

Maternal mortality in Switzerland: what we do and don't know

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Agenda

Definitions

Collecting data in Switzerland

Causes of maternal death

Risk factors

Take home message

Definitions

Maternal mortality	Direct obstetric deaths	Deaths resulting from obstetric complications in the pregnant state (pregnancy, labour and puerperium), from interventions, omissions, incorrect treatment, or from a chain of events resulting from any of the above
	Indirect obstetric deaths	Deaths resulting from previously existing disease, or any disease that developed during pregnancy and was not the result of direct obstetric causes, but which was aggravated by the physiological effects of pregnancy
	Non-pregnancy-related maternal deaths	Deaths from unrelated causes which happen to occur in pregnancy or the puerperium
	Late maternal deaths	Deaths occurring between 42 days and 1 year after abortion, miscarriage or delivery that are due to direct or indirect maternal causes

Data collection

- Data collection in 10 years periods: 1985-1994, 1995-2004, 2005-2014
- Federal Office of Statistics:
 - Death certificate: Manner of death («Todesart»)
 - Cause of death
- Since 2007: Linking birth data with the date of death of the mother
- Search in archive of the Institute of Forensic Medicine in Zurich

Death certificate

Todesort (zutreffendes ankreuzen und allenfalls ergänzen)
<input type="checkbox"/> <input type="text"/> (Institution, Gemeinde, Adresse, allenfalls Koordinaten)
<input type="checkbox"/> An Wohnadresse gestorben
<input type="checkbox"/> Todesort unbekannt – Auffindungsort: <input type="text"/>
Todeszeitpunkt - (Mögliche Zeitangaben zwischen 0:00 Uhr und 23:59 Uhr)
<input type="checkbox"/> exakte Todeszeit bekannt Datum <input type="text"/> Zeit <input type="text"/>
<input type="checkbox"/> exakte Todeszeit nicht bekannt aber auf 4 Tage eingrenzbar zwischen Datum/Zeit: <input type="text"/> und Datum/Zeit: <input type="text"/>
Todeszeitpunkt nicht bekannt oder nicht auf 4 Tage eingrenzbar
<input type="checkbox"/> Auffindung am <input type="text"/> <input type="text"/>
Todesart
<input type="checkbox"/> natürlicher Todesfall (Kremation, Erdbestattung zulässig)
<input type="checkbox"/> nicht-natürlicher Todesfall (z.B. Unfall, Suizid, Delikt, inkl. Spätfolgen davon → Meldung an Polizei)
<input type="checkbox"/> unklarer Todesfall → Meldung an Polizei
<input type="checkbox"/> Meldung an Polizei ist erfolgt

Zugang



eCOD - Todesursachenstatistik [↗](#)

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Cause of death

1. Underlying illness (e.g. high blood pressure, cardio-vascular disease..)
2. Immediate cause of death (e.g. hemorrhage, embolism, ...)
3. Other diseases

If female and between the age of 15 – 49 years:

“Was the women pregnant at the time of death or did she have given birth on any of the previous 42 days leading up to her death?” Yes / No

Coding

- Translation to ICD codes:
 - O codes are for obstetrical causes
 - F53: puerperal psychosis

ICD 10, 2018

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Data collection

Contacting the signing physician: Questionnaire

Institutions:

Obstetrics & Gynecology,

Internal Medicine,

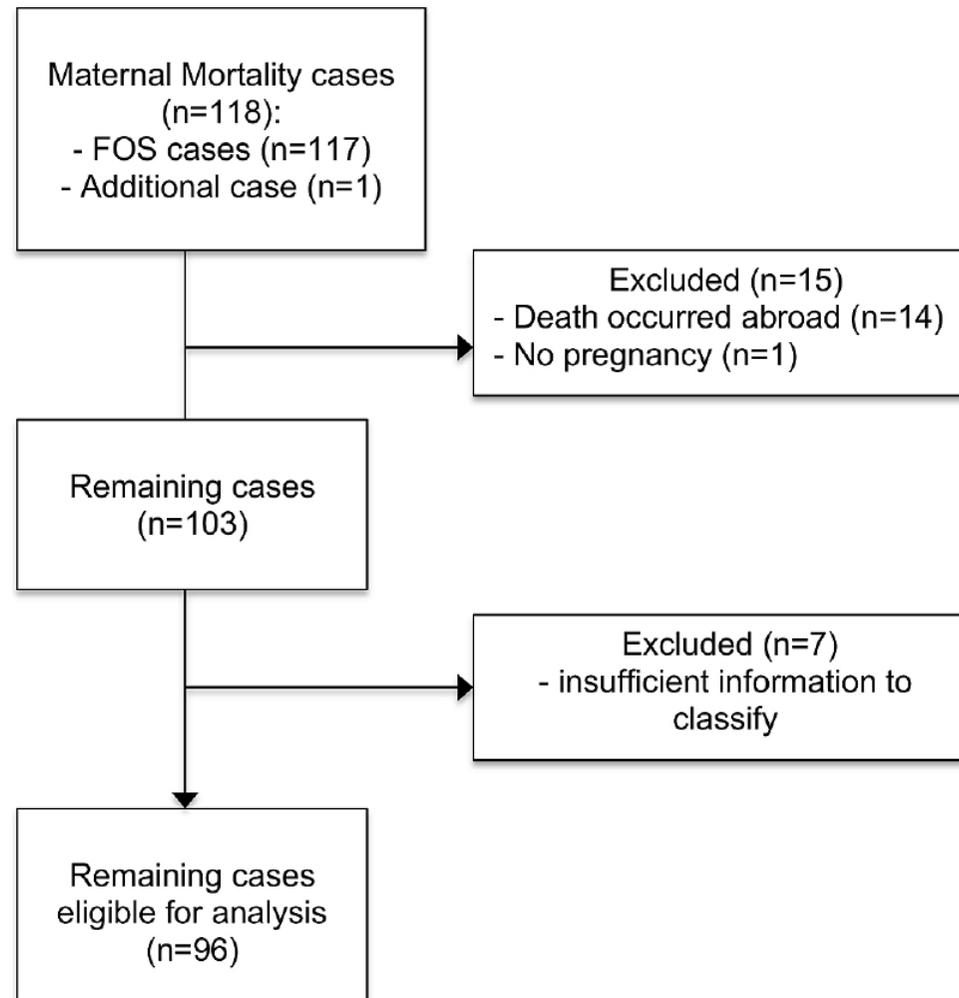
Surgery,

Palliative Care,

Anaesthesia,

Forensic Medicine,

Case numbers



Maternal mortality cases 2005 - 2014

N = 96

Direct:
26

Indirect:
26

Non-pregnancy related:
41

Late:
3

Mortality cases: Comparison 2005 - 2014 vs. 1995 - 2004

N = 96

Direct:
26 (32)

Non-pregnancy related:
41 (7)

N = 50, one unclear

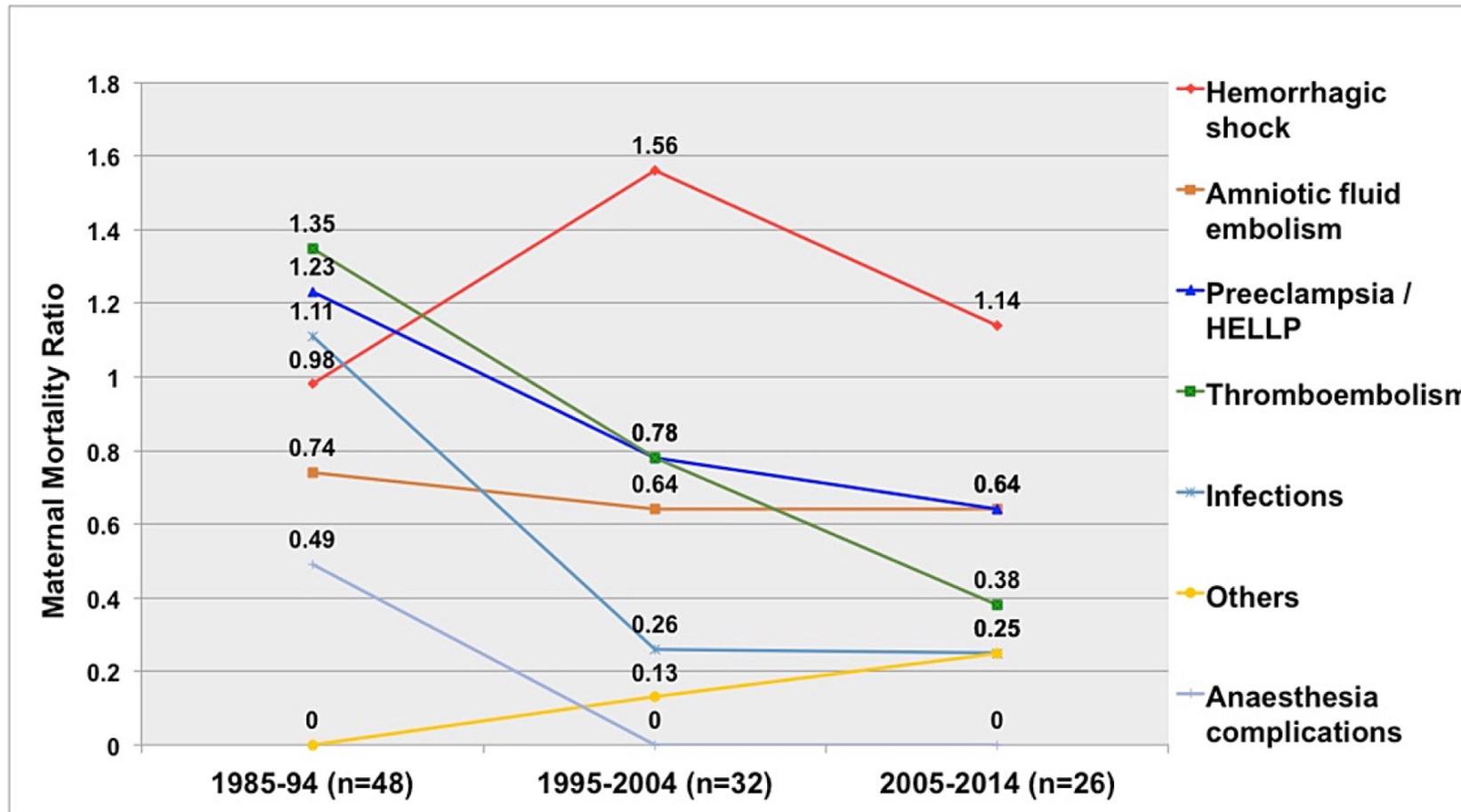
Indirect:
26 (9)

Late:
3 (1)

Maternal mortality per period

	Direct maternal mortality	Maternal Mortality
1985–1994	5.54	6.64
1995–2004	4.15	5.31
2005–2014	3.3	6.61

Direct maternal mortality: Causes of death 1985–2014



Improvements

- **Protocol for reduction of aspiration of gastric content**
 - Fasting period
 - Local anaesthesia
- **Protocol for thrombosis prophylaxis after c/section**
- **Protocol for postpartum haemorrhage**

Share protocols

POSTPARTALE BLUTUNG Handlungsalgorithmus			
nach vaginaler Geburt oder in der postoperativen Überwachungsphase nach Sectio caesarea			
© 2012: PPH-KONSENSUS – Gruppe (D-A-Ch)			
klinische Symptome	allgemeine/operative Maßnahmen	Medikamente	
STEP 1	Dauer max. 30 min nach Diagnosestellung <ul style="list-style-type: none"> vaginale Blutung >500 ml nach vaginaler Geburt >1000 ml nach Sectio caesarea <p>CAVE: Unterschätzung! Messsystem!</p> <ul style="list-style-type: none"> Patientin kreislaufstabil 	HINZUZIEHEN Oberarzt Facharzt Geburtshilfe INFORMATION Anästhesie <ul style="list-style-type: none"> 2 i.v.-Zugänge (mindestens 1 großlumiger) Kreuzprobe / Notfalllabor / EK's bereitstellen Volumengabe (z.B. Kristalloide / Kolloide) Blase katheterisieren Blutverlust messen rasche Abklärung der Blutungsursache (4T's) <ul style="list-style-type: none"> Uterustonius (Tonus-Atonie?) Plazentainspektion (Tissue-Plazentarest?) SpeculumEinstellung (Trauma-Geburtskanal?) Gerinnung (Thrombin-Laborwerte?) Uteruskompression - Ultraschall 	<ul style="list-style-type: none"> OXYTOCIN 3-5 IE (1 Amp.) als Kurzinfusion und 40 IE in 30 min (Infusion/Perfusor) ODER CARBETOCIN (off label use) 100 µg (1 Amp.) in 100 ml NaCl 0,9% als Kurzinfusion <p>bei starker persistierender Blutung STEP 2, bei moderat persistierender Blutung evtl.</p> <ul style="list-style-type: none"> MISOPROSTOL (off label use) 800 µg (4 Tbl. à 200 µg) rektal
	STEP 2	Dauer max. weitere 30 min (= 60 min nach Diagnosestellung) <ul style="list-style-type: none"> anhaltend schwere Blutung Patientin kreislaufstabil 	HINZUZIEHEN Anästhesie Alarmierung OP Team ORGANISATION OP-Saal TRANSFERKRITERIEN überdenken <ul style="list-style-type: none"> OP-Vorbereitung Ausschluss Uterusruptur Nachtastung / Ultraschall bei V. a. Plazentarest (nach US oder Inspektion) manuelle Nachtastung ggf. Cürettage (US-Kontrolle)
STEP 3		<ul style="list-style-type: none"> therapierefraktäre schwere Blutung und kreislaufstabile Patientin 	TRANSFERKRITERIEN überdenken HINZUZIEHEN Oberarzt Anästhesie INFORMATION der bestmöglichen personellen Expertise CAVUMTAMPONADE BALLONAPPLIKATION

In jeder geburtshilflichen Abteilung sollte ein auf die lokalen Verhältnisse angepasstes Schema / Algorithmus für die Notfallsituation der PPH vorhanden sein. Untenstehend findet sich ein Handlungsalgorithmus- Vorschlag, der gemeinsam von der PPH-Konsensusgruppe Deutschland – Oesterreich – Schweiz erarbeitet wurde unter der Federführung von Prof. Dietmar Schlembach, Graz / Jena, **Mitarbeitende für die Schweiz: Prof. I. Hösli, Prof. Th. Girard (Anästhesie Basel), Prof. D. Surbek, Prof. R. Zimmermann.**

Causes of death: indirect

	1985–1994 (n=9; %)	1995–2004 (n=9; %)	2005–2014 (n=19; %)
Cardio-vascular causes	0 (0)	2 (22.2)	8 (42.1)
Suicide	0 (0)	2 (22.2)	6 (31.6)
Thromboembolism	0 (0)	2 (22.2)	2 (10.5)
Infections	2 (22.2)	2 (22.2)	3 (15.8)
Haemorrhage (shock)	0 (0)	1 (11.1)	0 (0)
Anaesthesia complications	1 (11.1)	0 (0)	0 (0)
Others	6 (66.6)	0 (0)	0 (0)

Pre-existing conditions

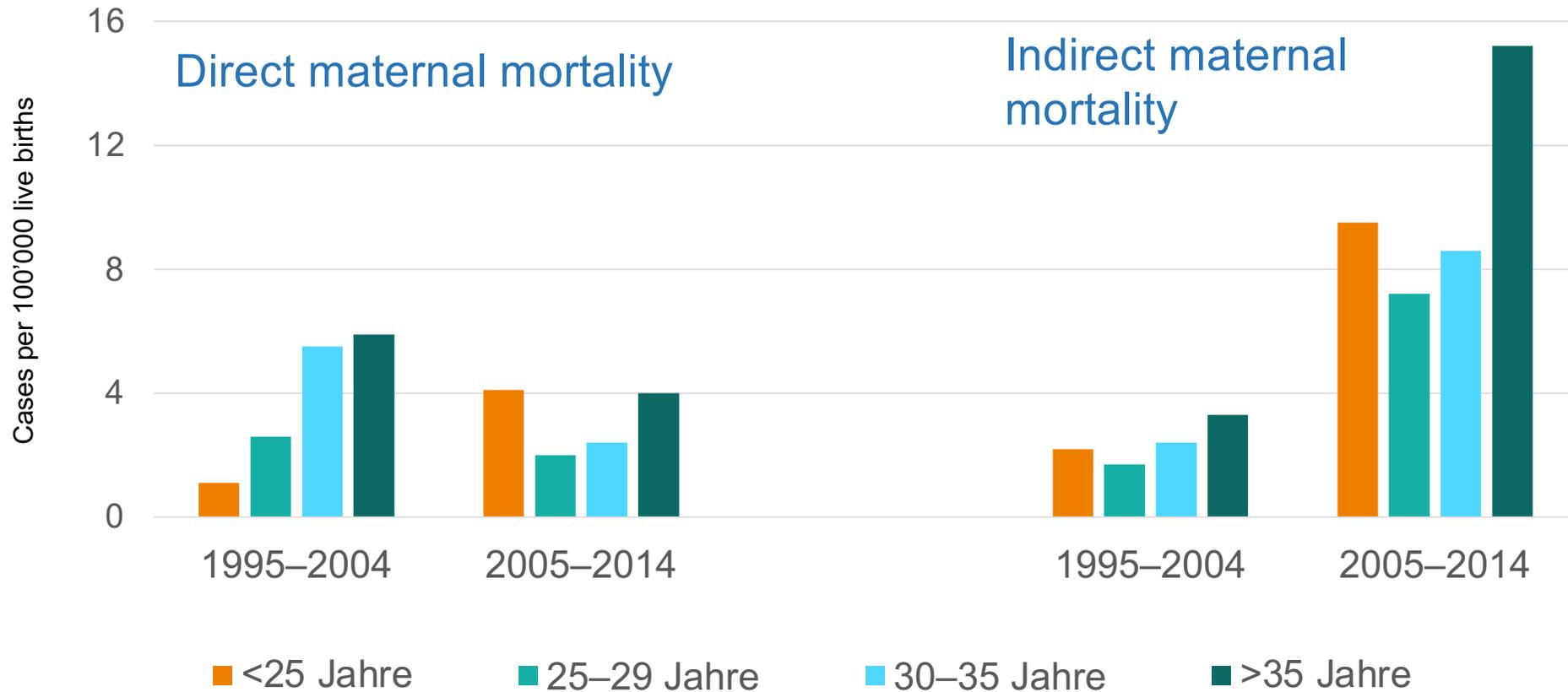
- **Cardio-vascular disease**

USA, UK: leading cause of maternal death

- **Psychiatric diseases**

- **Carcinomas**

Risk factor: Maternal age



Take home message



You do a great job!



Follow the protocols



Improve interdisciplinarity: cardio-vascular diseases, psychiatric diseases

PLEASE



...fill out the death certificate as detailed as possible

...fill out the questionnaire if you should be contacted by the authors

Collaborators

Prof. Dr. med. Roland Zimmermann

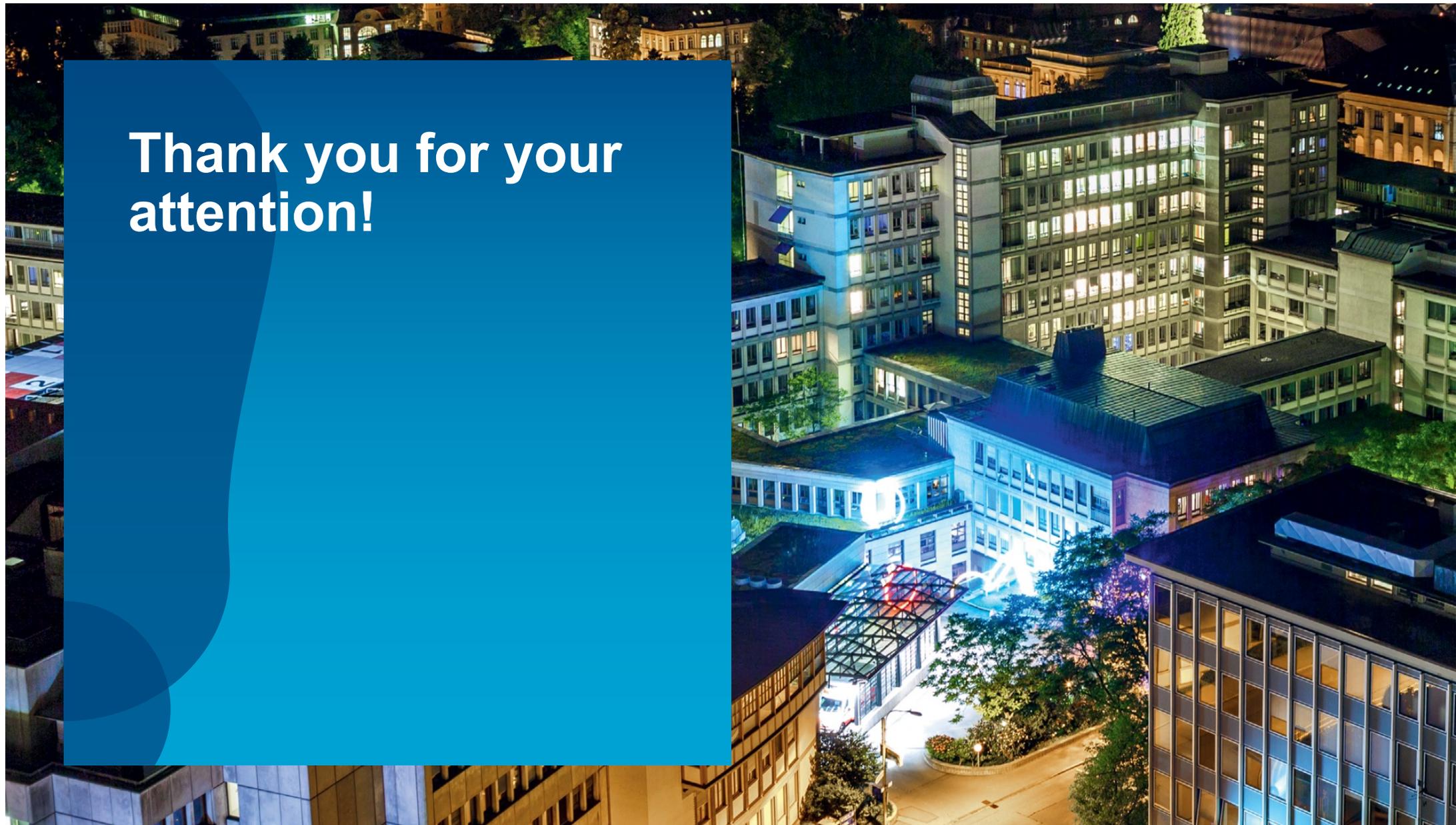
Dr. med. Laura Perotto

Dr. med. Martina Fässler

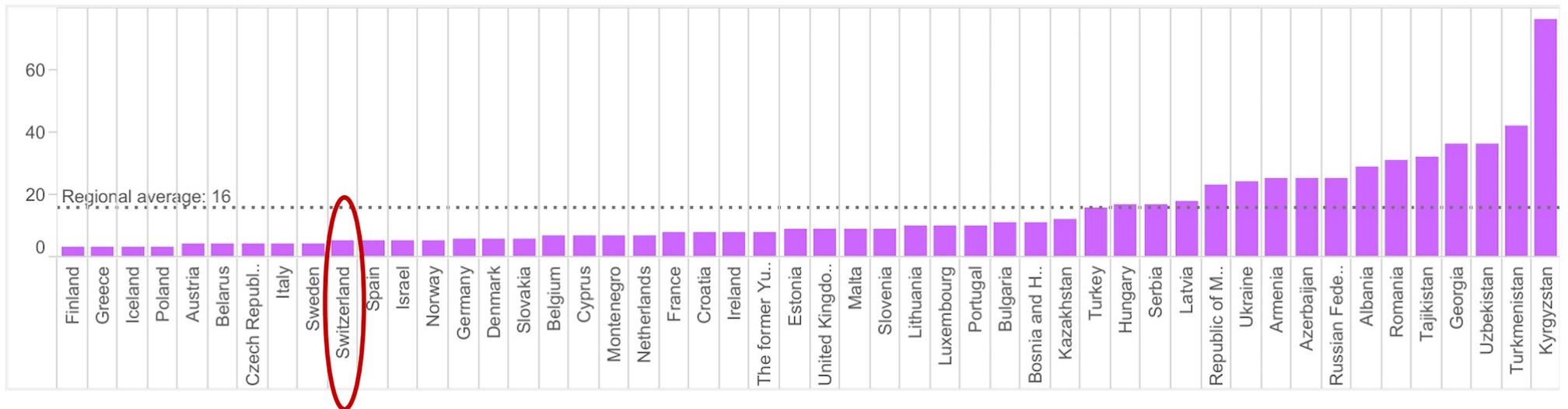
Dr. med. Gesine Meili

Prof. Dr. med. Renate Huch und Prof. Dr. med. Albert Huch

**Thank you for your
attention!**



Comparison with other countries



Causes of death: direct

	1985–1994 N=48 (%)	1995–2004 N=32 (%)	2005–2014 N=24 (%)
Haemorrhage (shock)	8 (16.6)	12 (37.5)	8 (33.3)
Amniotic fluid embolism	6 (12.5)	5 (15.6)	5 (20.8)
Preelampsia/ HELLP	10 (20.8)	6 (18.8)	5 (20.8)
Thromboembolism	11 (22.9)	6 (18.8)	3 (12.5)
Infections	9 (18.8)	2 (6.3)	1 (4.2)
Others	0	1 (3)	2 (8.3)
Anaesthesia complications	4 (8.3)	0	0