



Short report

Factors affecting prevention and control of viral gastroenteritis outbreaks in care homes

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SUMMARY

We assess the effect of key care quality indicators on viral gastroenteritis outbreaks and control in care homes using mandatory inspection data collected by a non-departmental public body. Outbreak occurrence was associated with care home size but not with overall quality or individual environmental standards. Care home size, hygiene and infection control standard scores were inversely associated with attack rate in residents, whereas delayed reporting to the local public health agency was associated with higher attack rates.

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Introduction

Infectious gastroenteritis presents a significant public health and infection control problem, with norovirus responsible for the majority of adult cases worldwide.¹ Transmission is primarily person to person via the faecal–oral route and environmental contamination plays an important role in transmission in semi-enclosed settings such as hospital wards and care homes. Infection tends to affect elderly and immunosuppressed individuals disproportionately and spreads rapidly in semi-enclosed settings; as a result, outbreaks in care homes for the elderly are relatively common.² Understanding factors which affect both the occurrence of outbreaks of viral gastroenteritis and their outcomes is important to better prevent and control them. This study aimed to assess the influence of aspects of quality of care measured against nationally agreed standards on outbreak prevention and control.

Methods

Study population

There are 438 registered care homes in Cheshire and Merseyside, North West England, UK with a total capacity for more than 19,000 residents.

Detection and management of outbreaks

An outbreak of viral gastroenteritis is defined as two or more individuals with diarrhoea and/or vomiting within a care home, where symptoms are of a suspected infectious nature (not associated with prescribed drugs or treatments and not associated with an underlying medical condition or illness), and where no bacterial agent is identified.

Notification of significant outbreaks of infectious gastroenteritis in care homes to the local public health agency is a requirement as recommended by the regulatory authority.³ Public health professionals liaise with community infection control nurses who manage outbreaks by visiting the affected homes, providing specialist infection control advice and arranging for the timely testing of appropriate clinical samples.

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During outbreaks of gastroenteritis, faecal samples (vomit swabs are also acceptable for virology) from a maximum of six symptomatic patients are tested.⁴ In addition to routine faecal bacteriology, norovirus reverse-transcription polymerase chain reaction (PCR) is used to screen clinical samples; this is the preferred method due to the superior sensitivity of this technique. Following nationally agreed standard operating procedures, norovirus PCR testing is only carried out on unformed faecal specimens.⁴ Testing for rotavirus or adenovirus is not routinely undertaken for outbreaks in the elderly.

National guidelines are used to inform the management of outbreaks of viral gastroenteritis in care homes in the UK.⁵ The local public health agency records information on outbreaks in a central database, including date reported, date of onset of symptoms, total number of residents and staff affected, and date the outbreak is declared finished.

Quality of care inspections

UK care homes are subject to mandatory inspection by a non-departmental public body and are assessed against a set of minimum standards defined by the Department of Health.⁶ A database of care home inspections with scores against each individual standard is maintained by this public body, as well as an overall quality score for the care home.

The study

Factors affecting outbreak prevention and control in care homes in Cheshire and Merseyside were assessed by combining mandatory inspection data for 2008, using the overall rating and environmental and staffing standards closely linked to infection control (e.g. Hygiene or Infection Control), with the public health agency database of outbreaks in care homes during 2009 (Table I).

Multivariate regression analysis was used to model factors associated with outbreak occurrence, and the influence of these on the attack rate in residents in care homes with outbreaks of viral gastroenteritis.

In affected care homes the attack rate in residents and the time delay in reporting outbreaks to the local public health agency were calculated. Attack rates were calculated using the total number of cases reported divided by the total number of residents in the care home. Delay in reporting was calculated as the difference in days between the onset of clinical symptoms and the date the outbreak was first reported to public health.

We compared total capacity and the score in the different standards in homes with and without reported outbreaks, and estimated the relative risk (RR) and confidence interval (CI) associated with each using Poisson regression. We did the same comparing homes with one outbreak and those with two or more. In homes with outbreaks, Poisson regression was used to model the effects that various factors have on management of outbreaks using attack rate as the outcome measure. All analysis was conducted using STATA 9 (STATA Corp., College Station, TX, USA).

Results

In 2009 there were 438 registered care homes in Cheshire and Merseyside, with a total capacity for 19,067 residents

Table I

Summary of quality inspection standards related to infection control for the care homes in the counties of Cheshire and Merseyside, North West England

Standard/description ^a	Rating	Number	Proportion
Overall quality rating	0 stars: poor	7	1.46%
	1 star: adequate	56	11.64%
	2 stars: good	282	58.63%
	3 stars: excellent	130	27.03%
	Not rated	6	1.25%
Premises (standard 19):	1	5	1.04%
The location and layout of the home is suitable for its stated purpose;	2	76	15.80%
it is accessible, safe and well maintained;	3	324	67.36%
meets service users' individual and collective needs in a comfortable and homely way and has been designed with reference to relevant guidance.	4	76	15.80%
Washing (standard 21):	1	5	1.04%
Toilet, washing and bathing facilities are provided to meet the needs of service users.	2	76	15.80%
	3	320	66.53%
	4	14	2.91%
	NA	66	13.72%
Hygiene and Infection Control (standard 26):	1	3	0.62%
The premises are kept clean, hygienic and free from offensive odours throughout and systems are in place to control the spread of infection, in accordance with relevant legislation and published professional guidance.	2	37	7.69%
	3	371	77.13%
	4	70	14.55%
	NA		
Training (standard 30):	1	8	1.66%
The registered person ensures that there is a staff training and development programme which meets National Training Organisation workforce training targets and ensures staff fulfil the aims of the home and meet the changing needs of service users.	2	106	22.04%
	3	301	62.58%
	4	66	13.72%

NA, not applicable.

^a Source: Department of Health. *Care homes for older people: national minimum standards and the care home regulations 2001*. 3rd ed. Norwich: Stationery Office; 2003.

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