ENV 341

Introduction to library resources and identifying literature

September 25, 2019

Heather Cunningham, M.Sc., MLIS
Reference & Research Librarian
Gerstein Science Information Centre
University of Toronto
Email: h.cunningham@utoronto.ca
Objectives

• Searching as strategic exploration – pre-planning; strategies
• Searching as a methodology
• Information as part of the scholarly conversation
“Can measurement of Exhaled Volatile Organic Compounds inform the diagnosis and management of asthma in adults: A systematic Review”

Paddy Dennison, Peter Howarth, Adnan Azim, Clair Barber

Citation

Review question
Can the measurement of exhaled volatile organic compounds in patients with asthma give information on clinical, physiological, inflammatory and therapeutic aspects of asthma.

Searches
Search strategies will be developed using medical subject headings (MeSH) and free text with boolean operators.

We will search the following databases:
- MEDLINE (OVID interface, 1946 onwards)
- EMBASE (OVID interface, 1947 onwards)
- The Cochrane Central Register of Controlled Trials (Wiley interface, current issue)

We will scan the reference lists of included studies or relevant reviews identified through the search as well as contact experts identified by the team.

A MEDLINE Search Strategy is provided
MeSH terms would be adapted for each relevant database
Briefly our algorithm is, as follows:
“Asthma” terms AND (“exhaled” terms AND “VOC” terms) OR “breathomic” terms

Search strategy
https://www.crd.york.ac.uk/PROSPEROFILES/84145_STRATEGY_20180705.pdf

Types of study to be included
Randomised Controlled Trials are not expected. Majority of studies will be cross sectional in nature with few longitudinal (case control) studies expected. Broad inclusion criteria also facilitates inclusion of correlational studies.

Condition or domain being studied
Types of study to be included
Randomised Controlled Trials are not expected. Majority of studies will be cross sectional in nature with few longitudinal (case control) studies expected. Broad inclusion criteria also facilitates inclusion of correlational studies.

Condition or domain being studied
Asthma is a chronic inflammatory condition characterised by variable symptoms of dyspnoea, wheeze, chest tightness and cough associated with underlying airflow obstruction and chronic airways remodelling in the lung.

Participants/population
Studies were included if they used a distinct group of patients with asthma, defined by a trained physician or according to Global Initiative for Asthma or the American Thoracic Society/European Respiratory Society guidelines.

Studies were excluded if they looked at non-adult (i.e. <18 years) asthma populations. This is due to differences in diagnostic criteria between children and adults, as well as an attempt to not overlap a recent review in paediatric populations.

Intervention(s), exposure(s)
Measurement of Volatile Organic Compound in exhaled breath (using some form of GCMS or sensor array platform [i.e. e-nose])
Specific exclusions include
- exhaled nitric oxide (not a VOC)
- breath condensate (may contain VOCs but does not measure directly from exhaled breath)
- particles in exhaled breath (not VOCs)

Comparator(s)/control
Comparator/controls are difficult to predict in advance. The evidence base for exhaled VOCs in asthma is limited and our search strategy has been kept broad and inclusive to reflect this. A number of study designs is expected. The most common study design is likely to be cross sectional, comparing asthma to healthy controls.

Context

Primary outcome(s)
Measure of accuracy by which exhaled breath measure can distinguish between groups. Aiming for measures of sensitivity, specificity, positive predictive value, negative predictive value and area under the receiver operating curve.

Secondary outcome(s)
Compilation of identified VOCs and their proposed origins into a library

Data extraction (selection and coding)
Literature search results will be uploaded to EndNote, a desktop reference manager, and then Rayyan, an internet based programme that facilitates collaboration among reviewers during the study screening process of citation.
Search Strategy Structure

1= Asthma Terms
2= Volatile Organic Compound Terms
3= Exhaled Terms
4= Breathomic Terms

1 AND (2 AND 3) OR 4

1= Asthma Terms
   Asthma
   bronch* NEAR/2 hyper*
   air* NEAR/2 inflamm*
   revers* NEAR/2 air*

2= Volatile Organic Compound Terms
   Volatil* NEAR/3 organic
   VOC
   gas* NEAR/3 chromatograph*

3= Exhaled Terms
   Exhale*
   Exp*

4= Breathomic Terms
   elect* NEAR/2 nos*
   breath* NEAR/2 metab*
   breath* NEAR/2 test*
   Breathomic*
   e$nose
Welcome

This guide is primarily intended for students in ENV 341 Environment and Human Health. This is a selective guide to the major resources that you will need to access in order to write your Term Paper Proposal (due: Oct 9, 2019) and Literature Review Paper (due Nov. 27, 2019).

Environmental health
Interdisciplinary Databases

- **Scopus**
  Large interdisciplinary article database. Covers environmental, health, engineering and science topics very well. Indexes over 14,000 journals. Coverage of database 1966 to present.

- **Web of Science: Core Collection**
  Covers over 8,000 journals in the sciences & social sciences. Also contains conference proceedings. Coverage goes back to 1899.

Medical Databases

- **PubMed**
  Freely available version of MEDLINE.

- **MEDLINE**
  Premier bibliographic database covering the fields of medicine and the preclinical sciences.

- **EMBASE**
  Biomedical database with strong coverage in pharmacy and alternative & herbal therapies.

- **PsycINFO**
  Covers journals, chapters, books, reports, theses and dissertations on psychology and related disciplines including medicine.

- **TOXNET**
  Detailed information on toxicological properties of chemical substances and environmental pollutants.
I am looking for articles on volatile organic compounds and their effect upon people who suffer from asthma.
Search strategy #1:

Break search question down into the main concepts
Search strategy #1:

Break search question down into the main concepts

• Volatile organic compounds
• Asthma
Volatile organic compounds AND asthma

<table>
<thead>
<tr>
<th>Basic Search</th>
<th>Cited Reference Search</th>
<th>Advanced Search</th>
<th>Author Search</th>
</tr>
</thead>
<tbody>
<tr>
<td>volatile organic compound and asthma</td>
<td>Topic</td>
<td>Search</td>
<td>Search tips</td>
</tr>
</tbody>
</table>

Cluster analysis on breath print of newly diagnosed COPD patients: effects of therapy

By: Scarlata, S (Scarlata, Simone)[1]; Finamore, P (Finamore, Panaitios)[1]; Santangelo, S (Santangelo, Simona)[1]; Giannunzio, G (Giannunzio, Gilda)[1]; Pennazza, G (Pennazza, Giorgio)[2]; Grasso, S (Grasso, Simone)[1]; Santonico, M (Santonico, Marco)[2]; Incalzi, RA (Incalzi, Raffaele Antonelli)[1]

**Abstract**

Background: Chronic obstructive pulmonary disease (COPD) is a highly heterogeneous disease and airflow limitation and symptoms only partially capture such heterogeneity. Since COPD is known to affect the production of volatile organic compounds (VOCs), we aimed to verify to which extent exhaled VOCs can characterize newly diagnosed COPD patients and changes in response to inhaled therapy. Materials and methods: Fifty newly diagnosed COPD patients were consecutively recruited among those attending the pulmonary medicine outpatient clinic at ‘Campus Bio-Medico’ University Hospital. VOCs were collected using the Pneumopipe (R) and analysed by the BIONOTE electronic nose both at baseline and after 12 weeks of inhaled therapy. Patients were grouped using K-mean cluster analysis on BIONOTE responses and the obtained clusters were compared via non-parametric tests. Results: We identified three clusters of subjects: (a) without remarkable comorbidities; (b) with air trapping and higher BODE index score (mean 1.2); (c) without air trapping and with a lower BODE Index. Inhaled bronchodilators caused a quantitative reduction in the amount of VOCs, while inhaled steroids provided a qualitative modification of the breath profile. Conclusion: VOCs patterns categorize newly diagnosed COPD subjects. VOCs production declines after bronchodilators administration and changes in quality after topical steroid treatment.

**Keywords**

Author Keywords: volatile organic compounds; electronic nose; COPD; phenotype; therapy

KeyWords Plus: OBSTRUCTIVE PULMONARY-DISEASE; VOLATILE ORGANIC-COMPOUNDS; EXHALED BREATH; ELECTRONIC NOSE; SMALL AIRWAYS; LUNG-VOLUMES; STANDARDIZATION; COMORBIDITIES; ASTHMA; SCALE
Search strategy #2:

- Think of different terms for each concept

<table>
<thead>
<tr>
<th>Concept 1: Volatile organic compounds</th>
<th>Concept 2: Asthma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volatile organic compound</td>
<td>asthma</td>
</tr>
<tr>
<td>Volatile organic compounds</td>
<td>asthmatic</td>
</tr>
<tr>
<td>VOCs</td>
<td>Chronic obstructive pulmonary disorder</td>
</tr>
<tr>
<td>Benzene</td>
<td>Respiratory disorder</td>
</tr>
</tbody>
</table>

- singular/plural, different spelling, synonyms, etc.
Search strategy #3:

• Use truncation (wildcards)

asthma*

• asthma
• asthmatic
Search strategy #4:

Use OR between similar concepts

OR = mORE

VOC*
benzene
Volatile organic compound*
Web of Science will undergo scheduled maintenance on September 23rd from 11:00-14:00 GMT. During this time, access to some personalization features may be intermittent. We apologize for any inconvenience.

Basic Search

"volatile organic compound**" OR VOC* or benzene

And

asthma OR respiratory disorder*
Volatile organic compounds
OR
VOCs
OR
benzene

Asthma
OR
Respiratory disorders

AND

Too many results?

Any strategies?
Too many results?
• try searching more specific terms
• put phrase in quotation marks to keep together
• try searching more specific fields (title or subject)
Too many results?
• apply limits (language, publication years, publication types, etc.)
Too few results?

Any strategies?
Too few results?
• synonyms (OR is mORe)
• wildcards (climat*)
• think of different spelling, plural, singular, etc. (language is variable)
• search all fields
• broader terms
• try another database
• remove limits (e.g. publication year, type of publication, etc.)
Too many results?
• try searching more specific terms
• try searching more specific fields (title or subject)
• apply limits (language, publication years, publication types, etc.)

Too few results?
• synonyms (OR is mORe)
• search all fields
• broader terms
• try another database
• remove limits
What do you do with the results?
Citation management software

- RefWorks
- Zotero
- EndNote
- Mendeley
Course specific resource guide

ENV 341: Environment and Human Health

Welcome

This guide is primarily intended for students in ENV 341 Environment and Human Health. This is a selective guide to the major e-resources that you will need to access to write your Term Paper Proposal (due Oct 5, 2017) and Term Paper (due Nov 23, 2017).

Environmental health

Why do we cite?
Why we cite

• Scholarly conversation
• Helps avoid plagiarism
• Intellectual credibility
• Acknowledgement & credit
• Allows others to find that information
 ENV_341: Environment and Human Health

Welcome
This guide is primarily intended for students in ENV 341 Environment and Human Health.

This is a selective guide to the major e-resources that you will need to access to write your Term Paper Proposal (due: Oct 5, 2017) and Term Paper (due Nov 23, 2017).

Environmental health
What is RefWorks?

RefWorks is a web-based bibliographic reference manager.

You can use it to:

- Organize your research
- Build a bibliography in a variety of formats
- Import references from many sources (article databases, web, library catalogue, etc.)
- Export references to EndNote, Reference Manager, etc.
- Access it from anywhere in the world
Any questions?

Contact:

Heather Cunningham, M.Sc., MLIS
Reference & Research Librarian
Gerstein Science Information Centre
University of Toronto
Email: h.cunningham@utoronto.ca