



TITLE: Emergency Medical Service “Treat and Release” Protocols: A Review of Clinical and Cost-Effectiveness, Safety, and Guidelines

DATE: 27 May 2014

CONTEXT AND POLICY ISSUES

Treat and Release (T & R) refers to the onsite (at the scene) treatment of a patient by a responding trained paramedics without either transporting that patient to a healthcare facility, such as emergency department (usually referred as “treat and transfer”) or referring that patient to a healthcare facility (usually referred as “treat and refer”).¹⁻⁴ The purpose of T & R is to provide adequate immediate care which does not compromise emergency medical service (EMS) ability to respond to other calls.¹ T & R is also used as a disaster-specific triage with assignment of patients who have a low likelihood of threatening illness to a low level of care in order to preserve resources for patients more likely to have life, limb, or organ threatening illness. T & R does not preclude a patient from independently seeking care.¹ It was reported that conditions where T & R may be applied include minor trauma, minor epistaxis, minor seizures, hypoglycemia, and supraventricular tachycardia (SVT).¹⁻⁴

“T & R” protocols have been considered an approach to relieve emergency department (ED) overcrowding, which exists in virtually every ED across the USA and Canada.⁵⁻⁸ The “T & R” protocols can decrease rates of ED admissions, inpatient admissions, and clinic visits.⁶ It is also believed that T & R could represent a cost savings for any payer agency in the USA.⁵ However, it has been indicated that there may be disadvantages for the implementation of T & R protocols. “T & R” is limited because there is no guarantee that every patient will be provided optimum care with a T & R protocol and there is no guarantee that the patient would not have benefited from transport to a health care facility.¹ The barriers for implementing T & R protocols also include issues related to licensure, liability exposure and reimbursement in USA.⁵

In Canada, T & R has gained more and more attention in some jurisdictions.^{2,3,9} Some jurisdictions are looking to introduce an Emergency Medical Services (EMS) “T & R” protocol that allows the paramedics to treat patients with a specific type of trauma or indication and release them. Currently, EMS personnel are required to transport patients with minor trauma (or are assessed as not requiring hospital services) to hospitals or have the patient sign a release form if the patient does not feel as though they need to go.

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This report aims to review the clinical evidence on the effectiveness, safety, and cost-effectiveness of T & R protocols and the evidence-based clinical practice protocols or guidelines regarding T & R of a patient at the scene by a responding trained paramedics without either transporting that patient to emergency department or referring that patient to another health care facility.

RESEARCH QUESTIONS

1. What is the clinical effectiveness and the safety associated with the use of “Treat and Release” protocols for patients requiring emergency medical services?
2. What is the cost-effectiveness of “Treat and Release” protocols for patients requiring emergency medical services?
3. What are the evidence-based guidelines associated with the use of “Treat and Release” protocols for patients requiring emergency medical services?

KEY FINDINGS

Little evidence on the clinical effectiveness and safety regarding treat and release (T &R) performed by paramedics at the scene was reported. No cost effectiveness was found to compare “T & R” protocols with “treat and transfer” or “treat and refer” protocols. No evidence-based clinical practice guidelines on T & R were identified. Therefore, well-designed studies are needed to determine the clinical effectiveness and safety regarding T & R protocols performed by EMS personnel at the scene.

METHODS

Literature Search Strategy

A limited literature search was conducted on key resources including PubMed, The Cochrane Library (2014, Issue 3), University of York Centre for Reviews and Dissemination (CRD) databases, Canadian and major international health technology agencies, as well as a focused Internet search. No filters were applied to limit the retrieval by study type. Where possible, retrieval was limited to the human population. The search was also limited to English language documents published between January 1, 2009 and April 28, 2014.

Selection Criteria and Methods

One reviewer screened the titles and abstracts of the retrieved publications, and evaluated the full-text publications for the final article selection, according to the selection criteria present in Table 1.

Table 1: Selection Criteria

Population	Patients requiring emergency medical services, such as the following three main indications: <ol style="list-style-type: none"> 1. Hypoglycemia 2. Those with a known history of seizures (i.e. not major seizure types like tonic-clonic but minor seizures) 3. Minor trauma (i.e. sprains, minor abrasions, bumps, bruises)
Intervention	EMS Treat and Release protocols (provided by primary care paramedics and includes being called to a scene and perhaps treating in an ambulance and then releasing)
Comparator	<ul style="list-style-type: none"> ●Treat and transfer ●Treat and refer ●No comparator
Outcomes	<ul style="list-style-type: none"> ●Clinical effectiveness (e.g., patient benefits) ●Safety (patient harms) ●Cost effectiveness (e.g., potential savings by preventing unnecessary transferring to hospital) ●Guidelines
Study Designs	Health technology assessments, systematic reviews and meta-analyses, randomized controlled trials (RCTs), non-randomized studies, economic evaluations, guidelines

Exclusion Criteria

Studies were excluded if they did not meet the selection criteria.

Critical Appraisal of Individual Studies

Because the one included study was only available in abstract form, there was insufficient detail to conduct a formal critical appraisal. This will be discussed in the limitations.

SUMMARY OF EVIDENCE

Quantity of Research Available

The literature search yielded 182 citations. Upon screening titles and abstracts, 179 citations were excluded, and three potentially relevant articles were retrieved for full-text review. In addition, two articles were identified from grey literature search. Therefore, total five potential articles including on abstract were reviewed. Of the five potentially relevant studies, four^{1,10-12} did not meet the inclusion criteria. One study, which was reported only in abstract form,⁹ is included in this review. The study selection process is outlined in a Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart (Appendix 1). In the included study, an emergency medical services T & R protocol for out-of-hospital patients presenting with supraventricular tachycardia was evaluated. No studies were identified evaluating the cost-effectiveness of T & R. No evidence-based protocol or clinical practice guidelines regarding the application of T & R were found.

Summary of Study Characteristics

1. *What is the clinical effectiveness and safety associated with the use of “Treat and Release” protocols for patients requiring emergency medical services?*

One study published in abstract form⁹ was identified that assessed the effectiveness and safety of a T & R protocol to allow advanced paramedic personnel to treat patients with paroxysmal supraventricular tachycardia (SVT) in the field, without transport to an emergency department (ED). The study was conducted in Canada. The data were retrospectively collected from the databases of the Alberta Health Services (AHS) EMS Electronic Patient Care Record (EPCR) for the City of Calgary and the AHS Calgary Zone Regional Emergency Department Information System (REDIS). Patients with SVT who were treated and released based on T & R protocol between September 1, 2010, and September 30, 2012 were included. The reported outcome was the T & R patient re-presenting to EMS or an ED within 72 hours of initial T & R.

2. *What is the cost-effectiveness of “Treat and Release” protocols for patients requiring emergency medical services?*

No study was identified examining the cost-effectiveness of “T & R” protocols for patients requiring emergency medical services

3. *What are the evidence-based guidelines associated with the use of “Treat and Release” protocols for patients requiring emergency medical services?*

No evidence-based guidelines regarding the use of T & R protocols for patients requiring emergency medical services were identified. However, some T & R related information extracted from a document on T & R (North Dakota Department of Health, USA, February 26, 2010)¹ is summarized in Appendix 2.

Summary of Critical Appraisal

Because the one included study⁹ was only available in abstract form, there was insufficient detail to conduct a formal critical appraisal. This study will be discussed in the limitations.

Summary of Findings

1. *What is the clinical effectiveness and the safety associated with the use of “Treat and Release” protocols for patients requiring emergency medical services?*

Reported in the abstract⁹ that assessed the effectiveness and safety of a T & R protocol for patients with paroxysmal supraventricular tachycardia (SVT), 75 patients with SVT were included in the study. Forty patients received vagal maneuvers, and the successful rate was reportedly low (5/40, 12.5%). Sixty-seven of 75 patients (89%) were treated with adenosine, all patients were successfully converted with a single dose of either 6 mg (n = 8) or 12 mg (n = 59). The remaining patients (number was not reported) converted to sinus rhythm spontaneously. There were 10 T & R patients called for EMS service within 72 hours after initial T & R. Among them, four were admitted to an ED within 72 hours. Of the four patients admitted to ED, two led to treatment and discharge for SVT, while another two resulted in admission for conditions unrelated to SVT. The authors concluded that their T & R protocol appears to be effective and safe for patients presenting with SVT in the prehospital setting.

2. *What is the cost-effectiveness of “Treat and Release” protocols for patients requiring emergency medical services?*

No information on the cost-effectiveness on the use of “Treat and Release” protocols was identified.

3. *What are the evidence-based guidelines associated with the use of “Treat and Release” protocols for patients requiring emergency medic services?*

No evidence-based guidelines regarding the use of “T & R” protocols were identified. However, some T & R related information extracted from a document on T & R (North Dakota Department of Health, USA, February 26, 2010)¹ is summarized in Appendix 2.

Limitations

The data of the one included study was retrospectively collected from two databases. The sample size was relatively small (n = 75) and there was no control group. In addition, it was published in an abstract form only, the methodological strengths and limitations were not able to be assessed formally due to insufficient reporting detail. Furthermore, the population of this study included one type of patient, (patients with supraventricular tachycardia). Therefore, the findings and conclusion drawn by the author should be interpreted with caution. It may not be generalizable to other conditions/patients. Overall, there is a little evidence on the clinical effectiveness and safety regarding the T & R performed by paramedics at the scene. No cost effective evidence was identified. No evidence based clinical practice guidelines or protocols were found.

CONCLUSIONS AND IMPLICATIONS FOR DECISION OR POLICY MAKING

Although the “T & R” performed by paramedics at the scene is believed to reduce the emergency admissions, inpatient admissions or clinic visit,⁶ little evidence on the clinical effectiveness and safety regarding the T & R has been reported. No study was identified to investigate whether T & R is cost-effective compared with “treat and transfer” or “treat and refer” protocols. Furthermore no evidence-based clinical practice guidelines were available. Therefore, well-designed studies are needed to determine the clinical effectiveness and safety regarding the T & R protocol performed by EMS personnel at the scene. Its cost-effectiveness compared with “treat and transfer” or “treat and refer” needs to be analyzed, and the evidence-based guidelines on T & R need to be developed for the Canadian setting.

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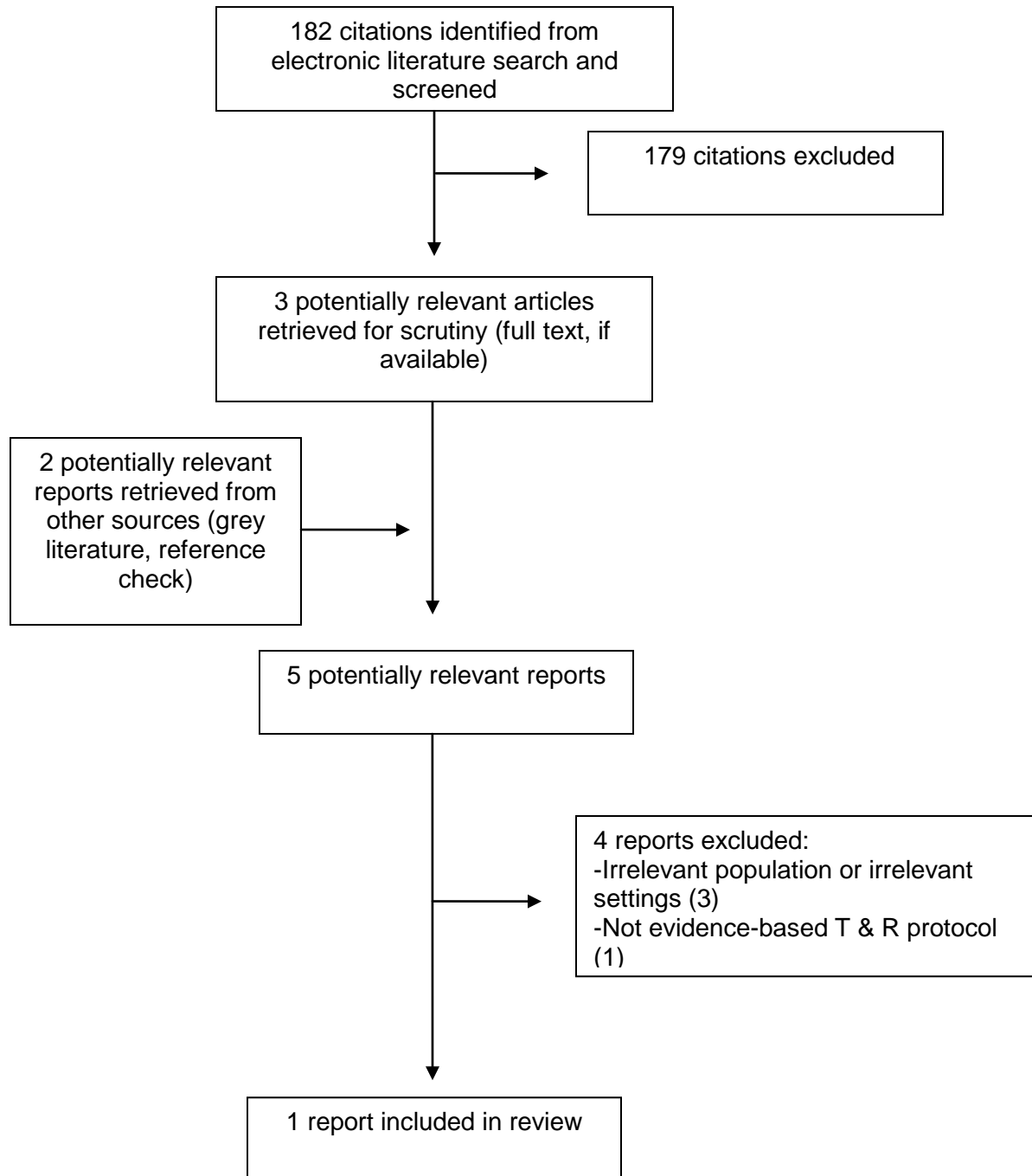
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Appendix 1: Selection of Included Studies



Appendix 2: Treat and Release, North Dakota Department of Health, USA

Author, year of publication ¹	Department of Health, North Dakota, USA, 2010
Definition	<i>On page 11: “Treat and release is the onsite treatment of a patient by a responding EMS unit without either transporting that patient to a health care facility or referring that patient to a health care facility. The patient is free to seek additional medical care at their own discretion. If the patient requests additional care, but has no alternate transport option, the responding unit is not obligated to supply it.”</i>
Purpose	<i>On page 11: “The purpose of T & R is to provide adequate immediate care which does not compromise EMS ability to respond to other calls. T & R is disaster-specific triage with assignment of patients who have a low likelihood of threatening illness to a low level of care in order to preserve resources for patients more likely to have life, limb or organ threatening illness. T & R does not preclude a patient from independently seeking care.”</i>
Conditions where T&R may be applied	<p><i>On page 11: “Treat and release can be considered when</i></p> <ul style="list-style-type: none"> • A Governor-declared disaster and executive order specify T & R as an acceptable care option; and • The state-recognized disaster standard of care for the patient severity category specifies T & R as an acceptable option. • EMS evaluation identifies no illness or injury likely to result in patient harm if the patient does not immediately go to the hospital or see a health care provider.” <p><i>On page 12: “Examples of Treat and Release situations</i></p> <ul style="list-style-type: none"> • Minor trauma which does not need further assessment for internal injury • Acute condition, such as hypoglycemia in patient who can eat or minor epistaxis can be adequately cared for at the scene without risk of immediate recurrence • During a pandemic, patients with influenza symptoms (headache, sore throat cough, fever, muscle aches) without prostration or altered consciousness and no other known reason for fever (i.e., not a post-operative patient, not an immunocompromised patient, no focal signs or symptoms of infection) • Palliative care patient who can be made comfortable • Non-threatening exacerbations of chronic conditions or pain syndromes.”
Conditions where T&R should be avoided	<p><i>On page 12: “Examples of When Treat and Release should be avoided:</i></p> <ul style="list-style-type: none"> • Vital signs are not normal (Blood pressure, P, pulse, respiratory rate) • Patient has abdominal pain, chest pain or neck pain • Patient has end stage renal disease • Patient who is immunocompromised • Patient is pregnant • Situation has potential legal implications (e.g., assault, domestic violence, sexual assault, gunshot wound, illicit drug use) • Patient is mentally ill or expresses any intent for self-harm • Patient illness is associated with intoxication or any other alteration in mental status, alertness or behavior • Patient is an unaccompanied minor • Patient with uncontrolled bleeding, recent uncontrolled bleeding or any bleeding in patient taking anticoagulants • Unstable or threatening scene • Any situation in which the EMS providers feels uncomfortable with T & R.”
Limitations	<p><i>On page 11: “Use of this protocol assumes that patients are provided the optimum level of care within the availability of resources.</i></p> <ul style="list-style-type: none"> • An EMS provider is never obligated to practice T & R. T & R is available as an option for some types of problems at certain standards of care. • Unlike T & R for specific conditions practiced in some services in the US, disaster-

	<p>related T & R cannot be fully driven by protocol, rather it relies upon the EMS provider to make a judgment call. T & R is not a guarantee that every patient so assigned will be provided optimum care or a guarantee that the patient would not have benefited from transport to a health care facility.</p> <ul style="list-style-type: none">• Treatments offered must be simple and time efficient. Treatment may be limited to reassurance without additional treatment, referral or transport.”
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EMS = emergency medical services; T & R = treat and release.