



**Karolinska  
Institutet**

# Sex differences in urinary bladder cancer survival

Cancer Survival Group  
**London school of hygiene & tropical medicine 2019**

Cecilia Radkiewicz MD

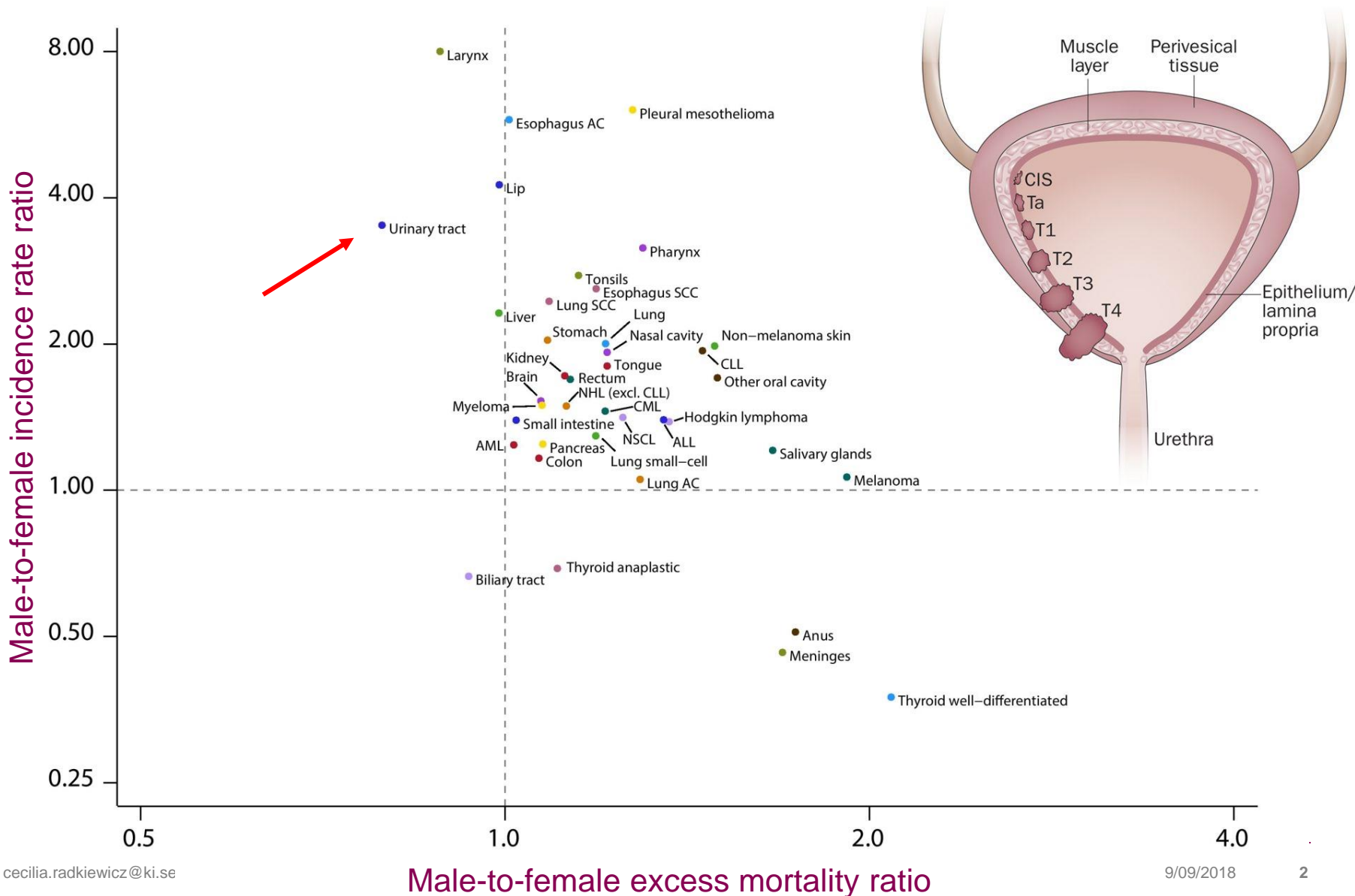
[cecilia.radkiewicz@ki.se](mailto:cecilia.radkiewicz@ki.se)

Department of Medical Epidemiology and Biostatistics (MEB)  
Karolinska Institutet, Stockholm, Sweden

Department of Oncology  
Karolinska University Hospital Hospital, Stockholm, Sweden

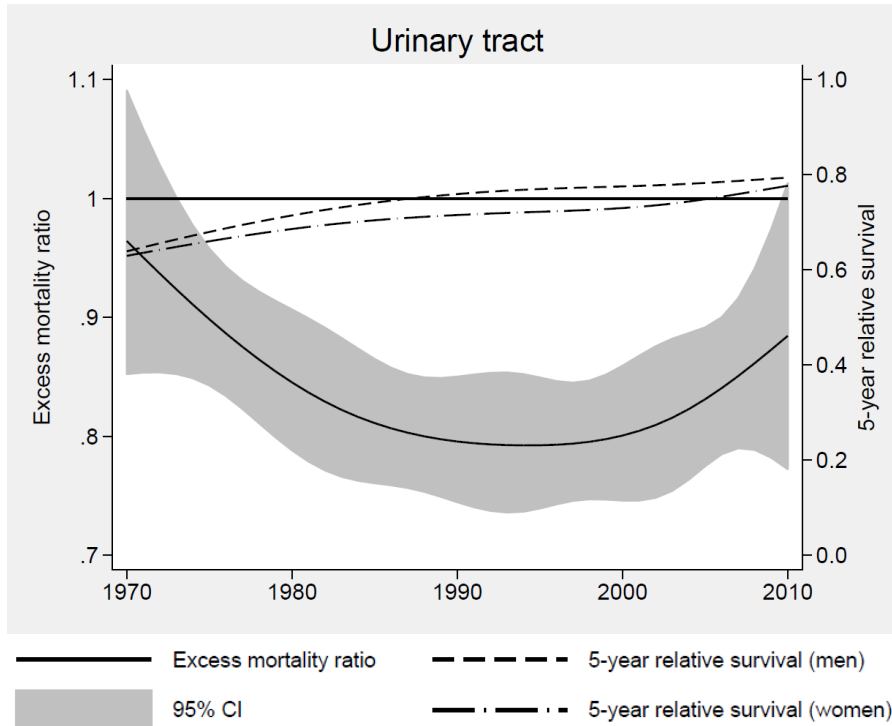
# Sex differences in cancer risk and survival

Radkiewicz et al, Eur J Cancer 2017



# Sex differences in urinary bladder cancer survival

## Purpose



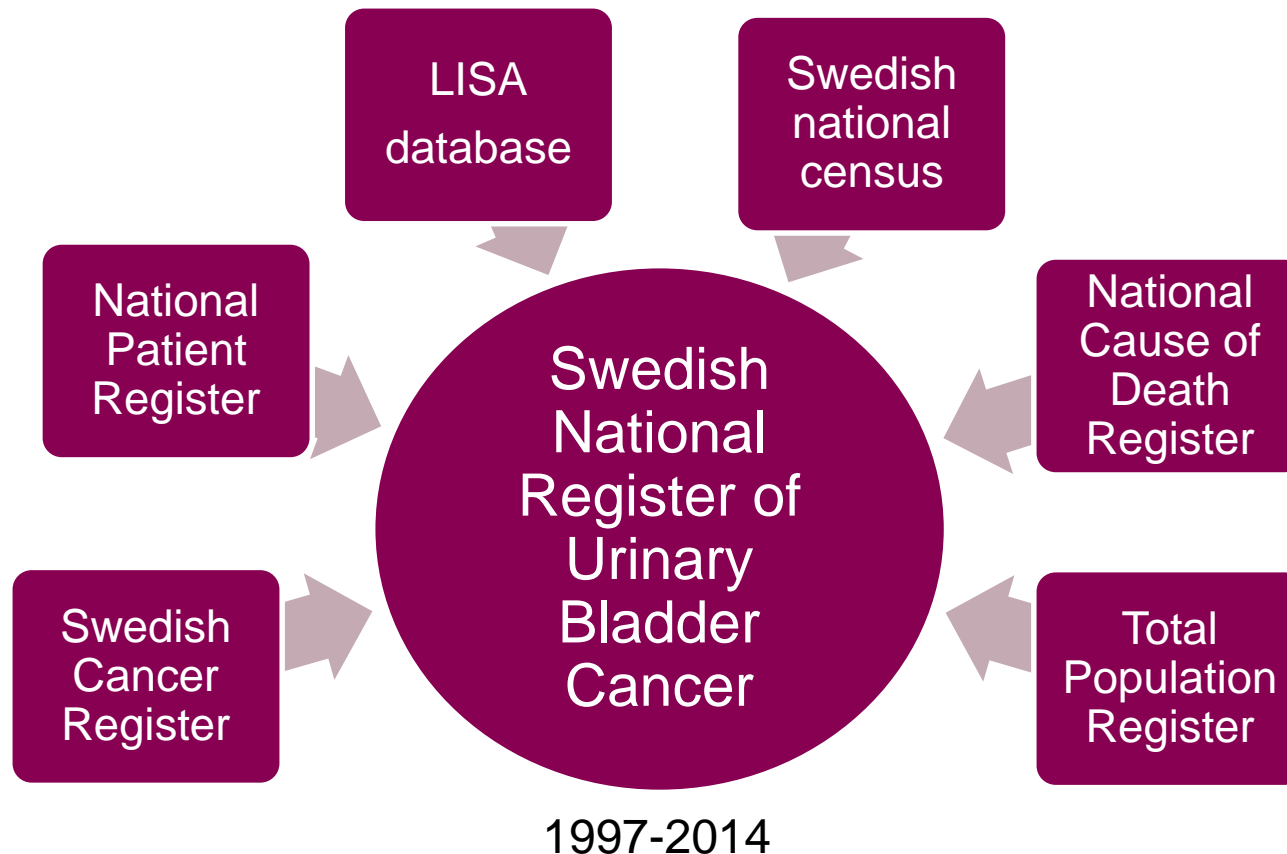
- Diagnostic delays?
- Adverse stage distribution?
- Suboptimal treatment?
- Histopathology?
- Tumour biology?
- Anatomy?

- Delineate sex differences in prognostic factors and clinical management
- Explore if these can explain the poorer outcome in women

## Sex differences in urinary bladder cancer survival

### Methods – data sources

- Population-based cohort study (n=36,344)
- The Bladder Cancer DataBase Sweden (BladderBaSe)



## Methods

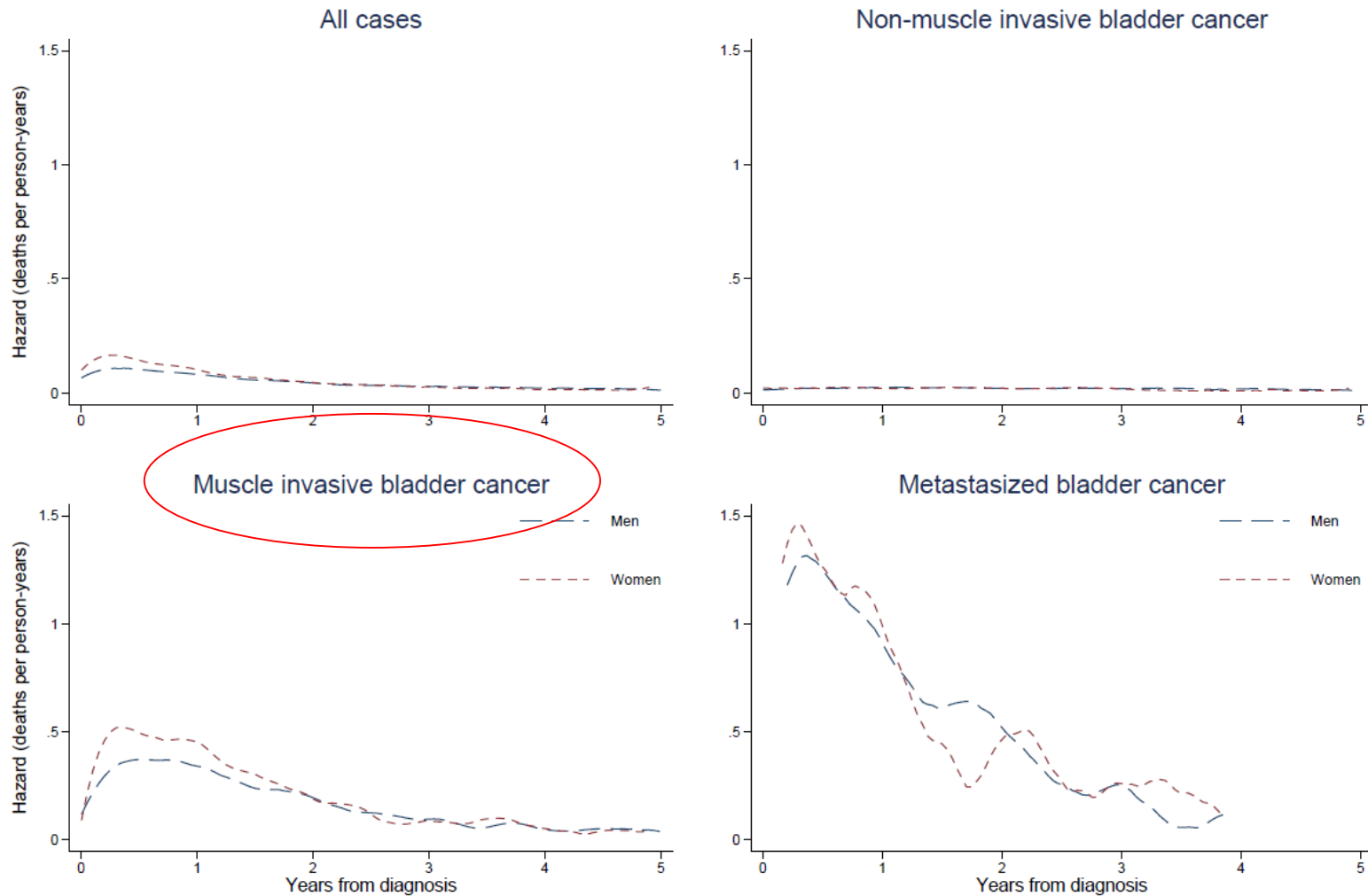
- Urothelial bladder cancer (ICD-O-3: C67.0-C67.6, C67.8-C67.9)
- Age 18-89
- Year of diagnosis 1997-2014
- T-stage based on TURBT specimens (current AJCC in practise)
- N- and M-stage (when performed radiology)
  
- All analysis stratified into three (mutually exclusive) groups:
  1. Non-muscle invasive bladder cancer (NMIBC) → very good prognosis
  2. Muscle invasive bladder cancer (MIBC) → 5-year relative survival ≈50%
  3. Primarily metastasized bladder cancer → 5-year relative survival ≈5%

# Results

- Women slightly older, but presented with less comorbidity (CCI)
- Proportion of women increased with advancing stage group; 23.6% (NMIBC) → 26.9% (MIBC) → 31.0% (metastasised UBC)
- Women had more advanced T stage (MIBC)
- NMIBC more often low-grade (WHO) in women?
- No/minor significant sex differences in clinical management, including timely diagnosis (<3 w from referral)

# Sex differences in urinary bladder cancer survival

## Results

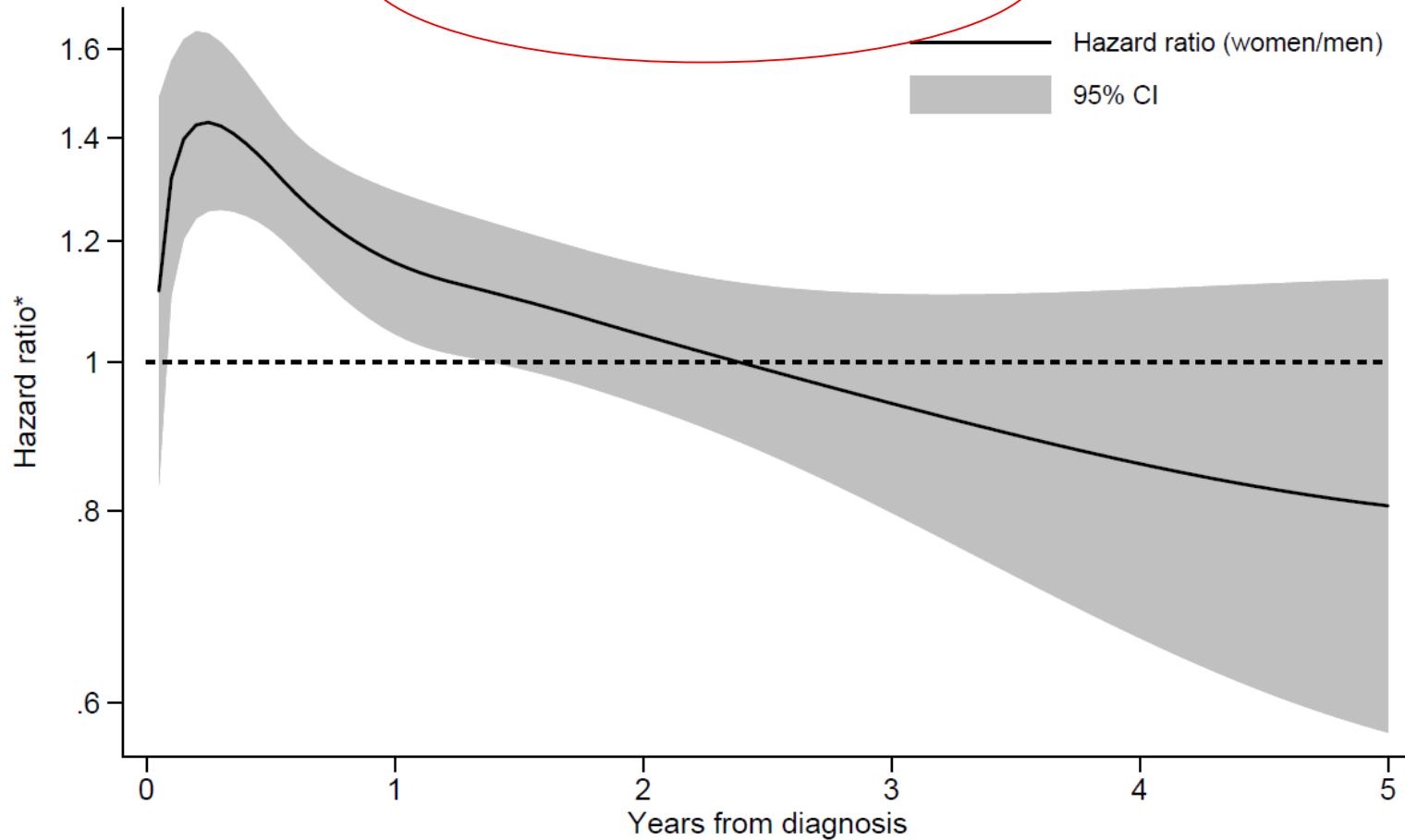


Bladder cancer-specific mortality rate (deaths per person-years) over follow-up, in men and women diagnosed with urothelial bladder cancer.

## Sex differences in urinary bladder cancer survival

# Results

Muscle invasive bladder cancer

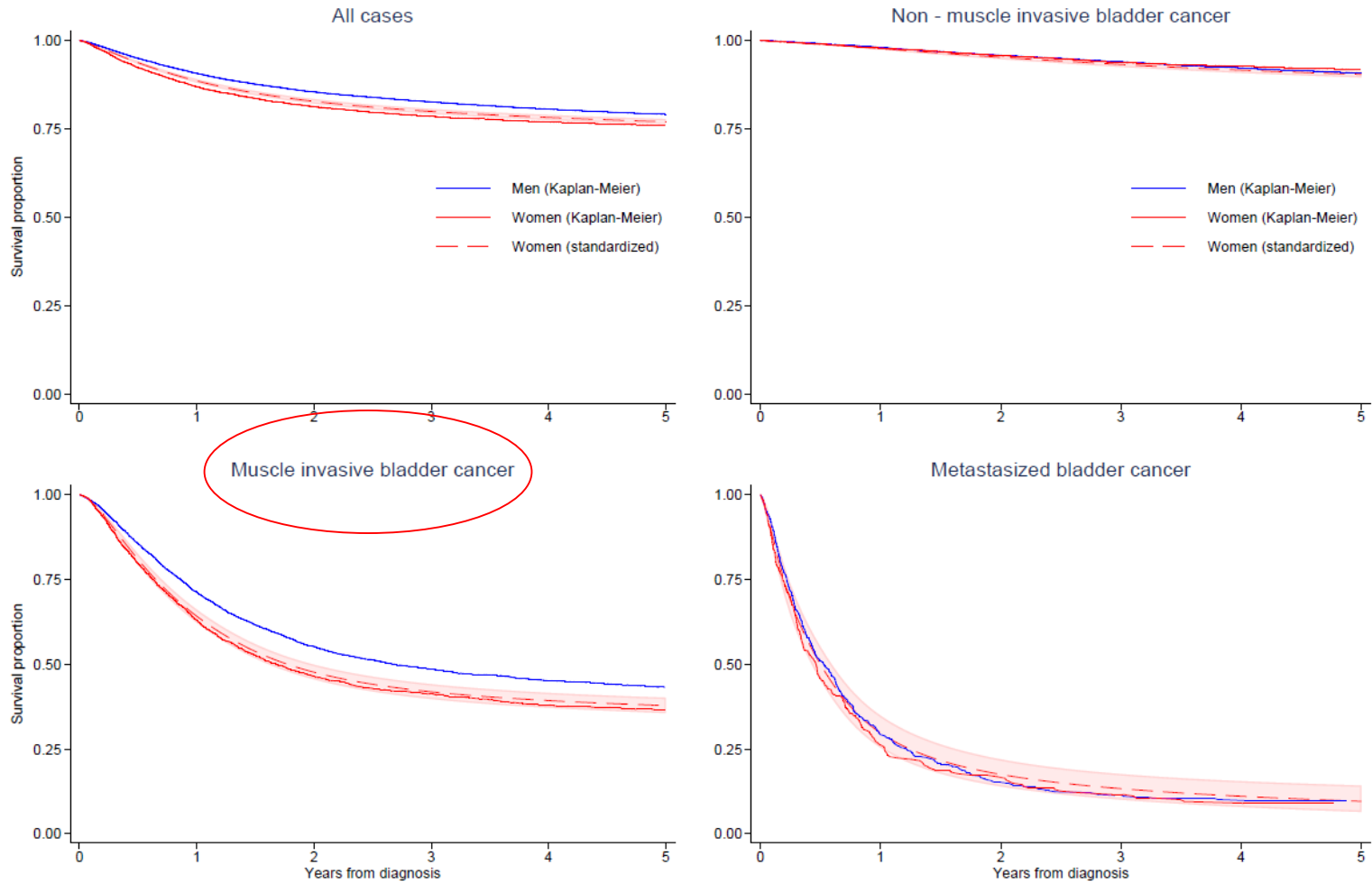


Bladder cancer-specific hazard ratio (women/men) over follow-up in muscle invasive bladder cancer, adjusted for age, year, WHO grade, stage, marital status, education, health care region, birth country, and comorbidity.



# Sex differences in urinary bladder cancer survival

## Results



Bladder cancer-specific survival proportion in men and women (Kaplan-Meier) and women standardized to the male covariate pattern (age, year, WHO grade, stage, marital status, education, health care region, birth country, and comorbidity) at diagnosis, including 95% CI.

# Conclusion

- The excess urinary bladder cancer mortality in women is;
  1. limited to muscle invasive tumors
  2. only noticeable the first two years post-diagnosis
  3. cannot be explained by sex differences in clinicopathological factors, comorbidity burden, sociodemographic factors, or clinical management
  
- Future research should focus on *muscle-invasive tumors*:
  1. Residual confounding (stage-within-stage)?
  2. T4-tumors in women (VERY poor prognosis)?
    - Compare pre- and postoperative surgical specimens
  3. Constitutional sex differences in anatomy?
    - Surgical complications
  
- **Take-home message** (clinicians): the adverse stage distribution in women calls for action!

## Sex differences in urinary bladder cancer survival

# Thank you

Gustaf Edgren<sup>1</sup>, Anna LV Johansson<sup>2</sup>, Staffan Jahnsen<sup>3</sup>, Christel Häggström<sup>4</sup>, Olof Akre<sup>5</sup>, Mats Lambe<sup>2</sup>, Paul Dickman<sup>2</sup>

<sup>1</sup>Department of Clinical Epidemiology, Karolinska Institutet, SWEDEN

<sup>2</sup>Department of Medical Epidemiology and Biostatistics, Karolinska Institutet, SWEDEN

<sup>3</sup>Department of Clinical and Experimental Medicine, Linköping University, SWEDEN

<sup>4</sup>Department of Biobank Research, Umeå University, SWEDEN

<sup>5</sup>Department of Pelvic Cancer, Karolinska University Hospital, SWEDEN

