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Neoadjuvant vs. adjuvant chemotherapy for luminal B breast cancer: A systematic review and meta-analysis – where is the evidence?

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ADMINISTRATIVE INFORMATION

Support - Nil.

Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

INPLASY registration number: INPLASY202590104

Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 25 September 2025 and was last updated on 25 September 2025.

INTRODUCTION

Review question / Objective Review evidence base regarding comparative use of neoadjuvant chemotherapy vs adjuvant in hormone positive HER2 negative (Luminal B) breast cancer and whether there are differences in survival outcomes.

Rationale No international guidelines exist to suggest for or against use of neoadjuvant chemotherapy in luminal B breast cancer with potential benefits afforded to patients if evidence suggests safe to do so and non inferior in regards to survival outcome.

Condition being studied Hormone positive HER2 negative (Luminal B) breast cancer.

METHODS

Search strategy Embase, pubmed, medline + reviewing reference lists of screened articles.

Participant or population Patients over the age of 18 diagnosed with hormone positive HER2 negative (Luminal B) breast cancer.

Intervention Neoadjuvant chemotherapy (any regimen).

Comparator Adjuvant chemotherapy (any regimen).

Study designs to be included All.

Eligibility criteria Patients over the age of 18 diagnosed with hormone positive HER2 negative (Luminal B) breast cancer studies either state luminal B or hormone positive HER2 negative studies must include both neoadjuvant and adjuvant arms.

Information sources Medline, pubmed, embase database + reference lists of articles.

Main outcome(s) Overall survival.

Additional outcome(s) Disease free survival, complete pathological response rate.

Quality assessment / Risk of bias analysis Only studies identified were retrospective cohort series presumed high risk of bias - commented on in review.

Strategy of data synthesis A random-effects model was used to generate a pooled hazard ratio and 95% confidence interval. A combined hazard ratio incorporating both stage I-II and III patients was generated for one of the included studies. Cochran's Q statistic was used to test heterogeneity of the studies, whereby a p value of less than 0.10 indicated heterogeneity. The I² statistic was used to quantify the degree of heterogeneity, such that values of 25%, 50% and 75% indicated low, medium, and high respectively.

Subgroup analysis Nil.

Sensitivity analysis Nil.

Language restriction English.

Country(ies) involved Australia.

Keywords Luminal B breast cancer, neoadjuvant chemotherapy, overall survival.

Dissemination plans scientific journal publication.

Contributions of each author

Author 1 - Luke Bromley - record screening, data synthesis, manuscript drafting.

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Author 2 - Christopher Harris - record screening, data synthesis, manuscript drafting.

Author 3 - Ardolino Luke - review of discussion from medical oncology perspective, manuscript editing.

Author 4 - Guy Eslick - statistical analysis of data.

Author 5 - Sanjay Warriar - project overseeing, resolving conflicts in data extraction, manuscript editing.

Author 6 - Adam Ofri - project overseeing, resolving conflicts in data extraction, manuscript editing.