

# Trace element monitoring in the ICU: quality and economic impact of a change in sampling practice

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## Abstract

**Background & aims :** Trace elements (TE) are involved in the immune and antioxidant defences which are of particular importance during critical illness. Determining plasma TE levels is costly. The present quality control study aimed at assessing the economic impact of a computer reminded blood sampling versus a risk guided on-demand monitoring of plasma concentrations of selenium, copper, and zinc..

**Methods :** Retrospective analysis of 2 cohorts of patients admitted during 6 months periods in 2006 and 2009 to the ICU of a University hospital. Inclusion criteria: to receive intravenous micronutrient supplements and/or to have a TE sampling during ICU stay. The TE samplings were triggered by computerized reminder in 2006 versus guided by nutritionists in 2009.methods.

**Results :** During the 2 periods 636 patients met the inclusion criteria out of 2406 consecutive admissions, representing 29.7% and 24.9% respectively of the periods' admissions. The 2009 patients had higher SAPS2 scores ( $p = 0.02$ ) and lower BMI compared to 2006 ( $p = 0.007$ ). The number of laboratory determinations was drastically reduced in 2009, particularly during the first week, despite the higher severity of the cohort, resulting in a 55% cost reduction..

**Conclusions:** The monitoring of TE concentrations guided by a nutritionist resulted in a reduction of the sampling frequency, and targeting on the sickest high risk patients, requiring a nutritional prescription adaptation. This control leads to cost reduction compared to an automated sampling prescription..

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