

# Guidelines Adherence for Therapeutic Drug Monitoring

glycopeptide and aminoglycoside  
antibiotics

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EISHOCKEY

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präsentiert von Zurich

## EISHOCKEY: NLA/NLB (20.09.)

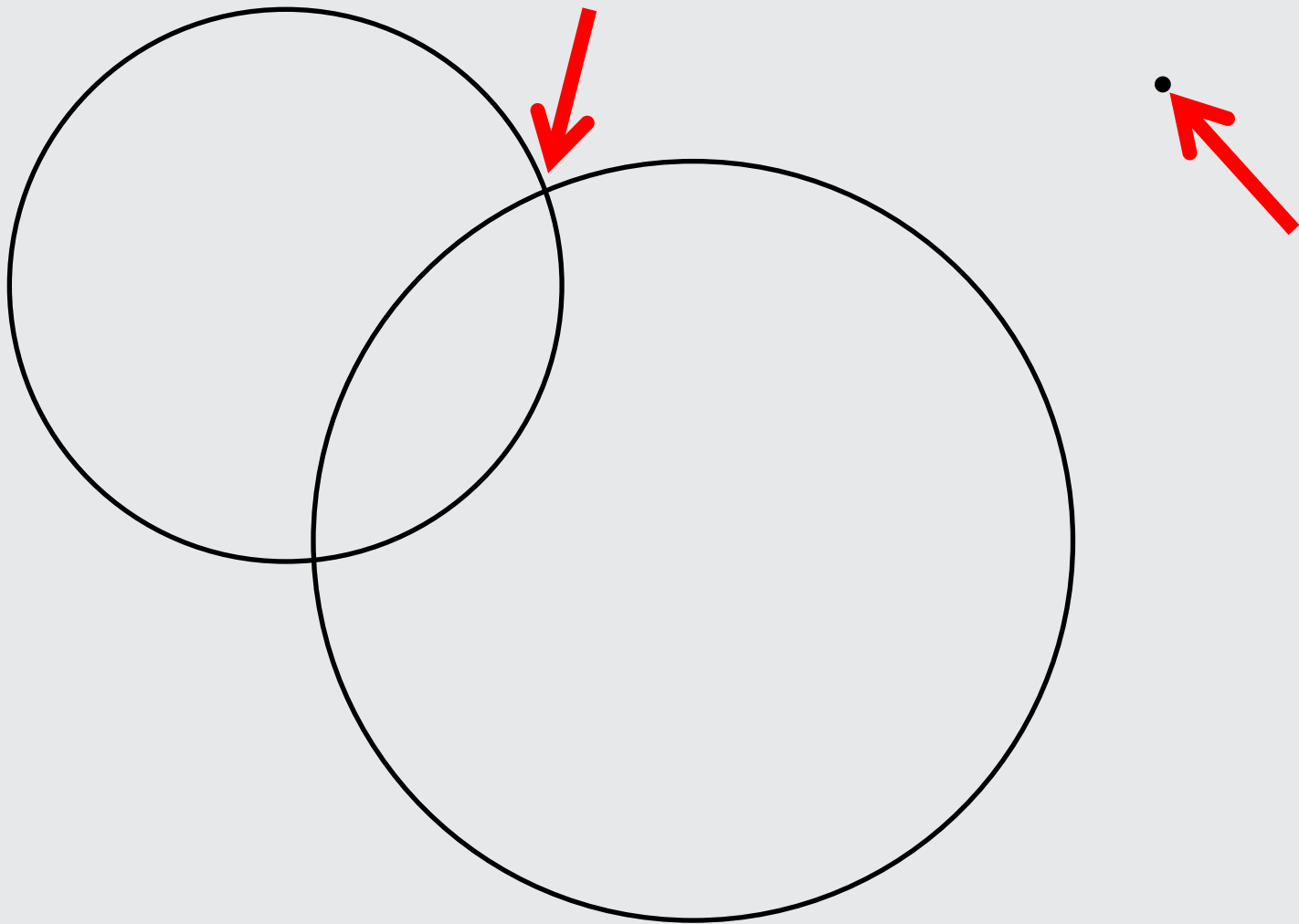
## NLA, 6. Runde

Ambri	- Zug	nP	4:3	(0:1	1:0	2:2)
Biel	- Genf		4:1	(0:0	1:0	3:1)
Freiburg	- Bern	nV	2:3	(1:1	0:1	1:0)
Kloten	- Davos	nV	5:6	(2:2	2:0	1:3)
SCL T.	- Lausanne		0:5	(0:3	0:1	0:1)
ZSC L.	- Lugano		4:1	(1:1	3:0	0:0)

## NLB, 5. Runde

Lakers	- Thurgau		5:1	(1:1	1:0	3:0)
Red Ice	- EVZ Ac.		4:1	(2:0	2:1	0:0)
Visp	- W'thur		0:2	(0:0	0:2	0:0)
Chx-Fds	- Langent.		6:2	(2:0	3:1	1:1)
GCK L.	- Ticino R	nV	3:2	(1:1	0:0	1:1)
Olten	- Ajoie		3:2	(1:1	2:0	0:1)

-W- Zurich Versicherung Offizieller  
Versicherungspartner Swiss Ice Hockey



## Three points of interest

- Complexity and Variability of Antibiotic Therapies
- Bits and Bytes of the Electronic Health Record
- Challenge of Electronic Therapeutic Drug Monitoring (TDM)

# Introduction

- glycopeptide and aminoglycoside antibiotics
  - narrow therapeutic windows
  - therapeutic efficacy
  - toxic overdosing
- therapeutic drug monitoring (TDM)
  - guidelines
  - adherence

# Complexity and Variability

- Vancomycin (normal dosage):
  - 2 x 1g every 12 h
- Vancomycin (normal dosage TDM)
  - no later than before 5. administration
  - ~ after 36 h or 48 h

# Complexity and Variability - Renal Insufficiency

## ■ Vancomycin (dosing):

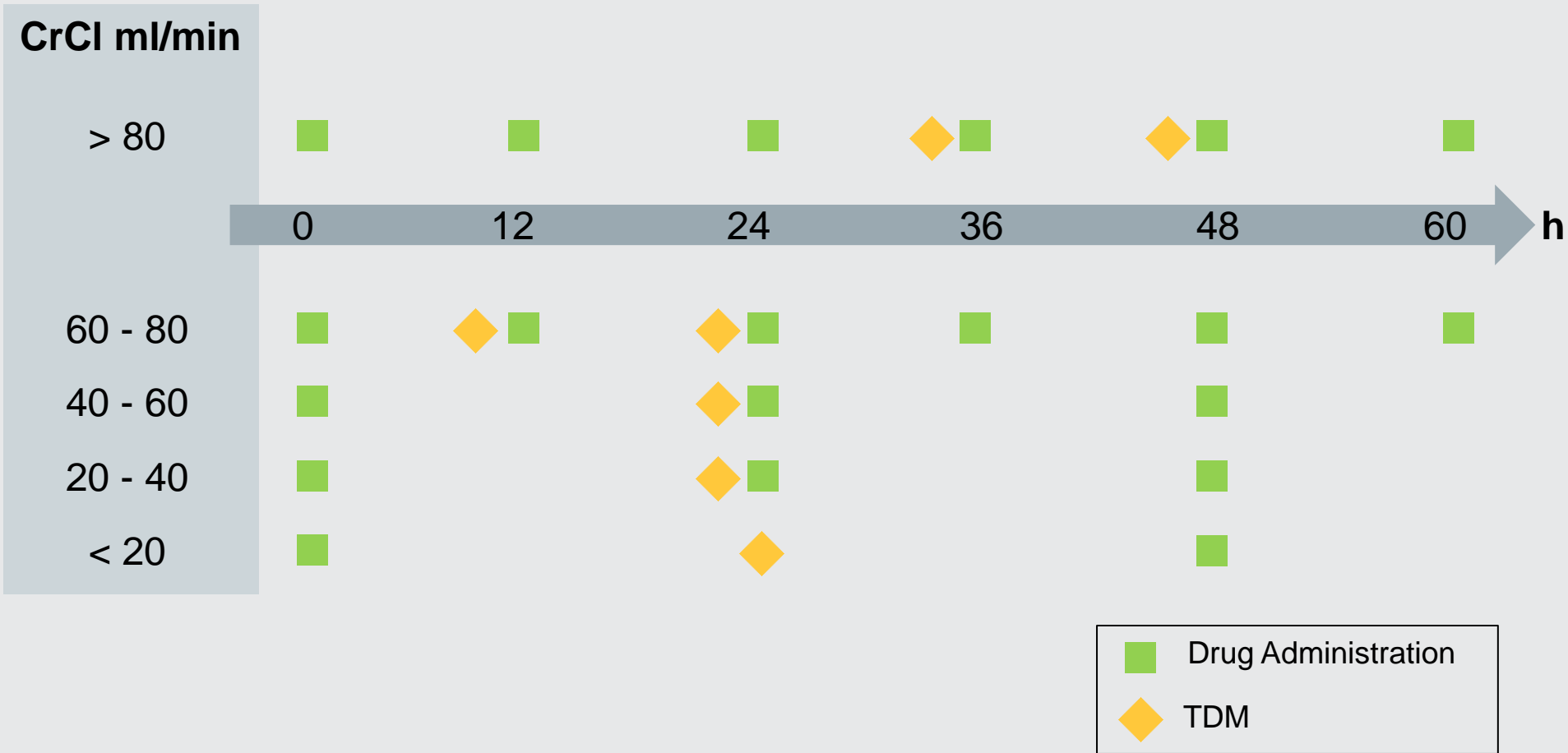
CrCl > 80 ml/min:	1000 mg/12 h
CrCl 60-80 ml/min:	750 mg/12 h
CrCl 40-60 ml/min:	750 mg/24 h
CrCl 20-40 ml/min:	500 mg/24 h
CrCl < 20 ml/min:	500 mg/48 h

## ■ Vancomycin (TDM)

before 2nd administration

no later than 24 h

# Complexity and Variability - Renal Insufficiency





# Method

## ■ Data and Filtering

- three drugs: Gentamicin, Vancomycin and Teicoplanin
- 3-year-period (from 01/01/2012 to 31/12/2014)
- all inpatients admitted to the UniversityHospital Zurich
- all electronic orders of intravenous administrations
- all corresponding TDM-lab-orders

## ■ Guidelines of initial TDM

- no later then:
- 72 h for Gentamicin
  - 60 h for Vancomycin
  - 96 h for Teicoplanin

# Result

## ■ Data (115'509 analyzed inpatients including)

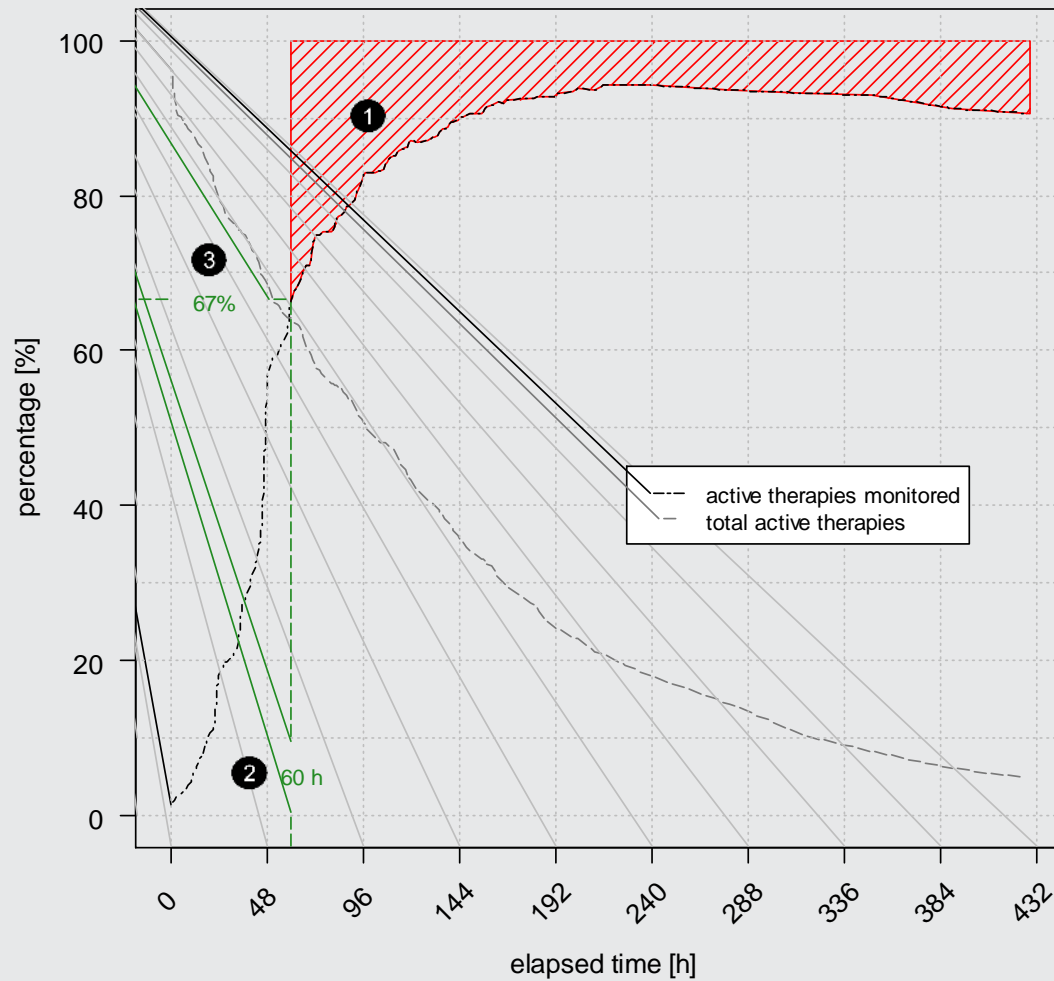
Drug	Orders	Therapies
Gentamicin	1'045	470
Vancomycin	6'168	2'396
Teicoplanin	2'184	807

## ■ Guideline adherence\*

Drug	Guideline	Adherence
Gentamicin	≤ 72 h	72%
Vancomycin	≤ 60 h	67%
Teicoplanin	≤ 96 h	63%

\*therapy duration ≥ 72 h

## Vancomycin Therapy Monitoring (coverage at a given point in time)



## Discussion

- TDM guidelines adherence  $\leq 72\%$ .
- quality assurance actions needed
- educational programs require continuous efforts.
- automated TDM reminders; implementation is a one time effort only
- algorithms may be reusable

## Conclusion

specification and implementation of an automated TDM reminder

# Thank you

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