Enhanced performance feedback and patient participation to improve hand hygiene compliance

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Enhanced performance feedback and patient participation to improve hand hygiene compliance of health-care workers in the setting of established multimodal promotion: a single-centre, cluster randomised controlled trial

Andrew James Stewardson, Hugo Sax*, Angèle Gayet-Ageron, Sylvie Touveneau, Yves Longtin, Walter Zingg, Didier Pittet*

The Lancet Infectious Diseases 2016;16:1345
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Content

1. Discuss how to design a best practice implementation trial
2. Evaluate the results of a large cluster-randomised controlled trial to evaluate enhanced feedback and patient participation: what would we do differently next time
3. Determine how to build an intervention using qualitative inquiry
4. Evaluate methodologic considerations relating to interventional studies in hand hygiene

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With the identified variability in certainty of evidence, interventions, and methods, **there remains an urgent need to undertake methodologically robust research to explore the effectiveness of multimodal versus simpler interventions** to increase hand hygiene compliance, and to identify which components of multimodal interventions or combinations of strategies are most effective in a particular context.

Gould DJ, Moralejo D, Drey N, Chudleigh JH, Taljaard M. Interventions to improve hand hygiene compliance in patient care. Cochrane Database of Systematic Reviews 2017, Issue 9.

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Performance feedback

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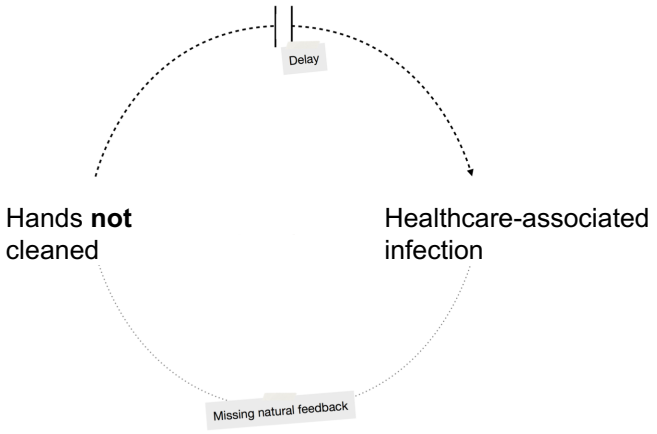

Stewardson and H. Sax. In: Hand Hygiene: A handbook for medical professionals. Wiley & Blackwell, 1st edition. 2017.

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Performance feedback

Should be framed to maximise the behaviour change

Should minimise the risk of the healthcare worker either "giving up" or "rationalizsing away"

Tools
Goal-setting = explicitly fixing an achievable target
Action planning = establishing how this goal can be reached
Rewards = meaningful in the targeted populations value space

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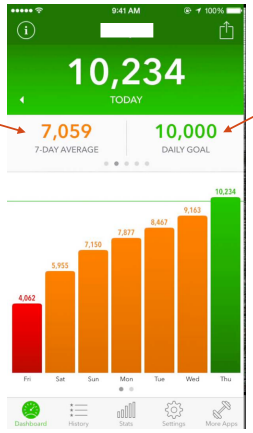

Average

Goal-setting

Trend over time

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Patient participation

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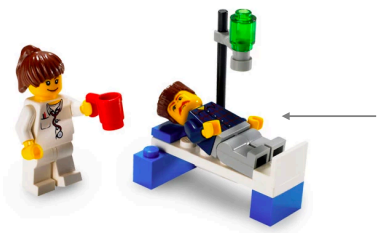
Guardian of the patient's interest. All decisions rely entirely on the knowledge of the health care worker



Passive recipient of care.

The Paternalistic Model of Care

Longtin et al. Mayo Clinic Proceedings. 2010;85:53

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Conclusions. This study identifies several sociodemographic characteristics associated with the intention to ask nurses and physicians about hand hygiene and underscores **the importance of a direct invitation from healthcare workers** to increase patient participation and foster patient empowerment. These findings could guide the development of future hand hygiene–promotion strategies.

Longtin Y, Sax H, Allegranzi B, Hugonnet S, Pittet D Patients' beliefs and perceptions of their participation to increase healthcare worker compliance with hand hygiene. 2009;30(9):830–9. Doi: 10.1086/599118.

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Setting up the study

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Qualitative	Quantitative
Quotes	Numbers
"They said it was a priority...but then, they actually never showed up, we never saw them here at the bedside..."	11.5% (p=.3)

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Qualitative research

Qualitative Research is intended to deeply explore, understand and interpret social phenomena **within its natural setting**.

[...] to explore the why and how of a situation, **not** only what, where, when.

Patton MQ: Qualitative Research and Evaluation Methods. Thousand Oaks, CA, USA: Sage Publications, Inc; 2002.

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Focus groups for intervention design - **Methods**

1. Scenario of patient asking for hand hygiene
2. Discussion
3. Videotaping > Analysis

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Focus groups for intervention design - **Results**

1. Refusal > Engagement
2. Critique is a 'difficult' emotional experience
3. Inventing range of solutions

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Hypothesis

Implementation of **enhanced performance feedback** or **enhanced performance feedback plus patient participation** in wards with ongoing multimodal hand hygiene promotion would lead to a clinically significant increase (defined *a priori* as ≥15 percentage points) in hand hygiene compliance compared with multimodal hand hygiene promotion alone.

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Trial design

Setting
- University of Geneva Hospitals (HUG)
- 2200-bed primary and tertiary institution
- Long history of multimodal hand hygiene promotion

MAIN DANS LA MAIN

Design
- Single-centre, cluster-randomised controlled trial
- Unit of randomisation & implementation = ward

Population
- All patients & healthcare workers in study wards included
- Waiver of individual participant consent

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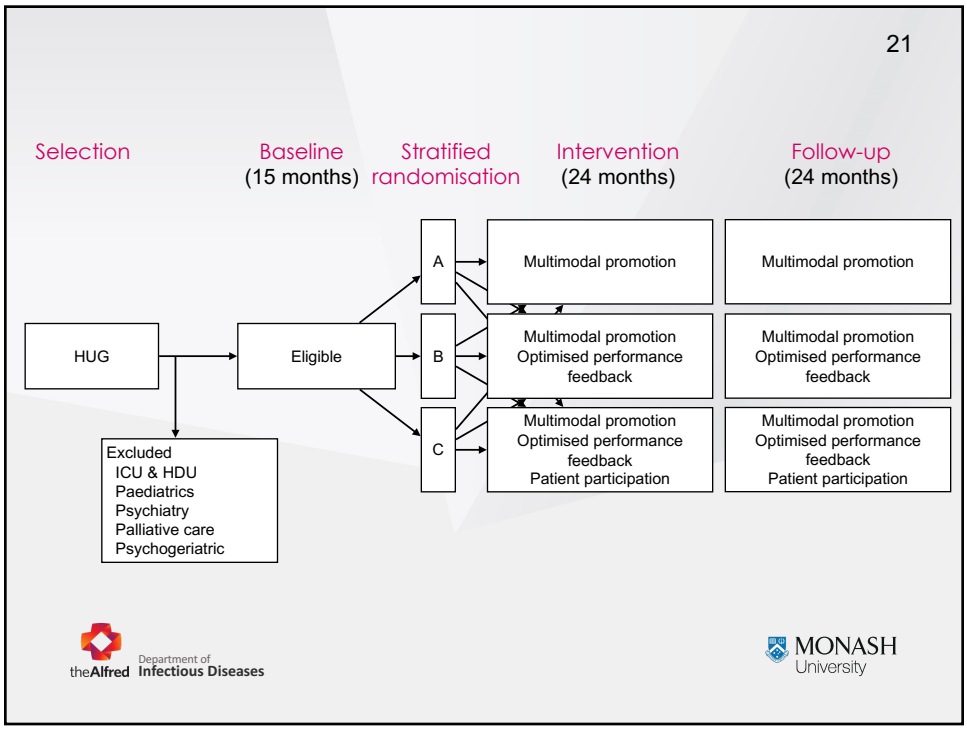
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Selection
Baseline
(15 months)
Stratified
randomisation
Intervention
(24 months)
Follow-up
(24 months)
HUG
Eligible
Excluded
ICU & HDU
Paediatrics
Psychiatry
Palliative care
Psychogeriatric
A
B
C
Multimodal promotion
Multimodal promotion
Multimodal promotion
Optimised performance
feedback
Multimodal promotion
Optimised performance
feedback
Multimodal promotion
Optimised performance
feedback
Patient participation
Multimodal promotion
Optimised performance
feedback
Patient participation
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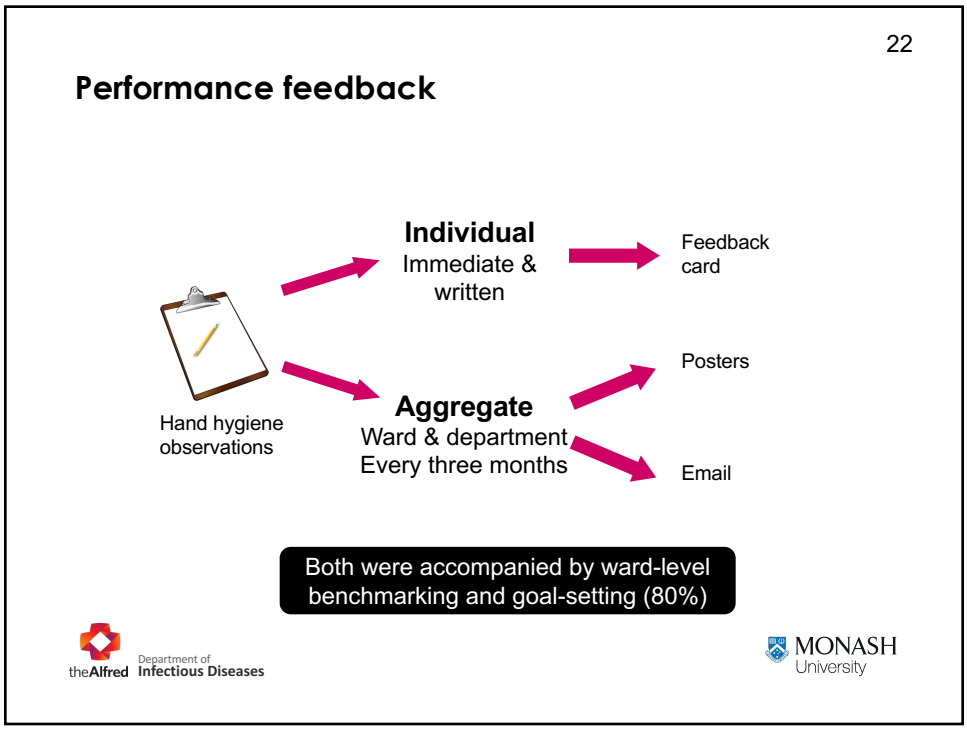
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Performance feedback
Individual
Immediate &
written
Feedback
card
Posters
Hand hygiene
observations
Aggregate
Ward & department
Every three months
Email
Both were accompanied by ward-level
benchmarking and goal-setting (80%)
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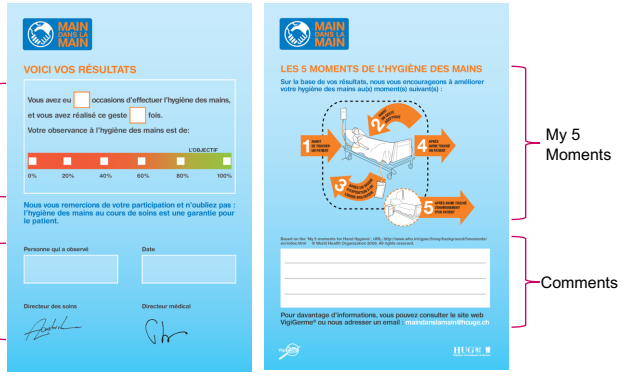

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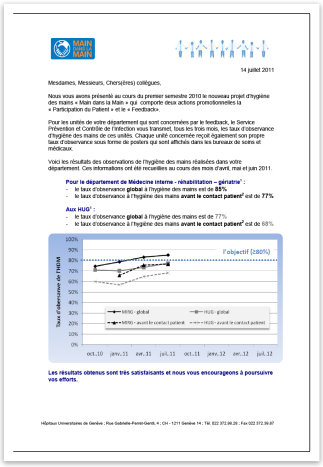


14 juillet 2011

Mesdames, Messieurs, Chers(ères) collègues,

Nous vous avons présenté au cours du premier semestre 2010 le nouveau projet d'hygiène des mains « Main dans la Main » qui comporte deux actions promotionnelles la « Participation du Patient » et le « Feedback».

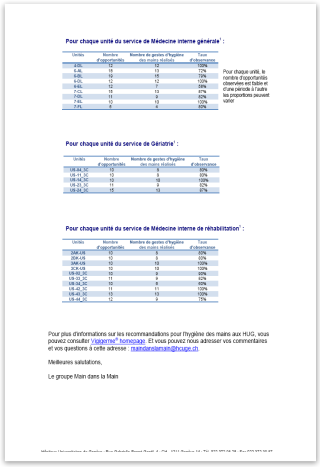
Pour les unités de votre département qui sont concernées par le feedback, le Service Prévention et Contrôle de l'infection vous transmet, tous les trois mois, les taux d'observance d'hygiène des mains de ces unités. Chaque unité concernée reçoit également son propre taux d'observance sous forme de posters qui sont affichés dans les bureaux de soins et médicaux.

Voici les résultats des observations de l'hygiène des mains réalisées dans votre département. Ces informations ont été recueillies au cours des mois d'avril, mai et juin 2011.

Pour le département de Médecine interne - réhabilitation – gériatrie[1] :
- le taux d'observance **global** à l'hygiène des mains est de **85%**
- le taux d'observance à l'hygiène des mains **avant le contact patient[2]** est de **77%**.

Aux HUG[1] :
- le taux d'observance **global** à l'hygiène des mains est de 77%
- le taux d'observance à l'hygiène des mains **avant le contact patient[2]** est de 68%

Les résultats obtenus sont très satisfaisants et nous vous encourageons à poursuivre vos efforts.



Pour chaque unité du service de Médecine interne générale[1] :

Unités	Nombre d'opportunités	Nombre de gestes d'hygiène des mains réalisés	Taux d'observance
4 BIL	12	12	100%
5 JBL	18	13	72%
6 BIL	12	12	100%
6 GIL	12	12	100%
6 HIL	12	7	58%
7 GIL	11	11	100%
7 QIL	11	10	91%
7 JIL	12	12	100%
7 HIL	4	4	100%

Pour chaque unité, le nombre d'opportunités observées est total. Cependant le taux représente la juste proportion pouvant valoir

Pour chaque unité du service de Gériatrie[1] :

Unités	Nombre d'opportunités	Nombre de gestes d'hygiène des mains réalisés	Taux d'observance
UB-04_SC	13	9	69%
UB-03_SC	13	8	62%
UB-04_SC	10	10	100%
UB-03_SC	11	9	82%
UB-04_SC	14	14	87%

Pour chaque unité du service de Médecine interne de réhabilitation[1] :

Unités	Nombre d'opportunités	Nombre de gestes d'hygiène des mains réalisés	Taux d'observance
1AA UR	13	9	69%
1AB UR	10	8	80%
2AA UR	10	10	100%
3CA UR	13	13	100%
UR-01_SC	11	9	82%
UR-02_SC	13	8	62%
UR-04_SC	10	8	80%
UR-42_SC	11	11	100%
UR-43_SC	13	13	100%
UR-44_SC	10	7	70%

Pour plus d'informations sur les recommandations pour l'hygiène des mains aux HUG, vous pouvez consulter l'agenda[2] homepage. Et vous pouvez nous adresser vos commentaires et vos questions à cette adresse : maindanslamain@hcuge.ch.

Meilleures salutations,

Le groupe Main dans la Main

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Patient Participation

Admission
(If healthcare worker judges the patient capable)
- Patient education:
  - Patient indications for hand hygiene
  - Healthcare worker indications
- Welcome pack: Brochure and bottle of alcohol-based hand rub (100ml)
- Partnership: Agreement to remind each other – *focus on Moment 1*

Throughout admission
- Repetition of message
- Badge for healthcare workers
- Posters in clinical zone

Implementation
- Healthcare worker education: 3 × 15 minute workshops
- Quarterly visit from study team members

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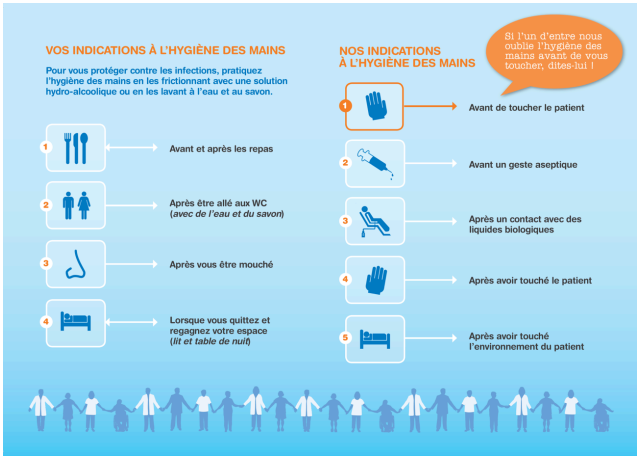

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Outcomes

Primary outcome

- Healthcare worker hand hygiene compliance
  - 12 trained infection control nurses
  - WHO "My 5 Moments"
  - Purpose built database - validation

Secondary outcomes

- Hand hygiene behaviour
  - Moment 1 hand hygiene compliance
  - ABHR requisition (100mL bottles)
- Healthcare associated infections
  - Bloodstream infection: primary & secondary
  - Period prevalence
- Hospital pathogen clinical isolates
  - Clinical isolates: MRSA & ESBL-PE
  - *Clostridium difficile* positive results
- Acquisition of multidrug- resistant organisms
  - MRSA
  - ESBL-PE

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Statistical methods

Sample size

- Baseline compliance 60%
- Clinically significant increase = 15 percentage points (60% to 75%)
- Alpha 5%, power 80%, accounting for clustering
- Require 1100 opportunities per group per study period

Analysis

- Generalised linear mixed-effects models
- Hand hygiene
  - Mixed effects logistic regression with interaction term between period & study group
  - Interaction term for study period (baseline/intervention) & study arm
- ABHR consumption: mixed-effects linear regression after log transformation
- Infections: mixed-effects Poisson regression models

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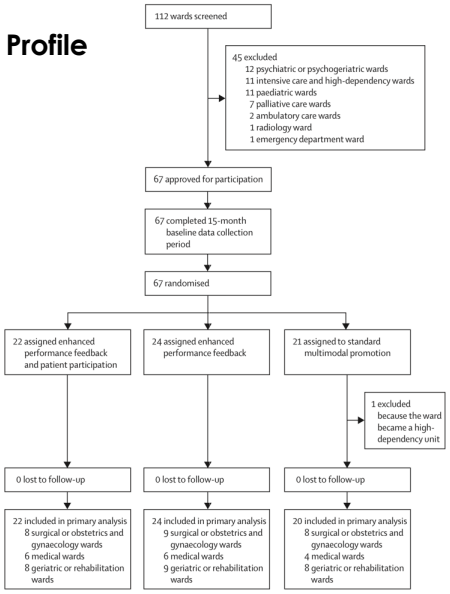
Results: Study Profile



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Results

- 39 months (baseline & intervention)

Hand hygiene
- 12 observers
- 1,367 observation sessions
- 3,973 "heathcare workers"
- 12,579 opportunities

Alcohol-based handrub
- 34,714 litres
- 1,169,567 bed days

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Overall hand hygiene compliance

		Actions	Opportun.	Mean compliance	Absolute change	Odds ratio (95% CI)
Control						
	Baseline	935	1430	66% (62–70)		
	Intervention	1631	2239	73% (70–77)	7% (4–10)	1·41 (1·21–1·63)
	Follow-up	631	949	70% (66–75)	4% (0–8)	1·21 (1·00–1·47)
Enhanced performance feedback						
	Baseline	1040	1629	65% (62–69)		
	Intervention	2160	2920	75% (72–77)	10% (7–13)	1·61 (1·41–1·84)
	Follow-up	1356	1956	72% (68–75)	7% (4–10)	1·38 (1·19–1·60)
Enhanced performance feedback plus patient participation						
	Baseline	1024	1594	66% (62–70)		
	Intervention	2107	2767	77% (74–80)	11% (8–14)	1·73 (1·51–1·98)
	Follow-up	1485	2100	72% (69–76)	6% (4–10)	1·36 (1·18–1·57)

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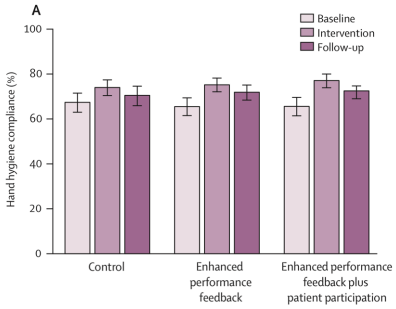
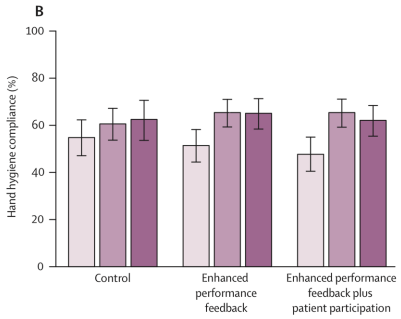
Overall



Moment 1



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Absolute difference attributable to interventions

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3 percentage points (95% CI 0–7; p=0·19) for enhanced performance feedback

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Absolute difference attributable to interventions

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	Follow-up	1485	2100	72% (69–76)	6% (4–10)	1·36 (1·18–1·57)

4 percentage points (1–8; p=0·048) for enhanced performance feedback plus patient participation

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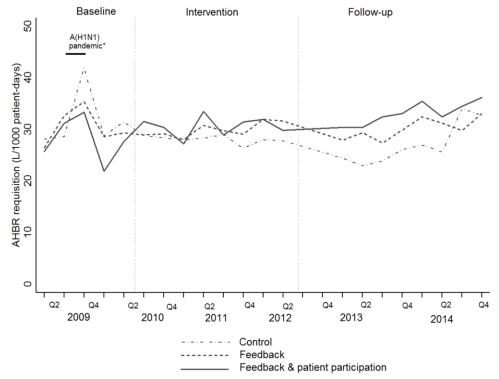
Alcohol-based handrub consumption



* "A(H1N1) pandemic" refers to Influenza A(H1N1) pandemic.

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Alcohol-based handrub consumption

n=2516 observations	Coeff.	CI95%	P-value
Change in AHBR consumption after the intervention			
In the control arm	0.0003	-0.0064;0.0070	0.93
In the feedback arm	0.0025	-0.0040;0.0091	0.446
In the feedback plus patient participation arm	0.0079	0.00013;0.014	0.019
AHBR change explained by the intervention			
Effect of feedback alone compared to control	0.0022	-0.0025;0.007	0.349
Effect of combination of feedback plus PP compared to control	0.0076	0.0028;0.0123	0.002
Effect of PP compared to feedback	0.0053	0.0008;0.0099	0.021
AHBR consumption across time (centered on the intervention)	-0.0014	-0.0057;0.003	0.54

Mixed linear model with a random effect on the intercept (ward) assessing the effect of the intervention on AHBR consumption in liters per 1000 patients-days by study period (interaction term).

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Other secondary outcomes, refer to…

Stewardson AJ, Sax H, Gayet-Ageron A, Touveneau S, Longtin Y, Zingg W, Pittet D. Enhanced performance feedback and patient participation to improve hand hygiene compliance of health-care workers in the setting of established multimodal promotion: a single-centre, cluster randomised controlled trial. Lancet Infect Dis. 2016;16:1345-55.

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Implementation

- Feedback card distribution
  - PF: 36% (331/908)
  - PF&PP: 32% (280/884)
- Welcome pack distribution
  - 33 (IQR 21–47) welcome packs per 100 admissions

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HCW awareness of study allocation

	Response	Nurses	Nursing assistants	Doctors	All
Performance feedback					
	No intervention	52 (37.7%)	34 (50.0%)	23 (63.9%)	109 (45.0%)
	Performance feedback	85 (61.6%)	33 (48.5%)	13 (36.1%)	131 (54.1%)
	Patient participation	1 (0.7%)	1 (1.5%)	0	2 (0.8%)
	Both interventions	0	0	0	0
Performance feedback plus patient participation					
	No intervention	23 (14.1%)	18 (21.7%)	46 (70.8%)	87 (28.0%)
	Performance feedback	5 (3.1%)	4 (4.8%)	2 (3.1%)	11 (3.5%)
	Patient participation	83 (50.9%)	50 (60.2%)	13 (20.0%)	146 (46.9%)
	Both interventions	52 (31.9%)	11 (13.3%)	4 (6.2%)	67 (21.5%)

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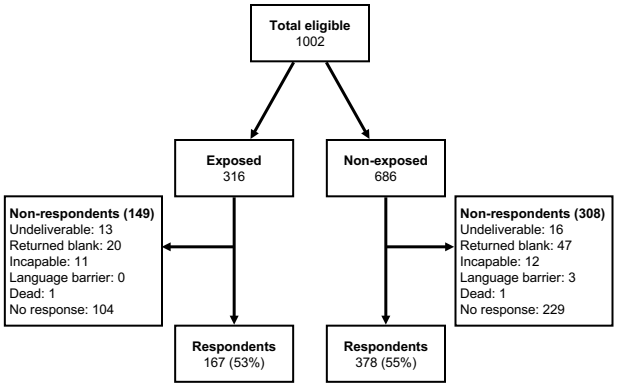
Patient Survey



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Results: Descriptive

Characteristic	
Female sex, n (%)	307 (57%)
Age, median (IQR)	58 (38-74)
Previous admission	411 (75%)
Length of stay (days)	6.2 (3.2-12-9)

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Do you think that patients should remind healthcare workers to perform hand hygiene?

Yes	28% (147/531)
No	59% (311/531)
I don't know	14% (73/531)

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Do you think that patients should remind healthcare workers to perform hand hygiene?

	Odds Ratio	95% CI	P value
Intervention	1.36	0.89-2.08	0.15
Female sex	1.25	0.83-1.89	0.29
Age group			
≤35	reference		
35 – 49	1.19	0.61-2.33	0.61
50 – 65	1.67	0.88-3.17	0.12
65 – 79	2.17	1.16-4.09	0.02
≥ 80	1.39	0.66-2.90	0.38
HAI exposure*	1.58	1.04-2.39	0.03

*HAI exposure: awareness that they themselves or a close friend or family member has had an HAI

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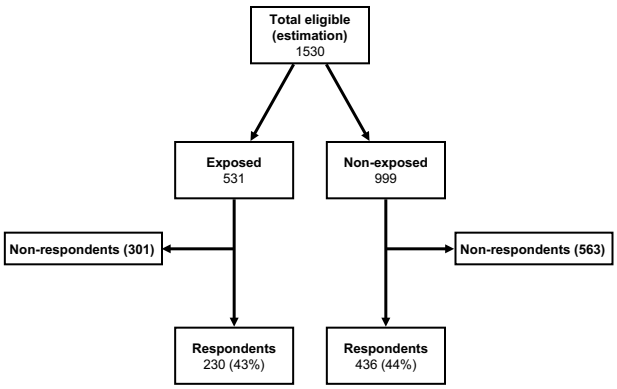
Healthcare worker survey



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Results: Descriptive

Characteristic	
Female sex, n (%)	512 (80%)
Age, median (IQR)	38 (31-47)
Hand hygiene compliance estimation, median (IQR)	80% (70-90%)
Profession	
Doctor	108 (17%)
Nurse	392 (61%)
Nursing assistant	140 (22%)

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If you forget to perform hand hygiene prior to patient care, would you like your patient to remind you?

Yes	67% (439/658)
No	28% (181/658)
I don't know	6% (38/658)

29% in 2009

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If you forget to perform hand hygiene prior to patient care, would you like your patient to remind you?

	Odds Ratio	95% CI	P value
Intervention	1.53	1.01-2.30	0.04 ←
Nurse/nursing assistant	1.70	1.06-2.83	0.03 ←
Age category			
≤33	reference		
34-43	1.29	0.82-2.02	0.26
≥44	1.56	0.97-2.53	0.07

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Back to the patients…

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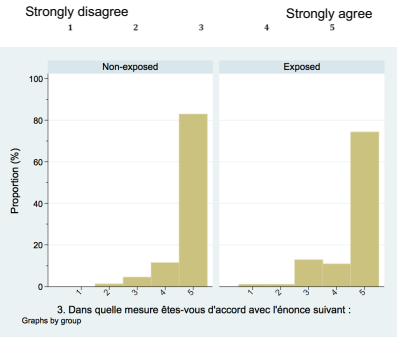
HAI are important.

To what extent do you agree with the following statement: *Hospital-acquired infections (nosocomial infections) are a serious problem*



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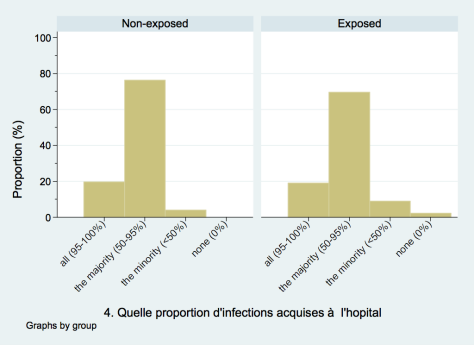
HAI can be prevented by hand hygiene.
What proportion of hospital-acquired infections could be avoided if healthcare workers frequently practiced hand washing or handrubbing with alcohol-based handrub?



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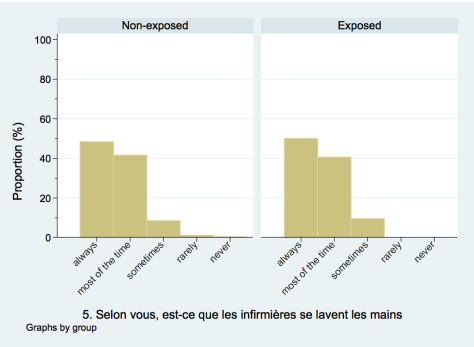
…but healthcare workers already perform hand hygiene well.
In your opinion, how frequently do *nurses* wash or rub their hands before providing patient care?



P=0.681

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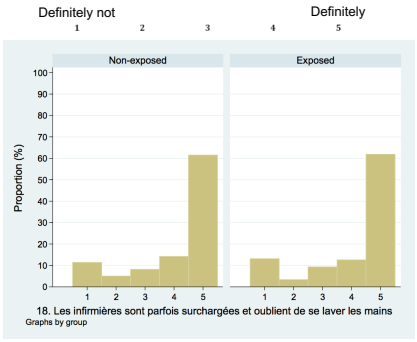
Importance of explicit invitation.
If a nurse invited you to remind him/her to perform hand hygiene, would you do so?



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Qualitative results

- Patient participation:
  - •Acceptance & implementation variable
  - •Dependent on local ward leadership
  - •Main impact = awareness raising (patient reminders very rare)
  - •A new sense of partnership was developed
  - •HCWs appreciated shifted focus of attention
  - •At trial end: strong wish to continue but without reminders
- Performance feedback
  - •Well received (especially when positive)
  - …but not hand hygiene observation
  - •Stimulated competition
- Control wards
  - •Very aware of exclusion from interventions – strong motivator

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Discussion

- Hand hygiene improved in all study groups
  - Sustained during follow-up period
  - Effect of interventions was therefore not clinically significant
  - Potential explanations: cross-contamination & study effect in control wards
- Enhanced performance feedback
  - Accepted by healthcare workers & generated competition
  - Technical challenge of low numbers when reporting by ward
- Patient participation
  - Variable implementation among wards – dependent on ward leadership
  - Surveys indicated greater impact on HCW than patients

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January 18, 2018	USING THE RIGHT MODEL TO CALCULATE THE FINANCIAL IMPLICATIONS OF *CLOSTRIDIUM DIFFICILE* INFECTION Speaker: **Dr. Mairead Skally**, Beaumont Hospital, Dublin
January 24, 2018	*(FREE ... WHO Teleclass - Europe)* GLOBAL INFECTION PREVENTION AND CONTROL PRIORITIES 2018-2022: A CALL FOR ACTION Speaker: **Prof. Benedetta Allegranzi**, World Health Organization, Geneva *Sponsored by the World Health Organization, Infection Prevention and Control Global Unit*
January 25, 2018	PRACTICAL APPROACHES FOR MONITORING CLEANING IN HEALTHCARE FACILITIES Speaker: **Prof. Curtis Donskey**, Case Western Reserve University, Cleveland
February 8, 2018	*(FREE Teleclass)* PATIENTS ARE YOUR PARTNERS - WHY AND HOW THIS PARTNERSHIP WORKS Speaker: **Ioana Popescu**, Canadian Patient Safety Institute, **Judy Birdsell** and **Kim Neudorf**, Patients for Patient Safety Coalition
February 15, 2018	REFUGEE HEALTH: A NEW PERSPECTIVE FOR INFECTION PREVENTION AND CONTROL

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