

# The Second Infectious Intestinal Diseases Study (IID2)

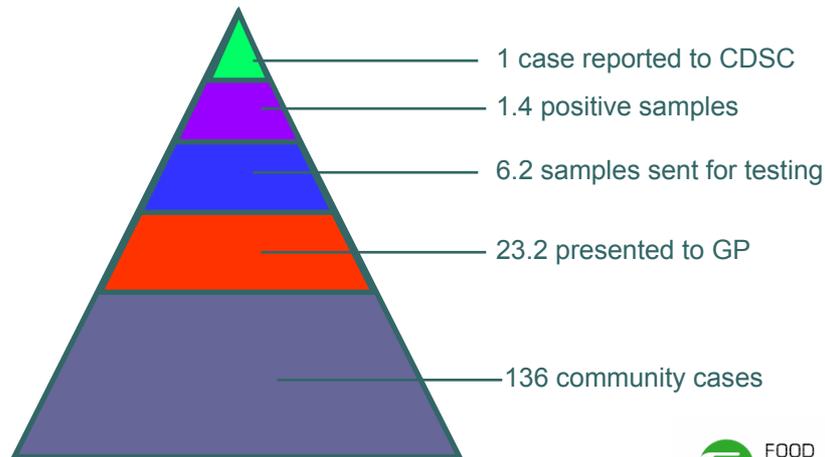


## Infectious Intestinal Disease

- Estimates produced from data gathered between August 1993 and January 1996 in the Study of Infectious Intestinal Diseases in England (IID1)
  - Approx. 9 million cases annually
    - 1 in 5 of population
  - Cost = £0.75 billion
    - 36% to NHS
    - 55% to employers
    - 8% directly to the case



## IID1 reporting pyramid



## Why a new IID study?

- Original IID study data now >10 years old
- Need to understand any changes that have taken place in reporting pyramids
  - to rates of GP consultation
  - requests for laboratory examinations
  - reporting to national surveillance
  - impact of structural changes in national surveillance
    - NHS Direct (NHS 24)
    - Changes in structure of CDSC and surveillance data flows
    - Creation of HPA

## Main Questions

- Policy relevance
  - Support Food Standards Agency's aim to further reduce foodborne disease
- Main research questions
  - Has the incidence of infectious intestinal disease (IID) in the community fallen since the mid-1990s?
  - Have the relationships in the reporting pyramid changed?

## Introduction

- Funded – Food Standards Agency
  - Budget = £4.1 million
  - Duration April 2006 – May 2010
  - Pilot study September – December 2007
  - Main study April 2008 – July 2009
  - Results expected February 2009



## Who is involved in carrying out the study?

- Medical Research Council General Practice Research Framework (MRC GPRF)
- Universities of Manchester, East Anglia, Nottingham, Wales College of Medicine
- London School of Hygiene and Tropical Medicine
- Health Protection Agency (HPA)
- Health Protection Scotland
- NHSD/NHS24

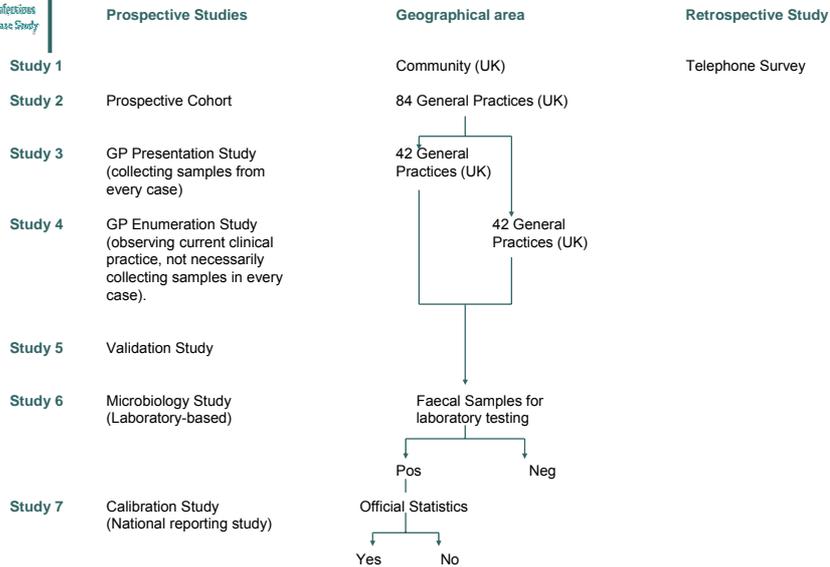


## Project overview

- Main aims are to:-
  - estimate prospectively the burden and causes of IID in the population and presenting to General Practitioners in the UK
    - compare these results with national surveillance data
  - estimate the burden of self-reported IID in each UK nation via a telephone survey
    - compare these results with the prospective estimate.



## IID2 Study Structure



## Case definition

- Persons with
  - loose stools or clinically significant vomiting
  - lasting less than two weeks, in the absence of a known non-infectious cause
  - preceded by a symptom-free period of three weeks.

## Microbiology

- Organisms/toxins that stool specimens will be analysed for:
  - *C. jejuni/coli*, *E. coli* O157, *L. monocytogenes*, *Salmonella* spp., *Shigella* spp. and *Yersinia* spp.
  - *C. perfringens* enterotoxin, *C. difficile* toxins A & B, *Cryptosporidium* and *Giardia*,
  - *Cyclospora*
  - Astrovirus, Norovirus, Sapovirus
  - children < 5 yrs: Rotavirus and Adenovirus 40, 41
- Using conventional and “future-proof” techniques (molecular methods) for detection and identification of pathogens

## Prospective Studies

- Population Cohort study:
  - estimate the incidence & aetiology of IID in community
  - weekly reporting (cards/emails) +/- stool samples over 1 yr
- GP Presentation study:
  - estimate the incidence & aetiology of all IID in primary care
- GP Enumeration study (normal practice):
  - estimate the proportion of samples routinely sent for lab examination from cases of IID presenting to GPs
- Calibration Study (national reporting study):
  - estimate the completeness of reporting of laboratory-confirmed cases to the four national surveillance centres
- Recruitment via MRC GPRF:
  - 8,400 patients (approx 84 practices)

## Sample size (cohort study)

To estimate a single UK-wide pyramid, detecting a 20% decrease in incidence of severe disease (80% power, 95% precision)

Country	Person-years of follow-up required	Practices
England	7,000	70
Wales	400	4
Scotland	700	7
N. Ireland	300	3
Total	8,400	84

## The Telephone Survey

- Estimate reported incidence of IID in the population based on recall
  - separate estimates will be made for recall over one week and one month for the UK as a whole and for each of the UK nations.
  - telephone survey will take place over the same time frame as the prospective study.
  - results from the telephone survey will be compared with call rates to NHSD



## Sample size (telephone survey)

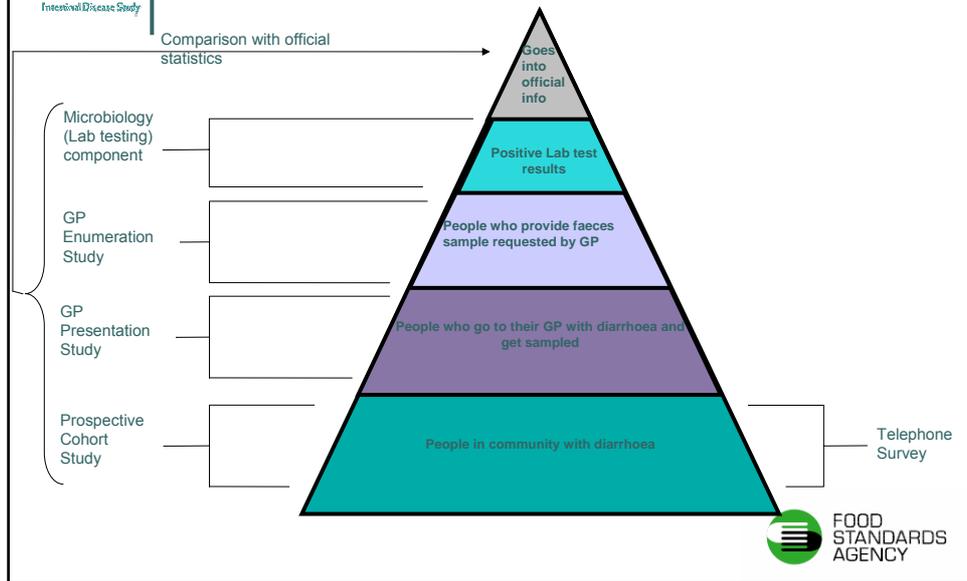
- Based on expected frequency of IID  $\approx$  10% (+/- 1%)
- For each of the four countries
  - 3,600 completed surveys (total 14,400)
    - 3,000 people will be asked about diarrhoea in the previous week
    - 600 about diarrhoea in the previous month.



## How will we use the data?

- Improved understanding of Foodborne disease in the UK
- New estimate of the incidence of IID
- Re-calibration of the reporting pyramids

## Reporting pyramid



## Pilot Study

### ● Aims

- to assess the feasibility and efficiency of the recruitment process, participant compliance and efficiency of the data entry procedure in the telephone, cohort and GP presentation studies
- to evaluate the IT search strategy for identifying IID in practices undertaking the GP Presentation Study and in the remaining GP practices, where clinical practice was simply observed.

## Pilot Study

- **Aims**
  - To determine the number of viable stool samples available in sufficient quantity for testing, the frequency of organism using microbiological examination (including enrichment and PCR) and the time taken for data transfer between laboratories and GP.

## Telephone survey

- **887 participants from 2251 valid residential numbers**
  - Completion rate of 39.5%
  - 5,608 telephone calls actually made
- **Issues identified**
  - inefficiency of 3 calls to valid numbers
  - next birthday sampling method
  - questions on socioeconomic classifications
- **Disease rates (prevalence)**
  - one week recall – 7.23%
  - 4 week recall – 11.76%



## Cohort Study

- 2,213 individuals invited
  - 327 +ve respondents (14.8%)
  - 169 joined cohort
    - Practices stopped recruiting at 30 participants
    - much lower recruitment rate than in IID1 (35%)
    - similar to other current MRC cohort studies
      - e.g. fluwatch – 10.8%, UK Biobank – 8%
    - cohort was under-represented in the 5-24 age group, and males ages 24-34
    - cohort was over-represented in the >55 age group
  - compliance for follow-up is high once the study is joined
    - true for both email and postcard methods



## GP presentation & Validation Study (3 practices)

- GP presentation
  - 16/23 individuals invited responded positively and 13 participated
  - Recruitment rate of 0.6 cases/practice/week
- Validation study
  - 65 eligible IID consultations identified
    - 3 consultations/practice/week
- Issues
  - lack of recruitment of eligible patients by GPs
    - 20% in IID2 vs 64% in IID1

## Enumeration study ( 3 practices)

- 126 IID related consultations identified
  - 4.7 consultations/practice /week
- Discrepancy between practices in the validation and enumeration studies
  - may relate to practice size, age/sex distribution of registered patients, the use of different GP clinical management software systems and inconsistent coding of IID on these systems
- Need average of 5 patients/week in 25 practices to meet sample size requirements

## Microbiology

- 25 individuals with IID symptoms
  - 12 cohort, 13 GP presentation
- 27 specimens provided
  - 24 compliant
- HPA Manchester (conventional methods)
  - Pathogen detected in 4 (16.6%)
    - *C. perfringens* enterotoxin in 3 samples
    - *Giardia* spp. in 1 sample
- HPA CFI (molecular methods)
  - Pathogen detected in 11 (45.8%)
    - Norovirus in 7 samples
    - Sapovirus, Astrovirus and *C. jejuni* in 1 sample each
    - Mixed rotavirus and *Giardia* spp. in 1 sample

## Outcomes

- Need to improve recruitment to cohort
  - double size of initial mailshot
  - improve design of leaflet, flyers, invitation letters
- Need to improve recruitment to GP presentation study
  - professionally designed materials for surgeries to remind GPs and alert patients
  - GI template installed on practice computers
  - monthly validation searches and feedback on recruitment rates

## Conclusions

- Preparation phase
  - key to ensuring that major changes required after pilot were minimised
- Pilot study
  - Absolutely essential in a study of this size
  - identified key areas of concern
  - allowed strategies for addressing these to be in place by commencement of the main study
- Main study
  - Commenced April 2008
  - Currently in recruitment phase
  - Recruitment will be reviewed in Aug/Sept 2008

[www.iid2.org.uk](http://www.iid2.org.uk)

