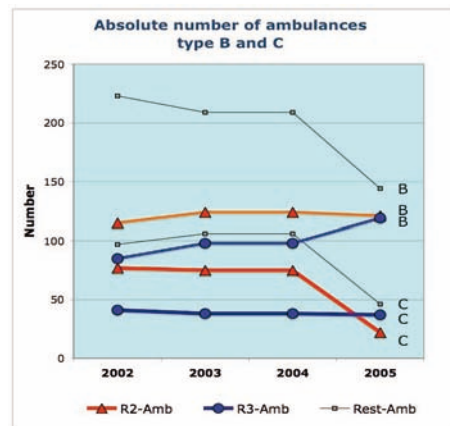


3) Ambulance infrastructure indicators (number/type of vehicles):

The required number of ambulances (e.g. per 100'000 population) hasn't been defined explicitly in any document of the project, the objective being the improvement of quality for vehicles and equipment. But REMSSy was involved in the definition of standards of the various types of ambulances. The application of standards did probably lead to the downward-trend for 2005 seen in this graph: the number of type C ambulances dropped in two areas, R2 and Rest-28 because they didn't fulfill the requirements (they had to be downgraded to type B ambulances).

Are their enough Type C ambulances corresponding to the new standards? According to a number of testimonies, the MoPH plans to acquire new ambulance, which means that this decrease of the number of ambulances has been recognized and correcting measures are envisaged.

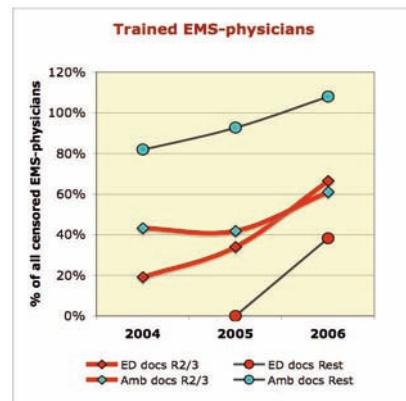
It can be assumed that REMSSy contributes indirectly to such decision-making processes by its involvement in standard setting and its connection to all stakeholders in EMS.



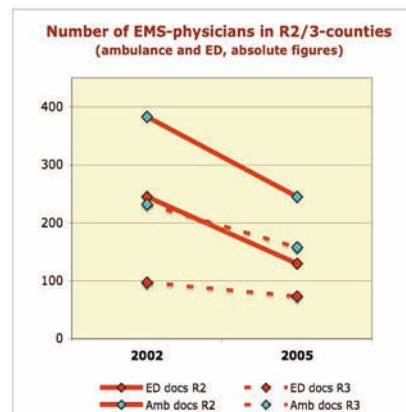
4) EMS staff indicators:

The core business and main objective of REMSSy was and still is the training of EMS staff, by creating the enabling teaching environment (training centers, trainers, material, etc.) and by organizing training workshops.

This graph (including 2006 data) shows the steady progress made in number of trained physicians: according to the data, even more than 100% of ambulance physicians of the rest-28 counties have passed through a REMSSy training (maybe some came already twice); R2/R3 ED- and ambulance-physicians have already reached the REMSSy 4 goal of 60%. A similar progress can be seen in the training of nurses. The 60% level has been reached already for ambulance nurses in the R2 and R3 counties.



In contrast to these rising figures, the absolute number of EMS-physicians, ambulance and ED's, are declining in the R2 and R3 counties, according to the questionnaire data. A similar phenomenon can be observed for the number of EMS-nurses. The effect is stronger in the R2-zone, i.e. the counties where REMSSy training efforts started first. The role of REMSSy being the training of EMS-staff, this loss of EMS-physicians cannot be attributed to the project, which did its job. But the fact that trained staff might disappear from their respective institutions, be it ED's or ambulances, is disturbing.

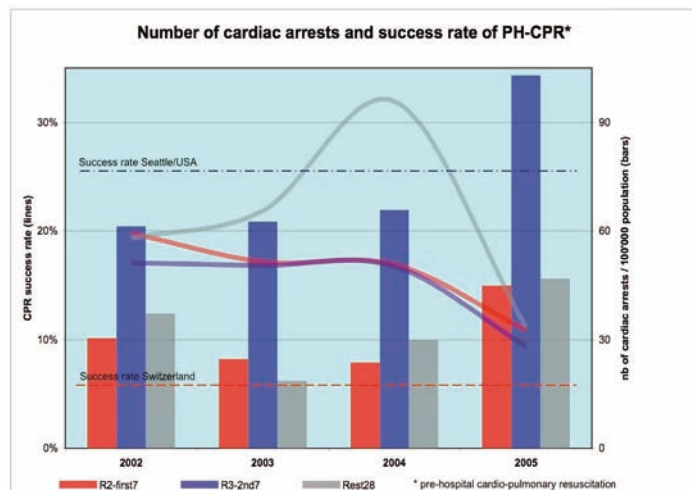


REMSSy will probably reach its training goal. Now appears a problem that is not in the reach of the project: a migration of trained staff towards more prestigious departments, to private practice, or abroad! Does this jeopardize the sustainability of the project?

5) EMS-staff performance indicators:

Ambulance staff: The collected Romanian pre-hospital data show an upward trend of out-of-hospital cardiac arrests in all zones, which is consistent with the increase of cardio-vascular morbidity and mortality projected for the Romanian population by WHO (between 40-100/100'000 population; similar to Switzerland).

Surprising are the discrepancies among the three zones (different inclusion criteria for cardiac arrest?).



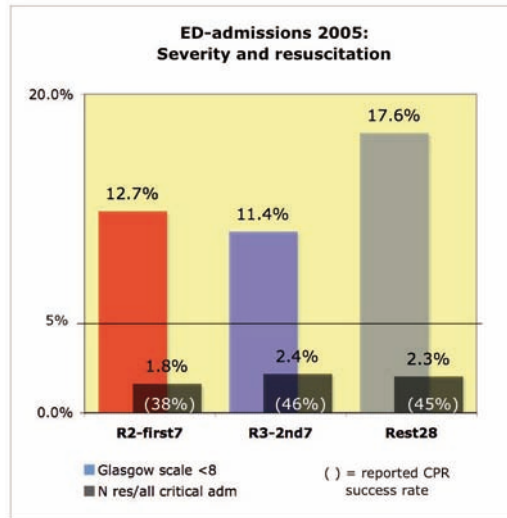
Ambulance services reported a success rate of cardio-pulmonary resuscitation of 10-20%, which seems rather too high, the Swiss average being 5%. And why there is a decrease of success rates since 2002: adjustment of over-reporting or lesser performance?

Conclusion: It wouldn't be prudent to make a judgment on the basis of these data!

Emergency-department staff:

Concerning the performance of ED-staff, the following outcome indicators have been collected: the proportion of resuscitations among ‘critical patients’, which are admitted and the success rate of in-hospital resuscitations among these admitted critical patients.

Of patents being admitted in 2005 at ED’s in all counties, 11–18% were in ‘critical conditions’ (the inclusion criteria used for this condition was maybe not so clear-cut, but it probably meant a patient needing professional life-saving interventions). Around 2% of them had to be resuscitated at arrival in the ED, and 38–45% of these resuscitations were successful. In a Swiss regional hospital-ED the resuscitation rate is under 1% of critical admissions, and the success rate around 50%.



These good results could suggest that Romanian ED’s are performing well, at a similar level as in Western-European countries; they could be seen as indicators of a successful training outcome. But obviously, these two indicators alone are not able to give a comprehensive picture of ED-staff performance. And again, their reliability is questionable.

More and better performance data would be needed to demonstrate progress towards the declared super-ordinate goal of REMSSy, i.e. to ‘increase the chance of survival of emergency patients’, survival meant not only at ED-level, but equally at home, at the emergency site, in the ambulance before and during transport. **A future minimal standard data set will hopefully be able to demonstrate EMS-performance in a more comprehensive way.**

OUTPUTS and OUTCOMES of REMSSy 4

Compiled from quarterly reports, monitoring sheets and evaluation plans of the EA as well as from observations during the mission and at discussions with the various stakeholders.

1) Residency program / EM-specialty

For the objective 'Contribute to the reorganization of the residency program for EMS and the development of an *Emergency Medicine Specialty*', the following outputs were realized:

- *International expertise in the reorganization has been involved, an English standard textbook identified and translated.*
- *The conceptual and legal process towards a ministerial order and its related by-laws has been supported, together with the relevant stakeholders, the EMS-commission and the MoPH.*
- *Professional networks have been established and knowledge transfer fostered through active participation in international and national EMS-conferences.*

The results of these outputs are:

Outcomes in the pipeline	Outcomes delivered till 02/07 (19 th of 30months)
Ministerial order concerning the reorganization of EM-residency and the establishment of EM as a specialty are made available for discussion (on the Web). The corresponding by-laws are pending, resistance against the proposal coming from some MoPH-representatives and faculty members. EM textbook selected, translation in process, 500 copies to be printed.	Criteria for accreditation of residency training centers and for the selection of residency training coordinators and residency director are developed. Standardized training curriculum, fulfilling Euro standards, quality of teaching process improved. A growing number of physicians are joining an EMS residency. 29 EM specialists/residents were able to participate in international and/or national conferences, 14 papers were accepted, presenting progress made in Romanian Emergency Medicine and REMSSy program results; international professional networks are established.

Appreciation:

These outcomes are the result of a great number of conceptual activities, of lobbying and intense discussions with representatives of the MoPH, the NHIH, National Center for Postgraduate Medical Education, the MoPH EMS commission, local health and ED authorities, etc. It is the result of the efforts of many actors, and the role of REMSSy was to contribute to it. But the credibility and experience of the project implementers, the established relations to all stakeholders involved, **made REMSSy a key catalyst** for the progress made towards this objective.

Very important building stones for a sustainable EM system in Romania are still waiting in the pipeline. To shift them over into the field of real outcomes is a complex political process (legislation) and does not lie in REMSSy's own sphere of influence.

As a conclusion it can be assumed that the project did achieve what was within its possibilities.



2) Training prerequisites for B/CME and FAST

For the objective 'Provide the prerequisites for the training of EMS-staff (conceptual, human, material) in order to establish sustainable basic and continuous medical education programs (B/CME) and the introduction of the FAST ultrasound diagnostic technology', the following outputs were realized:

- *Concepts, standards and curricula for basic and continuous medical training of nurses and physicians in ambulance services and EDs have been created.*
- *Instructors and training centers have been identified and evaluated, standards developed and accreditation procedures supported (in collaboration with the college of physicians, order of nurses, center for CME, MoPH, MoEd).*
- *The corresponding manuals and teaching material have been made available, training schedules organized; the EM distance-learning program updated.*
- *An integrated EMS training approach has been developed to improve medical coordination in disaster/mass casualty events.*

The results of these outputs are:

Outcomes in the pipeline	Outcomes delivered till 02/07 (19 th of 30months)
15 centers for CME and 8 centers for BME in EM prepared for accreditation. Distance-learning programs under development (CME and FAST, platform on the Web, specialized firm for 'virtual training center').	CME curriculum endorsed by the National Center for Postgraduate Medical Education (NCCME) 4 of 19 hospitals and 3 of 14 ambulance institutions use the standard CME plan. 31 EM instructors trained (technically and pedagogically) and certified. 1500 manuals printed, 49 lectures and 3500 slides created, available for TOT purposes as well as CME and residents training. Training centers ready to deliver training, training schedules established. 19 FAST ultrasound instructors trained and certified. 6 FAST training centers, 100 trainer packages ready, 2000 training manuals developed and printed. 18 ambulance staff instructors available. Concept for integration of EMS in the emergency and disaster intervention model developed (international workshop sponsored)

Appreciation:

The prerequisites for a sustainable EMS-staff training are in place: trainers available and qualified, training centers identified, training materials available - formal accreditation of training centers in the pipeline, the final legislation step, again, not depending on REMSSy action alone.

I can be assumed that this core objective of REMSSy, a key element to reach a sustainable quality of emergency services in Romania, has been achieved: for EM-physicians, -nurses and -paramedics, at ambulances- and ED-levels.



3) EMS training

For the objective ‘Organize and deliver practical continuous medical education (CME) for EMS staff’, the following outputs were realized:

- CME was delivered to personal of target hospitals/EDs (objective 60% of the 61 hospitals).
- CME was delivered to ambulance services staff working on ambulance B or C (objective 60%).
- FAST diagnosis technique was taught to emergency physicians (objective: 300).

The results of these outputs are:

Outcomes in the pipeline	Outcomes delivered till 02/07 (19 th of 30months)
A training quality evaluation tool (with scores).	<p>143 ED physicians, 282 ED nurses trained (during 30 training courses), credits received.</p> <p>179 EM physicians trained in FAST (total 31 sessions), ready to use the ultrasound equipment to be procured through the WB-loan, credits received (60 hours counted as CME).</p> <p>61 target hospitals covered with trained staff.</p> <p>106 ambulance physicians and 486 ambulance nurses trained (29 training courses in ambulance training centers).</p> <p>20 EM-physicians trained in mass casualty management (international conference).</p> <p>Peer evaluation processes established and evaluations done.</p>

Appreciation:

The 60% target has probably been reached, with over 1000 EMS staff trained (already R3 reached high proportions in staff training, see assessment of previous phases). Therefore, it can be assumed that the quality of services in ambulances and EDs will improve – albeit at this moment little specific quality and performance indicator data of sufficient reliability is available.

The physicians trained in FAST–diagnostics cannot exercise their new skills yet because no ultrasound machines have been delivered up till now (MoPH/WB loan) due to problems in the bidding process. This lack of experience after the training can have a negative effect on training outcome.

No dispatch staff has been trained, because the decision at Prime Minister level concerning dispatch systems and procedures is pending; alternatives for dispatch training prior to such decision are discussed but not yet in the outcome pipeline.

The project did probably what was in its reach and capacity, the described shortcomings not falling within its responsibility. The quality of the various trainings could not really be appreciated by this review, due to the lack of simple and accessible quality indicators (the corresponding tool still being in the pipeline).



4) Quality assurance

For the objective 'Develop quality assurance instruments and mechanisms for emergency medicine services', the following outputs were realized:

- *Quality standards and monitoring protocols were created; sensitization and implementation workshops were held at county and national levels; REMSSy staff got involved in the drafting of the corresponding secondary legislation.*
- *The definition of quality indicators and of a 'minimum basic data set' (MBDS) for performance and quality monitoring has been initiated, including patient level data and software development.*
- *QAIBs have been stimulated and supervised in their task to assure and improve EMS-performance in their respective county; the adaptation of quality standards into local protocols has been supported.*

The results of these outputs are:

Outcomes in the pipeline	Outcomes delivered till 02/07 (19 th of 30months)
<p>REMSSy staff is involved – at national and county level - in drafting and commenting proposals for by-laws to the Emergency Law (3 workshops organized), encompasses medical-professional as well as managerial-financial dimensions of EMS.</p> <p>The approval of a joint MoPH/NHIIH legislative package, in which CHPS was involved, is in progress; it is about quality standards:</p> <ul style="list-style-type: none"> • <i>For transfer of critical patients,</i> • <i>In the EM-residency reform,</i> • <i>On classification of hospitals providing EMS (ED-standards),</i> • <i>About assessment tools for the performance of health care providers when contracting with NHIIH (EDs, DAS/SMURD, etc.).</i> <p>A standard minimum basic data set (MBDS) for EMS delivery is under construction, with support of REMSSy-consultants – in close collaboration with national health authorities; the source for this data set will be a 'standard patient record' introduced in the new health legislation.</p> <p>Testing of the new tools is planned in pilot (REMSSy?) counties, prior to the national implementation.</p>	<p>Quality Assurance and Improvement Boards/bureaus (QAIBs) function, thus with different levels of performance (in 13 out of 14 counties).</p> <p>Advocacy for quality control in EMS is carried out at county level whenever an occasion (monitoring visit, workshop, etc.) is given.</p> <p>Some institutions have adopted own quality control procedures on the basis of REMSSy-proposals: 7 out of 19 R2/R3 hospitals, 4 out of 14 DAS, 3 out of 6 SMURD.</p> <p>A national population survey on Health issues integrated a REMSSy-initiated evaluation on EMS aspects, mainly about awareness how to alert services and user satisfaction.</p>

Appreciation:

A major outcome of REMSSy project is its involvement in the legislation process concerning quality assurance in EMS and in the development of the related Minimum Basic Data Set. This data set should eliminate a good amount of problems and biases that occurred with the old questionnaires. While these activities are a challenge for the project team, they offer a great opportunity to take part in the policy dialogue and to shape the new regulations, standards and protocols of EMS by-laws.

The profound project experience and professionalism is highly appreciated by the health authorities, at central as well at county levels. But it's still along way to make QAIBs really fulfill their highly demanding task of quality assurance!



5) Preparedness of Emergency Departments for WB-equipment

For the objective ‘Enhance the organizational, managerial and functional capacities of 61 target EDs, in order to install and properly use the equipment received through the WB loan’, the following outputs were realized:

- *A suitable planning and assessment method and a questionnaire has been developed, experts identified and ToRs defined.*
- *Site visits and workshops have been organized in order to analysis status of equipment/premises.*
- *Individual EDs reorganizing and planning efforts have been supported.*
- *During the procurement and delivery procedures, a continuous coordination with MoPH and WB took place.*

The results of these outputs are:

Outcomes in the pipeline	Outcomes delivered till 02/07 (19 th of 30months)
	15 experienced ED physicians acting as evaluators / coaches. Analysis done of status of premises and equipment required (2 workshops); 89 of 244 coaching visits performed, 58 of 61 ED plans elaborated. 17 EDs ready and able to receive WB-equipment; identification in a WB/MoPH-lead workshop with directors of the 17 hospitals, chief ED-physicians and directors of county Public Health Authorities; on demand of MoPH this workshop was supported by REMSSy-staff. Some equipment delivered to first 17 hospitals (distribution to all EDs planned till end of 2007).

Appreciation:

All EDs visited during this review mission were in the process of more or less profound reorganization and transformation (additional rooms requisitioned, walls broken down, renovation work going on, etc.); excitement was omnipresent in view of the promised supplies. Finalization of this work needs still some (months?) time, at least in some cases. In some places, already delivered WB-loan equipment could be identified (ophthalmo-, otoscopes, monitors, e.g. in Bucharest Emergency Hospital).

While the bidding process for equipment is generally accomplished and contracts signed, there is (unfortunately, see above) still debate about radiology and ultrasound equipment (hopefully this problem is resolved in the coming months).

The interviews with WB and the MoPH representatives were not conclusive enough to deduce whether their request to REMSSy for the preparation of ED’s was fully satisfied. But the observations in the field and the activity log of the EA permits the assumption that this REMSSy objective has been reached. Now it’s up to the hospitals and county health authority to comply with what has been planned, to apply the standards set and to mobilize the necessary financial resources for the preparatory work. A close supervision of the delivery process is nevertheless desirable.



6) Community based PH-EMS

For the objective 'Promote innovative pre-hospital emergency services', the following outputs were realized:

- A concept and guidelines for an integrated, decentralized EMS delivery at community level has been developed (community first response teams and/or community, fire-brigade related SMURD teams)
- Regional advocacy workshops have been organized (with all stakeholders, including Ministry of Administration and Interior, responsible for fire-brigades), a competitive selection process in order to select interested communities has been performed.
- A limited number of pilot projects have been initiated

The results of these outputs are:

Outcomes in the pipeline	Outcomes delivered till 02/07 (19 th of 30months)
Other 4 communities selected and recommended for support	Detailed concept paper and guidelines for community based first response teams in rural and urban areas developed (based on EMS law encompassing a framework for EMS delivery at community level, defining financing, rules, responsibilities). Awareness raised among community health authorities (8 workshops and 1 conference held). 4 pilot communities selected for the establishment of 'first response teams' and contracts signed (for project support in terms of concept, training and equipment). Training of teams initiated.

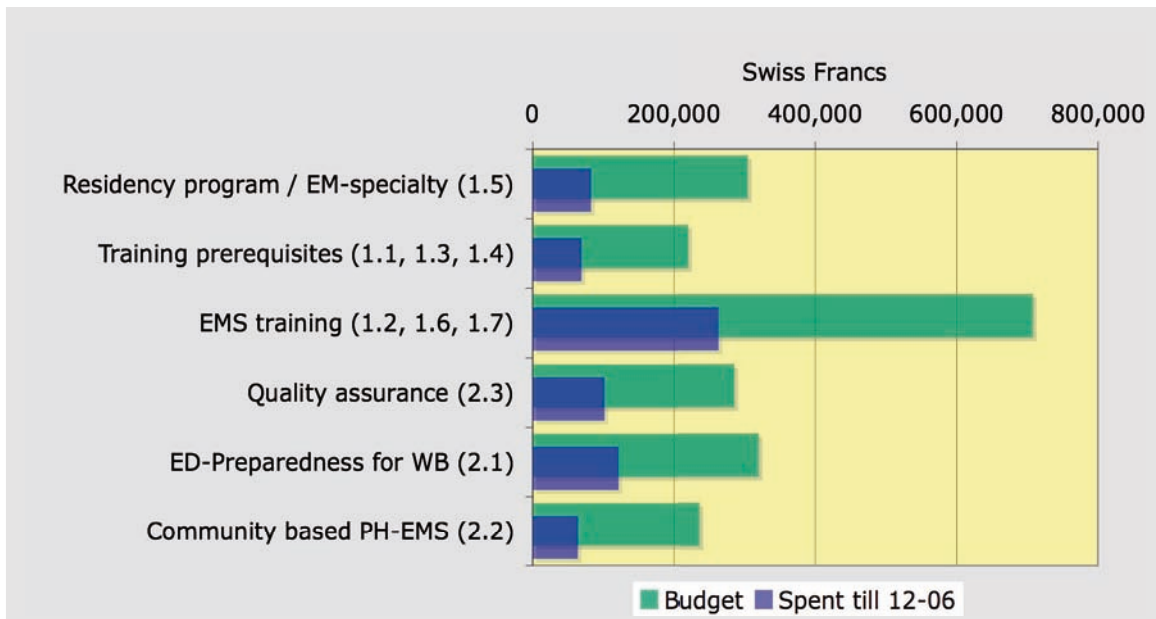
Appreciation:

This pilot project stays at the very beginning. People and authorities in the four selected communities are very committed, teams got first trainings, and premises are transformed to host the staff, material and ambulances. No material delivered up till now. Some of the selected and trained local paramedics impatient to start work (some did already quit former employment and claim a salary from their community)

Assumptions about potential success and impact on the overall goal of REMSSy are not yet possible.



7) Disbursement level of REMSSy 4



After 18 months of a total of 30 month R4-duration, an average of 34% of the budget has been spent for the various project components. According to the EA-staff, this relatively low disbursement is due to a late start of various activities, which now are on track. But it is possible that the allotted budgets are too high for certain components, which could allow a reallocation of some resources to project-adjustments (see below).

8) R4 outcome summary

The outcomes of REMSSy can be summarized in short as follows:

- ⇒ *Emergency medicine established as a new and independent medical specialty*
- ⇒ *Laws and by-laws for EMS training and quality promulgated*
- ⇒ *Professional attitude, credibility and esteem of EMS personal improved*
- ⇒ *Overall quality of services in project counties improved*
- ⇒ *Criteria for start of WB-equipment delivery in ED's reached*
- ⇒ *First sets of performance indicator data analyzed, lessons learnt for the development of adequate quality indicators (MBDS under construction)*

CONCLUSIONS

A) IMPACT

The relevance of REMSSy or the long-term changes and effects of the various REMSSy project-phases must be measured against the objectives that were set at different levels:

- Infrastructure level: 'well equipped EMS-structures, for dispatch, ambulance, ED's';
- Human resource level: 'well trained EMS-staff of high and standardized quality';
- 'Endpoint level': 'increase the chance of survival of people facing a medical emergency'.

Based on the – qualitative and quantitative – outcomes described above, on the impressions during the review mission and the discussions with a big variety of stakeholders involved in emergency services, the following synthesis of the potential impact of REMSSy can be drawn:

1) Long-term effect on infrastructure:

REMSSy did launch a process, more than ten years ago, for a technical adaptation of the EMS-infrastructure, which is still ongoing:

- *Initially by updating the IT-technology that is essential for an efficient communication in case of an emergency,*
- *and by providing equipment for ambulances and emergency departments.*

But even more importantly, and over time, it was able to introduce a different notion concerning EMS-concepts and -standards,

- *for the efficient utilization and adequate equipment of ambulances;*
- *for the reform of the old fashioned 'emergency rooms' towards new 'independent emergency departments', equipped to receive critically ill patients, to do the necessary triage and life-saving interventions.*

REMSSy started small, spreading from Bucharest to some pilot counties, than to more counties and today to the whole country. REMSSy was not the only promoter in this field, other efforts and concepts existed before and other actors joined in later; but it seems that it was REMSSy that had the strongest catalyzing effect on decision makers, in the medical, administrative and political field. It did not only demand better standards but did put them in practice and proved that better coverage with efficient and well-equipped services was feasible and something that the population appreciated a lot.

The biggest success of REMSSy was that upgrading of EMS-equipment became an important component of the recent WB-loan. This allows now to spread the new EMS-concepts and standards over the whole country.

2) Long-term effect on human resources:

The impact on equipment that REMSSy achieved over time made working in emergency services attractive. The professional training offered through the project, with workshops, manuals, motivated trainers, increased the value of the EMS-profession. Again, REMSSy had a catalyzing effect on the development of training standards and curricula, on the establishment of accreditation criteria – by motivating a hand-full committed EMS-advocates in medical faculties and collaborating closely with them. The creation of a medical specialty 'emergency physician', the curriculum for the corresponding residency training, was strongly supported by the project, CHPS-staff being involved in advocacy and legislation processes.

As a result, a very motivated peer group of EMS-professionals, nurses and physicians in ambulance and emergency hospitals, has been formed. Their performance level, improved under the auspices of renowned international emergency specialists, will soon close up with the one of Western-European EMS-staff. This group will surely defend their interests

and fight for their rights, that established standards are guaranteed and promised equipment procured – and in that sense they will become ‘self-sustainable’.

These developments have certainly a long-term positive effect on the Romanian emergency medical services. An unintended negative effect might be the fact that staff who was enrolled in REMSSy-trainings might use their improved knowledge and skills to get better paid posts elsewhere than in the Romanian EMS, in urban, private clinics or abroad. Only an improved official human resource policy, better salaries, improved working conditions or other incentives, might reduce these risks.

Quality control is crucial to obtain good performance. Already in early project phases, quality assurance procedures have been fostered, like the Quality Assurance and Improvement Boards (QAIBs). But it is a demanding task to assure a continuous quality monitoring. During this mission, no explicit quality measures for the performance of QAIB’s or EMS-staff could be obtained. Because international quality standards are now rooted in Romanian by-laws and applied in the training practice, it can be assumed that the quality level will steadily improve; but still more attention must be drawn on proper execution of the monitoring role of QAIB’s.

Frequently, emergencies occur when no trained EMS-staff is within rapid reach, especially in vast, scarcely populated counties in rural Romania – or in the overcrowded capital. Up till REMSSy 3, the project didn’t address the need for training in ‘first aid’, useful for family members or ‘passers-by’ / ‘by-standers’. This gap in the emergency framework has been closed in R4 with the promotion of community based ‘first response teams’. Yet, no concrete impact of this (important) project line can be witnessed (positive results have been obtained in some counties where initiatives have been launched to implement such structures, e.g. in Mures county).

Health authorities should resolve the problem of the unacceptably low commitment of many general practitioners in emergencies; the potential of GPs must and can be exploited better. This issue is obviously out of the scope of the REMSSy project.

3) Long-term effect on morbidity and mortality:

After all the many years of commitment for a better EMS in Romania, an impact on morbidity and mortality seems evident. Better equipment, better staff and better performance! Nevertheless, these positive indicators are, in a strict sense, not proving an impact on the ‘project end-point’, i.e. the ‘chances for survival in a life-threatening medical emergency’. In scientific terms, they are only ‘proxy-indicators’. The only ‘hard data’ obtained during the mission were those from the questionnaires presented earlier, about resuscitation rates and CPR-success, out- and in-hospital; but we considered these data as not reliable enough.

The judgment of the overall relevance of REMSSy must therefore be a more intuitive one. It would clearly be cynical to doubt about the impact of SDC’s commitment for the Romanian medical emergency system. The obvious developments documented over the past years in quality of staff and equipment have contributed to reach victims more rapidly, in case of car accidents or heart failures, to initiate life-saving actions on the spot, to improve the transport conditions and to improve the first treatments at arrival in the hospital. This must have saved lives and reduced morbidity and disability, must have improved the quality of life and functional status of survivors. Unfortunately, all this cannot be put in quantitative terms yet...

There is a growing awareness for evidence-based management procedures, not only in EMS but also in the whole medical area; the introduction of a ‘disease related group (DRG) based’ financing method of in-patient services is an example for it. And in emergency medicine, there is a growing literature claiming for more research and data on the quality, cost-effectiveness and efficiency of in- and out-of-hospital emergency care^{6 7 8}. Economist claim to prove that ‘favorable cost-effectiveness has not been firmly established for most

⁶ Osterwalder J, Insufficient quality of research on pre-hospital medical emergency care, SwissMed Wkly 2004, lecture held at EM congress, Barcelona, 2003

⁷ Dawson DE, National EMS information system (NEMSIS), Prehosp Emerg Care 2006

⁸ Davis J, Evaluating EMS: controlling the rising cost of saving lives, Health Hum Serv Adm 2004

aspects of out-of-hospital emergency care'⁹ and others advocate for a 'vigorous promotion of by-stander CPR'¹⁰ demonstrating that 'citizen-initiated bystander CPR is a strong and independent predictor of very good functional outcomes of these survivors of cardiac arrest'.

The discussion seems open which mix of approaches has the most cost-effective impact on mortality, morbidity or disability after an emergency. In view of the remaining shortcomings in the Romanian EMS, this discussion seems futile. But it illustrates that not quantifying the impact on mortality and morbidity isn't a specific problem of REMSSy or Romania.

4) Long term effect on the Romanian Health Sector Reform (RHRSR)

This fundamental reform process started in the early 90's, with a number of important decrees issued by the government (see chapter 'concepts and definitions'). Detailed ministerial orders followed, in 1998 an ED- and ambulance service regulation, and even a 'REMSSy 2 ministerial order'. In 2006, a new 'Health Reform Law' summarized and updated earlier legislations, including a special chapter on emergency medical services (chapter 4).

During the BEMSSy project little explicit involvement in RHRSR took place. In contrast, already REMSSy 2 became a topic for a ministerial order, the dimension of the project requiring a clear legal frame, probably on initiative rather of the government than of the project. In later REMSSy phases, especially in the past two years, the influence of the project on reform processes in EMS started to grow. CHPS-staff became more and more involved in the definition of standards for teaching, equipment and quality control, and finally in the drafting of ordinances and by-laws concerning EMS: REMSSy became an architect of the future EMS of Romania.

EMS's are very visible parts of the health system. A positive change in performance, in attitude of personal and in equipment demonstrates to the public that reform processes are taking place: REMSSy offered the government a window to show progress.

Dr.Arafat from Tergu Mures Emergency Hospital, one of the pioneers of EMS in Romania, who 'grew up with REMSSy', became a national hero and was publicly honored by Romania's President in a VIP-show of the national television.

It can be concluded that REMSSy had a direct influence on reform processes in its field of competence.

An indirect influence of REMSSy might be presumed, too: through its capacity building efforts and through its large network with health professional in the country, a big number of 'REMSSy-influenced' people can be found in decision-making positions, like e.g. Mr. Petru Movila, Deputy for Iasi county and vice-president of the National Commission for Health and Family, or the former director of CHPS, who became director of the National Health Insurance House, etc.



Dr.Arafat and Ioana Daramus, REMSSy program director

⁹ Lerner EB, Economic value of OH-emergency care, Ann Emerg Med 2006

¹⁰ Stiell I, Health-related quality of life is better for cardiac arrest survivors receiving Citizen-CPR, Circulation 2003

B) Elements of SUSTAINABILITY of REMSSy project-results

The following factors contribute to the sustainability of REMSSy achievements:

- **Commitment:** since its early stage, committed people were involved in REMSSy, they became pioneers of emergency medicine. They will fight for their cause even without the underlying structure and support of a project.
- **A critical mass of trained EMS-staff with international linkages:** the growing group of Romanian emergency professionals stays in an intensive contact with their international peers, electronically and during conferences etc. This stimulates the care for achieved standards and for a further development of the Romanian EMS.
- **Decentralized training facilities:** the various FAST- and CME-training centers seem to operate in a relatively independent way; drop in performance of one or few of them can be compensated by good work done in the others, the risk of concentration being limited.
- **Laws and by-laws on EMS issued:** as soon as standards and procedures are defined in legally binding ways, an important step towards a sustainable implementation is realized.
- **In-country institutional memory:** the fact that a local executing agency like CHPS, the Center for Health Policy and Services, was carrying forward the project since several years, has built up an important memory which still is available after the project's end; the same is true for other institutions like the various training centers, and even for key actors like the EMS-trainers.
- **Political will:** in all of its phases, the project encountered varying political support at county and national level; at this very moment, the Minister of Health and some county deputies are strongly committed to push the nation-wide EMS development forward.
- **Financing of EMS:** at national level, the scheme for the financing of the various facets of EMS seems clarified, the respective contributors identified (MoPH, NHIH, c-HIH, community, etc.); with the reported growth in available resources for health (according to NHIH-information), the observed gaps and disagreements in the implementation of this scheme might be overcome.

REMSSy got, over time, involved in more and more complex processes, in technical and professional terms as well politically. A growing number of stakeholders start playing a role in Romania's EMS. While the influence of REMSSy 4 as a project is still very important, not all developments remain in its own sphere of influence. Therefore, sustainability of REMSSy outcomes do depend less on what is done by the project and its staff. This is not a negative development but rather a sign of maturity of the project and that Romania might slowly be capable to take over ownership and responsibility for its EMS.

C) REMAINING PROBLEMS and RISKS

Despite the wide range of positive outcomes identified above and the good impact assessment presented, large areas of Romania are – at this moment in time – still far away from a satisfying EMS. This contrasts somehow to the fact that all prerequisites for a rapid national 'roll-out' of a good EMS are put in place, in form of well trained human resources and a comprehensive legal frame. But there are still some gaps to be closed, closed by other actors than REMSSy.

Even in the counties with a direct REMSSy support since years, the problem of rapid access to remote communities, e.g., remains: 30 minutes or more to reach a victim is common. Today, only one civil helicopter in Bucharest is operational in the whole country. And today, the equipment to be purchased with WB-loan APL2 did not reach most of its destinations.

The highlight in all this is the fact that capable personal is ready to act in a professional way, and this mainly because of REMSSy and the commitment of CHPS-staff. Now it's mainly up to the MoPH with its county counterparts, to resolve the remaining problems:

- *To push forward the acquisition of **equipment** and to organize a swift distribution to the selected ED's.*

- *To define the adequate number of **ambulances** by county and type, and to purchase new ambulances, if necessary.*
- *To materialize the proposed alternative concepts for an adequate **rural coverage** with basic emergency services, like the 'first response teams' or the 'first-SMURD' fire brigades, including a more active involvement of rural GP's.*
- *To finalize rapidly the **pending ordinances** or by-laws concerning EMS-issues, through an active mediation effort among the interested parties in order to resolve ongoing conflicts (among physicians, among pre-hospital EMS-providers).*
- *To reform the **human resource policy** for health professionals, creating incentive mechanisms especially for physicians and nurses in rural areas, to prevent a further brain drain.*
- *To reinvigorate efforts in primary or secondary **prevention of accidents, cardio-vascular diseases (CVD's) and strokes** (e.g. road safety and CVD-prevention programs) or to develop community campaigns on basic life support (e.g. at schools).*

Such a comprehensive implementation package goes far beyond the scope of REMSSy. But inaction in the cited domains above would endanger a rapid progress for which REMSSy has prepared the terrain.

But the risk is real that MoPH is unable to fulfill these expectations and that further EMS-development is slowed down. The end of SDC's commitment for the Romanian EMS-development seems, under these circumstances – too early. Alternatives compensating for this (foreign) support seem crucial.

RECOMMENDATIONS

A) PROPOSED ADJUSTMENTS till end of project

For the 9 months left, already a lot is programmed; but in view of what has been said above, some adjustments might still be feasible and even necessary:

1) For SDC / COOF Bucharest

Because the MoPH will undoubtedly become an important player in the further EMS-development, i.e. will play a key role whether REMSSy-achievements will become sustainable, the policy dialogue with representatives of this ministry is of utmost importance. This task is not tempting considering the frequent changes of personal, even at top levels. But it is nevertheless important to get in a close, productive exchange with this top-level bureaucrats and with the Minister himself – this latter a task obviously for SDC's country director. The list of problems and challenges drawn above might help defining the content of such a policy dialogue.

Another issue should be the development of a transition plan, i.e. the design of options for institutional set-ups assuring a continuum in support as it has been provided by COOF and CHPS. Options should be discussed with WB-representatives (Armin Fidler, Health Sector Manager Europe and Central Asia of the World Bank, or rather Kari Hurt: khurt@worldbank.org); according to Fidler, sustainability concerning their EMS-components is secured by the fact that WB-loan items are no 'budget additionalities', i.e. will be fully integrated in the future health budget (a maybe a bit too optimistic perception concerning sustainability).

Adjustments should be allowed in the activity framework of CHPS, especially because some activities have not been executed and some budget items not disbursed: money could be reallocated for alternative activities focusing more on the forthcoming transition.

2) For the executing agency CHPS

CHPS-staff, too, is worried about the transition and the disappearance of SDC from Romania. The staff is convinced that EMS-development, the 'national role out' in particular, needs further 'non-governmental support', doubting about the capacities of the MoPH. Options should be worked out allowing CHPS to continue at least a certain monitoring function, either with a mandate from the MoPH, which would 'outsource' and finance this task, or with funding from another sponsor (the World Bank?).

On a more technical side, CHPS should try to focus its work on the conceptual issue how to close most effectively the gap, mentioned above, in the present EMS-coverage, i.e. to narrow the time between an emergency event and the arrival of professional help. For a patient with a heart infarct and a cardiac arrest, surviving is a question of help arriving within 5 minutes, the best ambulance service offering not less than 15 or even 30 or more minutes. Heart attacks are increasing, and touching younger people; more healthy life years will be lost.

The pilot projects with community first response teams could therefore get more attention, as well as the First-SMURD concept. Ideas for a more intense by-stander motivation and training program could be developed, to disseminate knowledge on Basic Life Support, at schools, or in collaboration with the Automobil Clubul Roman, ACR (Georgiana Moga intl@acr.ro). All these concepts should urgently be adapted to the very difficult situation of Bucharest, where the same gap is present and even widening up.

A future bilateral Swiss-Romanian governmental collaboration with cohesion fund money being still far away (2-3 years at least), CHPS could also become a catalyst in the establishment of private partnerships for Swiss-Romanian know-how exchange in EMS (Swiss Association of Emergency Medicine, REGA, hospital-hospital, etc.).

B) LESSONS

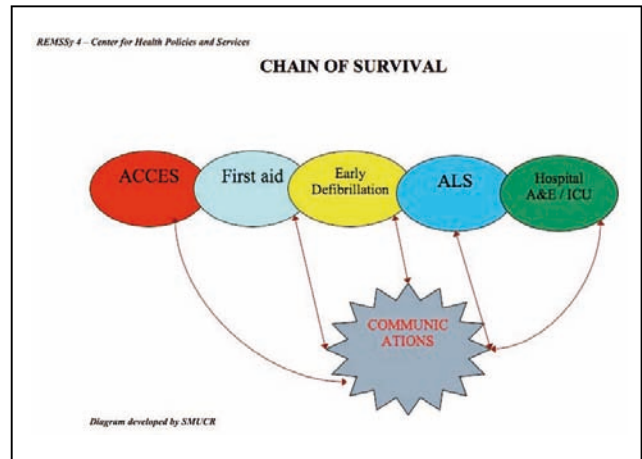
1) To be taught:

- **Continuity – builds confidence:** REMSSy is a very long term project, of more than 13 years duration; this fact is the basis for the build-up of confidence and a growing influence at national level. And confidence is the prerequisite for access to the narrow circle of decision makers and legislators.
- **Visibility – boosts start-up:** in all project phases, from BEMSSy to REMSSy 4, the start of the project encompassed 'visible components', 'software' was always complemented with visible 'hardware', training with equipment, etc.; a right mix at the beginning creates an incentive for an initial involvement and can be the key for a long-term commitment of partners and the success of a project.
- **Local responsibility – creates local memory:** REMSSy was started with a foreign/Swiss executing agency (B and R2), then the implementing responsibility was shifted to CHPS, a Rumanian EA; this shift has proven useful not only because it fostered local capacity development but equally local memory, an important element for the sustainability of a project.

2) To be learnt:

- **Get involved in policy dialogue:** a meeting at MoPH unraveled a complete ignorance of the ministry's contact person concerning REMSSy project; while this lack of information is obviously the result of frequent staff changes, it shows the importance of a continuous update and exchange with public stakeholders and decision makers to counteract this deficiency; this is particularly true in moments of transition, when responsibilities are transferred from project staff to public authorities. Highlevel contacts should be intensified in this phase.

- **Think more systemic:** it could be argued that the project envisaged a high impact (increase the probability to survive in case of an emergency) but did not consider all factors influencing this goal or all elements responsible for a successful survival chain, as presented in this graph; the elements 'access', 'first aid' and 'early defibrillation' are indeed important building blocks of survival. They are more and more taken into consideration in debates on priority setting in EMS.



- **Obtain baseline data:** as has been suggested above, quantitative assessment of progress and success, of outcome and impact, needs quantitative data of the situation prior to intervention; mostly, intuition motivates the initiation of a project, which is ok; collecting some essential baseline data relative to the project goal is not fashionable at that moment, but will prove very useful later on.
- **Link an EA better to international networks:** during REMSSy 3 and 4, the EA was – besides operational tasks – confronted with research questions, like the development of questionnaires or now a standardized minimal data set; SDC has since many years supported NGO's dealing with health research issues, fostering 'applied research' or so called 'essential national health research'; these NGO's (COHRED and the Global Forum on Health Research) have accumulated a large knowledge base and built research networks, equally in Eastern Europe. Networking with such institutions – stimulated by SDC and its health service – can lead to a fruitful and sustained scientific collaboration.

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A list of further people I met and who contributed to my work is attached in the appendix.

Appendix:

The following documents are appended:

- *Schedule of mission*
- *List of contacted people during the mission*
- *Terms of Reference*

Further documents are available in separate files (or on disc):

- *Questionnaire analysis, comprehensive version*
- *Several CHPS-documents*
- *A photo gallery (only in disc version)*