



# Knowledge, Attitude and Practice of Aseptic Non-Touch Technique Clinical Practice Framework among Healthcare Providers: A Systematic Review Protocol

Joseph S<sup>1\*</sup>, Mathew R<sup>2</sup> and Nayak SG<sup>3</sup>

<sup>1</sup>Department of Nursing, Fatima College of Health Sciences, UAE

<sup>2</sup>Nursing Instructor, Fatima College of Health Sciences, UAE

<sup>3</sup>Department of Medical-Surgical Nursing, College of Nursing, All India Institute of Medical Sciences, India

**\*Corresponding author:** Smitha Joseph, Department of Nursing, Fatima College of Health Sciences, UAE, Tel: 00971503676241;  
Email: Smitha.Joseph@fchs.ac.a

**Received Date:** August 04, 2023; **Published Date:** September 13, 2023

## Abstract

**Introduction:** The Aseptic Non-Touch Technique (ANTT) is a fundamental medical and nursing skill that describes the infection prevention and control methodologies and precautions required during invasive clinical procedures to reduce the risk of transmission of microorganisms from health care providers, equipment, or the environment to a patient. It is essential that healthcare providers have a thorough understanding of the dangers they pose to patients and that this knowledge can be demonstrated in practice. This review protocol aims to provide an in-depth analysis of the current state of healthcare care provider knowledge, attitude, and practice of ANTT.

**Methods:** This study will be conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA)-2009 with the use of sample, Phenomenon of Interest, Design, Evaluation, and Research Type (SPIDER) and Population, Intervention, Comparison, and Outcome (PICO) tools to structure the research question. The following databases will be searched to identify eligible published papers (CINAHL, PUBMED/Medline, Scopus, Web of Science, Embase, Cochrane Library) and unpublished papers and 'grey' literature (ProQuest Dissertations & Theses, Open SIGLE and the Grey literature report).

**Discussion:** The review protocol will serve as a valuable resource for healthcare professionals, policymakers, educators, and researchers working towards enhancing patient safety and reducing HAIs.

**Keywords:** Aseptic Non-Touch Technique; Clinical Practice Framework; Healthcare Associated Infections; Healthcare Providers; Systematic Review

**Abbreviations:** ANTT: Aseptic Non-Touch Technique; PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses; SPIDER: Sample, Phenomenon of

Interest, Design, Evaluation, and Research Type; Mesh: Medical Subject Headings; PRISMA: MMAT: Mixed Methods Appraisal Tool.

## Introduction

Infections acquired in healthcare settings, often known as health-care-associated infections (HCAIs), are the most common adverse event in healthcare delivery globally [1]. Health-care-related problems affect hundreds of millions of people. Each year, millions of people contract diseases around the world, resulting in enormous mortality and financial losses [2].

Although the causes of healthcare-associated infection are diverse, it is widely acknowledged that poor aseptic technique is a major contributor [3]. Although the aseptic technique is widely accepted as a significant clinical competency, practical instruction and skill evaluation have been disregarded in the past. This is partly owing to the widespread belief that anything as common as an aseptic practice must be clearly defined [4]. The most common cause of preventable HCAI is a failure of the aseptic procedure. While this is well-recognized, there is still a large gap between this understanding and the changes in therapeutic behavior that are required. As a result, it is critical that healthcare providers thoroughly understand the dangers they pose to patients and that this knowledge can be demonstrated in practice [5,6].

The Aseptic Non-Touch Technique (ANTT) was created on empirical evidence. ANTT is a fundamental medical and nursing skill that describes the infection prevention and control methodologies and precautions required during invasive clinical procedures to reduce the risk of transmission of microorganisms from health care providers, equipment, or the environment to a patient [4,7]. The underlying principle of ANTT is the "Key site and the Key part protection". Asepsis can be achieved by protecting the key parts of the procedure equipment and the key site of the patient's body from being contaminated by microorganisms from the health worker and the procedure environment. This can be applied irrespective of circumstances and the location [8].

The ANTT framework establishes a standard for aseptic practice that can be applied to every invasive health care intervention [9]. The concept "asepsis" means free from pathogenic organism in sufficient numbers to cause infection is achievable in the healthcare settings. The right aseptic non-touch technique depends on complexity of the procedure, and is determined by the risk assessment. This helps the healthcare worker to choose either the standard aseptic technique for simple invasive procedures or the non-touch surgical aseptic technique for complex surgical procedures [10].

The successful adoption of ANTT is highly dependent on the knowledge, attitude, and practise of healthcare providers

[4,11]. Knowledge refers to the theoretical understanding of the ANTT framework, including its principles, indications, and best practices. Attitude encompasses the beliefs, perceptions, and attitudes of healthcare providers towards ANTT, as well as their motivation and willingness to adhere to the recommended guidelines. Practice involves the actual implementation of ANTT in clinical settings, encompassing skills, techniques, and adherence to infection prevention protocols [4].

This review protocol aims to provide an in-depth analysis of the current state of healthcare care provider knowledge, attitude, and practice of ANTT. By synthesizing the existing literature, we seek to identify gaps, challenges, and potential solutions to improve the implementation of ANTT in clinical practice. This review will serve as a valuable resource for healthcare professionals, policymakers, educators, and researchers working towards enhancing patient safety and reducing HAIs.

## Objectives

- To assess the knowledge, attitude and practice for aseptic non touch technique upon healthcare provider's.
- To examine the reported findings of the knowledge, attitude, and practice of healthcare providers in undertaking an aseptic technique as a result of learning.
- To contribute the findings to an existing clinical practice framework on ANTT.

## Review Question

What is the effect of the Clinical Practice Framework on knowledge, attitude, and practice of Aseptic Non-Touch Technique among healthcare providers?

## Methods

Protocol registration (PROSPERO- Prospective Register of Systematic Reviews)

The review protocol is registered in PROSPERO and the enrollment number is CRD42023399096.

## Study Conduct and Reporting

This review aims is to summarize the published articles on knowledge, attitude and practise of healthcare workers regarding ANTT. The protocol is presented according to the recommendation of Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA-P) 2015 statement [12].

## Data sources and Searching Procedure

The following databases will be searched to identify eligible published papers (CINAHL, PUBMED/ Medline, Scopus, Web

of Science, Ovid and Google Scholar) and unpublished papers and 'grey' literature (ProQuest Dissertations & Theses, Open SIGLE and the Grey literature report). A search strategy would be developed in PubMed and would be tailored to different databases. The database-specific taxonomy will be used in the search. Reference list of related articles and grey literature would also be searched to find additional articles. The articles will be searched by two reviewers (SJ, RM), and the third author (SN) will be consulted for disagreements of the significance of the studies to be included in the review.

### Eligibility Criteria for Selecting Studies for this Review

The review will include qualitative, quantitative, and mixed method studies written in the English language. Studies will be considered that investigate the current state of knowledge and / or skills and/or attitudes and/or perceptions and/or

practices and/or behaviors of healthcare workers in ANTT will be considered.

### Types of Studies

Studies published in English from 2010 to 2023 would be included, without any restriction on the place of study.

### Search Strategy

The search strategy will be based both on medical subject headings (MeSH) and on the following key words, in multiple combinations, which will be chosen to reflect the focus of the review. The search strategy combining MeSH terms and keywords that will be used in MEDLINE is described in Table 1 and will be adapted to meet the specific syntax requirements of each database.

Search Strategy for Medline Database		
1	Aseptic Non Touch Technique	(Aseptic Non Touch Technique OR ANTT OR aseptic technique OR asepsis OR non touch technique)
2	Healthcare Providers	(Healthcare providers OR healthcare workers OR healthcare professionals OR Doctors OR Nurses OR Pharmacists OR Paramedical staff OR Emergency health staff OR allied health staff OR hospital staff)
3	Clinical Practice Framework	(Clinical Practice Framework OR clinical practice guideline)
4	Knowledge	(Knowledge OR Awareness OR ANTT knowledge)
5	Attitude	(Attitude OR Perception OR Perceive OR ANTT perception)
6	Practice	(Practice OR ANTT practices)

**Table 1:** Search Strategy for Medline Database.

### Search Strategy for Medline Database

#### Inclusion & Exclusion Criteria

The review will be carried out in accordance with Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA)-2020, using SPIDER tools to identify key review elements (see Table 2) and PICO tools to structure the research question. SPIDER stands for Sample, Phenomenon of Interest, Design, Evaluation, and Research Type.

#### Study Characteristics

All research that employed mixed, quantitative, and qualitative methodologies will be included. Studies seeking the knowledge, attitudes, and/or practices of healthcare providers regarding aseptic practices in invasive procedures, studies investigating the effect of ANTT educational interventions on the knowledge and attitudes of healthcare providers, and studies those solely look at information specific to one group of healthcare providers.

#### Participant Characteristics

Healthcare providers, including those in medicine, nursing, pharmacy, dentistry, and paramedicine, will be included in the review.

#### Setting and Time Frame

Studies published in English from 2010 to 2023 will be included.

#### Selection of Studies

Two authors (SJ, RM) will independently screen titles and abstracts to identify pertinent studies for full-text scrutiny once the selected publications have been imported into the Mendeley bibliographic software and duplicates have been eliminated. Team discussion and a complete text review will be used to settle any differences over whether studies are eligible at this point. The development of two identical libraries for the reviewers (SJ, RM) to independently select articles will come next. Team discussion and consultation

with another team member (SN) will be used to settle any disputes regarding eligibility. For the purpose of finding other pertinent studies, the reference lists of the included

papers will be snowballed. The history of the searches will be meticulously recorded (Table 2).

		Criteria	Inclusion	Exclusion
		Language	English	Non- English
S	P	Sample	Healthcare providers	Non-Healthcare providers
PI		Phenomenon of Interest	Aseptic Non-Touch Technique (ANTT)	
	I	Intervention	Questionnaire-based survey and interview assessing knowledge OR/AND attitude OR/AND practice	Non-questionnaire-based survey
D		Design of Study	Mixed Method	
	C	Comparison	Comparison of KAP among different healthcare providers	
			when available	
E	O	Evaluation	Healthcare providers' knowledge status/skills/ attitudes/perceptions/ views/opinions/practices/ behaviors	Unrelated to HCP knowledge status/skills/ attitudes/perceptions/views/opinions/ practices/ behaviors
R		Research Type	Qualitative studies, quantitative studies, and mixed-method studies	Reviews, opinion-based studies, letter to editors, case reports, study protocols
		Geographical Area of interest	Worldwide	
		Study focus	<ul style="list-style-type: none"> <li>Studies investigating the knowledge AND/OR attitudes AND/OR practices/behaviours of Health care providers towards aseptic practices in invasive procedures.</li> </ul>	<ul style="list-style-type: none"> <li>Studies with inadequate data Studies focusing on aggregated data per individual categories of healthcare providers</li> </ul>
			<ul style="list-style-type: none"> <li>Studies investigating almost two among knowledge, attitude, and practice.</li> </ul>	
			<ul style="list-style-type: none"> <li>Studies investigating the impact of ANTT educational interventions on the knowledge AND / or attitudes of healthcare providers.</li> </ul>	
			<ul style="list-style-type: none"> <li>Studies focusing only on data about single categories of healthcare providers</li> </ul>	

**Table 2:** Summary of Inclusion and Exclusion Criteria in PICO and SPIDER format.

### Search Methods for Identification of Studies

The search results would be imported into Rayyan software and with the help of the 'check for duplicates tool', duplicates would be omitted. Once duplicates are removed, two reviewers would select papers by their titles and abstract against the inclusion and exclusion criteria. Any disagreement between the two reviewers would be sorted in consultation with the third reviewer. After the initial selection of the articles, the article would be screened based on their full text for eligibility. The reference lists of the included articles will be sorted for identification of further relevant articles, and

the search history will be documented.

### Data Extraction

Following the data extraction stage, a compiled summary of the findings table will be created and presented with a descriptive numerical description of the retrieved data from the included research. Each of the pre-specified outcomes will be included in the descriptive summary of the findings table, along with information about the characteristics of the included studies, such as the total number of articles included, the study design type, the publication year, the

characteristics of the study populations, the study setting, and the summary of findings of each study depicting the

knowledge, attitude, and practice of healthcare providers' (Table 3).

Title of the article	First Author, year of publication	Country	Aim	Study design	Sample Characteristics	Category of health care worker	Data collection method	Summary of findings			Level of Evidence
								K	A	P	

**Table 3:** Data extraction form.

### Risk of Bias Assessment

The Cochrane Handbook for Systematic Reviews of Interventions' criteria will be used to determine how to assess the risk of bias for included studies. The Risk of bias tool Version 2 (RoB2), which evaluates a number of critical areas of potential bias, will specifically be used to test the randomized trials for bias. These areas include the randomization process, deviations from intended interventions, missing data, measurement of outcome, and choice of the reported result. The Risk of Bias Tool for Non-randomized Studies of Interventions (ROBINS-I) tool will be used to evaluate quasi-experimental and non-randomized trials, identifying potential sources of bias [13]. The methodological quality of the included mixed-method study will be evaluated using the Mixed Methods Appraisal Tool (MMAT) [14]. Two reviewers (SJ, RM) will each independently evaluate the methodology of the included studies. Any disagreements will be settled by consensus or, if necessary, discussion with the third reviewer (SN).

### Ethics and Dissemination

The preliminary results will be discussed at pertinent national and international conferences, and a manuscript will be printed in a peer-reviewed publication.

### Discussion

In this systematic review protocol, all review steps, data search and extraction strategy is well explained. The review consists of identification of studies, study selection, data extraction and data synthesis. All the information and characteristics of the included studies have been well described.

By conducting this systematic review, we aim to provide a comprehensive overview of the knowledge, attitudes, and practices of healthcare providers regarding ANTT. The findings will help identify gaps and challenges, inform the development of targeted interventions, and promote standardized guidelines and educational programs to enhance ANTT implementation.

### References

1. Haque M, Sartelli M, McKimm J, Abu Bakar M (2018) Health care-associated infections – an overview. *Infect Drug Resist* 11: 2321-2333.
2. (2022) World Health Organization.
3. Shettigar S, Aradhya AS, Ramappa S, Reddy V, Venkatagiri P (2021) Reducing healthcare-associated infections by improving compliance to aseptic non-touch technique in intravenous line maintenance: a quality improvement approach. *BMJ Open Qual* 10(1): e001394.
4. Clare S, Rowley S (2018) Implementing the Aseptic Non Touch Technique (ANTT<sup>®</sup>) clinical practice framework for aseptic technique: a pragmatic evaluation using a mixed methods approach in two London hospitals. *J Infect Prev* 19(1): 6-15.
5. Guimaraes T, Costa SF (2018) New Interventions Targeting Healthcare-Associated Infections. *Curr Treat Options Infect Dis* 10(1): 78-89.
6. Puro V, Coppola N, Frasca A, Gentile I, Luzzaro F, et al. (2022) Pillars for prevention and control of healthcare-associated infections: an Italian expert opinion statement. *Antimicrob Resist Infect Control* 11(1): 87.
7. Keogh S, Marsh N, Higgins N, Davies K, Rickard C (2014) A Time and Motion Study of Peripheral Venous Catheter Flushing Practice Using Manually Prepared and Prefilled Flush Syringes. *J Infus Nurs* 37(2): 96-101.
8. Denton A, Hallam C (2020) Principles of asepsis 1: the rationale for using aseptic technique. *Nursing Times* 116: 38-41.
9. Rowley S, Clare S (2019) Standardizing the Critical Clinical Competency of Aseptic, Sterile, and Clean Techniques with a Single International Standard: Aseptic Non Touch Technique (ANTT<sup>®</sup>). *J Assoc Vasc Access* 24(4): 12-17.

10. Rowley S, Clare S, Macqueen S, Molyneux R (2010) ANTT v2: An updated practice framework for aseptic technique. *Br J Nurs* 19(Sup1): S5-11.
11. Sonoiki T, Cooke J, Alexis O (2020) Challenges faced by nurses in complying with aseptic non-touch technique principles during wound care: a review. *Br J Nurs* 29(5): 28-35.
12. Moher D, Shamseer L, Clarke M, Ghersi D, Liberati A, et al. (2015) Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Syst Rev* 4(1): 1.
13. Sterne JA, Hernan MA, Reeves BC, Savovic J, Berkman ND, et al. (2016) ROBINS-I: a tool for assessing risk of bias in non-randomised studies of interventions. *BMJ* 355: i4919.
14. Hong QN, Fabregues S, Bartlett G, Boardman F, Cargo M, et al. (2018) The Mixed Methods Appraisal Tool (MMAT) version 2018 for information professionals and researchers. *Educ Inf* 34(4): 285-291.