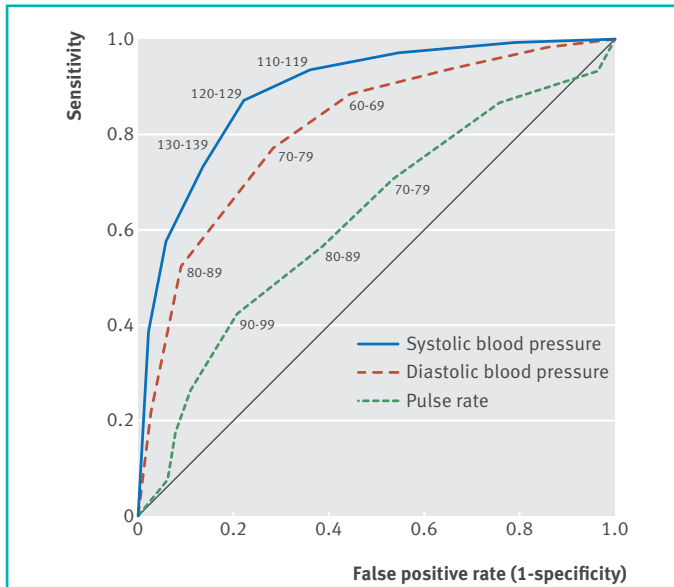


# ENDGAMES

We welcome contributions that would help doctors with postgraduate examinations. We also welcome submissions relevant to primary care. See [thebmj.com/endgames](http://thebmj.com/endgames) for details

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## STATISTICAL QUESTION

### How to read a receiver operating characteristic curve

Researchers investigated the use of vital signs as a screening test to identify brain lesions in patients with impaired consciousness. The setting was an emergency department in Japan. In total, 529 consecutive patients presenting with impaired consciousness, as assessed by a score of less than 15 on the Glasgow coma scale, were studied. Patients were followed until discharge. The vital signs of systolic and diastolic blood pressure plus pulse rate were recorded on arrival. The diagnosis of a brain lesion was determined on the basis of brain imaging and neurological examination. In total, 312 patients (59%) were diagnosed with a brain lesion.

The performance of each vital sign as a screening test for diagnosed brain lesions was evaluated separately. The measurement scale for each vital sign was categorised using equal sized strata. Each stratum for a vital sign was taken successively as the threshold between a “negative” and “positive” screening test result; all measurements with values greater than the categorised strata were considered a “positive” result and all others were considered “negative.” If the result was positive, the patient was deemed at “high risk” of a brain lesion; otherwise the patient was deemed at “low risk” of a brain lesion. For each stratum of a vital sign the sensitivity and specificity were derived and used to plot a receiver operating characteristic curve for the vital sign (figure). The area beneath the curve was 0.90 for systolic blood pressure, 0.82 for diastolic pressure, and 0.63 for pulse rate.

Which of the following statements, if any, are true?

- The value of 1 minus specificity represents the proportion of patients without a diagnosed brain lesion identified as positive on screening
- For successive cut-off scores of a vital sign, as the sensitivity of the screening test increases the specificity decreases
- The vital sign that best distinguished between patients with diagnosed brain lesions and those without was systolic blood pressure

Submitted by Philip Sedgwick

## CASE REVIEW

### A young woman with recurrent perianal sepsis

A 23 year old woman had been experiencing cramping abdominal pain, alternating diarrhoea and constipation, and episodic blood per rectum for four months. An earlier colonoscopy showed proctitis, which was thought to be indicative of underlying inflammatory bowel disease, and she was started on oral and topical mesalazine. In the following months she was admitted twice with acute perianal sepsis, which required examinations under anaesthesia and drainage of an intersphincteric abscess. She later presented after feeling generally unwell for four days with “flu-like” symptoms and perianal pain. On examination she had tenderness and fluctuance in the region of the right ischial tuberosity, with an external fistula opening visibly in the perineum. Her blood tests show mild neutrophilia ( $9.40 \times 10^9/L$ , reference range 2-7.5) and mildly raised C reactive protein (380.96 nmol/L (40 mg/L), reference range 0-95.24 (0-10)) only.

- What imaging modality should be used to investigate this clinical presentation?
- What is the underlying pathophysiology of perianal fistulation?
- What classification systems are used for perianal fistulas?
- What is the optimal management for a patient with a perianal fistula and abscess?

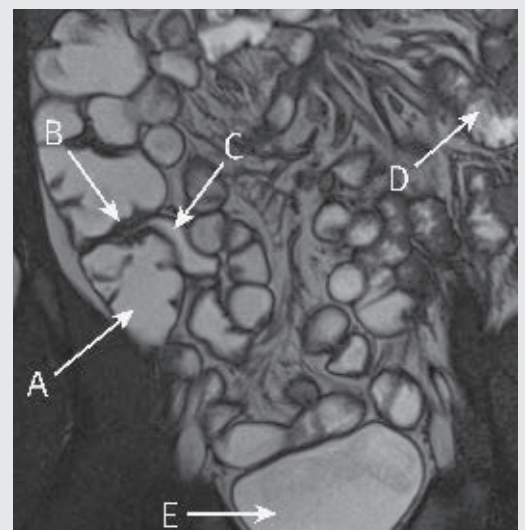
Submitted by Tom L Kaye, Anthony O'Connor, Dermot Burke, and Damian J M Tolan  
Patient consent obtained.

Cite this as: *BMJ* 2015;350:h1969

## ANATOMY QUIZ

### Coronal T2 weighted image of the right iliac fossa from a magnetic resonance enteroclysis study

Name the structures A, B, C, D, and E in this coronal T2 weighted image of the right iliac fossa from a magnetic resonance enteroclysis study. What is magnetic resonance enteroclysis?



Submitted by Emily Skelton and D Howlett

Cite this as: *BMJ* 2015;350:h1540

## CONTRIBUTIONS

We welcome all contributions to the Endgames section. See online for our new article styles.

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