UNIVERSITÀ DEGLI STUDI DI TORINO

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Centro Regionale Esperto per la Sclerosi Laterale Amiotrofica

The role of pre-morbid diabetes on developing of ALS

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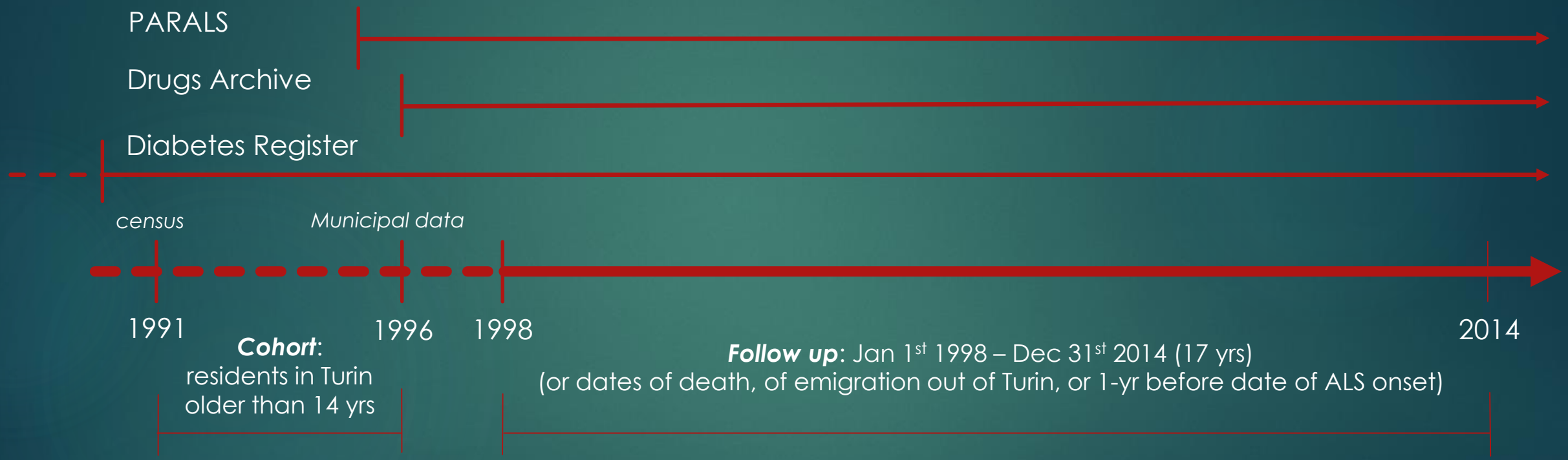
Background

- limited number of studies
- age and type of diabetes may be an effect modifier of this association
- later onset of ALS in diabetic patients compared to non-diabetic ones
- conflicting results

Research questions

1. Is there an association between pre-morbid diabetes and ALS?
2. If yes, could age and type of diabetes represent eventual modifying effects?
3. Could diabetics display a later ALS onset?

The Cohort study



N: 727,977
N diab: 82,963
N ALS: 397
N ALS diab: 20

Statistical analysis

- exposure to diabetes was treated as a time-dependent variable, and was truncated at 1 year before ALS onset (3-years truncation as sensitivity analysis)
- Cox proportional Hazards models with robust standard errors were performed, adjusted for age, gender, educational level and marital status
- the eventual modifying effect of age was assessed categorizing age variable in three classes: <50 years, 50-64 years, 65+ years.

Results

Truncation at 1 year before ALS

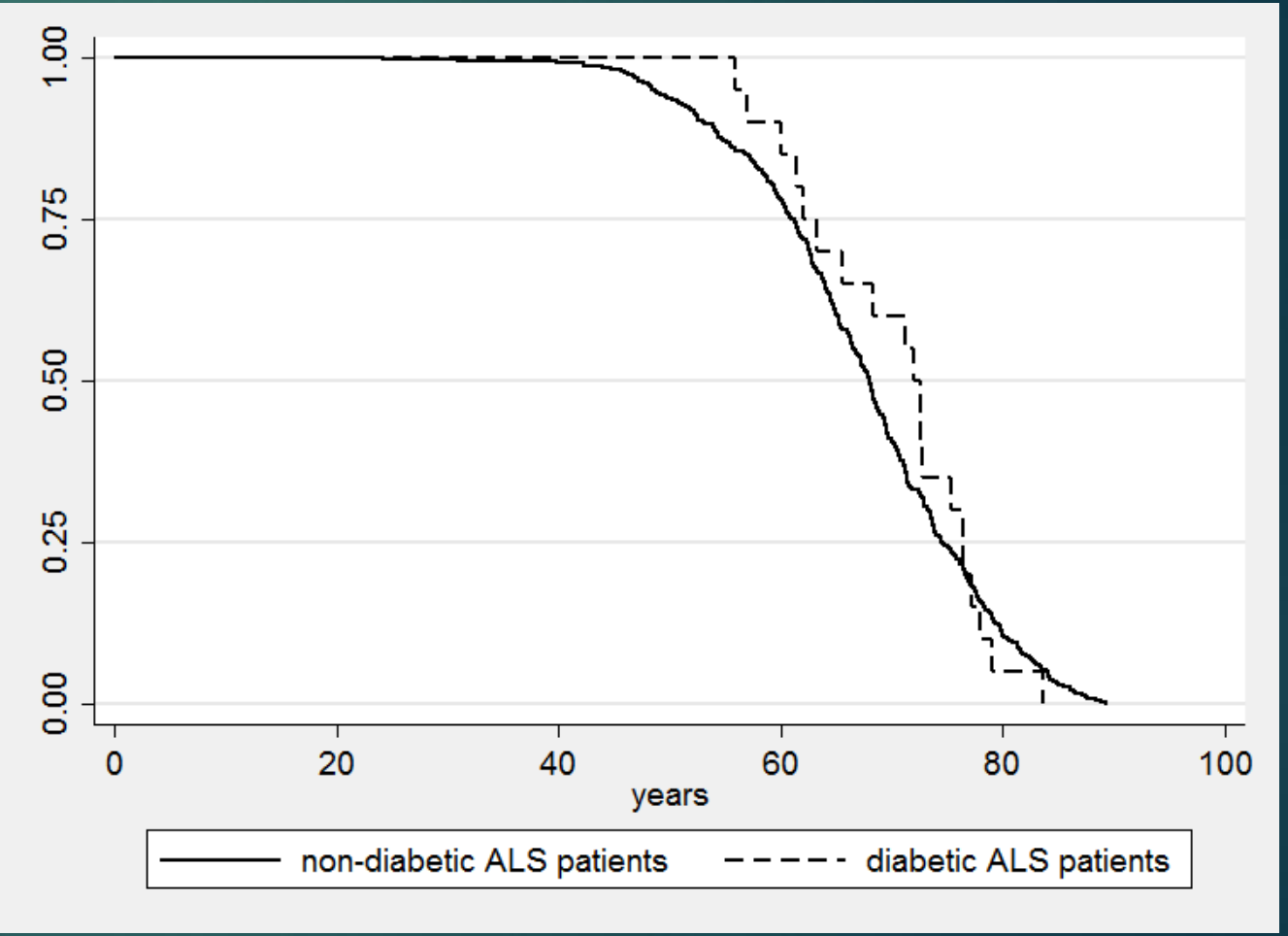
Ever exposure	HR	95% CI
Overall	**0.26**	0.17 – 0.42
Stratified by gender		
Male	0.27	0.15 – 0.48
Female	0.25	0.12 – 0.54
Stratified by age		
15-49 years	0.24	0.06 – 0.98
50-64 years	0.21	0.11 – 0.43
65+ years	0.27	0.14 – 0.54

Truncation at 3 years before ALS

HR	95% CI
0.18	0.11 – 0.31
0.16	0.08 – 0.33
0.22	0.09 – 0.49
0.24	0.06 – 0.98
0.14	0.06 – 0.32
0.18	0.08 – 0.40

Results

- survival analysis by age shown that mean age at ALS onset of diabetic patients was 3-years higher than that of non-diabetic patients:
  - age mean: 67.4 (sd 10.5) years and 70.0 (sd 7.9) years
  - log-rank test p=0.78



Conclusions

- protective association between pre-morbid diabetes and the development of ALS (significant HR of 0.26)
- this association concerned exclusively type 2 diabetes and was not modified by age or sex
- survival analysis by age at ALS onset between diabetic and non-diabetic patients presented different curves, with a 3-years later onset for the former (even if not significant)
- although the mechanisms underlying this association remain mainly unclear:
  - higher serum lipids or glucose may reduce and delay the damage to the motor neuron system;
  - environment and genotype might play a role on this association

Thank you

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