

Inadequate follow-up after tracheostomy and intensive care

Frederik Mondrup¹, Karen Skjelsager¹ & Kristian Rørbæk Madsen²

ABSTRACT

INTRODUCTION: When patients are transferred from intensive care units (ICUs) to general wards with a tracheostomy in situ, there is a risk of suboptimal care and increased morbidity. The aim of this study was to elucidate the management of patients with a tracheostomy in situ at discharge from the ICU to the ward.

MATERIAL AND METHODS: We performed an electronic questionnaire survey among heads of unit at registered Danish ICUs.

RESULTS: A total of 34 out of 43 ICUs responded. 56% of the ICUs do not document individual plans for decannulation in the patient's chart. 91% of the ICUs do not perform daily follow-up of tracheotomised patients on the ward. No guidelines for decannulation on the ward were found, and only 6% have a guideline for accidental decannulation. Furthermore, as little as 47% of the ICUs report any formalized education or training of staff nurses in the management of tracheotomised patients.

CONCLUSION: Guidelines relevant to patients discharged from Danish ICUs with a tracheal cannula in situ are scarce; few ICUs employ individualized plans for tracheostomy management and decannulation; there is largely no daily intensivist-led post-ICU follow-up, and formal staff education in tracheostomy management on the ward is scarce. Altogether these factors create a potential for adverse events and increased morbidity in this high-risk, high-cost patient population. Possibly individualized plans for tracheotomised patients as well as intensivist-led follow-up on the ward can improve patient outcome and safety and this should be confirmed in a future study.

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Tracheostomy is a common surgical procedure in critically ill patients. Indications of tracheostomy include long-term mechanical ventilation, airway protection, airway suctioning, and relief of upper airway obstruction [1, 2]. An international survey reported that 10-24% of intensive care patients require tracheostomy for prolonged respiratory support or weaning [3].

Tracheostomy decannulation describes the process of tracheostomy tube removal [2].

Decannulation should be considered once the need for the tube has resolved and when patients demon-

strate a satisfactory respiratory drive, a good cough, and the ability to protect their own airway [4, 5]. However, the decision to decannulate is difficult to make and is guided by the initial indication for tracheostomy. Specific protocols and predictors of successful decannulation have been developed as decisional flowcharts based on clinical expertise [6]. However, there is a lack of solid evidence-based decannulation guidelines [7].

When patients are transferred from intensive care units (ICUs) to general wards with a tracheostomy in situ, there is a risk of suboptimal care and increased morbidity due to insufficient local skills and experience in the management of tracheostomised patients [8]. A recent cohort study showed that the lack of decannulation of conscious, tracheotomised patients before ICU discharge to the general ward was associated with increased mortality. The patients in the non-decannulated group were, however, significantly older, had less cooperation, less pulmonary performance, a larger amount of sputum, and required more frequent suctioning and had reduced swallowing function as compared with the decannulated group [9].

The aim of the present study is to elucidate the management of patients with a tracheostomy in situ at discharge from the ICU to the ward. No published data from Danish hospitals exist on this topic. Our hypothesis

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1) Department of Anaesthesiology and Intensive Care Medicine, Naestved Hospital
2) Department of Anaesthesiology and Intensive Care Medicine, Odense University Hospital

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A tracheostomised patient. Source: iStockphoto.

was that guidelines are few and that patient management as well as staff education differs widely and that this creates a potential for adverse events in this vulnerable patient population.

MATERIAL AND METHODS

Design

We performed an electronic cross-sectional questionnaire survey. The study included all ICUs in Denmark registered at the National Board of Health. Danish law exempts this type of research from ethical approval. The survey was conducted between 22 November and 19 December 2011. A covering letter and a unique link to online questionnaires were sent by email to the physician in charge of the ICU (head of unit) at all ICUs. A reminder email was sent out twice if the centre did not respond before deadline. The questions focused on: decision-making for decannulation, presence of formal guidelines and follow-up protocols, who was in charge of the follow-up team, formal education in management of patients with a tracheostomy, and, finally, the need for national guidelines in this area.

Data analysis

All data from the survey were collected using SurveyXact 2011 (Rambøll Management Consulting) and processed with a spreadsheet application, Excel 2003 (Microsoft Corp.). All statistical analyses were performed with SPSS 15.0 (SPSS Inc, Chicago).

Trial registration: not relevant.

RESULTS

We received a response from 34 out of 43 departments which corresponds to a response rate of 79% with 100% completion. The responses represent the current geographical distribution of ICUs. University departments and provincial hospitals represent 35% (n = 12) and 65% (n = 22), respectively. The data are summarized in **Table 1**.

Discharge of patients with a tracheostomy

Discharge of patients with an uncuffed tracheostomy in situ from the ICU occurred in all departments surveyed in the study, 100% (n = 34). Another 18% (n = 6) of the departments discharged patients with a cuffed cannula in situ. A total of 44% of the respondents claimed to document individual plans for decannulation in the patient's chart, while 56% of the respondents reported the absence of such documented plans. We found that only 9% (n = 3) of the departments follow-up on these patients on a daily basis after their discharge from the ICU, while 91% of the departments stated that no daily follow-up was performed. In all of the three departments with daily follow-up, the assessments were performed by physicians with experience in anaesthesia (data not shown in Table 1).

The presence of decannulation guidelines

We found that 74% (n = 25) of the departments did not have a guideline for decannulation in the ICU and only 26% (n = 9) did. No department confirmed the existence of a guideline for decannulation on the ward, and 76% (n = 25) of the departments answered "No", while 24% (n = 9) indicated "Do not know". We found that only 6% (n = 2) confirmed the existence of a guideline for the management of accidental decannulation, while 76% (n = 26) disproved the existence of such guideline and 18% (n = 6) answered "Do not know". 21% (n = 7) stated that there was a need for a national guideline on decannulation, while 70% (n = 24) believed that there was no such need. Three departments answered "do not know" 9% (n = 3).

Staff involved in the decision on decannulation and the practical management

The decision to decannulate in the ICU is largely taken by a physician with experience in anaesthesia 79% (n = 27). Six departments stated that the decision was made together with the responsible nurse. One department answered that it was solely a nurse decision 3% (n = 1).

The decision to decannulate at the ward was made by an anaesthesiologist in 47% of cases (n = 16), while in 35% (n = 12) of the cases such decision was taken by the ward doctors. The remaining 18% (n = 6) answered combinations of intensivists, ear-nose-throat and pulmonary

TABLE 1

Management of patients with tracheostomy in intensive care and wards. The values are n (%).

	Yes	No	Do not know	Total
Is there a guideline for decannulation of tracheotomised patients in your ICU?	9 (26)	25 (74)	0 (0)	34 (100)
Do you discharge tracheotomised patients with a <i>cuffed</i> cannula to the ward?	6 (18)	28 (82)	0 (0)	34 (100)
Do you discharge tracheotomised patients with an <i>uncuffed</i> cannula to the ward?	34 (100)	0 (0)	0 (0)	34 (100)
Do you document a detailed individual plan for decannulation in the patient's record?	15 (44)	19 (56)	0 (0)	34 (100)
Do you perform daily follow-up on tracheotomised patients on the ward?	3 (9)	31 (91)	0 (0)	34 (100)
Do guidelines for decannulation of tracheotomised patients on the ward exist?	0 (0)	25 (74)	9 (26)	34 (100)
Do you have guidelines for accidental decannulation and reinsertion?	2 (6)	26 (76)	6 (18)	34 (100)
Do nurses on the ward receive formal education and training in management of tracheotomised patients?	10 (29)	16 (47)	8 (24)	34 (100)
Do you find national guidelines for decannulation necessary?	7 (21)	24 (71)	3 (9)	34 (100)

ICU = intensive care unit.

specialists. A total of 32% (n = 11) specified that this procedure was performed by anaesthesiology staff.

The decannulation procedure was performed by the ward doctors and nurses, either alone or in cooperation in 44% (n = 15) of the departments. 32% (n = 11) specified that decannulation was performed by anaesthesiology staff, while a single department (3%) stated that the procedure was done by a specialist in respiratory medicine.

The remaining departments 21% (n = 7) stated that decannulation was performed in cooperation between the ICU and ear-nose-throat department following individual assessment.

DISCUSSION

Our results demonstrate considerable heterogeneity in the management of patients with a tracheostomy in both ICUs and in the wards. Only about one quarter of respondents had a guideline for decannulation at the ICU, while no decannulation guidelines existed at the wards, although all respondents confirmed that patients with a tracheostomy cannula were discharged to wards. One reason for the lack of decannulation guidelines may be that these guidelines would become very comprehensive if all individual and complex disease patterns and reasons for tracheostomy were to be covered. Another reason may be doubt as to the usefulness of such guideline considering the lack of solid evidence for specific decannulation practices. Thus, only 21% of the respondents stated that they perceived a need for national guideline on decannulation. Nevertheless, the documented scarcity of guidelines as well as individualized plans for tracheostomy management and decannulation may indicate a less engaged or even agnostic attitude among physicians towards this vulnerable patient group. Thus, the decannulation decision may only too often be left to the discretion of any clinician who later happens to cross the patient's clinical path without having sufficient tracheostomy knowledge or skills. Inconsistent management and delayed decannulation is therefore a risk in this patient group.

Furthermore, the respondents stated that 44% of the decannulations were conducted by doctors and nurses at the ward and 21% in collaboration with ICU personnel, but only 29% reported any formalized education in the management of patients with a tracheostomy on the ward. This again poses a risk of inconsistent management and delayed decannulation in the patient's post-ICU course. An intensivist-led, post-ICU tracheostomy follow-up team has been associated with earlier discharge from hospital [10]. In our study, however, only 9% of departments reported to perform daily follow-up. Since percutaneous dilatational tracheostomy is now considered the standard method at the ICU [11], the fol-

lowing question arises: If as intensive care doctors we perform a (semi-)surgical procedure in the ICU, are we not obliged to ensure adequate follow-up after the procedure we ourselves performed? And to ensure not only the patient's readiness for the floor, but also the floor's readiness for the patient? [12]. This includes knowledge of basic care of patients with a tracheostomy and acute management of accidental decannulation. We recommend that all patients discharged from ICU with a tracheostomy have a documented plan for tracheostomy management and decannulation, and that intensivist-led post-ICU follow-up is available and performed as necessary. The impact of this intervention should be confirmed in a future study.

Limitations

A retrospective questionnaire design carries the risk of self-selection bias in respect to selection of participants, selection bias and recall bias (i.e. do respondents answer accurately). This stresses the necessity of interpreting the results with caution. The response rate was 79% which is high for this type of online survey. Non-response may be caused by the questionnaire being filtered into the spam filters on mail servers, or simply by unwillingness to participate due to lack of incentive or motivation. Finally, the questionnaire was non-validated, but we conducted an internal pilot-test before its distribution.

CONCLUSION

In patients discharged from Danish ICUs with a tracheal cannula in situ, patient management differs widely. There is a paucity of guidelines; fewer than half of the responding ICUs employ individualized plans for tracheostomy management and decannulation; there is largely no daily intensivist-led post-ICU follow-up, and formal staff education in tracheostomy management on the ward is scarce; altogether, these factors create a potential for adverse events and increased morbidity in this high-risk, high-cost patient population. Individualized plans for tracheostomised patients as well as intensivist-led follow-up on the ward may improve patient outcome and safety and this should be confirmed in a future study.

CORRESPONDENCE: Frederik Mondrup, Anæstesiologisk Afdeling, Næstved Sygehus, 4700 Næstved, Denmark. E-mail: frederik.mondrup@gmail.com

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CONFLICTS OF INTEREST: none

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