

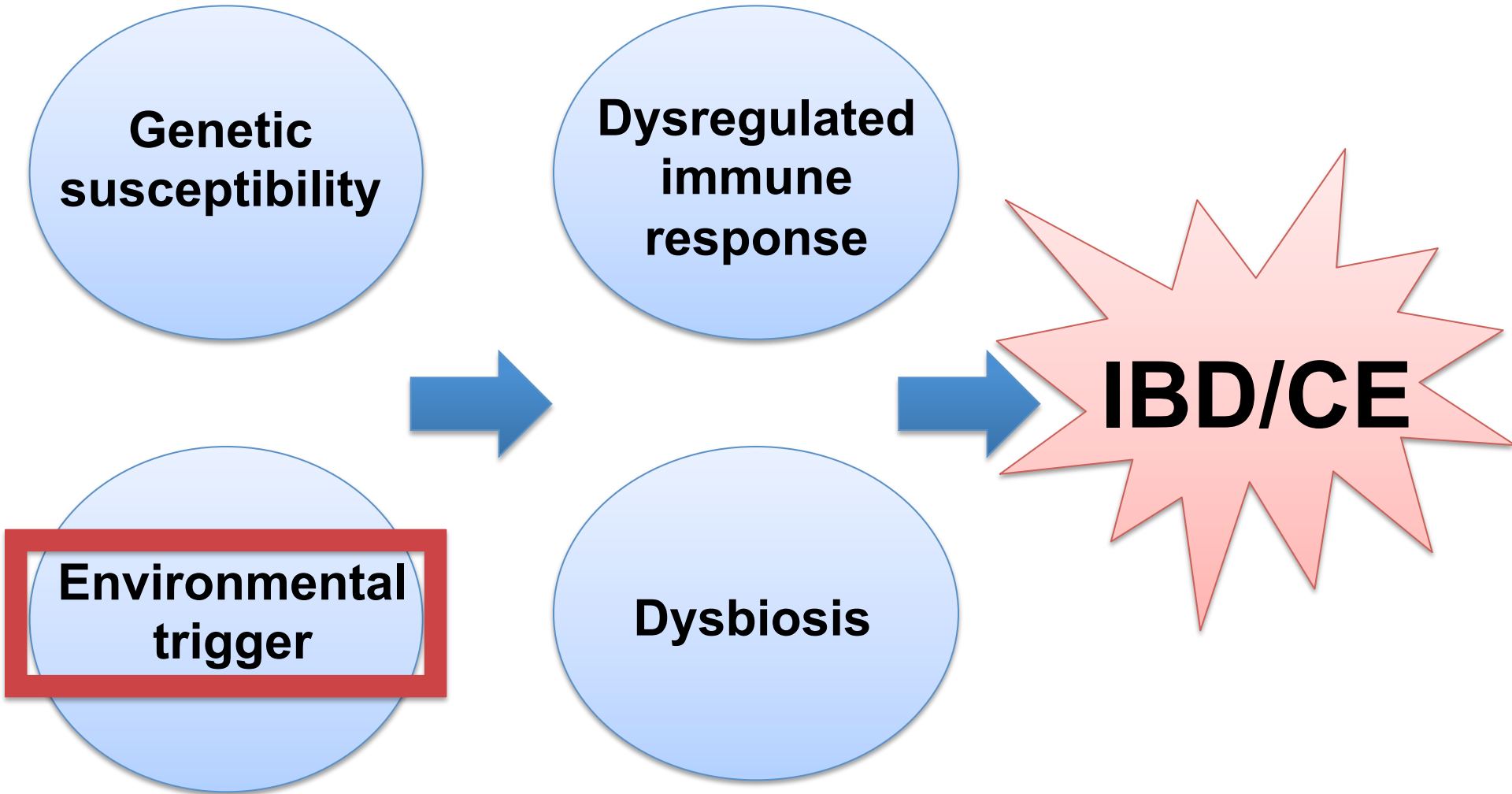
Nutritional Management of Chronic Enteropathy


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45 minutes:

- Background
- Malnutrition
- Aims of dietary management
- Assessment of patient
- Dietary treatment
- Case example

Background




- Migrant studies^{1,2}
- Systematic review³ – pre-IBD diagnosis:
 - Increased dietary fat & animal protein
 - Decreased dietary fibre & fruit **Westernized diet**
- Most dietary studies have reported inconsistent findings:
 - Omega 3 FAs

Chronic Enteropathy

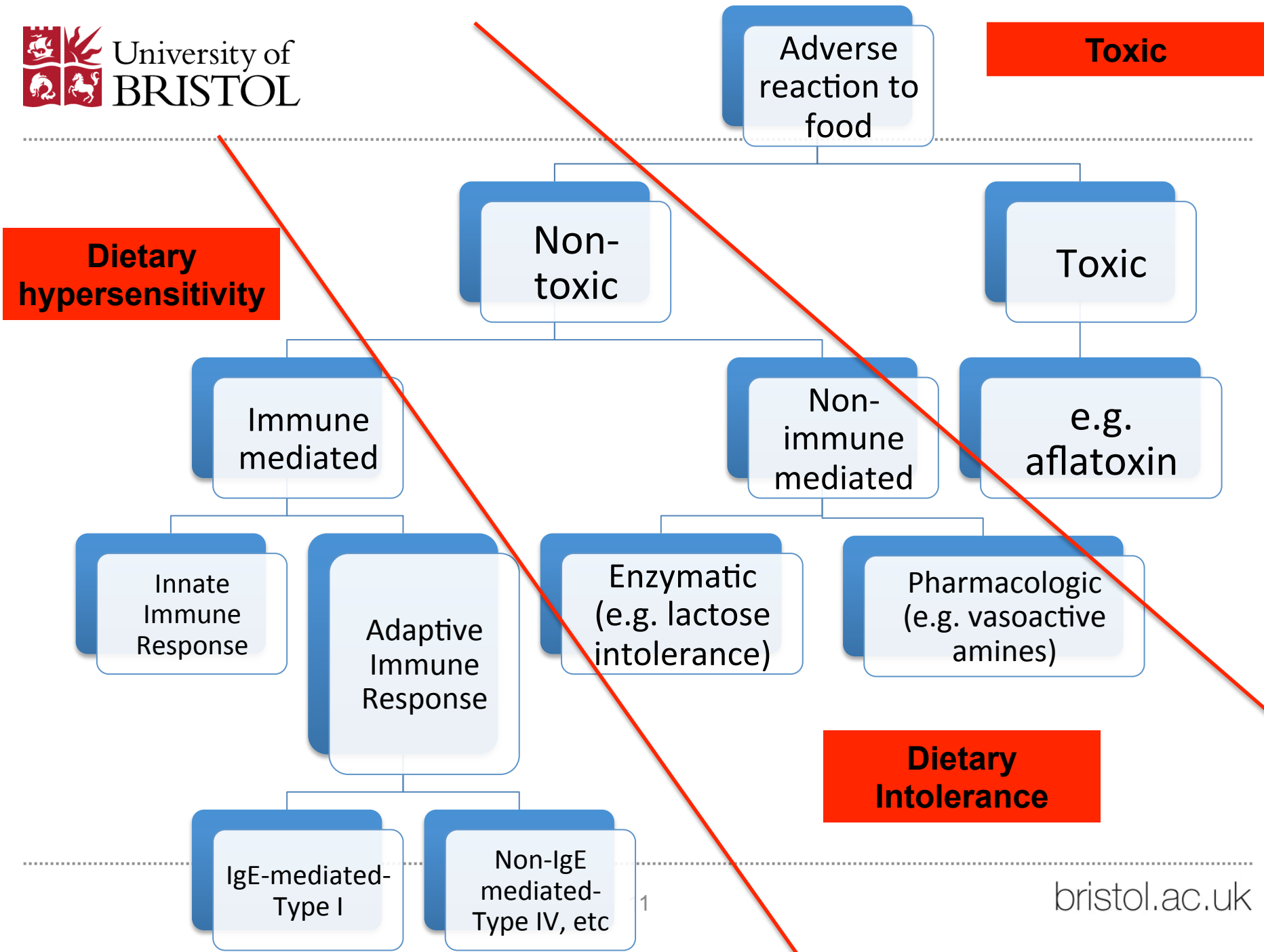
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- Ruling out secondary causes of chronic GI signs:
 - CBC/Chem/UA
 - Baseline cortisol/ACTH stimulation test/T4
 - Faecal analysis
 - Pancreatic testing – TLI/PLI
 - GI biopsy for DDx Vs. Exclusion Diet Trial
 - AUS
 - B12/folate
 - Hypoalbuminaemia
 - Weight loss
 - Lethargy
 - Anorexia

- Food-responsive enteropathy
- Antibiotic-responsive enteropathy
- Steroid-responsive enteropathy

- Dogs & cats with diet responsive CE can NOT be differentiated from those with disease requiring steroid treatment based on the severity of endoscopic or histologic lesions.

- Dietary hypersensitivity
 - Dietary intolerance
 - Inflammatory bowel disease/chronic enteropathy
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- Adverse Reaction to Food**

- Adverse Reaction to Food
 - Avoidance of allergen/or discriminated food
- IBD/Chronic Enteropathy
 - Additional dietary strategies beyond avoidance/destruction of specific dietary allergens
 - Gene expression
 - Epigenetics
 - Microbiota
 - GI permeability
 - Immune system



- **Toxic:**
 - e.g. aflatoxin
- **Non-toxic:**
 - **Non-immune-mediated:**
 - e.g. lactose intolerance
 - e.g. vasoactive amines
 - **Immune-mediated**

Adverse reaction to food

- Humans:
 - Skin prick test - >90% sensitivity, ~50% specificity
 - Food specific serum Ig E – 60-95% sensitivity, 30-95% specificity
 - BAT – peanut allergy, 97% accuracy, 95% PPV, 98% NPV
 - Double-blinded placebo controlled food challenge is currently the GOLD STANDARD in the diagnosis of food allergy

- Dogs & Cats:
 - Intradermal skin testing, skin patch testing and measuring circulating food allergen-specific serum IgE are of NO DIAGNOSTIC VALUE because of their low sensitivity & specificity
 - Food trial & challenge is currently the GOLD STANDARD in the diagnosis of ARF

Malnutrition

- Underestimated & under-recognized
 - Causes:
 - Inadequate intake – inappetence, nausea, vomiting, diarrhea, incomplete & unbalanced diet
 - Increased requirement? – growth, inflammation
 - Malabsorption – decreased surface area, bile acid malabsorption, steatorrhea – Ca
 - Increased losses – bleeding, vomiting, diarrhea
 - Drug interferences – steroids, sulfasalazine, cholestyramine
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- Effects:
 - Poor growth
 - Impaired immune system
 - Decline in muscle function
 - Impaired wound healing
 - Apathy/low mood
 - Increased anesthetic risk
 - Negative prognostic indicator in human IBD

Aims of Dietary Management

- Achieve or maintain good nutritional status
- Help improve clinical signs with or without medical treatment
- Promote remission in active disease
- Maintain remission

Assessment of Patient

- Body weight
 - Current status – weight stable/decreasing
 - Ideal body weight
 - % weight loss
- Muscle condition
- Hair coat (black cats)
- Physical exam

- Diet history:
 - Current food intake
 - Types of food, snacks, food for admin. of meds
 - Food diary
 - Identify possible trigger foods & food intolerances
 - Clinical signs – small/large intestinal or mixed
 - Previous or concurrent diagnoses
 - Lab work – electrolytes, B12, Vitamin D, UA!
 - Current medications
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Dietary Treatment

Adverse reaction to food

- Commercial therapeutic hydrolysed diet
- Commercial therapeutic limited-ingredient novel protein diet
- Limited-ingredient novel protein, complete & balanced home-cooked diet

- Commercial therapeutic hydrolysed diet
- Commercial therapeutic limited-ingredient novel protein diet
- Commercial therapeutic gastrointestinal diet
- Limited-ingredient novel protein, complete & balanced home-cooked diet

- Pros:
 - Highly digestible
 - Less expensive
 - Increased palatability
 - Some formulas have low fat
- Cons:
 - Ability to maintain remission¹?

- Pros:
 - Increased palatability
- Cons:
 - Adequate diet history
 - Fat content
 - Relapse

- Pros:
 - No diet history needed
 - Less chance of relapse
 - Anecdotal/scientific studies
 - Controlled fat
- Cons:
 - Reduced palpability
 - Limited canned formulas
 - Expensive?

- Pros:
 - Increased digestibility
 - Increased palatability
 - Precisely set macronutrient profile
 - Avoid antigens from processing and emulsifiers & preservatives
- Cons:
 - Expensive
 - Labor intensive
 - Chance of relapse
 - Source of novel protein
 - Cats

- Dietary strategies:
 - Highly digestible
 - Fibre
 - Fat
 - Ingredients
- Trial & error to determine most effective diet

There are few controlled clinical trials that have evaluated specific dietary strategies in either prevention or management of canine and feline IBD/CE

- Studies in human IBD – high fat exacerbates signs¹
- Mouse model – high fat diet – exacerbate colitis & enrichment of pro-inflammatory microbiota². Also increases barrier dysfunction³
- TRIAL & ERROR if low fat approach is beneficial as likely depends on genetic susceptibility of underlying pathophysiology

- Soluble fiber – SCFAs:
 - Energy source
 - Maintain epithelial integrity¹
 - Decrease proinflammatory cytokines²
 - Decrease intestinal inflammation³
 - Alter microbiota⁴
- Insoluble fiber
 - Bulk
 - Transit time

Benefits of Fiber

- A diet with a fiber content of 23.4 grams/day may decrease the risk of CD by 40%¹
- Crude Fiber Vs TDF
- More research in human IBD – soluble Vs insoluble fiber
- Mice models of DSS induced colitis – soluble fiber can exacerbate disease severity

Case Example

Case Example

- 9 month, FS Mix-breed dog
- 4 months old – single meal of home-cooked chicken & oatmeal, which triggered a marked generalized cutaneous hypersensitivity reaction & LI diarrhea, which responded to a home-cooked diet of ground bison & white rice
- Owner tried introducing various commercial diets over a 3 week period but she would develop soft stools within 2-3 days of eating at least 50% of the new diet.

- Good appetite
- Normal stool
- No vomiting
- Weight stable at 18.7 kg
- Currently on no medications
- Owner would like more diet options

Physical examination:

- BAR
- BCS 5-6/9
- Normal musculature
- Good coat quality
- Fundic exam and cardiothoracic auscultation unremarkable
- Abdominal palpation and rectal examination unremarkable

- **Serum chemistry panel** calcium 11.3 mg/dL (RI 9.6-11.2), phosphorus 6.5 mg/dL (RI 2.6-5.2) & potassium 3.5 mmol/L (RI 3.6-4.8).
- **Complete blood count** unremarkable
- **Vitamin B12** was 272 ng/L (RI 271-875).
- **Urinalysis** showed specific gravity of 1.055, pH 6.0, no protein, and amorphous debris.

- **Problem list:**

- Food-responsive enteropathy
- Adverse reaction to food
 - Toxic Vs Dietary intolerance Vs dietary hypersensitivity
- Chicken/oatmeal/something else?
- Increased tCa and Phos – growth
- Mildly decreased potassium & vitamin B12 – unbalanced diet or CE (4 weeks of diet that met 82.6% & 46.2% of NRC RA)?
- Mildly over-conditioned

Dietary Aims

- Feed a complete and balanced diet
- Avoid offending antigen
- Support growth
- Avoid further weight gain

Dietary Management:

- Balance current home-cooked diet for long-term feeding
- Commercial therapeutic options:
 - Purina Pro Plan Veterinary Diets Canine HA
 - Royal Canin Veterinary Diets Canine Venison and Potato dry food

Monitoring

- Body weight/BCS/musculature
- Diarrhoea, dermatological signs
- CBC/Chem/UA
- Vitamin B12

Persistent GI signs or recurrence

- Food diary
- Further GI work-up
- Trial & error with different fat and fibre contents

QUESTIONS??