Guidelines for Venous Thromboembolism and Clinical Practice in Italy: A Nationwide Survey

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Venous thromboembolism (VTE) is a common health problem for today's society, and considering the role that it plays in surgical patients (general surgery, gynecology, and orthopedics), new advances in our understanding of the procedures and trauma characteristics are relevant and necessary. The most important and recently published guidelines concerning this problem have been taken into consideration, leading to articulate investigations and data evaluation. This project has proposed a data-survey framework available as a questionnaire in order to investigate application of the guidelines for VTE throughout the national territory. Of the total 714 Italian centers, a random sample of 214 were contacted and asked to take part in this study; of these, 146 replied (20.4% of total and 68.2% of the sample): 48 departments of general surgery, 46 departments of gynecology, and 52 departments of orthopedics. About 70% of the centers has appropriate information about surgery as a risk factor for VTE. The answers have provided evidence of an adequate knowledge of the instrumental and laboratory diagnostic pathways, useful to confirm the diagnosis of TE (80%). Data waiting compared with morbidity and mortality rates related to deep vein thrombosis and pulmonary embolism showed an increase of mortality associated with the diagnostic data timing of supply, with an exponential trend linked to the data acquisition delay. Both risk stratification and adequate application of prophylaxis together with treatment devices represent a real tool to control morbidity and mortality for VTE. Moreover, diagnostic data waiting significantly influences adequate prophylaxis. In Italy, only 40% of the centers are ready to provide diagnostic data within 12 hr.

INTRODUCTION

The clinical impact and incidence of venous thromboembolism (VTE) have led to a number of leading scientific societies requesting an accurate definition of specific guidelines . The guidelines formulated by the American Society for Chest Physicians (ASCP)[1] are routinely used for the stratification of risk and definition of procedures for prophylaxis and treatment.

According to such guidelines, over three-fourths of pulmonary embolism (PE) events occur in medical patients.[2] However, because of the variety of risk factors in these patients and their individual health problems (e.g., comorbidities, therapies),[3] the guidelines formulated for these cases are scarcely applied. The type of procedure as well as trauma are crucial for VTE in surgical patients (general surgery, gynecology, and orthopedics). Therefore, predictive algorithms that should help to identify high-risk subjects (i.e., those who require intensive prophylaxis) have been defined.[2,4] Appropriate use of the guidelines is thus an opportunity to decrease

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mortality and morbidity rates in this setting.[2,5,6] We have considered that, in addition to appropriate knowledge of the issue, the availability of specific technical resources in each health-care structure may affect dramatically the way guidelines are applied. We have evaluated the level of knowledge of VTE guidelines as well as the quantitative and qualitative information about diagnosis, prophylaxis, and treatment of a large number of Italian health departments that normally cope with patients at high risk of developing deep vein thrombosis (DVT) and PE.

Although studies based on questionnaires are generally considered not very rigorous and somewhat approximate, the significant amount of data collected in this work could stimulate further studies and strategies to implement guidelines about VTE in surgical settings.

MATERIALS AND METHODS

Of the total 714 public and private health-care facilities identified by each Health Regional Government Office and web search results, a random sample of 214 were contacted and asked to take part in the study. The self-administered questionnaire was mailed to selected participants and particularly to physicians who headed the general surgery, gynecology, and orthopedics wards in the centers who were responsible for answering the questionnaire, with an accompanying cover letter providing details on the purpose of the study and a reply-paid, addressed envelope. To keep track of who responded and to identify those who required follow-up, each returned envelope was individually coded with an identification number. To encourage participation of those who did not respond to the initial mailed questionnaire, in order to increase the response rate, telephone calls and two additional complete mailings, with another copy of the questionnaire and of the envelope, were sent to nonrespondents.

The standard form involved a certain number of questions (Fig. 1). In order to achieve better reliability of the collected data and to verify the quality of the practical approach carried out in each center, a series of filter questions were employed, with emphasis on laboratory and instrumental diagnostic devices and facilities for treatment, together with questions related to general information (i.e., not exclusively related to VTE). Five university centers (local units) supervised the forwarding and data collection.

Validation of the questionnaire to reveal major difficulties and weaknesses was performed through a pilot study, surveying a convenience sample of 20 surgeons, gynecologists, and orthopedists; and on the basis of the results of the pretesting, modifications were made to improve the validity of responses.

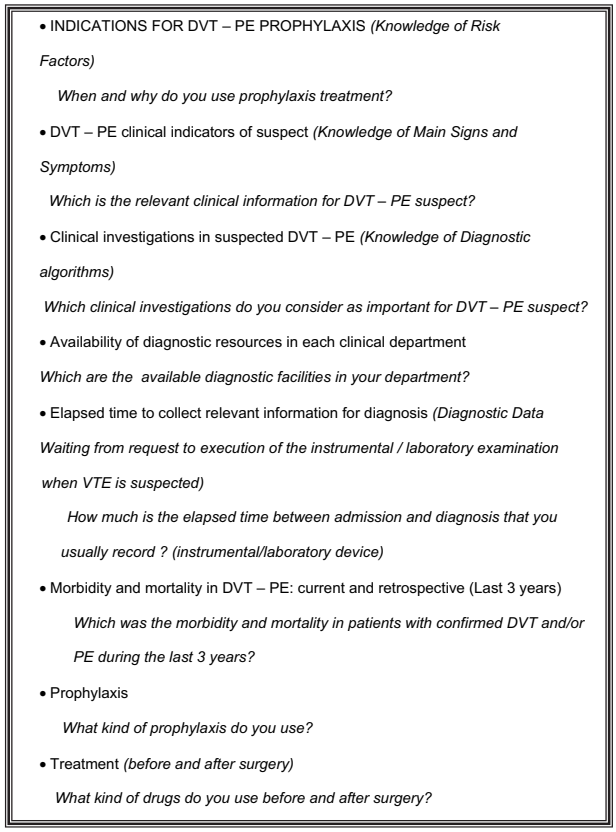

Fig. 1. The questionnaire.

RESULTS

Replies were received from 146 centers (20.4% of total and 68.2% of the sample): 48 departments of general surgery, 46 departments of gynecology, and 52 departments of orthopedics.

Health-care centers were used by 12,391,240 individuals (20.4% of the Italian population).

In order to make the statistical data analysis more uniform, stratification among centers in north (25,600,000 inhabitants), central (10,900,000 inhabitants), and south (20,000,000 inhabitants) Italy was chosen.

- *Indications about DVT—PE prophylaxis (knowledge of the risk factors):* About 70% of the centers possessed some appropriate information about surgery as a risk factor for VTE. Of this 70%, only

half reported knowing the other risk factors not related to surgery (Table I).

- *Clinical indicators of suspect DVT—PE (knowledge of main signs and symptoms):* About 80% of the centers reported pain and edema as signs of VTE; the same percentage of centers mentioned dyspnea and chest pain as symptoms of PE. Other signs and symptoms were underestimated (Table II).
- *Procedural investigations in use for suspect DVT—PE (knowledge of the diagnostic algorithms):* The diagnostic procedures to consider in case of suspected DVT are correctly followed by about 80% of the centers, while in case of suspected PE (similar to the choice between Computed Tomography Angiography [angio-TC] and Perfusional Scintigraphy [Perf-Scint]) the percentage rises to 90%. Thus, the data suggest that more attention is paid to suspected PE rather than DVT (Table III).
- *Availability of diagnostic resources in clinical departments:* About 80% of the health care facilities employ diagnostic resources necessary to confirm DVT—PE. High-cost investigations (magnetic resonance angiography [angio-MR] 45-61%, Scint radiolabeled Fibr 25%) are less common than the essential diagnostic devices (90%) (Table IV).
- *Diagnostic data waiting:* Only 40% of the centers receive confirmation of the clinical suspicion within 12 hr; in some centers more than 48 hr is necessary in order to get this important information. Generally, 24 hr is requested for confirmation (Table V). There is a delay from the request to the execution when VTE is presumed (the same for DVT and PE).
- *Annual and triennial mortality for DVT—PE (number of cases per 100,000 inhabitants):* The recruited centers replied to specific questions that asked for data related to mortality about patients with a certain diagnosis or post-mortem diagnosis (Table VI). It is interesting to note that the total mortality for DVT, as indicated by some physicians who answered the form, is probably due to PE events not diagnosed in patients with DVT.
- *Prophylaxis:* About 90% of the centers employ low-molecular weight heparin (LMWH) or opiate analgesic (oral anticoagulant [OA]) for prophylaxis; physical devices are used in 40% of cases (Table VII). No association is evident between risk categories and type of prophylaxis employed.

Table I. Knowledge of the risk factors of TE

Risk factors	%
Immobilization	40.3
Major surgical procedures	73.0
Traumas	32.6
Neoplasias	34.6
Previous TE	40.3
Trombophilia	23.6
Obesity	32.6
Age >60 years	48.0
Venous disease	44.2
Other	31.7

Table II. Knowledge of the main signs and symptoms of DVT and PE

Main signs and symptoms	%
DVT	
Pain	89.3
Edema	76.3
Fever	24.4
Cutaneous alterations	28.2
Functional alterations	20.6
Homans maneuvre-positive	19.8
Venous reticula	14.5
Other	26.7
PE	
Dyspnea	92.5
Thoracic pain	70.1
Cough	27.6
Tachypnea	50.7
Anxiety	19.4
Hemoptysis	26.8
Sweating	19.4
Other	46.2

Medical Treatment before and after Surgery

Data analyses have shown that 70% of centers involved in this study usually use LMWH before surgery and 80% after surgery (Table VIII). OA treatment is seldom used (0/0.93%). This attitude is based on the need to choose drugs with the best risk/benefit (protection/bleeding) ratio in preventing VTE.

Data concerning diagnostic data waiting and morbidity/mortality were further analyzed through stratification of the information divided according to specific areas (north, center, and south) (Table IX). There was a sufficient distribution of laboratory and instrumental diagnostic resources combined with an incongruous distribution of data waiting: only 40% of the centers were able to supply diagnostic data within 12 hr.

Data waiting were compared with morbidity and mortality rates related to DVT—PE (Table X, Figs. 2-4). Comparison between data waiting and mortality showed an increase of mortality in some way associated to the diagnostic data timing of supply, with an

Table III. Knowledge of the diagnostic algorithms

Kind of device	%
Echo color Doppler	85.8
Echo Doppler	71.7
Doppler	44.9
Phlebography	21.2
Marked fibrinogen vein scintigraphy	29.5
D-dimer evaluation	83.2
Hemocoagulation evaluation	81.6
Homocysteine evaluation	36.2
Thoracic radiography	91.0
Pulmonary spiral CT	69.7
Perfusional scintigraphy	69.5
Ventilatory scintigraphy	38.8
D-dimer evaluation	93.8
Hemocoagulation evaluation	91.0
Lactate dehydrogenase evaluation	83.9
Creatine phosphokinase evaluation	79.7
Alanine aminotransferase evaluation	71.1

Table IV. Availability of diagnostic resources

Kind of device	%
Radiography	99.1
CT	95.6
MR	58.1
Phlebography	59.1
Ultrasonography	92.6
Angio-CT	70.5
Angio-MR	45.6
Plethysmography	22.6
Perfusional scintigraphy	46.8
Ventilatory scintigraphy	27.3
Marked fibrinogen vein scintigraphy	25.0
aPTT evaluation	99.1
PT evaluation	100
INR evaluation	98.2
Fibrinogen evaluation	99.1
Factor XII	57.4
D-dimer evaluation	88.3
FDP evaluation	87.3
Protein C evaluation	82.9
Protein S evaluation	70.6
AT III evaluation	95.5
Homocysteine evaluation	57.4

CT, computed tomography; MR, magnetic resonance; aPTT, activated partial thromboplastin time; PT, partial thromboplastin; INR, international normalized ratio; FDP, fibrinogen degradation product; AT III, antithrombin III; Angio TC, computed tomography angiography; Angio RM, magnetic resonance angiography.

exponential trend linked to the data acquisition delay.

Some data about mortality for DVT have surfaced, but they are of uncertain meaning.

Morbidity and Mortality by Type of Clinical Center (Number of Cases per 100,000 Inhabitants)

Data related to mortality and morbidity of TE linked to the specialty of the clinical departments where patients are treated were taken into consideration. Considering the collected information, an incongruity between data related to morbidity and mortality has emerged from the replies (Table XI, Figs. 5 and 6). Regarding the questionnaire, all the centers were asked to reply accurately to the specific requested information but only in case of confirmed morbidity and mortality.

DISCUSSION

For the last 10 years, detailed and exact guidelines for diagnosis, prophylaxis, and therapy for VTE have been circulating within the scientific community, becoming the gold standard for up-to-date practice. There is no study available about the application of these guidelines for VTE across a national territory or results from evaluation of experienced practices.

We received replies from 146 public and private clinical centers (68.20% of the transmitted questionnaires), serving 12,391,240 inhabitants. Data collected from five university research units, each of them responsible for some regions, were redistributed in classical divisions of the national territory (north, center, south). The distribution of centers in defined areas compared to the local population represents a valid sampling for statistical analysis (48 departments of general surgery, 46 departments of gynecology, 52 departments of orthopedics).

Our response rate was 68.2%, and the survey was nationwide. This rate is consistent with other mailed physician surveys, in which the typical response is approximately 50%.[7,8] Selection bias is always a concern and may limit the generalizability of the findings, and this may mean that those who did respond tended to support guidelines and were more likely to be more knowledgeable. Moreover, actual compliance with guidelines is probably lower among nonrespondents, while respondents may tend to overestimate the extent to which they comply in practice. We examined the impact of nonresponding physicians. The best approach suggested to understand the role of nonresponse bias is to use variables known for a sufficiently large and representative sample of nonresponders and to compare them with those of responders.[9] We were able to compare baseline demographic and practice variables of

Table V. Diagnostic data waiting

Kind of device	<12 hr (%)	>12 <48 hr (%)	<48 hr (%)
Radiography	61.6	31.5	6.8
CT	44.0	29.3	26.6
MR	42.0	8.0	50.0
Phlebography	2.6	74.4	23.1
Ultrasonography	52.0	28.1	19.8
Angio-CT	26.8	36.6	35.6
Angio-MR	33.3	8.3	46.7
Plethysmography	40.0	46.7	13.3
Perfusional scintigraphy	11.1	66.7	22.2
Ventilatory scintigraphy	18.2	18.2	63.6
Marked fibrinogen vein scintigraphy	33.3	50.0	16.7
aPTT evaluation	46.7	25.3	28.1
PT evaluation	46.7	25.3	28.1
INR evaluation	46.7	25.3	28.1
Fibrinogen evaluation	45.9	25.7	24.4
Factor XII	39.0	17.1	43.91
D-dimer evaluation	38.6	29.8	31.6
FDP evaluation	49.2	23.8	27.0
Protein C evaluation	82.9	82.9	82.9
Protein S evaluation	36.4	16.0	47.7
AT III evaluation	47.2	20.8	31.9
Homocysteine evaluation	34.2	15.8	50.0

CT, computed tomography; MR, magnetic resonance; aPTT, activated partial thromboplastin time; PT, partial thromboplastin; INR, international normalized ratio; FDP, fibrinogen degradation product; AT III, antithrombin III; Angio TC, computed tomography angiography; Angio RM, magnetic resonance angiography.

Table VI. Annual and triennial mortality for DVT—PE

Mortality	DVT	PE	Total
Cumulative (3 years)(number of cases /100,000 inhabitants)	1.55	0.65	2.20
Annual(number of cases / 100,000 inhabitants)	0.51	0.21	0.72

responders and nonresponders. Our results indicate that all characteristics of the two groups exhibit the same pattern with no statistically significant differences, so we infer that there was no selection bias in these data and that the findings may be representative of all populations of physicians.

The evidence proves that the ability to recognize all major signs and symptoms of suspected DVT—PE, although adequate, suffers from a moderate underevaluation of all the early signs and symptoms which are indicative of the problem.

- For DVT: pain (89.3%) and edema of the lower limbs (76.3%), fever (24.4%), functional limitations of the lower limbs (20.6%), positive Homans maneuvre (19.8%), venous reticula (14.5%).
- For PE: dyspnea (92.5%), thoracic pain (70.1%), tachypnea (50.7%), cough (27.6%), hemoptysis (26.8%), anxiety (19.4%), sweating (19.4%). Data suggest good clinical attention to evidence that appears more suggestive and, probably, poor attention to the complex patophysiology of the event.

Actually, guidelines are mainly aimed at physicians who do not specialize in this specific area. Indeed, they seem to be more interested in the legal

Table VII. Kind of prophylaxis

Kind of device	%
Early mobilization	39.3
Anticoagulant drugs	93.1
Elastic compression	37.8
Antiplatelet drugs	2.2
Other	8.3

Table VIII. Medical treatment before and after surgery

Kind of drug	%
Before surgery	
Antibiotics	83.9
Anti-inflammatories	14.9
Anticoagulants	80.8
Antiplatelets	15.4
After surgery	
Antibiotics	76.9
Anti-inflammatories	57.6
Anticoagulants	90.7
Antiplatelets	31.7

Table IX. Echo color Doppler, angio-computed tomography, and D-dimer: data waiting and area

Clinical centers	Data waiting <12 hr (%)	Data waiting >12 hr (%)	Methodology not available (%)
Echo color Doppler			
North	0 %	94.16 %	5.84 %
Center	48.89 %	48.89 %	2.22 %
South	33.33 %	57.58 %	9.09 %
Angio-computed tomography			
North	7.35 %	89.71 %	35.29 %
Center	46.67 %	48.89 %	20.00 %
South	21.21 %	69.70 %	39.39 %
D-dimer			
North	10.29 %	80.88 %	8.82 %
Center	29.55 %	63.64 %	6.82 %
South	6.06 %	69.70 %	24.24 %

Table X. Comparison of echo color Doppler, angio-computed tomography, and D-dimer: data waiting and mortality rate

	Data waiting <12 hr		Data waiting >12 hr	
Mortality	DVT	PE	DVT	PE
Echo color Doppler				
Cumulative (3 years)(number of cases /100,000 inhabitants)	0.0052	0.0008	0.0013	0.1848
Annual(number of cases /100,000 inhabitants)	0.0018	0.0000	0.0004	0.0615
Angio-computed tomography				
Cumulative (3 years)(number of cases /100,000 inhabitants)	0.0114	0.0012	0.0015	0.1445
Annual (number of cases /100,000 inhabitants)	0.0038	0.0004	0.0005	0.0482
D-dimer				
Cumulative (3 years) (number of cases /100.000 inhabitants)	0.0049	0.0007	0.0018	0.1654
Annual (number of cases /100.000 inhabitants)	0.0017	0.0002	0.0006	0.0551

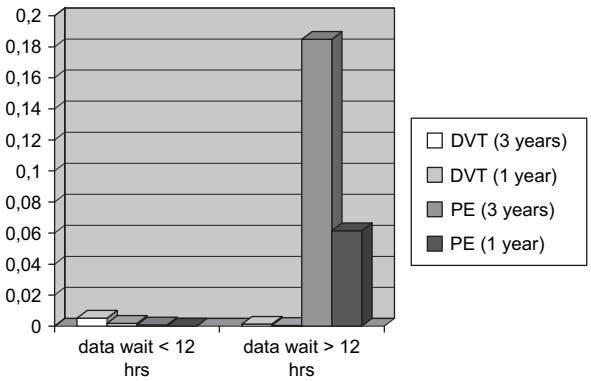

Fig. 2. Comparison of echo color Doppler data waiting and mortality rate.

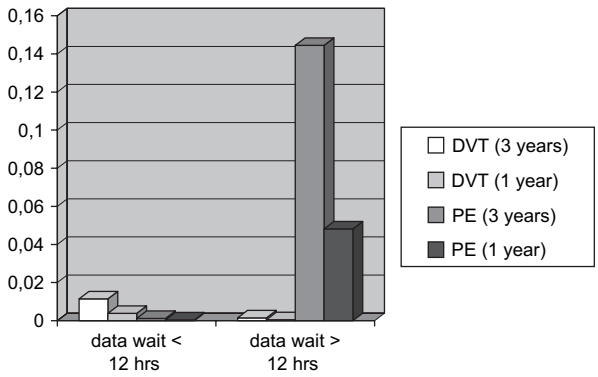

Fig. 3. Comparison of angio-computed tomography data waiting and mortality rate.

aspect of a TE diagnosis, as well as instrumental and laboratory strategies, rather than following the recommendations.

The answers have demonstrated adequate knowledge of the instrumental and laboratory diagnostic pathways, useful to confirm TE (80%). The evidence of a major interest in a main and more updated methodology (ultrasound, D-dimer, angio-computed tomography) suggests consistent attention to the recent literature. Health-care facilities involved in this study refer to an inadequate presence of instrumental and laboratory resources, necessary to confirm risk factors for diagnosis in case of suspected disease (80%). The element related to data waiting represented an unexpected surprise: in the vast majority of cases, data are not supplied within 12 hr. Basically, TE is a disease which can be treated thanks to adequate therapeutic systems. DVT–PE therapy is structured on the use of heparin together with a physical treatment. Pathophysiology of the

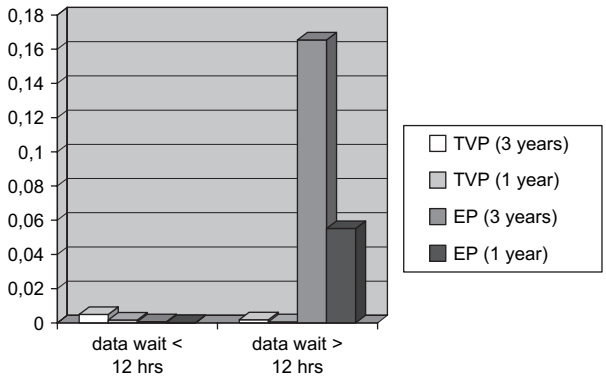

Fig. 4. Comparison of D-dimer data waiting and mortality rate.

thromboembolic disease suggests that a precocious therapeutic action represents the limit between the solution of the episode and the evolution to complications. A diagnostic delay can severely

Table XI. Morbidity and mortality rates versus clinical centers

	Cumulative (3 years) (number of cases/100,000 inhabitants)		Annual (number of cases/100,000 inhabitants)	
	DVT	PE	DVT	PE
Morbidity				
General Surgery	0.0280	0.02427	0.0093	0.0810
Orthopedics	0.2057	0.1845	0.0686	0.0615
Gynecology	0.0589	0.0536	0.0196	0.0179
Mortality				
General Surgery	0.0034	0.7828	0.0011	0.2609
Orthopedics	0.0020	0.0017	0.0001	0.0001
Gynecology	0.0015	0.0003	0.0005	0.00001

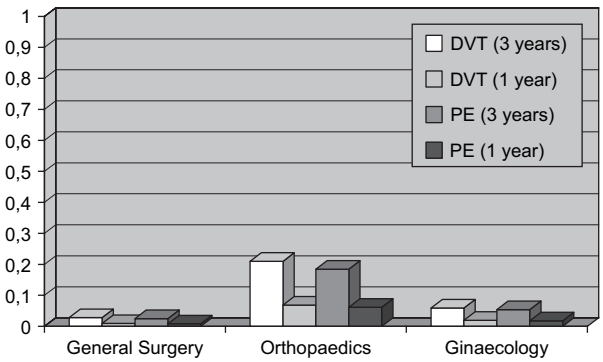

Fig. 5. Morbidity rate versus clinical centers.

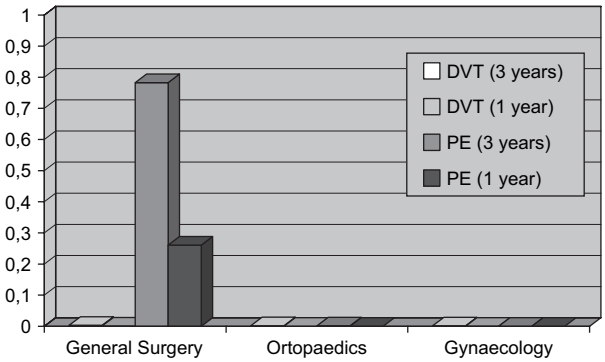

Fig. 6. Mortality data versus clinical centers.

influence the efficacy of therapy. What can be supposed is that when a diagnostic pathway is defined, it is necessary to think of an ''effective diagnosis,'' i.e., a useful diagnosis, in the answer and timing in order to apply the correct therapy. Guidelines, although precise, accurate, and schematic in diagnostic recommendations, never mention adequate timing for the diagnostic procedures. To confirm the above-mentioned, data waiting and mortality in DVT—PE were elaborated and compared. It is evident that an absolute increase of mortality related to a delay (of more than 12 hr) in the supplying of data. This delay was the same for DVT and PE but probably more important for DVT because this led to PE not being diagnosed and, consequently, to an apparent increase of mortality for DVT. In this group of answers concerning mortality, a low mortality rate in DVT was reported. The centers were asked about mortality data only for patients with confirmed or post-mortem diagnosis; thus, the declared mortality in PE by all means refers to events intrinsically mortal.

Mortality in DVT may represent an underestimated element related to the lack of diagnosis of PE or to a major event different from PE that arose before its identification. The literature indicates a known mortality from PE of 13% (8.97/100,000 inhabitants),[10] so the data for mortality from DVT, which might represent a risk factor for TE, should be investigated. In recent years, different incidence rates of morbidity and mortality for TE related to the kind of patient, i.e., those attending general surgery, gynecology, and orthopedics units, have emerged in various studies.[5,6] Differences seem to be related to a different sensitivity to the problem and to varying cultural integration of single specialities.

In this study, a higher mortality from PE was found in general surgery departments and a higher morbidity for DVT and PE in orthopedics and gynecology. It can be supposed that higher morbidity coincides with a best identification that coincides with an adequate treatment and vice versa. The identified anomalies related to data waiting and mortality were investigated, creating from the whole data a partial regional data area (north, center, south). The most inadequate answers seem to belong to the northern regions that traditionally are recognized as being equipped with high technology and structural resources. An explanation could be attributed to the different health-care regional systems, expressed by different applications of the Diagnosis-Related Groups system that might represent, in

this case, a health-care disadvantage or deficiency. VTE is a major cause of mortality and morbidity for Western populations. Its annual incidence over the general population is 145/100,000 for DVT and 69/100,000 for PE.[11-13] Just 13% of PE cases are fatal (mortality 8.97 cases/100,000 inhabitants[1]). Thus, VTE is a major issue in health care and social cost.[14-16] About three-fourths of VTE cases occur in medical patients, and about one-fourth are found in surgical patients for whom risk factors represent a precise condition.

CONCLUSIONS

Surgical procedure and trauma involve a higher probability of developing a major event. In these patients, risk stratification and adequate application of prophylaxis and treatment devices represent a real possibility to control morbidity and mortality. Diagnostic data waiting is a fundamental factor for adequate prophylaxis, and this study has clearly shown that in Italy only 40% of centers today are able to provide diagnostic data within 12 hr.

Hospital	Department	Head
Casa di cura S. Rita Ciro' Marina—Kr	General Surgery	E. Massari
Ospedale di Palermo	General Surgery	G. Lombardo
Ospedale di Latina-Formia	General Surgery	G. Cardi
Ospedale di Matera	Orthopedics	A. Laforgia
Ospedale di Ragusa	Gynecology and Obstetrics	S. Iannizzotto
Ospedale di Caltanissetta	Orthopedics	D. Morgante
ASL n7 Ospedale diRagusa	Gynecology and Obstetrics	S. D'Asta
Ospedale di Roma	General Surgery	M. Farao
Osp. S. Francesco Venosa Potenza	Orthopedics	G. Bruno
Asl n6 Ospedale di Cefalu'- Palermo	General Surgery	G. Mastrandrea
Ospedale di Rossano	General Surgery	L. Cloro
Casa di cura Sant'Anna Cagliari	Gynecology and Obstetrics	F. Angioni
Ospedale Cristo Re Roma	General Surgery	C. Allegri
Ospedale Santa Maria della Misericordia Sorrento	General Surgery	De Rosa
Ospedale Monadi di Napoli	Orthopedics	R. Magri
Ospedale di Salerno	Orthopedics	S. D'Auria
Ospedale di Cosenza	General Surgery	A. Petrassi
Ospedale di Potenza	Orthopedics	S. Accordo
Ospedale di Trapani	Gynecology and Obstetrics	A. Governale
Villa del Sole Catanzaro	General Surgery	V. Aloi
Ospedale di Catania	Gynecology and Obstetrics	S. Caschetto
Ospedale di Castrovillari	Orthopedics	L. Tarsia
Casa di cura S. Giuseppe, Roma	Orthopedics	A. Schiavone Panni
Ospedale di Roma	General Surgery	E. Fedele
Ospedale di SCIACCA	Orthopedics	A. Vella
Ospedale di Potenza	General Surgery	L. Luccioni
Ospedale di Napoli	Orthopedics	L. Grosso
Ospedale di Isernia	Gynecology and Obstetrics	L. Falasca
Ospedale Civile di Atessa	General Surgery	A. M. Vitalone
Ospedale di Lanciano, Vasto	General Surgery	G. Marchese
Ospedale Renzetti, Lanciano	General Surgery	G. Lesti
Ospedale San Liberatore, Teramo	Orthopedics	T. De Iure
Ospedale San Salvatore, L'Aquila	Gynecology and Obstetrics	F. Cappa
Azienda Ospedaliera Senese	General Surgery	S. Mancini
Ospedale di Piombino (ASL 6), Livorno	General Surgery	A. Andreini
Azienda Ospedaliera Careggi, Firenze	Orthopedics	R. Capanna
Azienda Ospedaliera Senese	Orthopedics	L. Bocchi
Ospedale di Fivizzano (ASL 1), Massa	Orthopedics	S. Limontini
Ospedale di Massa (ASL 1) Massa	Gynecology and obstretics	D. Milano
Ospedale di Piombino (ASL 6) Livorno	Gynecology and Obstretics	N. Calonaci
Ospedale di Empoli (ASL 11)	Gynecology and Obstetrics	M. Filippeschi
Azienda Ospedaliera Senese	Gynecology and Obstetrics	F. Petraglia

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