SIMPIOS – 8° Congresso Nazionale, Bergamo, 21-23 May 2018

SESSIONE PLENARIA 8: MISURE DI PREVENZIONE PER LA DIFFUSIONE DEI BATTERI MULTIRESISTENTI (MDR)

Sustained hand hygiene compliance – why we fail and what we could do better

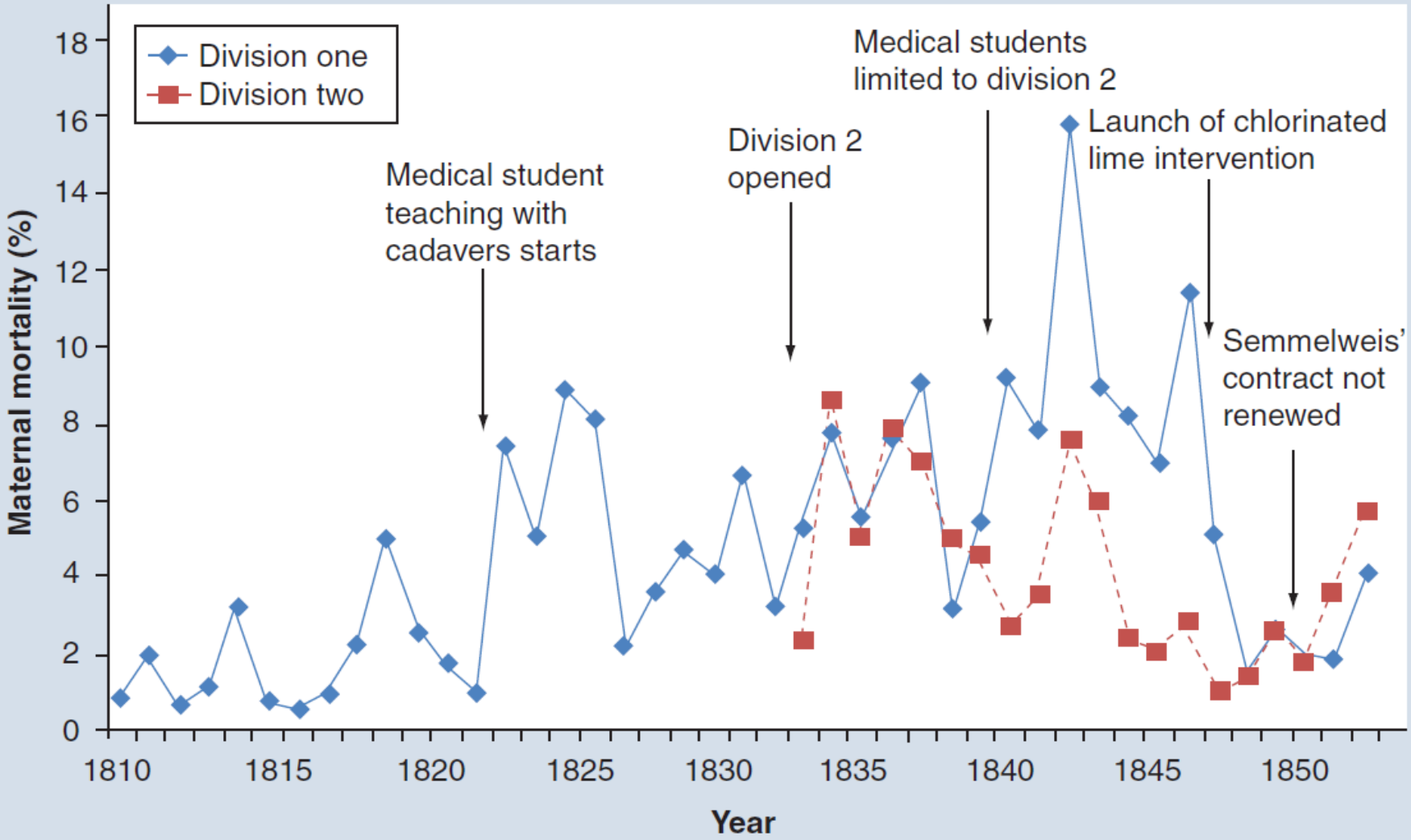
Walter Zingg, PD, MD

Hôpitaux Universitaires Genève

Imperial College London

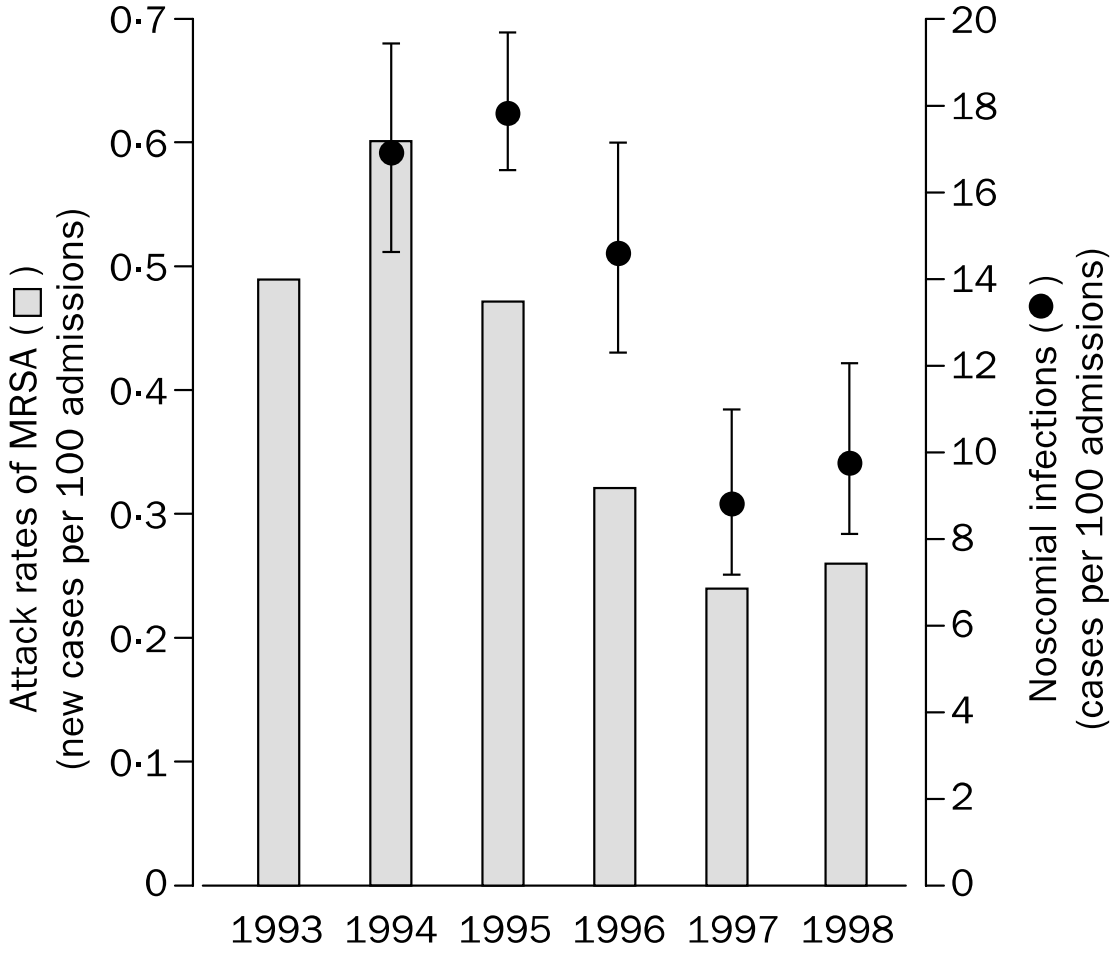
Is hand hygiene effective?

Vienna, Austria – Semmelweis 1848!



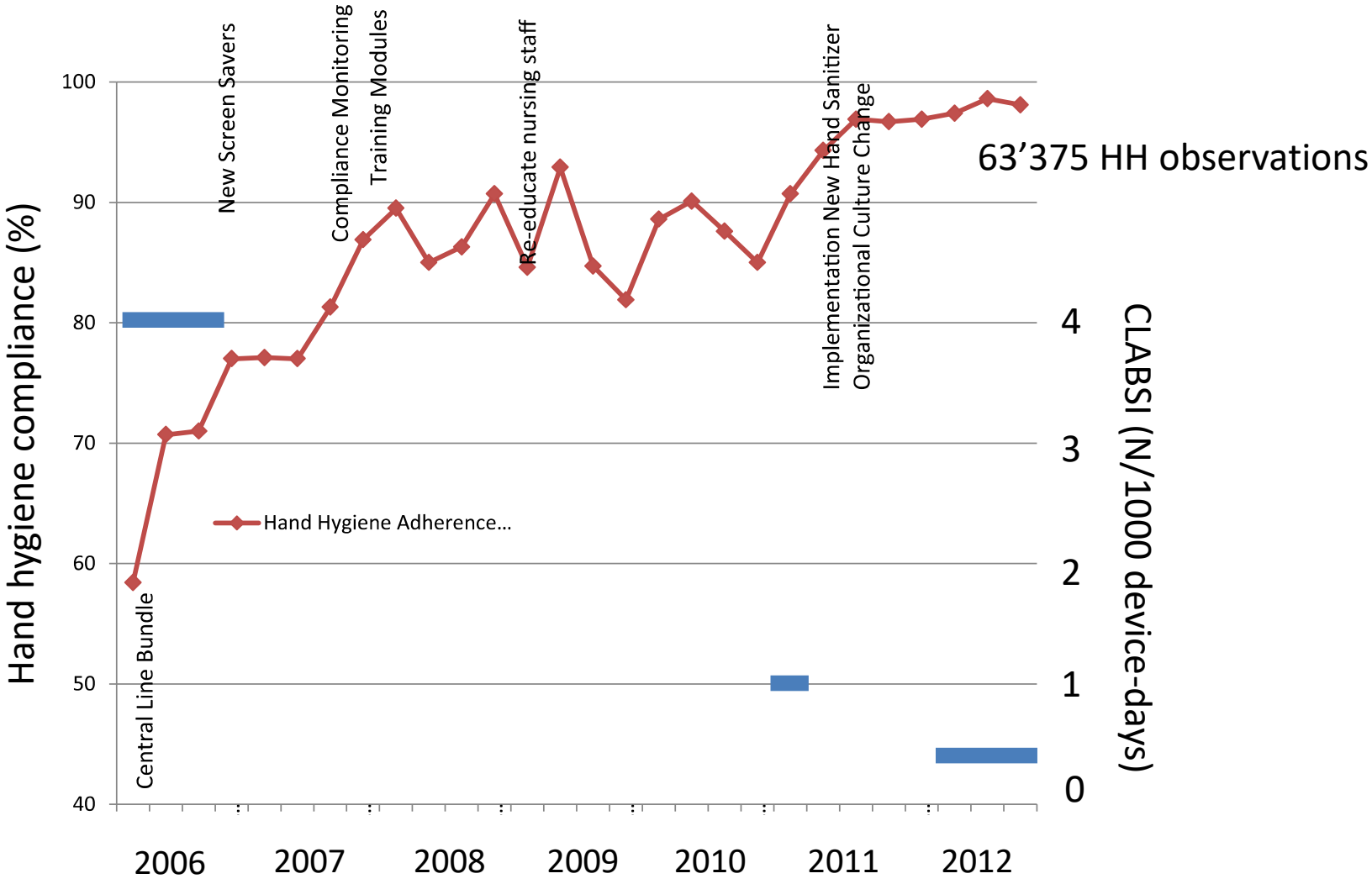
Stewardson A *Future Microbiol* 2011;8:855

Geneva, Switzerland



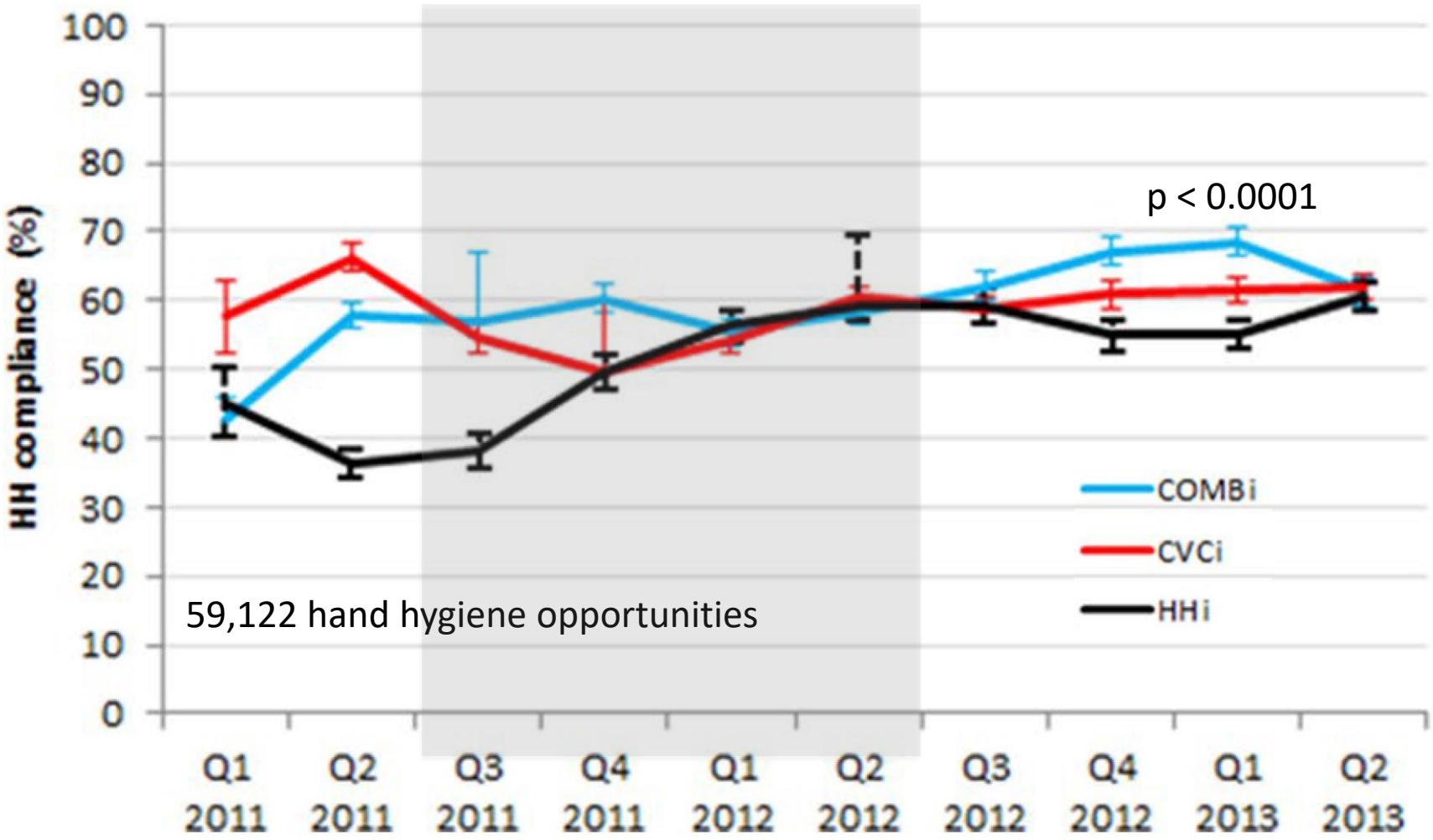
Pittet D *Lancet* 2000;56:1307

Missouri, USA



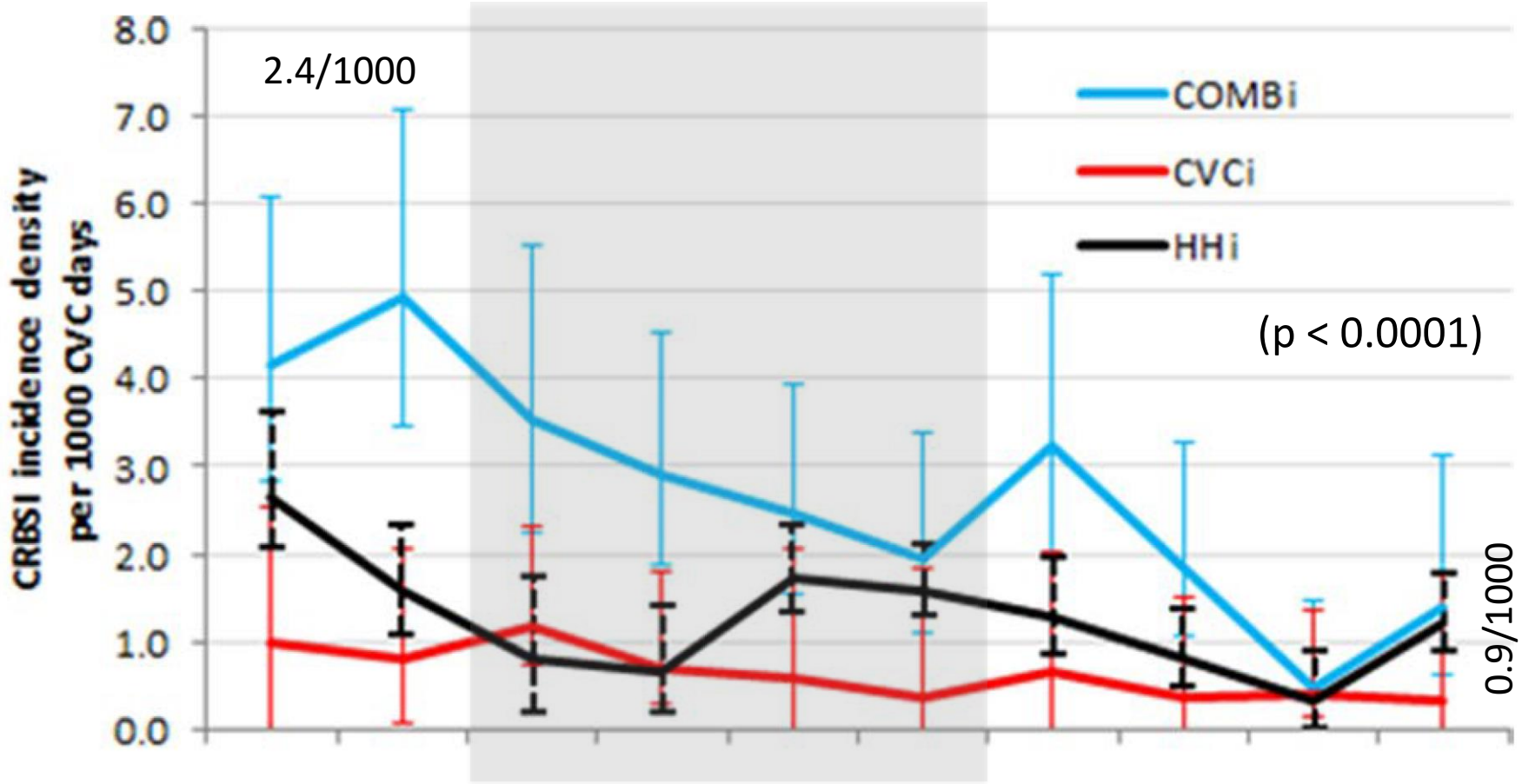
Johnson L *Am J Infect Control* 2014;42:1146

Europe (PROHIBIT)



van der Kooi T *Intensive Care Med* 2018;44:48

Europe (PROHIBIT)

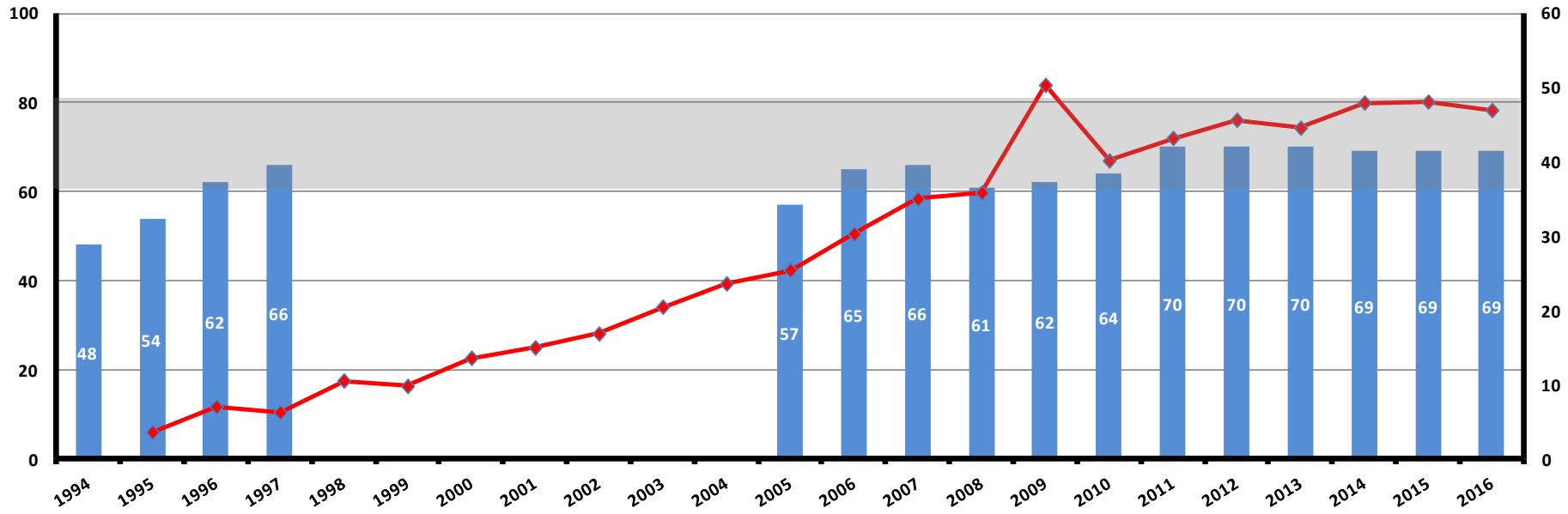


Association between hand hygiene and CRBSI in the hand hygiene arm:
IRR 0.95 (0.93-0.98)

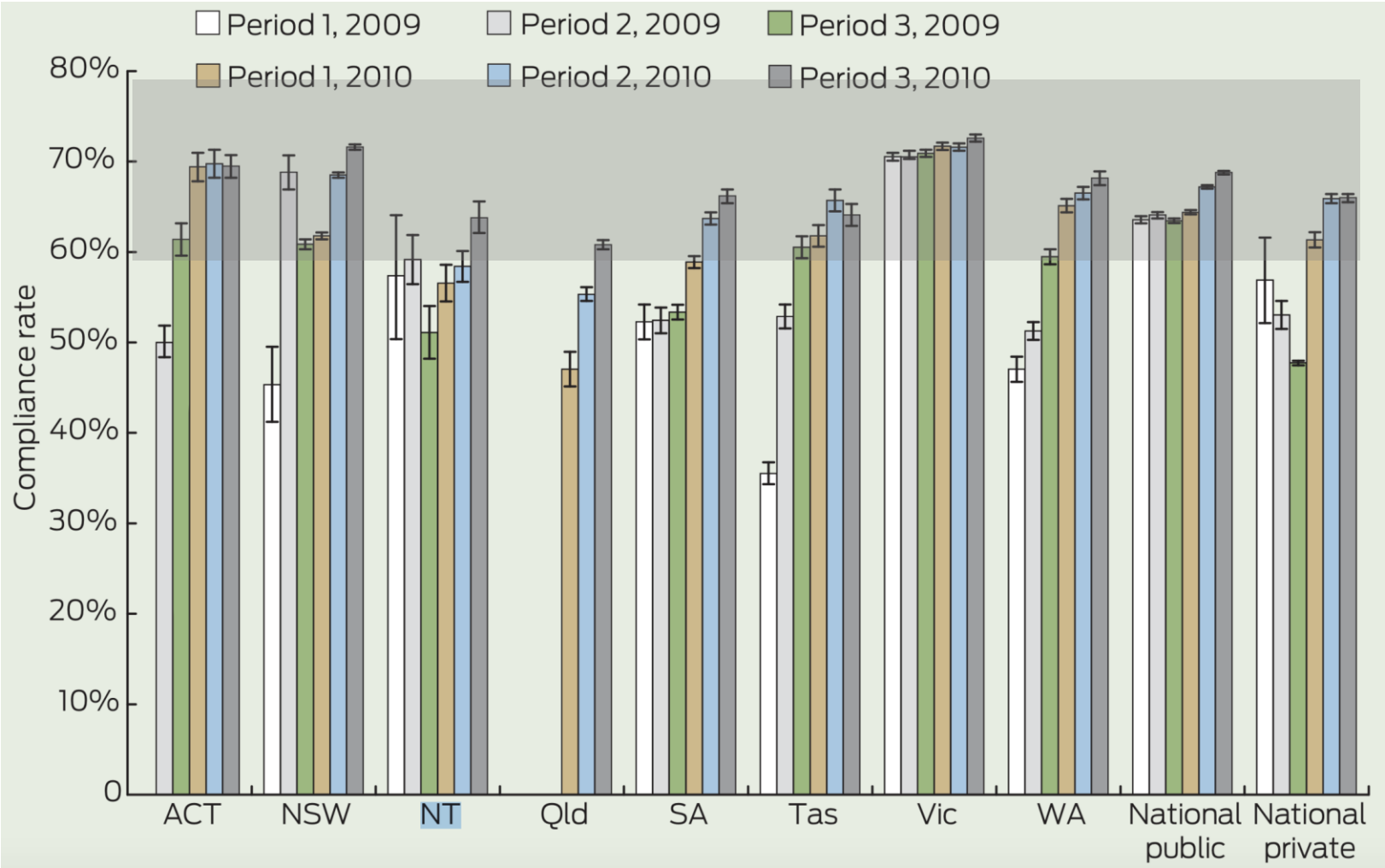
van der Kooi T *Intensive Care Med* 2018;44:48

What is “sustained” hand hygiene compliance?

Hand hygiene compliance and consumption of alcohol-based handrub at the University of Geneva Hospitals

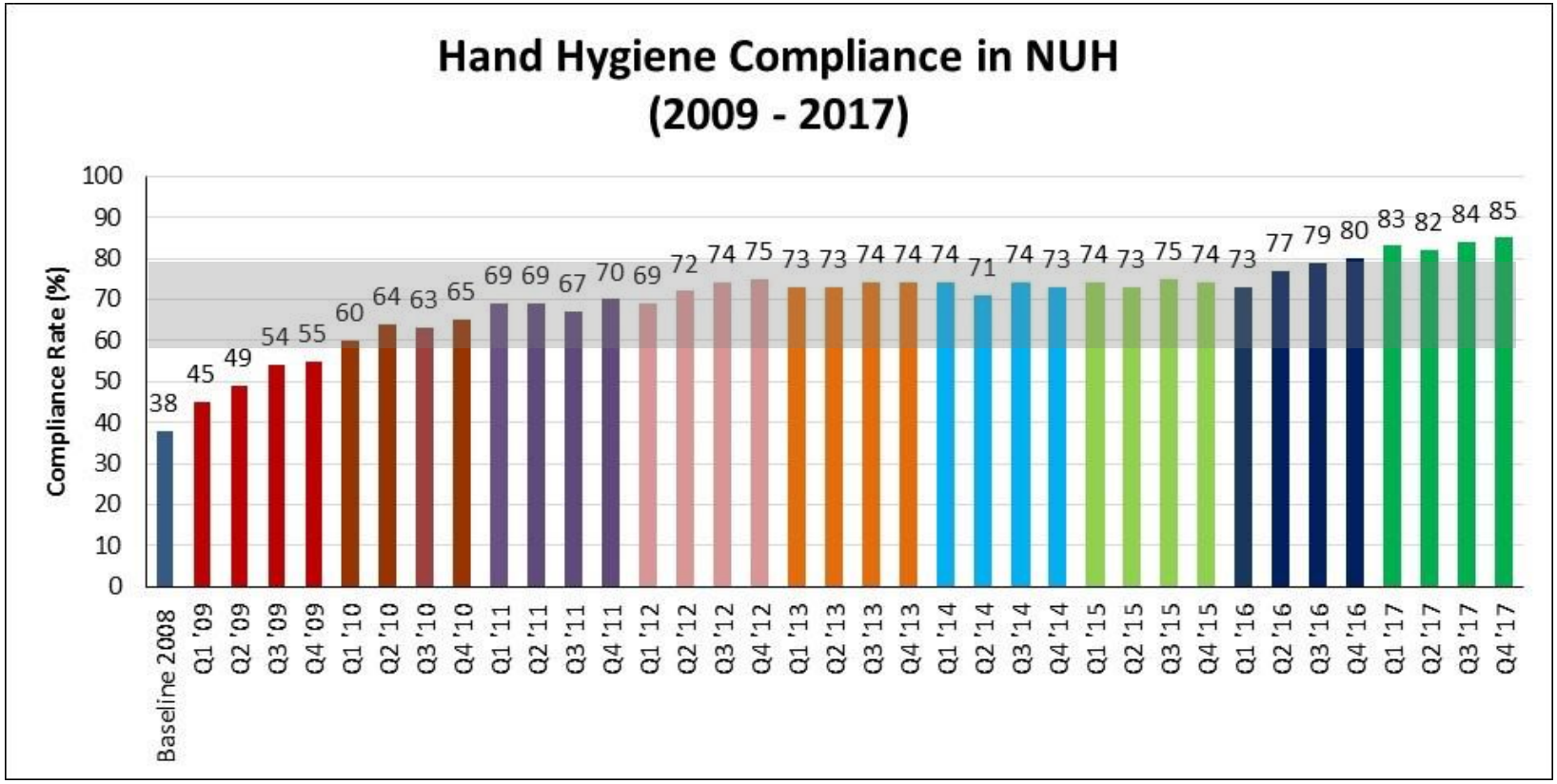


Hand hygiene Australia



Grayson ML *Med J Aust* 2011;196:615

National University Hospital, Singapore



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How achieve sustainability?

	Key components (ECDC – SIGHT)	Core components (WHO)
1	An effective infection control programme in an acute care hospital must include at least: one full-time specifically trained IC-nurse ≤ 250 beds; a dedicated physician trained infection control; microbiological support; data management support	An IPC programme with a dedicated, trained team should be in place in each acute health care facility for the purpose of preventing HAI and combating AMR through IPC good practices
2	To make sure that the ward occupancy does not exceed the capacity for which it is designed and staffed; staffing and workload of frontline health-care workers must be adapted to acuity of care; and the number of pool/agency nurses and physicians minimized	In order to reduce the risk of HAI and the spread of AMR, the following should be addressed: (1) bed occupancy should not exceed the standard capacity of the facility; (2) health care worker staffing levels should be adequately assigned according to patient workload
3	Sufficient availability of and easy access to material and equipment and optimized ergonomics	At the facility level, patient care activities should be undertaken in a clean and/or hygienic environment that facilitates practices related to the prevention and control of HAI, as well as AMR, including all elements around the WASH infrastructure and services and the availability of appropriate IPC materials and equipment
4	Use of guidelines in combination with practical education and training	Evidence-based guidelines should be developed and implemented for the purpose of reducing HAI and AMR. Education and training of the relevant health care workers on guideline recommendations and monitoring of adherence with guideline recommendations should be undertaken to achieve successful implementation
5	Education and training involves frontline staff, and is team- and task-oriented	At the facility level, IPC education should be in place for all health care workers by utilizing team- and task-based strategies that are participatory and include bedside and simulation training to reduce the risk of HAI and AMR.
6	Organizing audits as a standardized (scored) and systematic review of practice with timely feedback	Regular monitoring/audit and timely feedback of health care practices should be undertaken according to IPC standards to prevent and control HAIs and AMR at the health care facility level. Feedback should be provided to all audited persons and relevant staff
7	Participating in prospective surveillance and offering active feedback, preferably as part of a network	Facility-based HAI surveillance should be performed to guide IPC interventions and detect outbreaks, including AMR surveillance with timely feedback of results to health care workers and stakeholders and through national networks
8	Implementing infection control programmes follow a multimodal strategy including tools such as bundles and checklists developed by multidisciplinary teams and taking into account local conditions	At the facility level, IPC activities should be implemented using multimodal strategies to improve practices and reduce HAI and AMR
9	Identifying and engaging champions in the promotion of a multimodal intervention strategy	
10	A positive organizational culture by fostering working relationships and communication across units and staff groups	

Zingg W *Lancet Infect Dis* 2015;15:212
Storr J *Antimicrob Resist Infect Control* 2017

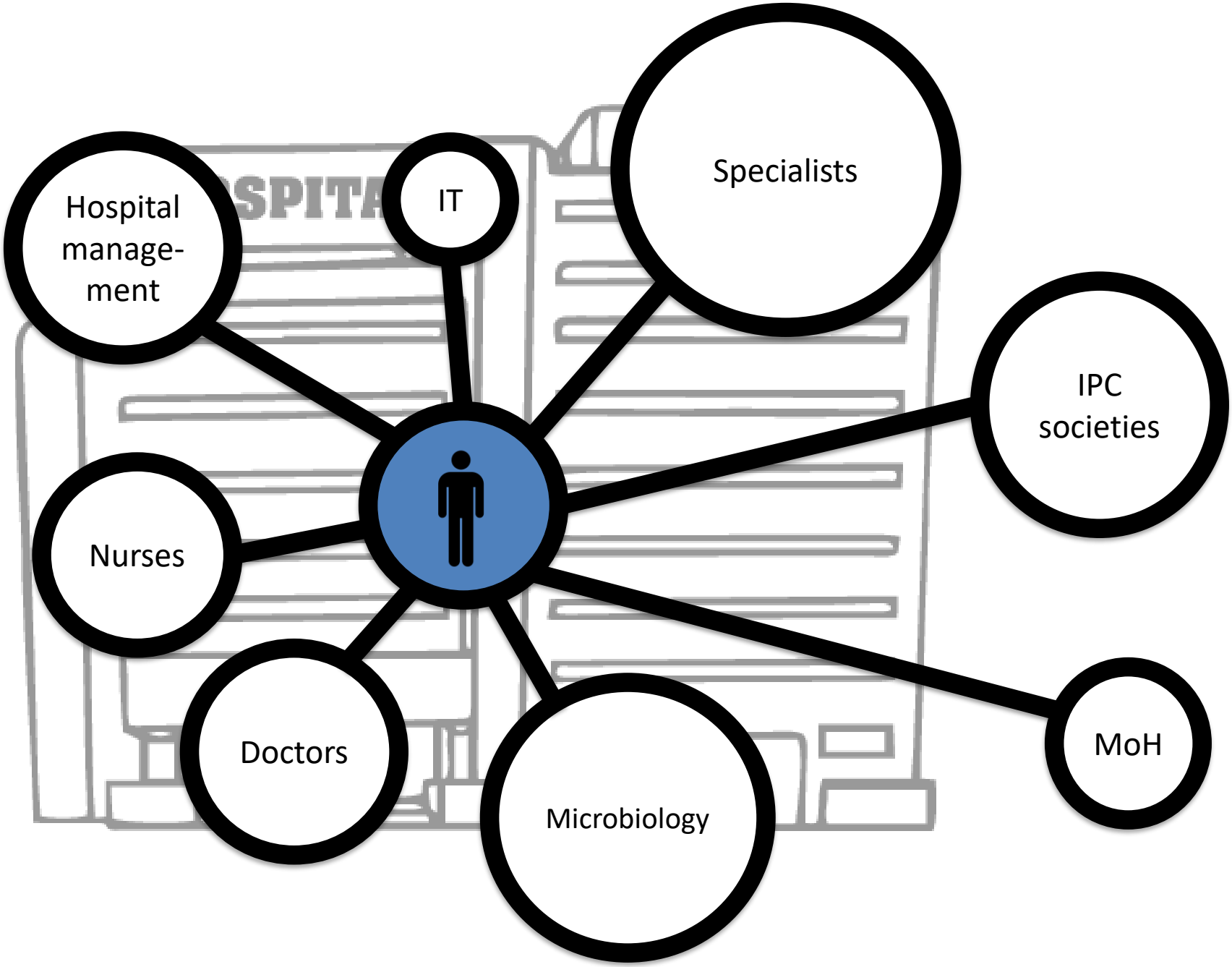
Organisation of infection control

Key component

An effective infection control programme in an acute care hospital must include at least: **one full-time specifically trained IC-nurse ≤ 250 beds**; a dedicated physician trained infection control; microbiological support; data management support

Core component

The panel recommends that an IPC programme with a dedicated, trained team should be in place in each acute health care facility for the purpose of preventing HAI and combating AMR through IPC good practices


Hospital manage-ment
IT
Specialists
IPC societies
Nurses
Doctors
Microbiology
MoH

Ward occupancy and workload

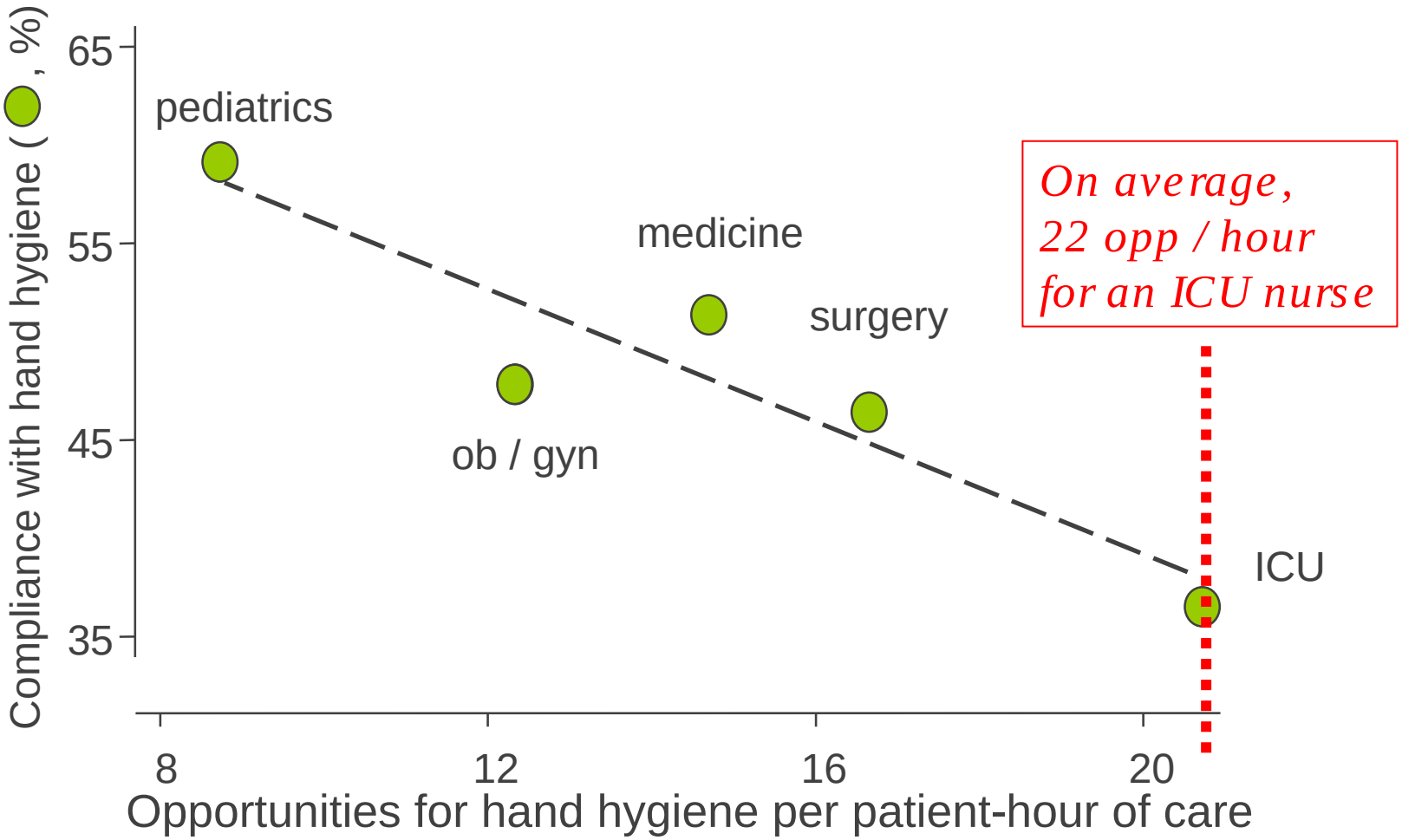
Key component

Ward occupancy must not exceed the capacity for which it is designed and staffed; **staffing** and **workload** of frontline staff must be adapted to acuity of care, and the number of pool or agency nurses and physicians used kept to a minimum

Core component

The panel recommends that the following elements should be adhered to in order to reduce the risk of HAI and the spread of AMR: (1) bed occupancy should not exceed the standard capacity of the facility; (2) health care worker staffing levels should be adequately assigned according to patient workload

Hand hygiene opportunities and compliance



(adapted from) Pittet D *Ann Intern Med* 1999;130:126

Materials, equipment, and ergonomics

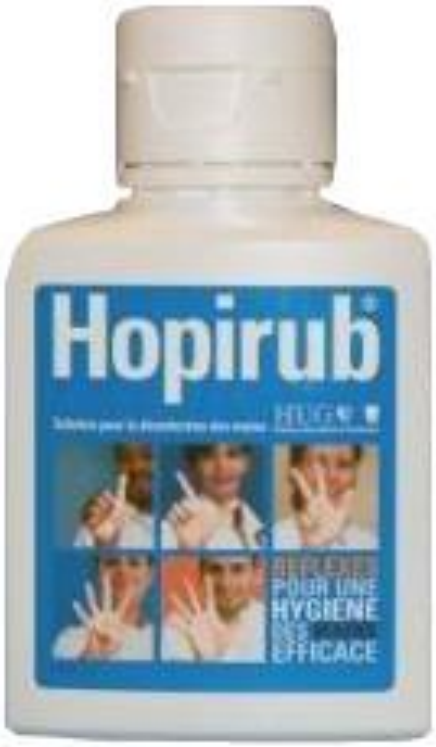
Key component

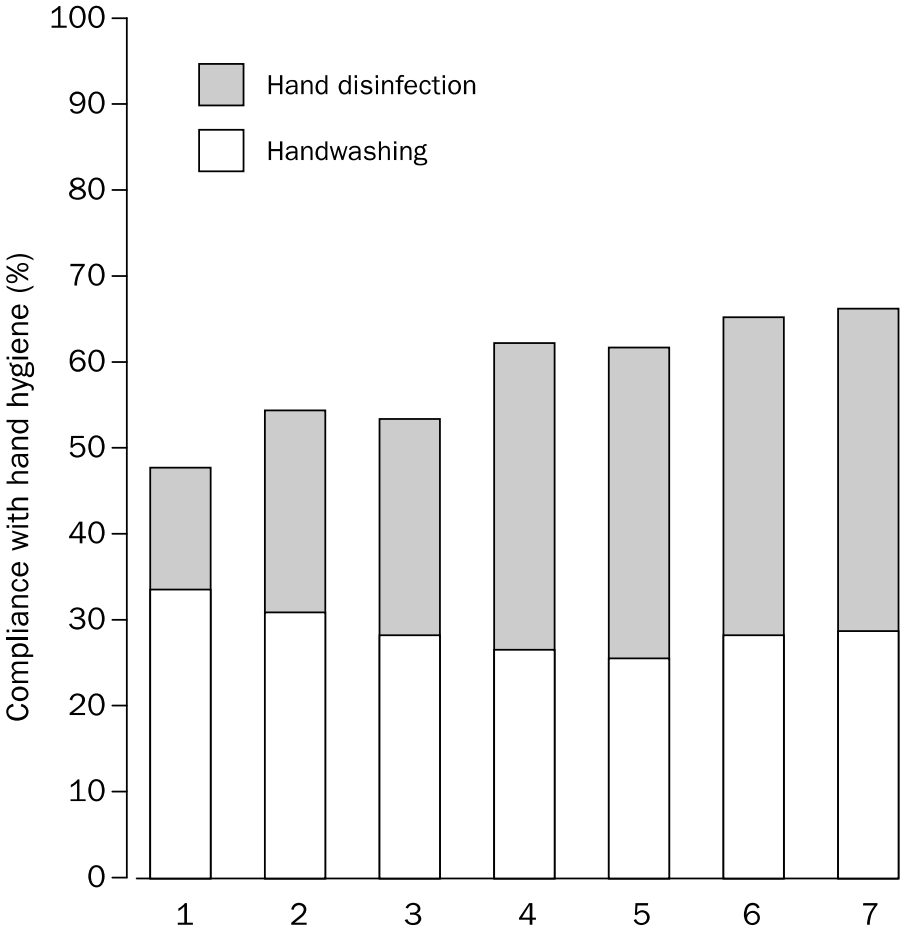
Sufficient **availability** of and **easy access** to materials and equipment, and optimisation of ergonomics

Core component

The panel recommends that materials and equipment to perform appropriate hand hygiene should be readily available at the point of care

Handrub at the point of care





Pittet D *Lancet* 2000;56:1307

Handrub at the point of care

RCT; 52 physicians

14 (53.8%) physicians performed hand hygiene

Birnbach DJ *Qual Saf Health Care* 2010;19:462

Use of guidelines, education, and training

Key component

Use of **guidelines** in combination with practical **education** and **training**

Core component

The panel recommends that evidence-based guidelines should be developed and implemented for the purpose of reducing HAI and AMR - The education and training of relevant health care workers on the guideline recommendations and the monitoring of adherence with guideline recommendations should be undertaken to achieve successful implementation

Guidelines if not part of an active prevention strategy do not change behaviour!

"Wide dissemination of this Guideline was not sufficient to change practice. Only some hospitals had initiated multidisciplinary programs; practice change is unlikely without such multidisciplinary efforts and explicit administrative support"

Larson EL *Am J Infect Control* 2007;35:666

Team- and task-oriented education and training

Key component

Education and training **involves frontline staff** and is team and task oriented

Core component

The panel recommends that IPC education should be in place for all health care workers by utilizing team- and task-based strategies that are participatory and include bedside and simulation training to reduce the risk of HAI and AMR

The national IPC programme should support the education and training of the health workforce as one of its core functions

Involvement of frontline workers in education and training improves outcome

- ✓ Organising multidisciplinary focus groups to engage frontline healthcare workers
- ✓ Peer-to-peer education

Joshi SC *J Hosp Infect* 2012;80:340
Marra AR *Infect Control Hosp Epidemiol* 2010;31:12
Thomas M *Am J Infect Control* 2005;33:368
van der Kooi T *Intensive Care Med* 2018;44:48

Standardisation of audits

Key component

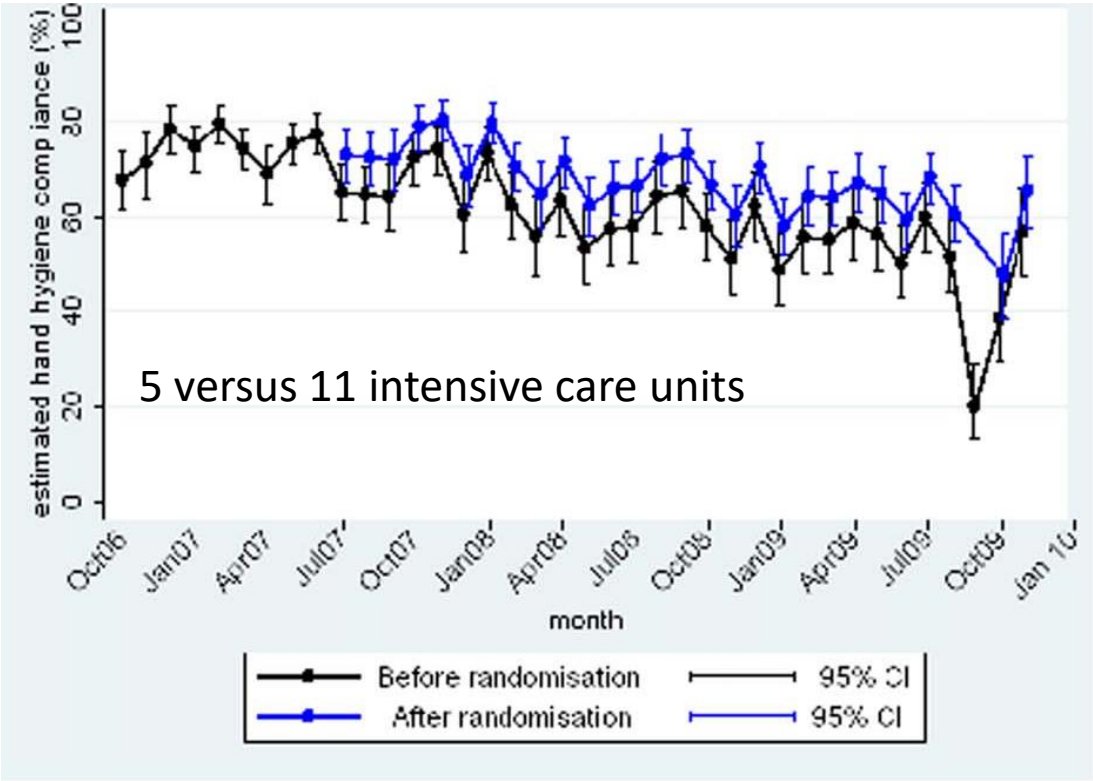
Organising **audits** as a **standardised** (scored) and **systematic** review of practice with timely feedback

Core component

The panel recommends that regular monitoring/audit and timely feedback of health care practices according to IPC standards should be performed to prevent and control HAIs and AMR at the facility level - Feedback should be provided to all audited persons and relevant staff

The feedback intervention trial (FIT)

Direct and timely feedback with formulating an action plan: individual followed by team level



Factor	Estimated odds ratio	95% CI	P value
ITU			
Before randomisation	Reference		
After randomisation before implementation	1.70	1.26 to 2.30	<0.001
After implementation	2.09	1.55 to 2.81	<0.001

Fuller W *PLOS One* 2012;7:e41617

Surveillance, feedback, and networks

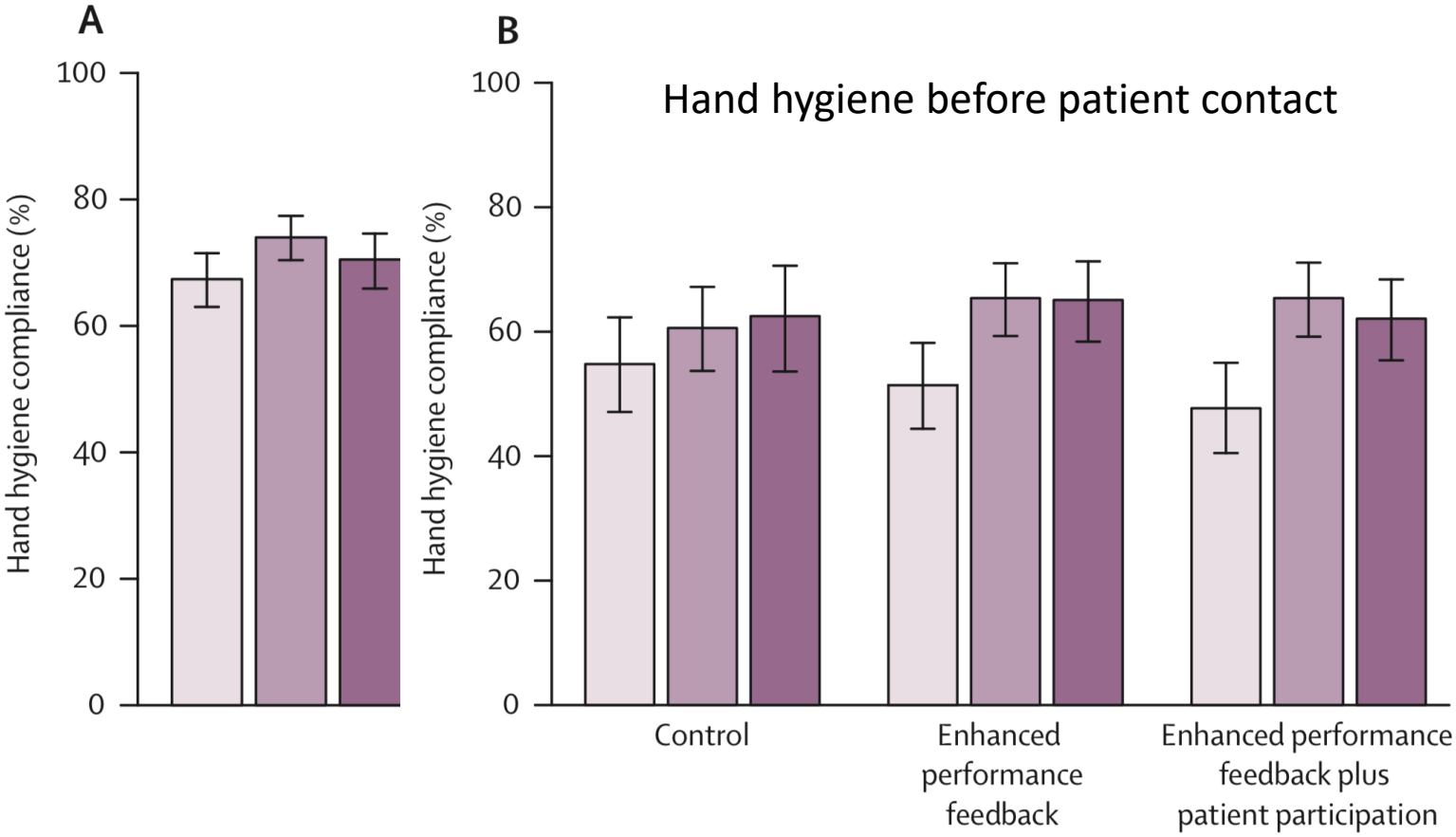
Key component

Participating in **prospective surveillance** and offering active **feedback**, preferably as part of a network

Core component

The panel recommends that facility-based HAI surveillance should be performed to guide IPC interventions and detect outbreaks, including AMR surveillance, with timely feedback of results to health care workers and stakeholders and through national networks

Enhanced performance feedback and patient participation



Stewardson A *Lancet Infect Dis* 2016;16:1345

Prevention by multimodal strategies

Key component

Implementing infection-control programmes following a **multimodal strategy**, including tools such as bundles and checklists developed by multidisciplinary teams, and **taking into account local conditions**

Core component

The panel recommends implementing IPC activities using multimodal strategies to improve practices and reduce HAI and AMR

The panel recommends that national IPC programmes should coordinate and facilitate the implementation of IPC activities through multimodal strategies on a nationwide or subnational level

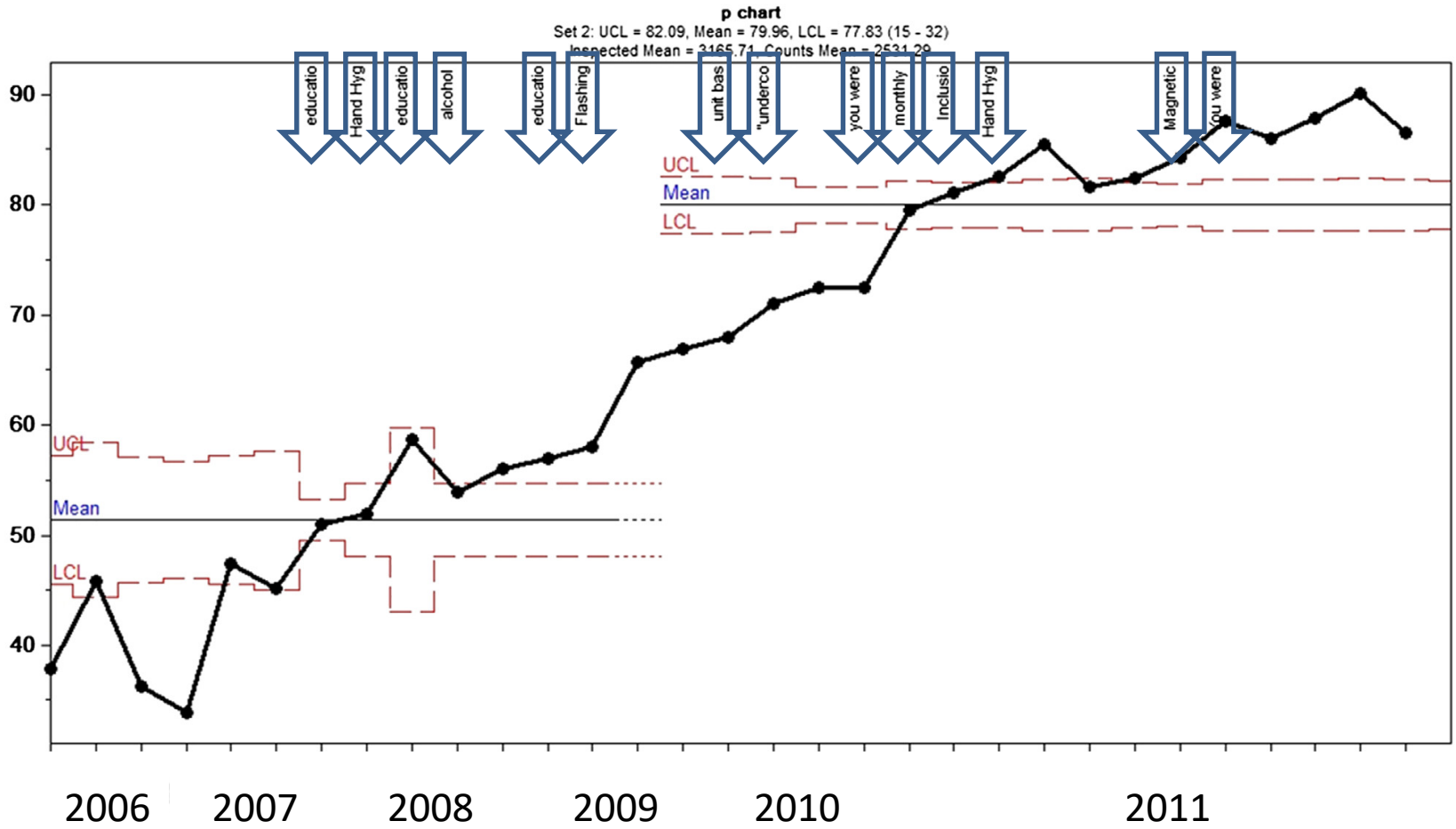
”Multimodal” refers to a strategy addressing stakeholders on various levels by using different “modes” to pass education

Examples: Leadership (management) commitment, opinion leaders, champions, positive reinforcement, principles of product marketing, financial incentives, emotional involvement

…room for creativity and local adaptation

Johnson L *Am J Infect Control* 2014;42:1146
Talbot TR *Infect Control Hosp Epidemiol* 2013;34:1129
Lieber SR *Infect Control Hosp Epidemiol* 2014;35:313
Al-Tawfiq JA *Am J Infect Control* 2013;41:482
Higgins A *J Hosp Infect* 2013;84:32
Rodriguez V *Int J Qual Health Care* 2015;27:405
Stevenson KB *Antimicrob Resist Infect Control* 2014;3:10

Multimodal hand hygiene campaign in Saudi Arabia



Al-Tawfiq JA *Am J Infect Control* 2013;41:482

Role and engagement of champions
Creating a positive organisational culture

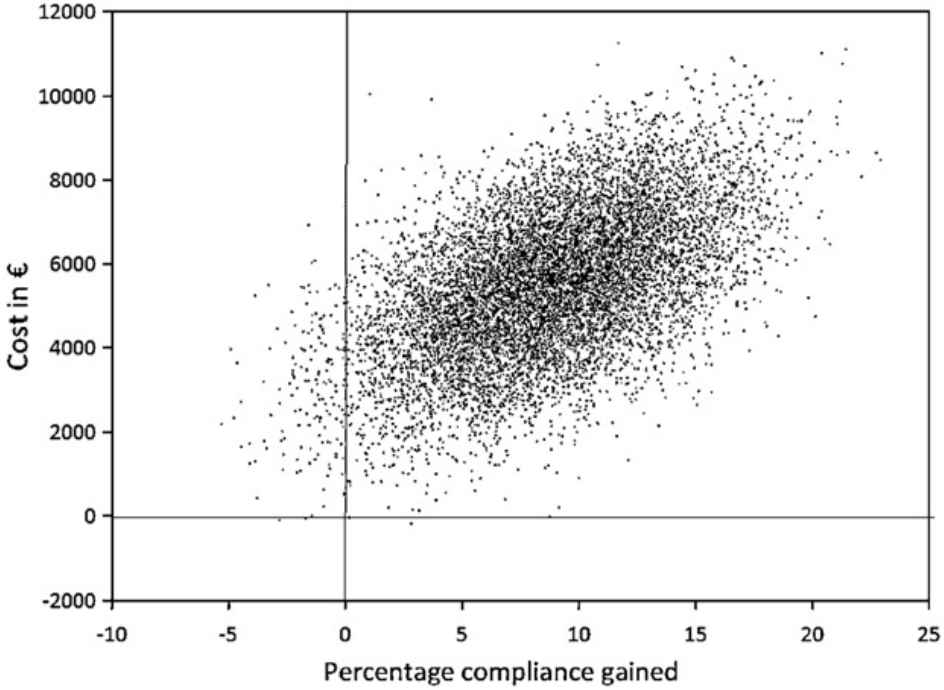
Key components

Identifying and **engaging champions** in the promotion of intervention strategies

A **positive organizational culture** by fostering working relationships and communication across units and staff groups

“State-of-the-art” versus team- and leaders-directed implementation strategy for hand hygiene improvement in the Netherlands

Compliance in the state-of-the-art strategy group improved from 21.8% to 45.9%, whereas the compliance in the team and leaders-directed strategy group increased from 19.1% to 52.1%



Huis A *IntJ Nurse Stud* 2013;50:518

IPC

We need people to be in charge and do the job

Equipment Ergonomics

Alcohol-based handrub can be integrated better in the workflow than hand washing, but it must be available at the point of care

Aud

Surveillance

Audits with direct feedback help sensitising

Education Training

Multomodal strategy

Education and training follows a multimodal strategy

Champi

Organisational culture

Champions, leadership, role models

The goal is “culture change”

“The way we do things around here”

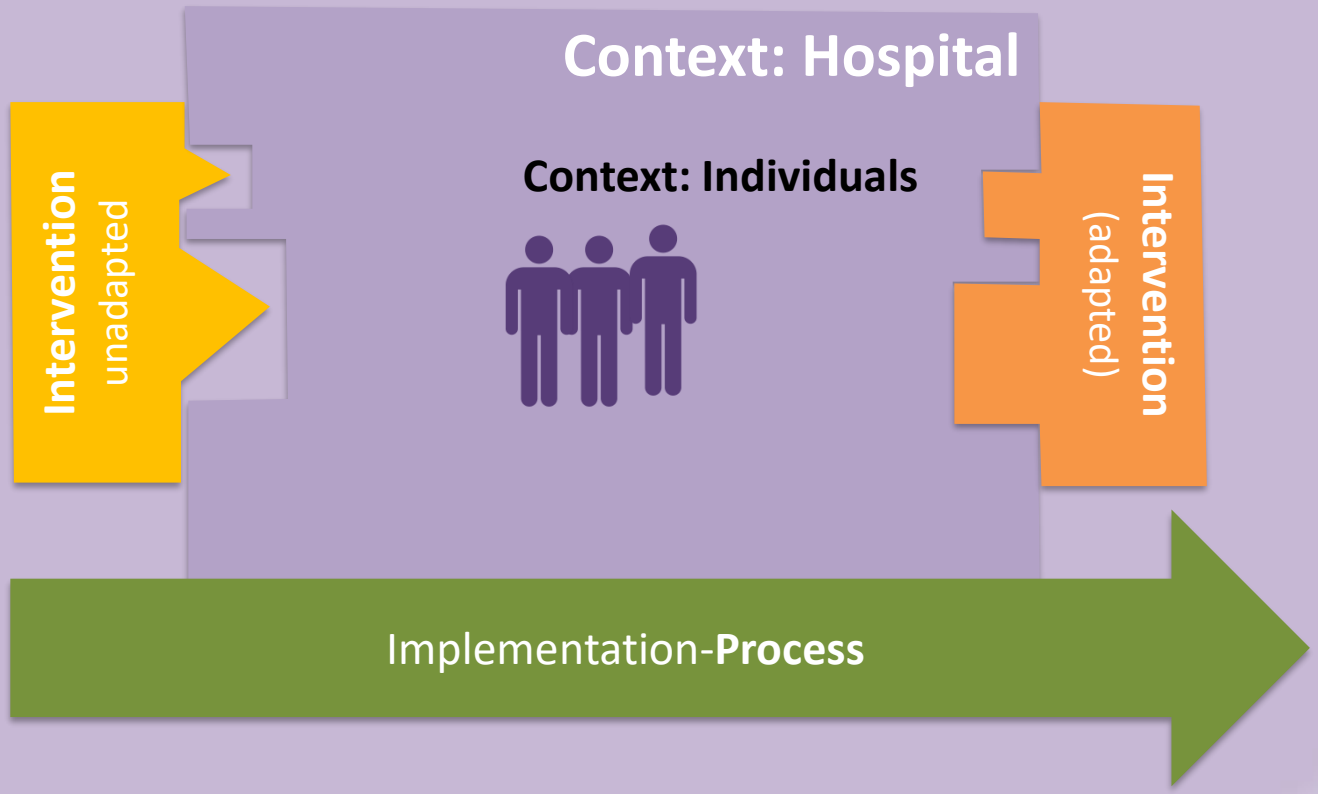
How about context?

InDepth study – PROHIBIT

Interv-ention	Alignment with implementation agendas	Availability of resources	Boundary spanners	Qualitative measures of implementation success	CVC insertion compliance†			Hand hygiene compliance†			CRBSI rate (N/1000 catheter-days) ††		
	■ Low ■■ Mid ■■■ High	■ Low ■■ Mid ■■■ High	■ Low ■■ Mid ■■■ High	■ Low ■■ Mid ■■■ High	Baseline		Intervention	Baseline		Intervention	Baseline		Intervention
HH	■■	Human ■■■ Material ■■■	Formal ■■■ Informal ■■■	Satisfaction ■■■ Fidelity ■■■ Context fit ■■■	Low	↗	**High**	Mid	↗	**High***	Low	→	**Low**
Both	■■■	Human ■ Material ■■■	Formal ■■■ Informal ■■	Satisfaction ■■■ Fidelity ■■■ Context fit ■■■	Low	↗	**High***	Mid	↗	**High***	Low	→	**Low**
CVC	■■■	Human ■■ Material ■	Formal ■■ Informal ■■■	Satisfaction ■ Fidelity ■■ Context fit ■■	Low	↗	**High***	Mid	→	**Mid***	Low	→	**Low**
Both	■■■	Human ■ Material ■	Formal ■■ Informal ■■■	Satisfaction ■■■ Fidelity ■■■ Context fit ■■■	Low	↗	**High***	Low	→	**Low****	High	↘	**Mid***
Both	■■■	Human ■ Material ■	Formal ■■ Informal ■■■	Satisfaction ■■■ Fidelity ■■■ Context fit ■■■	Low	↗	**High***	Mid	↗	**High***	High	↘	**Mid***
CVC	■	Human ■■■ Material ■■■	Formal ■ Informal ■	Satisfaction ■■■ Fidelity ■ Context fit ■	Mid	→	**Mid[1]**	Low	→	**Low**	Low	→	**Low**

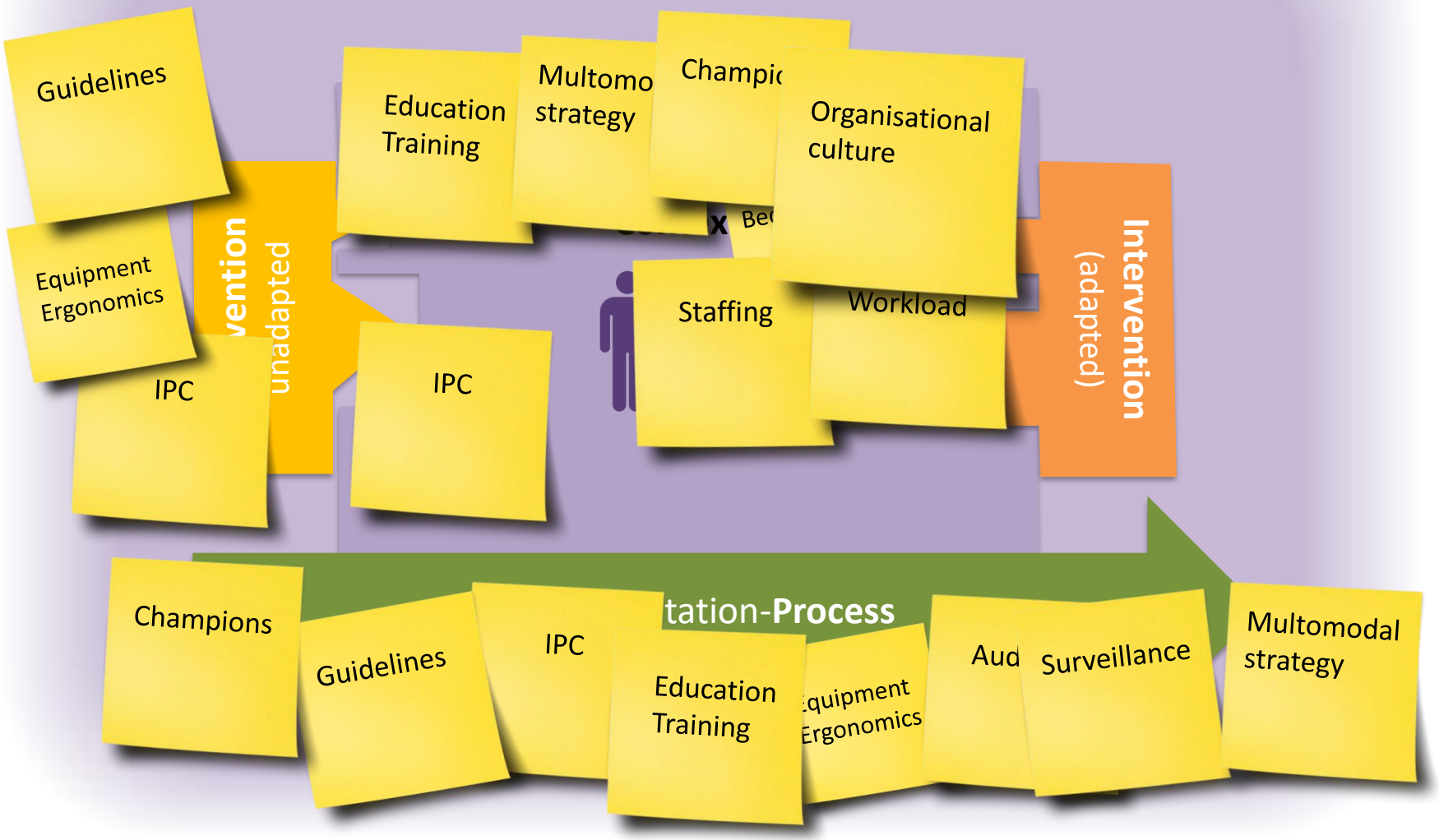
CVC, central venous catheter; CRBSI, catheter-related bloodstream infection; HH, hand hygiene; Both, both interventions; †, thresholds calculated based on terciles of overall compliance in study hospitals during study participation; ††, thresholds based on literature (see text); *, statistically significant improvement; **, statistically significant decline; [1], low number of observations

Clack L & Zingg W *BMJ Qual Saf* In press

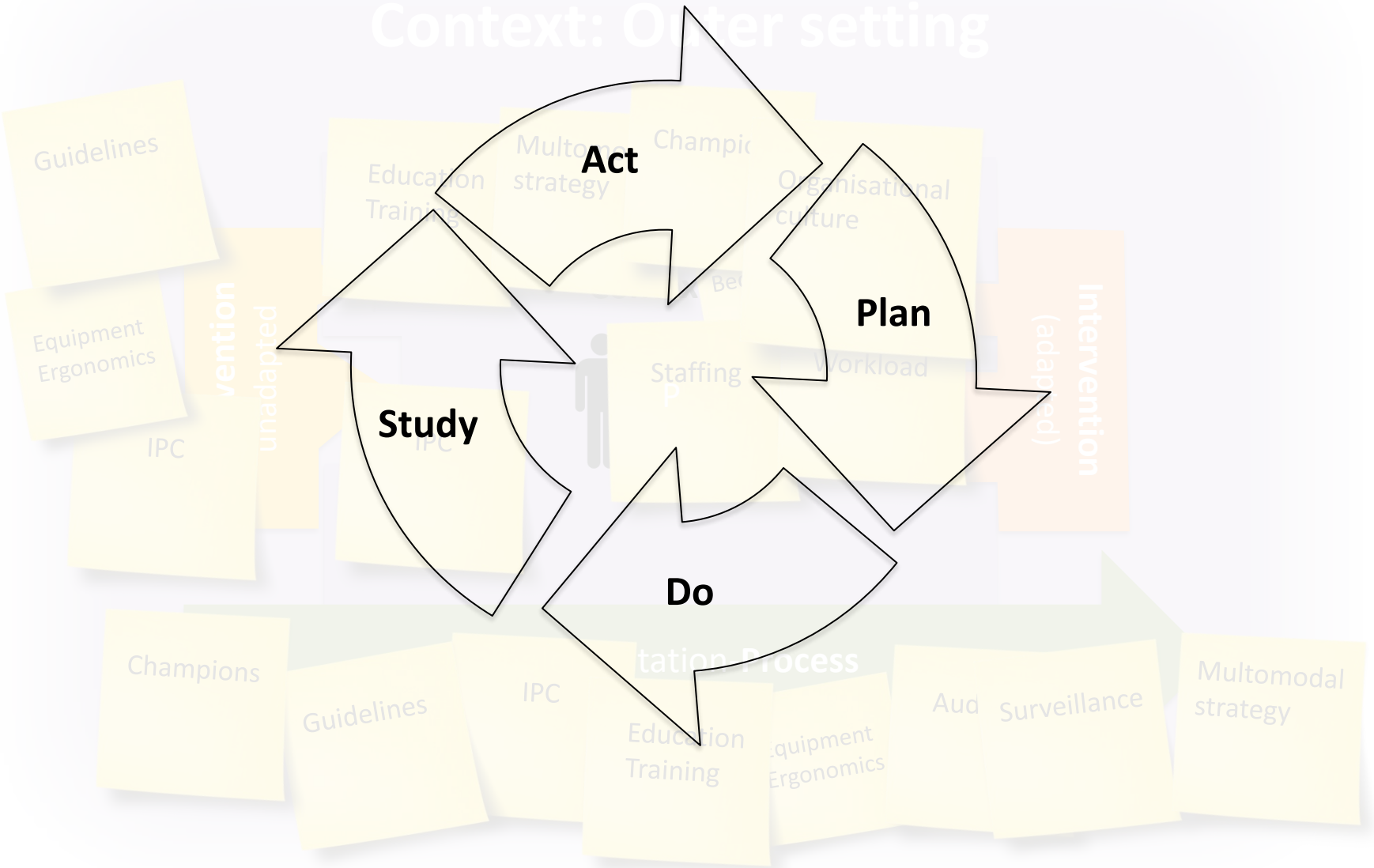


Damschroder L *Implementation Sci* 2009;4:50

Context: Outer setting

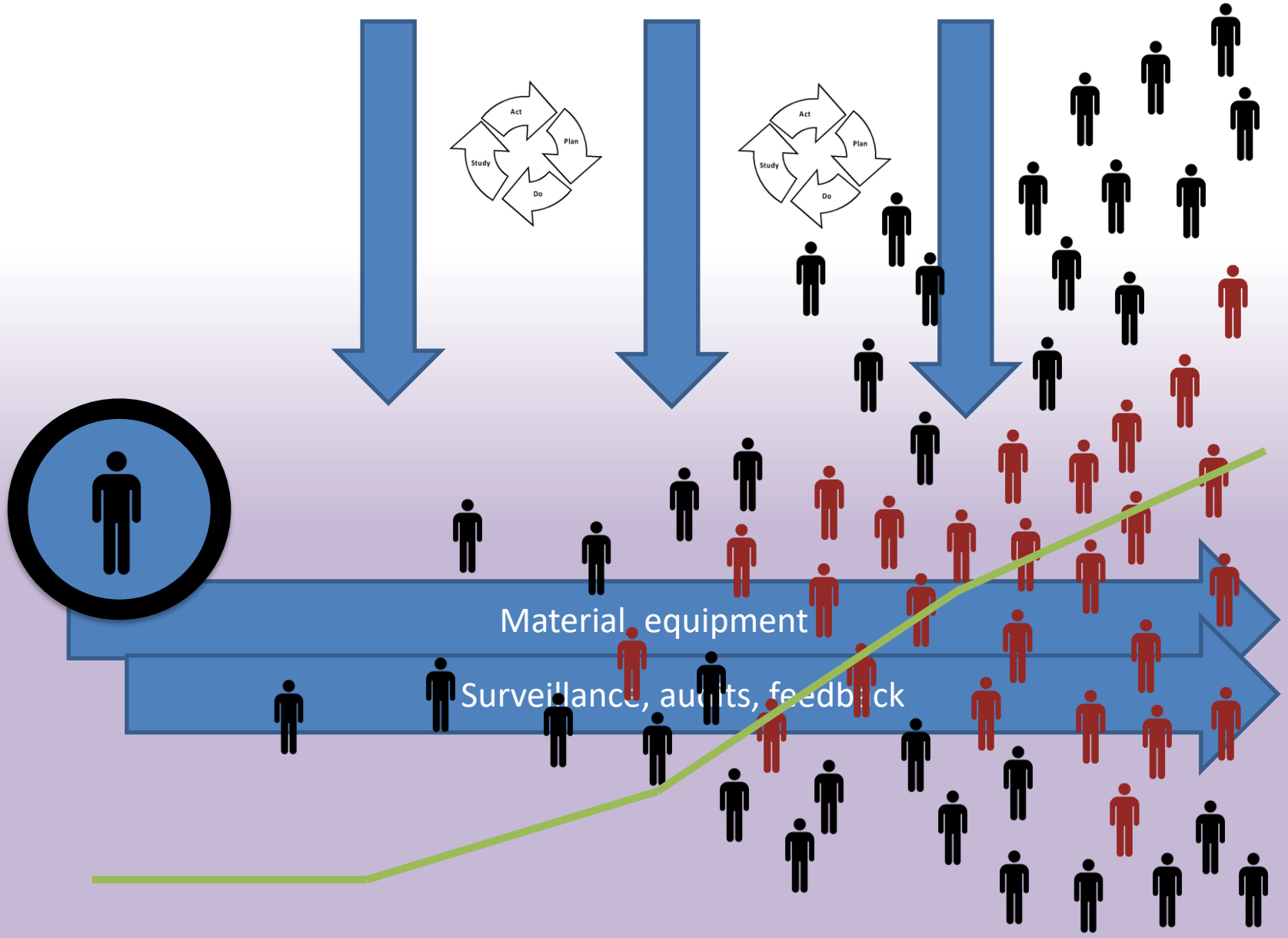


Damschroder L *Implementation Sci* 2009;4:50



Damschroder L *Implementation Sci* 2009;4:50

Summary



"The way we do things around here" → *"The new way we do things around here"*

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Thank you very much for your attention!

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