

PLAYING IT SAFE:

VALIDATING SEARCH FILTERS FOR ADVERSE EVENTS

KELLY FARRAH, MLIS; MONIKA MIERZWINSKI-URBAN, MLIS; KAREN CIMON;
CANADIAN AGENCY FOR DRUGS AND TECHNOLOGIES IN HEALTH, OTTAWA, ONTARIO

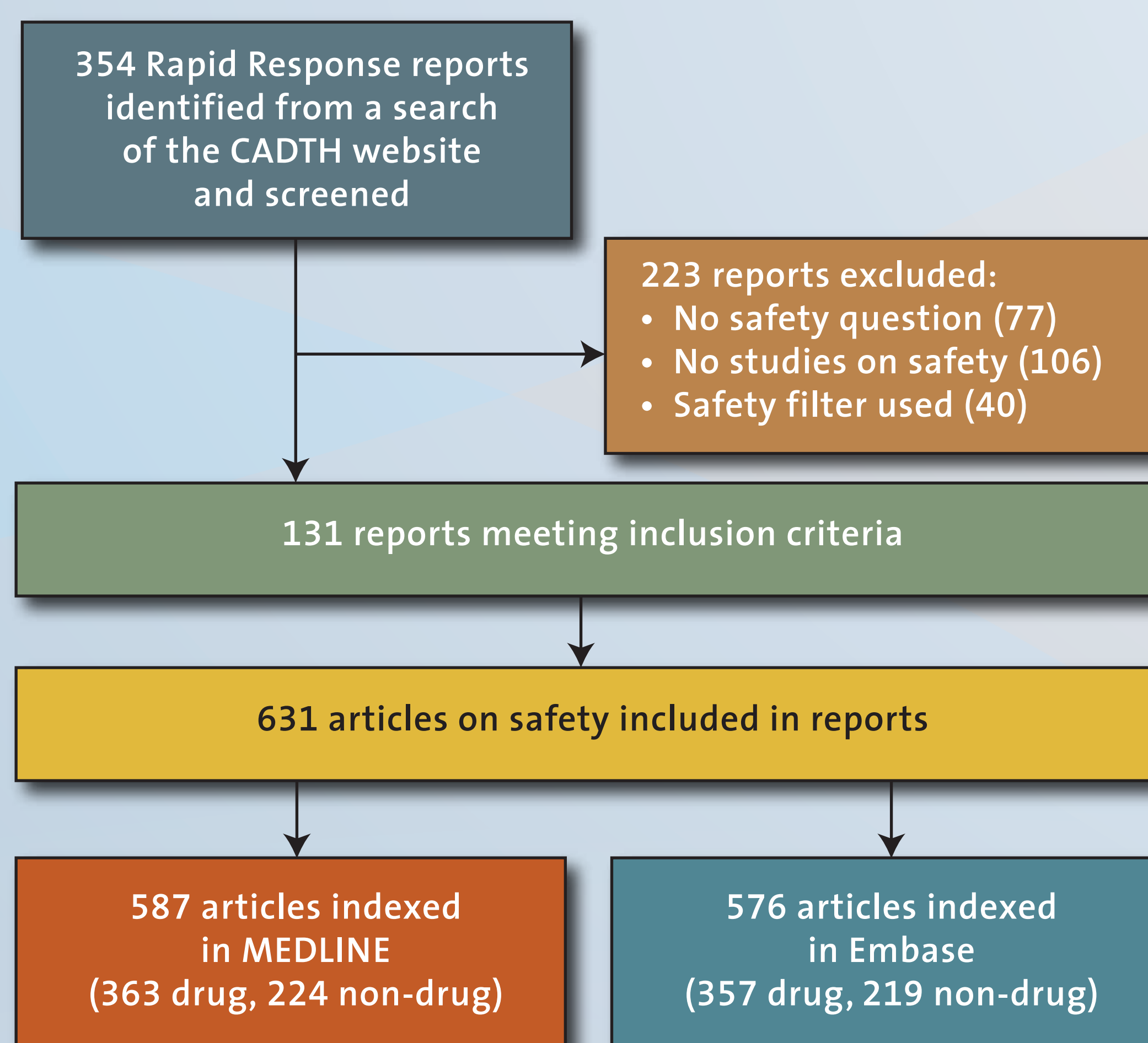
OBJECTIVE

Little formal testing has been done to assess the performance of search filters for retrieving database records on adverse events. This project aims to create a validation set of articles on adverse events, and to use this set to test the effectiveness of adverse events filters for MEDLINE and Embase.

METHODS

A validation set of articles related to adverse events was created using included references from Canadian Agency for Drugs and Technologies in Health (CADTH) rapid reviews on safety topics (Figure 1).

Figure 1: Selection of Reports and Included Articles



The performance of three previously developed CADTH filters was tested: a broad filter, a narrow filter, and a filter targeted to devices and procedures. Two published filters were also tested: *BMJ Clinical Evidence*¹ and Golder et al.^{2,3} The sensitivity of these filters was tested by determining how many articles from the testing set they retrieved. The precision of the filters — a measure of how many irrelevant records they retrieve — was tested using two Rapid Response reports as case studies.

RESULTS

For articles on drug topics, the sensitivity of filters ranged from 76% to 93%. For non-pharmacological topics, all filters tested were less effective at capturing relevant articles, with sensitivity ranging from 32% to 88% (Table 1).

Filter	Drug Topics		Device and Procedure Topics	
	Sensitivity MEDLINE (n = 363) (%)	Sensitivity Embase (n = 357) (%)	Sensitivity MEDLINE (n = 224) (%)	Sensitivity Embase (n = 219) (%)
CADTH Broad	82	89	66	55
CADTH Narrow	76	83	55	32
CADTH Non-drug	n/a	n/a	71	60
<i>BMJ Clinical Evidence</i> ¹	92	93	88	82
Golder et al. ^b	92	89	74	54

^a Sensitivity = (Number of records from validation set retrieved/Total number of records in validation set) x 100.
^b Most sensitive search strategy excluding use of specified adverse effects.^{2,3}

In two case studies, CADTH filters that retrieved fewer articles from the validation set performed better at excluding irrelevant articles (Tables 2 and 3). In general, the precision for all filters was lower in Embase than MEDLINE. The precision was also lower for the case study on the procedure topic versus the drug topic.

TABLE 2: Precision^a of Adverse Events Filters in Ovid MEDLINE and Embase Case Study #1 — Rosiglitazone and Pioglitazone for Patients With Type 2 Diabetes

Filter	MEDLINE			Embase		
	Number of Records Retrieved	Number of Relevant Records	Precision (%)	Number of Records Retrieved	Number of Relevant Records	Precision (%)
Original Search, No Filter	261	17	6.5	294	12	4.1
CADTH Broad	124	16	12.9	171	10	5.8
CADTH Narrow	113	16	14.2	106	10	9.4
<i>BMJ Clinical Evidence</i> ¹	176	15	8.5	210	10	4.8
Golder et al. ^b	203	15	7.4	122	9	7.4

^a Precision = (Number of relevant records retrieved/Total number of records retrieved) x 100.
^b Most sensitive search strategy excluding use of specified adverse effects.^{2,3}

TABLE 3: Precision^a of Adverse Events Filters in Ovid MEDLINE and Embase Case Study #2 — Endovascular Thermal Ablation for Varicose Veins

Filter	MEDLINE			Embase		
	Number of Records Retrieved	Number of Relevant Records	Precision (%)	Number of Records Retrieved	Number of Relevant Records	Precision (%)
Original Search, No Filter	261	9	3.4	232	6	2.6
CADTH Broad	77	7	9.1	92	4	4.3
CADTH Narrow	41	4	9.8	21	1	4.8
CADTH Non-drug	87	7	8.0	93	4	4.3
<i>BMJ Clinical Evidence</i> ¹	202	7	3.5	180	6	3.3
Golder et al. ^b	160	4	2.5	94	3	3.2

^a Precision = (Number of relevant records retrieved/Total number of records retrieved) x 100.
^b Most sensitive search strategy excluding use of specified adverse effects.^{2,3}

CONCLUSION

Adverse events filters may be most useful for searches where comprehensiveness is not essential, or as an adjunct to systematic searches. The results suggest that different approaches are required when searching for safety information on non-pharmacological topics versus pharmacological topics. Further research is needed to determine why these filters failed to identify some articles from the validation set and whether sensitivity can be improved while maintaining adequate precision.

REFERENCES

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