

# Choosing the right test...

*It's not always scopes!*

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No Disclosures

# What do we mean by tests?

- **Blood**

- Complete blood count (white blood count, hemoglobin)
- C-reactive protein (CRP)
- Liver function tests, electrolytes, creatinine (kidney function)
- Medication (“drug”) levels (for biologics and azathioprine/6-MP)

- **Stool (poop)**

- Calprotectin
- C difficile, stool cultures, giardia testing

- **Imaging (scans)**

- Abdominal CT scan
- MR or CT enterography
- MRI of the pelvis, MRCP

- **Scopes**

- Colonoscopy, endoscopy, capsule endoscopy (camera pill)

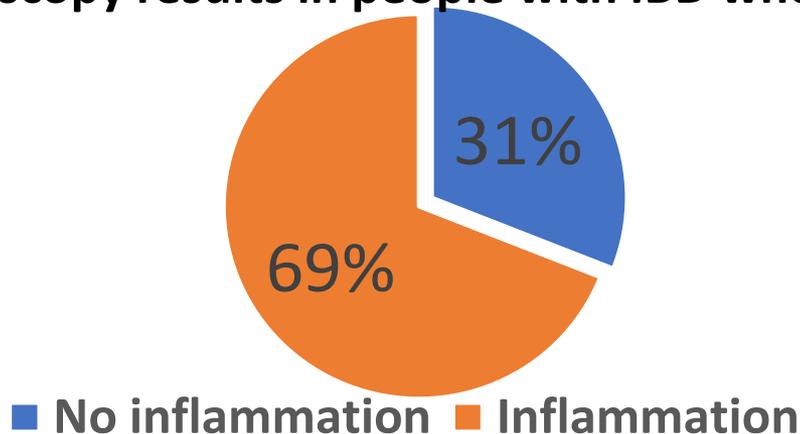
# Main things to understand

- 1. *What*** do tests tell us
- 2. *When*** are certain tests most helpful
- 3. *Why*** are tests so important

# Why do we need tests?

- Because inflammatory bowel disease (“IBD”) can fool us
- Feeling well (or having mild symptoms), doesn’t necessarily mean IBD is controlled
  - IBD causes intestinal inflammation (redness, swelling, ulcers)
  - Uncontrolled intestinal inflammation can cause irreversible damage
  - **Treatment targets: resolve symptoms *and* heal the intestine** (prevent damage)

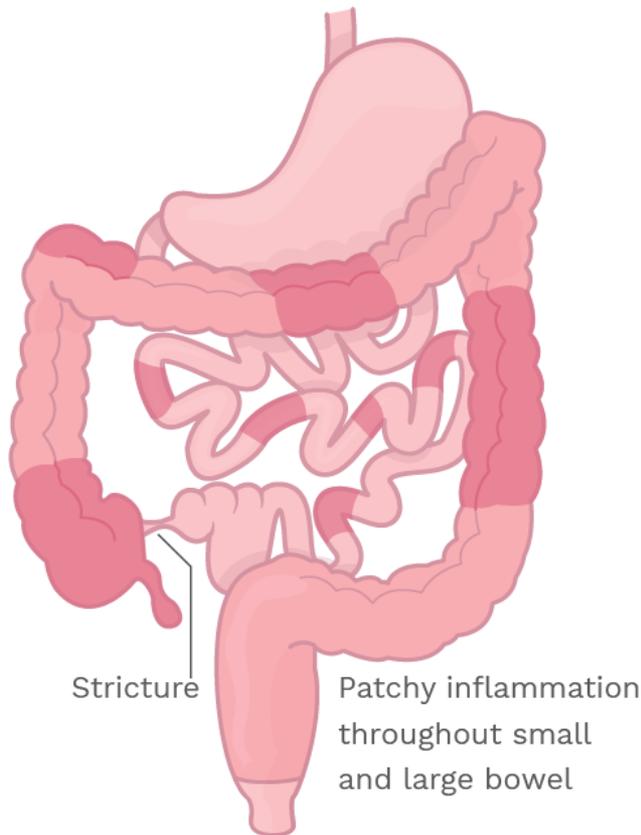
Colonoscopy results in people with IBD who feel well



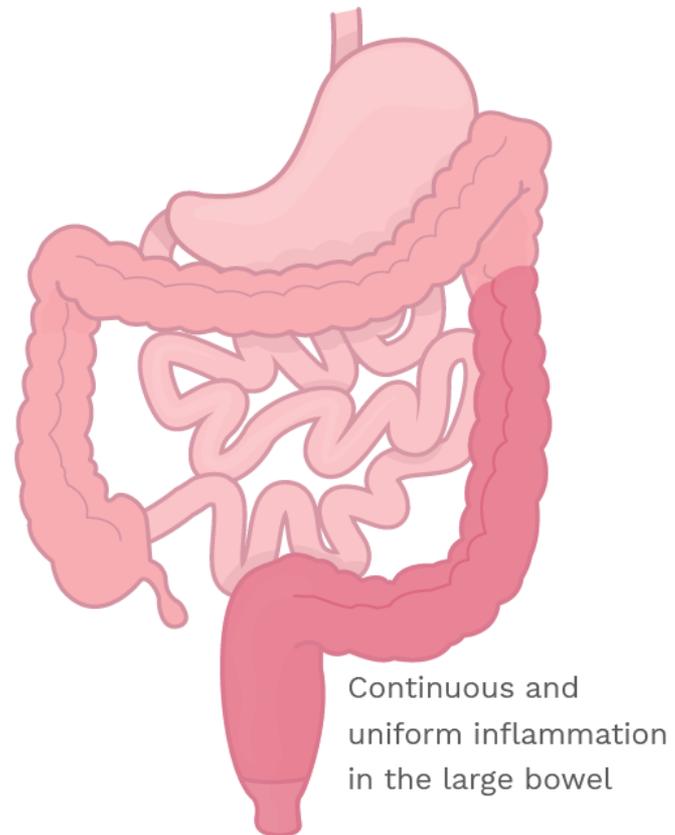
# Individualizing testing in IBD

Disease & location affect symptoms and guide testing

Know you (or your family member's) disease type **and** disease location



**Crohn's Disease**



**Ulcerative Colitis**

# Blood tests: Clues to intestinal health

Useful to follow disease during flares & when feeling well

## **CBC (complete blood count): Detects anemia (plus infection & inflammation)**

- **What**

- Hemoglobin measures red blood cell number. A low number indicates anemia.
- Anemia means less blood to carry oxygen in the body.

- **When**

- Test when feeling tired. Feeling tired is a symptom of anemia.
- Test when disease inflammation is active and when feeling well.

- **Why**

- Most anemia is from low iron.
- Inflammation can interfere with iron absorption and use.
- Intestinal blood loss (from bleeding) or poor absorption (from small intestine Crohn's) may contribute.

# Blood tests: CRP (C-reactive protein)

## What

- Indicates the presence of inflammation anywhere in the body, including from the intestines (a “biomarker”)
- Levels can go up & down. A higher number means more inflammation.

## When

- Followed during a flare to monitor response to treatment.
- When feeling well, a normal value can be a reassuring sign; a high value can suggest inflammation from ongoing disease.

## Things to keep in mind

- Because it's not a specific test for ulcerative colitis or Crohn's, infections (like colds) can cause a high CRP.
- Not everyone's CRP goes up when there is inflammation. For these people it is not a helpful test to follow.

# “Everything comes down to poo (stool)!”

## Understanding Calprotectin

### ***What it is***

- A stool test for intestine inflammation
  - Calprotectin is a protein released by white blood cells when there is intestine inflammation

### ***What it tells us***

- A **high** calprotectin means there is likely **inflammation** in the intestines
  - Range of values depending on the lab (approximately 100 to 1000 ug/g or higher)
- A **normal** calprotectin means there is likely **no inflammation** in the intestines
- It becomes a more powerful tool when combined with CRP

# Calprotectin: When do we use it?

## 1) To check that symptoms are from a flare (not all symptoms are from a flare)

- A **flare** means that **symptoms of disease inflammation** have come back. **Symptoms of a flare** *may* include:
  - Diarrhea or frequent or urgent bowel movements
  - Blood in the stools
  - Abdominal pain
  - Fatigue, loss of appetite or weight loss
  - “Extra-intestinal” symptoms such as mouth ulcers or joint pains
- Irritable bowel syndrome (IBS) or food intolerances (like lactose) **don't** cause intestine inflammation, but **symptoms can be the same.**
- **Infections** can also cause symptoms that may look just like a flare, but are treated differently.
  - **Testing the stool for c diff** and other infections with **stool cultures** may be helpful when having new or worsening symptoms.

# Calprotectin: When do we use it?

## 2) To check if there is disease inflammation when feeling well (no symptoms)

- Remember: IBD can fool us
- A high calprotectin may predict the chance of symptoms coming back in the next few months
- After intestinal surgery for Crohn's, calprotectin may help check if Crohn's has come back

# Calprotectin: When do we use it?

## **3) To follow disease over time and help guide treatment**

- Based on increasing or decreasing calprotectin levels, we can follow progress with treatment
- Levels may be compared with colonoscopy findings to track degree of inflammation for an individual over time

# What calprotectin is *not* (*limitations*)

- It's ***not*** a replacement for colonoscopy with biopsies
  - It doesn't prove healing of the intestines (it is a "biomarker")
  - It doesn't detect pre-cancerous change (dysplasia)
  - It is **not as good** at detecting Crohn's inflammation **limited to the small intestine** (ileum, jejunum or upper small intestine).
    - It is **better** at detecting **inflammation from IBD in the colon** (Crohn's colitis or ulcerative colitis).

# Putting it together

## Monitoring disease with calprotectin

- Joe is 23 years old and has ulcerative colitis (UC) involving his entire colon. He takes mesalamine daily and has been well. He goes to the bathroom 3 to 4 times a day and has no bleeding.
- To follow his disease, a calprotectin is checked. It is high at 500 ug/g (normal less than 50). A colonoscopy is scheduled and shows significant inflammation from UC.
- Joe is started on infliximab (Remicade). A calprotectin after 3 months is 200 ug/g, and after 6 months is less than 50 ug/g. A colonoscopy shows a healed colon.

# Imaging Tests (“Scans”): What, when & why

**Abdominal CT scan**: Useful mainly for **emergencies**, to evaluate for complications of IBD in a severe flare.

- ***Pros***

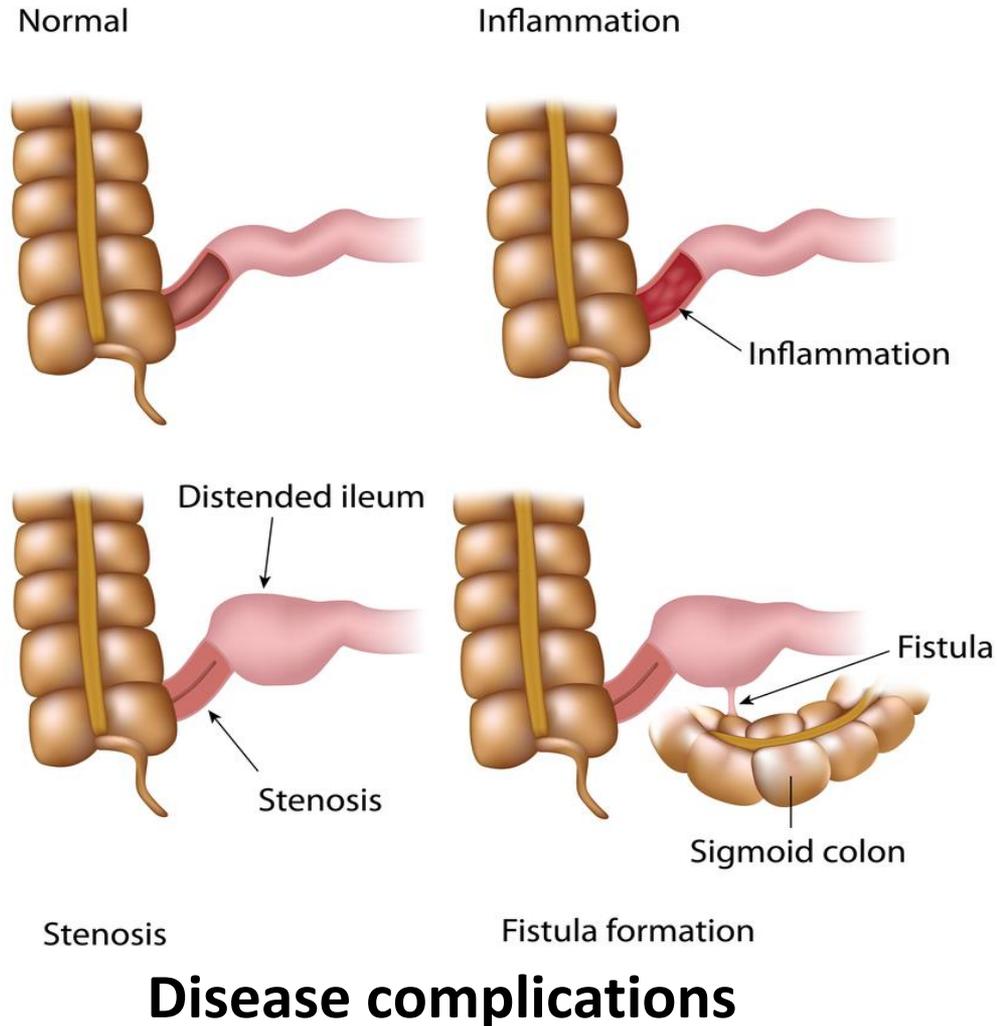
- Quick (less than 20 minutes) and widely available.

- ***Cons***

- With repeated CT scans, radiation exposure over time may be significant. We try to limit repeat CT scans.
- CT does not highlight the small bowel as well as other imaging scans.

# Examples of when a CT scan is useful in Crohn's disease of the small intestine

- **Sudden worsening abdominal pain** that suggests intestinal injury colon (*perforation*) or intestinal blockage (*obstruction*).
- **Fever**s that suggest an abdominal infection (*abscess*) or abnormal connection between two organs (*fistula*)



# CT or MRI Enterography

A helpful tool in managing small intestine Crohn's

## What

- A type of CT scan (computed tomography) and MRI (magnetic resonance imaging) where a special contrast agent is swallowed to give a **sharp outline of the small intestines**.

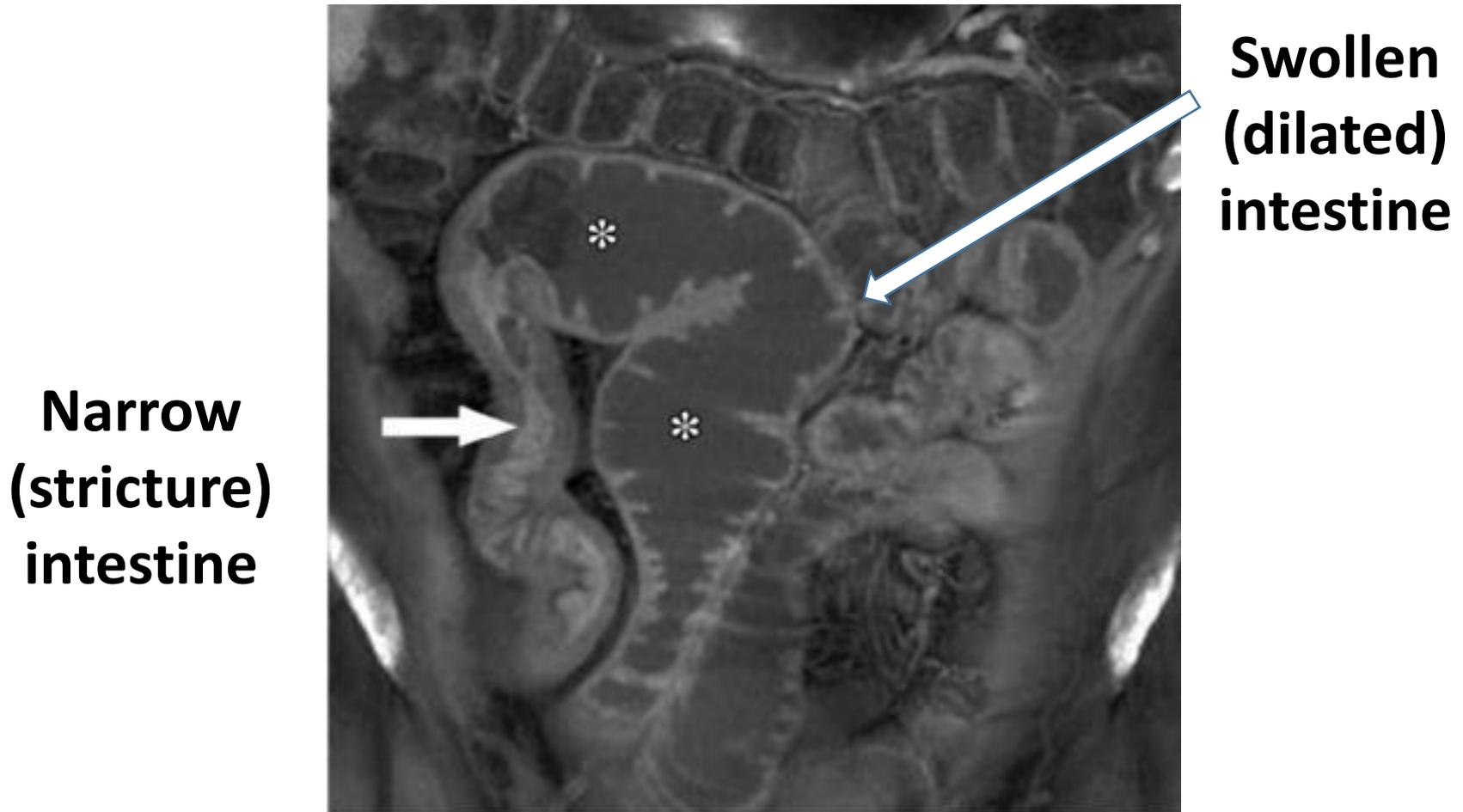
## When

- To check for disease throughout the small intestine when a **new diagnosis** of Crohn's disease is suspected.
- **To monitor small intestine Crohn's disease over time**
  - Approximates length of small intestine affected & severity of disease
  - Can distinguish between inflammation & scar ("fibrosis"), guiding decisions about medication (for inflammation) or surgery (for fibrosis).
- **Pros:** MRI avoids radiation and may be preferable to CT if repeat imaging over time is needed.
- **Cons:** May not pick up mild Crohn's or may over-call disease.

# Putting it Together

- Mary is a 48 year old with Crohn's disease of the small intestine (ileum).
- She injects adalimumab (Humira) once every 2 weeks and has been feeling well for a couple of years on this.
- Over the past few months she's had worsening belly pain after eating. She feels more constipated, like her belly is swollen. The last time this happened, she got nauseated and vomited.
- She sees her gastroenterologist who is worried that Mary might have a blockage and orders imaging.

# CT Enterography findings



# Role of scopes: Here to stay

- **To check disease status** (mild, moderate or severe and the amount of colon affected) **during a flare or before starting a new treatment.**
- **To check response to a new treatment.** Remember the target is to heal the intestine.
- After having ulcerative colitis and Crohn's colitis for 8 or more years, colonoscopy is needed **to monitor the colon for pre-cancer** (dysplasia).

# Summary: Key Points

- Routine testing is important to detect, treat and prevent problems from disease inflammation that can be silent.
- Biomarkers like CRP and calprotectin can provide valuable additional information about disease inflammation over time.
- Testing strategies are individualized and help to guide management. Knowing about your (or your family member's) disease can help you to be part of the decision-making process.