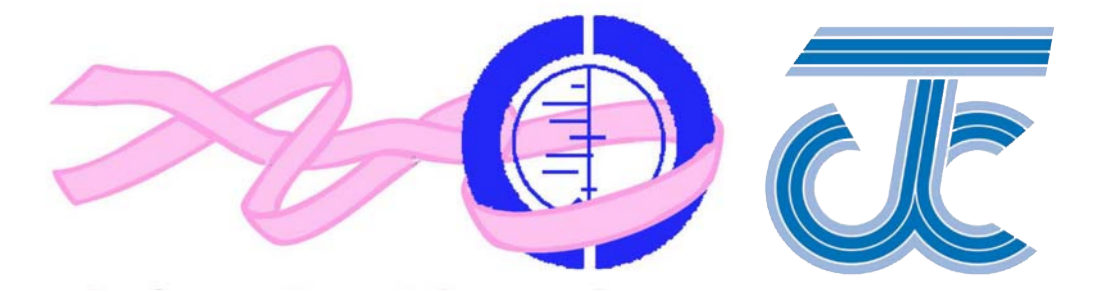


# Accuracy of the MeSH term “Breast Neoplasms”: ten years on

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## INTRODUCTION

Medical Subject Headings (MeSH) is a controlled vocabulary thesaurus developed by the National Library of Medicine (NLM; [1]). The MeSH thesaurus consists of sets of terms naming descriptors in a hierarchical structure and this allows NLM users to search more efficiently for publications of interest. In 1999, the Cochrane Breast Cancer Group (CBCG) analysed whether the MeSH term “Breast Neoplasms” was correctly assigned to publications related to breast cancer clinical trials (i.e. randomised controlled trials (RCTs)) in MEDLINE. We did this by applying our 60-line search strategy (consisting of various combinations of key words and text words) aimed at identifying as many controlled trials as possible on breast cancer. As MeSH terms are continually updated [1] and our Group has changed the syntax of the original search strategy (in 2008), it is necessary to reassess: (i) the accuracy of the MeSH term “Breast Neoplasms” being tagged onto publications in MEDLINE and (ii) the implications of the MeSH term on the retrieval of relevant publications for our Specialised Register.

## OBJECTIVES

1. to assess how well the MeSH term “Breast Neoplasms” is assigned to publications in MEDLINE and 2. its impact when deciding what goes into our Specialised Register

## METHODS

We applied the CBCG’s search strategy (see Figure 1) to search MEDLINE (via OVID SP) on 17 March 2011. In 2008, the syntax of our search strategy was slightly modified so that the Group could search MEDLINE via the OVID SP platform (instead of OVID). This strategy aimed to retrieve all publications relevant to breast cancer and clinical trials

Figure 1. The CBCG’s Search Strategy for Breast Neoplasm

1. exp breast neoplasms/
2. exp "neoplasms, ductal, lobular, and medullary"/
3. exp fibrocystic disease of breast/
4. 1 or 2 or 3
5. exp breast/
6. breast.tw.
7. 5 or 6
8. (breast adj milk).ti,ab,sh.
9. (breast adj tender\$.ti,ab,sh.
10. 8 or 9
11. 7 not 10
12. exp neoplasms/
13. 11 and 12
14. exp lymphedema/
15. 11 and 14
16. (breast adj25 neoplasm\$.ti,ab,sh.
17. (breast adj25 cancer\$.ti,ab,sh.
18. (breast adj25 tumour\$.ti,ab,sh.
19. (breast adj25 tumor\$.ti,ab,sh.
20. (breast adj25 carcinoma\$.ti,ab,sh.
21. (breast adj25 adenocarcinoma\$.ti,ab,sh.
22. (breast adj25 sarcoma\$.ti,ab,sh.
23. (breast adj50 dcis).ti,ab,sh.
24. (breast adj25 ductal).ti,ab,sh.
25. (breast adj25 infiltrating).ti,ab,sh.
26. (breast adj25 intraductal).ti,ab,sh.
27. (breast adj25 lobular).ti,ab,sh.
28. (breast adj25 medullary).ti,ab,sh.
29. 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28
30. 4 or 13 or 15 or 29
31. exp mastectomy/
32. 30 or 31
33. exp "Analytical, Diagnostic and Therapeutic Techniques and Equipment"/
34. 11 and 33
35. 32 or 34
36. exp mammary neoplasms/
37. (mammary adj25 neoplasm\$.ti,ab,sh.
38. (mammary adj25 cancer\$.ti,ab,sh.
39. (mammary adj25 tumour\$.ti,ab,sh.
40. (mammary adj25 tumor\$.ti,ab,sh.
41. (mammary adj25 carcinoma\$.ti,ab,sh.
42. (mammary adj25 adenocarcinoma\$.ti,ab,sh.
43. (mammary adj25 sarcoma\$.ti,ab,sh.
44. (mammary adj50 dcis).ti,ab,sh.
45. (mammary adj25 ductal).ti,ab,sh.
46. (mammary adj25 infiltrating).ti,ab,sh.
47. (mammary adj25 intraductal).ti,ab,sh.
48. (mammary adj25 lobular).ti,ab,sh.
49. (mammary adj25 medullary).ti,ab,sh.
50. 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49
51. 35 or 50
52. exp breast self-examination/
53. (breast adj25 self\$.ti,ab,sh.
54. (breast adj25 screen\$.ti,ab,sh.
55. (breast adj25 screen\$.ti,ab,sh.
56. 51 or 52 or 53 or 54 or 55
57. mammograph\$.tw.
58. 11 and 57
59. 56 or 58
60. randomized controlled trial.pt.
61. randomized.ab.
62. placebo.ab.
63. clinical trials as topic/
64. randomly.ab.
65. (crossover or cross-over).tw.
66. trial.ti.
67. 60 or 61 or 62 or 63 or 64 or 65 or 66
68. humans/
69. 67 and 68
70. 59 and 69
71. limit 70 to yr="2009 - 2010"

- We searched MEDLINE during the period January 2009 until December 2010
- 2000 publications were retrieved and imported into a Reference Manager 11 database for review
- Following de-duplication, there were 1913 publications
- Two of the authors (FT and MW) reviewed and coded each of the retrieved records
- We categorised records as:
  - related or unrelated to breast cancer as determined by the two authors
  - assigned or not with the MeSH term “Breast Neoplasms” by MEDLINE, and
  - a controlled trial or not
- If there was insufficient information to code a record from the abstract, a full copy of the publication was retrieved
- Any uncertainty as to how to code a record was resolved through discussion between the two authors
- Once coding was complete, we conducted an analysis of the coded records using the ‘Search References’ function within Reference Manager 11. This included determining the number of publications retrieved that were:
  - assigned with the MeSH term “Breast Neoplasms”
  - correctly or incorrectly assigned with the MeSH term by MEDLINE as deemed by the authors
  - a RCT or controlled clinical trial (CCT)

## RESULTS

### Baseline data

1913 publications were retrieved using our search strategy. Of these, 1473 publications (i.e. 77%) were assigned the MeSH term “Breast Neoplasms” by MEDLINE

### Publications assigned the MeSH term “Breast Neoplasms”

Table 1. Assignment of the MeSH term “Breast Neoplasm” regardless of study type

	Assigned MeSH Term “Breast Neoplasms”	Not assigned MeSH Term “Breast Neoplasms”	
Identified as being relevant to breast cancer by the CBCG	1430 (75%)	166 (9%)	1596
Identified as not being relevant to breast cancer by the CBCG	43 (2%)	274 (14%)	317
	<b>1473</b>	<b>440</b>	<b>1913</b>

The most popular areas of research within breast cancer were on the topics of:

1. Drug therapy 637 records (33%)
2. Surgery 232 records (12%)
3. Other Therapy (includes multiple therapies, general or unspecified therapy, immunotherapy, tissue therapy, and therapy with biological products but excludes drug therapy, diet therapy, radiotherapy and surgery) 154 records (8%)

### Publications assigned the MeSH term “Breast Neoplasms” and categorised as breast cancer controlled trials

Table 2. Assignment of the MeSH term “Breast Neoplasm” when considering study type (i.e. RCT or CCT)

	Assigned MeSH Term “Breast Neoplasms”	Not assigned MeSH Term “Breast Neoplasms”	
Included in CBCG’s Specialised Register:			
YES	513 (27%)	29 (2%)	542
Included in CBCG’s Specialised Register:			
NO	960 (50%)	411 (21%)	1371
	<b>1473</b>	<b>440</b>	<b>1913</b>

<sup>1</sup> To be eligible for inclusion in the Specialised Register, publications must be in breast cancer AND classified as RCT or CCT

- The most common areas of research of the 29 publications which were eligible for the Specialised Register but not detected by the MeSH term “Breast Neoplasms” are:
  1. Surgical interventions for breast cancer 8 records (28%)
  2. Alternative and complementary therapies (e.g. Traditional Chinese Medicine) 4 records (14%)
  3. Chemotherapy 4 records (14%)
  4. Diet therapies 4 records (14%)
  5. Education therapies 4 records (14%)

• Of the 1913 publications retrieved by the search strategy, 542 (28%) were relevant to the CBCG’s Specialised Register.

## DISCUSSION & CONCLUSIONS

- Our aim was to assess the accuracy of the MeSH term “Breast Neoplasms”. This would help us to decide if the search strategy for our Specialised Register needs to be revised
- Of the 1473 publications assigned the MeSH term “Breast Neoplasms”, 1430 (i.e. 97%) were assigned the term correctly (see Table 1). The use of the MeSH term appeared to be less sensitive in the current data set than it was in 1999 (2009—2010: 97% vs. 1966—1997: 99% [2])
- The additional terms used in the CBCG’s search strategy resulted in the identification of an extra 440 publications (see Table 1), of which 166 (38%) were in breast cancer. Of the 166 publications, 29 were classified as RCTs or CCTs and therefore would be eligible for inclusion in our Specialised Register (see Table 2)
- Systematic reviewers and Trials Search Co-ordinators should be aware of the potential limitations in MeSH terms (type II errors) when searching for studies
- As the nature of our Cochrane Reviews are changing (i.e. using other study designs aside from RCTs and CCTs) and as such supplementary searches are required, our Group needs to be aware of the impact this has on the Specialised Register
- Considering the effort required to apply the additional search terms and examine the eligibility of retrieved publications, is this worthwhile given that we capture only an extra 2% for our Specialised Register?

## REFERENCES

- [1] Fact Sheet: Medical Subject Headings (MeSH). U.S. National Library of Medicine, National Institutes of Health; Bethesda, USA. Accessed 11/10/11.
- [2] Telenta J & Gheri D. 2000. How comprehensive is the MeSH term “breast neoplasms”? Cochrane Colloquium abstract, Freiburg, Germany.