

## ORIGINAL ARTICLE

# Reasons for hospitalization in an internal medicine department: epidemiological, clinical, and diagnostic profile

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## ABSTRACT

**Background:** Internal medicine wards receive patients with heterogeneous and often multisystem presentations, and the reason for admission may not predict the final diagnosis. Describing admission reasons can support service planning and diagnostic pathways.

**Methods:** We conducted a retrospective descriptive single-center study in an internal medicine department. The unit of analysis was hospitalizations (repeat admissions were counted as separate episodes). We included all adult hospitalizations with an analyzable medical record between January 1, 2022 and October 31, 2024. For each hospitalization, the primary reason for admission was extracted from the admission note and grouped into predefined syndromic categories using an explicit coding rulebook, with adjudication of ambiguous cases. The main discharge diagnosis was extracted from the discharge summary and grouped into broad nosological categories. The analysis was descriptive.

**Results:** We analyzed 190 hospitalizations (mean age, 54.1 years; 55% women). Mean length of stay was 16.9 days. Twenty-four admission reasons were identified; the most frequent were anemia syndrome (30/190, 16%), unilateral leg swelling (23/190, 12%), polyarthralgia (20/190, 11%), general health deterioration (19/190, 10%), abdominal pain (15/190, 8%), and dyspnea (15/190, 8%). The first 8 reasons accounted for 75% of admissions. Complete blood count was performed in all patients, and thoraco-abdomino-pelvic computed tomography was the most frequently requested imaging examination (137/190, 72%). Discharge diagnoses were dominated by hematologic disorders (43/190, 23%), systemic or autoimmune diseases (39/190, 21%), and vascular causes (21/190, 11%).

**Conclusion:** Admissions clustered around a limited set of clinical syndromes but led to a broad spectrum of final diagnoses. This mismatch underscores the integrative diagnostic role of hospital-based internal medicine and may help optimize diagnostic pathways and resource allocation.

**Keywords:** Internal medicine, hospitalization, reasons for admission, discharge diagnoses, anemia, deep vein thrombosis.

## Introduction

Internal medicine wards care for patients with heterogeneous, multisystem, and often initially undifferentiated presentations. Contemporary internal medicine remains defined by integrative reasoning across organ systems, management of multimorbidity, and the ability to navigate diagnostic uncertainty when the presenting syndrome does not immediately indicate the final diagnosis [1-3].

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This role is becoming increasingly important as hospital populations age and accumulate multimorbidity and frailty. Large contemporary data suggest that the burden of complex admissions is rising over time, while multicenter work in European internal medicine has highlighted wide organizational variability and a broad spectrum of admission diagnoses, lengths of stay, and resource needs [4,5].

From a preventive and population health perspective, describing how patients are admitted (syndromic reasons) and how they leave the ward (discharge diagnoses) can help define local case mix and anticipate diagnostic demand. Data from North African internal medicine wards remains limited. We therefore aimed to [1] describe the main reasons for hospitalization and the most frequently requested investigations, and [2] contrast the distribution of admission syndromes with the distribution of discharge diagnosis groups (without prespecifying causal or predictive relationships).

### Methods

**Study design and setting.** We performed a retrospective descriptive single-center study in an internal medicine department. The unit of analysis was hospitalizations (admission episodes) rather than unique patients; repeat admissions during the study period were counted as separate hospitalizations.

**Study period.** The study covered hospitalizations from January 1, 2022 to October 31, 2024.

**Participants.** We included all adult ( $\geq 18$  years) hospitalizations during the study period with an exploitable medical record. We excluded hospitalizations with missing key documentation (admission note or discharge summary) or when the primary reason for admission and/or the main discharge diagnosis could not be determined from the record.

**Variables and definitions.** We extracted age, sex, selected medical history/comorbidities, length of

stay, the primary reason for admission, investigations performed during hospitalization (laboratory tests, imaging, endoscopy, and biopsies), and the main discharge diagnosis. Admission reasons were extracted verbatim from the admission/triage note, then mapped to one of 24 predefined syndromic categories using a coding rulebook. If multiple complaints were recorded, we retained the primary reason documented by the admitting physician; ambiguous cases were adjudicated by a second reviewer. For clarity, “anemia syndrome” denotes admissions primarily prompted by suspected or confirmed anemia at presentation (symptoms and/or low hemoglobin), and “general health deterioration” denotes non-specific functional decline (asthenia, weight loss, anorexia, or reduced performance status) without a dominant focal symptom. Discharge diagnoses were extracted from the discharge summary and grouped into broad nosological categories (e.g., hematologic; systemic/autoimmune; vascular; infectious; digestive; neoplasm; rheumatologic; cardiorespiratory) using predefined rules; when multiple diagnoses were listed, we retained the main diagnosis driving management and discharge.

**Statistical analysis.** Analyses were descriptive. Categorical variables are reported as counts and percentages (n/N, %). Continuous variables are summarized as mean (range) and, when the distribution was non-normal, median (interquartile range).

**Ethics statement:** This study was a retrospective analysis of routinely collected clinical data. According to local institutional policy and national regulations, formal ethics committee/IRB approval was not required for anonymized, non-interventional retrospective studies. All data were fully anonymized prior to analysis, and no identifiable information was retained.

### Results

We analyzed 190 hospitalizations (admission episodes), including 70 in 2022, 71 in 2023, and 49 in 2024 through October. Because the unit of analysis was

**Table 1.** General characteristics of the study population (n = 190).

Variable	Result
Study period	January 2022 to October 2024
Total sample	190 patients
Mean age (range)	54.11 years [19-94]
Female sex	55%
Male-to-female ratio	0.81
Most frequent age group	40-64 years: 80 patients (42.11%)
Mean length of stay (range)	16.9 days [2-55]
Most frequent comorbidities	Hypertension 19%; diabetes 17%; systemic diseases 17%
On chronic treatment before admission	48%



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hospitalization, a given patient could contribute more than one admission during the study period. Age ranged from 19 to 94 years (mean 54.11 years); 55% of hospitalizations involved women (male-to-female ratio 0.81). Length of stay ranged from 2 to 55 days (mean 16.9 days). The general characteristics are summarized in (Table 1).

Twenty-four reasons for hospitalization were identified. The most frequent were anemia syndrome (30/190, 16.0%), unilateral leg swelling (23/190, 12.0%), polyarthralgia (20/190, 11.0%), general health deterioration (19/190, 10.0%), abdominal pain (15/190, 8.0%), dyspnea (15/190, 8.0%), bleeding syndrome (11/190, 6.0%), and skin lesions (10/190, 5.0%). These 8 reasons accounted for 75% of admissions (Table 2).

Complete blood count was performed in all patients. Kidney function tests were requested in 177 patients (93%), C-reactive protein in 170 (89%), cholestasis tests and coagulation tests in 89%, liver transaminases in 90%, electrolyte testing in 84%, lipid and thyroid panels in 76%, viral serologies in 64%, and urine culture in 63%.

Thoraco–abdomino–pelvic computed tomography was the most frequently requested imaging examination (137/190, 72%). At least 1 ultrasound examination was performed in 85 patients (45%), upper gastrointestinal endoscopy in 61 (32%), and colonoscopy in 23 (12%). Common biopsies included gastric biopsy in 53 patients (28%) and minor salivary gland biopsy in 13 (7%) (Table 3).

The main discharge diagnosis groups were hematologic disorders (43/190, 23%), systemic or autoimmune diseases (39/190, 21%), vascular causes (21/190, 11%), digestive causes (8%), infections (7%), neoplasms (6%), rheumatologic diseases (5%), and cardiorespiratory conditions (4%) (Table 3). The most frequent specific diagnoses were iron deficiency anemia (20/190, 11%), deep vein thrombosis (17/190, 9%), pernicious anemia, and lupus.

We did not perform inferential or multivariable analyses, and we did not model patient-level predictors of discharge diagnoses or length of stay; the contrast between admission syndromes and discharge

**Table 2.** Main reasons for hospitalization.

Reason for Admission	n	%
Anemia syndrome	30	16.0
Unilateral leg swelling	23	12.0
Polyarthralgia	20	11.0
General health deterioration	19	10.0
Abdominal pain	15	8.0
Dyspnea	15	8.0
Bleeding syndrome	11	6.0
Skin lesions	10	5.0
Other reasons (16 categories)	47	24.0

**Table 3.** Key investigations and discharge diagnosis groups.

Investigation or Diagnosis Group	n	%
Complete blood count	190	100
Kidney function tests	177	93
C-reactive protein	170	89
Thoraco-abdomino-pelvic CT	137	72
At least 1 ultrasound	85	45
Upper GI endoscopy	61	32
Gastric biopsy	53	28
Hematologic disorders (discharge)	43	23
Systemic or autoimmune diseases (discharge)	39	21
Vascular causes (discharge)	21	11



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diagnosis groups is therefore descriptive and intended to be hypothesis-generating.

**Table 4** contrasts the most frequent admission syndromes with discharge diagnosis groups. Admissions clustered around a limited number of syndromic presentations, whereas discharge diagnoses were distributed across multiple categories.

### Discussion

This study shows that hospitalizations in internal medicine in our setting were concentrated around a relatively small number of syndromic presentations, whereas discharge diagnoses were distributed across several nosological groups. The concentration of admissions in 8 leading clinical syndromes accounting for three-quarters of hospitalizations is clinically important because it suggests that a limited number of structured initial pathways could cover a large share of inpatient activity. At the same time, the diversity of final diagnoses confirms the distinctive role of internal medicine as a specialty of integration, reclassification, and iterative reasoning under uncertainty rather than simple organ-based triage [1-3].

Our population was relatively young for an internal medicine cohort, with a mean age of 54.1 years, yet it already showed a broad burden of diagnostic complexity and substantial resource use. In the French multicenter SNFMI study, admitted patients were older on average, and the mean length of stay was shorter, illustrating that case mix, referral pathways, and service organization can strongly shape inpatient internal medicine activity [5]. More broadly, recent population-level work has shown that multimorbidity and frailty among adult hospital admissions have increased over time, reinforcing the need for flexible internal medicine

services able to manage overlapping chronic disease, acute decompensation, and diagnostic ambiguity within the same admission episode [4].

Anemia syndrome was the leading reason for admission in our series and translated into a large burden of hematologic discharge diagnoses. This finding is plausible in a department that receives patients with constitutional symptoms, occult bleeding, nutritional deficiencies, inflammatory disease, and systemic disorders. It is also consistent with prior internal medicine literature showing that anemia is common among hospitalized patients and is closely linked to age, comorbidity, inflammatory states, renal dysfunction, malignancy, and prolonged hospitalization [6,7]. Clinically, our results support the usefulness of a structured anemia pathway in internal medicine combining complete blood count interpretation, iron studies, hemolysis markers, renal assessment, inflammatory markers, and targeted endoscopic evaluation when indicated. The predominance of iron deficiency anemia among final diagnoses further emphasizes the public health value of earlier outpatient identification of chronic blood loss and nutritional deficiency, which may reduce avoidable admissions and shorten diagnostic delay [8].

Unilateral leg swelling was the second most common admission reason and frequently led to a vascular diagnosis, especially deep vein thrombosis. In day-to-day practice, this symptom is prototypical of syndromic reasoning in internal medicine: the presentation is simple, but the etiologic field ranges from venous thrombosis to cellulitis, lymphedema, trauma, Baker cyst, and systemic inflammatory disease. Current evidence continues to support standardized diagnostic pathways combining pre-test probability assessment, D-dimer testing, and compression ultrasonography

**Table 4.** Side-by-side distribution of the most frequent admission syndromes and discharge diagnosis groups.

Admission syndrome (primary)	n/N (%)	Discharge diagnosis group (main)	n/N (%)
Anemia syndrome*	30/190 (16.0)	Hematologic disorders	43/190 (23)
Unilateral leg swelling	23/190 (12.0)	Systemic or autoimmune diseases‡	39/190 (21)
Polyarthralgia	20/190 (11.0)	Vascular causes	21/190 (11)
General health deterioration†	19/190 (10.0)	Other discharge diagnoses	87/190 (46)
Abdominal pain	15/190 (8.0)		
Dyspnea	15/190 (8.0)		
Bleeding syndrome	11/190 (6.0)		
Skin lesions	10/190 (5.0)		
Other reasons (16 categories)	47/190 (24.0)		

\*Suspected or confirmed anemia at presentation (symptoms and/or low hemoglobin). †Non-specific functional decline without a dominant focal symptom.

‡Includes systemic autoimmune/inflammatory diseases (e.g., SLE and Behçet disease) and related multisystem disorders.



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for suspected lower-extremity deep vein thrombosis [9]. The importance of this pathway is reinforced in our context by regional data from North Africa that also describe venous thromboembolic disease as a significant clinical burden in hospitalized medical patients [10]. In addition, autoimmune and immune-mediated diseases are recognized contributors to venous thromboembolism risk, which is relevant in an internal medicine population where inflammatory disorders are common [11].

Polyarthralgia and skin manifestations formed another major entry point into hospitalization and frequently culminated in systemic autoimmune diagnoses at discharge. This pattern is highly coherent with the vocation of internal medicine, where non-specific inflammatory presentations are progressively clarified through repeated history taking, directed immunologic testing, imaging, and selected tissue sampling. The prominence of lupus and Behçet disease in our cohort is also clinically plausible in a Mediterranean setting. These disorders can present with constitutional, mucocutaneous, articular, hematologic, vascular, neurologic, or serosal manifestations, and they often require an internist-led synthesis before a stable disease label is reached [12,13]. The practical implication is that wards admitting large numbers of patients with inflammatory syndromes should anticipate sustained demand for autoantibody testing, vascular imaging, endoscopy in selected cases, and multidisciplinary links with dermatology, rheumatology, ophthalmology, neurology, and hematology.

General health deterioration, abdominal pain, dyspnea, bleeding syndrome, and skin lesions together accounted for a substantial share of admissions beyond the leading syndromes. Although these entry complaints are less specific, they are precisely the kinds of presentations that test the organizational value of internal medicine. They usually trigger broad laboratory panels and cross-sectional imaging before the diagnostic field narrows. In our study, thoraco-abdomino-pelvic computed tomography was requested in nearly three-quarters of patients, and endoscopic or biopsy-based investigations were frequent. This high diagnostic intensity probably reflects a combination of non-specific presentations, concern for systemic disease, and the need to rule out infection, malignancy, vascular disease, and inflammatory disorders within a limited inpatient time frame. These findings argue for locally agreed diagnostic bundles, for closer prioritization of high-yield tests, and for stronger links with ambulatory fast-track clinics for anemia, venous thromboembolism, and suspected systemic disease, so that selected patients can complete part of their work-up outside the ward when clinically safe. Such pathways may be particularly useful for patients admitted with general deterioration or abdominal pain, in whom the balance between comprehensive

investigation and unnecessary prolongation of stay is often delicate.

The mean length of stay of 16.9 days deserves particular attention. In internal medicine, length of stay is rarely driven by one factor alone; it reflects diagnostic uncertainty, multimorbidity, the tempo of sequential testing, the need for specialist opinions, and discharge planning constraints. Our value was longer than that reported in some European series, suggesting that the inpatient stay in our setting may absorb a larger part of the diagnostic process [5]. This interpretation is supported by literature showing that prolonged length of stay in general medicine is associated with illness severity, comorbidity burden, and limitations of current prediction tools, and that discrepancy between admission and discharge diagnoses is itself associated with longer hospitalization [14,15]. In practical terms, reducing avoidable inpatient days will likely require not only earlier discharge decisions but also earlier access to key investigations and outpatient follow-up structures capable of safely continuing unresolved diagnostic work-ups.

Taken together, our findings are primarily descriptive but may inform local reflection on inpatient internal medicine activity. They [1] describe the case mix and diagnostic workload encountered in a real-world ward, and [2] identify a limited number of common syndromic entry points that could be prioritized for protocolized initial assessment. Any implications for staffing, resource allocation, or preventive strategies should be considered hypothesis-generating and require confirmation in prospective multicenter studies with analytical comparisons and patient-centered outcomes.

These observations also suggest potential quality-improvement targets. Because a limited number of presenting syndromes account for most admissions, wards could consider monitoring simple process indicators (e.g., time to etiologic work-up in suspected anemia, time to venous ultrasonography in unilateral leg swelling, time to first immunologic orientation in inflammatory polyarthralgia). Such indicators should be interpreted cautiously and ideally validated against outcomes in future work.

Our results may also highlight opportunities for earlier ambulatory evaluation of common syndromes (e.g., iron deficiency work-up or standardized evaluation for suspected venous thromboembolism). However, our study cannot determine the preventability of admissions or quantify system-level impact; prospective studies linking outpatient pathways to outcomes are needed.

This study also has educational value. Many patients are admitted with syndromes rather than established diagnoses, and the internist must move from broad problem representation to prioritized testing while avoiding both premature closure and excessive low-yield investigation. Our case mix may therefore help



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guide local teaching priorities and quality-improvement work focused on high-frequency presentations such as anemia, unilateral leg swelling, and inflammatory polyarthralgia [2,14,15].

A further strength of this work is that it examines the pathway from presenting syndrome to discharge diagnosis and major investigations in a real-world ward, rather than reporting only final disease categories. This perspective is especially relevant in internal medicine, where service needs are determined early, while uncertainty is still high. Even without multivariable modeling, these descriptive data can support audit targets, anticipate imaging and endoscopy demand, and inform decisions about which patients require a complete inpatient work-up versus structured outpatient continuation.

### Limitations

This study has several limitations. First, its retrospective design makes it vulnerable to information bias related to chart documentation. Second, it was conducted in a single center, which may limit generalizability to institutions with different referral patterns or case mix. Third, we performed descriptive analyses only and did not model predictors of investigations, discharge diagnosis, or length of stay. Finally, classifying the main reason for admission as a single dominant syndrome may oversimplify multifactorial presentations, although this approach reflects real-world admission practice. Finally, because this was a descriptive ward-based study, we could not assess post-discharge outcomes or determine how many admissions might have been preventable through earlier ambulatory detection and management.

### Conclusion

In this internal medicine ward, admissions clustered around a limited number of recurrent clinical syndromes but resulted in a wide range of discharge diagnoses dominated by hematologic, systemic or autoimmune, and vascular conditions. Mapping the pathway from admission syndrome to discharge diagnosis may support service organization, diagnostic resource planning, and preventive strategies aimed at earlier evaluation of common syndromic presentations.

### List of Abbreviations

CBC	complete blood count
CRP	C-reactive protein
CT	computed tomography
GI	gastrointestinal

### Conflicts of interest

The authors declare that they have no conflicts of interest regarding the publication of this article.

### Funding

None.

### Ethical approval

This study was a retrospective analysis of routinely collected clinical data. According to local institutional policy and national regulations, formal ethics committee/IRB approval was not required for anonymized, non-interventional retrospective studies. All data were fully anonymized before analysis, and no identifiable information was retained.

### Consent for publication

Not applicable.

### Data availability

Available from the corresponding author upon reasonable request, subject to institutional rules.

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