2020 LEAD Capstone Poster Session

BioCol: Population-based Biorepository for Colonoscopy

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Abstract

Background: A leading cause of cancer-related mortality, colorectal cancer is diagnosed in approximately 1 in 20 persons, and adenomas (i.e., premalignant lesions) are present in more than half of adults receiving colonoscopy.

Problem: There are no systematic processes in place to track biospecimens within and across patients or integrate samples with demographic and clinical data from the electronic health record (EHR).

Solution: Build a biorepository that collects tissue (adenoma and normal), saliva, blood, and fecal samples from patients receiving colonoscopy at Parkland Health & Hospital System and UT Southwestern Medical Center.

Expected Result: Opportunity to combine “omic” data with clinically rich EHR data and facilitate collaboration between basic and population science, in gastroenterology and beyond.

The Science

- Colorectal cancer (CRC) develops in a multi-step process, from normal mucosa to adenoma to invasive carcinoma
- A leading cause of cancer-related mortality, CRC is diagnosed in approximately 1 in 20 persons, and adenomas are present in more than half of adults receiving colonoscopy
- Although adenomas are common and easily detected by colonoscopy, most have low risk of progressing to cancer. Only 5% transition from adenoma to invasive carcinoma
- As a result, we know little about which adenomas will persist and progress to invasive carcinoma, and which will regress

The Challenge

- Tumor tissue is available on campus
- More challenging to identify normal tissue or other complementary biospecimens, like blood or saliva
- No systematic processes in place to track samples within and across patients or integrate samples with demographic and clinical data from the electronic health record (EHR)
- A population-based biorepository, rooted in the EHR, will enable studies of clinical outcomes at the disease-, patient-, and population-levels of analysis

Objectives

- Build a biorepository that collects tissue (normal, adenoma), saliva, blood, and fecal samples from patients receiving colonoscopy at Parkland Health & Hospital System and UT Southwestern Medical Center
- Integrate these samples with demographic, epidemiologic, and clinical data from the EHR

Project Plan

Leverage existing clinical infrastructure and an eager, ready-to-engage patient population referred to colonoscopy

- Patients will be recruited from GI clinics after referral to colonoscopy, via weekly EHR queries
- One to two weeks prior to colonoscopy, research coordinator will call patient to explain the biorepository and obtain verbal consent
- Research coordinator will mail fecal and saliva sample collection kits and instructions after obtaining consent and prior to colonoscopy
- Blood and tissue (normal, adenoma) will be collected during colonoscopy procedure

Why colonoscopy?

Patients are already:

1. Scheduled for a procedure that requires in-person visit

2. Reminded via telephone of procedure 1-2 weeks in advance – perfect opportunity to obtain consent

3. Required to do bowel preparation at home – perfect opportunity for stool and saliva collection

4. Planning for procedure that involves biopsy and sedation – perfect opportunity for blood and tissue collection

Proposed Budget

- 1 Research Coordinator (100% FTE, $78,500)
- Data analytics (to develop EHR query, pull clinical data to annotate samples, $50 per hour)
- Oragene® kits for saliva collection ($550 for 25 qty case)
- Stool collection kits ($125 for 500 qty case)
- Postage, printed materials for mailing ($6 per mailing)
- Sample storage ($10 per patient)

Innovation and Significance

Benefits of biorepository expand beyond gastroenterology:

- Opportunity to combine “omics” data with clinically rich data from the electronic health records
- Facilitates collaboration between basic and population science
- Adds valuable and complementary information to existing and ongoing efforts to collect cancer or tumor tissue
- Serves as an example of a population-based biorepository that can be adapted for primary care, another disease site, or within the larger health system

Application of What You Learned at LEAD

- Engage stakeholders
- Create opportunities for shared benefit
- Learn to say “NO” to requests that may delay or compromise your goals
- Understand sources of revenue and resources required to support research