

XXVII^e Congrès National de la Société
Française d'Hygiène Hospitalière

1, 2 et 3 juin 2016



SESSION INTERNATIONALE:
THE H FACTOR AND HOW TO DEAL WITH IT
**Sustainably promoting hand hygiene in intensive
care units: Results of the PSYGIENE-project**

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INFECT-019

CONFLICTS OF INTEREST DISCLOSURE

Name of the speaker: Thomas von Lengerke

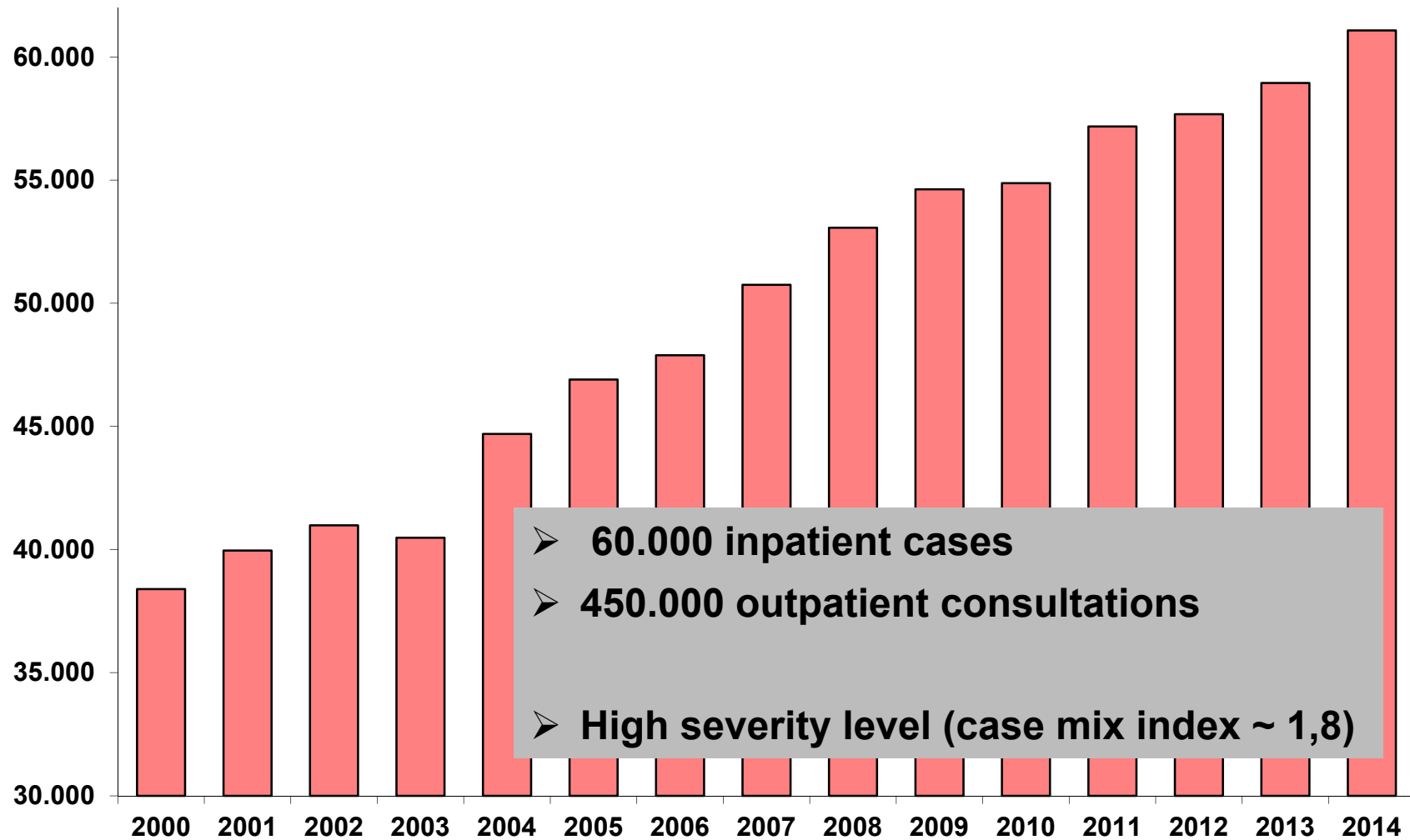
I have no conflicts of interest.

Hannover Medical School (MHH)

- Only university in Germany with an exclusively medical focus
- Focus on critically ill patients
- Total spectrum of medical care
→ „Supramaximal care“
- Important areas:
 - Immunology/Infection
 - Transplantation/Regeneration
 - Biomedical technology/Implants
- Leading centre in the field of Transplant Medicine/Surgery

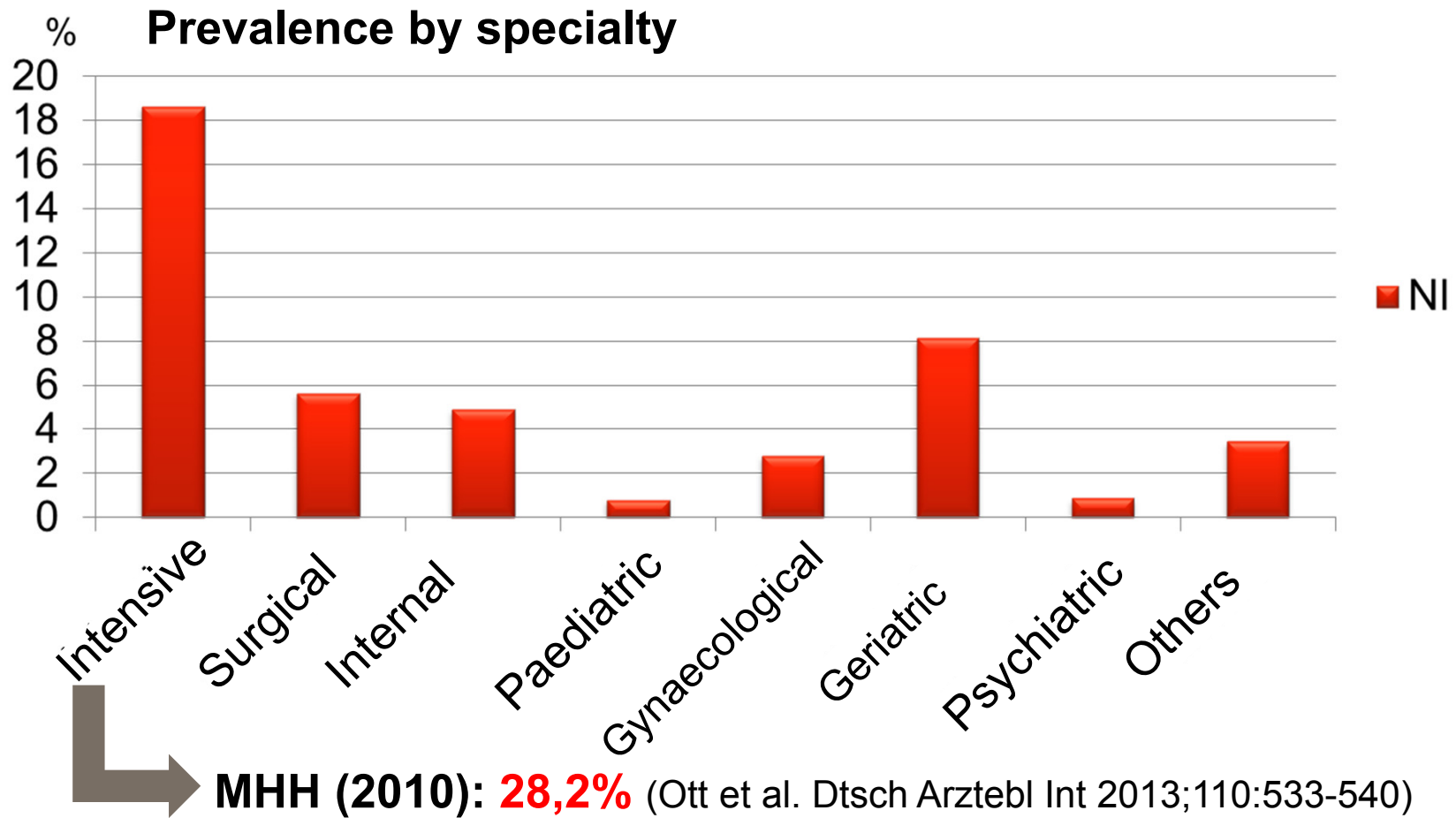


Inpatient cases 2000-2014



Prevalence of nosocomial infections

2. National Prevalence Study*



*Behnke et al. Dtsch Arztebl Int 2013;110(38):627-33

MHH

Hannover Medical School

PSYGIENE-project: PSYchologically optimised hand hyGIENE promotion (2012-16)



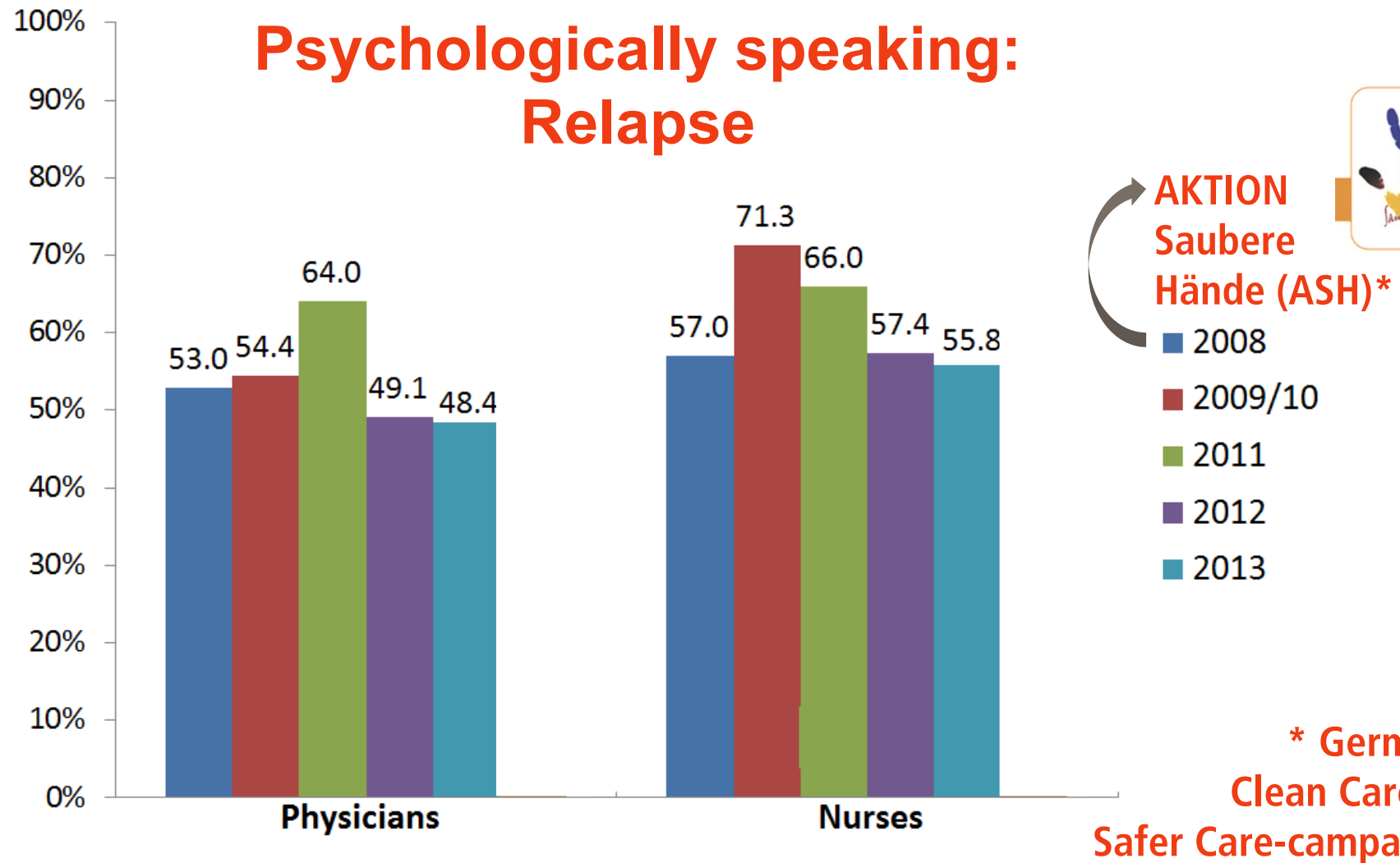
- Funding: German Federal Ministry of Health
- Participating work groups at Hannover Medical School:
 - Hospital Epidemiology
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- Setting: 10 intensive care units
2 hematopoietic stem cell transplantation units



Hygienic hand disinfection compliance (in %) on 10 ITS and 2 HSCTU at MHH

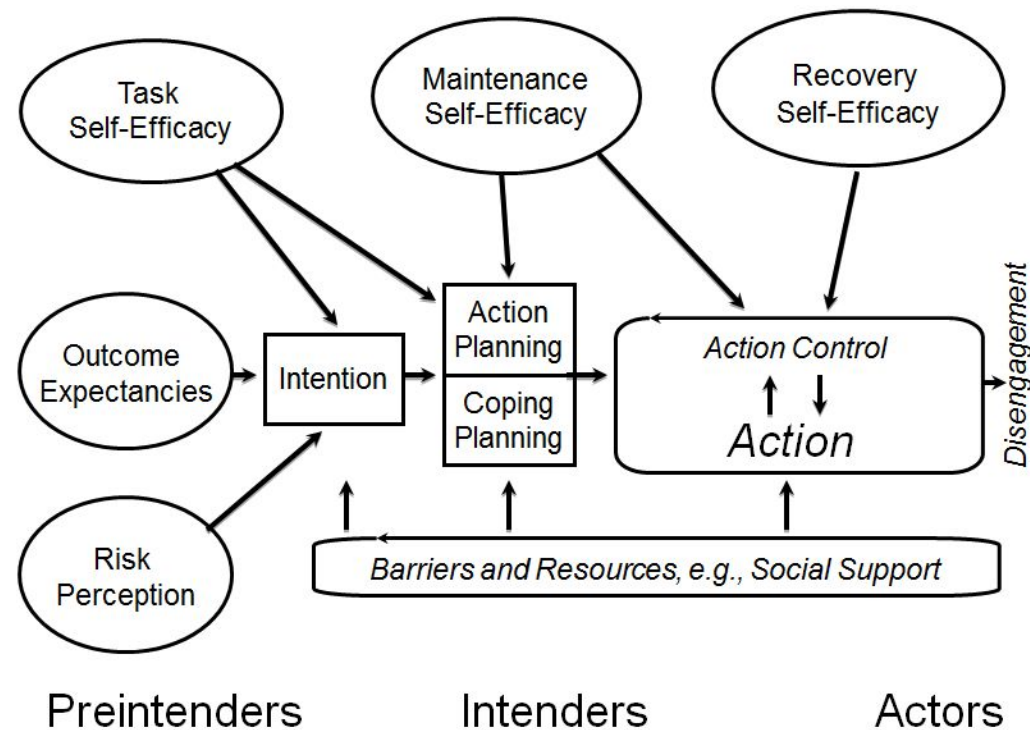


Psychologically speaking: Relapse



Possible problem: Implementation as «one size fits all»-approach

- Possibly, the campaign at MHH does not make enough of its theoretical background on compliance.
- This background, the Health Action Process Approach by Ralf Schwarzer (HAPA), would allow designing interventions in accordance with psychological determinants of compliance behavior.



Source: <http://userpage.fu-berlin.de/health/hapa.htm>

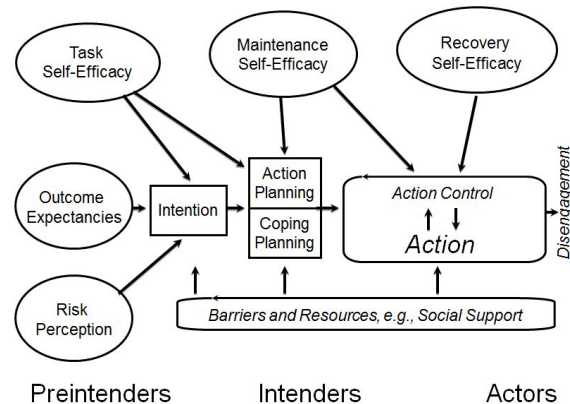
Possible solution: Ward-specific psychological tailoring



Tailored strategies

Strategies to improve professional practice ... taking account of prospectively identified determinants of practice.

(Baker et al. Cochrane Database of Systematic Reviews. 2015; 4: CD005470, page 5)



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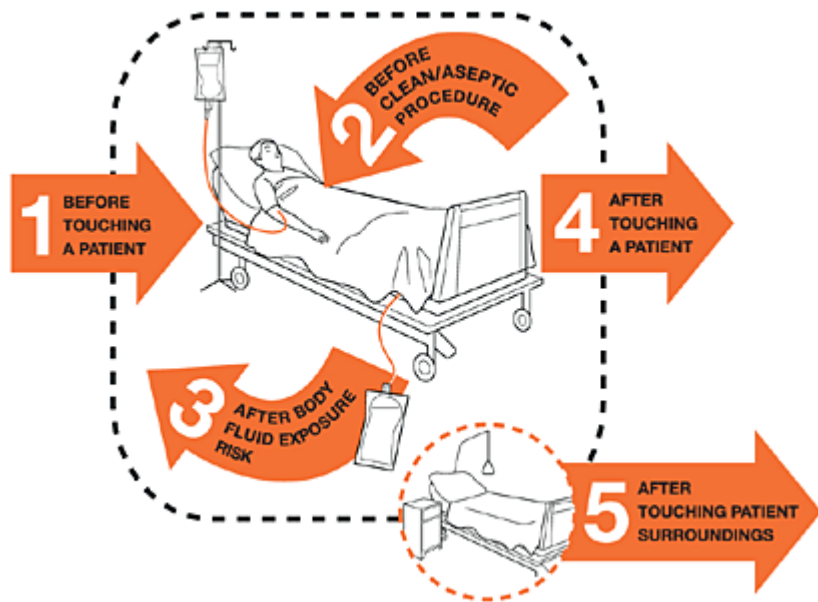
1. Written survey: Self-administered questionnaires on HAPA-constructs (response rates: 63% nurses, 71% physicians)

2. Face-to-face survey: Problem-focused interviews on day-to-day routines and activities (response rates: 100% both among head nurses and responsible physicians)

→ **SWOT*-Analysis**

*Strengths – Weaknesses – Opportunities - Threats

Example of ward-specific SWOT-analysis (here: ITS 4, profession: physicians)



Item example "I know how to disinfect my hands according to the guidelines."

Action control: Awareness of standards

4,37

4,37-5,92

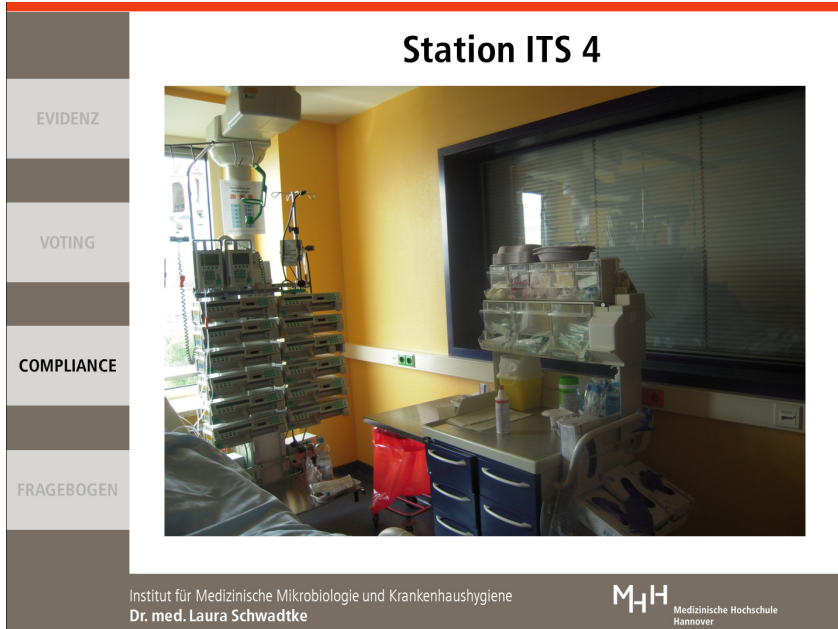
p < .001

SWOT-Analysis ITS 4, Profession: Physicians;
(n=79; questionnaire survey response rate: 87,8%)

	Rank	1	2	3	4	5	6	7	8	9	10	11	12	M-Range	Comparison with other physicians
Risk perception (transmission) without HD						6,33								6,00-6,92	
Risk perception (transmission) with HD									4,18					3,08-4,68	
Outcome expectancy: Prevention of NI				6,43										5,93-6,85	
Outcome expectancy: Time pressure										3,38				2,04-3,70	p= .019
Outcome expectancy: Skin irritations		4,25												2,60-4,27	p= .005
Outcome expectancy: Longer working hours					2,46									1,54-3,21	
Outcome expectancy: Being a role model								5,86						5,20-6,56	
Outcome expectancy: Superiors' appreciation				2,71										2,07-4,23	
Self-efficacy expectancy: Superiors' non-compliance					6,38									6,17-6,94	
Self-efficacy: Non-compliant colleagues					6,41									6,11-6,94	
Self-efficacy: Time required					6,13									5,58-6,81	
Self-efficacy: Not easy for me						5,86								5,33-6,47	
Self-efficacy: Need to get disinfectant		4,69												4,67-6,06	p= .003
Self-efficacy: After lapse					5,81									5,39-6,62	
Self-efficacy: Interruption of patient contact								5,53						4,95-6,50	
Self-efficacy: Patient no risk factors for NI				5,92										5,21-6,77	
Self-efficacy: No regular reminders								5,76						5,21-6,88	
Behavioural Intention					6,52									6,29-7,00	
Implementation intention: Change gloves			4,52											4,14-6,19	p < .001
Implementation intention: Given barriers				3,66										3,20-5,67	p= .030
Implementation intention: After lapse				3,66										3,21-5,08	
Action control: Self-monitoring				5,28										4,93-6,69	p < .001
Action control: Awareness of standards			4,37											4,37-5,92	p < .001
Action control: Self-regulatory effort*			3,49											1,88-3,49	p= .018
Personnel resources: Nurses					4,04									2,25-4,81	
Personnel resources: Physicians						4,05								2,19-5,46	
Material resources: Spatial equipment							3,78							2,33-4,48	
Material resources: Technical equipment										5,20				3,43-5,20	p= .002
Organisational stressors: Problems with occupancy*											4,44			4,44-6,23	p < .001
Organisational stressors: Problems with absenteeism*						4,97								3,35-5,93	
Quality of cooperation on ward: with colleagues							5,84							5,07-6,54	
Quality of cooperation on ward: with superiors					5,39									4,79-6,46	p= .045
Quality of cooperation on ward: with relatives of patients						5,46								4,64-6,25	



Example of ward-specific SWOT-analysis (here: ITS 4, profession: physicians)



Item example “Of late, I have planned how to deal with barriers impeding HD.”

Implementation intention: Given barriers

3,66

3,20-
5,67

p= .030

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- Participating work groups at Hannover Medical School:
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- Setting: 10 intensive care units
2 hematopoietic stem cell transplantation units
- Development of tailored interventions based SWOT-analysis
- Intervention methods: Professional education/training sessions for nurses and physicians, and feedback discussions with head nurses (Jun - Dec 2013)
- Intervention techniques: “BCT taxonomy v1” (Michie et al. 2013)



Behavior Change Technique Taxonomy (v1) of 93 Hierarchically Clustered Techniques*



BCT: “observable, replicable, and irreducible component of an intervention designed to alter or redirect causal processes that regulate behavior” (Michie et al. 2013, p. 82)

In PSYGIENE: 29 BCTs in trial arm “Tailored Interventions” (15 in ASH-arm)

- 1.2 Problem solving
- 1.4 Action planning
- 3.2 Social support (practical)
- 3.3 Social support (emotional)
- 4.4 Behavioural experiments
- 6.3 Information about others’ approval
- 7.1 Prompts/cues
- 8.1 Behavioural practice/rehearsal
- 8.7 Graded tasks
- 10.4 Social reward
- 12.5 Adding objects to the environment
- 13.1 Identification of self as role model
- 13.2 Framing/Reframing
- 14.6 Situation-specific reward
- 1.1 Goal setting (behaviour)
- 2.2 Feedback on behaviour
- 2.4 Self-monitoring of outcome(s) of behaviour
- 2.7 Feedback on outcome(s) of behaviour
- 3.1 Social support (unspecified)
- 4.1 Instruction on how to perform the behaviour
- 5.1 Information about health consequences
- 5.3 Information about social + environmental consequences
- 5.6 Information about emotional consequences
- 6.1 Demonstration of the behaviour
- 6.2 Social comparison
- 8.6 Generalisation of target behaviour
- 9.2 Pros and cons
- 15.1 Verbal persuasion about capability
- 15.3 Focus on past success

PSYGIENE-project: PSYchologically optimised hand hyGIENE promotion (2012-16)



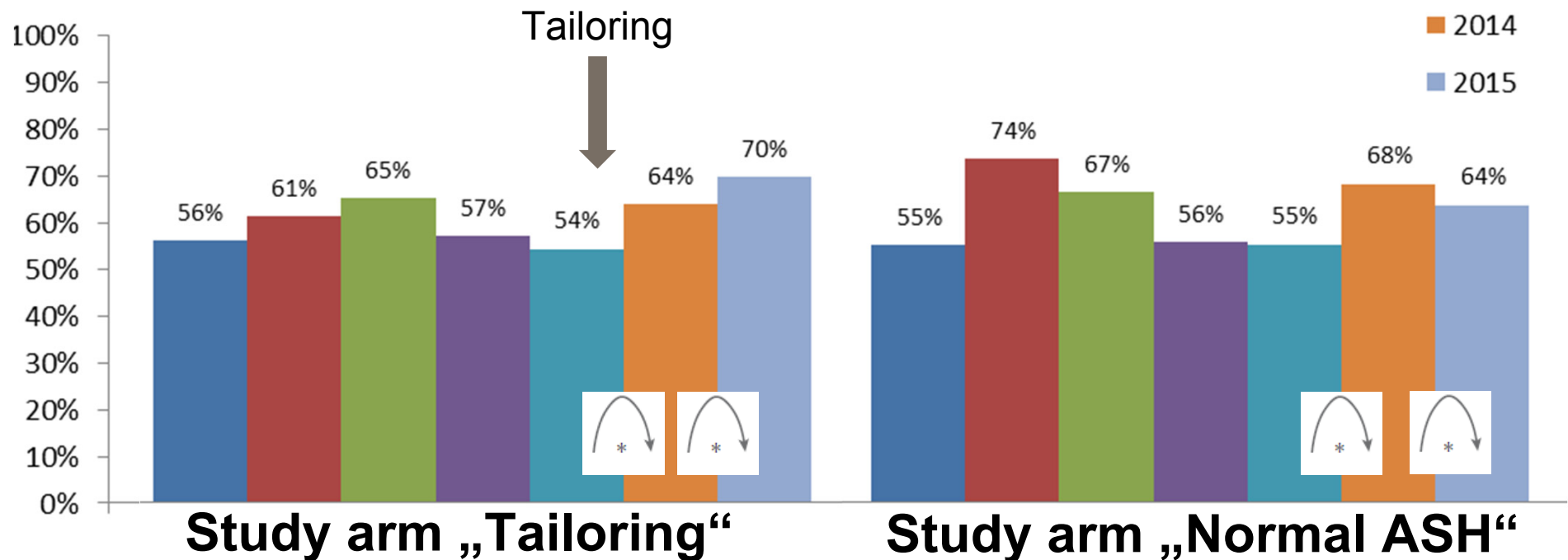
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- Intervention methods: Professional education/training sessions for nurses and physicians, and feedback discussions with head nurses (Jun - Dec 2013)
- Intervention techniques: “BCT taxonomy v1” (Michie et al. 2013)
- Participation rates: nurses 50%, physicians 48%; head nurses 100%
- Study design: Comprehensive Cluster-Randomised Controlled Trial
- **Primary outcome: Hygienic hand disinfection compliance rates (2014-15)**



Results of the PSYGIENE C-RCT, part 1: Hygienic hand disinfection compliance rates 2008-2015, stratified by study arms

**Breslow-Day tests
for Interaction Of
Risk Difference over
Strata (Tailoring vs. ASH):**

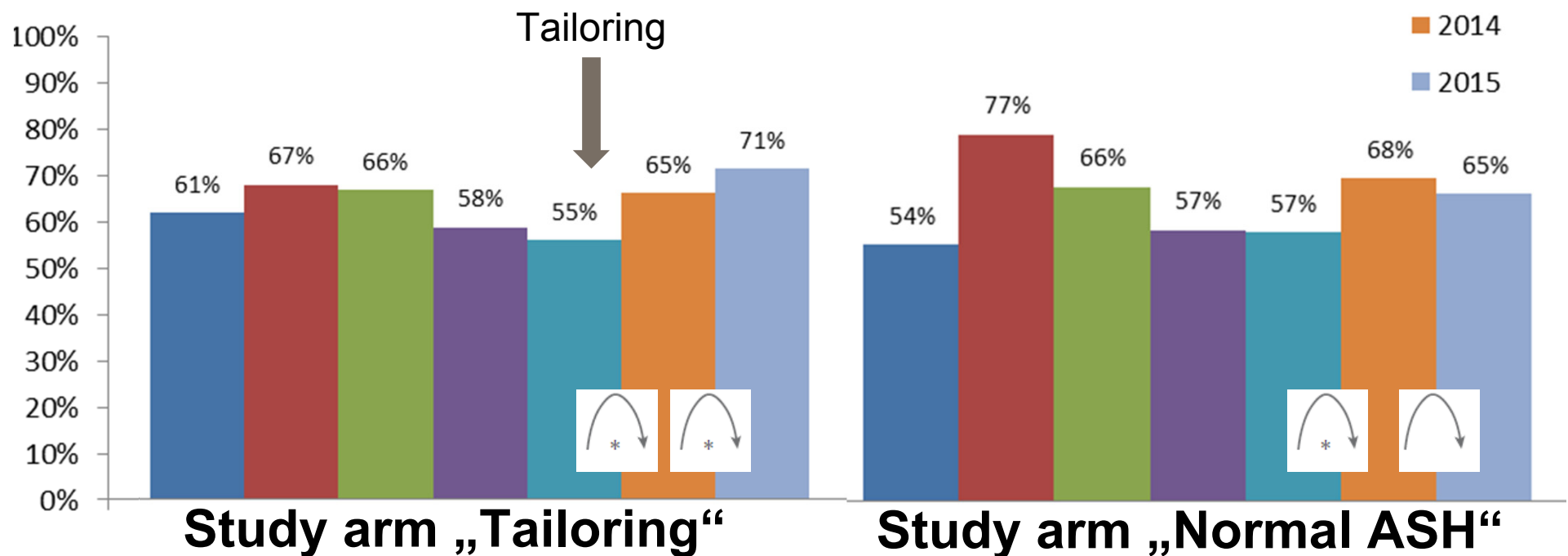
- 1) 2013 vs. 2014 in Tailoring vs. 2013 vs. 2014 in ASH: $p=.126$
- 2) 2014 vs. 2015 in Tailoring vs. 2014 vs. 2015 in ASH: $p<.001$
- 3) 2013 vs. 2015 in Tailoring vs. 2013 vs. 2015 in ASH: $p=.005$



Results of the PSYGIENE C-RCT, part 2: Hygienic hand disinfection compliance rates 2008-2015, stratified by study arms, **NURSES**

**Breslow-Day tests
for Interaction Of
Risk Difference over
Strata (Tailoring vs. ASH):**

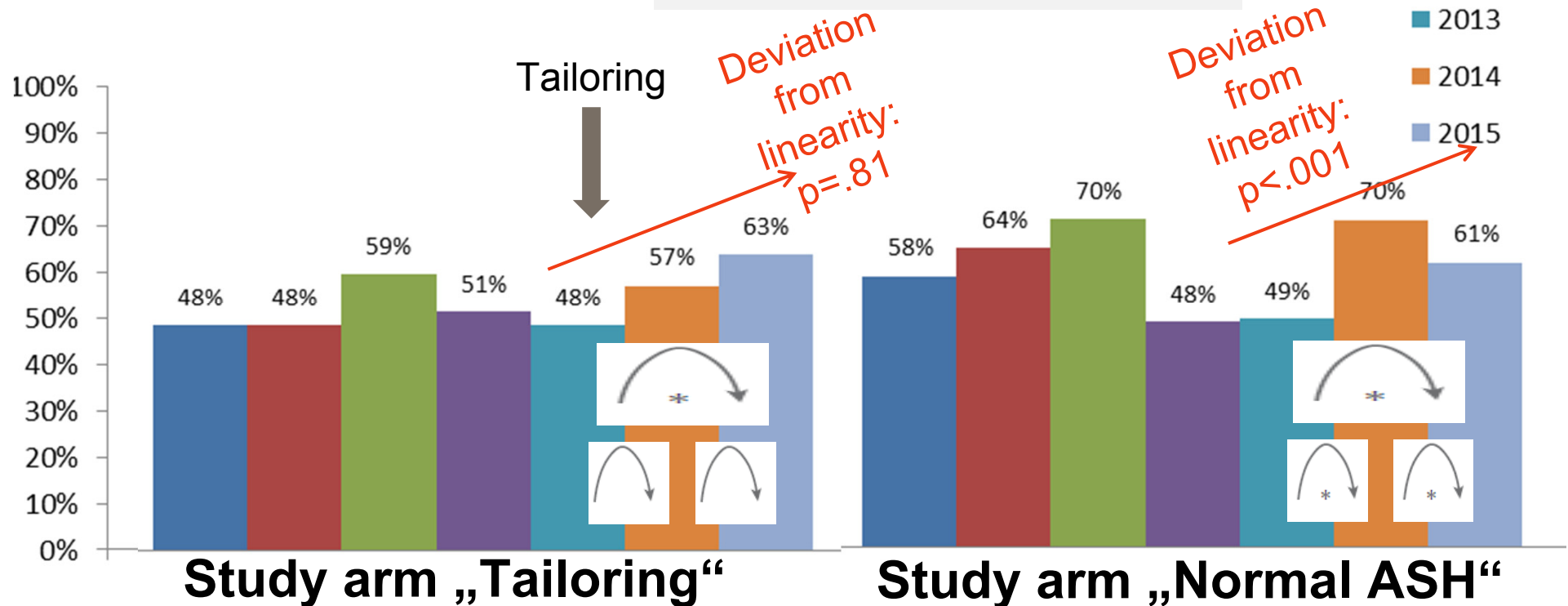
- 1) 2013 vs. 2014 in Tailoring vs. 2013 vs. 2014 in ASH: $p=.590$
- 2) 2014 vs. 2015 in Tailoring vs. 2014 vs. 2015 in ASH: $p<.001$
- 3) 2013 vs. 2015 in Tailoring vs. 2013 vs. 2015 in ASH: $p=.005$



Results of the PSYGIENE C-RCT, part 3: Hygienic hand disinfection compliance rates 2008-2015, stratified by study arms, **PHYSICIANS**

Breslow-Day tests for Interaction Of Risk Difference over Strata (Tailoring vs. ASH):

- 1) 2013 vs. 2014 in Tailoring vs. 2013 vs. 2014 in ASH: $p=.037$
- 2) 2014 vs. 2015 in Tailoring vs. 2014 vs. 2015 in ASH: $p=.016$
- 3) 2013 vs. 2015 in Tailoring vs. 2013 vs. 2015 in ASH: $p=.658$

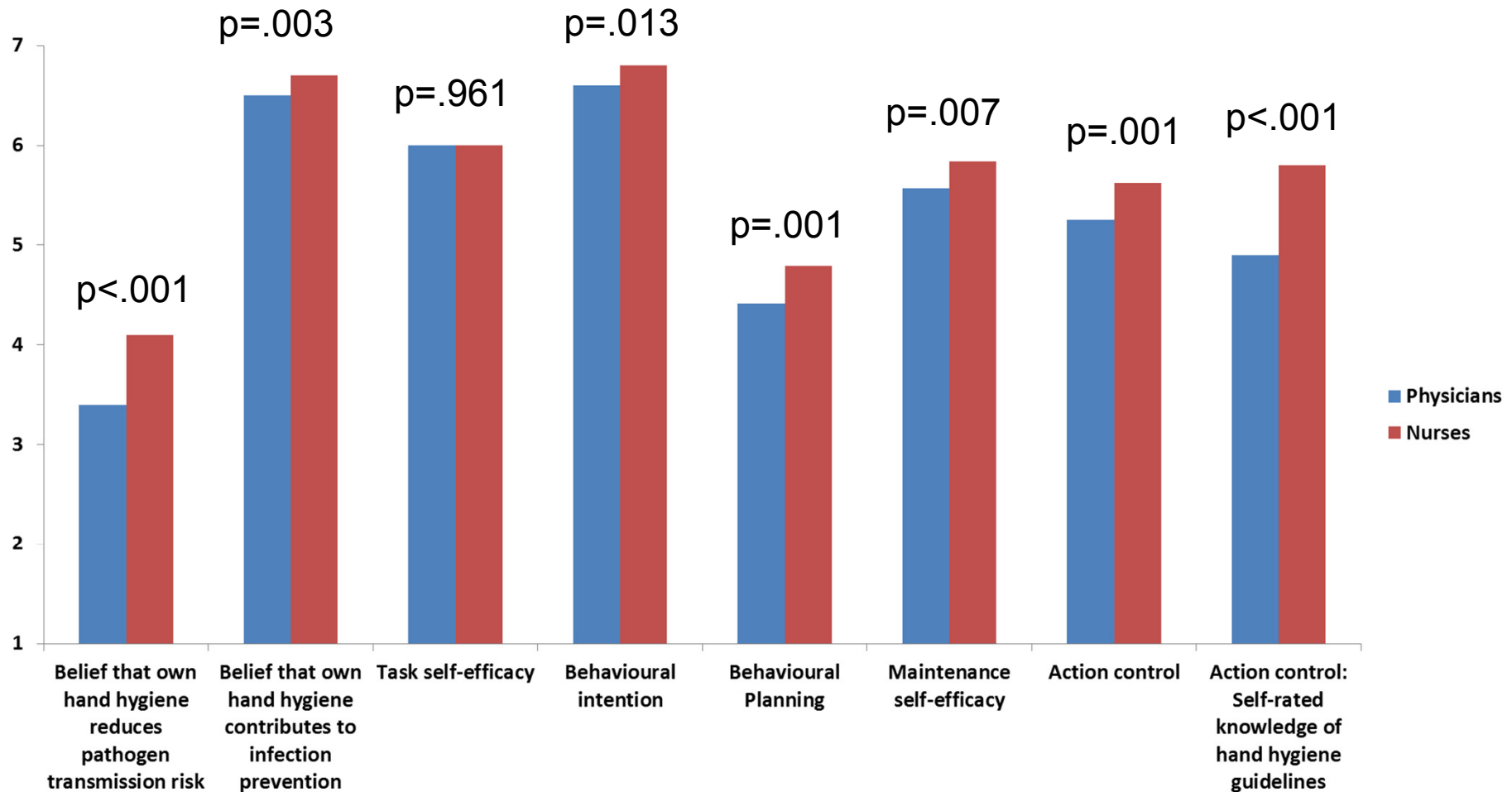
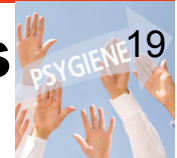


Discussion and Conclusion



- **Limitations:**
 - **Possible contamination due to same + unblinded intervention staff in study arms (Tailoring vs. ASH)**
 - **Intervention methods: 'Only' education sessions and feedback discussions**
 - **Trial duration: Tailoring limited to one year (2013)**
- **Compliance increased both in the Tailoring- and ASH-study arm in year 1, but in year 2 only in Tailoring-arm**
- **Effect clearer for nurses**
- **Possible reason: Largest difference in participation rate for educational sessions among physicians in favour of ASH-study arm (54% vs. 44% in Tailoring)**

Differences in HAPA-variables in physicians vs. nurses

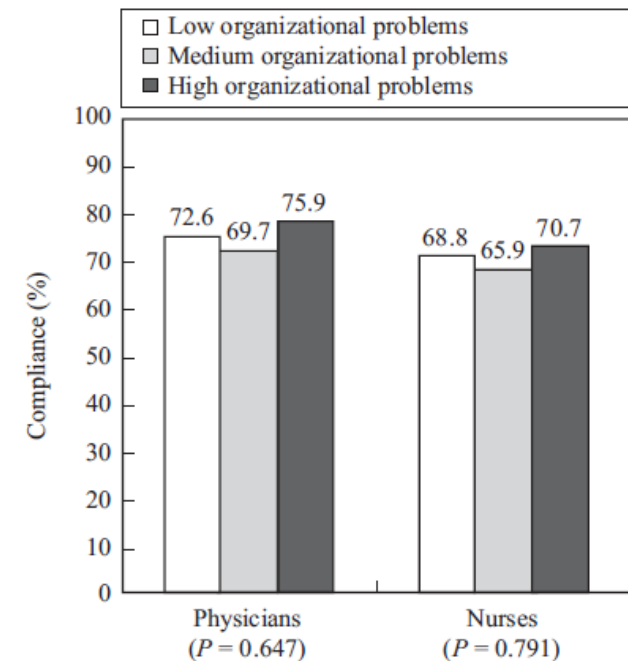
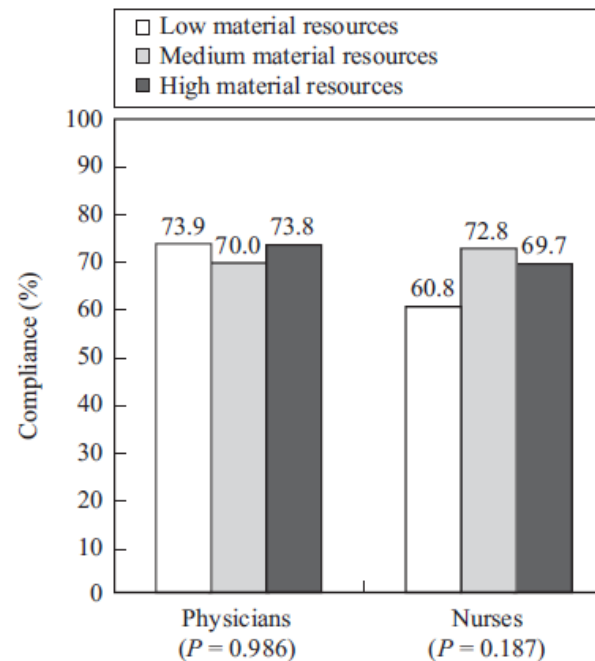
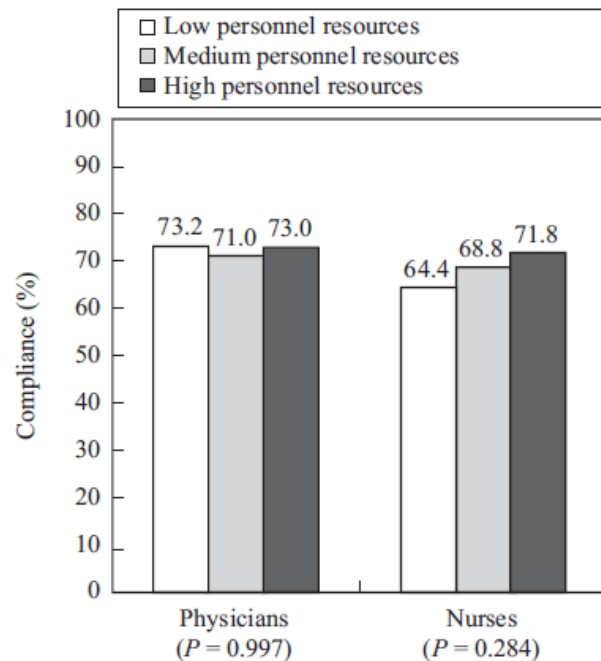


Lutze et al. J Hosp Infect 2015; 91(1): 59-67 [PMID: 26253651]
von Lengerke et al. J Hosp Infect 2015; 91(1): 59-67 [PMID: 26184662]



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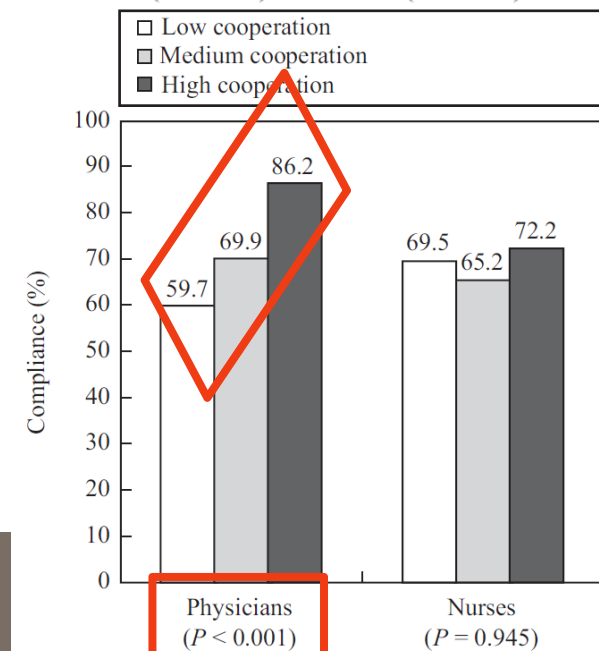
Self-reported compliance by perceived ward environment



„Top 3“-measures to promote role model behavior and hand hygiene compliance from the viewpoint of senior physicians:

1. Communication with hygiene expert staff (71%)
2. Specific workshops (64%)
3. Feedback of compliance observation data (64%)

(Schulz-Stübner, Hyg Med 2012; 408-12)



Discussion and **Conclusion**



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- Effect clearer for nurses
- Possible reason: Largest difference in participation rate for educational sessions among physicians in favour of ASH-study arm (54% vs. 44% in Tailoring-arm)
- **Psychological tailoring on HAPA-basis resulted in more sustainable increase in hand hygiene compliance. Re physicians, more target group-interventions are needed.**

Acknowledgments: Our sincere thanks go...

... to the PSYGIENE Study Group:

- **Hospital Epidemiology**
Univ.-Prof. Dr. med. **Iris F. Chaberny**, Dr. med. **Karolin Graf**,
Dr. med. **Laura Schwadtke**, **Aneta Smuda**, **Gabriele Porep**
- **Medical Psychology**
PD Dr. phil. Dipl.-Psych. **Thomas von Lengerke**, Prof. Dr. rer. nat. Dipl.-Psych.
Karin Lange, Dr. rer. biol. hum. **Bettina Lutze** MSc, BSc, **Barbara Kröning** MPH
- **Health Economics**
Prof. Dr. rer. pol. Dipl.-Volksw. **Christian Krauth**, Dr. PH Dipl.-Ök.
Jona T. Stahmeyer,

... to all participating wards and their staff,



... and to you for your attention!



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