Validating a search filter for diagnostic sensitivity and specificity

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Validating a Search Filter for Diagnostic Sensitivity and Specificity
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Objective
To create and validate a search filter for diagnostic sensitivity and specificity (DSS) in PubMed for use in systematic reviews.

Methods
Based on work by Haynes and the Hedges Team to validate the PubMed Clinical Query for Diagnosis.

1. Create a pool. We used a thorough search strategy for adult septic arthritis created for a systematic review and limited the pool to the last five years in PubMed.
2. Create filter. We created a filter for DSS by harvesting terms from standard indices and on-topic articles.
3. Run filter within pool. We ran our DSS filter within the Septic Arthritis pool in PubMed limited to the last five years.
4. Review results for filter and pool search results using the 2X2 table for DSS from...

<table>
<thead>
<tr>
<th></th>
<th>About DSS</th>
<th>Not About DSS</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSS Search</td>
<td>TP = 49</td>
<td>FP = 11</td>
</tr>
<tr>
<td>Pool</td>
<td>FN = 123</td>
<td>TN = 642</td>
</tr>
</tbody>
</table>

Discussion
Sensitivity (Recall) 49/49+123 = 79%
Specificity (Precision) 642/11+642 = 98%

Discussion
There are no clear step by step instructions on how to create or validate a search filter.

While we based our methods on Haynes, et al., we created our pool differently and it was much smaller. Haynes used articles in 160 journal titles for the year 2000 resulting in a pool of 49,028 articles. Our Septic Arthritis search was limited to the last 5 years and included 765 articles.

Our responsibilities represent the typical work load of an academic medical librarian and this project took three years, fitting it in where we could. Thus, it is not realistic to validate every search strategy created for systematic reviews.

Conclusion
The DSS filter achieved 79% sensitivity and 98% specificity therefore it is an effective filter for locating articles on diagnostic sensitivity and specificity in PubMed.