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# '24-hour' Report as an Effective Monitoring and Communication Tool in Infection Prevention and Control in Nursing Homes

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## Abstract

Twenty-four hour reports are filled out by nurses daily to monitor nursing home (NH) residents and document any changes in residents' status. Semi-structured interviews conducted with infection preventionists from 12 Southeast Michigan NHs showed that while 24-hour reports were used, they were not standardized for infection prevention activities. Our results indicate they can be an effective communication tool and potentially aid in early recognition of infections and outbreaks.

## Introduction

The role of an infection prevention and control program within a nursing home (NH) is constantly expanding.[1] Infection preventionists (IPs) manage these programs and are an essential part of an effective program,[2] although an interdisciplinary collaborative approach is also critical for the program to be successful. This includes regular communication between frontline healthcare personnel, administration, and physician/medical directors on issues such as antibiotic usage, indwelling devices and transmission-based precautions, in addition to other general resident care information.[3,4,5]

The use of a 24-hour report to report a change in resident condition is nearly universal in NHs. This report is filled out daily by the nurse at the end of each shift and includes a wide range of information. Despite its widespread application, the information in the 24-hour report is not standardized, and its role in communications surrounding infection prevention issues has not been studied. Therefore, we performed a qualitative content and thematic

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analysis of interviews with the IPs of 12 Southeast Michigan NHs to explore its potential beneficial uses, including its role in infection prevention and control.

## Methods

Twelve NHs in Southeast Michigan were enrolled in a prospective randomized controlled trial with a targeted infection prevention intervention focusing on prevalence and incidence rates of antibiotic-resistant bacteria and infections in residents with indwelling devices.[6] The study was approved by the University of Michigan and the Ann Arbor VA Health System Institutional Review Boards. At the start of this study (2010) and at its conclusion (2013), a semi-structured interview, designed to follow the SHEA/APIC guideline for infection prevention and control in long-term care facilities,[7] was conducted (Authors: LM, SM, BL) with the IP at each facility. Each interview was audio-recorded and transcribed for qualitative analysis.

Two questions related to the 24-hour report were asked: 1) “Do you have a 24-hour report?” and 2) “How does this report help in your infection prevention activities?” Although these were the only questions related to a 24-hour report, the topic was frequently mentioned by the IPs when discussing questions regarding outbreaks, antibiotic monitoring, and other topics.

We then conducted a summative content analysis.[8] Keywords were chosen to reflect potential uses of the 24-hour reports in infection prevention and control. Keywords quantified were: admission, admits, antibiotic, change, communicate, communication, condition, discharge, falls, fever, infection, isolation, monitor, outbreak, precaution, status, surveillance, symptom, and treatment. Each keyword was searched in the condensed transcripts and their presence quantified. Several “themes” were chosen based on the potential uses for the 24-hour report, including: 1) presence of a 24-hour report, 2) identifying residents on transmission-based precautions, 3) identifying new infections by status change, 4) identifying residents on antibiotics, 5) monitoring antibiotic response, 6) reviewing report in morning meetings, and 7) device care and issues. Thematic analysis was completed by two independent analyzers. Initial agreement was found for 88% of coding variables between the two analyzers. A second round of coding followed by a discussion of any discrepancies was completed until consensus was reached. Subsequently, 24-hour reports were obtained from five facilities in order to compare their format and information.

## Results

Eight of the 12 facilities were for-profit, 2 not-for-profit, and 2 were government-owned, with an overall mean quality star rating of 3 (range: 1-5). The average number of beds ranged from 83 to 230 [mean (SD): 137 (41.2) in 2010 and 134 (42.9) in 2013]. Seven of the 12 facilities changed IPs during the three-year study period. In addition to their IP duties, 82% held other jobs at the facilities such as wound care nurse or staff in-service coordinator. The majority of IPs reported having full decision-making authority, as well as the ability to institute infection control measures. On average, IPs spent 17.5 and 20.4 hours a week on infection prevention and control (2010 and 2013 respectively, Table 1).

All NHs reported using a 24-hour report as a communication tool. Content analysis of the interviews yielded four keywords with at least five mentions. The most mentioned keyword was antibiotics (*n*=24, 18; 2010 and 2013 interviews, respectively), followed by symptom (*n*=15, 12), infection (*n*=8, 9), and change (*n*=5, 7). All other keywords were used less than five times during each interview year. There was relatively close agreement and consistent rank order of keywords between the 2010 and 2103 interviews regardless of different time points and turnover of IPs. The most prominent theme was the use of 24-hour reports to identify new infections by monitoring a change in resident status (100% of facilities, Table 2). Most facilities used this report to identify residents on antibiotics (75%). Only 33% mentioned using 24-hour reports to identify residents on transmission-based precautions. There was no reference to using the report to identify the presence of a device or its care.

## Discussion

All 12 NHs used 24-hour reports and they can be considered as a key component of their infection prevention and control programs. The reports are generally filled out by the nurses at the end of each shift, reviewed by the IPs, and discussed during morning meetings with other staff including director of nursing, unit managers, and other administrators, demonstrating its potential as an excellent tool to enhance communications surrounding infection prevention. With this tool, IPs can track residents with presumed infection who are on antibiotics, which is an essential element of an infection prevention program.

While our 12 NHs use 24-hour reports, their content varies considerably. A more standardized report with certain elements of infection control could be established that would allow each facility to customize it to their specific needs, especially, in an environment where turnover in infection preventionists is pervasive [in our study, 7 of the 12 NH had turnover in the IP role in 3 years]. These reports could then be utilized to document the presence of multi-drug resistant organisms, symptoms guiding antibiotic prescribing, and guidance on transmission based precautions. Documentation of duration and indication of antibiotic use and presence of indwelling devices could also be included to identify inappropriate antibiotics and device use. Our study was limited by small sample size. Further research and quality improvement programs are needed to address the efficacy of 24-hour reports in enhancing infection prevention and control.

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## Highlights

- 24-hour reports are common in nursing homes, but information and format varies
- IPs often use 24-reports for monitoring signs & symptoms of infection, antibiotic use
- Report standardization could enhance communication surrounding infection prevention efforts

## Table 1

Description of Infection Preventionist(IP) Duties

| Theme | 2010 | 2013 |
|---|---|---|
| Responders identifying themselves as IP, *n*(%) | 12 (100) | 11 (92)* |
| Responders with multiple jobs at facility(outside of IP), *n*(%) | 9 (75) | 9 (82) |
| Responders with a written job description, *n*(%) | 10 (83) | 10 (83) |
| Responders with full decision making authority, *n*(%) | 8 (67) | 9 (82) |
| Responders with ability to institute infection control measures, *n*(%) | 9 (75) | 10 (91) |
| Hours per week spent on infection prevention and control, mean (SD) | 17.5 (10) | 20.4 (9.0) |

*One facility in 2013 was in between IPs so the director of nursing with infection prevention responsibility was interviewed.

**Table 2**

Thematic analysis for use of a 24-hour report in infection prevention and control activities in NHs

| Theme | 2010 (*n*=12) | 2013 (*n*=12) | Examples of Use |
|---|---|---|---|
| Presence of 24-hour report, *n*(%) | 12 (100) | 12 (100) | |
| Identify new infections by change in status, *n*(%) | 10 (83) | 9 (75) | "we meet clinically every morning…and we look through what we call our 24-hour report sheet and we talk about anything that's happened in the last 24 hours and I start looking for anybody that looks like they have some signs and symptoms based on what they tell me, and start the investigation into those things." |
| | | | "it helps me to know who to go to immediately." |
| | | | "Yes. I love that(24-hour) report and the nurses are more aware what they're doing…before 24-hour report they didn't know, they were just giving the antibiotics…We've started a different 24-hour report several years ago and it really helped with the nurses identifying and looking for signs and symptoms." |
| Identify residents on antibiotics, *n*(%) | 8 (67) | 7 (58) | "for an antibiotic situation and infection, they would be charted on every shift and then symptoms would be documented." |
| 24-hour report reviewed in morning meetings, *n*(%) | 4 (33) | 7 (58) | "We go through them in a group setting, with the director of nursing, myself, the MDS(the coordinator), the care plan person, the dietary, social services, environmental." |
| | | | "it helps the nurses with communication to each other and to the CNAs(certified nurses' assistants) as to specifically who was being treated for an infection and it helps them to be monitoring those residents for signs and symptoms or lack of." |
| Monitoring response to antibiotics in 24-hour report, *n*(%) | 4 (33) | 2 (17) | "[monitoring antibiotics] the 24-hour sheet is what cues me in, that's my first." |
| Identify residents on transmission-based precautions, *n*(%) | 1 (8) | 3 (25) | "on the 24 hour report they have who was on antibiotic therapy and who was on isolation." |
| Device presence or care/issues identified, *n*(%) | 0 (0) | 0 (0) | None given. |