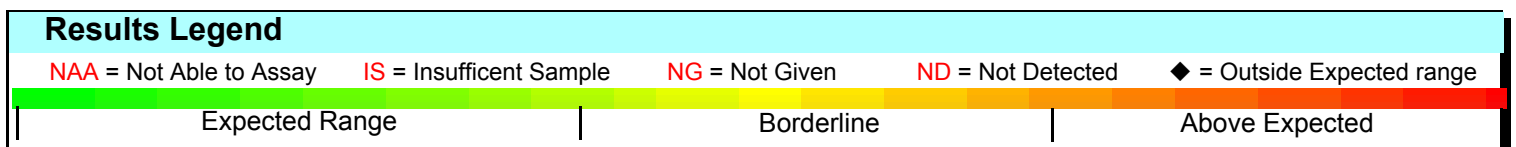
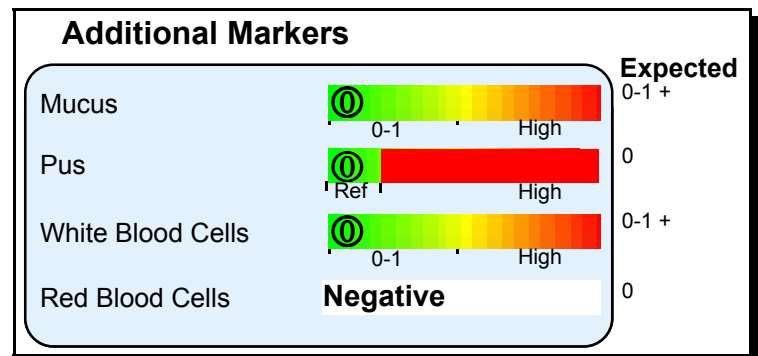
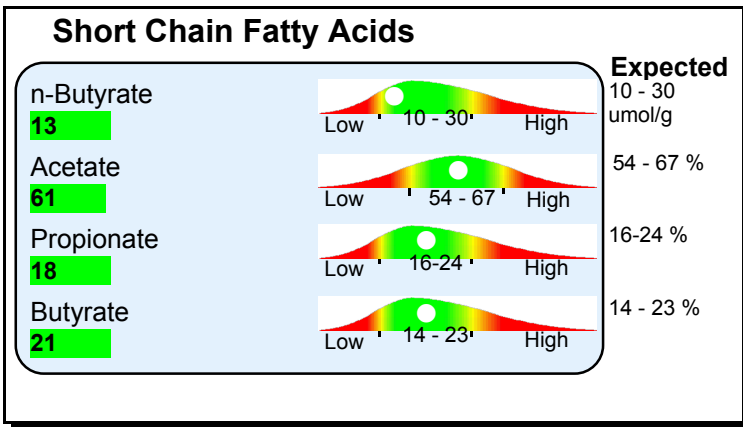
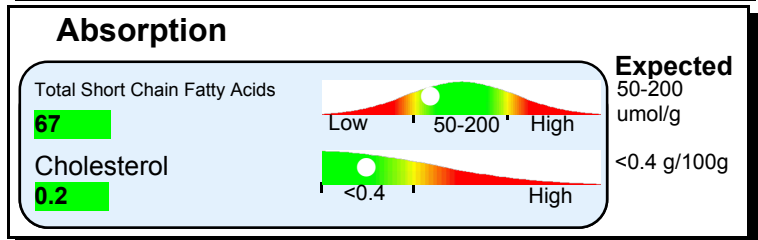
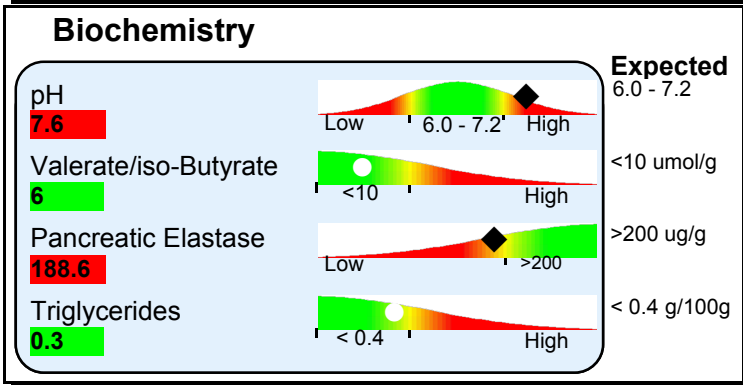
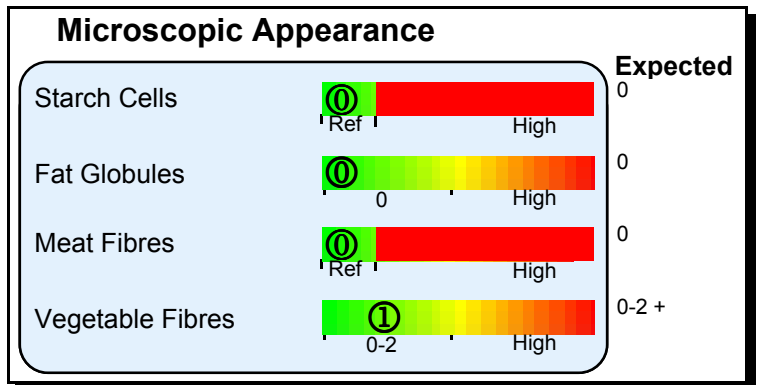
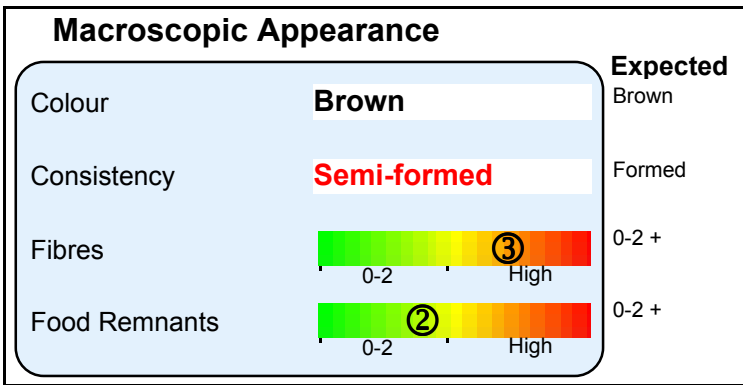


LAB No:

Consulting Pathologist: **Dr D. Deam**

Patient :  
 D.O.B. :  
 Request Date :  
 Date Received :  
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 Referring Practice :  
 Provider No. :  
 REFERRING PRACTICE REFERENCE:

## COMPLETE DIGESTIVE STOOL ANALYSIS - (CDSA) Level 4

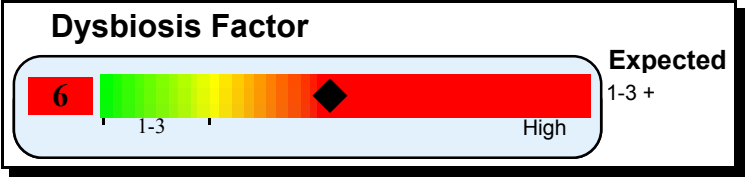
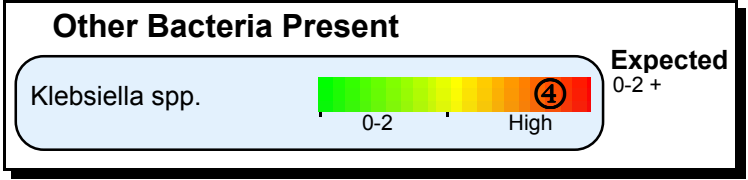
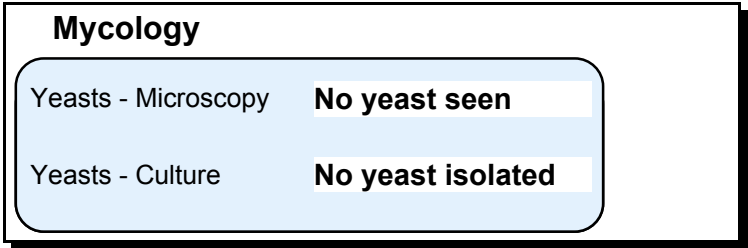
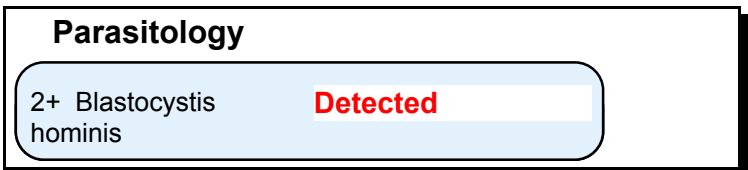
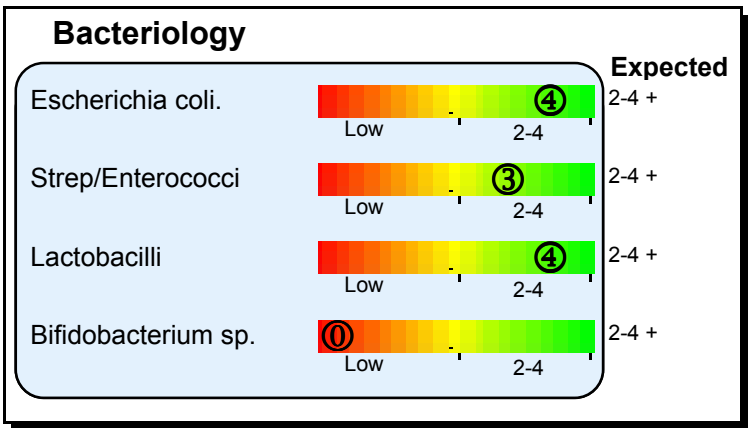


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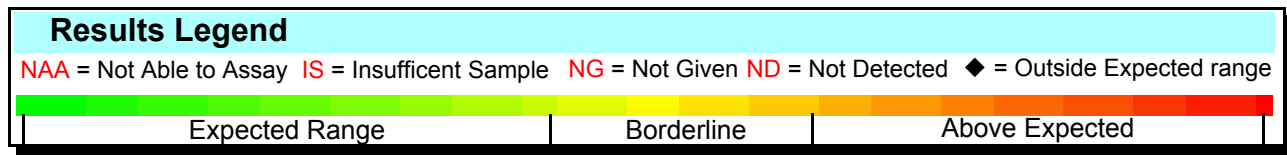
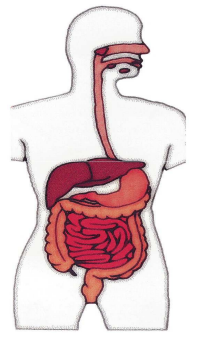
Consulting Pathologist: **Dr D. Deam**

Patient :  
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## COMPLETE DIGESTIVE STOOL ANALYSIS - (CDSA) Level 4



The Complete Digestive Stool Analysis (CDSA) provides the Practitioner with highly specific data for the accurate diagnosis of microflora imbalance (dysbiosis) and gastrointestinal dysfunction. The CDSA provides baseline diagnostic information upon which current and future gastrointestinal well being can be gauged. The CDSA IS NOT indicated as a procedure for the diagnosis of underlying disease. Pancreatic Elastase (PE1) is a non-invasive marker of exocrine pancreatic function. The PE1 test in stool identifies pancreatic exocrine insufficiency due to chronic pancreatitis,



The presence of 3+ macroscopic fibres may indicate possible carbohydrate mal-digestion and/or incomplete mastication.

The significance of finding Blastocystis hominis in terms of colonisation or disease is still not clearly understood. However symptomatic patients in whom no other parasite, bacteria or virus has been identified, large numbers of Blastocystis hominis could be considered pathogenic if no other underlying cause is demonstrated.

The absence of Bifidobacterium species indicates microbial imbalance. Probiotic therapy is recommended.

LAB No:

Consulting Pathologist: **Dr D. Deam**

Patient :  
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## COMPLETE DIGESTIVE STOOL ANALYSIS - (CDSA) Level 4

### Sensitivities

Natural Antimicrobials	Klebsiella spp.
	Susceptible
Bearberry ( Arctostaphylos uva ursi )	NO
Golden seal (Hydrastis canadensis )	NO
Citrus seed Extract	YES
Black walnut	NO
Chinese wormwood	NO
Barberry	NO

LAB No:

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## COMPLETE DIGESTIVE STOOL ANALYSIS - (CDSA) Level 4

### Specimen 1

Collection Date **25/6/11**  
Wet Preparation **2+ Blastocystis hominis**  
Concentrate **Blastocystis hominis**  
Fixed Smear **Blastocystis hominis detected**

### Specimen 2

Collection Date **26/6/11**  
Concentrate **Blastocystis hominis**

### Specimen 3

Collection Date **27/6/11**  
Concentrate **Blastocystis hominis**

### Comments:

The significance of finding Blastocystis hominis in terms of colonisation or disease is still not clearly understood. However symptomatic patients in whom no other parasite, bacteria or virus has been identified, large numbers of Blastocystis hominis could be considered pathogenic if no other underlying cause is demonstrated.

### Results Legend

**NAA** = Not Able to Assay   **IS** = Insufficient Sample   **NG** = Not Given   **ND** = Not Detected   **◆** = Outside Expected range

## COMPLETE DIGESTIVE STOOL ANALYSIS (CDSA) Interpretive Guidelines

### MACROSCOPIC / MICROSCOPIC APPEARANCE

**Colour**

Faecal colour can be indicative of various conditions. Possible indications of abnormality are-

- Yellow-green: diarrhoea, antibiotic use, fat maldigestion
- Black: upper intestinal tract bleeding
- Red: lower intestinal tract bleeding
- Tan-grey: blocked bile duct, steatorrhoea, pancreatic insufficiency.

**Form**

The unformed, semi-formed, soft or liquid stool can indicate inadequate digestion, inflammation or infection.

**Consistency**

A soft consistency may reflect an overgrowth of anaerobic bacteria in the upper gastro-intestinal tract, Candida infection, food allergy or intolerance, laxative use, increased stress or increased oral vitamin C.

**Mucus and Pus**

The presence of mucus or pus can indicate IBS, intestinal wall inflammation caused by infection (e.g. typhoid, shigella, amoebae) or diverticulitis

**Fibres and Food Remnants**

Indicated inadequate carbohydrate digestion.

**White Blood Cells (WBC's)**

WBCs present in the faeces are indicative of inflammation or infection.

**Red Blood Cells (RBC's)**

The presence of RBCs suggests the possibility of lower gastro-intestinal tract bleeding (due to haemorrhoids, polyps, or cancer) and should be investigated immediately

### DIGESTIVE MARKERS

**Fat Globules**

Faecal fat globules are indicative of maldigestion and malabsorption.

**Meat, Vegetable Fibres and Starch Cells**

Increased levels indicate maldigestion from either HCl/pepsin and/or pancreatic insufficiency, or rapid bowel transit time

**pH**

Fibre intake and subsequent production of short and long chain fatty acids will influence pH. A decrease in short chain fatty acid production will result in a more alkaline pH, which may reflect inadequate dietary fibre and imbalanced intestinal ecology. An alkaline pH may also reflect hypochlorhydria, or ammonia production in the gastro-intestinal tract. An acidic pH may result from increased SCFAs, organic acids or a highly acidic diet.

**Pancreatic Elastase (PE1)**

PE1 is a non-invasive marker of exocrine pancreatic function. The PE1 test in stool identifies pancreatic exocrine insufficiency due to chronic pancreatitis, gall stones, cystic fibrosis, cholelithiasis, diabetes mellitus and other conditions.

**Triglycerides**

These are a major component of dietary fat; an increased level reflects incomplete fat hydrolysis and suggests pancreatic insufficiency, maldigestion and/or increased dietary triglycerides.

**Valerate and iso-Butyrate**

These SCFAs are produced by the fermentation of dietary protein. High levels indicate inadequate protein digestion due to pancreatic insufficiency or hypochlorhydria. It may also reflect bacterial overgrowth.

### METABOLIC MARKERS

**Short Chain Fatty Acids (SCFA's)**

SCFAs are the main fuel source for the cells lining the small intestine (enterocytes) and help prevent breach of the paracellular spaces by supporting cellular integrity and decreasing inflammation. The SCFAs are the principal products of fermentation of dietary carbohydrate in the large intestine. They are the predominant anions in the colon, with acetate, propionate and butyrate occurring in greatest amounts. Other acidic products of fermentation are found in the colon, such as branched-chain fatty acids, iso-butyrate, and iso-valerate, which are products of amino acid fermentation. Starch gives the highest SCFAs yield and the most butyrate, whilst non-starch polysaccharides (eg. Pectins) produce mostly acetate and propionate. Butyrate is protective against colorectal cancers and ulcerative colitis.

**Butyrate**

This is the preferred fuel for the colonic epithelium. Low butyrate (and n-butyrate) is associated with an increased risk of ulcerative colitis, colon cancer, and diarrhoea (since butyrate stimulates sodium and water absorption by the colonic mucosa). The ratios of the various SCFAs remain relatively constant in the healthy gut, but become imbalanced in certain disease states. For example, high levels of acetate together with low levels of butyrate relative to total may increase the risk of cancer.

**Propionate and Acetate**

These SCFAs are transported to the liver and used for energy production. Their metabolism produces by-products such as glutamine, glutamate, acetoacetate, and beta-hydroxybutyrate, which are used by intestinal mucosa for energy in preference to glucose. Low levels of SCFA's may indicate lowered energy capacity by the gastro-intestinal tract.

## COMPLETE DIGESTIVE STOOL ANALYSIS (CDSA) Interpretive Guidelines

### ABSORPTION MARKERS

**Total Long Chain Fatty Acids**

During fat digestion long chain fatty acids are released from triglycerides. As free fatty acids, they should be easily absorbed by the intestinal mucosa. In malabsorptior syndromes they can accumulate to substantial levels. A high level of total long chain fatty acids can indicate a bacterial overgrowth in the small intestine, which can interfere in the action of bile salts necessary for lipid absorption.

**Cholesterol**

Faecal cholesterol derives from both dietary sources and mucosal epithelial cell breakdown, although levels generally remain constant despite fluctuating dietary intake. A high level is abnormal and may reflect mucosal malabsorption, or a rapid cell turnover as occurs in mucosal inflammation.

**Total Short Chain Fatty Acids**

SCFAs are a significant marker of intestinal health. Colonic bacteria product SCFAs through the fermentation of dietary carbohydrate. They are readily absorbed by the intestinal epithelium and constitute an important source of energy. Faecal levels reflect a balance between production and absorption. High levels of SCFAs indicate malabsorption and an excess of bacteria or carbohydrate resulting in increased fermentation. Low levels may reflect insufficient healthy bacteria, an increased level of certain anaerobic organisms, and/or inadequate fibre intake.

### BACTERIOLOGY, PARASITOLOGY AND MYCOLOGY

**Bacteriology**

Faecal bacterial cultures can reveal the balance between normal, healthy intestinal flora and potential pathogens. Lactobacilli and Escherichia coli are examples of normal flora, which indicate bacterial health.

**Parasitology**

The various symptoms associated with intestinal parasitic infections are abdominal pain, diarrhoea (moderate to severe), flatulence, foul-smelling stools, cramps, distension, anorexia, nausea, weight-loss, belching, heartburn, headache, constipation, vomiting, fever, chills, bloody stools, mucous discharge and fatigue. Parasites can trigger autoimmune reactivity and have been associated with allergies and chronic illness.

**Mycology**

Colonic yeast infections have been associated with the presence of chronic illness. Candida albicans is a yeast organism, which is strongly associated with gastro-intestina symptoms such as diarrhoea, gas and bloating. Yeasts may be observed, stained and also cultured (grown).

### NUTRITIONAL SUPPORT

**Prebiotic**

Fructooligosaccharides

**Probiotics**

Lactobacillus acidophilus, L. bulgaricus, B. bifidum, B. infantis

**Anti-microbials**

Black walnut, Chinese wormwood, Pau Arco, Barberry, Cat's claw, Uva ursi, Gamma oryzzanol, Citrus seed extract.

**For further reading, refer to the Healthscope Functional Pathology Practitioner Manual.**