Medical knowledge evolution – query constraining aspects

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Health in the 21\textsuperscript{st} century

- The internet has changed the way we communicate
  - New ways of \textit{sharing} experiences
  - New ways of \textit{seeking} advice and information

- Patterns of communication reflect knowledge and interests
  - “You are what you tweet” (Paul et al 2011)

- E-health support (e.g. internet search engines) has to adapt to and take advantage of the characteristics of the new forms of communication
But,

- As scientists we may say... *We are what we publish!*

- Sources like Medline and patient record databases may be seen as “logs” of a life science knowledge evolution
Topics

- What can we learn from studying Medline as a “log” of knowledge evolution?
  - Do terms decrease/increase in use?
  - Do new terms occur?

- How can these lessons be utilised to possibly achieve improved search for health related information?
Materials and method

- 5851 MEDLINE records (1993-2009) containing “adiponectin” in title/abstract/keywords (MeSH)

- Manual occurrence analysis of terms and keywords

Adiponectin is a protein related to obesity and Diabetes Mellitus
Results
Terms become common knowledge

- Decrease in use of the main term *adiponectin* as a keyword
- Decrease in use of traditionally used terms (e.g. obesity, Diabetes Mellitus)
More detailed knowledge and interests

- Shift in use of terms towards more specific ones
  - From Obesity to “Obesity, Abdominal”
  - From Adipose Tissue to e.g. “Adipose Tissue, White”
New knowledge and interests

- Appearance of new terms is related to an interest in new concepts
  - New treatments (e.g. plants)
  - More specific population (e.g. age)
Hypotheses
in a search strategy perspective
Hypotheses
- Improved search strategies
  - **History** - take into account that terms become common knowledge
  - **Ontology** - use of search term context
  - **Trends** - allow ranking by occurrence of new terms
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