INPLASY

Predictive Models for Cardiotoxicity Induced by Trastuzumab Infusion in HER-2 Positive Breast Cancer Patients:A Scoping Review

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ADMINISTRATIVE INFORMATION

Support - No external funding or support was received for this study.

Review Stage at time of this submission - Data extraction.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202640007

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 2 April 2026 and was last updated on 2 April 2026.

INTRODUCTION

Review question / Objective Summarize evidence on trastuzumab-related cardiotoxicity to support clinical risk management and future research.

Rationale Trastuzumab improves outcomes in HER-2 positive breast cancer but causes unpredictable cardiotoxicity. This review summarizes its incidence, risk factors, and predictive models to support clinical risk stratification and future research.

Condition being studied Primary condition: HER-2 positive breast cancer Secondary condition / Outcome condition: Trastuzumab-induced cardiotoxicity / Cancer treatment-related cardiac dysfunction (CTRCD).

METHODS

Search strategy Systematic search in PubMed, Web of Science, Ovid, Embase, Cochrane Library, Scopus, CNKI, Wanfang; keywords: HER-2 positive breast cancer, trastuzumab, cardiotoxicity, risk prediction model; using Boolean operators AND/OR/NOT.

Participant or population HER-2 positive breast cancer patients receiving trastuzumab infusion (with or without chemotherapy).

Intervention Trastuzumab targeted therapy (alone or in combination with chemotherapy).

Comparator No comparator.

Study designs to be included Prospective cohort, retrospective cohort, observational, predictive model studies.

Eligibility criteria Inclusion criteriaOriginal studies investigating trastuzumab-induced cardiotoxicity in HER-2 positive breast cancer patients; studies reporting incidence, predictive models, clinical manifestations or influencing factors of cardiotoxicity. • Exclusion criteriaNon-original

studies (reviews, letters, editorials, conference abstracts); studies not focusing on trastuzumab-related cardiotoxicity; studies with irrelevant study subjects.

Information sources PubMed, Web of Science, Ovid, Embase, Cochrane Library, Scopus, CNKI, Wanfang.

Main outcome(s) 1.Incidence of trastuzumab-induced cardiotoxicity (CTRCD) in HER-2 positive breast cancer patients
2.Key risk factors for trastuzumab-related cardiac dysfunction
3.Performance and application of existing predictive models for trastuzumab-induced cardiotoxicity.

Quality assessment / Risk of bias analysis Methodological quality will be evaluated using the Mixed Methods Assessment Tool (MMAT).

Strategy of data synthesis A descriptive synthesis approach will be used to systematically integrate the findings. Data will be categorized by topic (incidence, risk factors, predictive models, clinical manifestations) and presented in tabular form with brief summaries. Meta-analysis will not be conducted due to high heterogeneity and lack of sufficient quantitative data across included studies.

Subgroup analysis No subgroup analysis is planned.

Sensitivity analysis No sensitivity analysis is planned.

Language restriction No language restriction.

Country(ies) involved China.

Keywords HER-2 positive breast cancer; trastuzumab; cardiotoxicity; risk prediction model; cancer treatment-related cardiac dysfunction; CTRCD.

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