

Proposed Pilot Sensitivity and Specificity Analyses

Introduction. Saint Louis University's Faculty Beaumont Development Grant concludes at the end of June. The progress report will be reported more fully next month. Part of the report, however, will stress the importance of evaluating the EBN Matrix. One way of evaluating the Matrix is to determine how sensitive and specific the filters are in categorizing articles according to the definitions of the model. The pilot approach to be used is described below. See rationale, definitions, and methods.

To insure the proper posting of results and addition of needed filters and to test the application of the EBN Matrix in diagnosis development and concept analysis work, the Saint Louis University Research Team will ask for a continuation of unused Beaumont funds to cover such information management needs.

Rationale.

It is important to evaluate the sensitivity and specificity of the filters developed to justify the use of the filters or to correct and improve the filters, should the sensitivity and/or specificity results be disappointing.

Definitions.

Sensitivity may be defined as the probability that a test (or symptom, or sign) is positive given the disease/condition being present. It is sometimes called a true positive probability.

Specificity may be defined as the probability that a test (or symptom, or sign) is negative or absent given that the disease/condition is not present. Specificity is sometimes called a true negative probability.

Table 1. Number of Primary Data Articles that Deal with the Diagnosis of Sleep Disorder/Deprivation within a PubMed Focused Sleep Search.

	Diagnosis +	Diagnosis -	Total
Primary Data +	188	77	265
Primary Data -	373	190	563
Total	561	267	828

Methods.

A team of five experienced nurses will select first 40 articles that are accompanied by abstracts from the focused sleep search. Each team member will place each abstract into one of four categories. Agreement among reviewers will be evaluated. Any agreement less than 80% that cannot be negotiated to 80% or higher will necessitate the review of the complete article and a rescoring. This will be the gold standard table.









	Dx +	Dx -	Total
Primary Data +	Green	Purple	Yellow
Primary Data -	Red	Olive Green	Dark Blue
Total	Cyan	Brown	40

Review the abstracts and take the following steps.

1. Divide all the articles into primary data + (yellow) or primary data – (dark blue). Insert counts.
2. Divide all (the sum of) the primary data + or yellow articles into diagnosis + (green) or diagnosis – (purple). Remember we are dealing with nursing diagnoses involving sleep disorders. Insert counts.
3. Divide all (the sum of) primary data - articles (dark blue) into diagnosis + (red) and diagnosis – (olive green) categories. Insert counts.
4. Sum the diagnosis + column and place the number in the aqua blue space. Insert counts.
5. Sum the diagnosis – column and place the number in the brown space. Insert counts.
6. Use the following table to record the author(s) name(s) and the year of the article. Numbers in the above table should equal the counts in the following table. Insert counts.

	DX + (Also, insert sleep diagnosis for each article).	DX -	
Primary Data +			
Primary Data -			

7. Calculate agreement among yourselves as reviewers. If an article has 100% agreement, fine. Negotiate any agreement level less than 80%. Include me in on the negotiations. If agreement of 80% or better cannot be obtained, the team will review the full text of the article.
8. Construct another table. Now find where the same forty articles appear in the table on the basis of NLINKS data. This will be the test table.

	Dx +	Dx -	Total
Primary Data +			
Primary Data -			
Total			40

9. Conduct sensitivity and specificity analyses

Table 1. Sensitivity and specificity of **primary filter** applied to focused sleep search.

	Primary data + (hand determination)	Primary data -	Total
Primary data filter test + (nlinks)			
Primary data filter test – (nlinks)			
Total			40

Table 2. Sensitivity and specificity of **diagnosis filter** applied to focused sleep search.

	Diagnosis + (hand determination)	Primary data – (hand determination)	Total
Diagnosis filter test + (nlinks)			
Diagnosis filter test – (nlinks)			
Total			40

Table 3. Sensitivity and specificity of **primary filter and diagnosis filter** applied to focused sleep search.

	Primary data x diagnosis + (hand determination)	Primary data x diagnosis – (hand determination)	Total
Primary data filter x diagnosis filter + (nlinks)			
Primary data filter x diagnosis filter – (nlinks)			
Total			40

10. Interpret and report findings.

11. Team members names will appear here.