

# Drug-related hospital admissions in older adults: comparison of the Naranjo algorithm and an adjusted version of the Kramer algorithm

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Drug-related admissions (DRAs) are an important cause of preventable harm in older adults<sup>1-4</sup>.

Multiple algorithms exist to assess causality of adverse drug reactions, including the Naranjo algorithm<sup>5</sup> and an adjusted, easy-to-use version of the Kramer algorithm<sup>6-8</sup>



The performance of these tools in assessing DRA causality has not been robustly shown.

We aimed to evaluate the ability of the adjusted Kramer algorithm to adjudicate DRA causality in geriatric inpatients



DRAs were assessed in a convenience sample of patients admitted to the acute geriatric wards of UZ Leuven.



DRAs were identified by expert consensus and causality was evaluated using the Naranjo and the adjusted Kramer algorithms.



For both algorithms, DRA adjudication was compared to the expert consensus by calculating the positive agreement.



A multivariable logistic regression analysis was performed to explore determinants for a DRA.



218 patients

age: 86 ± 5.8 years

male: 39.0%



65 DRAs according to the expert consensus



Positive agreement with the expert consensus

Naranjo algorithm:

72.3% (59.6-82.3%)

Adjusted Kramer algorithm:

100% (93.0-100%)



Contributing drugs (n=105)

1) diuretics (34.3%)

2) inhibitors of renin-angiotensin-aldosterone (10.5%)

3) benzodiazepines (9.5%)



Adverse drug reactions (n=65)

1) fall (27.7%)

2) acute renal failure (20.0%)

3) disturbances of the electrolyte balance (18.5%)



Independent, positive association between DRA and a fall-related principal diagnosis

odds ratio: 20.11 (5.60-72.24)

The maximal positive agreement with the expert consensus and the simplicity of the adjusted Kramer algorithm support its implementation as part of a structured DRA assessment approach in older adults.

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