Effect of exclusion policy on the control of outbreaks of suspected viral gastroenteritis: Analysis of outbreak investigations in care homes

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Background: Norovirus is an important cause of gastroenteritis outbreaks in care homes. Differences exist in the recommended duration of exclusion for affected staff during an outbreak.

Methods: We conducted a retrospective analysis of outbreak reports in 2006 and 2007 managed by health protection staff in 2 counties with differing exclusion policies, one advising exclusion of affected staff and isolation of residents for 72 hours and the other for 48 hours after the resolution of symptoms. We compared attack rates and average numbers of cases in residents and staff, adjusting for type of care home and staffing rate.

Results: A total of 96 outbreaks were managed, 63 with a 72-hour exclusion policy and 33 with a 48-hour exclusion policy. The longer exclusion policy resulted in lower mean number of cases among staff (6.5 vs 9.6; $P = .044$) and a lower overall attack rate (32.6% vs 35.1%; $P = .05$). No differences in the mean number of cases or the attack rate among residents were seen.

Conclusion: This brief study suggests that a longer exclusion policy reduces the number of cases among staff affected with viral gastroenteritis, possibly resulting in less staff absences. This could have potential benefits, particularly when resources are limited.

Key Words: Norovirus; outbreak control; exclusion policy; health care; infection control.

Norovirus (NoV) is an important cause of infectious gastroenteritis worldwide. It is readily transmitted from person to person by the fecal–oral route and via environmental contamination.[1] Foodborne outbreaks also are common, associated mainly with shellfish, frozen berries, and salads.[2-7] Because of the lack of long-lasting immunity in those affected and the small infective dose required, an outbreak can involve larger numbers of people.[8,9]

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Viral shedding normally peaks between 24 and 72 hours,[10] although virus can be detected in feces for up to 2 weeks postinfection.[11] The impact of viral shedding beyond 72 hours in otherwise asymptomatic individuals is not clear; thus, most infection control guidelines recommend exclusion of food handlers and staff for a period of 48 hours after the resolution of symptoms, in line with many bacteria-caused gastrointestinal illnesses. Some guidelines recommend a longer exclusion period of up to 72 hours.[12,13] To date, no comparative study of the 2 different exclusion periods has been published.

In 2005, the Norfolk team of the Norfolk, Suffolk and Cambridgeshire Health Protection Unit (HPU) changed their policy for the duration of exclusion of staff affected with viral gastroenteritis from 48 hours to 72 hours. The decision to change to a longer exclusion policy was based on the evidence of a prolonged viral shedding and a shift toward a longer exclusion period in the United States. This decision was made in consultation with all of the Environmental Health Departments in Norfolk, which normally enforce infection control measures. However, the Suffolk team of the same unit maintained the 48-hour exclusion after resolution of symptoms, in line with national guidelines.[14] We

conducted an analysis of outbreaks in care homes in the UK counties of Norfolk and Suffolk to assess the effect of the 2 different exclusion policies by the HPU on outbreak management and outcomes in 2 very similar counties.

METHODS

Two health protection doctors and 3 nurses manage health protection incidents and outbreaks in Norfolk, whereas 2 health protection doctors and 2 nurses cover Suffolk. Norfolk has a larger population, with 825,900 people (23.6% over age 65 years), whereas Suffolk has only 696,100 people (21.6% of the total population over age 65 years).[15]

Care homes are residential, with both short-term and long-term residents, providing accommodation, meals, and personal care (eg, help with washing and eating).[16] Care homes with nursing care (or nursing homes) are the same as those without nursing care but have registered nurses who can provide care for more complex health needs. Suffolk has a total of 142 care homes, of which 40 are nursing homes, and Norfolk has 207 care homes, 49 of which are nursing homes.[16]

We conducted an evaluation of the outbreaks managed with a policy of 72-hour exclusion of affected staff and isolation of affected residents as the intervention group and managed with a 48-hour policy as the control group as part of an audit of the management of gastroenteritis outbreaks in care homes. Apart from the different exclusion policies, outbreaks in Norfolk and Suffolk were managed in the same way, in line with national guidelines that, although written for hospital care settings, also are applicable and widely used for community-based care settings (Table 1).[14]

We reviewed case notes of outbreaks of suspected or confirmed viral gastroenteritis in care homes in both counties reported to the HPU between January 1, 2006 and December 31, 2007. Outbreaks were excluded if a bacterial or parasitic cause was identified, because we were interested only in suspected viral gastroenteritis.

Agreed-upon standard operating procedures for laboratory investigation of gastroenteritis outbreaks and sporadic cases exist in the UK.[17,18] From each outbreak, fecal samples from a maximum of 6 symptomatic patients are tested. NoV polymerase chain reaction is the preferred assay for screening. All specimens from a negative outbreak and 1 specimen from a positive outbreak are sent to the reference laboratory for further testing or virus characterization. Only unformed stools are tested for viruses, meaning that some outbreaks are not investigated if symptoms resolve quickly and insufficient liquid stool samples are available. Rotavirus or adenovirus are not routinely tested for in outbreaks in elderly person.

Table 1. Summary of control measures recommended by Chadwick et al[14]

- Isolate or cohort symptomatic residents.
- Wear gloves and apron for contact with affected patients and change these between patients.
- Wash hands with soap and water after contact with an affected patient.
- Exclude affected staff from duties until symptom-free for 48 hours.
- Close of the facilities to new admissions.
- Limit visits and advise visitors on handwashing.
- Promptly clean body fluid spillages.
- Increase the frequency of routine cleaning.
- Use 0.1% (1000 ppm) hypochlorite to disinfect hard surfaces and clean soft furnishings with either steam or detergent and hot water.

We also excluded outbreaks in warden-controlled flats or houses, because these settings are similar to private homes, in which residents are more independent and normally care for themselves, with some use of communal areas. Moreover, these settings are managed differently from ordinary care homes.

Case notes were reviewed by 2 researchers. For each outbreak, information was collected on the care home characteristics, number of residents and staff, cases among residents and staff before and after intervention, and dates of onset of the first case and when the outbreak was first reported to the HPU.

An outbreak was considered closed when no new cases had been reported for 1 week (ie, date of the last reported case plus 7 days). The period of time between the date of onset of the first case and the closing date was considered the total duration of an outbreak (ie, date of onset to date of closure of an outbreak). The duration of intervention was taken as the time from the date when the outbreak was first reported to the HPU until the closure of the outbreak (ie, date first reported to date of closure), The delay in reporting outbreaks to the HPU was measured as the date of onset of the first case to the date first reported.

Attack rates were estimated from the information given to the HPU. The attack rate before intervention was calculated as cases reported to the HPU on or before the date of first reporting over the number of exposed care home population (ie, residents and staff). The attack rate after the intervention was initiated was calculated as cases reported after the outbreak was reported to the HPU over the number of susceptible persons (ie, total population minus those already affected).

Analysis

The characteristics of care homes (eg, type of home, number of residents and staff) and outbreaks (eg, cases reported) before any intervention were compared