Gruppo di ricerca geriatrica

vent'anni per gli anziani

1988-2008

Journal Club, 30 Gennaio 2009

Change in Five Years of Rates of Emergency Department Visits and Hospital Admissions According to Age.

Renzo ROZZINI

National Health Statistics Reports

Number 7 ■ August 6, 2008

National Hospital Ambulatory Medical Care Survey: 2006 Emergency Department Summary

by Stephen R. Pitts, M.D., M.P.H., F.A.C.E.P.; Richard W. Niska, M.D., M.P.H., F.A.C.E.P.; Jianmin Xu, M.S.; and Catharine W. Burt, Ed.D., Division of Health Care Statistics

Abstract

Objective—This report presents the most current (2006) nationally representative data on visits to hospital emergency departments (ED) in the United States. Statistics are presented on selected hospital, patient, and visit characteristics.

Methods—Data are from the 2006 National Hospital Ambulatory Medical Care Survey (NHAMCS), the longest continuously running nationally representative survey of hospital ED utilization. The NHAMCS collects data on visits to emergency and outpatient departments of nonfederal, short-stay, and general hospitals in the United States. Sample data are weighted to produce annual national estimates.

Results—In 2006 there were 119.2 million visits to hospital EDs, or 40.5 visits per 100 persons, continuing a long-term rise in both indices. The rate of visits per 100 persons was 36.1 for white persons, 79.9 for black persons, and 35.3 for Hispanic persons. ED occupancy (the count of patients who had arrived, but not yet discharged, transferred, or admitted) varied from 19,000 patients at 6 a.m. to 58,000 at 7 p.m. on an average day nationally. Though overall ED visits increased, the number of visits considered emergent or urgent (15.9 million) did not change significantly from 2005, nor did the number of patients arriving by ambulance (18.4 million). At 3.6 percent of visits, the patient had been seen in the same ED within the previous 72 hours. Median time to see a clinician was 31 minutes. Of all ED visits, 35.6 percent were for an injury. Patients had computerized tomography or magnetic resonance imaging at 12.1 percent of visits, blood drawn at 38.8 percent, an intravenous line started at 24.0 percent, an x ray performed at 34.9 percent, and an electrocardiogram done at 17.1 percent. Patients were admitted to the hospital at 12.8 percent of ED visits in 2006. The ED was the portal of admission for 50.2 percent of all nonobstetric admissions in the United States in 2006, an increase from 36.0 percent in 1996. Patients were admitted to an intensive care unit at 1.9 percent of visits.

Keywords: emergency department visits • diagnosis • injury • medications

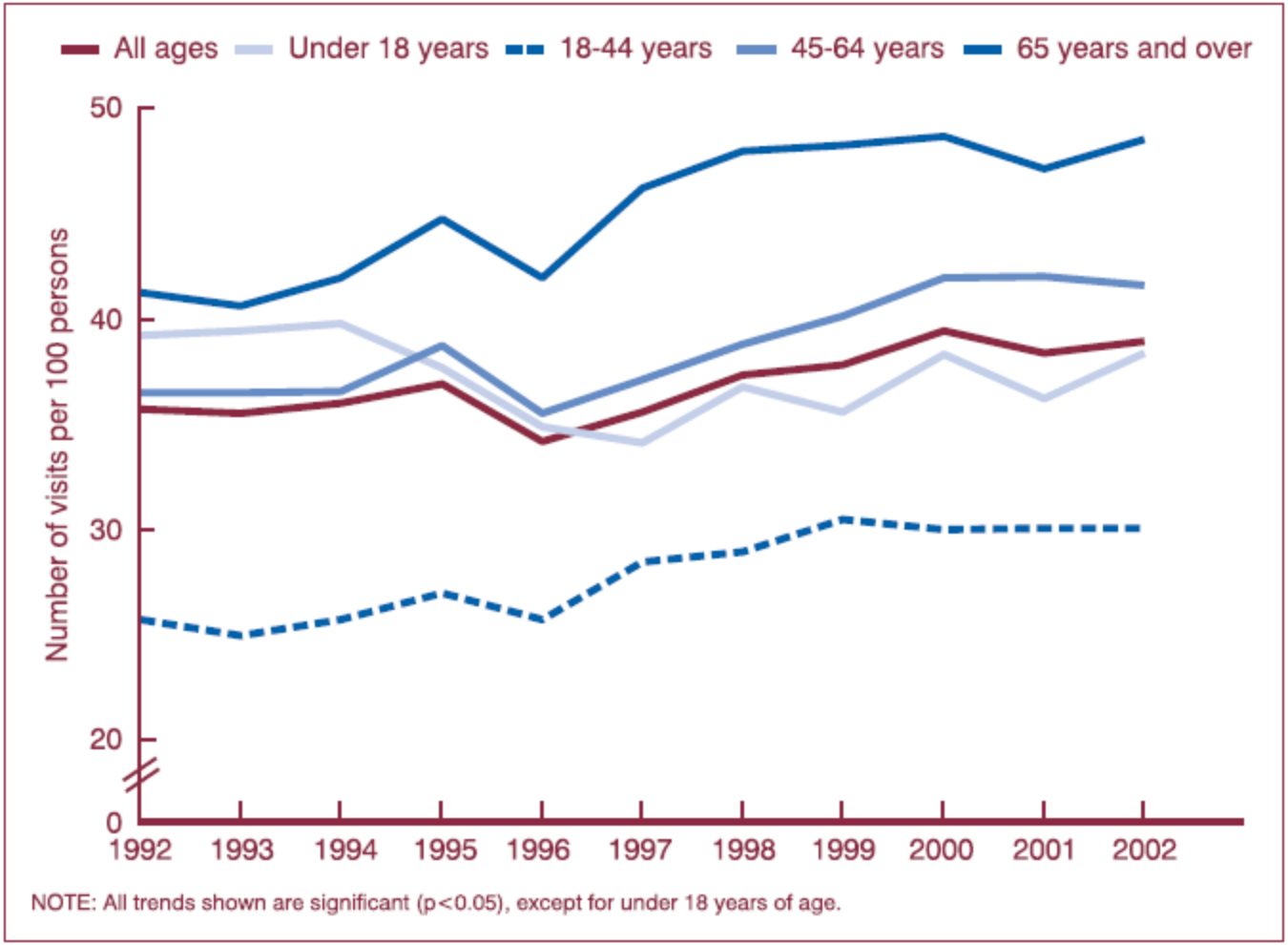

Figure 1. Trends in emergency department visit rates by age: United States, 1992–2002

Highlights

ED Utilization

- From 1996 through 2006, the annual number of ED visits increased from 90.3 million (24) to 119.2 million visits (up by 32 percent). This represents an average increase of about 2.9 million visits (3.2 percent) per year. There were, on average, about 227 visits to U.S. EDs every minute during 2006.
- As the number of visits to the ED has increased, the number of hospital EDs has decreased from 4,019 to 3,833 (25), thus increasing the annual number of visits per ED.
- From 1996 through 2006, the overall population-based ED utilization rate increased by 18 percent, from 34.2 (24) to 40.5 visits per 100 persons (Table 1).
- Population-based utilization rates varied by geographic region, with the West having the lowest ED visit rate (Figure 1).
- About 35.0 percent of ED visits were made to hospitals designated as trauma centers (Table 1).

Patient characteristics

- The age group with the highest annual per capita ED visit rate was infants under 12 months of age, who made 84.5 visits per 100 infants. This represents about 3.5 million visits (Table 2). Three-quarters of these visits were to general EDs, 9.2 percent to pediatric EDs within general hospitals, and 14.3 percent to pediatric hospital EDs (Figure 2).
- Persons aged 75 years and older had the second highest per capita ED visit rate at 60.2 visits per 100 persons. This represents about 10.2 million visits (Table 2).
- The ED visit rate for black persons was about double the rate for white persons in all age groups, whereas Asian or Pacific Islander persons had about half the visit rate of white persons (Table 2).
- The ED visit rate varied little between persons of Hispanic and non-Hispanic ethnicity.
- Persons living in nursing homes made 139.5 ED visits per 100 residents. This represents about 2.1 million visits (1.7 percent) (Table 2).
- Homeless people made 83.6 ED visits per 100 homeless persons (26). This represents about 635,000 visits (0.5 percent) (Table 2).

Increasing Rates of Emergency Department Visits for Elderly Patients in the United States, 1993 to 2003

David C. Roberts, PhD, MPH
Mary Pat McKay, MD, MPH
Alison Shaffer, MS

From the Department of Epidemiology and Biostatistics (Roberts), and Department of Community Health and Prevention (Shaffer), The George Washington University School of Public Health and Health Services, Washington, DC; and the Department of Emergency Medicine, The George Washington University Medical Center, Washington, DC (McKay).

Study objective: In 2005, the Centers for Disease Control and Prevention reported increasing emergency department (ED) visit rates per 100 people. The greatest increase in visit rate was among individuals 65 years and older. Given that older ED visitors have longer lengths of stay in the ED, are more likely to be admitted, and compose a growing proportion of the American population, this finding could have a significant negative effect on ED crowding. The first step toward addressing this issue is a better understanding of the nature of these visits.

Methods: We performed trend analysis for persons aged 65 years and older using 1993 to 2003 National Hospital Ambulatory Medical Care Survey data, an annual national sample of visits to the EDs of nonfederal general and short-stay hospitals. SAS 9.1 computed population estimates and standard errors for number of ED visits. Annual census data were used to compute visit rates per 100 persons. A least-squares test for trend determined slopes and 95% confidence intervals.

Results: Visits for patients aged 65 to 74 years increased 34% during the study period. The visit rate for blacks increased 93% to 77 visits per 100 population, whereas the rate for whites increased 26% to 36 visits per 100. The admission rate did not change significantly during the study period. The number of visits at which 3 or more medications were prescribed increased 44%. The increased visits occurred primarily in the category of "other and undefined" diagnoses (90% increase).

Conclusion: If these trends continue, ED visits in the United States for the 65- to 74-year-old group could nearly double from 6.4 million visits to 11.7 million visits by 2013. [Ann Emerg Med. 2007;xx: xxx.]

0196-0644/$-see front matter

doi:10.1016/j.annemergmed.2007.09.011

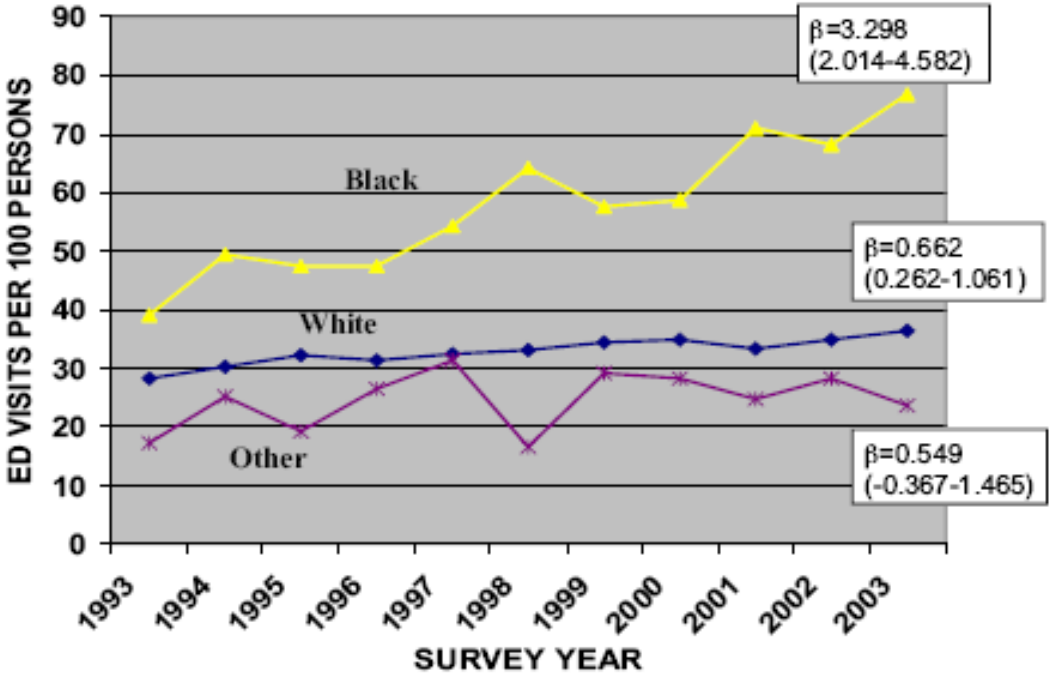

Figure 1. Change in ED visit rates by race, ages 65 to 74 years.

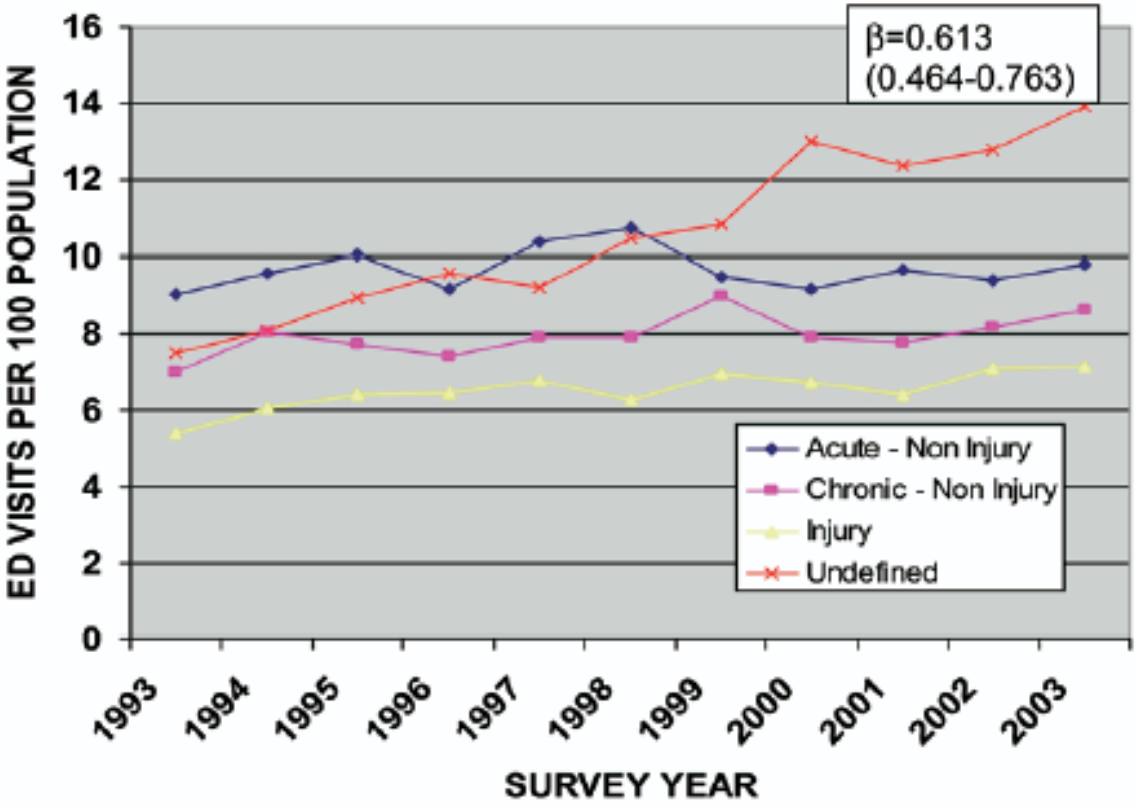
β=0.613
(0.464-0.763)
Acute - Non Injury
Chronic - Non Injury
Injury
Undefined
ED VISITS PER 100 POPULATION
0
2
4
6
8
10
12
14
16
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
SURVEY YEAR

Figure 3. ED visit rate trends by primary payer.

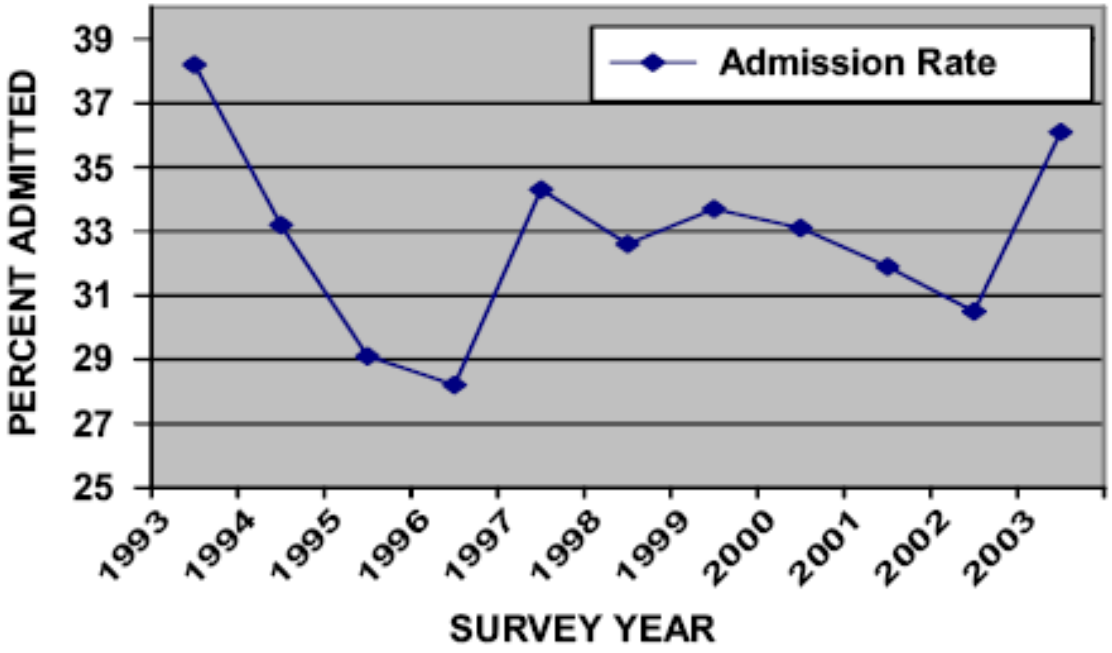

Figure 4. Percentage of ED patients admitted to the hospital.

If the admission rate continues to be essentially static, this will mean the number of admissions from the ED for individuals older than 65 years will increase from 2.1 million to 3.8 million per year.

If trends continue, the effects on ED and hospital crowding could be catastrophic, and planning should begin now.

Change in Five Years of Rates of Emergency Department Visits and Hospital Admissions According to Age.

Background and aim: even if it has been reported that patients aged over 65 years account for 15% of Emergency Department (ED) attendances, there have been few studies looking changes at older people's use of ED occurred in last years. The study describes the ED attendance patterns of older people and their admission rate using data from a middle sized general hospital (Poliambulanza Hospital, Brescia) over 5 years.
Setting and methods: ED attendance data were collected for the period from 1 January 2003 to 31 December 2007. Those visited in ED and furtherly admitted to Medical or Surgical ordinary wards were also detected; of these patients DRG weights was computed.
Results: an increase in the absolute number of ED visits throughout the study period was observed. An overall trend in the rate of ED visits for the 65- to 85+ year-old group was also confirmed. An absolute increase of patients attending the ED and subsequently admitted in medical or surgical wards was also observed. The increase of hospital admissions in Medical wards as percentage of ED visits was small, while more significant is the increase of the rate of those admitted in Surgical wards. An increase of DRG weight, taken as a marker of medical complexity was found in older patients (65+).
Conclusions: this study shows a significant increasing level use of ED by those aged over 65 years during the last five years. This highlights the need for continued systemic monitoring of ED attendance patterns, in order to enable physicians and planners to accommodate the specific needs of ageing population.

Introduction

People live longer than before and the rapidly growing part of the population of the elder citizens with their burden of age-associated chronic disorders (eg, cardiovascular disease, hip fracture, Alzheimer's disease) is determining a progressive growing use of health care services.

Care for elderly people is increasingly being sought in emergency departments (EDs), where older patients typically present with complex medical conditions, stay longer for more-extensive diagnostic testing and treatment regimens, and require special needs. Although the aging population will affect all areas of health care, the ED is likely to be disproportionately affected. Despite this, there have been relatively few studies looking at older people's use of ED. It has been reported that patients aged over 65 years account for 15% of Emergency Department (ED) attendances, and that those aged over 70 years account for 12-15% of attendances.

Aims

This study examines (a) the emergency department utilization during five years in a medium sized Italian General Hospital, (b) the hospital admissions rates in medical and surgical wards following ED visits, and c) the DRG weights according to ages groups of ED hospitalized patients.

Methods:

The study was conducted in Poliambulanza Hospital in Brescia (Northern Italy) during the period from January 1, 2003 to December 31, 2007. This is a general hospital with 350 beds and most medical (Internal Medicine, Geriatrics, Neurology, Cardiology, Oncology, Pediatrics) and surgical (General surgery, Cardiac surgery, Vascular surgery, Urology, Otorhinolaringology, Oculistics, Neurosurgery, Orthopedic, Gynecological) specialties and services inclusive of an intensive care unit (ICU), a coronary unit and a service for invasive coronary intervention, Stroke Unit, Sub-Intensive Care Unit.

The ED data utilized in this study include patient demographics and discharge disposition. The ED discharge disposition was categorized as either a discharge or an admission to the hospital; admission rates were calculated by grouping all admission types divided by medical or surgical ward.

Methods:

Data are categorized into 4 groups of different ages: less than 65, between 65 to 74, 75 to 84, and older than 85 years of age.

As a proxy of clinical complexity the DRG weight was considered for medical and surgical patients; they were stratified into two groups: under or over 64 years of age.

Statistical analysis was performed …..

Results:

Table 1 shows the rates of Emergency Department visits according to age strata throughout the study period; from 2003 to 2007 it has been observed an increase in the absolute number of ED visits (+10.3%). A significant (?) increase in the rate of ED visits was found as age increases: + 5.8, 22.2, 28.9, and 42.7% for patients <65, 65-74, 75-84, and 85+ years old respectively. Throughout the study period an absolute increase of patients attending the ED and subsequently admitted in medical or surgical wards was also observed (+16.1 and +34.3% respectively).

Table 1. Rates of Emergency Department visits according to age strata, 2003 to 2007

	2003	2004	2005	2006	2007	% change 2003-2007	Test for trend
	N (%) N=40.944	N (%) N=40.772	N (%) N=41.895	N (%) N=44.352	N (%) N=45.185	+10.3	P<.0001
Age groups							
<65	32.618	32.393	32.557	34.297	34.502	+5.8	P<.0001
65-74	3.670	3.671	3.974	4.196	4.484	+22.2	P<.0001
75-84	3.232	3.350	3.689	3.966	4.167	+28.9	P<.0001
85+	1.424	1.358	1.655	1.893	2.032	+42.7	P<.0001

Statistics

Results:

The trend increases with increasing age and is more pronounced in surgical patients (Table 2). Table also show the rate of admission in medical and surgical wards as percentage of ED visits: from 2003 through 2007, in medical wards, was observed a significant (?) increasing rate in admission in higher ages (75-84 and 85+); in surgical ward the rate of admission increased in all considered age groups over 65, and was highly significant in those patients 85+.

Table 2. Hospital admissions as total number (and percentage of ED visits) through Emergency Department in medical or surgical wards according to age strata, 2003 to 2007

	2003		2004		2005		2006		2007		% change 2003-07	
	Med ward N=3.536	Surg ward N=1.411	Med ward N=3.763	Surg ward N=1.578	Med ward N=3.752	Surg ward N=1.692	Med ward N=4.088	Surg ward N=1.841	Med ward N=4.107	Surg ward N=1.895	Med ward +16.1	Surg ward +34.3
Age groups												
<65	1.685 (5,2)	807 (2,5)	1.772 (5,5)	968 (3,0)	1.684 (5,2)	933 (2,9)	1.783 (5,2)	1.036 (3,0)	1.694 (4,9)	989 (2,9)	+0.5	+22.5
65-74	641 (17,5)	268 (7,3)	617 (16,8)	261 (7,1)	654 (16,5)	326 (8,2)	624 (14,9)	315 (7,5)	719 (16,0)	345 (7,7)	+12.2	+22.7
75-84	740 (22,9)	246 (7,6)	844 (25,2)	266 (7,9)	852 (23,1)	301 (8,2)	973 (24,5)	338 (8,5)	966 (23,2)	386 (9,3)	+30.5	+56.9
85+	470 (33,0)	90 (6,3)	530 (39,0)	83 (6,1)	562 (34,0)	132 (8,0)	708 (37,4)	152 (8,0)	728 (35,8)	175 (8,6)	+54.9	+94.4

Statistics:

Results:

Table 3 shows the DRG weight of medical and surgical patients according to age. In the group of medical patients the clinical complexity of patients as detected by the DRG weight increases through the observed period. Also in surgical patients complexity increases, even if in a less linear way (Specificare in base alla statistica).

Table 3. DRG weight in patients admitted I Medical or Surgical Wards during the period 2003-2007 according to age groups.

	2003		2004		2005		2006		2007			
	Med ward	**Surg ward**	**Med ward**	**Surg ward**	**Med ward**	**Surg ward**	**Med ward**	**Surg ward**	**Med ward**	**Surg ward**	**Test for trend**	**Test for trend**
< 65	0,72	2,07	0,74	1,96	0,76	1,90	0,76	1,92	0,78	2,02	**P<.0001**	**P<.0001**
65 - 74	1,06	3,03	1,03	2,99	1,05	3,14	1,08	2,93	1,10	3,05	**P<.0001**	**P<.0001**
75 - 84	1,13	3,16	1,10	3,00	1,15	2,83	1,14	3,15	1,14	2,90	**P<.0001**	**P<.0001**
85 +	1,09	2,33	1,19	2,29	1,21	2,80	1,16	2,43	1,26	2,80	**P<.0001**	**P<.0001**
all	*1,00*	*2,64*	*1,01*	*2,56*	*1,04*	*2,67*	*1,03*	*2,61*	*1,07*	*2,70*	**P<.0001**	**P<.0001**

Discussion

-In our study the rate of ED visits significantly increased during the last years; for very old persons, in particular, the visit rate per 100 persons increased *faster* than the visit rate for any other age group. An absolute increase of patients attending the ED and subsequently admitted in medical or surgical wards was also observed. However the increase of in hospital admitted patients after the ED visit does not directly parallels the absolute increase of ED visits: in fact the increase of hospital admissions in Medical wards as percentage of ED visits is small, while more significant is the increase of the rate of those admitted in Surgical wards. Finally an increase of clinical complexity, both for medical and surgical patients, as detected by the DRG weight, was observed across the five years considered.

-Available data on ED use change in the most recent years show an increase utilization of ED by general population and an increase utilization by elderly persons. A recent publication by NHSR report that from 1996 through 2006, the annual number of ED visits in US hospital increased from 90.3 million (24) to 119.2 million visits (up by 32 percent). This represents an average increase of 3.2 percent per year. From 1996 through 2006, the overall population-based ED utilization rate increased by 18 percent, from 34.2 (24) to 40.5 visits per 100 persons (NHSR, August 6, 2008). Roberts and al in a study on demographic characteristics of ED user report that from 1993 to 2003 ED visits for patients aged 65 to 74 years increased 34%; during the study period the admission rate did not change significantly (Roberts, Ann Emerg Med, 2007).

-Possible explanations for the increase of ED use are at least two. The first correlated with the demographic changes (i.e. aging of the population), the second due to a failure of the larger health care system available in the communities (i.e. inadequate preventive care and chronic care received by many) mainly supplied by general practitioners.
Since in our Medical Districts (about 1 million inhabitants), from 2003 to 2007 the increase of persons over 65 was 0,3 per year (in 2007 persons over 65 in charge to the public Health Care System were 204.583, 18.4 of total population) the increased rate of ED use of elderly may only partially due by the increase of elders observed in demography.

Also an inadequate level of accessibility to physician services could explain the greater frequency of emergency room visits by elders. However non urgent visits, so potentially manageable by the general practitioner, should have a modest role in burdening the EDs. In a recently published paper it has been demonstrated that the demand that elderly persons with potentially avoidable and non urgent problems placed on ED is quite low (5.7%) and would only be modestly alleviated by focusing on triaging probably non urgent and potentially avoidable visits to alternative care sources and sites, even if effective triaging procedure were widely implemented. In the same study, on the contrary, the principal drivers of high intensity (and presumably appropriate) use of the ED were generally medical need. Compared to older adults who did not use the ED, those who used the ED for only high-intensity visits were more likely to be older, to be men, to have greater morbidity and comorbidity, to have a higher level of cognitive impairment, and to perceive their health to be poor. The immutability of most of these factors further attests to the low likelihood that reducing the demand on and overcrowding of the ED can be readily achieved (Wolinsky, 2008).

It has been argued also that people rely on hospital ED in growing numbers because of the skilled specialists and advanced technology they offer (this could be the true also for elderly persons). Finally hospitals and EDs maintain their historical role in citizens minds: they are viewed as a good chance for all the need health related, safe places where most of social and health crisis may be tapered. Are these other possible explanations of the observed change in ED utilization?

-We need a better understanding of the processes that lead to the increase of EDs use and if ED elderly users may be getting care from their general physicians or other different way of care.
Data on change of EDs use by citizens are important in order to design agenda for ED and hospital organization in next future.
First, as the EDs are under increasing pressure to provide care for more elderly patients, resulting in crowding, it is important that EDs change their operational praxis taking into account the increasing use of emergency care system by elderly subjects. The emergency department (ED) has several advantages as a site for geriatric interventions. The ED population is at high risk of various adverse outcomes, including death, functional decline, and institutionalization. Many of these patients have undetected problems, including delirium, functional dependence, and self-care.

Particular attention needs to be devoted to patients affected by dementia. Beside live saving interventions, a fast criterion in order to define the most prevalent needs and also wards that promptly admit patients are necessary. Even with barriers to the implementation of effective interventions including the short stay in the ED, a lack of orientation of ED staff to the special problems of older patients, and a lack of continuity of care between the ED and services in the community, the geriatric approach becomes mandatory (JAGS, Mc Cusker, 2001).

The ED is a critical site to evaluate and to understand if a very old person may gain advantages from the hospital admission in acute setting or if these advantages could be overwhelmed by adverse effects due to the hospitalization itself [Harris et al, 2002; Rozzini et al, 2005]. Until now the ED system has worked with a high resilience; have we to maintain an optimistic view for the future? Many emergency departments are already overwhelmed with patients waiting hours for medical care. Just continuing the trend for elderly patients over the next few years could cause the emergency care system to collapse. The observed trends underscore the need to make sure emergency departments that can meet the demand for care by older people. The increasing ED use can degrade the quality of emergency care and hinder its ability to provide urgent and life saving care to seriously ill and injured patients wherever and whenever they need it, not only the aged ones. (1° di Wolinsky).

Emergency departments should not be relied upon as substitutes for primary care, but very often they are.

Among older patients those with lack of social support were more likely to engage in higher inappropriate ED use (Carret, BMC 2007). Strong predictors of ED admissions were age; being male; high social deprivation; previously prescribed analgesics, antibacterials, nitrates, and diuretics; the number of respiratory medications; and the number of previous admissions and previous total bed-days (Donnan, Arch Int Med, 2008).