

IMPROVING THE QUALITY OF CLINICAL DECISION MAKING BASED ON TOTAL PHENYTOIN SERUM LEVELS

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R. Juvany¹, M. Colls¹, M. Dastis², L. Santulario¹, E. Leiva¹, S. Cobo¹, D. Doč², R. Jódar¹.

¹Hospital Universitari de Bellvitge, Pharmacy department, Hospitalet de Llobregat, Spain.

²Hospital Universitari de Bellvitge, Clinical Laboratory, Hospitalet de Llobregat, Spain.

BACKGROUND

Therapeutic drug monitoring of phenytoin in basis of total phenytoin level (TPHEL) can be misleading in patients with serum albumin < 44 g/L, needing correction before use in clinical decision-making. However, serum albumin isn't always requested with phenytoin measurement.

PURPOSE

To design and implement an algorithm, in accordance with the Clinical Laboratory, that includes the albumin serum measurement whenever THPEL is requested in routine testing in hospitalized patients, with the purpose to facilitate the correct interpretation on THPEL.

MATERIALS AND METHODS

Retrospective observational study of hospitalized patients between January 2013 - August 2014.

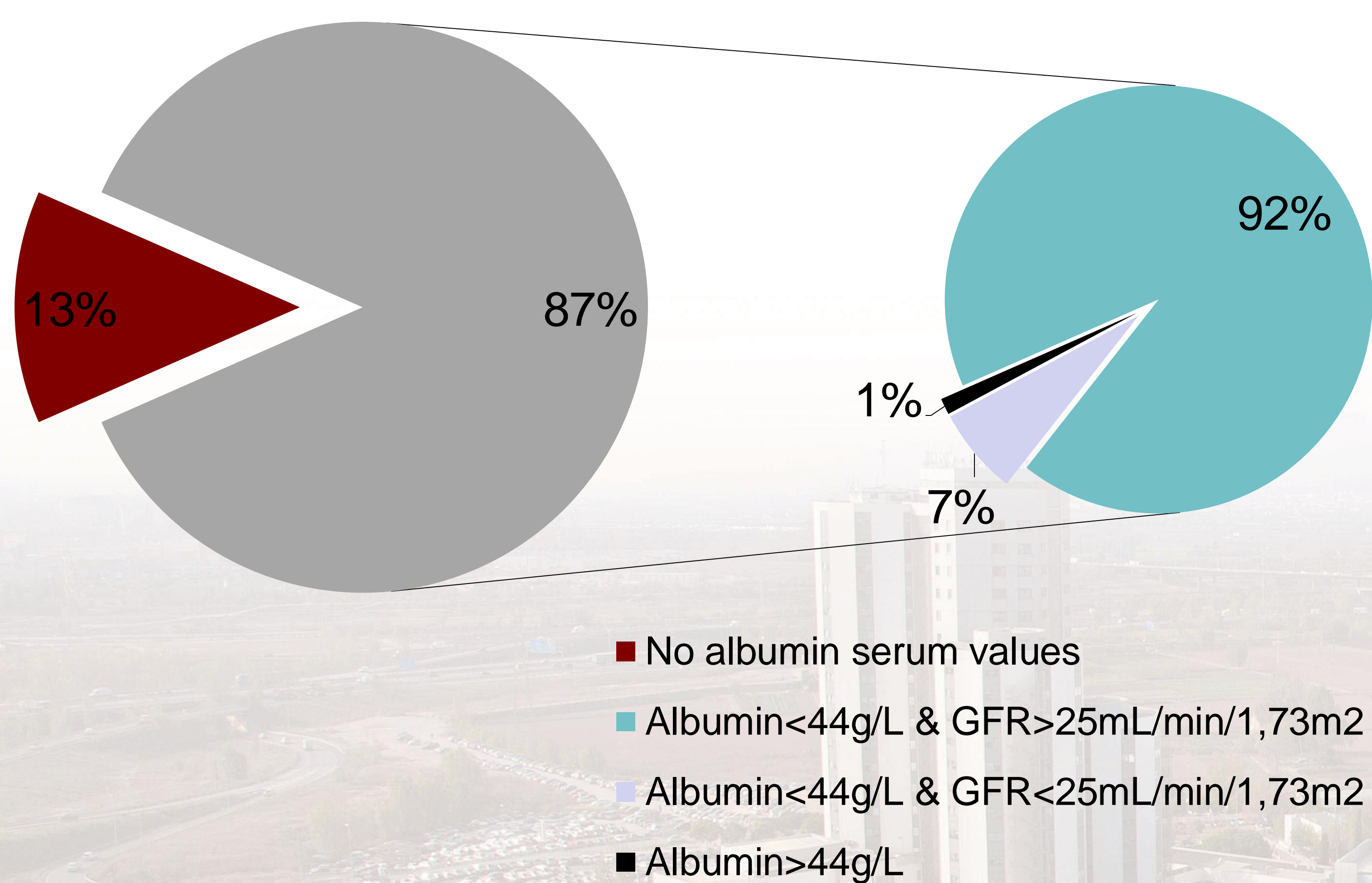
- Variables collected: age, sex, TPHEL, albumin, creatinine and urea serum values.
- Phenytoin therapeutic interval: 10-20 mg/L.
- Albumin-adjusted total phenytoin level (AATPHEL) by the Sheiner-Tozer equation and GFR by CKD-EPI were calculated

Serum albumin analysis in routine testing was determined if it wasn't requested on the same day as phenytoin measurement.

TPHEL and AATPHEL results was classified into infra, supra or therapeutic groups and discrepancies among groups were analyzed.

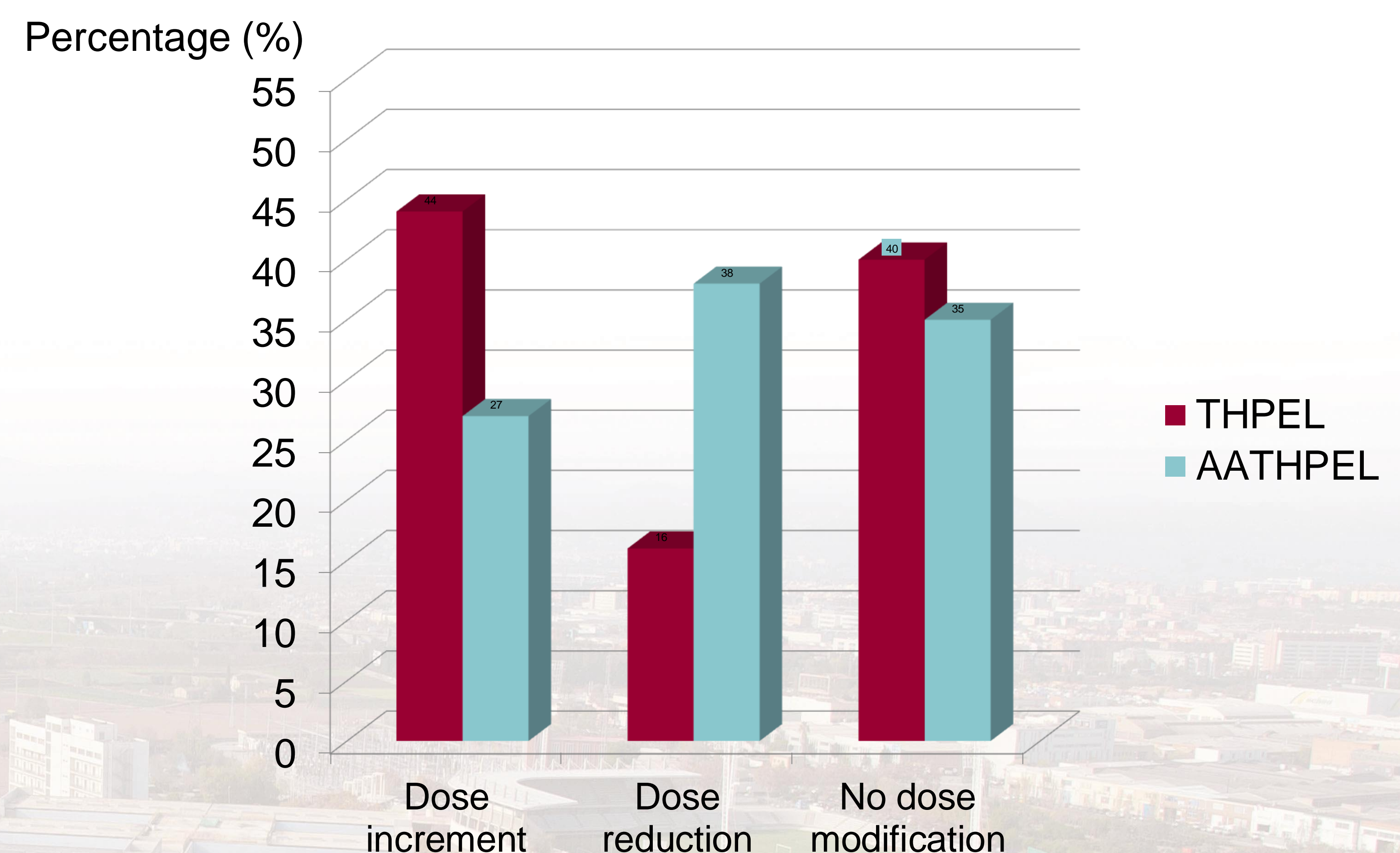
RESULTS

N= 561 THPEL (206 patients; average age: 60.5 years; 119 female).



74 (13%) TPHEL did not have albumin results because were stat requests.

98.8% of TPHEL (481 out of 487) had serum albumin < 44 g/L and required correction and 93% of them (449 out of 481) had GFR > 25 mL/min/1.73 m2.



Based on the TPHEL alone, 44% required an increased dose while only 27% required it when using AATPHEL.

In contrast, 16% of TPHEL results required dose reduction, which jumped to 38% when AATPHEL was used.

CONCLUSIONS

The majority of hospitalized patients had albumin inferior to 44 g/L, requiring the calculation of AATPHEL to optimize clinical decisions.

The collaboration between the Clinical Laboratory and the Pharmacy Service has facilitated the availability of serum albumin values for nearly 90% of TPHEL thus improving quality in TPHEL interpretation.