

Welcome

Thank you for attending!

Special thank you to Dr. David A. Williams, Dr. Patrick Barko, and of course Madelon Hale and her friends and family.

Olesia Kennedy, Pres & Founder of Epi4Dogs Foundation Inc, a 501c3 non-profit charitable organization



EPI Awareness/Education

Support EPI Research

24/7 On-Line/Tel Support

Comprehensive Resources

Vet Research Recommendations

Vet Involvement

Apply Practical Application

EPI Registry Database

3,100+mbrs, +social media, 9+ yrs data, 24/7avail, (as of Aug 2017) 1,485,800 assists, been contacted 2,046,327 times, observe “patterns/trends”. Most recommendations research based, but some are based on practical experience.

100% volunteer-run



EPI from the Pet Owner's Perspective



Some of our EPI pets

Before Treatment @ 52 lbs



5 Months
later after
treatment
@ 80lbs 5

Mixed Breed



160lbs

Before enzyme therapy



260lbs

After enzyme therapy

and
Patron— EPI Survivor

“Patron”
Spanish
Mastiff



Before EPI treatment @ 37lbs



4 Months
after EPI
treatment @
70 lbs



Rilind
Pit
Bull

“Jewels”



Pre-treatment @ 9 lbs



5 months after treatment @ 20.4 lbs

Rat Terrier



“Mini” 11-25-2013
before treatment

“Mini” 2-6-2014
after treatment



Pit Mix

18
lbs



37
lbs

"Pixie" a Sheltie @11.23 lbs before treatmentin 4 months to 16.4 lbs after treatment

Shirl,
epi4dogs
member's
EPI gal,
"Pixie"

before ...

after ...

and
after a
little too
much..
.....diet
time!

Pandy

13 lbs when diagnosed

1 yr after treatment 26 lbs

Dachshund

Ziska



“Ziska” 7-11-17

Forever Family

- Jul 2017, estimated 4-5 yrs old, 30lbs
- Aug 2017, with EPI treatment, 40lbs
- Rescue Ctr/wouldn't test/fed 8 cups food daily/TLI cheaper!
- Luckily, Donna recognized possible EPI ☺, TLI tested, confirmed EPI, adopted Ziska ... 2nd EPI dog for them



GSD

Cats get EPI too!

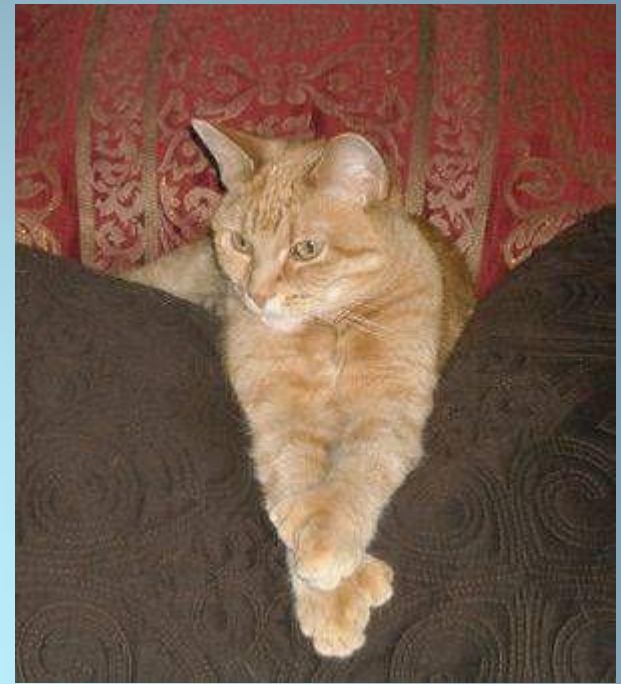


From 250 lbs in Mar

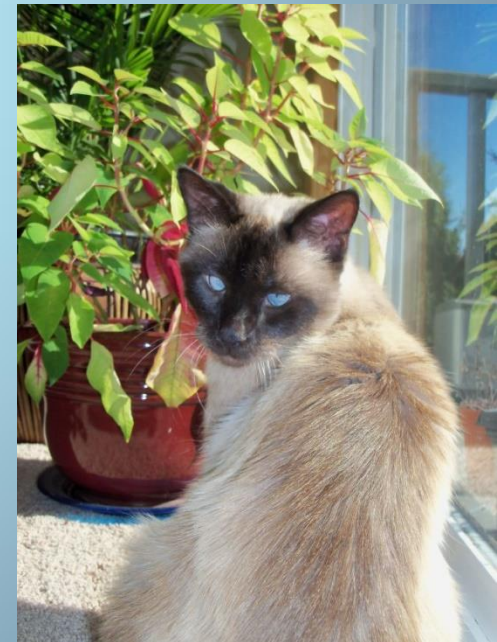
To 400 lbs in Sept



Soleil



King Kitty



Timothy

EPI Stool

Before treatment



1 Day after treatment (Tylan)



- Tylan (preferred antibiotic), Metro, Amoxy
Or try a PreBiotic (Slippery Elm powder)

What EPI Care-Givers are thankful for with their current vet!



98% of vets willing to consult with other professionals if needed

97% of vets really listen to their concerns

80% of vets willing to try client recommendation if supporting research is provided

What EPI Care-Givers want from their vets

- Test for EPI before running other expensive or invasive tests (i.e. if Giardia test is negative next test for EPI)
- Offer cost saving alternatives:
 - Generic enzymes (i.e. Enzyme Diane)
 - OTC oral B12 (i.e. Pet Factor B12, Trinfac)
 - Commercial dog food vs. Prescription dog food (unless needed for another health condition)
- Suggest good web resources vs. “Dr. Google”
- Be willing to try “adjustments” first vs. more tests

Actual EPI owner comments

- “For me, just discussing what I'd learned from Epi4Dogs was the biggest key to my feeling comfortable with my vet (it was a new vet to me - she knew my dog that I had inherited from my mother-in-law when she passed away, but I had never been to her before.). She was willing to listen and discuss things, and, although she knew much more about EPI than I did, she was still willing to learn more about EPI and discuss information I had found on the website. This willingness to work with me rather than just dismiss information I had found was the main reason I switched all my dogs from their previous vet to this one.”
- “The standard way of treating EPI has been to give enzymes. I was told to put them on the food and let my dog eat the food as usual. That was wrong information. In Fritzzy's case we had to incubate them with water added to the kibble . I felt so awful that he had bleeding mouth sores because of poor advice. In the end I had 2 vets call me because of the information I had gained from EPI online sources. They asked me about how to prepare the food and where to buy the enzymes from. I was glad that they asked to help other dogs.”
- “When first diagnosed the disease was not fully explained to me. My vet did not know about Enzyme Diane and I thought I would have to give my dog up due to expense. When I mentioned Enzyme Diane they did not look into it. My dog's B12 was 406 so I was told not to supplement despite what is recommended by EPI4DOGS. I was told not to incubate enzymes even though there were reports of mouth sores. I know they are busy but when dealing with a devastating disease like this it would be nice if they would take a minute and look into the suggestions made by those dealing with it everyday and suggestions backed by research. Tylan wasn't even an option despite the research.”
- “Thanks to whoever mentioned that too much enzymes can also cause loose stools!”
- “I took Lucy to the vet Wednesday to have her B12 levels checked. I supplement her daily with wonderlabs B12. He just called to tell me her B12 levels were over 1,000! “

Epi4Dogs Mantra

“Effectively managing EPI is all about finding the right balance of the recommended protocol for each individual EPI dog”

1. Treat the **WHOLE** dog

Enzymes

Diet

B12 if needed

Treatment for SID if needed

2. Make adjustments if needed

3. Keep an EPI Log/Observe “patterns/trends”

4. Share **EVERYTHING** recommended with your vet



Epi4Dogs “EPI Quick Guide” handout (copy in your folder)

Various Enzyme Types and their Application Techniques

Powder	Approx 1 level tsp per 1 cup kibble or 3/4 tsp per 1 cup canned	Add approx 1/4 cup of something wet & lukewarm (water, broth, yogurt, applesauce, baby food, etc.) to better spread the enzymes in the food. Let sit for 20+ minutes to help avoid possible mouth sores. Cost-saving generic powder enzymes are available at: http://www.enzymediane.com/
Tablets	Start with 1 tablet per 1 cup of food +1 more tablet. It is possible that up to 7-9 tablets will be needed	Always CRUSH tablets and treat as a powder. If 1 tablet per 1 cup of food +1 doesn't work, try increasing the dose. Some dogs need up to 7-9 crushed tablets per meal. Add lukewarm liquid or something wet to better spread the enzymes in the food and let sit for 20+ minutes to avoid possible mouth sores.
CREON/ Enteric coated capsules	Start with one CREON 10 (or CREON 5 for tiny dogs)	Either break open and sprinkle on food and serve immediately OR give capsules whole at meal time or just prior to feeding. DO NOT allow to sit on food as this may cause mouth sores. Watch poo for a few days/a week. If poo is still sloppy looking, increase dose to two CREON 10...Some dogs even need CREON 25. Each pet's dose is different. Finding the right dose depends on your pet's digestive system via trial and error.
Granules	Start with the manufacturer's guidelines	Depending on the product, some may need to be served like the powder enzymes and other products need to be served like the enteric coated enzyme products. Follow the manufacturer's instructions. Some trial and error may be needed to find the right dose for your pet.
Raw Pancreas	Use 1 to 4 ounces per cup of food	Fresh bovine or lamb pancreas is preferred over porcine because of possible bacteria. Finely chop/mince "room-temperature" raw pancreas and include in meals and serve immediately. May be frozen in cubes for future use but always thaw naturally. Never heat on stove or in microwave. Freezer shelf life is 3 months. Actual pancreas gland potency may vary from one slaughtered animal to the next.



What to feed your EPI dog

Start with low fiber food (look at grain-free foods) with a fiber content of 4% or less

Special prescription diets not needed unless there is a concurrent condition, like a food allergy/sensitivity, IBD, etc

Feed 150% in multiple smaller meals, at least 2 hours apart, until body is restored

The right diet often varies from one EPI dog to another

Possible Signs of B12 Deficiency

Loss of Appetite

Lethargy

Failure to thrive despite EPI treatment

Joint Pain

SID/SIBO

Dog becomes fearful and/or cranky

Vomiting

Loose Stools

Signs of Small Intestinal Dysbiosis (SID)*



Enzyme tidbits

- Loose stools: too much / too little enzymes
- When stable “try” reducing by 1/8 tsp(s), assess and go with dose that maintains
- Aging may require slight enzyme increase
- **Enzyme Diane** : generic powdered enzymes@1/3 cost (bulk-rate/low overhead), AmerLabs/USDA sourced, direct access, highly recommended: <http://www.enzymediane.com/>
- **Green Cuisine4Pets** : carries raw pancreas, also carries raw green tripe <http://www.greencuisine4pets.com/>
- Rare pork allergy (3 cases/3000), try beef, sheep enzymes @ higher doses
- Plant enzymes will eventually fail
- Enzyme tablets/not ideal, crush, +1 tablets (3-9 pills per feeding)
- **Creon**: does work. Proper administration technique is key 4pH vs. 1pH
- Incubate to avoid possible mouth sores:
 - Incubate 20 minutes, if issue, increase by increments 15 minutes no longer than hour
 - Add more liquid
 - Slightly reduce enzymes
 - Squirt water in mouth as a rinse, wipe inside mouth with wash cloth
 - Give dog an ice cube after meal

Cost-Savings (generic) Enzymes

\$145, 1 kilo = 35.27oz
2.8 grams of powder = 1 tsp
357 teaspoons in a kilo of 6x

6.264 US

Reevaluation Date:
May 11, 2019



Pancreatin 6x USP Powder

Digestive Enzyme Supplement
Porcine Based—United States of America
Manufacturer: American Laboratories, Inc.
Packaged by: Enzyme Diane
Lot No: 52570392

Protease: 470,400 USP/2.8 grams
Amylase: 462,000 USP/2.8 grams
Lipase: 50,120 USP/2.8 grams

Approximate dose 1/2-1 tsp per cup of food. Dose will vary pet to pet.
Add enzymes to each meal with warm water, mix thoroughly and let sit
a minimum of 20 minutes at room temperature before feeding.
Warning: Contact with dust may cause respiratory irritation, allergic,
asthmatic reaction, possible hypersensitization, or dermatitis.
Discontinue use in animals showing sensitivity.
Pancreatin will vary in potency by batch, adjustments may be needed.
Pancreatin is a digestive enzyme supplement not regulated by the FDA
(Food & Drug Administration).
It is not intended to diagnose, cure or prevent any disease.
Store in airtight container in a dry place at temperatures not exceeding 85F

1 Kilo, 35.27 oz

For animal use only
Consult veterinarian about usage
Keep out of reach of children

Photo below shows King at around 26kg (around 57lbs) taken a few days ago. He is basically all skin and



Kings poop before starting on Creon - unfortunately a bit weathered due to rain.



King's poop today, the improvement has been dramatic, started within 24 hours of taking the Creon.



Creon will work... with proper Administration:

- start with Creon 10 or 12
- try opening capsule, sprinkle pellets on food, feed immediately
- or try giving capsule whole (tucked in something) approx 5 minutes prior to a meal
- or try increasing the Creon by $\frac{1}{2}$ dose increments

Larger dogs often end up using Creon 25

(Australians use Creon vs. Enzyplex)

University of Sydney (Australia)
Centre for Veterinary Education

references Epi4Dogs.com and to use
Creon vs. Enzyplex for EPI

Diet tidbits

- “Approved EPI diet” will not agree with all EPI dogs
- Initially suggest change diet: 4% or less fiber content
 - (why 4% fiber content? soluble/insoluble, highly fermentable/ lowly fermentable too confusing)
- Fiber may inhibit enzyme activity to one degree or another
- Shop in “grain-free” section , although grain-free not accurate/mkt gimmick. **READ** actual ingredients!
- Feed smaller portions / more feedings
- Feed approx 150% in beginning until weight replenished
- If trying different diets / buy “small” bags or just a can or two
- Normal fat content is fine / unless other health conditions require low fat
- Issues with too much pea content! Rice/grain maybe/maybe later. A little bit of canned pumpkin often helps firm stools.
- Sometimes less carb content is needed
- Food type and concentration counts

Diet – Peas (copy of full poster in folders)

40th European Cystic Fibrosis Conference, 2017, Seville, Spain

Starch digestion in case of exocrine pancreatic insufficiency – complete but different ?

What can we learn from in-vivo and in-vitro studies using an animal model ?

Anne Mößeler*, Sandra Vagt, Josef Kamphues
anne.moesslerer@tiho-hannover.de

Institute for Animal Nutrition, University of Veterinary Medicine Hannover, Foundation, Bischofsholer Damm 15, 30173 Hannover, Germany



Introduction

Exocrine pancreatic insufficiency (EPI) results in maldigestion of fat and protein, but starch digestion seems to be less or not affected [Lohr 2009] as in most cases starch is not excreted via stool. As a consequence several authors [e.g. Schmidt et al. 2010] argue, that pancreatic enzyme replacement therapy (PERT) is not necessary when meals low in fat but rich in starch are consumed. Nonetheless fermentative diarrhea or meteorism and flatulence are clinically relevant symptoms of impaired enzymatic and forced fermentative starch digestion – therefore some authors [e.g. Schönfelder 2012] recommend to use PERT even for meals low in fat but rich in starch. The pancreatic duct ligated pig is an established model for human EPI [Gregory et al. 2016].

As the capacity for fermentation of starch in the hindgut is tremendous [Mößeler et al. 2007; 2017], resulting in a compensation of the reduced enzymatic digestion of starch in the small intestine, this study was focused on digestibility of starch in the pancreatic duct ligated (PL) pig – differentiating between digestion in small and large intestine (in-vivo). Furthermore in-vitro the gas production was quantified using ileal chyme to mimic situation of intestinal fermentation [Vagt 2014].

Material and Methods

In-vivo studies: Praecaecal and total tract digestibility of starch was determined in the animal model of the ileo-caecal fistulated pig (see figure 1; Mößeler et al. 2017). Hydrogen exhalation was measured in both groups of animals as well to estimate carbohydrate fermentation. No PERT was used in PL-pigs during these studies.

In-vitro studies: Fresh ileal digesta of healthy control pigs (C, n=4) and pancreatic duct ligated pigs (PL, n=3) were used. Cumulative gas production was detected continuously over 24 hours using the gas production system (GPS) of ANKOM® (Macedon NY, USA).



Figure 1: Scheme of ileo-caecal fistulated minipig to determine praecaecal digestibility

Background:

Praecaecal digestibility of starch – noteworthy ?



Results

in-vivo

- Digestibility of starch over the entire gastrointestinal tract was complete in controls and PL-pigs. Even the diet was rich in starch (60 %) there was no faecal excretion of starch in PL-pigs, although no PERT was used.
- Praecaecal digestibility of starch was significantly reduced in PL-pigs receiving no PERT (~ 60 %) with effect of botanical origin of starch (amaranth; oat > wheat > buckwheat) and thermal treatment (cooked > raw).
- Hydrogen exhalation significantly increased within two weeks after experimentally induction of EPI.
- Indirect parameters of microbial activity (SCFA, lactate) were significantly higher in ileal chyme of untreated PL-pigs.



in-vitro

- In-vitro cumulative gas production without added substrate was higher in chyme taken from PL-pigs compared to controls.
- Incubation of 1 g starch with ileal chyme resulted in in-vitro gas production up to 124 ml of gas in PL-pigs when raw pea starch was added.

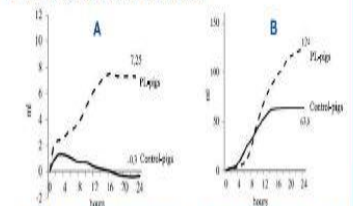


Figure 2: Mean cumulative in-vitro gas production when using ileal chyme of controls (—) or PL-pigs (---). A) without any added substrate; B) with addition of 1 g raw peas starch

Discussion

In-vivo studies showed a significant reduction in praecaecal starch digestion while total tract digestibility indicated a complete digestion of starch. The in-vitro study showed that high volumes of gas (> 120 ml) are produced per g starch escaping enzymatic digestion in the small intestine. Taking into account the negative side effects of fermentative digestion of carbohydrates (→ distinct gas production → bloating, meteorism and flatulence) the need to use amylolytic enzymes becomes obvious. The fact that the effects of EPI on starch digestion cannot be detected by analysing stool samples underlines the need to use suitable tests (hydrogen exhalation tests) or animal models.

Conclusions

Although most emphasis is given to reduced fat digestion in case of EPI the present results indicate that praecaecal starch digestion is impaired massively as well. Even no starch is excreted via stool, praecaecal digestion is reduced significantly. Postileal fermentation results in marked gas production (as shown by in-vivo and in-vitro studies). Therefore PERT is crucial in EPI patients with relevant starch intake to avoid negative side effects of fermentation (diarrhea, meteorism, flatulence). The need of using amylolytic enzymes in a proper dosage has to be taken into account especially if the multienzyme product is dosed according to lipase activity and meal is low in fat.

B12 tidbits

- 4 out of 5 EPI dogs **NEED** B12 supplementation (Low/Low Normal not good enough) Aim for upper mid-range/600
- Recommend testing B12 same time as TLI test/cost effective + more thorough diagnosis
- Cyanocobalamin shots/Oral B12, same dose
- Oral Wonderlabs (hdqtrs Whitehouse TN) Pet Factor B12 or Trinfac (Methycobalamin+ Intrinsic Factor + Folate) widely used (8yrs) /excellent results & inexpensive
- Sublingual B12 tabs eventually fail within 1+yr
- Retest for B12 for a benchmark
- When proper levels reached, continue B12 at maintenance levels
- Even if B12 normal at diagnosis, as dog ages, may need B12 maintenance

SID tidbits

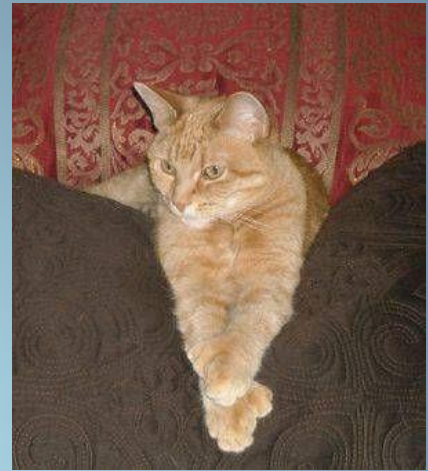
(small intestinal dysbiosis)

- SID likely present in most EPI dogs whether there are signs or not. Folate test not reliable diagnosing for SID
- 1st try enzymes without antibiotics for 1-2 wks. If dismal results, usually it is SID; treat
- If perfect results for 1-2 wks, then set-back, usually it is SID; treat
- Recognizing SID in EPI pets: *“repeated signs of yellowish-coloring to the stools, continued loose/soft stools, intermittent sloppy stools, gelatinous stool coating, flatulence, lack of appetite, stomach noises, acid reflux, regurgitation”*
- There is no perfect SID treatment..... Yet...
- Owners not happy until SID “appears” controlled via normal stools

SID tidbits ...continued

- Addressing SID
 - Antibiotics
 - Prebiotics
 - Combination of Anti's and Prebiotics
 - Symbiotic: Combination of Prebiotics and Probiotics
 - Uncontrolled "Acid" Reflux / Omeprazole, Slippery Elm, Pepcid AC
 - Diet
- Antibiotics
 - Tylan (preferred anti-although just suppresses over-all bacteria count) twice daily 30/45 days, If no positive response within 7-10 days switch to Metro, Amoxy, Oxytet/Oxycare, etc.
 - Slowly withdrawing Tylan sometimes reduces ARD (antibiotic responsive diarrhea) effect. At end of 45 days, for 1 more wk reduce dose to half twice/day for 1 wk, then next week give ½ dose once day, then next & last wk give ½ dose every other day, then stop completely.
- Prebiotics
 - Slippery Elm Loose Powder: 1/8 tsp for dogs under 10lbs, ¼ tsp for dogs 10lbs to 30lbs, ½ tsp for dogs 30lbs to 80lbs, 3/4 tsp for dogs 80lbs to 100lbs, and 1 tsp for dog 100/+lbs. Mix in meal, add 1 to 2 tablespoons of water, mix and serve meal as you normally would
- Combination Anti's & Prebiotics
 - Given together with food
- Symbiotic: Prebiotics & Probiotics together
 - When giving Probiotics ... (keep it simple) and give 2 hrs away from any anti's
 - Products vary from dog to dog
 - Start at ½ dose, work up to full dose over course of a wk
- Diet! An agreeable diet is the final piece of the puzzle to effectively managing SID
- Normal stools are achievable

EPI Cat tidbits



- Most EPI cats need B12 supplementation
- Many cats are finicky; compounding flavors to camouflage enzymes often helps
- May try Tylan anti 2.5 to 5mg per pound for SID
- EPI Cat Support group: <http://epiincats.webs.com/>
- Or contact: Carol Pilger directly for support info:
cmp25391@comcast.net

Fecal Monitoring Chart

Fecal Scoring System



Score 1 – Very hard and dry; requires much effort to expel from body; no residue left on ground when picked up. Often expelled as individual pellets.



Score 2 – Firm, but not hard; should be pliable; segmented appearance; little or no residue left on ground when picked up.



Score 3 – Log-like; little or no segmentation visible; moist surface; leaves residue, but holds form when picked up.



Score 4 – Very moist (soggy); distinct log shape visible; leaves residue and loses form when picked up.



Score 5 – Very moist but has distinct shape; present in piles rather than as distinct logs; leaves residue and loses form when picked up.



Score 6 – Has texture, but no defined shape; occurs as piles or as spots; leaves residue when picked up.



Score 7 – Watery, no texture, flat; occurs as puddles.



Nestlé PURINA

Trademarks owned by Société des Produits Nestlé S.A., Vevey, Switzerland

Epi4Dogs “EPI Log” handout






[illegible]

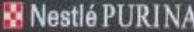
Epi4Dogs
EPI LOG



Epi4Dogs Foundation, Inc.
Exocrine Pancreatic Insufficiency
 Non-Profit 501(c)(3) www.Epi4Dogs.com

Fecal Scoring System

 <p>Score 1 – Very hard and dry pellets result when he excreted from body; no residue left on ground when picked up. Often signal as individual pellets.</p>	 <p>Score 2 – Firm, but not too hard; should be pliable; improved appearance; little or no residue left on ground when picked up.</p>	 <p>Score 3 – Lumpy, little or no segmental visible; some residue; some residue, but holds form when picked up.</p>	
 <p>Score 4 – Very moist (slightly distal) by shape; some residue and some form when picked up.</p>	 <p>Score 5 – Very moist but has distinct shape; powdery in place rather than at distal end; lower residue and some form when picked up.</p>	 <p>Score 6 – Has texture, but no defined shape; occurs in piles or as spots; lowest residue when picked up.</p>	 <p>Score 7 – Watery, no texture, flat, occurs as puddles.</p>



Information comes from *Health and Product Bulletin 13*, *Animal Performance*

001 0000 0102

FINCHES/LLS


[illegible]

Include chopped raw carrot in 1 meal to assess “stool transit time”

EPI Log

“Effectively managing EPI is all about finding the right balance of the recommended protocol for each individual EPI dog”

Easily said ... Not so easily done

- Try adjustments (enzymes, diet, B12, SID treatment) one-at-a time/3-5 days, assess reaction, move on to next change if needed
- To save everyone's sanity, keep an EPI LOG
- Good & bad “patterns” will show up in an EPI Log
- Record
 - Condition of dog
 - Everything you give the dog
 - Diet ingredients, supplements, enzymes, meds, etc
 - Dog's reaction 
 - Stool frequency, volume, texture, color, other body reactions/acid reflux, etc., Stool pictures help
 - An EPI Log will help identify underlying triggers



- **STRUCTURE:**
 - Established 2008, Board of 14, Forum mbrs 3,100, 1.5 million assists, 100% volunteer, \$0 Admin costs, contacted by over 2 million, 24/7 world-wide assistance
 - Goals: Awareness, Education, Research, Assistance
 - Current & Comprehensive Information & Resources available
- **OUR CLIENTS:** frustrated, scared or overwhelmed
 - Before and After diagnosis
- **FUNCTION:** To educate and offer long-term support after pet owner leaves the vets office
 - Help: navigate next steps for optimal results, help identify triggers, Assist w/ hardships
- **EPI REGISTRY:**
 - Statistics and participants available for vet school research/clinical trials/studies
- **EPI RESEARCH:** Candidates easy to get, funding not so easy
 - Passionate/Generous Donor -Special Cause funding: Calendars, Auctions, Contests (offer either product or recognition for donation)
- **RAISE FUNDS SPECIAL NEEDS:**
 - i.e Hurricane Harvey \$ Donation+ Staff in place networking to deliver supplies, Collaborated with TAMU V.E.T.
 - Facilitate EPI adoptions on FB & assist with some transfers for EPI adoptions

Thank You and Questions & Answers?

EPI dogs everywhere would like to **THANK YOU** for taking the time to learn about our condition and giving us the best care ever

Lisa's EPI dog "Fala" doing Schutzhund training

