Preface

Acute gastroenteritis can be caused by a wide variety of organisms including viruses, bacteria and protozoa. It is widely seen as a common but preventable illness that is often managed at home. A recent All-Ireland study reported that each year there were 0.6 cases per person of acute gastroenteritis in the community (1), which is in similar range, if slightly lower than that found in similar studies in the United States and the UK. Viruses (in Ireland as elsewhere) are the most common cause of acute infectious gastroenteritis, (Norovirus being, by far, the most frequent). The commonest bacterial causes in Ireland are *Campylobacter* (1568 laboratory-reported cases in 2003) and *Salmonella* (486 laboratory reported cases in 2003).

By comparison, 86 cases of verotoxigenic *E. coli* (VTEC) O157 were reported in the Ireland in 2003. At first glance it may appear that the burden of illness due to *E. coli* O157 and other VTEC is of minor significance. There are, however, a number of features of VTEC infection that make diagnosis, treatment and care of patients particularly important and which present specific challenges to those responsible for prevention of infection and with implementation of public health control measures.

In contrast to other bacterial gastroenteric pathogens such as *Campylobacter* and *Salmonella*, the proportion of VTEC patients experiencing severe symptoms is high. As many as 70% of cases experience bloody diarrhoea (2) while 2-10% of cases progress to haemolytic uraemic syndrome (HUS) (3), (4).

Supportive measures remain the mainstay of treatment; the development of peritoneal dialysis has markedly improved the outcome of the most serious complication, HUS.

It is estimated that 61 deaths occur annually in the US among an estimated 73,500 VTEC O157 cases (0.08%) (5). This compares with 0.04% for Salmonella and 0.005% for Campylobacter. Moreover, although VTEC accounted for only 0.1% of cases of indigenous foodborne disease in England and Wales in 2000, it resulted in 5% of the fatal cases (6). Two deaths due to VTEC O157 have occurred in Ireland, both children; one in 1997 and one in 2000.

The number of organisms of *E. coli* O157 believed to be sufficient to cause infection is very low, possibly as few as 10 organisms. This compares with approximately 500 organisms in the case of campylobacter and in excess of 100,000 in the case of salmonella (7). This has implications for the ease of transmission of VTEC infection both from person-to-person and by food, water and environmental means.

Although this organism was first recognized as a foodborne pathogen (the “burger bug”), it is now known that it can be transmitted from its natural animal reservoir to humans through food, water, and the environment and by direct contact with the animals. Person to person spread has also been documented.

Non-O157 VTEC are increasingly being recognised as agents of enterohaemorrhagic disease. Unlike the UK, there have been outbreaks of VTEC O26 in Ireland, which has implications for diagnosis of VTEC infections.

Roberts et al. (8) assessed the economic impact of an outbreak of *Escherichia coli* O157:H7 that occurred in 1994 in Scotland. It was the largest reported milk-borne outbreak on record in the United Kingdom (UK) (9). The average cost per HUS case was STG£62,353, a TTP case cost STG£21,422, and non-HUS and non-TTP cases cost STG£1,030. When combined with the costs of investigating and controlling the outbreak (STG£171,848), the projected total cost over 30 years was STG£11.9 million, or STG£168,032 per case, demonstrating the considerable economic burden of VTEC cases.

Thus, while infection with verotoxigenic *E. coli* is rare in comparison with other causes of gastroenteric illness, the substantial morbidity and mortality, the absence of a specific treatment and the variety of transmission routes make it a pathogen of high public health significance (10).

I. The Purpose of this Report

In 1999, the FSAI published a report entitled 'The prevention of *E. coli* O157:H7 infection: a shared responsibility' (11). The focus of that report was on the roles and responsibilities of food producers and processors in preventing VTEC infection.

This report focuses on the work of clinicians, and laboratory, infection control and public health professionals, providing guidance and recommendations for the diagnosis, treatment and care of those suffering from VTEC infection, and advice for the prevention of transmission of infection.

This committee had the following terms of reference

1. To develop national guidelines to assist clinicians, specialists in public health medicine, microbiologists, environmental health professionals and infection control professionals in:
    a. Clinical and microbiological investigation of human cases of suspected VTEC;
    b. The management of sporadic and outbreak related human cases of VTEC and
    c. Prevention and control of VTEC in humans.

2. To review current surveillance of human VTEC in Ireland and to make recommendations for its improvement.

3. To develop national infection control guidelines with respect to cases of VTEC.

The purpose of this report is to provide agreed guidance on the rapid identification of single cases and outbreaks of human VTEC illness and on methods to promptly control spread of VTEC. It is also intended that the information contained in this report be used

to prevent cases of VTEC infection through the application of the expert advice and best practice hygiene measures.