Uses of first line emergency services in Cuba

INTRODUCTION

The historical function of hospital emergency departments was to care for patients who did not have the financial means to consult private physicians [1]. Their function shifted towards ensuring adequate response to accidents and ‘real’ emergencies when social security systems and financially accessible first line health services became available. However, many patients continue to visit emergency departments with problems that could have been solved at the level of a family doctor or health care centre. The literature extensively documents such inappropriate use or even ‘abuse’ and indicates that a substantial proportion of patients would have been better off being treated by a competent general practitioner [2-7]. Even after introducing a broad array of initiatives to canalize ‘primary care patients’ to the corresponding level of care, ‘inappropriate use’ of the emergency services frequently continues to affect their adequate, or at least their efficient functioning [8-9].

Cuba’s national health system is also confronted with this problem, that was exacerbated at the beginning of the 90’s, when radical changes in the terms of trade with the former Soviet Union and the tightening of the USA blockade drastically reduced the national income [10-11]. Health care spending dropped and scarce resources were concentrated at hospital level [12]. This resulted in patients, who could have been attended by family physicians, overcrowding hospital emergency units, perusing resources and possibly
receiving sub-optimal care [13]. The health authorities developed plans for rationalizing service delivery and increasing efficiency without recurring to privatization or cost recovery. Despite the economic crisis, they ratified the principles of state responsibility and free universal coverage, effectiveness and participation [14-15]. A programme of quality improvement was set up [11, 16-18], including an *extra muros* emergency care system in which first line policlinics and networks of community based family doctors or general practitioners (GP’s) played a central role [19-20].

Cuban municipalities are divided into health areas, in which a policlinic organizes the first line care for about 30 000 inhabitants [11,19]. The policlinic covers the whole population with a family doctor program (one GP and one nurse per 700-800 inhabitants), and ensures the necessary diagnostic support and backstopping by specialists. There is a hospital per 150 000 inhabitants. Until 1995, only hospital emergency services (HES) offered high standard emergency care. From 1996 onwards, each municipality developed a first line emergency service (FLES) consisting of one principal emergency policlinic (an existing policlinic), and – in function of population density – a variable number of (small) peripheral or auxiliary emergency centers (other policlinics or strengthened GP-cabinets) [21-22]. In this new set up the patient can attend directly the principal first line emergency policlinic or, possibly, the nearest peripheral emergency centre where an ambulance can be called. The FLES is functioning 24 hours a day. The principal emergency policlinics are staffed with specialized personnel seconded by GP’s and have a high technical plateau compared with the (poorly equipped) GP-cabinets. However, contrary to GP’s the FLES is not ensuring continuous integrated care [23].
The first line emergency services have been contributing to diminishing pressure on the hospital emergency services, but at the same time the demand for non-emergency care at the family doctor level seemed to shift to the FLES [23]. We analyse here the use of the FLES and its determinants, in order to develop proposals to channel ‘non-emergency’ FLES-patients to their family doctors.

METHODS

Study setting
Baracoa and Cerro, a rural and a metropolitan municipality respectively, were selected as study sites. In both municipalities the decentralization of the emergency services took place in 1997. Baracoa is situated at the northern coast of the Guantánamo province, which lies in the eastern part of Cuba, and is divided in three health areas. It is composed of an urban, peri-urban and rural, mostly mountainous zone, of which some parts are difficult to access. The municipality had a population of around 85 000 inhabitants in 2000. The municipal hospital and the principal emergency policlinic are located in the urban zone; there are four peripheral emergency centers in the rural area. Baracoa is geographically isolated from the rest of the province and from the provincial reference hospital situated in Guantánamo. An ambulance takes two and a half hours to cover the 170 km between the two towns.

Cerro is one of the central municipalities of Havana, Cuba’s capital. It is densely populated, with a total of about 122 000 inhabitants in 2000, and is divided in four health
areas. Cerro is covered by a complex and open metropolitan second and third line health services network: It hosts two hospitals on its territory and three others are situated just across the municipal boundaries. The majority of its inhabitants live at walking distance from a hospital and the principal emergency policlinic has been set up in the policlinic of the Maceo health area, at a few kilometers from the hospitals mentioned above. Additionally there are three “peripheral” FLES, which are situated closer to the hospitals.

**Data collection and analysis**

For the period July 1999 – June 2001 we collected information in the principal emergency policlinic on the total number of attendances, the date and hour of consultation, age and sex of the patient, referral status, motive of consultation, emergency classification, diagnosis and medical conduct. The data collection form was derived from the existing routine registration tool that only includes administrative information and the diagnosis. It was constructed after discussion with the personnel involved in the study, pre-tested and adapted. To ensure proper registration, all medical doctors participating in the facilities were trained on its use before the start of the registration period. Systematic control for completeness of recording on the forms, double data entry and regular supervision ensured the quality of information.

Statistical analysis was carried out using SPSS 10.0 for Windows on a random sample of patient contacts drawn from the database. The sample sizes were calculated for each location separately, based on the frequencies observed for key variables during exploratory analysis of the full database. They provided, for the main contrasts specified
for the subsequent in-depth analysis, 80% power to detect a 3% difference between groups.

Patient's problems had been classified as "emergency" or not by the attending physician based on guidelines and a scale used in the Cuban health system. The classification turned out to be problematic and resulted, during data analysis, to be inconsistent. Therefore, we constructed – post hoc – a variable “inappropriate use” that captures whether the FLES had been, from a purely medical perspective, an appropriate entry point in the care system. Based on elements included in some earlier frameworks (24-26) and on the variables available in the database, we designed a construct that was as specific as possible: inappropriate use was imputed when (1) a request to follow up a chronic problem (e.g. to control blood pressure) was the sole motive for consultation, or (2) the diagnosis was "a-symptomatic", "upper respiratory tract infection" or "parasite infection", or (3) the patient was discharged after anamnesis and clinical examination only, with no further technical acts, observation or immediate referral, and with no treatment (or herbal treatment as sole therapeutic measure).

We used the X² test or t-test for independent samples in bivariate analysis. We used multivariate logistic regression to quantify the strength of the associations between patient characteristics, the night time use, medical procedures, referral, and inappropriate use of the FLES. In building the different regression models all variables that were significantly associated in bivariate analysis, or deemed important on a priori grounds,
were entered in the first step. Subsequently, non significant variables were excluded from the model by stepwise backward elimination.

RESULTS

Over the 2 years observation period, 24 879 and 59 795 patient contacts were registered with the principal emergency policlinic in Baracoa and Cerro respectively. Overall, attendance was equally distributed over the days of the week. In both municipalities the under-five and the over 60 years age groups were overrepresented in comparison to the Cuban population pyramid (Table 1). Also, female attendance reached more than 60% in the adult groups. In Baracoa the patients were more frequently referred (p<0,01) and a higher proportion attended during day-time (p<0,01). The main motives for consultation, both in Baracoa and in Cerro, were ‘control of blood pressure’ and ‘shortness of breath’. The most frequent diagnosis in Baracoa was hypertension (16.0%), against asthma (20.2%). In Baracoa and Cerro respectively, trauma contributed only 3.7% and 4.3% of the consultations; 9.8% and 14.1% of patients were a-symptomatic; 18% and 37% of the cases were discharged, without further technical intervention or treatment, after anamnesis and clinical examination only; 34.2% and 62.1% of the patients were referred to their family doctor; and hospitalization at home was suggested in 15.9% and 1.9%. In Cuba home hospitalization is defined as the intensive follow-up at home, by the first line health personnel, of patients that require bed rest and/or isolation, without having a compelling technical need for hospital admission [27-28]. The percentage of patients hospitalized was three-times higher in Baracoa than in Cerro (11.5% versus 3.5%)
(p<0.01), but the relative frequency of ‘inappropriate use’ was similar – just below 60% – in both municipalities. The agreement between the physicians’ classification of “emergency” based on the routine criteria used in Cuba and our constructed variable of ‘inappropriate use’ was poor (kappa of 0.31 for Baracoa and 0.34 for Cerro). In particular, at least 30% of the “emergency cases” received herbal treatment only.

Table 1 compares the characteristics of the patients attending during day- and night-time in the sample used for in depth analysis. In both municipalities night-time cases were less inappropriate users, even more prominently so in Cerro. This was also reflected in a higher frequency of child cases, of asthma crises, of therapeutic measures and of being hospitalized afterwards. During the night, less elderly were seen and less patients attending for control of blood pressure.

Determinants of inappropriate use were assessed in a logistic regression model (table 3). There was no marked correlation between inappropriateness of care seeking and gender or age. Moment of consultation was a significant determinant in both settings: inappropriate use was some 50% more frequent during the day than at night. In Baracoa, but not in Cerro, referred patients were 4 times less likely to be classified as inappropriate users. In both settings these patients had markedly different characteristics (table 4).
More often they were adults and coming during night time. They were also more frequently held in observation in the emergency unit, more in need of a consultation by a specialist, and up to 12 times more frequently hospitalized.

As the appropriateness of care seeking was determined by the moment of consultation, we contrasted morning (8am-12m) and night (23 pm-3am) attendance (table 5). In both localities night-time consultation was consistently associated with younger age. Also, interventions indicating a higher level of medical need, such as observation in the emergency unit, specialist consultation and hospitalization, were consistently associated with the time of attendance, albeit with some differences between the two study sites.

DISCUSSION

While a body of literature on appropriate use of emergency services claims that a variable proportion of patients would have been better off by consulting a competent general practitioner, explicit objective criteria for ‘appropriate’ use are frequently lacking [29], and definitions of ‘minor problems’ and of ‘inappropriate use’ continue to be controversial [30]. In the present study we define “inappropriate use” through a construct
inspired on elements from earlier studies [24-26], and using the available information on the reason for encounter, the diagnosis and the medical conduct. While our definition has undeniably limitations, it assures a high specificity – be it at the expense of sensitivity. As such, our estimates constitute a lower boundary for the true frequency of inappropriate use. Our construct is also, certainly in the Cuban context, a proxy for the volume of health problems that could – and should – easily be handled at the level of a GP cabinet during regular office hours.

We had shown in the past [23] that the overall use of emergency services in Cuba is rather high, particularly in Cerro. At the time of our study, the utilization rates were 0.4 cpy and 1.0 cpy for the FLES and 0.6 cpy and 1.4 cpy for the HES in Baracoa and Cerro respectively. We demonstrate here that Baracoa has a lower proportion of spontaneous use and a higher proportion of hospitalization.

To fully understand these differences, a contextual analysis is needed. Firstly, in Baracoa many GP’s live in the communities they serve and they can better ensure permanence and more easily develop a relationship of confidence with the population, which encourages patients to contact them rather than to recur directly to the emergency services. Distance and difficulties with transport also favor recourse to the family doctors. Secondly, the centrally located principal emergency policlinic in Baracoa diminishes the pressure on the HES more globally. In Cerro, the principal emergency policlinic is situated in the periphery: It complements the HES for part of the municipality but is not an attractive alternative for the population that resides closer to the hospitals [23]. Thirdly, the higher
proportion of hospitalizations in FLES users in Baracoa is related to the fact that the
FLES-ambulance is one of the few vehicles available in rural areas to transport critically
ill patients and pregnant women from their homes to the hospital. Even if directly
referred such patients are administratively included as “hospitalization through the
FLES”, which increases the figures on hospital referrals.

Regardless of these differences, the main problem in both municipalities is the high
volume of inappropriate use of first line emergency services, especially by non-referred
patients and during daytime. Various studies use the proportion of hospitalized cases as a
proxy-indicator for the appropriate use of emergency services [8, 31-33]. In hospital
emergency services of the industrialized world these proportions vary from 18-19% in the
UK and Ireland, to 34-71% in different studies in France [8,32,34]. But hospitalization
figures from the Cuban FLES (3.5% in Cerro and 11.5% in Baracoa) cannot be easily
compared to these international data, nor be used as a proxy for appropriate use: being a
genuine first line service, it is frequently bypassed by cases for which the need for
hospitalization is manifest.

Notwithstanding, almost 60% of inappropriate use seems high. Still, the FLES ensure
permanence and accessibility for emergency care at the first line and can best be
compared with the ‘out-of-hours first line (emergency) care’ in European health systems.
However, the Cuban FLES functions around the clock and specialists are at hand. Family
doctors are comparatively less accessible (restricted opening hours, absent for home
visits, etc..) and provide a lower technical platform. It has been observed before that this
incites patients to use emergency services as first line services, bypassing GP’s who are
better placed to ensure continuous and integrated care [31,33]. This is also compatible with a higher relative frequency of inappropriate use during daytime: When patients feel the subjective ‘urgent’ need to consult a doctor, the attractiveness – for the reasons set out above - of the emergency services leads them to directly consult FLES, also for non-emergencies. The lower frequency of inappropriate use amongst cases referred to the FLES by the family doctor only confirms this hypothesis.

In some countries, financial barriers have been put in place to dissuade non-appropriate health care seeking at emergency services [6], but this is not considered an option by the Cuban authorities. When financial constraints are of marginal importance, the decision to visit a family doctor depends on the patient’s perception of his problem, his personality and his expectations and preferences [35-37], but also on the patient’s confidence in the physician, (the perception of) his technical capacity, his accessibility and the material conditions he works in [38]. Many authors consider that “inappropriate use” is the result of a rational process that leads the patient to identifying the most appropriate way to solve his/her health problem [6,31-32,34,39-40]. Therefore, more than at ‘inappropriate use’, this study points at weaknesses in and opportunities for the Cuban family doctor program.

To strengthen the central position of family doctors, an adequate technical plateau must be developed at their cabinets, permanence should be improved by strengthening the collaboration between family doctors working within the same neighborhood, and during day time access to the FLES ought to be limited to referred patients only. Documented
counter-referral of “inappropriate” FLES-users to their family doctor has to become the rule and concurrently a clear information and communication campaign should be launched on the nature and purpose of the “family doctor – FLES” set up. Finally, a more systematic GP-involvement in the emergency network could ensure growing confidence of patients attending FLES in ‘their’ family doctor and his technical skills.
REFERENCES


