

A new Era of Veterinary Medicine : « Nutritional Epidemiology »

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What is Nutritional Epidemiology ?

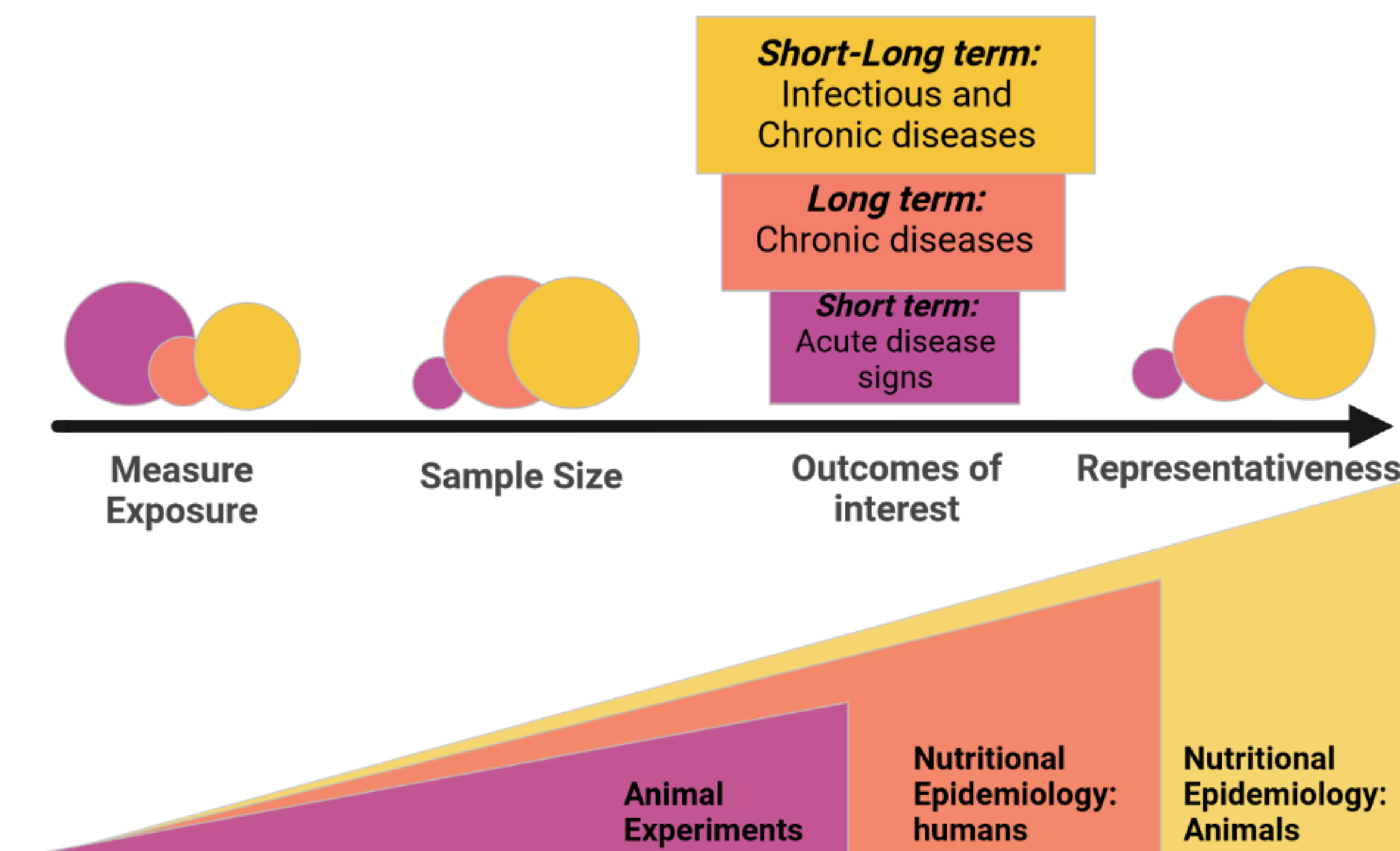
- Nutritional epidemiology provides data on the **relationship between diet and disease** that are transformed by public health policy makers into prevention practices.
- Specific **contributions** of this field include the assessment of diet, the description of nutritional exposure to different hazards and the statistical modeling of the diet-disease relationship.
- The real challenge is: **exposure measurement**.



Aim :

Identify the limits and strengths of nutritional research in animals and humans and **illustrate** how nutritional epidemiology could be conducted in veterinary field.

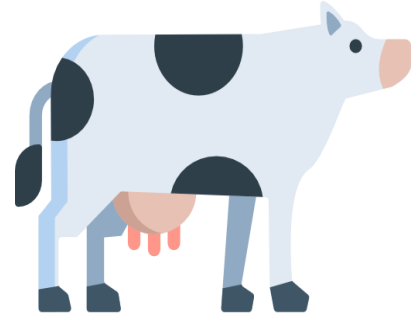
What are the limits and strengths of Nutritional Research ?



How to illustrate Nutritional Epidemiology in Veterinary ?

Observational Study

A **retrospective study was carried out** based on data (2008-2015) from French dairy herds enrolled in the official Milk Recording Scheme and supplemented with **extruded linseed**.



1204 herds, 194 056 cows, and 400 522 lactations was to our knowledge the **first large field-based epidemiological study** exploring the association between nutrition (i.e., exposure to a feed) and cow health and milk performance.



The exposure measurement was achieved thanks to : the **deliveries of commercial feeds** containing extruded linseed.



The high statistical power resulting from this large sample allowed to demonstrate that **supplementing extruded linseed in commercial farms could be beneficial to dairy cow performance**.

Ariza JM, Meignan T, Madouasse A, Beaudou F, Bareille N. Effects on milk quantity and composition associated with extruded linseed supplementation to dairy cow diets. Sci Rep. 2019 Nov 26;9(1):17563.



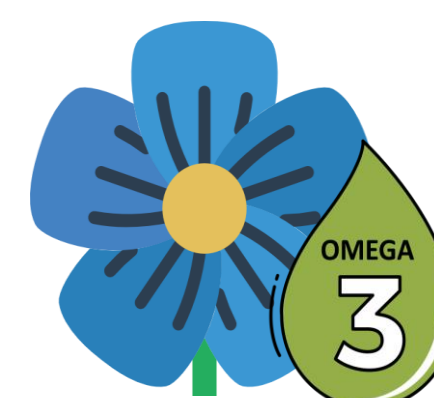
Meignan T, Madouasse A, Beaudou F, Ariza JM, Lechartier C, Bareille N. Does feeding extruded linseed to dairy cows improve reproductive performance in dairy herds? An observational study. Theriogenology. 2019 Feb 1;125:293-301.

Interventional Study

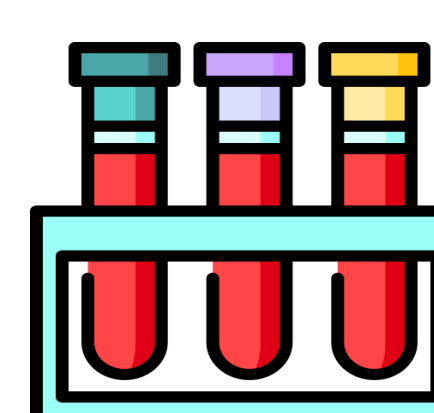
A **prospective exposed/non-exposed study will be held on**, in **30 dairy commercial farms** (2023-2024).



Within each **farm**, prior to dry off, **30 pregnant dairy cows** will be randomly assigned to one of **two trial groups**, a group **supplemented with extruded linseed** and a **control group**.



Our **hypothesis** is that **supplementation rich in omega-3** via extruded linseed can be **preventive** to the **health** of the cow and that of her calf via **foeto-maternal exchanges** and colostrum/transitional milk **transfers**.



The exposure measurement will be achieved by assessing **blood, colostrum and transitional milk** lipid profile. In addition, different **health and metabolic biomarkers** will be explored (Ig, oligosaccharides, BoH...).



Based on the **obtained results**, we **aim** to investigate the potential impact of dry period nutrition on the health status of dairy cows and their calves, utilizing promising **biomarkers**.