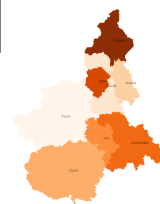


CAUSE-SPECIFIC MORTALITY IN DAIRY CATTLE: AN ONGOING COHORT STUDY

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INTRODUCTION & AIM



The health of a population is commonly assessed by mortality studies: while all-causes mortality studies give an indication of mortality trends and extent, for a better definition of the phenomenon cause-specific mortality data are needed. However the availability of this kind of data is limited by the fact that, to assess the true cause of death, post-mortem evaluation is recommended. Aim of our study is to investigate the causes of mortality in a small cohort of dairy cattle in a Region of northern Italy (Piedmont).

MATERIAL AND METHODS

- STEP 1: Identification of the "typical farm": descriptive analysis of dairy farms active in Piedmont during the year 2011 (i.e breeder association registration, herd size);
- STEP 2: Enrolment of the cohort based on predetermined inclusion criteria (stratified by province, breeders associates, herd size over 19 heads, willing to be involved in the project) & case definition: every calf, veal or cattle died or euthanized;
- STEP 3: Post-mortem examination & ancillary diagnostics: following a standard protocol on every case during the period 01/04/2012-31/01/2014
- STEP 4: Descriptive analysis (crude and age specific mortality rates, Poisson's regression to calculate incidence rate ratio between age-classes (3 classes: 1-6 months, 7-24 months, >24 months), breeds (3 classes: Friesian, Piedmontese and Others) and sex, rates of cause specific mortality) & statistical analysis (trends of crude and age specific all causes mortality). Data on denominators comes from National Cattle Registry (BDN).

RESULTS

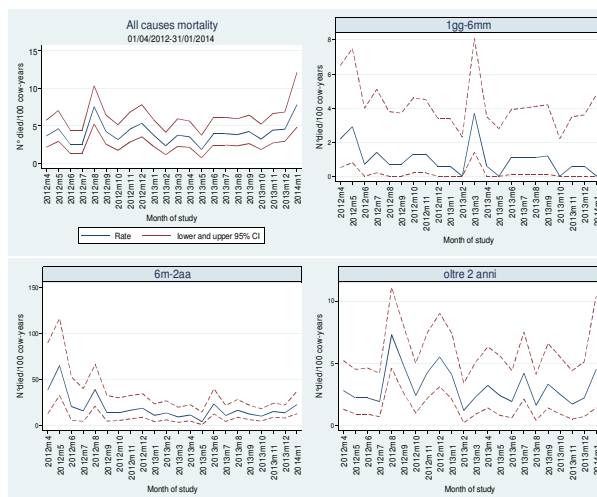
- Cohort:** 32 farms were selected (herd size >19 (3 classes small:20-99, big:100-499, huge: over 500))
- Heads involved** during the period 01/04/2012-31/01/2014: 12695, 10475.43 cow-years
- Crude mortality rate** during the period 01/04/2012-31/01/2014: 4/100 cow-years (CI95% 3.6-4.4)

Mortality rates by causes and age class

Causes of mortality	1day-6moths			7-24 months			>24 months		
	Rate	[95% Conf. Interval]		Rate	[95% Conf. Interval]		Rate	[95% Conf. Interval]	
Accidents	7.8	3.5	17.36	1.53	0.22	10.85	1.62	0.9	2.93
Calving disorders	365.25	152.03	877.52	n.r	n.r	n.r	1.9	0.99	3.65
Digestive disorders	12.65	8.85	18.1	n.r	n.r	n.r	2.27	1.62	3.18
Respiratory disorders	5.17	3.37	7.92	0.69	0.22	2.15	2.43	0.61	9.74
Metabolic	n.r	n.r	n.r	n.r	n.r	n.r	4.4	0.62	31.24
Udder/teat disorders	n.r	n.r	n.r	n.r	n.r	n.r	1.43	0.59	3.43
Other reasons	17.18	11.42	25.85	1.16	0.29	4.63	0.73	0.38	1.4
Total	9.93	8.03	12.28	0.84	0.42	1.68	1.64	1.3	2.07

Ageclass	Person-time	Failures	Rate	[95% Conf. Interval]
1gg-6m	1173.33	202	17.22	15 19.76
7m-2aa	3412.51	35	1.03	0.74 1.43
>2aa	5889.6	182	3.09	2.67 3.57
Total	10475.43	419	4	3.63 4.4

Trends of crude and age specific all causes mortality rates



Ageclass	IRR	[95% Conf. Interval]
1gg-6m	16.8	11.7 24.0
7-24m	Ref	Ref Ref
>2aa	3.0	2.1 4.3
Breed		
Friesian	Ref	Ref Ref
Piedmontese	1.3	1.0 1.8
Others	5.5	4.3 7.0
Sex		
Females	Ref	Ref Ref
Males	3.0	2.4 3.8

CONCLUSION

- Crude mortality rates are consistent with national data
- Mortality in the age class 1day-6 month could be overestimated as <15 days old calves are under-registered, this is also evident when considering calving disorders in the same age class.
- The rate of digestive disorders in adults is higher than reported in literature, most of our cases are due to Clostridiosis (Cl. perfringens)
- The lack of an internationally acknowledged classification system prevents a meaningful evaluation of the cause-specific mortality in cattle