

# Missed detection and management of hypercalcemia in the emergency department

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## 01 Background & aim

Hypercalcemia is found in roughly **2–4%** of emergency-department presentations. Its two leading causes — primary hyperparathyroidism (PHPT) and malignancy — are conditions in which timely diagnosis changes management, yet recognition and work-up in the ED are often incomplete.

We set out to determine **how often hypercalcemia is recognised** in the ED, the treatment given, and the factors associated with recognition, at a large university teaching hospital.

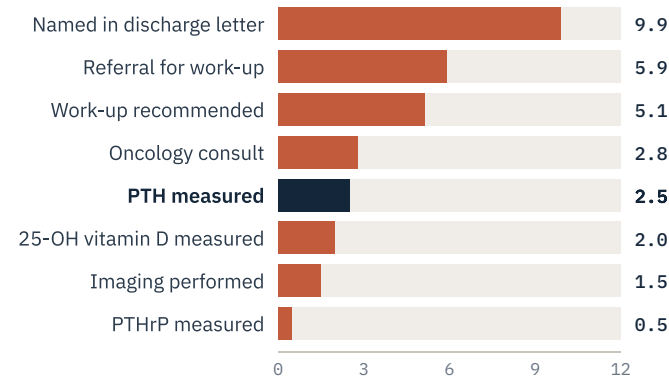
## 02 Methods

|             |                                                                                                        |
|-------------|--------------------------------------------------------------------------------------------------------|
| DESIGN      | Retrospective cohort, Shaare Zedek ED, 2024                                                            |
| POPULATION  | Adults ≥ 18 y with hypercalcemia at presentation — total calcium > 10.5 mg/dL or ionized > 1.32 mmol/L |
| SAMPLE      | N = 651 identified; detailed chart review in 393                                                       |
| RECOGNITION | Any of work-up, discharge mention, referral, treatment, or documented cause                            |
| ANALYSIS    | $\chi^2$ / t-tests and multivariable logistic regression                                               |

## 03 Results — recognition and work-up were uncommon

Fig 1 · Aetiological work-up & documentation

Share of the 393 chart-reviewed patients (%)



Every step of the aetiological work-up was performed in only a small minority of patients.

12.2%

Recognised overall  
48 / 393

2.5%

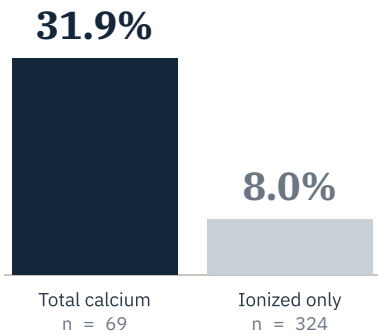
Had a PTH measured  
10 / 393

94.1%

No cause documented  
370 / 393

Fig 2 · Recognition by calcium test ordered

Recognised (%)



Recognition was **~4x higher** when a total calcium was ordered than when only an ionized calcium was available.

p < 0.001

## 04 Also found

- Recognition was independently more likely with **prior hypercalcemia, primary HPT, malignancy, GI symptoms** and male sex — and less likely with older age (aOR 0.65 per +10 y).
- No difference in mortality, length of stay or 1-year readmission between recognised and non-recognised patients.
- Severe hypercalcemia (> 14 mg/dL) in **5.1%** of patients — clustered in those with a history of hypercalcemia or malignancy, treated with calcitonin and bisphosphonates, and with higher mortality.

## 05 Conclusions

**Hypercalcemia is recognised and investigated in only a small minority of ED patients — a clear, remediable gap in care.**

Recognition depends heavily on which calcium test is ordered, and older patients are under-investigated. Three simple steps may help: **flag an elevated ionized calcium, prompt a first-line PTH, and ensure documentation and referral at discharge.**