# Accepted Manuscript


An Innovative Solution to Raise Public Awareness Using a Mobile Colorectal Clinic - The 'Bowel Bus'

N. Naguib, M. Lewis, R. Iredale, R. Pugh, P.N. Haray

PII: S1743-9191(17)30112-7

DOI: 10.1016/j.ijsu.2017.01.107

Reference: IJSU 3529

To appear in: *International Journal of Surgery*

Received Date: 15 October 2016

Revised Date: 5 December 2016

Accepted Date: 29 January 2017

Please cite this article as: Naguib N, Lewis M, Iredale R, Pugh R, Haray P, An Innovative Solution to Raise Public Awareness Using a Mobile Colorectal Clinic - The 'Bowel Bus', *International Journal of Surgery* (2017), doi: 10.1016/j.ijsu.2017.01.107.

**Title:** An Innovative Solution to Raise Public Awareness Using a Mobile Colorectal Clinic - The 'Bowel Bus'

**Authors:** N Naguib[1], M Lewis[1], R Iredale[2,3], R Pugh[2], PN Haray[1,3].

**Institutions:**

1. Prince Charles Hospital, Cwm Taf University Health Board, United Kingdom
2. Department of Cancer Support, Tenovus Cancer Care, United Kingdom
3. University of South Wales, United Kingdom

**Correspondence:**

Nader Naguib,

Prince Charles Hospital, Merthyr Tydfil, Mid Glamorgan, CF47 9DT, United Kingdom.

Phone: 01685 721721 Ext 8212.

Fax: 01685 728649.

Email: nadernaguib71@yahoo.com

**Conflict of interest:** None

**Sources of Funding:** Unfunded

**Word Count:** 1684

**Title:** An Innovative Solution to Raise Public Awareness Using a Mobile Colorectal Clinic - The 'Bowel Bus'

**Abstract (250 words)**

Introduction: Colorectal cancer is the fourth most common cancer in the United Kingdom; however, figures show that the uptake for bowel cancer screening lags behind other cancer screening programmes. Methods: This is a report of a multi-staged development of an outreach colorectal clinical community service provided through a Mobile Unit (a Bowel Bus). The unit delivers a one-stop colorectal clinic that provides a rapid access pathway to members of the public who have concerns about, or symptoms of, bowel cancer. The aims of the project were to increase public awareness about colorectal cancer and to provide an outreach clinic as a supplement to the hospital based colorectal clinic. This service is a result of collaborative efforts between Tenovus Cancer Care (TCC) and the colorectal surgery department of the local NHS Hospital. Results: During one year, the Bowel Bus has provided services to 772 members of the local community. 244 patients were examined by the colorectal nurse specialist including 66 drop-in patients and 135 patients referred by the GPs. The service led to decrease in the waiting list for routine referrals to be seen in the colorectal clinic at the hospital from a mean of 10.5 weeks to 5.9 weeks. A feedback questionnaire from 180 patients, used to audit the quality of the service, has confirmed an overwhelming satisfaction with the service. Conclusion: The Mobile Unit is a novel solution to addressing the ever increasing demand for specialist outpatient services without compromising the quality of care whilst enhancing the patient experience.

**Key Words:**

Colorectal, Mobile Unit, public awareness, bowel cancer, patient out-reach

## Introduction

Colorectal cancer is the fourth most common cancer in the United Kingdom with 41,500 new patients diagnosed annually, equivalent to a new patient diagnosed every 15 minutes. It is the second common cause of cancer mortality with about 16,000 patients dying per annum. The 5-year survival rate for patients diagnosed at early stage exceeds 97%[1]. Unfortunately, only less than 13% of cases are diagnosed early and public participation in the screening programs remains poor worldwide, but also in the United Kingdom, particularly in Wales[2].

Many different studies have shown that the public awareness of the signs of cancer is generally poor[3, 4] notwithstanding the social taboos around discussing the symptoms[5]. Bowel cancer screening programmes may reduce the risk of dying from bowel cancer by 16%[6]; however, figures show that the uptake for bowel cancer screening lags behind other cancer screening programmes including breast and cervical cancer[7]. Uptake of screening in Wales in some areas is less than 50%. Consistent efforts are required to ensure that the appropriate public health messages are conveyed, to improve outcomes[8].

This paper describes a pilot project exploring the feasibility and acceptability of developing a Rapid Access Colorectal Clinic in a community setting. It is a partnership project between Tenovus Cancer Care (TCC), Wales' largest cancer charity, with the Department of Colorectal Surgery at a local District General Hospital. The project is based on utilizing a Mobile Unit as a space in the community to deliver a colorectal clinic providing a rapid access pathway to members of the public who have concerns about, or symptoms of, bowel cancer. In addition, it also provides a 'drop in' service for asymptomatic members of the public and functions as a public health resource in raising awareness of cancer in general as well as bowel cancer in particular.

## Methods

This is a report of a multi-staged development of an outreach colorectal clinical community service provided through a Mobile Unit. This service is delivered in a catchment which includes some of the areas with the highest health deprivation and lowest socio-economic status in the UK[9]. TCC provides a Mobile Cancer Support Unit, which has become known locally as the 'Bowel Bus' and financial support towards a specialist colorectal nurse as well as some administrative costs and publicising the project in the local press. The clinical service on the Mobile Unit is provided mainly by an experienced colorectal nurse specialist who has been trained to a high standard (Band 8A) and has been independently examining patients referred to the colorectal service for the past 10 years in the regular hospital

colorectal clinic[10]. The specialist nurse is supported by a consultant colorectal surgeon. In addition, access to psychosocial support services, such as welfare benefits advice and counselling, are also available on board as necessary.

The project was developed in a staged fashion with detailed prospective data collection and patient satisfaction surveys. As the Mobile Unit weighs 30 tonnes and takes up 16 car parking places, suitable sites were selected based on pedestrian traffic loads around the local town centre/ shopping area for the Bowel Bus to be located every Monday for the whole day. The first stage of the project started in March 2015 for 6 months providing easy access to members of the public to drop in. A variety of services were available including leaflets on colorectal conditions, advice about the national bowel cancer screening programme and the, opportunity to seek general advice regarding cancer. In addition, a clinical consultation including a general, abdominal and rectal examination (with rigid sigmoidoscopy) was also available. There were also volunteers from TCC who were positioned in the vicinity, to offer some advice to those who were not inclined to enter the Bus. See Figure 1.

Figure 1: The bowel bus

Based on the success of stage 1, the second stage was implemented as a pilot in September 2015, to evaluate the feasibility and acceptability of translating this concept to a symptomatic group of patients rather than asymptomatic members of the public. Patients who had been referred to the local hospital's Colorectal Clinic were contacted by telephone and given a choice of being seen either at the usual outpatient clinic or at the Bowel Bus. It was made clear that if they chose the Bowel Bus, they would be seen by one of the regular clinicians who run the hospital colorectal clinic. Great care was taken not to offer an earlier appointment or incentivize the Bus in any way. Patient referrals were triaged according to a set of criteria to assess if they were safe to be seen off site. Following the success of the pilot, the third stage was implemented from October 2015, providing a regular Rapid Access Colorectal Clinic in the community through the Bowel Bus, complementing the hospital based outpatient service. Statistical analysis was performed using Fisher's Exact Test, Likert's scale and Student's t-test.

**Results**

During the first 12 months of the service the Mobile Unit was made available in the community on 41 Mondays (March 2015 to February 2016), and has provided the following services to the local community:

- Conversations about the signs and symptoms of bowel cancer with 772 members of the public
- A total of 373 visitors coming on board the Bowel Bus
- Ten people referred to the Bowel Screening Programme
- When indicated, these patients were referred for investigations such as CT colonography, Barium enema, endoscopy, MRI, endo-anal ultrasound, blood tests, and faecal calprotectin etc. A total of 244 individuals examined by the specialist nurse of which:
    - 66 asymptomatic drop-ins
    - 135 new patients referred to rapid access colorectal service by GPs
    - 43 follow up patients from either of the above 2 groups
    - Male: Female = 93: 108, median age 55 years (range 19 to 86 years)
    - 141 endoscopic procedures were performed including 89 flexible sigmoidoscopy, 41 colonoscopy and 11 gastroscopy. 68 CT colonography and 65 Barium enema were also performed.
    - In 148 (60.7%) patients, there was no pathology reported up on investigations.
    - 57 (23.4%) patients had diverticular disease, one of them had diverticular stricture
    - 23 (9.4%) patients had colorectal polyps and 3 patients had malignant tumours; in the caecum, lower rectum and lung.

The waiting time for routine referrals to the colorectal unit in the DGH has dropped from a mean of 10.5 weeks at the beginning of the symptomatic patient service at the Mobile Unit to 5.9 weeks after six months, $p < 0.0001$.

The data from the Health Board information services show that the rate of patients who do not attend (DNA) in the outpatients clinics is significantly lower in the mobile (6.6%) unit when compared to the hospital out-patients clinics (11.4%), $p= 0.035$.

Questionnaires to evaluate the experience were completed by 180 individuals who received examination (patients/ asymptomatic drop-ins), since September 2015. The results showed a

very positive feedback as reflected by the high average scores on the 5-points Likert's scale (Mean = 4.8, 4.6, 4.7 and 4.7 for questions 1-4, respectively). 98% of the respondents rated the concept of the Bowel Bus as Good/ Very Good and confirmed that they would be willing to use the facility themselves again (92%) and would recommend to a friend (96%). Most users found the facility to be attractive due to ease of access, car parking and the majority found the experience preferable to attending a clinic at the hospital. Detailed results are summarised in Figure 2.

Figure 2: User Experience Questionnaire

**Discussion**

In 2006 the NHS Bowel Cancer Screening Programme for England was introduced, following the evaluation of a pilot screening programme, which had begun in 2000[11]. Screening using faecal occult blood test, followed by colonoscopic assessment for patients testing positive was implemented and has been predicted to reduce bowel cancer mortality by up to 16%[6].

Unfortunately, the uptake for bowel cancer screening program remains low in the United Kingdom being 58% and 52.6% in England and Wales, respectively. These figures lag behind those for breast cancer screening (72%) and cervical cancer screening (79%)[7]. There is also a 24% difference between the lowest and highest areas of uptake across England and Wales (42-66%)[12]. The uptake in the local community served by this project was 54%. The reasons for the low uptake remain unclear in the literature with the available evidence suggesting a number of approaches to potentially increase the bowel cancer awareness among the general public and improve the uptake for the bowel screening programme. These include GP endorsement letters, enhanced patients leaflets, telephone advice, face to face health promotion and advertising[13, 14]. Replacing the Haemoccult® test requiring 3 samples with the new Faecal Immunochemical Test which requires one stool sample using a simple and cleaner sampling technique with an easy-return postal package has been demonstrated to result in an increase in participation rates in a large pilot study[15].

Over the past 20 years, both the number of patients and the complexity of cases requiring treatment in the community have increased[16]. Demographic changes, technological advances, the changing pattern of disease as well as of patient expectations have driven this growth. At the same time, there has been no commensurate shift of resources and expertise to the community. Consultants have become increasingly specialised in their knowledge and have continued to remain predominantly based in the secondary care sector. This has left many

patients struggling to get appropriate care in the community with ever increasing waiting times for hospital appointments with potential delays in diagnosis and/or treatment[17]. The report in 2013 by the Future Hospital Commission to the Royal College of Physicians called for radical changes to the way hospitals are structured with multi-professional clinical teams bridging hospital and community settings to provide a co-ordinated service, closer to patients' homes. This approach is very different to the traditional model for shifting specialist care to the community, which predominantly consisted of consultant-run outreach clinics based in a community hospital or GP practice[18, 19].

The concept of Mobile Units providing clinical services is not new[20]. These models of healthcare delivery have been used for decades in the developing world to compensate for lack of infrastructure in rural areas. More recently, reports from mobile cancer screening coaches were launched in 2013 by Cancer Care Ontario in Canada providing screening for breast, cervical and colorectal cancers.[21]. There are also recent examples in the United Kingdom with promising and satisfactory results[22]. The Bowel Bus project reported here has demonstrated that it is possible to achieve these objectives even for conditions with socially embarrassing symptoms by utilising the expertise of a highly trained colorectal nurse specialist even in areas with significant deprivation. We are currently exploring the possibility of extending this service to include immediate flexible sigmoidoscopy for suitable patients, to bring the mobile outreach service in line with our hospital-based one stop colorectal clinic.

**Conflict of Interest: None**

**References:**

1- http://www.bowelcanceruk.org.uk/information-resources/bowel-cancer-facts-figures/

September 2015.

2- Power E, Miles A, Von WC, Robb K, Wardle J: Uptake of colorectal cancer screening: system, provider and individual factors and strategies to improve participation. Future Oncol 2009, 5:1371-1388.

3- McCaffery K, Wardle J, Waller J: Knowledge, attitudes, and behavioural intentions in relation to the early detection of colorectal cancer in the United Kingdom. Prev Med 2003, 36:525-535.

4- Wardle J, Waller J, Brunswick N, Jarvis MJ: Awareness of risk factors for cancer among British adults. Public Health 2001, 115:173-174.

5- C Jagot. The importance of improving awareness of colorectal cancer. Nursing Times 2004; 100:14, 30–31.

6- Hewitson P, Glasziou P, Irwig L, Towler B, Irwig W. Screening for colorectal cancer using the faecal occult blood test, Hemoccult 2007. The Cochrane Library (1) doi:10.1002/14651858.CD001216.pub2.

7- http://www.cancerresearchuk.org/cancer-info/cancerstats/local-cancer-statistics/

8- E Power, A Simon, D Juszczyk, S Hiom, J Wardle. Assessing awareness of colorectal cancer symptoms: Measure development and results from a population survey in the UK. BMC Cancer 2011, 11:366.

9- 12- PR Shah, ME Foster, PN Haray. Correlation between deprivation levels and outcome from colorectal cancer. Colorectal disease, 2007; 9(s1)

10- M Lewis, A Joseph, P Shah, N Kulkarni, A Lipp, PN Haray. Designing a colorectal nurse-led clinic: The Merthyr protocol. Gastrointestinal Nursing 2006; 4(4):28-33

11- Alexander F and Weller D (2003). Evaluation of the UK Colorectal Screening pilot: Final report. Edinburgh.

12- Hansard, 1 Apr 2014 Col.562W. http://www.publications.parliament.uk/pa/cm201314/cmhansrd/cm140401/text/140401w0001.htm#1404026000191

13- http://www.cancerresearchuk.org/health-professional/early-diagnosis-activities/bowel-screening-projects-and-resources/evidence-on-increasing-bowel-screening-uptake

14- S Graham. Increasing uptake of bowel cancer screening. BMJ quality improvement *Report* 2014;3: doi:10.1136/bmjquality.u205661.w2324

15- http://www.cruk.cam.ac.uk/news/latest-news/major-increase-bowel-cancer-screening-uptake-shown-new-screening-test

16- Smith J, Holder H, Edwards E, Maybin J, Parker H, Rosen R, Walsh N (2013). Securing the future of general practice: new models of primary care. London: Nuffield Trust and The King's Fund.

17- Goodwin N, Curry N, Naylor C, Ross S, Duldig W (2010). 'Managing people with long-term conditions'. Background paper for the Inquiry into the Quality of General Practice in England. London: The King's Fund

18- Future Hospital Commission (2013). 'Future hospital: caring for medical patients.' A report from the Future Hospital Commission to the Royal College of Physicians,

19- http://www.kingsfund.org.uk/sites/files/kf/field/field_publication_file/specialists-in-out-of-hospital-settings-kingsfund-oct14.pdf

20- Iredale R, Hilgart J, Hayward J (2011) Patient perceptions of a mobile cancer support unit in South Wales. European Journal of Cancer Care, Vol. 20, No.4, pp 555-560.

21- https://www.cancercare.on.ca/pcs/screening/mobile_screening/

22- http://www.greater-manchester-cats.nhs.uk/

GIG CYMRU NHS WALES
Bwrdd Iechyd Prifysgol Cwm Taf University Health Board

## Mobile Bowel Unit

| | Very Poor | Poor | Average | Good | Very Good |
|---|---|---|---|---|---|
| How would you rate the concept of the Mobile Bowel Unit? | 0 | 0 | 0 | 20 | 156 |
| How did you find having an examination on the Mobile Bowel unit? | 0 | 0 | 5 | 28 | 141 |
| How was the communication regarding your appointment on the Mobile Bowel unit? | 0 | 0 | 4 | 27 | 141 |
| How was your overall experience on the Mobile Bowel Unit? | 0 | 0 | 2 | 27 | 147 |

| | Yes | No |
|---|---|---|
| Would you recommend the use of this facility? | 173 | 0 |
| Would you use this facility again? | 166 | 0 |

| What did you like about the Mobile Bowel Unit Service today? | | |
|---|---|---|
| Closer to home | 88 | Other:<br>"closer to work – quicker appointment"<br>"Very quick and friendly service"<br>"Very good speedy facility"<br>"Less crowded"<br>"Appears more up to date than hospital" |
| Easier to park and access | 98 | |
| Same service as hospital | 73 | |
| Prefer it to hospital | 87 | |

# International Journal of Surgery Author Disclosure Form

The following additional information is required for submission. Please note that failure to respond to these questions/statements will mean your submission will be returned. If you have nothing to declare in any of these categories then this should be stated.

**Please state any conflicts of interest**

None

**Please state any sources of funding for your research**

None

**Please state whether Ethical Approval was given, by whom and the relevant Judgement's reference number**

Not required

**Research Registration Unique Identifying Number (UIN)**

Please enter the name of the registry and the unique identifying number of the study. You can register your research at http://www.researchregistry.com to obtain your UIN if you have not already registered your study. This is mandatory for human studies only.

N/A

**Author contribution**

Please specify the contribution of each author to the paper, e.g. study design, data collections, data analysis, writing. Others, who have contributed in other ways should be listed as contributors.

1- N Naguib: data analysis and writing
2- M Lewis: data collection and data analysis
3- R Iredale: study design and writing
4- R Pugh: study design
5- PN Haray: study design and writing

**Guarantor**

The Guarantor is the one or more people who accept full responsibility for the work and/or the conduct of the study, had access to the data, and controlled the decision to publish.

P N Haray and N Naguib