

# INPLASY PROTOCOL

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**Review Stage at time of this submission:** Preliminary searches.

**Conflicts of interest:**  
None declared.

## Comparative efficacy of different ultrasoundguided ablation for the treatment of benign thyroid nodules: Systematic review and network meta-analysis

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**Review question / Objective:** Percutaneous ablation is currently deemed an additionally treatment option for benign thyroid nodules in the world, but possibly different effect among the ablation modalities is not clear. So we aim to evaluate the efficacy and complications of thermal/chemical ablation by network meta-analysis.

**Condition being studied:** In the network meta-analysis, PubMed, EMBASE and the Cochrane Library databases were searched from 1980 to 2020. Studies of adults with thyroid benign nodules under percutaneous ablation therapy were included. Percentage mean volume change, symptom score change, cosmetic score change and complications were evaluated by network metaanalysis.

**INPLASY registration number:** This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 14 June 2022 and was last updated on 14 June 2022 (registration number INPLASY202260061).

### INTRODUCTION

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complications of thermal/chemical ablation by network meta-analysis.

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mean volume change, symptom score change, cosmetic score change and complications were evaluated by network metaanalysis.

## METHODS

**Participant or population:** Benign thyroid nodules.

**Intervention:** Ultrasoundguided ablation.

**Comparator:** Radiofrequency Ablation; Ethanol ablation.

**Study designs to be included:** RCT.

**Eligibility criteria:** Inclusion criteria:(1) Randomized controlled trials; (2) complete follow-up data about the percentage mean change in benign thyroid nodule volume, symptom score, cosmetic score and complications during 6-month or more follow-up after US-guided percutaneous ablation (RFA, LA, HIFU, MWA and EA).Inclusion criteria for patients were as following: (1) age older than 18; (2) presence of a solid or cyst thyroid nodule with cosmetic or compressive symptoms; (3) confirmation of benign findings in US-guided core needle or fine-needle aspiration (FNA) biopsies;(4) no history of radioiodine therapy or thermal/chemical ablation, no previous neck or trunk external beam radiotherapy, or refusal of or ineligibility for surgery. Types of interventions: Interventions comprised US-guided percutaneous ablations including RFA, LA, EA, MWA and HIFU.Control groups included patients with no treatment.

**Information sources:** PubMed, EMBASE, Cochrane.

**Main outcome(s):** Efficacy.

**Data management:** Endnote.

**Quality assessment / Risk of bias analysis:** Cochrane Collaboration.

**Strategy of data synthesis:** The primary outcome was the percentage mean change in benign thyroid nodule volume and the

outcome measure was its mean difference(MD) with 95% confidence interval (CI). For direct comparisons, standard pairwise meta-analysis was performed using the inverse variance DerSimonian-Laird random effects model. If a direct comparison was based on 2 or more studies, between-study heterogeneity, which represents the extent of variation among the intervention effects observed in different studies, was quantified using the I-squared statistic. Heterogeneity was considered low, moderate, or high for I-squared values 50%, respectively. For indirect and mixed comparisons, random effects network meta-analysis using Markov chain Monte Carlo simulations was carried out within a frequentist setting. In the Bayesian network meta-analysis, we used non-informative (vague), prior distributions that allow data to drive the posterior distributions. The achievement of convergence was evaluated using the Brooks-Gelman-Rubin statistics. The results of network meta-analyses(NMA) with effect sizes (MD) and 95% CrI were summarized. The plausibility of the transitivity assumption was assessed based on the design characteristics and the methodology of the studies included in the NMA, as recommended. Inconsistency has been investigated using a design-by-treatment interaction model, which addresses both loop and design inconsistencies, In each loop, we evaluated the inconsistency factor (IF) as the absolute difference (95% confidence interval [CI]) and using z-test between the direct and indirect estimates for each paired comparison in the loop. The IF is the logarithm of the ratio of two odds ratios (RoRs) from direct and indirect evidence in the loop; RoRs close to 1 indicate that the two sources are in agreement. Additionally, subgroup analyses were performed to evaluate the robustness of the findings.

**Subgroup analysis:** Subgroup study based on patients' age, marital status, and economic circumstances.

**Sensitivity analysis:** After deleting any one of them, the combined results of the remaining literature are not significantly

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different from those without deletion, which means that the sensitivity analysis is passed.

**Country(ies) involved:** China.

**Keywords:** ultrasound-guided ablation, benign thyroid nodules.

**Contributions of each author:**

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