

**PROJECT TITLE:**

Establishing an All Ireland collaboration targeting prevention and early diagnosis of oesophageal cancer through registration of Barrett's Oesophagus and development of a Bioresource

**PRINCIPLE INVESTIGATOR:** Professor JV Reynolds (Head of Surgery, Trinity College Dublin, St. James's Hospital)



ST. JAMES'S  
HOSPITAL



**LOLLIPOP DAY**  
Funding Oesophageal Cancer research in Ireland

## **Academics actively working on this grant**

### **St James's Hospital**

Prof. J Reynolds, Consultant Surgeon and Principle Investigator on this grant  
Prof. D Kelleher, Head of School of Medicine, TCD  
Mr. N Ravi, Surgeon and Senior Lecturer, TCD  
Dr. J O'Sullivan, Scientific Senior Lecturer [Director Barrett's research program]  
Dr. G Pidgeon, Scientific Senior Lecturer

### **Beaumont Hospital**

Mr. P Broe, Consultant Surgeon  
Dr. S Pachett, Consultant Gastroenterologist  
Prof. E. Kay, Consultant Pathologist

### **Mercy University Hospital, Cork**

Dr. M Buckley, Consultant Gastroenterologist  
Mr. C O'Suilleabhain, Surgeon  
Mr. T Tom Murphy, Surgeon  
Mr. M O'Riordain, Surgeon

### **Mater Misericordiae Hospital**

Prof. P MacMathuna, Gastroenterologist  
Dr. Layden, Gastroenterologist

### **St Vincent's University Hospital**

Dr. G Doherty, Gastroenterologist  
Dr. H Mulcahy, Gastroenterologist

## **Staff employed on OCF grant**

**Dr. Ronan Feighery** Barrett's bio-bank and data manager at St James' Hospital

**Marie O'Brien:** St James's Hospital project leader and data manager

**Dr. Jenny Watson:** Beaumont data manger and bio-bank manager

**Evelyn Flanagan:** Mercy/HSE South data manager

**Beata Rebow:** St. Vincent's and Mater data manager (position co funded by DCCR)

## **Overall objective and aims of this grant**

**Overall Objective:** To target oesophageal cancer prevention and early diagnosis through registration of at-risk patients with a diagnosis of Barrett's oesophagus and storing biopsies for research. The initiative will enable improved monitoring, standards, surveillance, education, patient information, and collaborative epidemiological, clinical and scientific research.

### **Specific Aims:**

1. To establish the first Barrett's Registry in the Republic of Ireland with linkage to the existing Northern Ireland Barrett's Register
2. To establish a repository of biopsy and blood material in participating Molecular Medicine Centres with existing bio-banking resources. This will facilitate clinical and

molecular research targeting oesophageal cancer prevention, as well as international collaboration.

### **Collaboration with Dendrite**

Marie O'Brien (Project Leader/Data Manager at St. James's Hospital) has worked closely with Dendrite Clinical Systems on the implementation of the system. She tested and validated 600 questions on the RS2 Test Server and requested Dendrite to make further enhancements to the dataset. She mapped and transferred all existing data from the St. James's Hospital PATS system to the St. James's Hospital Intellect Version. All data transferred was audited and validated. Following Dendrite setting up a link from the Hospital Patient Administration and Histopathology Systems to St. James's Barrett's Registry, the registry went live on St. James's Hospital Intellect Web Version.

Dendrite loaded the dataset onto the National Registry and made the required changes to facilitate the anonymous registry. The National Registry was then tested by Marie O'Brien. The backup procedure was setup by St. James's IT Department and is monitored. All database protocols in place in the Hospital are strictly adhered too for the Barrett's Registry. The Data Manager from Mercy Hospital Cork has received training on data entry and enters data directly into the anonymous National Registry. The dataset from St. James's Hospital has been copied onto Beaumont Hospital's Intellect Web Version on the local server and changes have been made applicable to Beaumont Hospital. The Data Manager has been trained on data entry and patients are being entered onto the local server.

### **Work in progress**

A function to upload data from St. James's and Beaumont Hospitals to the anonymous National Registry is currently been developed. The patient's MRN will be converted to a unique anonymous ID number. All patient details from the two hospitals will be audited before data is uploaded. This function will be done on a regular basis and detailed reports will be run for all of the centers'.

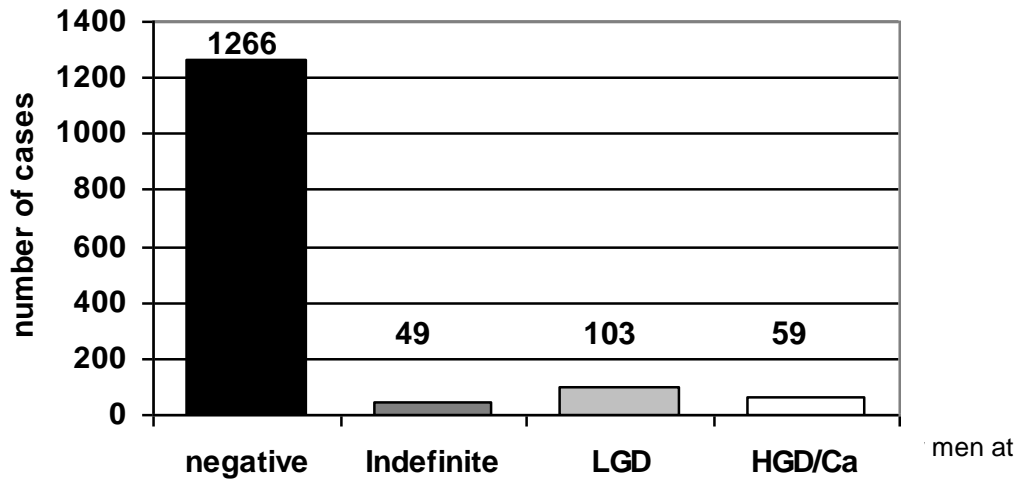
Professor Reynolds and Marie O'Brien are working with Dendrite to develop a new reporting system that will be more beneficial in the management of Barrett's patients. One advantage of these new reports are that they will show how many patients progress to low grade, high grade and intra-mucosal mucosa in the follow up registry. Reports can be generated to ensure all patients are followed up for appropriate treatment such as EMR, HALO etc. A facility to view Endoscopy Images (from Hospitals Adams System) in the initial registry is also been developed. Marie O'Brien and Barry Fanning are working with Fujifilm and Dendrite on downloading Endoscopy Images to SJH Barrett's Register using a possible URL link. A Barrett's email address will be linked to the registry and an email will be generated two months before the patient's proposed OGD appointment. This information can be downloaded into a letter to send to the patient and patient lists can be generated for the Endoscopy Unit/Consultants to ensure no patient is lost to follow up.

### **2.3 Progress report on total Barrett's patient data collection from all sites combined**

In year 1, a total of 949 cases had been collected. The projected numbers for year 2 was a further 500 patients across the sites. To date data on 1477 Barrett's patients has been collected. **The data presented in this report is presented as collated data from all sites.** Figure 1 below shows the breakdown on these patients by Vienna grade.

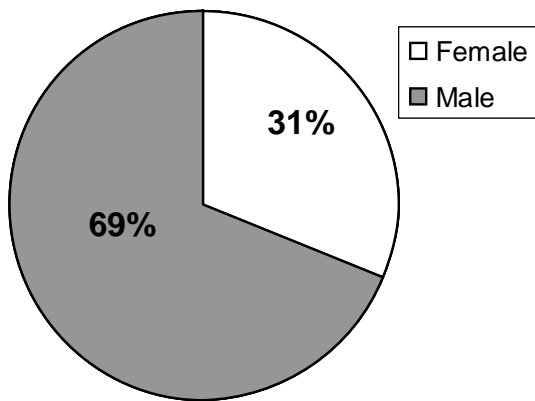
## Vienna Grade

1477 patients

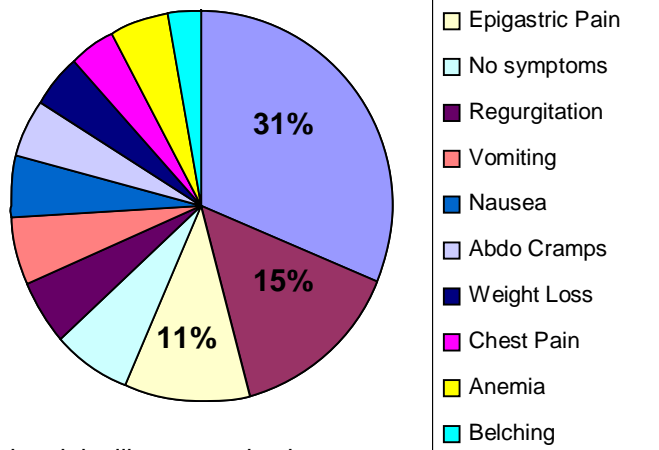


The mean age of diagnosis was 63.9 years.

### Gender



### Symptoms



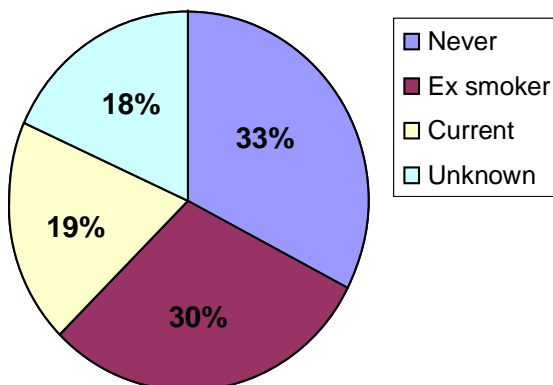
**Mean age of diagnosis, male: 63.9, female: 57.3**

Above on the right illustrates the large range of symptoms documented for the Barrett's patients on the registry. The highest percentage of symptoms falls in the heartburn, dysphagia and epigastric pain groups.

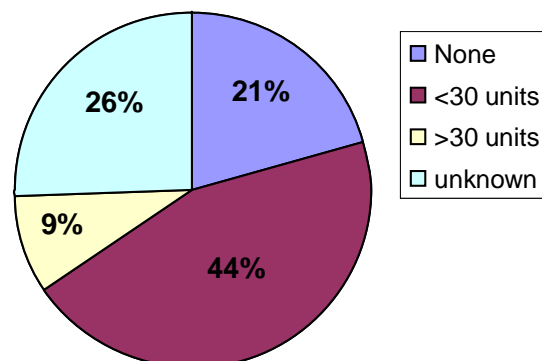
**Smoking History:** As shown graphically below, 33% of patients never smoked, 30% were ex smokers, 19% are current smokers and data was unknown for 18% of cases.

**Alcohol Use:** 21% of patients had not history of alcohol use, 44% consumed <30 units, 9% consumed >30 units and this information were not available for 26% of patients.

### Smoking History



### Alcohol Use

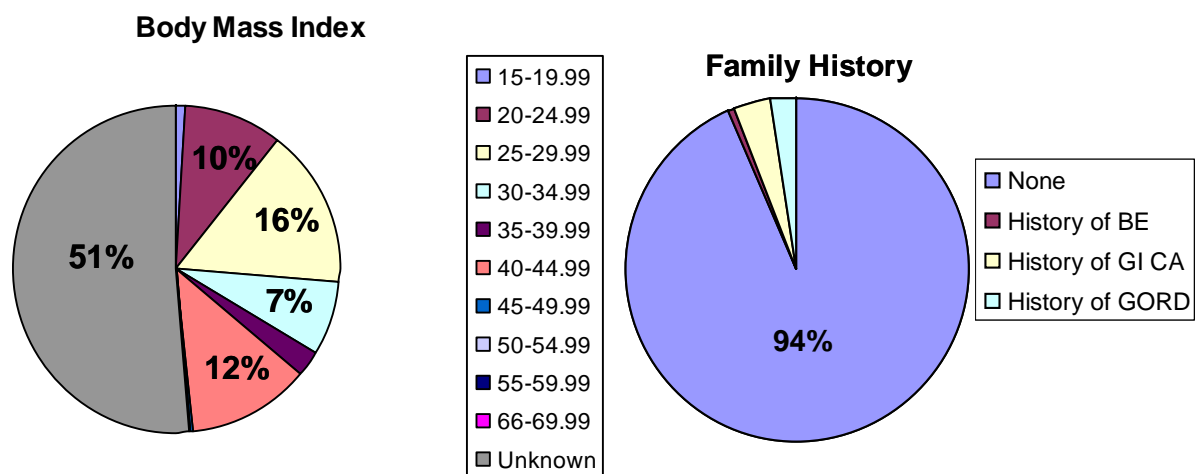


**Body Mass Index:** As shown below, this information was not available for 51% of patients. Prospectively, both BMI and waist circumference is taken at the time as patient consent. Currently, for the patients where BMI values were documented, a large proportion of the patients had BMI's greater than 25.

**Family History:** The majority of patients have no family history of Barrett's, gastrointestinal cancer or history of GORD.

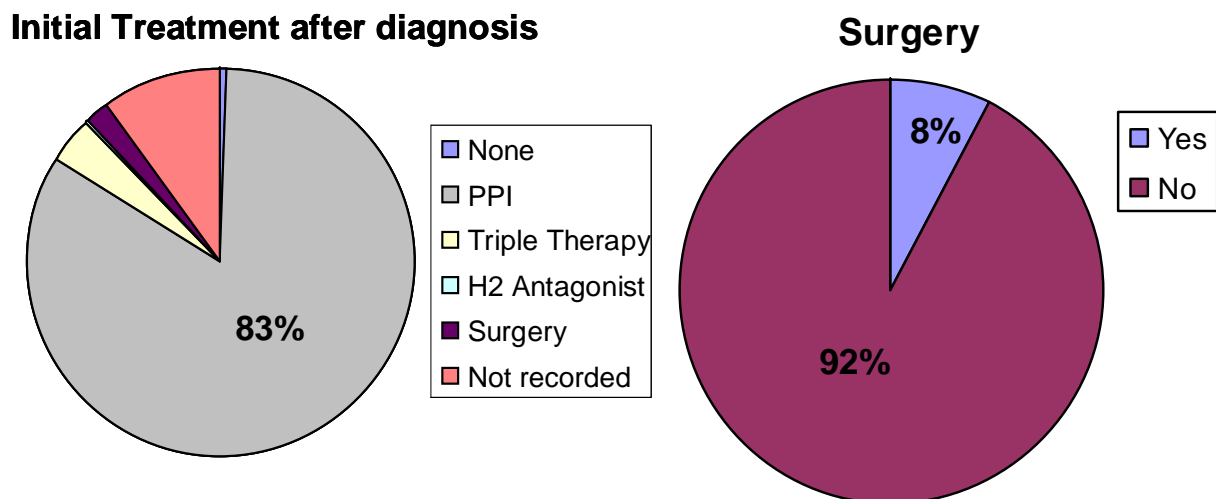
**Hiatus Hernia:** 43% of patients had a hiatus hernia

**Gastritis on OGD:** 73% of patients had confirmed gastritis on OGD



**Initial treatment after diagnosis:** as shown below, a high percentage of Barrett's patients (83%) received PPI treatment.

**Surgery rates:** 8% of patients underwent surgery.



## **Progress report on Barrett's biobanking**

Blood and tissue samples for bio-banking have been collected with informed consent from all patients. Consent has also been sought from patients to use their archive paraffin embedded tissues to also construct tissue microarrays for scientific studies. These tissue microarrays were constructed by Dr. Ronan Feighery in collaboration with our Pathology colleagues.

### **Blood**

To date, 241 blood samples have been collected from Barrett's patients. DNA from this whole blood has been isolated and bio-banked. In addition, serum has been stored in the bio-bank from all patients.

### **Tissue**

In our 1<sup>st</sup> annual report, we documented tissue from 50 Barrett's had been collected. To date, the total tissue collection stands at 201. When tissue biopsies are collected, they are processed differently depending on the study they will be used for. As shown below in the diagram, 84 have been stored in RNA later, 73 were snap frozen and 44 were used for human explant tissue culture work. This blood and tissue bio-bank is fuelling 5 Barrett's translational research projects for 4 Ph.D. students and 1 postdoctoral fellow.

### **Projected Collections for Year 3**

From this month, bio-banking will be active at 4/5 sites listed on this grant. Dr. Ronan Feighery, Dr. Jenny Watson and Ms. Beat Rebow will play an active role in this. With the collaboration described below with the DCCR, research nurses at the sites will be involved. We estimate a minimum of 200 new tissue and blood samples will be bio-banked in year 3. This collection will be instrumental for the Barrett's program of research and to attract funding through grant applications to the Health Research Board, Irish Cancer Society and Science Foundation Ireland to fund research fellows.

### **Interest of the Dublin Clinical Centre for Research (DCCR) in this project**

The DCCR is part of Molecular Medicine Ireland [www.molecularmedicineireland.ie](http://www.molecularmedicineireland.ie) It was formed in response to the need to create a critical mass of excellence in molecular medicine research and education in Ireland and to deploy a clinical research infrastructure to facilitate medicine into better healthcare provision. It is funded under the Higher Education Authority's programme for research in Third level institutions, cycle 4. Its vision is to improve healthcare through the development of diagnostic and therapies from concept to realisation.

In the 1<sup>st</sup> annual report, we documented that the DCCR expressed a strong interest to be involved and help drive this national project. This is now a reality. This year their commitment was made. As we only had funds to support a data manager half time between Vincent's and Mater Hospitals, they co-funded this position to make it a full time post. They have also offered their IT support to set up and manage the systems at both sites. In addition, to allow bio-banking to occur at these two sites, they have guaranteed research nurse help in consenting and in bio-banking the samples.

### **Project Goals for Year3**

- Follow up progression on registry will be complete
- An estimated 600 new Barrett's patients across all sites will be recruited.
- Bio-banking of Barrett's blood and tissue collections will be active across 4 sites.
- At the end of year 3, a total of 2000 patients will be uploaded on the registry and follow up reports and detailed audit reports will be run.
- Publication: documenting the success of the development of the first Barrett's registry in the Republic of Ireland.

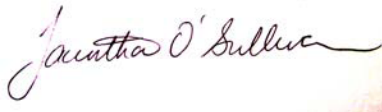
Yours sincerely,



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John V Reynolds  
Director of the Clinical Barrett's National project  
Head of Surgery  
St. James's Hospital

Yours sincerely



Jacintha O'Sullivan Ph.D.  
Director of the Scientific Barrett's program  
Associate Professor,  
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