

The hospital Internal Medicine specialist today: a literature review and strength, weaknesses, opportunity, threats (SWOT) analysis to develop a working proposal

Emilio Scotti,¹ Filomena Pietrantonio²

¹Villa Luana Clinic, Azienda Sanitaria Locale Roma G, Poli, Rome; ²Internal Medicine Unit I, S. Eugenio Hospital, Azienda Sanitaria Locale Roma C, Rome, Italy

ABSTRACT

The aim of the paper is to identify the role of the hospital Internal Medicine specialist in the Internal Medicine Unit (IMU) through a clinical and statistical analysis of the patients referred to them by identifying the activities that differentiate them from patients in General Medicine and Emergency Departments, *i.e.* diagnosis and treatment of complex patient with varying degrees of instability, identifying priorities in the acute problems of co-morbidities. The modified early warning score (MEWS), an internationally validated marker, was chosen to assess and stratify the clinical instability of patients referred to the IMU. A literature review was carried out, and a cut-off score of 3 was chosen to define the critical patients referred to the IMU; a MEWS value of 4 defines the need for transfer to the Intensive Care Unit (ICU) or Intensive Cardiac Care Unit (CCU), considered the primary end point in most of the studies examined. To better characterize the internist's role today, a strength, weaknesses, opportunity, threats (SWOT) analysis was performed and examined, and commented upon. A total of 101 articles were reviewed and 5 were selected. The case histories relating to the IMU appear to be made up of complex patients with conditions that are, in most cases, acute and unstable. From 10% to 17% of patients present a MEWS of 3 or more that defines a condition of severe clinical instability requiring continuous observation and non-invasive multi-parametric monitoring. From 5% to 7% of cases present a MEWS of 4 or more and therefore require transfer to the ICU/CCU or risk rapid death. Approximately 40% of patients present MEWS of 1-2 and still have disease flare-up, but with a lesser degree of instability; however, these patients could experience a potentially negative disease development if not promptly and properly treated. Approximately 40% of patients have MEWS of 0 and represent the group of fragile patients that cannot be studied, diagnosed or stabilized on an outpatient basis. The critical analysis of the literature review and the SWOT analysis suggest that the two specific hospital internist's tasks are: i) to stabilize acute, severe and complex patients with multiple pathologies; and ii) to develop etiologically difficult diagnoses in these and in fragile patients who need to be admitted to the hospital because the alternative diagnostic routes, for various reasons, cannot be used.

Correspondence: Filomena Pietrantonio, via Ebe Stignani 20, 00128 Roma, Italy.
Tel. +39.329.1710748 - Fax: +39.06.5089501.
E-mail: filomena.pietrantonio@gmail.com

Key words: hospital Internal Medicine specialist, modified early warning score (MEWS), clinical instability stratification, strength, weaknesses, opportunity, threats (SWOT) analysis, internist's role.

Contributions: the authors contributed equally. FP developed the SWOT analysis.

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

Received for publication: 6 June 2013.
Revision received: 22 July 2013.
Accepted for publication: 1 August 2013.

This work is licensed under a Creative Commons Attribution NonCommercial 3.0 License (CC BY-NC 3.0).

©Copyright E. Scotti and F. Pietrantonio, 2013
Licensee PAGEPress, Italy
Italian Journal of Medicine 2013; 7:278-286
doi:10.4081/ijm.2013.278

Introduction

Scientific debate increasingly focuses on the interaction between government, healthcare and clinical research.^{1,2} Also in the United States, the role of the hospital Internal Medicine specialist is continually discussed and the search for a new definition in the light of human, social and economic changes is ongoing. The study conducted thus fits into a shared debate that arises from the need to make clear to public health administrators what the hospital Internal Medicine specialist tasks are within the Internal Medicine Unit (IMU). This has been done through clinical and statistical analysis of the patients referred, and identifying the activities that differentiate them from General Medicine and Emergency Department patients. In contrast to what we imagine and what is shown by scientific studies,³ the hospital internist faces especially difficult diagnoses and problems of instability in the context of complex and seriously ill patients with multiple pathologies that, once stabilized, are transferred to areas of lower intensity care. Management of the phase of clinical instability of complex diseases and

difficult diagnoses are specific to the internist and cannot be shared with other specialists. In contrast, the management of complexity, comorbidity, frailty, disability and social problems is also shared with other specialists (e.g. geriatricians, physiatrists) and settings such as assisted residential facilities, long-term care, home healthcare, General Practitioners, etc.

To assess and stratify patient clinical instability, the internationally validated modified early warning score (MEWS) was chosen together with comorbidity assessment, frequently used in Internal Medicine cases and in patients of advanced age; in fact, advanced age complicates patient management. This objective makes this study stand out from those previous studies in the literature that evaluated the complexity of patients hospitalized in the Internal Medicine Department.⁴ This study identifies those activities of Internal Medicine that differentiate them from those of the General Practitioner and of the Emergency Department: the diagnosis and treatment of the complex patient with varying degrees of instability, prioritization in the acute problems of complex patients.

In the Emergency Department, the most important skill is to stabilize the critically ill acute patient while long-term care deals with chronically ill patients that have already been diagnosed and stabilized.

The MEWS is a tool for bedside evaluation to identify medical patients at risk of deterioration that require transfer to the Intensive Care Unit (ICU) or Cardiac Care Unit (CCU).⁵

The MEWS was chosen because it is an internationally validated indicator in the medical field. It is simple to perform, and has been used in almost all scientific studies carried out in Internal Medicine. Among other things, MEWS is currently used to assign unstable patients to the most appropriate level of care, in particular for the referral of the patient to the ICU and as a prognostic factor of outcome;⁶ the primary end point in most of the existing studies in the literature. Several methods are used to assess clinical instability and these are shown in Table 1.⁷⁻¹²

Defining the internist's specific role in acute care medicine is crucial in this particular moment in time. The situation today is that there has been much segmentation and redistribution of tasks resulting in specialty and emergency departments being allocated many of the responsibilities that previously lay with the internist. Now, throughout Italy, we can start to see these responsibilities returning to the hands of the internist, including certain prerequisites of internal medicine, such as a role in the social and medical care of frailty, comorbidity and complexity in the clinically stable. On the other hand, the cuts in the number of beds available, the reduction in the length of hospital stay, and the need to follow cost-cutting guidelines have generated the phenomenon of early discharge,

and with it the risk of transferring patients who are still not completely stabilized too early to facilities of low intensity of care.

Materials and Methods

In order to stratify patients admitted to the Internal Medicine departments using the MEWS, a literature review was carried out on the basis of the keywords *MEWS validation in Internal Medicine*. A total of 101 articles were selected stratifying patients in three main areas: Internal Medicine, Emergency and Surgery. Five representative articles were chosen to compare MEWS at admission and to identify the different clinical characteristics requiring a different diagnostic and therapeutic approach.^{5,13-16} Patients were stratified according to the MEWS and the average MEWS value obtained was calculated for each category. Each MEWS value was discussed and contextualized within the IMU to define the internist's role in relation to the series treated based not only on the characteristics relating to clinical instability, but also on possible diagnostic and therapeutic pathways, evaluating the appropriateness or the reasons that lead to hospitalization.¹⁷

Subsequently a SWOT analysis on the internist's role today was performed to correlate that role to the distinctive features of the specialty in relation to the type of patients referred to the Internal Medicine Departments and the changes in the epidemiological, social and cultural context.

Results

A total of 101 articles were examined and 5 were selected to define the MEWS cut off for ICU/CCU admission and the percentage of MEWS score in Internal Medicine patients (Table 2).^{5,13-16}

The MEWS was calculated on the basis of five physiological parameters: systolic blood pressure, heart rate, respiratory rate, body temperature, and alert, vigilant, pain, unresponsive (AVPU) score for the assessment of the state of consciousness (Table 3).

The review highlighted that the choice of a cut-off score for the critical patient of 3 or 5 shows the same efficiency (approx. 75%) in discriminating critical from non-critical patients among those who are critical at admission. However, using a score of 3 or over would better predict the negative clinical evolution, and therefore identify those patients at risk of a worsening in their condition, according to the Bollini and Colombo experience.¹³

According to published studies, the MEWS value that should result in sending critical patients to ICU ranges from 4 to 5. Indeed, there is some consensus that a MEWS of 5 or more is associated with immi-

Table 1. Clinical instability evaluation methods.

Methods	Parameters	Settings in which the score is used	Reference
Halm's criteria	Body temperature, heart rate, oxygen saturation, inability to feed oneself independently, delirium, pain	Medical	Halm <i>et al.</i> ⁷
SOFA	PO ₂ , FiO ₂ , creatinine serum, bilirubin serum, hypotension, platelet count, GCS	Intensive Care Unit	Bora <i>et al.</i> ⁸
MODS	PO ₂ , FiO ₂ , creatinine serum, bilirubin serum, PAR, platelet count, GCS	Intensive Care Unit	Bora <i>et al.</i> ⁸
APACHE II	Temperature, mean arterial pressure, heart rate, respiratory rate, FiO ₂ , arterial PH, HCO ₃ , sodium serum, potassium serum, creatinine serum, hematocrit, white blood count, GCS	Intensive Care Unit	Rogers <i>et al.</i> ⁹
MEWS	Systolic blood pressure, heart rate, respiratory rate, body temperature, state of vigilance assessment	Emergency, Medical and Surgical	Cei <i>et al.</i> ¹⁰ Robb and Seddon ¹¹
VIEWES	Pulse, temperature (C°), blood pressure (mmHg), respiratory rate (bpm), AVPU, SaO ₂ (O ₂ saturation), inspired O ₂	Medical and Surgical	Kellet <i>et al.</i> ¹²

SOFA, sequential organ failure assessment; GCS, Glasgow coma scale; MODS, multiple organ dysfunction score; PAR, pressure adjusted heart rate; APACHE II, acute physiology and chronic health evaluation; MEWS, modified early warning score; VIEWES, Vitalpac™ early warning score; AVPU, state of vigilance assessment.

Table 2. A literature review on modified early warning score use.

No. cases	MEWS cut off for ICU/CCU admission	MEWS score in Internal Medicine patients	Reference
1482 M 47.2% F 53.8%	5	Mean MEWS: 1.25 MEWS 0=43% MEWS 1=21% MEWS 2=16% MEWS ≥3=17% MEWS 4=7.4% MEWS ≥5=5%	Bollini and Colombo ¹³
790 M 45% F 55%	4	MEWS 0=2% MEWS 1=19% MEWS 2= 17% MEWS 3=22% MEWS 4=17% MEWS 5=12%	Burch <i>et al.</i> ¹⁴
597 M 44.6% F 55.4%	4	MEWS 0=39.4% MEWS 1=23.3% MEWS 2=14.6% MEWS 3=10.2% MEWS 4=5% MEWS 5=4.2%	Bartolomei and Cei ¹⁵
334* M/F= 1/1.02	5	MEWS <4=17% MEWS ≥4=19.7% MEWS >5=5%	Gardner-Thorpe <i>et al.</i> ¹⁶
709 M 45% F 55%	5	MEWS 0=2% MEWS 1=34% MEWS 2=32% MEWS 3=17% MEWS ≥4=7.1% Mean MEWS=1	Subbe <i>et al.</i> ⁵

MEWS, modified early warning score; ICU, Intensive Care Unit; CCU, Intensive Cardiac Care Unit. *Mainly surgical patients.

Table 3. Modified early warning score.

Category	3	2	1	0	1	2	3	Score
SBP (mmHg)	≤70	71-80	81-100	100-199	-	>200	-	-
Pulse rate (bpm)	-	≤40	41-50	51-100	101-110	111-129	>130	-
Respiratory rate (bpm)	-	≤9	-	9-14	15-20	21-29	>30	-
Temperature (°C)	-	≤35	-	35-38.4	-	>38.5	-	-
AVPU score	-	-	-	Alert	Reacting to voice	Reacting to pain	Unresponsive	-

SBP, systolic blood pressure; AVPU score: A, alert; V, responding to voice; P, responding to pain; U, unresponsive.

nent clinical instability, but a lower threshold (such as, for example, what we propose, fixed at 4 points) associated with cascade action protocols can be more useful for other purposes, as in the case of the admission triage.¹⁵

In Internal Medicine Departments, we usually find a proportion of patients (ranging from 10% to 17%, depending on the study) with MEWS of 3 or more, which defines a condition of severe clinical instability requiring continuous observation and a personalized therapeutic approach but which, however, for its specific characteristics (age, comorbidities, complexity, fragility or social problems) did not need a semi-intensive care unit resuscitation or highly specialized care unit. Patients with MEWS over 3 usually have an acute failure of an organ or a system, or multiple organs failure with the possibility of a pejorative and life-threatening evolution. Therefore, these patients require multi-parametric non-invasive monitoring until the degree of instability is reduced.

From 5% to 7% of patients referred to the Internal Medicine departments present MEWS over 4, indicating the need to be transferred to the ICU or risking rapid death.

About 40% of patients present MEWS 1-2, but with a lesser degree of instability, with no acute changes in mental status, vital signs and without shock; but they are suffering from acute diseases at potential risk of worsening if not promptly and properly treated. These patients have no indication for continuous monitoring of vital functions, even if they require adequate supervision and monitoring of the clinical evolution.

The studies conducted in the Internal Medicine Department present approximately 40% of patients with MEWS 0. The data could be explained by the increase in the number of elderly patients and the presence of comorbidities. Such data, therefore, represent the proportion of patients that, due to their fragility, can not be studied and diagnosed in an outpatient setting, or patients who have stabilized but who are still at potential high risk of relapse or complications and/or need complex hospital treatments.

Since the majority of patients reported in Italian studies have a MEWS of 0, we can assume that hospital-territory integration is inadequate. This underlies the need for reorganization of the health system to ensure that, more correctly, at least a proportion of those patients who require personal care assistance can take advantage of other assistance schemes rather than hospital admission. This reorganization would meet the growing demands of the legislator who, with the aim of reducing costs, and given the lack of hospital-territory integration, is likely to continue to proceed exclusively through linear cost cuts and reduce the number of acute care beds.

To better characterize the internist's role, a SWOT analysis was performed to promote the involvement of all levels of operators from the bottom up so that this role was clear and shared. The development of the SWOT analysis was preceded by: i) meticulous information collection; ii) identification of the characteristics of the internist's role; iii) identification of exogenous factors, classifying them as opportunities or threats; iv) identification of endogenous factors, ranking them as strengths or weaknesses; v) classification/selection of possible strategies; vi) overall assessment of the proposals' effectiveness made on the basis of the experts' experience and the literature review. Later, we used an analysis tool of a focus group with different stakeholders emphasizing the participatory approach. This was made up of 4 doctors and 3 nurses from Internal Medicine Departments of two hospitals in Rome (Sant'Eugenio and San Giovanni-Addolorata) and one assisted residential care center (Villa Luana in Tivoli, Rome). The results of the focus group are the basis of the creative process that led to the definition of the hospital Internal Medicine specialist today shown in Table 4.

Discussion

The working proposal, in agreement with the literature data, was developed from the evidence of hospital records that the cases admitted to Internal Medicine Departments are made up of varied and complex patients¹⁸ who are in most cases, in an acute and unstable condition.

By comparing the MEWS values collected in Internal Medicine Departments with those collected in Emergency and Surgical areas we believe that a score of 3 is the most appropriate cut off to define the critical profile of the patients in Internal Medicine. Therefore, we propose a review by Baltolomei and Cei in which they suggest a stratification strategy, correlating it to the overall outcome of a patient case-mix.¹⁵ We can then divide the patients admitted to Internal Medicine Departments on the basis of their MEWS value into 3 classes that can be correlated with the model of organization for intensity of care, and that correspond to different levels of severity: i) low (MEWS 0); ii) medium (MEWS 1-2); iii) high (MEWS ≥ 3).

The division into groups of patients according to different levels of instability suggests that the pattern of intensity of care medicine may be the most appropriate for this type of patients' care needs.

Similarly to the experience of other Italian regions that have drawn up models to differentiate hospital intensity of care, the Lazio section of the Federation of Associations of Hospital Doctors on Internal Medicine (FADOI) has already produced a document outlining an organizational model to differentiate hospital inten-

sity of care in the medical area according to the Lazio regional healthcare context.¹⁹ The proposal is built around the demographic changes, technological innovation, and the need to achieve greater clinical efficacy and welfare according to a sustainable economic approach, that apply to all hospital realities regardless of the available resources in order to ensure a uniformity in levels of care.

The document presents the classic three levels (high, medium and low intensity) together with a minimum (stable patients in long-term care and General Practitioner's care) and an intensive (patients in ICU) level and divides the 2nd level into high-average intensity and sub-intensive care (in the IMU), the characteristics of which are described in Tables 5 and 6.

The high intensity admission and discharge criteria have to be strictly defined and shared, as shown in Table 7.

The proposed model takes into account a very complex reality and represents a concrete step towards improving the quality of care. As a result, each Internal Medicine Department could set up a high intensity area which would represent approximately 10% of the beds, with appropriate technological and human resources and facilities, as reported in Table 8.²⁰

The use of SWOT analysis to define the internist's role today represents an innovative way to analyze the changed context. The SWOT analysis is a methodology created by marketing research and used to analyze the competitive environment and, in particular, the strategy to be adopted. The SWOT analysis has been used as an instrument of internal mapping to define the role of the Internal Medicine specialist in the hospital setting and to suggest the next steps to be taken to better define this role in a changing environment in which the tasks involved may not be completely understood. The intention behind the SWOT analysis is to maximize the strengths and minimize the weaknesses. Our study suggests that a way to overcome the weaknesses and minimize the risk is to improve professional quality with training courses, and activation of diagnostic and therapeutic pathways to integrate hospital and General Practitioners' care and long-term care, and patient stratification according to the severity of their condition, MEWS score, and type of disease.

Among the internist's strengths, the ability to perform co-management activities that are developed in different modalities has been added to the SWOT analysis, as summarized in Table 9.

Co-management occurs when 2 or more physi-

Table 4. Strengths, weaknesses, opportunities, threats analysis: the hospital Internal Medicine specialist today.

Strengths	Opportunities
(A) Ability to assess the patient in his or her complexity and completeness (holistic approach)	(A and B) Ability to give proper patient care depending on the developmental stage of the disease; can be a more effective care approach as it allows a response to varied and complex needs
(B) Specialized technical skills	(C-F) Ability to control costs and then to rationalize resources
(C) Ability to organize care processes characterized by professionalism and interdisciplinary approach according to the priorities to be considered in the overall management of the patient	(B, C and F) Ability to be promoters of the path of continuous quality improvement towards excellence. Ability to increase the appropriateness of admission in the hospital and to establish a Center of Excellence
(D) Ability to integrate the operations and ability to work in a network	(B and E) Ability to implement quality of provision of benefits both from a clinical and an organizational point of view
(E) Capacity to exercise the role of regional Internal Medicine center of reference (HUB) with respect to general practitioners	(E and G) Reduction in the duration of stay in areas with high hospital inpatient costs
(F) Ability to choose the necessary diagnostic tests and exclude unwanted ones	(G) Reduction of the complications and costs of hospital stay of surgical patients
(G) Co-management: the management of internal medicine problems in surgical patients	(H) Early transfer of patients from the Intensive Care Unit to high care units in the Internal Medicine Department
(H) Organization according to differentiated intensity of hospital care	
Weaknesses	Threats
1) Overlap with mono-organ and mono-system specialist	1) Risk of inappropriate management of the complex patient with multiple pathologies with complications and longer hospital stays
2) Sharing of frail patients, with prevailing social problems and welfare concerns, with Geriatric Departments	2) Risk of improper destination of patients with important social issues in hospital Internal Medicine Department
3) Confusion of the role of the hospital Internal Medicine Department with that of the General Practitioner and long-term care facilities	3) Risk of considering the hospital internist's role to be the same as that of the General Practitioner
4) Integration and differentiation of activities to be implemented	4) A lack of coherence between integration and differentiation can lead to a splitting of assets and the risk of failing to pursue quality, effectiveness, efficiency, appropriateness
5) Low voltage challenger and lack of a sense of belonging to a specialty	5) Resistance to change, clinging to out-dated working methods, difficulty in implementing a new model of work organization

cians representing different specialties share responsibility, authority and accountability for the management of hospitalized patients.

In the United States, co-management represents an increasing practice that has developed for different reasons: i) aging of the hospitalized patients who present conditions that are more and more medically complex that require greater input from physicians with medical expertise, and consistent and rapid availability at the bedside; ii) increased focus of surgeons and specialists on their practices, reducing their workloads and allocating greater time to performing financially lucrative procedures; iii) growing pressure on hospital

administrators to contain costs, improve quality of care and retain high-demand specialists; iv) greater workload restrictions on medical trainees.²¹

Limitations of the study

The choice of the use of the MEWS may be the subject of some debate since it has been used and validated in many different ways in scientific studies. There is a consistent body of work in the literature in the field of stratification and classification of hospitalized patients, and the selection of the studies and their interpretation can only be partial. We chose to identify the average values of the scores in internal

Table 5. Characteristics of the levels of intensity of care.

Minimum	The patient is clinically stable. He/she does not require medical assistance but only social assistance and nursing
Low	The patient is clinically stable. He/she does not require constant monitoring of vital parameters. He/she does not require continuous medical presence. Activities are prevalent techniques/basic nursing
Medium	The patient is clinically stable. Requires discontinuous monitoring of vital signs with doctors continuing care. Prevailing nursing activities are of medium complexity
High	The patient is clinically unstable. He/she requires constant monitoring of vital parameters. Prevailing nursing activities are highly complex or intensive nursing care is required
Intensive	The patient is unstable. Dependent or potentially dependent on technological aids; high risk of complications

Table 6. Clinical and nursing features of the different levels of care.

Level of care	Need for medical presence	Need for continuous monitoring	Hemodynamic stability	Vital signs monitoring: instrumental assistance	Risk of complication	Type of facility
Minimum	No	No	Yes	No	No	PTP
Low	Yes Discontinuous	No	Yes	No	No	Post-acute, etc., 5-day hospitalization (<i>week hospital</i>)
Medium	Yes	No	Yes	Discontinuous	Predictable Controllable	Hospital admission area
High	Yes	Yes	No	Continuous	Yes	Hospitalization in high intensity unit
Intensive	Yes	Yes	No	Continuous dependency on technological tools	Yes	ICU

PTP, community health post; ICU, Intensive Care Unit.

Table 7. High intensity unit: admission and discharge criteria.

Admission criteria	Discharge criteria
Insufficiency or acute exacerbation of an organ, with independent respiratory function	Stable patients who no longer require active organ support
Need for basic monitoring: cardiac, respiratory, neurological and renal	Patients who no longer require close monitoring
Patients post intensive but not yet requiring inpatient care	Patients in a vegetative state

medicine and, therefore, the stratification proposed may differ from situations elsewhere. However, it closely reflects the reality of the Lazio region on which the study concentrated. The cut-off score of over 3 used in the study may not be able to correctly identify a series of unstable patients. In fact, the data in the literature are not consistent, but still show a general consensus in considering that the MEWS value of 4 or more defines the need to transfer the patient to the ICU or CCU, considered the primary end point in most of the studies reviewed.

Role of the hospital Internal Medicine specialist

The task of the hospital Internal Medicine specialist does not finish when severely and acutely ill patients, with complex and multi-pathologies, are stabilized, but rather lies in the difficult and detailed etiologic diagnoses, working his or her way through

a jungle of symptoms, signs and clinical care problems of all kinds. To achieve this, the internist must have a wide-ranging background and extensive training that covers all fields. In other words, the internist must take a holistic view and consider the human body as a whole unit that cannot be expressed by a summing up of the parts. With this approach, the measurement of body function is always greater than (and different to) the sum of the performance of the individual parts. The human body can, therefore, represent an integrated system according to which the functionality of each organ influences that of the other organs, and disease or dysfunction of one has strong repercussions on the others.

A global vision of the internist allows us to identify priorities and to choose the most direct way to make a diagnosis with savings in time and cost. According to the SWOT analysis, the strengths of the holistic approach are: i) the ability to assess the patient in his/her

Table 8. Minimum structural, technological and organizational requirements in the high intensity area.

Structural and technological requirements

1. 100% of the multi-parametric beds monitored for ECG, blood pressure, pulse oximetry, trend parameters, audible and visual alarms
2. A monitoring station with a dedicated nursing station or a visual control system
3. Defibrillator and pacemaker
4. Volumetric infusion pumps and syringe
5. Blood gas analyzer available 24 h a day
6. Set for intubation: cardio-pulmonary resuscitation
7. NIV

Organizational requirements

Personnel

1. At least one referring physician during the day to have a level of competence that guarantees the task can be performed without supervision
2. Emergency medical service at night shared with the rest of the IMU
3. At least one nurse to every 4-6 patients

Procedures

1. Admission and discharge protocols that indicate the pathologies and the clinical condition shared with the Emergency Department and Intensive Care Unit
2. Protocols for management of the main pathologies and procedures performed (monitoring, respiratory care, non-invasive ventilation, use of infusion pumps)
3. Protocol management consulting and specialized diagnostic tests
4. Dedicated medical record
5. Nursing record
6. Protocols for the execution of instrumental maneuvers
7. Protocols for the prevention of clinical risk

ECG, electrocardiogram; NIV, non-invasive ventilation; IMU, Internal Medicine Unit.

Table 9. Development of co-management.

Type of co-management	Objective/result
Routine: collaboration between departments	Logical consequence of a long-standing working relationship between departments that wish to collaborate in a more structured manner to improve the care of a cohort of patients
Institutional: by hospital administrator or head of department	Solution for service, quality or other performance deficiencies
Spontaneous: progressive assumption of management responsibility	Medical service that progressively assumes responsibility for most, if not all, hospitalized surgical and/or orthopedic patients, irrespective of their diagnoses or medical comorbidities

entirety and complexity; ii) to identify management priorities; iii) to identify the quickest and most appropriate diagnostic-therapeutic course by choosing only those tests that are strictly necessary to define the pathological problem. In fact, increasingly, tests are being requested not according to clinical reasoning but rather with the exclusive aim of covering the most diverse diagnostic possibilities and eventualities, while at the same time acting on the principle of defensive medicine.²²

Doing *the right thing to the right patient at the right time* is the central node of a quality diagnostic-therapeutic course that, guided by a correct, appropriate and efficient clinical method, is the only way to reduce costs and length of hospital stay while at the same time delivering care at a level of excellence. The clinical method is the founding principle of the work of a hospital Internal Medicine specialist. It is the same scientific method as that described by Claude Bernard²³ in 1865 which defined the rules of observation, hypothesis formulation, deduction, testing/verification. Augusto Murri²⁴ said that in the clinic, as in life, you have to consider that everything that is affirmed and that seems true may be false. Before you believe, you have to ask yourself why you should believe. The diagnostic path of the internist is paved with continuous hypotheses, critiques, test subjects, verifications or refutations. Along this path the internist makes use of evidence-based medicine (guidelines, meta-analyses, trials), integrating it with the clinical method, so much so that Sackett²⁵ says *the best evidence is that which emerges from the interaction between internal evidence (experience, individual clinical knowledge a priori) and external evidence*.

These reflections, together with the results of this study, delineate the two specific tasks of the hospital internist: i) stabilize acutely and severely ill, critical, medically complex patients often with multi-pathologies; ii) develop difficult etiological diagnoses for patients who have to be hospitalized because, for various reasons, alternative solutions are not feasible.

These two functions characterize the Internal Medicine Department and differentiate it from: i) the emergency departments in which the diagnosis is mainly based on symptoms and resources are all directed towards stabilizing vital signs, while the etiological diagnostic process is secondary; ii) from the specialized mono-organ mono-apparatus divisions where the diagnoses are already established and to which the complex patients with multi-pathologies are often not even referred; iii) from the local assisted residential facilities and long-term care units where patients arrive once they have already been diagnosed and when their condition, within certain limits, has stabilized; iv) from the General Practitioner who does not and can not work with the acutely ill, but who plays a role in

prevention and early diagnostic orientation, sending the patient, when necessary, to the appropriate specialist, while delegating severe, unstable and critical cases to the hospital physician; v) from the geriatrician who performs valuable tasks aimed at frail patients, with complex social welfare issues, and who plays a role mainly in routine assistance, in long-term care and assisted residential facilities, being a professional figure oriented towards the rehabilitation of the post-acute chronically ill with persistent functional limitations.

Lack of understanding on the part of the public and, as a result, of the healthcare programmer about the role of the hospital internist arises precisely from the fact that the internist performs activities that compete with other specialists performing a vicarious function, mainly related to the field, which is not the internist's responsibility but is improperly assigned to him or her due to the lack of appropriate facilities in the area. A final consideration concerns the term *internal medicine* that was born some centuries ago in counterposition to *external medicine*. Liver, heart, brain were the organs contained in the internal organ cavities whose pathology, made up of diseases inaccessible to the eye, were the object of internal medicine which observed and diagnosed beyond the outward and visible signs. In contrast, *external medicine* did not look inside the body, but only at what could be seen by the eye.²⁶

So, what meaning can we give to internal medicine today, when *external medicine* no longer exists and diagnostic techniques allow us to sound parts of the body unreachable until yesterday? In an age like ours, in which appearance dominates and everything often seems reduced to a commercial function, one of the problems of internal medicine is that the very term has little impact in the media. For the majority of people, it is incomprehensible, despite the fact it still plays a crucial role in the organization of a hospital. The hospital Internal Medicine specialist must be able to make a diagnosis, must be able to combine the clinical method with new technologies, analyze, prioritize and find a synthesis. The term *diagnosis* on the one hand denotes the main task of the hospital internist and on the other has a higher resonance in public opinion and in the media. The emphasis on this characteristic diagnostic function of the internist may also help this figure to reappear on the healthcare stage.

References

1. Frieden TR. Government's role in protecting Health and Safety. *N Engl J Med* 2013;368:1857-9.
2. Gottesman MM. The role of the NIH in nurturing clinician-scientists. *N Engl J Med* 2013;368:1-3.
3. Nardi R, Scanelli G, Borioni D, et al. The assessment of complexity in internal medicine patients. *The FADOI*

- Medicomplex Study. *Eur J Int Med* 2007;18:283-7.
4. Lopez S, Sibilano A, Stefanoni MG, et al. La complessità e l'instabilità clinica nell'anziano istituzionalizzato. *Giorn Gerontol* 2009;57:23-32.
 5. Subbe CP, Kruger M, Rutherford P, Gemmel L. Validation of a modified early warning score in medical admissions. *Q J Med* 2001;94:521-6.
 6. Nardi R, Arienti V, Nozzoli C, Mazzone A. Organizzazione dell'ospedale per intensità di cure: gli errori da evitare. *Ital J Med* 2012;6:1-13.
 7. Halm EA, Fine MJ, Kapoor WN, et al. Instability on hospital discharge and the risk of adverse outcomes in patients with pneumonia. *Arch Int Med* 2002;162:1278-84.
 8. Bora DP, Melot C, Ferreira FL, et al. The multiple organ dysfunction score (MODS) versus the sequential organ failure assessment (SOFA) score in outcome prediction. *Intensive Care Med* 2002;28:1619-24.
 9. Rogers J, Fuller HD. Use of daily acute physiology and chronic health evaluation (APACHE) II scores to predict individual patient survival rate. *Crit Care Med* 1994;22:1402-5.
 10. Cei M, Bartolomei C, Mumoli N. In-hospital mortality and morbidity of elderly medical patients can be predicted at admission by the modified early warning score: a prospective study. *Int J Clin Pract* 2009;63:591-5.
 11. Robb G, Seddon M. A multi-faceted approach to the physiologically unstable patient. *Qual Saf Health Care* 2010;19:e47.
 12. Kellet J, Kim A. Validation of an abbreviated Vitalpac™ early warning score (ViEWS) in 75,419 consecutive admissions to a Canadian regional hospital. *Resuscitation* 2012;83:297-302.
 13. Bollini G, Colombo F. L'intensità assistenziale e la complessità clinica. Un progetto di ricerca della Regione Lombardia. Milano: Era-Futura; 2011.
 14. Burch VC, Tarr G, Morroni C. Modified early warning score predicts the need for hospital admission and in-hospital mortality. *Emerg Med J* 2008;25:674-8.
 15. Bartolomei C, Cei M. The allocation of patients in an intensity-of-care based Internal Medicine ward: the ADOIT Tri-Co (Triage in the Corridor) study. *Ital J Med* 2007;2:31-9.
 16. Gardner-Thorpe J, Love N, Wrightson J, et al. The value of modified early warning score (MEWS) in surgical inpatients: a prospective observational study. *Ann R Coll Surg Engl* 2006;88:571-5.
 17. Ridley S. The recognition and early management of critical illness. *Ann R Coll Surg Engl* 2005;87:315-22.
 18. Nardi R, Mathieu G, Berti F, et al. The working group FADOI-SDA BOCCONI. Evaluation models and items of clinical competence for the hospital physicians in internal medicine. *Ital J Med* 2011;55:S3-S13.
 19. D'Amore F, Manfellotto D, Pastorelli R, et al. Proposta di organizzazione delle U.O. di Medicina Interna secondo il sistema "Hub e Spoke". *Il Policlinico Sez. Prat.* 2010;117:405-10.
 20. Regione Emilia-Romagna. Delibera Giunta Regionale n. 419 del 10 aprile 2012. Requisiti specifici per l'accreditamento delle strutture di medicina interna. Agenzia Sanitaria e Sociale Regionale Emilia Romagna (Ottobre 2011, revisione 1): 1-34. Available from: <http://assr.regione.emilia-romagna.it/it/servizi/pubblicazioni/legislazione-e-atti-amministrativi/requisiti-accreditamento/requisiti-specifici/req-s-medicina-interna>
 21. Siegal E. Just because you can doesn't mean that you should: A call for the rational application of hospitalist comanagement. *J Hosp Med* 2008;3:398-402.
 22. Nardi R, Berti F, Fabbri LM, et al. Towards a sustainable and wise healthcare approach: potential contributions from hospital Internal Medicine Departments to reduce inappropriate medical spending. *Ital J Med* 2013;7:65-81.
 23. Bernard C. Introduzione allo studio della medicina sperimentale. Milano: Feltrinelli; 1973.
 24. Murri A. Quattro lezioni e una perizia. Il problema del metodo in medicina e biologia. Bologna: Zanichelli; 1972.
 25. Sackett DL, Haynes RP, Tugwell P. *Epidemiologia clinica*. Torino: Centro Scientifico Torinese; 1988.
 26. Cosmacini G. *Storia della medicina e della sanità in Italia. Dalla peste nera ai giorni nostri*. Roma: Editori Laterza; 2010.