Missed Respiratory Therapy Treatments: Underlying Causes and Management Strategies

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ABSTRACT

For patients who suffer from respiratory ailments, a missed treatment may exacerbate an existing condition and contribute to the patient requiring a higher level of care. Respiratory therapy is ordered for reasons including treatment of chronic obstructive pulmonary disease or cystic fibrosis; treatment of an acute illness such as pneumonia or bronchiolitis; or for monitoring after surgery or other procedures. Events submitted to the Pennsylvania Patient Safety Reporting System identified 8,745 missed respiratory treatments reported over a 5-year period; 22.8% of the event reports did not provide a reason. Respiratory therapists in Pennsylvania were surveyed to determine the most common factors contributing to missed respiratory treatments. Survey analysis revealed treatments were missed due to patient unavailability because of other therapies or tests; patient refused treatments; or the respiratory therapist was unavailable because of an emergency situation or increased workload. Strategies to address missed respiratory treatments include coordinating care using the electronic health record and team management, taking time to explain treatments to patients, and using assessment protocols to help define treatment frequency and modality. (Pa Patient Saf Advis 2016 Mar;13[1]:11-17.)

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INTRODUCTION

Respiratory care helps provide relief for patients who have difficulty breathing or cannot breathe on their own.[1-2] Treatments that are not given may adversely affect a patient's respiratory health, safety, and outcome.[3] Treatment delays could reduce the effectiveness of medications and lead to clinical deterioration.[3] Stoller et al. estimate that 3.5% of ordered respiratory treatments are missed.[4] Stacked treatment (e.g., giving treatments to multiple patients concurrently) can interfere with monitoring patients as they receive treatments, which could contribute to an adverse side effect.[3,5]

Missed respiratory treatments have been reported to the Pennsylvania Patient Safety Authority through its Pennsylvania Safety Reporting System (PA-PSRS). Patients in Pennsylvania who have missed ordered inhalation treatments have experienced acute respiratory failure. One patient who did not receive therapy as ordered said he felt like he was jogging all day.*

In their analysis of events reported through PA-PSRS, Authority analysts noted several event types involving workflow breakdowns that resulted in missed respiratory treatments. No reason was provided in almost a quarter of the event reports.

A literature query revealed an apparent scarcity of published research on this topic. Analysts contacted the Pennsylvania Society for Respiratory Care (PSRC), whose members include respiratory therapy administrators and clinicians, and conducted interviews of other respiratory leaders in Pennsylvania to gain perspective. Analysts determined that a survey of Pennsylvania respiratory therapists could offer further insights into the PA-PSRS event reports.

METHODS

Analysts queried the PA-PSRS database to identify (1) missed respiratory treatment and (2) medication dose omission error events that occurred from January 2010 through December 2014. For the medication dose omission error event narrative, an additional filter was applied to identify reports that contained at least one of the following respiratory medications:

- Beta2 adrenergic agonists: albuterol (i.e., Ventolin, Proventil, Accuneb, Proair), levalbuterol (i.e., Xopenex)
- Anticholinergic: ipratropium
- Anticholinergic combination/beta2 adrenergic agonist: ipratropium/albuterol (i.e., Duoneb, Combivent)
- Anticholinergic inhaler: tiotropium (i.e., Spiriva)
- Corticosteroid/beta2 adrenergic agonist long-acting combination inhalers: budesonide/formoterol (i.e., Symbicort), fluticasone/salmeterol (i.e., Advair)

The Authority and PSRC developed a survey to determine the most common factors contributing to missed respiratory treatments, from the perspective of Pennsylvania respiratory therapists. The 11 survey questions, available exclusively online with this article, were based on the PA-PSRS event report analysis, a literature search, and conversations with hospital-based respiratory managers. Two themes in the PA-PSRS event reports are not included in the survey results: the "Other" category and no identifiable reason. The survey questions also referenced a 3.5% benchmark for missed respiratory treatments based on the study published by Stoller et al.[4]

* The details of the PA-PSRS event narratives in this article have been modified to preserve confidentiality. None of these event narratives came from facilities interviewed for this article.

The PSRC distributed the survey to 6,976 member e-mail addresses on November 18, 2015. The respondents had until November 25, 2015, to answer the questions. Survey questions were not mandatory. Surveys from respondents that answered 60% or more of the nine specific reasons for missed treatments were included. All other survey responses were excluded.

RESULTS

PA-PSRS Event Report Demographics

Analysts identified 8,745 event reports. Patients age 61 through 90 were affected in the majority of the reported missed respiratory treatments (68.0%, n = 5,943 of 8,745). See Figure 1.

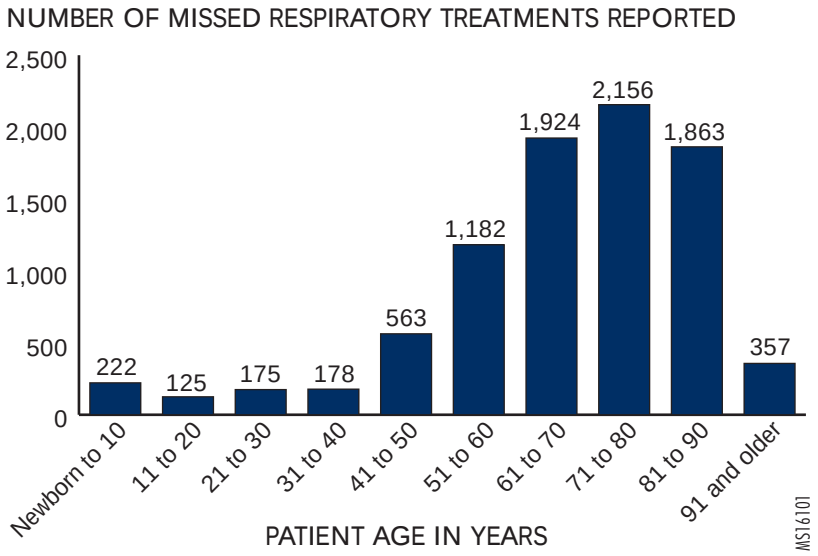
All events occurred in a hospital. Only three event reports were reported as Serious Events, with harm scores E and F; 86.7% (n = 7,579 of 8,745) were reported with a harm score C (i.e., an event reached the patient but did not cause harm and did not require increased monitoring) and 9.7% (n = 850) were reported with a harm score A (i.e., unsafe conditions, circumstances that could cause adverse events). The Pennsylvania Patient Safety Authority Harm Score Taxonomy is available at http://patientsafetyauthority.org/ADVISORIES/AdvisoryLibrary/2015/mar;12(1)/PublishingImages/taxonomy.pdf.

Reasons for Missed Treatments

Analysts grouped events into 11 different themes based on event report narrative descriptions (Figure 2).

The two most frequently reported reasons for missed treatments were related to therapist availability: therapist not available (i.e. variation in demand, staff unavailable; 20.0%, n = 1,754 of 8,745) and therapist called away emergently (18.3%, n = 1,596). The next most frequently reported reason was related to patient availability; patients were not in their rooms and unavailable when the therapist arrived to provide treatment (15.9%, n = 1,389 of 8,745). Close to one quarter of the reports (22.8%; n = 1,998) provided no specific reason for the missed treatment.

Figure 1. Number of Missed Respiratory Treatments Reported to the Pennsylvania Patient Safety Authority, 2010 through 2014, N = 8,745



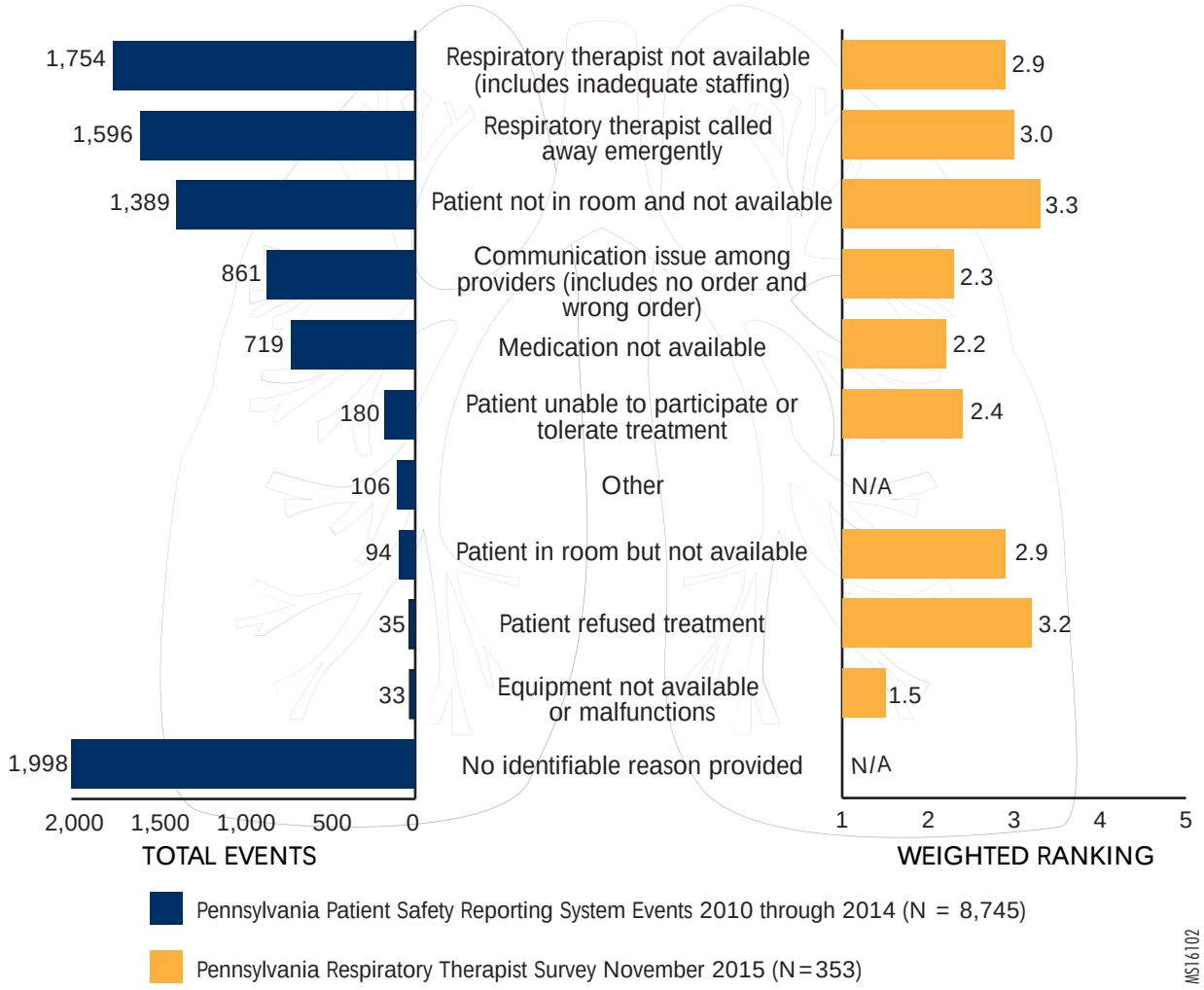
Survey Results

The survey was emailed to 6,976 respiratory therapists who returned 353 surveys that met the inclusion criteria, for a 5.1% response rate (see Table 1 for demographics).

More than half of respondents (52.4%, n = 185 of 353) were unaware of the percentage of missed treatments per month in their facilities, 30.3% (n = 107) indicated 3.5% or fewer respiratory treatments were missed per month, and 17.3% (n = 61) indicated more than 3.5% of respiratory treatments were missed per month. When asked about how often a respiratory therapist missed one or more treatments during a typical shift, 37.7% (n = 133 of 353) of respondents indicated 2 or more times a week. The next most frequent response was once a day (24.1%, n = 85), followed by once a week (19.8%, n = 70), and more than once a day (18.4%, n = 65). Respondents were also asked how often respiratory treatments were "stacked" (see Table 2).

Figure 2 compares event reports from PA-PSRS to survey results. About 43.3% (n = 153) of respondents indicated that an emergency coverage policy was in place, of which 61.4% (n = 94 of 153) indicated that the policy did not limit the number of missed treatments, 22.9% (n = 35) did not know whether the policy limited missed treatments, and 15.7% (n = 24) said their policy did limit missed treatments. When asked if there was a policy for non-respiratory therapists (e.g., registered nurses) to administer treatments, 57.5% (n = 202 of 351) indicated no, 27.9% (n = 98) indicated yes, and 14.5% (n = 51) did not know.

Figure 2. Reasons for Missed Respiratory Treatments



Types of Respiratory Therapy Events

The following are six deidentified examples of events reported to the Authority involving missed respiratory treatments:

Respiratory treatment was not administered by respiratory therapy. Patient short of breath; pulse oximeter is 85% on room air. Patient was placed on non-rebreather. Patient's clinical condition deteriorated and a rapid response was called.

Found patient's [respiratory medicine] in med room, but there was no record of the patient getting [the respiratory medication]. Went to administer medication to patient, but found patient unresponsive. Airway emergency called and patient transferred to medical intensive care unit (ICU).

Patient was ordered bilevel positive airway pressure (BIPAP)/continuous positive airway pressure (CPAP). [Several hours later,] no BIPAP or CPAP was running. Patient became less responsive during the afternoon; rapid response called and patient sent to ICU.

Patient refused four aerosol treatments. I found the patient diaphoretic, tachypneic with very little air movement, and complaining of trouble breathing.

After lunch, patient complained of chest pain and shortness of breath. Patient stated that she did not have

Table 1. Survey Respondent Demographics (N = 353)

CATEGORIZATION	RESPONSES	PERCENTAGE
ROLE		
Staff respiratory therapists	267	75.6%
Respiratory managers/directors	57	16.2%
Other roles (e.g., clinical coordinator, respiratory clinical specialist)	17	4.8%
Respiratory supervisors	12	3.4%
Total	**353**	**100%**
FACILITY TYPE		
Acute care hospital, 300+ beds	103	29.2%
Acute care hospital, 101 to 200 beds	78	22.1%
Acute care hospital, 201 to 300 beds	72	20.4%
Acute care hospital ≤100 beds	42	11.9%
Long-term acute care hospital	20	5.7%
Rehabilitation hospital	17	4.8%
Children's hospital	10	2.8%
Critical access hospital	7	2.0%
Long-term care/group home	4	1.1%
Total	**353**	**100%**
FULL-TIME EQUIVALENT (FTE) EMPLOYEES IN THE RESPIRATORY DEPARTMENT		
40 or more	92	26.1%
31 to 40	29	8.2%
21 to 30	53	15.0%
11 to 20	98	27.8%
1 to 10	78	22.1%
Unknown	3	0.8%
Total	**353**	**100%**

a breathing treatment for the past 24 hours. Patient was given a breathing treatment.

Patient did not receive his inhalation treatments as ordered. He experienced acute respiratory failure, required intubation, and was transferred to the critical care unit. Investigation of the workflow revealed a breakdown in communication causing missed treatments.

DISCUSSION

The role of the respiratory therapist has grown more complex over the years. Respiratory therapists help patients by administering medications during respiratory treatments, communicating with the patient, providing education about treatments and therapies, checking oxygen saturation levels, measuring pulmonary function, monitoring and managing therapy, and providing life support and other critical care in emergencies.[6]

A variety of factors contribute to the complex problem of missed respiratory treatments,[1-2] such as staffing adequacy, variation in demand, promotion of teamwork by organizational culture, patient education, and protocols for benchmarking and assessing patients.[5,7-8]

Missed Treatment Studies

Two studies found in the literature address missed respiratory treatments. Researchers at the Cleveland Clinic Hospital (Cleveland, OH) identified the patient's absence from the room at the time of the therapist's visit as the most common reason, followed by the patient refusing treatment and the patient being unavailable because of ongoing activities or therapy such as physical therapy.[4]

A study at Barnes-Jewish Hospital (St. Louis, MO) looked at missed medication doses, separated into two categories: operational and non-operational. Operational missed doses were missed because of situations that could be controlled by respiratory care, such as limited staffing and lack of medication availability. Non-operational doses that were missed were because of situations beyond the control of respiratory care, such as the patient not being available, patient refusing treatment, or the physician advised not to administer. The study revealed missed-dose rates of 1.1% for operational and 4.5% for non-operational causes.[9]

Common Themes

Common themes that emerged from statewide survey responses did not fully align with analysis of the event reports. Patient refusal of treatment was a prominent theme in the survey but not in event reports (see Figure 2). The following themes are the four most frequently identified reasons for missed respiratory treatments identified in the survey, presented in descending order of frequency.

Table 2. Survey Respondents: Delivery of Stacked Respiratory Treatments (N = 353)

CATEGORIZATION	RESPONSES	PERCENTAGE
Very often (more than once a day)	177	50.1%
Often (once a day)	40	11.3%
Sometimes (2 or more times a week)	48	13.6%
Rarely (once a week)	31	8.9%
Never	57	16.1%
Total	**353**	**100%**

Patient not in room and not available. Respiratory therapists usually travel to the patient's room to administer treatments in a scheduled timeframe. However, the timing of respiratory and other treatments are not always coordinated among caregivers.[10]

"The patient may not be available for a multitude of reasons," said Thomas Lamphere, BS, RRT-ACCS, RPFT, FAARC, executive director of PSRC. "They may be receiving nursing care, their dinner just delivered, or they may be out of the room getting a CT [computed tomography] scan. The therapist may make three separate attempts to administer treatments but is not always successful."[10]

Patient refused treatment. Non-adherence can occur when patients' treatment plans are too complex, they feel well at the time the intervention is offered, they lack understanding about the importance of the treatment, or the treatment may be scheduled at inconvenient times (e.g., in the middle of the night).[11] Patients have the right to refuse treatment and do not always feel there is a need for a respiratory treatment, Lamphere said. "Patients feel they are breathing fine, so they believe they do not need treatment," he said.[10]

A key factor in patient refusal is whether patients were given enough information to make an informed decision, said Lester Cash, MBA, BSM, RRT, Division Director Respiratory Care, Reading Hospital, Reading Health System.[12] "The therapist is an advocate for patients' safety," Cash said. "The therapist has to take the time to explain the consequences of going without treatment and not just walk away."[12]

Respiratory therapist called away emergently. Therapists are faced with many responsibilities during their shifts that are challenged when emergencies occur. The therapist administers treatments during a shift, usually guided by a worksheet or schedule. If a rapid response or a cardiac arrest occurs, the therapist assigned to attend the emergent situation has to deviate from the schedule.[10] "Emergencies happen in healthcare," Lamphere said. 'The best way to handle these situations is for the therapists to work as a team. But sometimes despite good teamwork, you may still not have enough staffing. Supervisors may help. Other therapists can kick in and help. Every hospital differs in how they handle these situations."[10]

Respiratory therapist not available. Respiratory managers, and other professional services, have experienced the problems and frustration of workload increases, according to Cash. Cash uses a statistically valid activity time standard defined by the American Association for Respiratory Care (AARC) for respiratory services to determine staffing levels. The time standards take into account all clinical and support activities that respiratory therapists perform for a procedure, which then determines appropriate staffing, he said. "Using unweighted metrics such as patient days does not give an accurate assessment of staffing needs," he said.[12]

The AARC guidelines also allow time for the therapist to provide direct oversight of care one patient at a time. The AARC states that concurrent therapy or "stacking" treatments leads to reporting erroneously high productivity values and potentially places the patient at risk because therapists cannot directly monitor the patient throughout the treatment.[5,13] However, the survey responses of PSRC members show that this practice is common among respondents, with 75% of them indicating they perform concurrent therapy at least one or more times a week.

The role of the reporter may influence both what is observed and what is understood about the incidence and causes of missed treatments; the role of the reporter is generally not available in PA-PSRS reports. Other studies have reported varying numbers and types of event reports obtained by using different methods of reporting or investigation.[14] Facilities may consider evaluating information from both PA-PSRS reports and the survey to provide a more complete analysis.

Limitations

Several of the PA-PSRS event descriptions could not be categorized because they contained limited information such as "respiratory treatment missed" and did not offer additional insights into why the treatment was missed. The low response rate for the survey may be the result of a one-week completion date with no reminder. Events resulting in harm may not have been reported as an outcome of a missed treatment.

RISK REDUCTION STRATEGIES

The following risk-reduction strategy suggestions address the four most common reasons for missed respiratory treatments identified from the survey results and are based on recommendations found in the literature, AARC best practices, and expert opinions of practicing respiratory therapists.

Appropriateness of Care

Assessment protocols. Use assessment and treatment protocols that allow respiratory therapists to evaluate patients, interact with physicians to minimize unnecessary care, and optimize care ordered by the physician.[8] Initiate or modify a patient's care plan following the set of physician orders, including instructions or interventions that the respiratory therapist can adjust as the patient's medical condition dictates. Protocols are generally written in algorithmic form, are based on scientific evidence, and include guidelines and options at decision points along with clearly stated outcome objectives.[15-17]

Track missed treatments. Track reasons for missed treatments to gain a better understanding of why they occur. Review information with staff and patient safety committee or management team, and post statistics in an easy-to-read area such as a break room.[12]

Benchmarking. Consider participating in the AARC benchmarking website (http://www.aarc.org/resources/tools-software/benchmarking) to exchange information and identify best practices.[18-20] The site allows hospitals to provide accurate data to support administrative staffing decisions, identify and promote best professional practices, and define comparison groups.[18]

Rounding. Include respiratory therapists in patient rounds with physicians, case managers, and nurses to discuss patient care and discharge disposition. Rounding as a team helps to coordinate care in a timely manner.[10,21]

Interdisciplinary Coordination

Check electronic health records (EHRs). If the hospital's EHR has the ability to provide patient locations, identify a computer terminal where respiratory therapists can check patients' location when patients are not in their rooms.[12]

White boards. Use patient whiteboards hung in the patient's room to communicate what and when tests or treatments are scheduled for the patient on a given day. Whiteboards improve teamwork, communication, and patient care.[22]

Interdisciplinary teamwork. Develop other communication systems, such as a communication wheel that can be dialed to indicate when the patient will return to the room.[23]

Patient Education

Explain treatment. Ensure that patients are involved in the treatment plan when possible and understand the rationale behind the medication, the side effects, and dosing frequency.[24]

Listen to the patient. Listen to the patient's perspective and concerns.[24]

Mode of delivery. Consider working with the patient and physician to change the mode of delivery to make it easier and quicker for the patient. For example, the patient may prefer inhaler use rather than a nebulizer treatment.[10]

Productivity and Staffing

Triage. Use a triage system to reassign patient-care needs when therapists are unable to accomplish duties. For example, a respiratory therapist could contact a shift charge therapist to communicate potential missed therapy, which could then be reassigned.[9]

"Surge" position. Consider establishing a "surge" position. This position could be an unassigned therapist who assists with unscheduled activity such as patient emergencies, as well as scheduled therapy during peak administration times.[9]

Partner for the day. Plan for shift partners who can help relieve duties between respiratory therapists when days become busy.[12]

CONCLUSION

PA-PSRS reports and a statewide survey of respiratory therapists provided a foundation to understand why missed respiratory treatments occur. Reasons for missed treatments in the two data sources were similar, with the exception that the survey of respiratory therapists suggested a greater incidence of patient refusal of treatment. Tracking the reasons for missed treatments is the first step to better understand facility-based trends and may guide managers as they consider methods to coordinate care and develop time-driven standards. Further studies of this topic, including the clinical consequence of missed therapies, may help to guide further interventions.

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