

Similarities and differences in proximal femoral fractures management in Lithuania and Germany.

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Introduction

- Hip fractures – most common
- Treatment methods varies
- Post op care varies
- Outcome varies in different countries

Introduction

- Treatment methods used in different institutions are not always based on current scientific evidence and may be influenced by previous country traditions
- Comparison of outcomes is essential for identification of best clinical practice

Study design

- One hospital for Germany and Lithuania
- Retrospective analysis of medical data
- Included all proximal femur fractures
- Inclusion period from 2014-06-01 till 2016-06-30
- Follow-up started on the day of treatment and ended on the day of revision, death or after one year

Material and methods

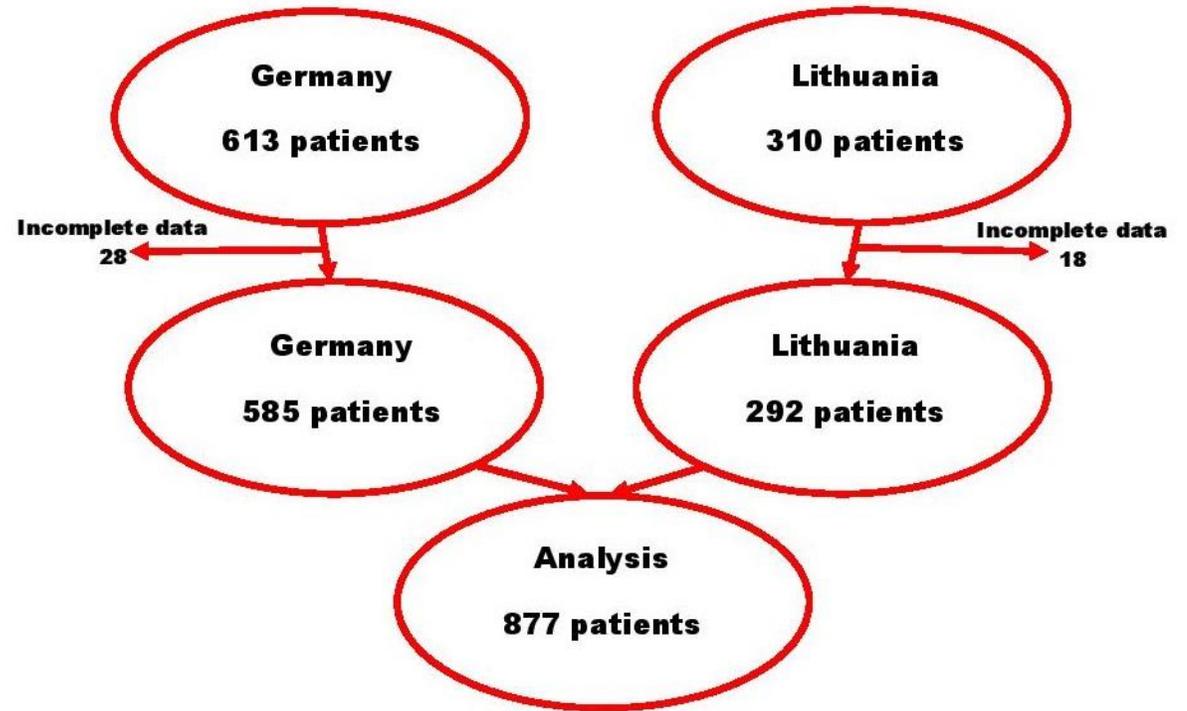
- Prefilled excel file prepared
- Germany extracted data from hospital charts
- LT reviewed individual patient charts
- LT obtained death dates from National Census register
- Reoperation from LT were cross checked in National Arthroplasty register

Statistics

- For descriptive statistics we used means, ranges, and 95% confidence intervals where appropriate.
- CRR curves were calculated and Log rank test were performed for survival estimates.
- Confidence intervals (95% CI) were calculated, using the Wilson quadratic equation with Greenwood and Peto effective sample-size estimates.

Descriptive statistics

- 923 patients.
- Germany (G) 613; Lithuania (L) 310.
- Incomplete data 44 (G 29; L 18)
- 877 patients (G 585; L 292).
- Males 270 (G 192; L 78); Females 607 (G 393; L 214)
- Age 79,64 (G 81,13; L 76,53; $p=0,0000$)



Fractures

Fracture type	Germany (%)	Lithuania (%)	Total
Displaced femoral neck fracture	116 (20)	179 (61)	295
Subtrochanteric fracture	62 (11)	20 (7)	82
Trochanteric two fragments fracture	240 (41)	42 (15)	282
Trochanteric fracture multi fragments	0	12 (4)	12
Undisplaced femoral neck fracture	167 (28)	39 (13)	206
Total	585	292	877

p = 0,000

Death in Lithuania after proximal femur fractures in one year after admission

- 54 (18,49) patients died.
- Age 84,61 (\pm 1,10) y.
- Time till death after operation 117,65 (\pm 14,38) days.
- The time period between admission and operations was significantly longer in patients who died before one-year follow-up. 80,96 hours vs. 40,12 hours ($p = 0,0145$).

ASA grade	Survives		Died	
I	8	3,38%	0	0%
II	77	32,49%	11	20,37%
III	139	58,65%	34	62,96%
IV	13	5,49%	9	16,67%
Total	237		54	

$p=0,015$

Time till operation

- Time till operation 40,03 hours
- Germany 36,17
- Lithuanian 47,72
- $p = 0,0523$
- After admission 528 (60,62 %) patients where operated in 24 hours. (G 345 (59,48%); L 183 (62,89 %) $p = 0,332$)

ASA grade	<24 h till op		>24 h till op	
I	8	1,52%	3	0,87%
II	137	25,95%	66	19,24%
III	355	67,23%	251	73,18%
IV	28	5,30%	23	6,71%
Total	528		343	

$p = 0,088$

Treatment method

Treatment method	Germany		Lithuania	
Bipolar hemiarthroplasty	159	27,18%	72	24,66%
Total hip replacement	113	19,32%	103	35,27%
Cannulated screws	2	0,34%	0	0%
Three screws	0	0%	8	2,74%
Two Cancellous threaded screws	0	0%	26	8,90%
Two screws (type unspecified)	0	0%	1	0,34%
Sliding hip screw	46	7,86%	73	25%
Gamma nail	264	45,13%	9	3,08%
No operation performed	1	0,17%	0	0%
Total	585		292	

Displaced femoral neck fractures

Treatment	Germany		Lithuania	
Arthroplasty	103	88,79%	172	96,09%
Screw osteosynthesis	1	0,86%	4	2,23%
DHS	7	6,03%	3	1,68%
Gamma nail	5	4,31%	0	0%
Total	116		179	

p=0,002

10 revisions where performed in Lithuania. 2 implant removal because of infection in arthroplasty group . 4 revisions because of dislocation. And 4 revisions in other treatment groups.

Undisplaced femoral neck fracture

Treatment	Germany		Lithuania	
Arthroplasty	153	91,62%	0	0,00%
DHS	11	6,59%	6	15,38%
Gamma nail	2	1,2%	2	5,13%
Screw osteosynthesis	0	0%	31	79,49%
Conservative	1	0,6%	0	0%
Total	167		39	

p=0,000

13 revisions where performed in both groups. 4 in Germany and 9 in Lithuania. All revisions were THA.
p=0,000

Trochanteric fractures

Treatment	Germany		Lithuania	
Arthroplasty	11	4,58%	3	5,56%
Screw osteosynthesis	1	0,42%	0	0%
DHS	21	8,75%	46	85,18%
Gamma nail	207	86,25%	5	9,26%
Total	240		54	

p=0,000

5 revisions were performed 1 in Germany and 4 in Lithuania. In all revisions arthroplasty was performed.

p=0,003

Subtrochanteric fracture

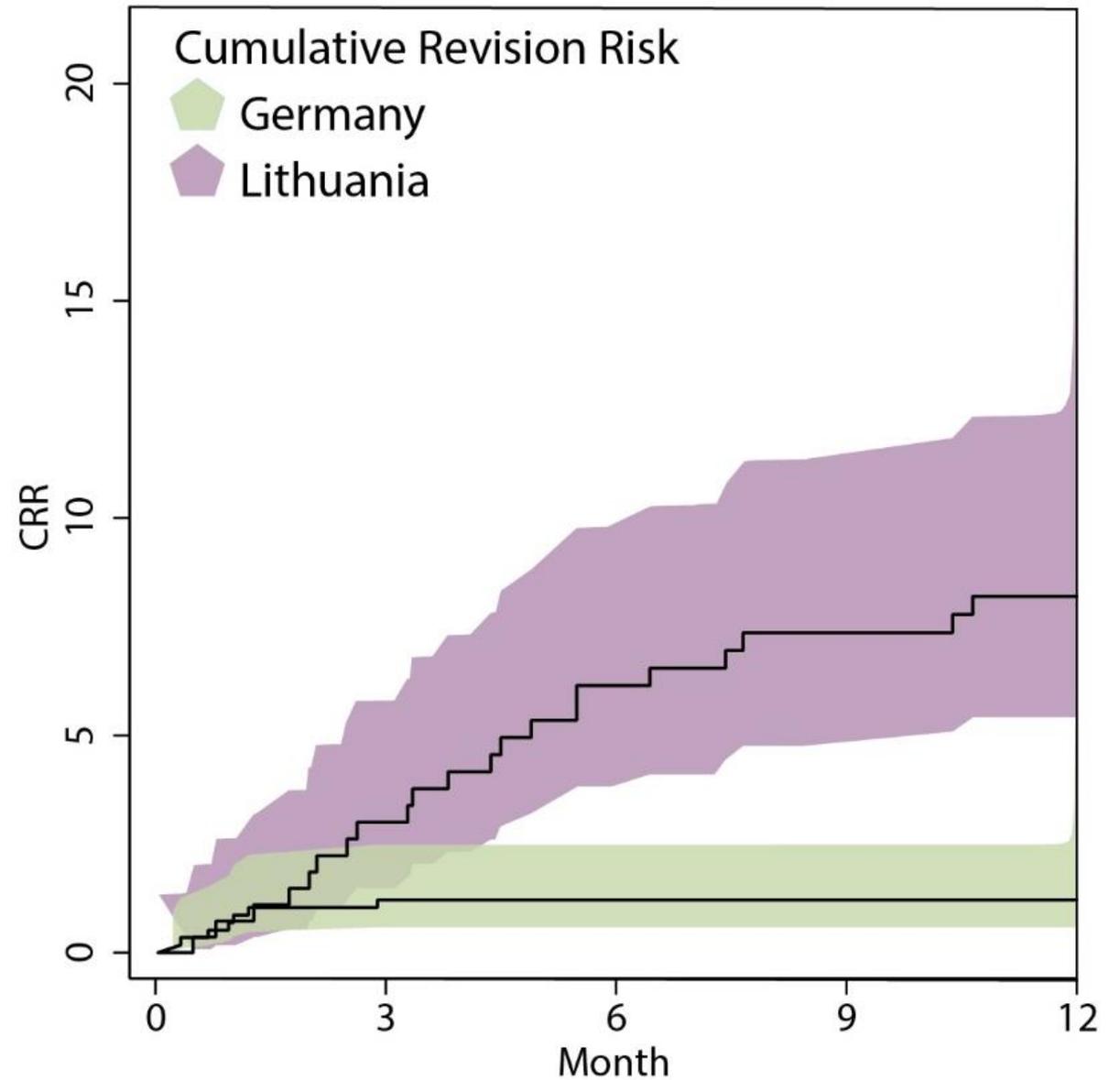
Treatment	Germany		Lithuania	
DHS	7	11,29%	18	90,00%
Gamma nail	50	80,65%	2	10,00%
Arthroplasty	5	8,06%	0	0,00%
Total	62		20	

p=0,000

8 revisions were performed 3 in Germany and 5 in Lithuania. 1 reosteosynthesis and 7 arthroplasty was performed. p=0,029

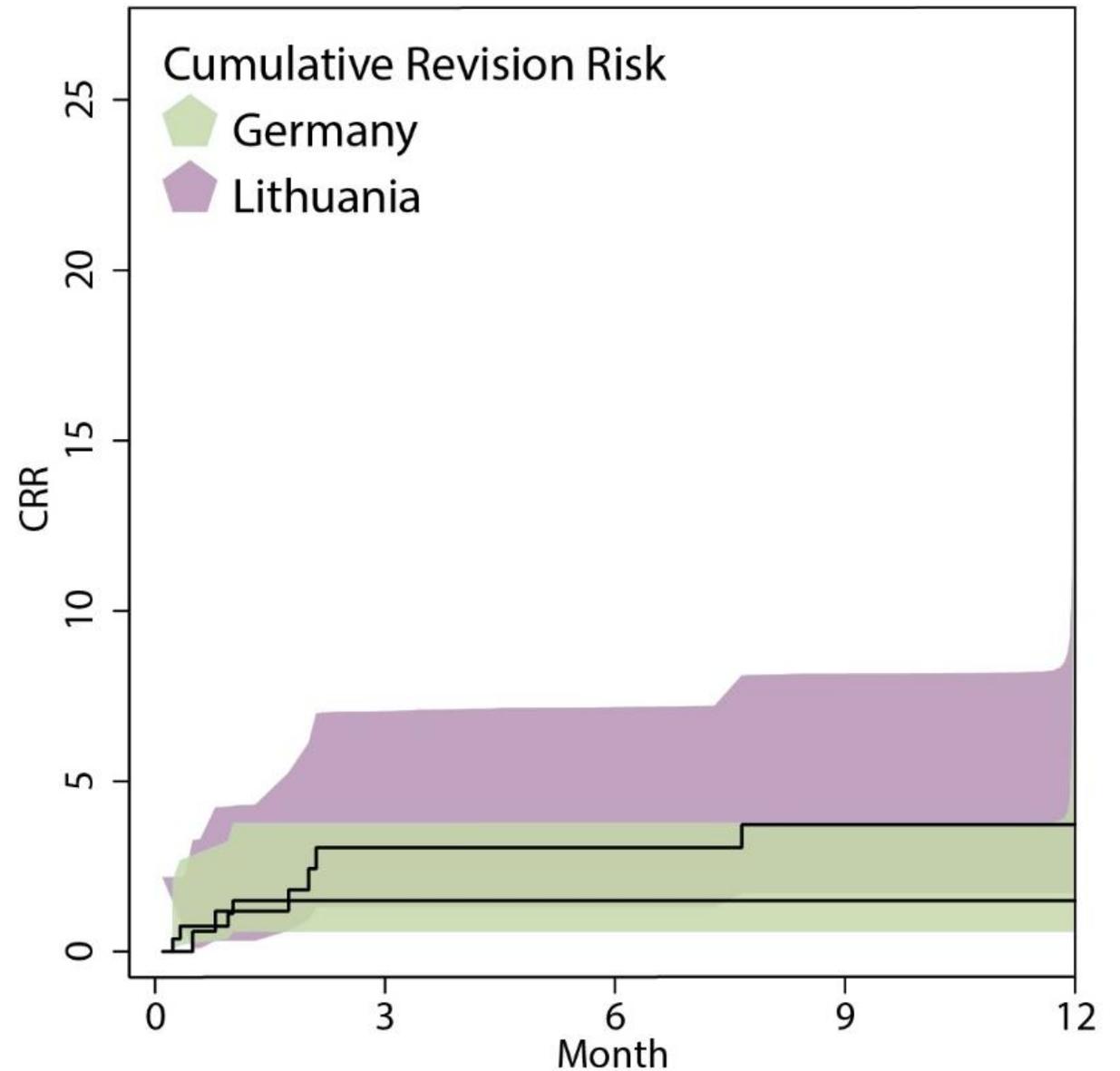
CRR

- Germany: 1,21% (95% CI 0,59 - 7,67%)
- Lithuania: 8,20% (95% CI 5,42 - 21,17%)
- $p = 0,0000$



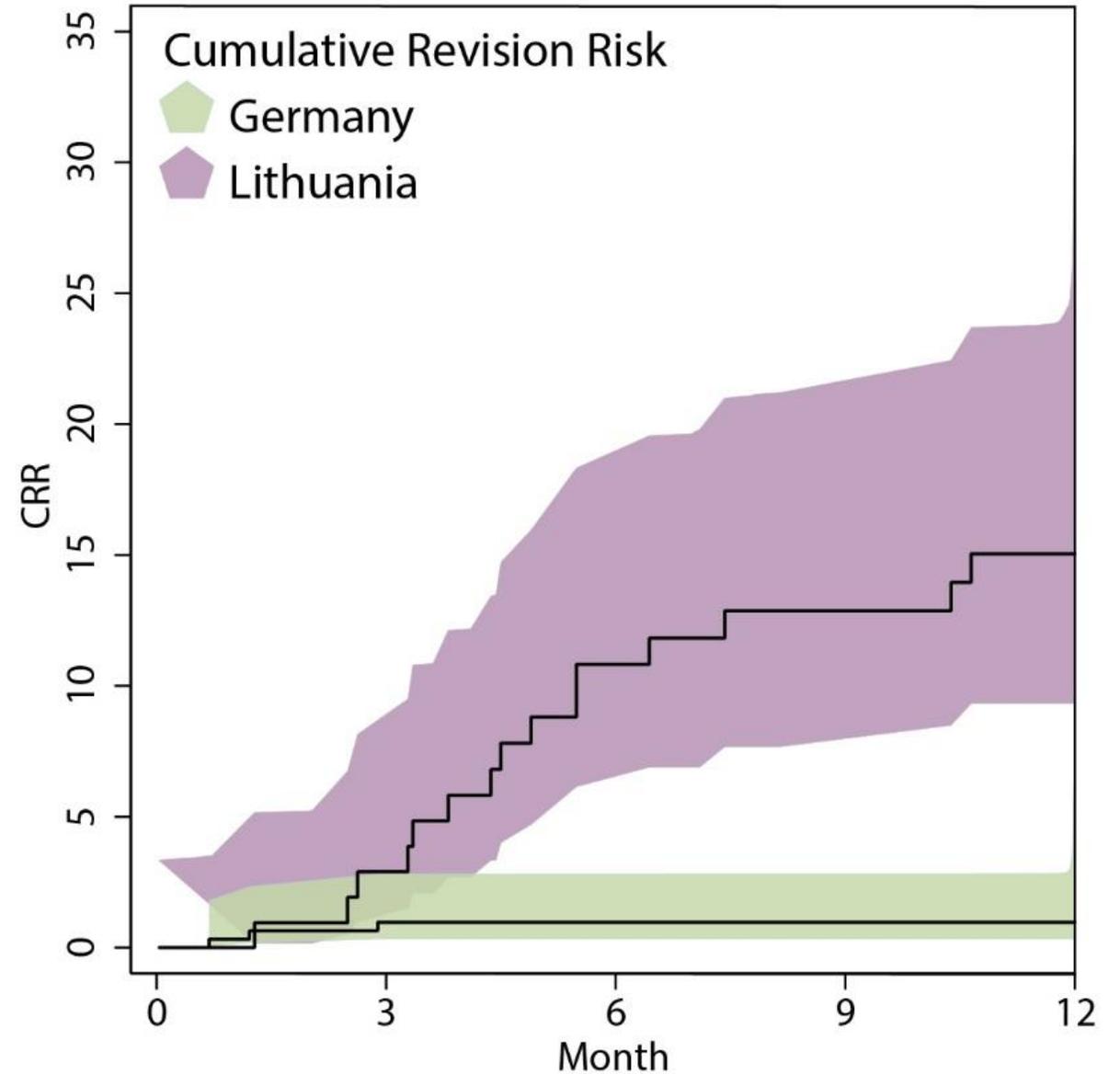
CRR arthroplasty

- Germany: 1,49% (95% CI 0,58 - 26,94%)
- Lithuania: 3,73% (95% CI 1,72 - 25,32%)
- $p = 0,1510$



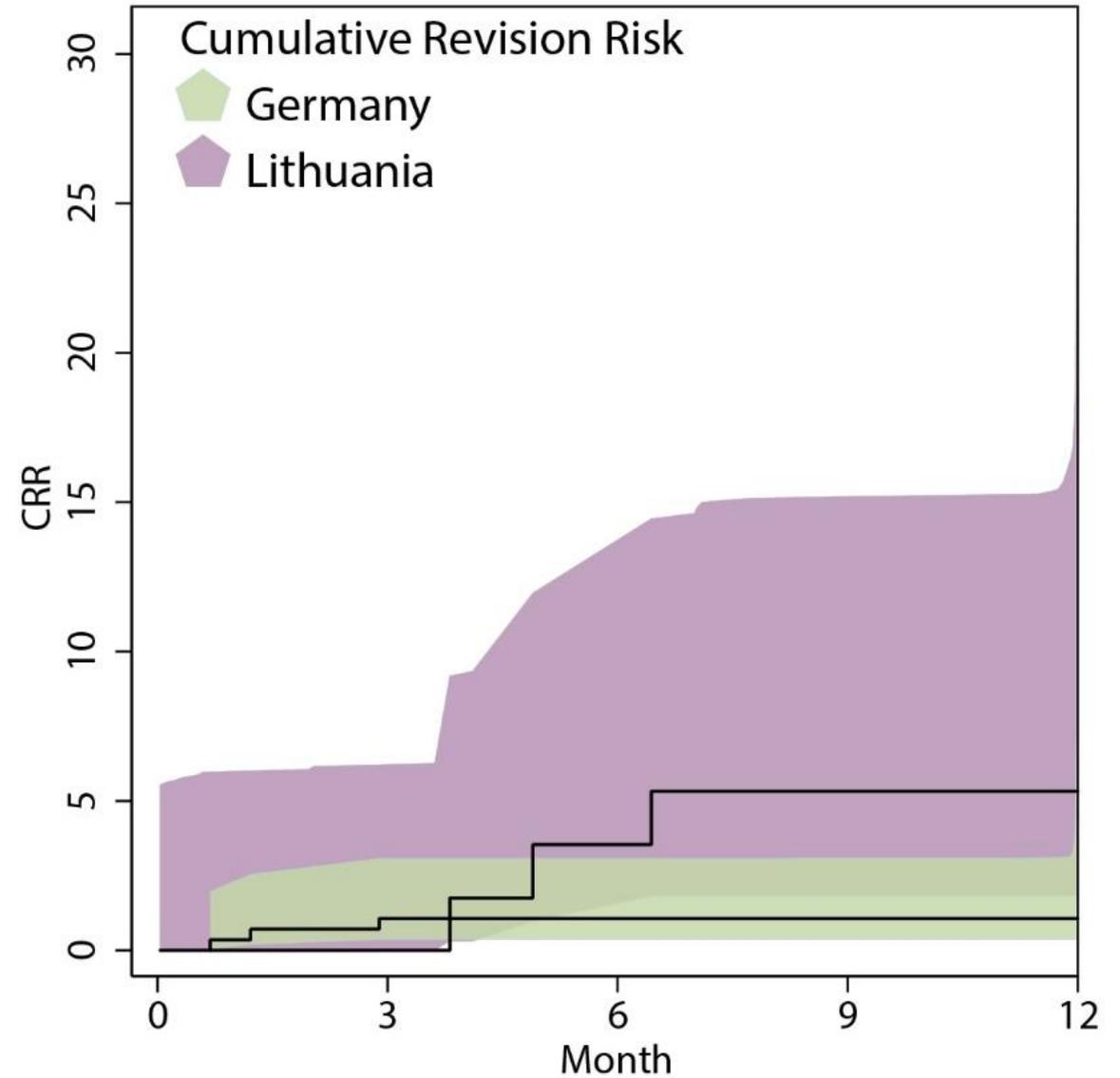
CRR osteosynthesis

- Germany: 0,97% (95% CI 0,33 - 8,40%)
- Lithuania: 15,05% (95% CI 9,32 - 34,21%)
- $p = 0,0000$



CRR trochanteric fractures

- Germany: 1,06% (95% CI 0,36 - 9,41%)
- Lithuania: 5,33% (95% CI 1,83 - 30,73%)
- $p=0,0313$



● COX regression

Factor	Hazard Ratio	p	95% Confidence Interval	
Age	1,01	0,69	0,97	1,05
Gender (male)	0,63	0,47	0,19	2,19
Country (Lithuania)	14,01	0,000	3,90	50,41
ASA grade				
II	1,62	0,65	0,20	13,17
III	0,38	0,41	0,40	3,68
Operation in 24 hours	1,19	0,77	0,38	3,67

Conclusions and interpretations

- Differences in outcome after osteosynthesis
 - Methods
 - Hardware
 - Other...
- Differences in surgery timing
- Field for improvement
- Data of hardware performance is in concordance with Diagnostic pilot data
- Questions to the registry



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