Census of Ligurian Internal Medicine Wards of non-teaching hospitals

Micaela La Regina, Francesco Orlandini, on behalf of the Ligurian FADOI group

Department of Internal Medicine, Ligurian East Hospital, ASL5 Liguria, La Spezia, Italy

ABSTRACT

What is the future of internal medicine in Italy? Which competencies? Which potentialities? To this aim Ligurian FADOI Regional Society performed a census among 18 Internal Medicine Wards (IMWs) in non-teaching Ligurian Hospital. We administered, by e-mail, a questionnaire to the heads of IMWs. Data about staffing, equipment, skills, competencies and productivity during 2011 were collected from 1st to 31st November 2012. A total of 15/18 (83.3%) chiefs answered to the questionnaire. The number of beds was largely variable among the wards. In 2011, mean diagnosis-related group (DRG)-weight was 1.09 (range 0.91-1.6) and that revenues/costs ratio much higher than 1.5. Staff was quite adequate to standards defined by current law, only 33% has got a doctor:patients ratio superior to 1:6.4. However, annual hospitalizations exceed the availability of beds in medicine and the complexity of the patients would require a lower doctor:patients ratio, at least for a group of patients. In fact, 4 wards have a progressive care organization with a defined area for more seriously ill patients. Mean length of stay was 10 days. Expertise was wide, covering almost all medical sub-specialties. Acquired skills such as abdominal, heart and vascular ultrasounds, invasive procedures and their comprehensive knowledge make internists complete and *cost-effective* specialists. IMWs, as a concentrate of medical knowledge and skills, are the natural destination of current patients with co-morbidities. Staffing and number of beds should be revised according to this new demand. Their revenues/costs ratio resulted favorable and their global approach to patients and not to disease can be useful for resource rationalization. Wider and further studies are needed to improve the awareness of stakeholders about Internal Medicine.

Introduction

Medicine advances are associated with an increasing life expectancy that means also an increasing prevalence of chronic diseases (heart failure, chronic obstructive pulmonary disease, diabetes, hypertension, overweight and obesity, oncological or neurodegenerative diseases, etc.). Not seldom, multiple chronic disorders are variously associated in the same patient and influence each other, leading to complex picture. Their management is the core competency of Internal Medicine.[1]

Today, Hospital Internal Medicine plays an irreplaceable role in small and large hospitals, representing the natural place of care for several patients and admitting patients (>80%) from Emergency Room or from other wards mainly as urgent cases.[2]

An emerging model suggests for IMWs an organization based on intensity of care,[3] with areas differentiated according to patients health needs. In the higher level, a team of physicians and nurses can assist patients who require mechanical ventilation and/or affected by stroke, acute pulmonary oedema, acute renal failure, metabolic decompensation, stratified on arrival by in-hospital mortality predictive scores, such as modified early warning score (MEWS) or Vitalpac™ early warning score (ViEWS).[4,5]

Once more, in chronic patients, the limit between inpatient and outpatient medicine is gradually disappearing, and internal medicine is the classical *link discipline*.[6] Primary care and internal medicine physicians must work in a continuum of care.

Unfortunately, continuous cuts of hospital beds without parallel development of alternative care pathways out of hospital affected Italian National Health

Correspondence: Micaela La Regina, Department of Internal Medicine, Ospedale S. Andrea, via Vittorio Veneto, 19124 La Spezia, Italy.
Tel.: +39.338.2393805.
E-mail: micaela.laregina@asl5.liguria.it

Key words: internal medicine wards, medical wards, clinical competence, progressive patient care.

Contributions: the authors contributed equally.

Conflict of interests: the authors declare no potential conflict of interests.

Conference presentation: part of this paper was presented, as poster discussion, at the 18th FADOI National Congress, held in Taormina 11-14 May 2013.

Received for publication: 29 September 2013.
Revision received: 31 March 2014.
Accepted for publication: 18 April 2014.

Italian Journal of Medicine 2014; 8:246-252
doi:10.4081/itjm.2014.434

System in recent years. As a consequence, Internal Medicine Wards are overcrowded and many patients, admitted to Internal Medicine because of their comorbidities, in the absence of beds, are placed in other wards with a suboptimal care and increased risks, the so called *outliers*. In any hospital, today, you can see overcrowded emergency rooms, chaotic wards burdened by mandatory quick and risky turnover and general practitioners uncomfortable with their elderly patients outside the hospital.

The present work stems from the need to survey the activities and tasks of hospital internal medicine in order to: i) clearly define the activities of each ward and compare them (homogeneities or discrepancies); ii) assess the impact of such activities on business management; iii) define the role of departments of internal medicine in the hospital organization; iv) clearly formalize the role of emergency medicine and internal medicine, defining skills and roles; v) provide tools of clinical governance in the definition of standards.

Materials and Methods

The survey was conducted from 1st to 30th November 2012. A questionnaire composed by 28 questions - open questions and multiple choice questions (Table 1) - was sent by email to the Chiefs of 18 Ligurian non-university Internal Medicine wards. The questionnaire was developed by a consensus among members of Directive Council of the Ligurian section of the Federation of Associations of Hospital Doctors on Internal Medi-

Table 1. 28-item questionnaire sent to the heads of Ligurian Internal Medicine wards.

Is emergency medicine ward present in your hospital?
Is it linked with your medical ward?
Is there a flow of patients from the emergency medicine to your ward?
After how many days, on average, patients admitted to emergency med are transferred to your ward?
What is the mean length of stay of emergency medicine ward?
How many doctors are assigned to your staff?
How many doctors are actually on ward?
How many of them are dedicated to the medical ward?
How many doctors work exclusively in the outpatient clinic?
How many outpatient clinics does your ward have?
Among the following outpatient clinics which are carried out by your physicians?
- Internal medicine
- Pulmonary diseases
- Hematology
- Arterial hypertension
- Dyslipidemia
- Diabetes
- Rheumatology
- Anticoagulant therapy management
- Endocrinology
- Others

How many patients were admitted to your ward in 2011?
What was the mean length of stay of your ward in 2011?
What was the mean diagnosis-related group weight of your ward in 2011?
Can you indicate the total costs of your ward in 2011?
Can you indicate the total revenues of your ward in 2011?
Which methods are performed autonomously by your staff?
- Internist ultrasound scan
- Vascular ultrasound
- Echocardiography
- Thoracentesis
- Chest drain insertion
- Paracentesis
- Biopsies of internal organs
- Abdominal drain insertion
- Non-invasive ventilation
- Bone marrow biopsy
- Lumbar puncture
- Spirometry
- Others

How many of your physicians are able to perform autonomously the following procedures?
- Internist ultrasound scan
- Vascular ultrasound
- Echocardiography
- Thoracentesis
- Chest drain insertion
- Paracentesis
- Biopsies of internal organs
- Abdominal drain insertion
- Non-invasive ventilation
- Bone marrow biopsy
- Lumbar puncture
- Spirometry

Your ward is organized for progressive care?
Which tool do you use to distinguish patients with different health needs?
How many patients were admitted to the critical care area of your ward in 2011?
What were the most frequent pathologies in percentage?
- Respiratory diseases
- Cardiologic diseases
- Infectious diseases
- Digestive diseases
- Nephrological diseases
- Metabolic diseases
- Onco-hematological diseases

How many doctors work in the critical care?
Is there a dedicated physician during afternoon dedicated in your critical care area?
Is there a physician on call for the critical care during the night?
What is the nurse:patient ratio in your critical care unit?
Which equipment does your ward have?
- Non-invasive ventilators (number)
- Monitor without telemetry (number)
- Monitor with telemetry (number)
- Ultrasound scanners (number)
- Spirometers (number)
- Hemogasanalyzer (number)
- Ambulatory blood pressure monitoring (number)

cine (FADOI). The aim was to collect data about medical staffing, equipment, skills, competencies and productivity (mean DRG weight, length of stay (LOS), beds turnover rate) of Ligurian Internal Medicine wards in order to know who they are, what (resources) they have, what they do, how they work and how much they work. Data about 2011 were asked.

Results

A total of 15/18 heads of medical wards answered the questionnaire. The number of beds in any medical ward is variable from 24 to 70. Less than one half of hospitals included in the study has got Emergency Medicine Units or Short Stay Units that always have the same Head of Emergency Room, except in one case where it depends from the Internal Medicine Head. There is a daily patients' flow from Emergency Medical Units to all Internal Medicine Wards, except one. The time interval for referral range from 6 to more than 72 h, in fact, the Emergency Medicine Units or Short Stay Units of the hospitals included in the study have in some cases a mean LOS longer than 3 days.

About physician staff, in the sample of the study, it varies from one doctor every 3.12 patients to 1 every 7-8.6 patients; anyway only 33.3% has a doctor:patients ratio superior to 1:6.4, as established by the Italian law about hospital standards. Only 26.6% of the medical wards have got physicians dedicated to outpatient clinics. Areas for critically ill patients are present in 4 of the medical wards interviewed and only in 3 cases they are formally recognized by the Institution.

The medical wards included in the study carry out 15 specialist outpatients activities. The most represented is Internal Medicine clinic (14/15 wards) but the study shows also a strong experience in Hematology and Metabolism/Endocrinology with clinics in 8/15 wards and Hypertension (7/15 wards). For further details see Table 2.

In 2011 the beds turnover rate (BTR) of the medical wards included in the study ranged from 21 to 55 (Table 3). The mean LOS is 10.1 days; the mean-DRG (International Classification of Diseases, ver. 9; ICD-9-CM 2007) weight 1.09; the revenues/costs ratio is favorable (>1.5).

Thoracentesis, paracenthesis, bone marrow biopsy, ultrasound scan and non-invasive mechanical ventilation are the most diffuse procedures performed in the interviewed medical wards (Table 4).

All the physicians in 10/15 wards can perform thoracentesis and paracentesis, minor percentage in the other 5 wards.

Only 6 physicians, in 3 different wards can insert a chest drain. Only 10 physicians, in 2 wards, can insert an abdominal drain. Only 3 physicians, in 3 different wards can perform heart US scan. For other details see Table 5.

Discussion

The first aim of our survey was to clearly define the activities of each ward and compare them, in other words, to investigate homogeneities and discrepancies among Ligurian Internal Medicine Wards. The first discrepancy noted was the number of beds; it was variable from 24 to 70 beds per ward, depending on the size of the hospital and historical trends. Anyway, we

Table 2. Frequency of outpatients activities.

Type of clinic	Number of medical wards provided with (tot=15)
Internal Medicine Clinic	14
Hematology	8
Diabetology	8
Hypertension Clinic	7
Endocrinology Clinic	7
Rheumatology Clinic	6
Clinic for the management of anticoagulant therapy	4
Pneumology Clinic	3
Allergology Clinic	2
Lipidology Clinics	2
Clinic of thrombotic and hemorrhagic diseases	2
Dietology Clinic	2
Hepatology Clinic	1
Oncology Clinic	1
Bone infections Clinic	1

Table 3. Beds turnover rate (2011 admissions/beds).

Wards enrolled in the study														
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
40	39	38	27	49	25	29	35	55	55	37	21	38	40	29

should know the number of users and the beds number of subspecialties, their rate of bed occupancy and their average DRG-weights to determine if the size of internal medicine wards is really appropriate.

Nevertheless, the phenomenon of the *outliers* is recurring and widespread. There is the perception that in IMWs the beds number is quite inadequate to the needs of the growing polypathological population, today. The amount of these patients is greater than 800 per year in some wards and this phenomenon is not accidental, because it has been repeating over the years (SIO Database - ASL5: Liguria, Italy) even when the mean LOS is lower than regional average (7 *vs* 10 days). Obviously it leads to a suboptimal care, and bear witness of the shortage of internal medicine beds during cost-cutting policy.

Another discrepancy is the number of physicians, ranging from 5 to 20, not all the time proportionate to beds number. In fact, they are enough numerous if we look at the last law about hospital standards; only in 33.3% of interviewed wards there is a doctor every more than 6.4 patients. Anyway, this law goes back to 1988 (Donat Cattin law no. 109, 8/4/1988) and considers internal medicine and general surgery as general wards providing internal medicine wards with 5 doctors and 17 nurses every 32 beds and further 3 doctors every 32 additional beds. Currently, not only in Liguria, Internal medicine, because of the increasing number of acute, severe and complex poly-pathological patients, receives unstable patients that need close monitoring and frequent therapy adjustments. So these wards are starting to define, inside them, areas for high dependency care[7] in relation to the activities carried out. In such a reality, the workload is much higher than the standards set forth in 1988 and the rotation of 5 doctors in 24 h is obviously inadequate, if we consider rest days after night or Sunday shifts. The picture is complicated by the high turnover of patients that administrators worried by LOS and the crowded emergency rooms impose on IMWs.

The analysis clearly showed the need to use clinical governance tools in the definition of standards. Nowadays, it would be much more appropriate to allocate medical and nursing staff no more in relation to the beds number, but, for example, to the mean DRG weight and/or the complexity of care (also clinically stable patients, if comorbid and disabled, increase the burden of care), using for the evaluation of the weight no more the DRG system which encodes the pathology without severity stratification, but the all patient refined-DRG that evaluates the severity of disease, the extent of the failure or the organ loss of function and the risk of death.[8] This system, used in America, was tested in Puglia, where it showed that clinical severity is the main determinant of resource consumption and costs.[9] Alternatively, it would be appropriate to refer to the annual number of admissions, the LOS and

Table 4. Number of wards performing the investigated procedures.

Procedures	Number of wards (tot=15)
Thoracentesis and paracentesis	15
Bone marrow biopsies	14
Abdominal, pelvic, chest ultrasound scan	12
Vascular ultrasound scan	9
Heart ultrasound scan	3
Non-invasive ventilation	10
Rachicentesis and other biopsies	5
Pleural drain insertion	4
Abdominal drain insertion	2
Spirometry	2

Table 5. Percentage of physicians that perform the procedures in each ward.

	Wards enrolled in the study (%)														
Procedures	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Bone marrow biopsy (range 0-66%)	33	22	60	18	43	43	19	50	66	41	12.5	12.5	18	33	-
Other biopsies (range 0-42%)	-	22	-	-	42	28.5	-	12-5	-	-	-	12.5	-	33	-
Vascular ultrasound scan (range 0-60%)	16	22	30	-	28.5	-	-	12.5	-	25	30	-	18	-	30
Internist ultrasound scan (range 0-45%)	-	44	30	18	28.5	28.5	-	25	-	12.5	25	12.5	45	-	20
Non-invasive mechanical ventilation (range 0-100%)	-	-	50	100	-	57	-	-	42	37.5	78	-	27	-	-

BTR. We found that BTR was variable from 21 to 55 among Ligurian IMWs. A rate greater than 40 was reported in 50% of the wards, and this affects the mean LOS that is equal to 10.1 days, less than many subspecialty wards and closely related with the needs of patients often affected by severe health, but also social, problems.

The mean DRG-weight (ICD-9-CM 2007) was 1.09 that does not really reflect the consumption of energies and resources of the single wards. In fact, in the 2 wards with a separate costs center for high dependence areas, they reach a mean DRG weight of 1.65 and 1.87, respectively. A suboptimal ability to codify diagnoses cannot be excluded. It could be a hot educational topic for internists.

High dependency areas in Internal Medicine and the role of Internal Medicine in hospital organization

The presence of high dependency areas (HDAs) inside or closely related to IMWs comes from the need of caring for *modern* medical patients. During the last years, the number of over-70-year-old patients with multiple organ dysfunctions during acute diseases, admitted to Internal Medicine, has been considerably increasing in western countries. Often they are critically ill and need to be treated with a global, case-oriented approach by doctors and nurses trained in acute diseases.[4] They are always less hospitalized in subspecialties wards, for both reasons, for beds reduction, and for the need of a holistic management, possible only in Internal Medicine. They require a particularly difficult diagnostic summary, the ability to prescribe only useful tests and to integrate different and sometimes opposite therapies.

The first high dependency area in Internal Medicine appeared just in Liguria, then this model of care was exported to other Italian regions. It finds its reason to exist in: i) higher standardization and so higher care quality; ii) rational allocation of resources with cost containment and waste reduction; iii) avoidance of clinical care gaps, unavoidable for patients transferred from emergency medicine unit to medical wards after clinical stabilization; iv) better outcomes measure.

An organizational model based on the assessment of clinical care complexity by validated score (*e.g.* MEWS or ViEWS)[4,5] allows better allocation of patients and resources, easier clinical management according to shared and integrated clinical pathways, encourages the application of protocols and so the standardization.

It is not sustainable to increase the number of physicians in all the Internal Medicine Wards of Italy, but it is also not sustainable and risky to continue with current standards. The recognition of high dependency area in Internal Medicine wards could be the right way to improve quality of care, reduce clinical risk and rationalize costs, increasing resources where they really need.

The survey clearly demonstrated the Emergency and Internal Medicine role by highlighting the daily patients' flow from Emergency Medicine units to Internal Medicine wards, even if the Emergency Medicine units LOS are sub-optimal in some cases. HDAs in Internal Medicine should not be considered as a duplicate of intensive care units, where patients are much more compromised so they need orotracheal intubation and invasive mechanical ventilation or invasive monitoring.[10] In United Kingdom HDAs development made the opposite path: in late 1990's, it appeared that significant numbers of patients of low dependency status filled intensive care beds, so they were implemented.[11]

It is neither a substitute of the Emergency Medicine units, located in the Emergency Department, where unstable patients are cared for max 72 h as established by regulatory policy[12] - because Emergency Medicine is a time-dependent specialty and not a complexity-dependent specialty, such as Internal Medicine.[3]

HDAs in Internal Medicine are instead an opportunity for the management of complex cases that cannot be treated in intensive care because they are not eligible, in relation to disease severity, age and comorbidities, although critically ill[13,14] with the advantage of avoiding discontinuations of care. They are also an opportunity for patients who require surgery or have just been operated and, because of their multiple comorbidities, are particularly frail.

A randomized controlled trial established the effectiveness of such areas in Internal Medicine. They compared performances of traditional intensive care units with lower technology *Special Care Unit* managed by internists, supported by sub-intensive nursing. These units obtained comparable clinical outcomes (mortality, complications) and better value (economic cost, hospital stay).[6-10]

Nevertheless, hospital Internal Medicine should cooperate with family physicians in the care of complex and *chronically unstable* patients to avoid the useless and harmful re-admissions. Hospital-primary care integration with hospital internist joining primary care groups showed to significantly reduce hospitalization rate (Foglia *et al.*, 2011, unpublished data).

Outpatient clinics and competencies

Once again our survey showed homogeneities and discrepancies. In terms of outpatients activities we found that Ligurian IMWs perform many activities covering almost all the sub-specialties (from hematology to endocrinology, rheumatology, infectious disease, etc.), but they differ from one ward to another.

Similarly, data collected about competencies highlighted how the internist is autonomous in the management of most diagnostic and therapeutic care pathways, although these activities are not equally distributed and standardized among the different wards.

Acquired skills such as abdominal, vascular and cardiac ultrasound, invasive tests (*i.e.* bone marrow biopsy, thoracentesis, paracentesis, placement of drains, etc.) make the internist a complete and cost-effective specialist.

Organ specialists can help in the diagnosis and treatment of a single disease, but entrusting to him/her the entire management of a patient seldom solve the problem, in case of complexity and patients with comorbidities. Nevertheless, it can increase costs.[1]

In order to define the role of departments of internal medicine in the hospital organization, the survey clearly demonstrated that internal medicine wards are overworking units (high BTRs), essential for their broad skills and competencies to modern patients with many comorbidities.

Last, but not least, our survey assessed that the impact of so many activities, carried out by IMWs, on business management can be very convenient, if one consider that the revenues/costs was much higher than 1.5 for the wards included in the study. Data from literature go in the same direction. Even if we exclude the demonstrated cost-effectiveness of hospitalists, as in such case the comparison was between hospital care delivered by general practitioners and care delivered by hospital-based internists, it has been reported that having several subspecialists, each treating a different organ or apparatus, is not a good medicine and is very costly.[15] In fact, super-specialist practice causes fragmentation of patient care and diffusion of responsibility,[16] it involves greater use of technologies and several referrals to additional super-specialists for difficulties outside the expertise of the referring specialist, leading to cost escalation.[17] Simoes *et al.* clearly demonstrated that hospital general based internists are associated with lower costs mainly in the largest hospitals. The DRG data shows that they use fewer resources, for the complexity of case, and they do not have worse outcomes, suggesting that hospital organization based on specialists may be one driver of higher hospital costs.[18]

Limitations of the study

Our study presents the following limitations: i) consumer base and flow analysis is not known, so we could not judge precisely beds adequacy of interviewed hospitals; ii) the relationship between hospital characteristics (size and location) and IMWs mission was not stressed. It means that we included in the same sample peripheral hospitals where IMWs work also as short stay units (low intensity of care) and larger urban hospitals where IMWs care mainly for acute and often unstable patients; iii) we did not include in the current study IMWs of university hospital. Most of them are sub-specialized (hematology, oncology etc.), their admissions are often programmed and do not come from Emergency Room, so benchmarking would be inconsistent.

Conclusions

IMWs are widespread throughout the country. They manage the majority of patients admitted from Emergency Room with a consumption of resources that is largely below the revenues from DRG system, as it is difficult to find all the internists' skills in organ-specialists. Anyway, the number of internists, actually employed in Ligurian hospital, seems less than required by the huge workload due to the large number of admissions and the high beds turnover rate. That is because staffing is allocated on the base of parameters, older than 20 years that consider internal medicine and general surgery as general specialties, with low complexity of care.

We hope that government will reorganize the national health system with new priorities and standards. Anyway, larger and further studies are needed to enhance the stakeholders awareness about Internal Medicine.

In force of their own multidimensional knowledge and activity, we expect that internists will be included in working groups about health quality and pharmaceutical expenditure, acquisition and management of technologies, reorganization of hospital network, interplay between in-hospital and out of hospital settings, with optimization of resources and ongoing evaluation of the cost/benefit ratio.

References

1. Palsson R, Kellett J, Lindgren S, et al. Core competencies of the European internist: a discussion paper. Eur J Intern Med 2007;18:104-8.
2. Palese A, Cuel M, Zanella P, et al. Nursing care received by older patients in Italian medical units: findings from an explorative study. Aging Clin Exp Res 2013;25:707-10.
3. Nardi R, Arienti V, Nozzoli C, Mazzone A. Hospital organization based on intensity of care: potential errors to avoid. Ital J Med 2012;6:1-13.
4. Subbe CP, Kruger M, Gemmel L. Validation of a modified early warning score in medical admissions. Q J Med 2001;94:521-6.
5. Prytherch DR, Smith GB, Schmidt PE, Featherstone PI. ViEWS - Towards a national early warning score for detecting adult inpatient deterioration. Resuscitation 2010;81:932-7.
6. Kramer MHH, Akalin E, de Mon Soto MA, et al. Inter-

nal Medicine in Europe: How to cope with the future? An official EFIM Strategy document. Eur J Int Med 2010;21:173-75.
7. Puleo A, La Carrubba S, Cicatello C, Di Rosa S. Critical care in internal medicine department: EBM approach and new organizational model for Italian National Health Service. Crit Care 2002;6:P249.
8. Rutledge R, Osler T. The ICD-9-based illness severity score: a new model that outperforms both DRG and APR-DRG as predictors of survival and resource utilization. J Trauma 1998;45:791-9.
9. Pilotto A, Greco A, Franceschi M, et al. All patients refined (APR) DRG in Geriatria: un nuovo sistema per valutare i costi nell'anziano ospedalizzato. G Gerontol 2004;52:262-6.
10. Rudy EB, Daly BJ, Douglas S, et al. Patients outcomes for chronically critically ill: special care unit versus intensive care unit. Nurs Res 1995;44:324-31.
11. Pappachan JV, Millar BW, Barrett DJ, Smith GB. Analysis of intensive care populations to select possible candidates for high dependency care. J Accid Emerg Med 1999;16:13-7.
12. Ministero della Sanità Italiana. Atto di intesa tra Stato e regioni di approvazione delle linee guida sul sistema di emergenza sanitaria in applicazione del decreto del Presidente della Repubblica 27 marzo 1992. In: GU Ser. Gen. no. 114, 17/5/1996, available from: http://www.gazzettaufficiale.it/atto/vediMenuHTML;jsessionid=0q9Nj6A7YM2jfDyVo1n5cQ__.ntc-as1-guri2a?atto.dataPubblicazioneGazzetta=1996-05-17&atto.codiceRedazionale=096A2986&tipoSerie=serie_generale&tipoVigenza=originario
13. Ip SP, Leung YF, Ip CY, Mak WP. Outcomes of critically ill elderly patients: is high-dependency care for geriatric patients worthwhile? Crit Care Med 1999; 27:2351-7.
14. Chesi G, Boni F. Hospitals and organizational models based on the intensity of treatment: the internist's point of view. Ital J Med 2012;6:63-71.
15. Baillie H, Kenyon M. General Internal Medicine: a core specialty in jeopardy. BCMJ 2005;47:377-8.
16. Peter RF, Reed MC, Kemper P, Blumenthal D. Changes in the scope of care provided by primary care physicians. N Engl J Med 1999;341:1980-5.
17. Kaira SP, Anand AC, Shahi BN. The relevance of general internal medicine today: role of super-specialists vis-à-vis internists. J Indian Acad Clin Med 2003;4:14-7.
18. Simões AM, Machado SR, Barros PP, Nunes J. General internists at the hospital: cost saving or big spenders? In: IHEA 2007 6th world congress: explorations in health economics. Available from: http://ssrn.com/abstract=994062

APPENDIX
Ligurian FADOI group

Giovanni Berisso (*Dept. of Internal Medicine, Sarzana, SP*), Marco Scudeletti (*Dept. of Internal Medicine, Sestri Levante, GE*), Enrico Haupt (*Dept. of Internal Medicine, Lavagna, GE*), Roberto Franceschini (*Dept. of Internal Medicine, Rapallo, GE*), Mario Pilade Parodi (*Dept. of Internal Medicine, Genova*), Gianmaria Zavarise (*Dept. of Internal Medicine, Genova*), Carlo Venzano (*Dept. of Internal Medicine, Genova*), Giuliano Lo Pinto (*Dept. of Internal Medicine, Genova*), Giancarlo Antonucci (*Dept. of Internal Medicine, Genova*), Teresiano De Franceschi (*Dept. of Internal Medicine, Albenga, SV*), Alberto Artom (*Dept. of Internal Medicine, Pietra Ligure, SV*), Lionello Parodi (*Dept. of Internal Medicine, Savona*), Rodolfo Tassara (*Dept. of Internal Medicine, Savona*), Franco Martini (*Dept. of Internal Medicine, Sanremo, IM*), Guido Rizzi (*Dept. of Internal Medicine, Imperia*)