

Respiratory diseases and allergy in farmers working with large animals and Poultry: A EAACI Position paper

Appendix 1 Search strategy *Update: (sept 2019)*

1.1 Restrictions:

1. Farm work-related exposures
2. Livestock: cattle or/or swine farming
3. (work-related) asthma and rhinitis and COPD, in adulthood

1.2 Exclusion

- farm childhood exposure vs asthma/rhinitis/allergy in children
- ODS, HP
- URT and LRT infectious disease

1.3 Comments/questions & in/exclusion:

Focus (*see also objectives of Task Force*):

1. Epidemiological studies on incidence/prevalence of asthma and rhinitis in farmers/farm workers
2. Studies on exposure in livestock farming – any (major) qualitative (other agents?) or quantitative changes during last decades, due to upscaling of livestock farming?
3. Dose-response relations between exposure levels and the risk of asthma/rhinitis among farmers/farm worker?
4. new insights re the pathogenesis of farm-related asthma and rhinitis
5. The paradox: farm exposure's *protection* against asthma/allergy/rhinitis \leftrightarrow farm-exposure as *risk factor* for asthma and rhinitis?
6. Prevention measures: effectiveness of primary and/or secondary prevention?

*For these topics strict focus on **primary literature** from the **last 10-15 years** – studies performed (=data collected) after 2000. In case of abundance in one or more of the 5 focus areas, selection with as criteria:*

- ~equal numbers of primary papers (if possible, at least 5-10) in each of the six focus areas;
- date of publication (or better: study date/period); priority for most recent papers
- geographical distribution/coverage – trying to incorporate studies from a variety of geographic regions worldwide (restriction to industrialized world)

Literature Search strategy (MEDLINE/PubMed)

1.3.1 Step A:

A series of papers on respiratory health risks (priority: asthma and rhinitis) and associated exposure factors in livestock farming; published 2011-17 – mainly reviews:

| <i>Authors</i> | <i>Journal</i> | <i>PY</i> | <i>Topic</i> |
|------------------------------|------------------------------|-----------|----------------------------------|
| Basinas et al. | J Exp Sci Environ Epidemiol | 2015 | Exposure |
| Bolund | Occup Environ Med | 2017 | Dose-response lung function |
| Luong Thanh | Cochrane Rev | 2016 | Prevention in Occup settings |
| May | J Tox Env Health | 2012 | Mechanisms |
| Nordgren & Bailey | Curr Op Resp Med | 2016 | General/clinical/diagnosis |
| Poole | Ann Asthma Allergy Immunol | 2012 | Exposure factors |
| Poole & Romberger | Curr Op Allergy Clin Immunol | 2012 | Mechanisms |
| Reynolds | J Agromed | 2013 | General dairy farming |
| von Essen | J Agromed | 2010 | Prevention/NIOSH recommendations |
| Wunschel & Poole | J Asthma | 2016 | General/risk factors |

1.3.2 Step B:

Inventory of all MeSH terms added in MEDLINE to these papers; MESH terms sorted on frequency with which they were. After exclusion of terms considered non-specific or not relevant, and terms used only once (numbers give frequency of use):

| MeSH term | # |
|-----------------------------------------------------|----|
| Occupational Exposure | 12 |
| Animals | 8 |
| Endotoxins/adverse effects | 7 |
| Dust | 7 |
| Lung Diseases/chemically induced* | 6 |
| Air Pollutants, Occupational/adverse effects | 5 |
| Occupational Diseases*/epidemiology | 5 |
| Pulmonary Disease, Chronic Obstructive/epidemiology | 5 |
| Agriculture* | 4 |
| Agricultural Workers' Diseases/chemically induced* | 4 |
| Asthma/epidemiology | 4 |
| Animal Husbandry* | 3 |
| Respiratory Tract Diseases/epidemiology | 3 |
| Bronchitis, Chronic/epidemiology | 3 |
| Aerosols | 2 |
| Cattle | 2 |
| Dairying | 2 |
| Livestock | 2 |
| Swine | 2 |
| Hypersensitivity/epidemiology | 2 |

1.4.3 Step C:

Check position of these terms in MeSH thesaurus tree (eg. asthma and rhinitis in the tree of 'respiratory tract diseases'; 'livestock' in tree 'animals')

1.4.4 Step D:

Search in Pubmed/MEDLINE for items indexed with "MESH terms" or "MESH major topics"

| Search in MEDLINE for items indexed with MESH terms or MESH major topics | | | | |
|---------------------------------------------------------------------------------|---------------|----------------------------------------------|-------------------|---------------|
| Set | Search | Search term / combination | | #hits |
| 1 | #2 | Occupational exposure | MeSH | 61.209 |
| 2 | #3 | Occupational exposure/adverse effects | MeSH | 19.523 |
| 3 | #4 | Dust | MeSH | 21.590 |
| 4 | #5 | Aerosols | MeSH | 30.333 |
| 5 | #6 | Endotoxins/adverse effects | MeSH | 13.780 |
| 6 | #7 | Air pollutants, Occupational/adverse effects | MeSH | 7.081 |
| A | | ANY (#2; #4-#7) | | 124.447 |
| A1 | | ANY (#3; #4-#7) | | 86.933 |
| | | | | |
| 7 | #12 | Agriculture | MeSH | 91.051 |
| 8 | #13 | Animal husbandry | MeSH | 20.401 |
| 9 | #14 | Dairying | MeSH | 11.729 |
| 10 | #15 | Farms | MeSH | 1.631 |
| 11 | #16 | Cattle | MeSH | 341.390 |
| 12 | #20 | Swine | MeSH | 231.576 |
| 13 | #21 | Livestock | MeSH | 3.184 |
| B | | ANY (#12- #16; #20-#21) | | 608.084 |
| | | | | |
| 14 | #23 | Respiratory tract diseases | MeSH | 1.295.91 6 |
| 15 | #24 | Asthma | MeSH | 124.190 |
| 16 | #25 | Rhinitis | MeSH | 33.156 |
| 17 | #26 | Pulmonary Disease, Chronic Obstructive | MeSH | 52.575 |
| 18 | #27 | Lung diseases | MeSH | 851.713 |
| 19 | #28 | Bronchitis, chronic | MeSH | 1.724 |
| 20 | #29 | Hypersensitivity | MeSH | 334.692 |
| C | | ANY (#4; #5; #12; #25; #27; #28; #29) | | 1.496.52 3 |
| | | | | |
| 21 | #31 | Agricultural Workers' Diseases | MeSH | 6.535 |
| 22 | #32 | Farmers OR workers OR occupational | Title or Abstract | 261.287 |
| D | | #31OR #32 | | 264.470 |
| | | | | |
| E | | A1 AND B AND C | | 798 |
| | | | | |
| F | | E and D | | 377 |
| | | | | |
| G | | F and PY >1999 (published since 2000) | | 266 |