AN AUDIT IN FAECAL ELASTASE DEMAND MANAGEMENT

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INTRODUCTION & BACKGROUND
Pancreatic exocrine insufficiency (PEI) causes malabsorption, diarrhoea, abdominal cramps and steatorrhoea. PEI may result due to chronic pancreatitis, cystic fibrosis and gastrointestinal or pancreatic surgical resection. It is also associated with type I, type II and secondary diabetes.1

Measurement of elastase-1 is the current gold standard for diagnosis. Elastase-1 is a protease synthesised in the pancreas then secreted into the duodenum. During transit it remains unchanged becoming concentrated thus making a sensitive marker in stool of pancreatic exocrine function.2

Faecal calprotectin (FCp) is recommended (NICE DG11) to aid diagnosis and management of inflammatory and irritable bowel conditions.3 Due to similar presenting clinical manifestations, diarrhoea guidelines lack clarity on test selection.4 An apparent increase in simultaneous faecal elastase and FCp requests had been noted, particularly as two separate samples are required and usually only one received (in which case FCp is run as per lab protocol). The audit aimed to establish requesting patterns and investigate options to control demand.

METHODS
Lab IT was searched between April 2016 to December 2018 for all faecal elastase and FCp requests. Data were analysed on Excel and further information sought from hospital systems for the most recent 9 months of samples.

RESULTS & DISCUSSION
3400 faecal samples were requested over 33 months with 67 elastase samples in the first 12 months, 301 the next 12 then 500 in the last nine. The last nine months of samples were then examined in more detail.

After removing NEQAS and non-reported results 389 elastase results remained of which 22 (6%) were intermediate (100-199 μg/g) and 54 (14%) were deficient (<100). 73 (15%) samples were rejected, 47 (66%) being single samples on simultaneous FCp requests. 37 (7%) samples were still awaiting results and 1 (0.2%) was stored pending further instruction from requestor.

There were 252 simultaneous requests with 2 samples of which 9 (4%) were intermediate and 24 (9%) deficient. There were only 2 (>1%) had both elastase deficiency and raised FCp. In those with deficient elastase results and non-specific clinical details additional relevant criteria were identified for 91%.

All patients with clinical details of diabetes on their forms were normal (1%), however further searches showed 44% of patients with PEI were also diabetic.

**Figure 1.** Frequency of clinical details of deficient results. **Deficient (0-99)**

92% of deficient results were in patients aged 40-90, with age groups 60-80 accounting for 44% of deficient results. Age group 0-20 and 90-100 results were all normal.

**Figure 2.** Elastase (μg/g) concentrations by patient age (yrs)

In the last 9 months, the gastroenterology consultants were the only requestors with >10 requests, and accounting for 41% of all requests and 45% of requests with results. Of this group, only 26 (7%) were deficient and 14 (4%) were intermediate. For one consultant, only 1 (2%) of 49 requests with results were deficient. 23% of requests originated in primary care, 8% of which were deficient.

CONCLUSION
There has been an increasing demand for elastase, but with a relatively high yield of PEI identified. Vetting simultaneous elastase and FCp requests with a single sample cannot be accurately performed in the lab as formal clinical details are inadequate but rate of detection of PEI was lower in simultaneous requests compared with elastase only suggesting a possible higher rate of suspicion and more typical signs and symptoms in these cases. Primary care seemed to have a higher rate of detection than gastroenterology. Advice at the point of requesting may be the best course to both control demand and maintain high rates of pick up, no obvious laboratory strategies became apparent.

References:

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