

MORE INFORMATION WORSE DECISIONS?

EVALUATING POTENTIAL OVERUSE OF LABORATORY DIAGNOSTICS IN ANAEMIA

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BACKGROUND

- More information is often thought to improve medical decision making, which may lead to **overuse** of relatively cheap tests.
- For diagnosing the underlying cause of anaemia in general practice, **up to 15 different laboratory tests may be ordered by general practitioners (GPs)**, according to the Dutch guideline.

OBJECTIVE

- Assess which of these 15 tests actually **contribute** to diagnosing an underlying cause of anaemia
- Assess which **subset** of tests is optimal for establishing a correct diagnosis.

METHODS

DATA

- A previously performed questionnaire presenting GPs (n=139) with three varying real-world anaemia cases, and all 15 corresponding test results.
- **GPs selected the expected underlying cause:**
 - Anaemia of chronic disease
 - Iron deficiency anaemia
 - Renal anaemia
 - 'unknown or other'
- The correct underlying cause was established by an **expert panel** (i.e. GP, internist, clinical chemist).

ANALYSIS

- **Multinomial regression:** to determine the value of each test for establishing a **particular** underlying cause.
- **Logistic regression:** to determine the value of each test for establishing the **correct** underlying cause.
- **Stepwise backward selection** using the Akaike Information Criterion: to determine the **optimal subset** of tests.

RESULTS

- Only **9 laboratory tests** (i.e. **60%**), and patient age, contributed to diagnosing an underlying cause of anaemia:
 - CRP, ESR, ferritin, folic acid, haemoglobin, leukocytes, MDRD, reticulocytes and serum iron.
- Diagnosing the correct underlying cause required just **5 (33%) tests** (CRP, ferritin, folic acid, MCV and transferrin), and patient age.

CONCLUSION AND DISCUSSION

- Of the full set of 15 laboratory tests recommended by the Dutch guideline, only a subset enhances the ability of the GP to diagnose an underlying cause of anaemia, from a **statistical perspective**.
- **A subset of five tests has most added value.**
- Extending this set with more tests may lead to a decrease rather than increase in correct diagnoses.



Table 1. Result of best subset selection.

	Predictors included after best subset selection		
	Predictors	For diagnosing an underlying cause	For diagnosing the correct underlying cause
Patient characteristics	Age	X	X
	Gender		
Test results	Creatinine		
	CRP	X	X
	ESR	X	
	Ferritin	X	X
	Folic acid	X	X
	Haemoglobin	X	
	LDH		
	Leukocytes	X	
	MCV		X
	eGFR	X	
	Reticulocytes	X	
	Serum iron	X	
	Thrombocytes		
	Transferrin		X
Vitamin B12			

QUESTIONS OR MORE INFORMATION?



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