The Year in

Infection Prevention & Control

A/Prof Jason Kwong

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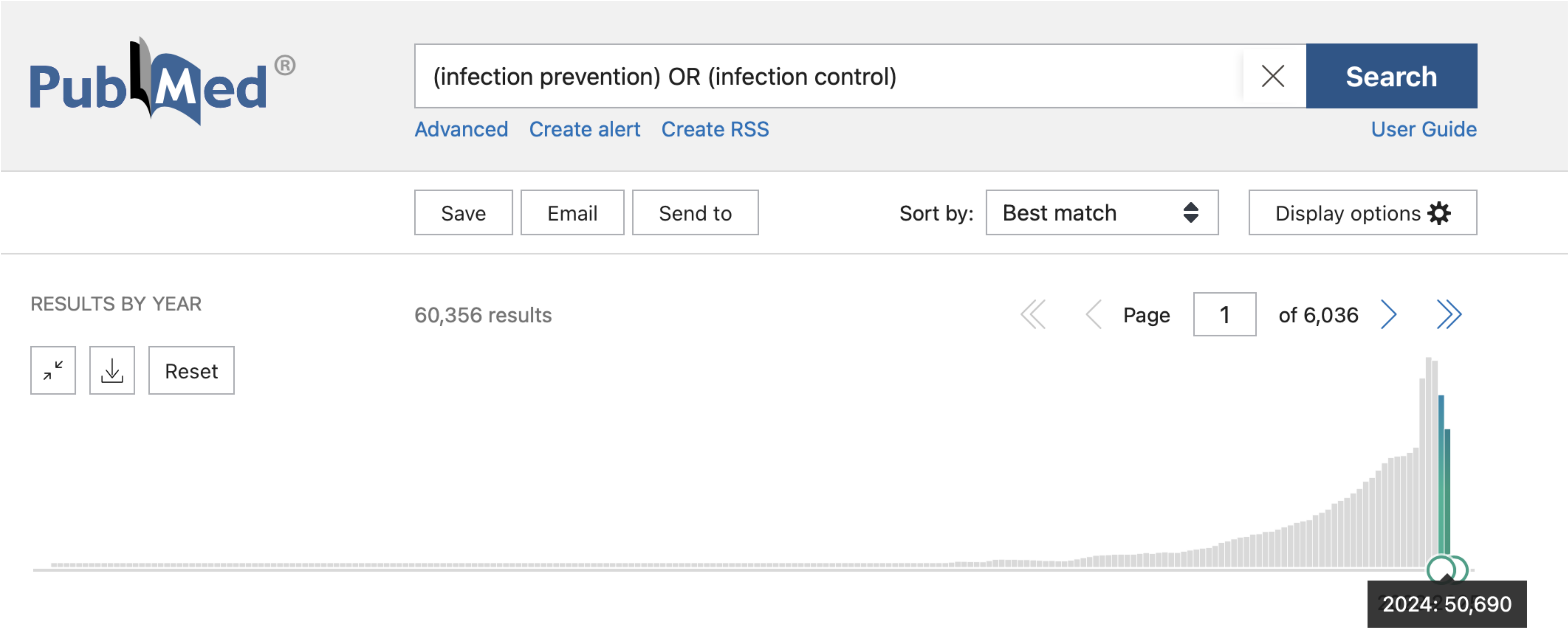
Acknowledgement of Country

I acknowledge the traditional owners and custodians of the lands where we live and work and pay my respects to the people, their culture, and their Elders past and present.

Disclosures

None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of 6,036
2024: 50,690

Scope

Healthcare-associated infections

Multidrug-resistant organisms

Cleaning and disinfection

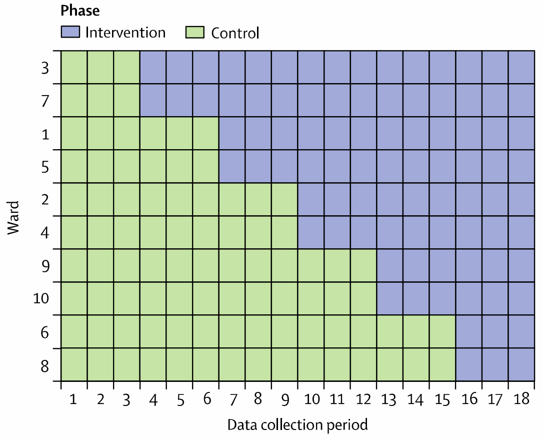
COVID-19 ✗

Transmission-based precautions ✗

Vaccination ✗

Investigating the effect of enhanced cleaning and disinfection of shared medical equipment on health-care-associated infections in Australia (CLEEN): a stepped-wedge, cluster randomised, controlled trial

Katrina Browne, Nicole M White, Philip L Russo, Allen C Cheng, Andrew J Stewardson, Georgia Matterson, Peta E Tehan, Kirsty Graham, Maham Amin, Maria Northcote, Martin Kiernan, Jennie King, David Brain, Brett G Mitchell



Design	Stepped-wedge, cluster-randomized controlled trial
Participants	10 wards (non-ICU), single public hospital
Intervention	Multimodal: 1. Education, 2. Additional cleaning (+3h/d M-F; shared medical equipment) by dedicated cleaning staff, 3. Auditing + feedback
Comparator	SOC: no requirement for cleaning staff to clean shared medical equipment
Outcomes	1. HAI (ECDC definitions); 2. prespecified types of HAI, cleaning thoroughness
Timeframe	March – November 2023 (36-week period)

1. Browne et al. Lancet Infect Dis 2024

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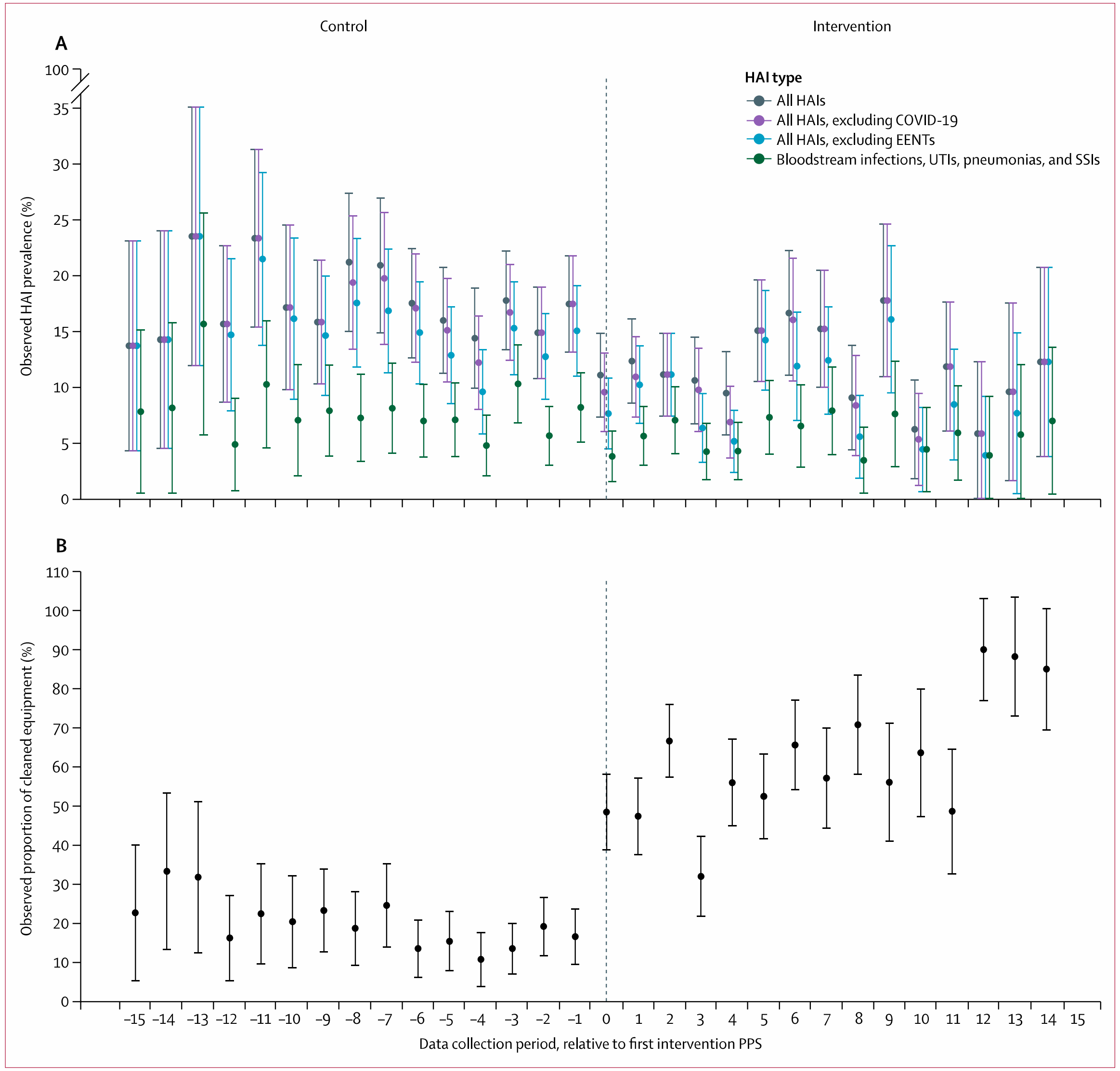
Ward specialty	
Geriatric	530 (10·6%)
Neurology	555 (11·1%)
Oncology	588 (11·8%)
Orthopaedic	519 (10·4%)
Other	1 (0·0%)
Renal	442 (8·8%)
Respiratory	586 (11·7%)
Surgical	1675 (33·5%)
Vascular	106 (2·1%)

	Control	Intervention	OR	P value
All HAI	**14.9%**	**9.8%**	**0.62 (0.45-0.80)**	**0.0006**
All HAI, excl COVID-19	14.4%	9.0%	0.59 (0.45-0.77)	0.0002
All HAI, excl EENT	13.0%	8.3%	0.60 (0.45-0.81)	0.0008
BSI, pneumonia, UTI, SSI	6.3%	4.0%	0.62 (0.42-0.86)	0.013



1. Browne et al. Lancet Infect Dis 2024

All patients: n=5002

Patients with ≥1 HAI: n=585 (11.7%)

The bottom line

A multimodal intervention with dedicated cleaning of reusable medical devices reduced HAI

Caveats:

- Single centre study (limited due to funding)
- Low baseline cleaning (10-20% vs 80-90% end of intervention)
- Cleaning vs Education/training vs Audit/feedback

Implications:

- Cleaning medical equipment (CLEEN) and environment (REACH) is good for reducing HAI

All patients: n=5002
Patients with ≥1 HAI: n=585 (11.7%)

1. Browne et al. Lancet Infect Dis 2024

How long does cleaning take?

Cleaning time and motion: an observational study on the time required to clean shared medical equipment in hospitals effectively

G. Matterson [a], K. Browne [a], P.E. Tehan [a, b], P.L. Russo [a, b, e], M. Kiernan [a, c], B.G. Mitchell [a, b, d, *]

[a] *Avondale University, Lake Macquarie, New South Wales, Australia*
[b] *Monash University, Melbourne, Victoria, Australia*
[c] *University of West London, London, UK*
[d] *Central Coast Local Health District, Gosford Hospital, Gosford, New South Wales, Australia*
[e] *Cabrini Health, Malvern, Victoria, Australia*

1. Matterson et al. J Hosp Infect 2024

How long does cleaning take?

Increasing cleaning time

Table I
Time required to clean shared medical equipment in hospitals effectively

Type of equipment	Mean time to clean effectively[a] (min:s)	Standard deviation (min:s)	Minimum cleaning time (min:s)	Maximum cleaning time (min:s)	95% confidence interval (mean) (min:s)
Blood glucose testing kit	0:50	0:14	0:27	1:10	0:40—1:00
Intravenous stand	1:20	0:30	0:40	2:01	0:59—1:41
Infusion pump	1:21	0:28	0:31	2:06	1:01—1:41
Blood pressure monitor	1:49	0:19	1:00	2:13	1:35—2:02
Patslide	2:17	0:24	1:38	3:00	1:59—2:34
Metal trolley	2:19	0:49	1:38	4:20	1:44—2:55
Wheelchair	2:29	0:45	1:21	3:38	1:57—3:01
Resuscitation trolley	2:29	0:32	2:01	3:50	2:35—3:20
Computer on wheels	2:43	0:45	1:46	4:00	2:11—3:15
Commode	2:58	0:43	2:18	4:20	2:28—3:30
Bladder scanner	3:16	0:53	2:09	5:01	2:39—3:54
Medication trolley	3:53	0:30	3:15	4:28	3:36—4:11

Note: Included timepoints met the 80% cleaning threshold.
[a] $N = 10$.

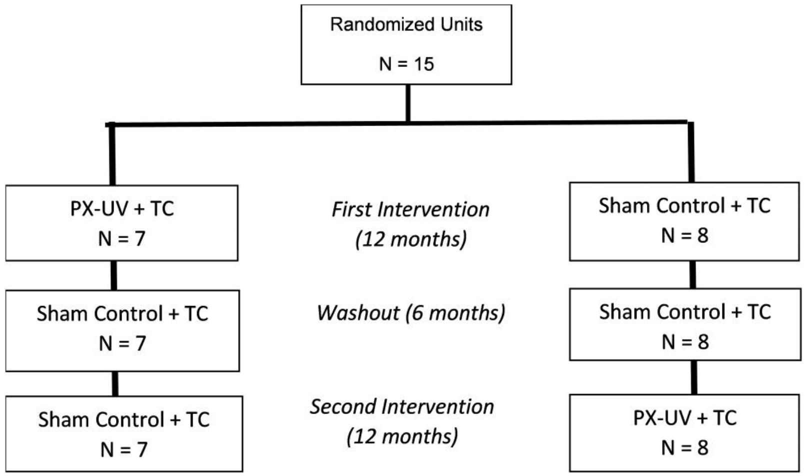
1. Matterson et al. J Hosp Infect 2024

Is disinfection after cleaning useful?

Lowering the Acquisition of Multidrug-Resistant Organisms (MDROs) With Pulsed-xenon (LAMP) Study: A Cluster-Randomized, Controlled, Double-Blinded, Interventional Crossover Trial

Sorabh Dhar,[1,2] Chetan Jinadatha,[3,4] Paul E. Kilgore,[5] Oryan Henig,[6] George W. Divine,[7] Erika N. Todter,[8] John D. Coppin,[9] Marissa J. Carter,[10] Teena Chopra,[1] Steve Egbert,[11] Philip C. Carling,[12] and Keith S. Kaye[13]

[1]Division of Infectious Diseases, Wayne State University, School of Medicine, Detroit, Michigan, USA; [2]Department of Internal Medicine, John D. Dingell Veterans Affairs Medical Center, Detroit, Michigan, USA; [3]Department of Medical Education, School of Medicine, Central Texas Veterans Healthcare System, Texas A&M University, Bryan, Texas, USA; [4]Department of Medicine, Central Texas Veterans Healthcare System, Temple, Texas, USA; [5]Department of Pharmacy Practice, Eugene Applebaum College of Pharmacy and Health Sciences, Department of Family Medicine and Public Health Sciences, School of Medicine, Wayne State University, Detroit, Michigan, USA; [6]Infection Prevention and Control Unit, Tel Aviv Sourasky Medical Center, Tel Aviv, Israel; [7]Department of Epidemiology and Biostatistics, Michigan State University, Henry Ford Health, Detroit, Michigan, USA; [8]Department of Public Health Sciences, Henry Ford Health, Detroit, Michigan, USA; [9]Department of Research, Central Texas Veterans Health Care System, Temple, Texas, USA; [10]Strategic Solutions, Inc, Bozeman, Montana, USA; [11]XENDELLA Facilities Management, Hawthorn Woods, Illinois, USA; [12]Department of Infectious Diseases, Boston University School of Medicine, Boston, Massachusetts, USA; and [13]Division of Allergy, Immunology, and Infectious Diseases, Robert Wood Johnson Medical School, New Brunswick, New Jersey, USA



Design	Cluster-randomized, double-blinded, sham-controlled interventional crossover trial
Participants	15 wards (including 5 ICUs), two hospitals
Intervention	Terminal Cleaning + PX-UV disinfection
Comparator	Terminal Cleaning + sham control device
Outcomes	Incidence of environmentally implicated HAI (VRE, ESBL-EC/KP, MRSA, Abau, C diff)

1. Dhar et al, Clin Infect Dis 2024

The bottom line

Table 3. Rates of Pathogens and Device Infections in the Sham and Intervention (PX-UV) Group

	Sham Arm			Intervention (PX-UV) Arm				
	No. of Cases	No. of Patient-Days	Infection Rate (per 1000 Patient-Days)	No. of Cases	No. of Patient-Days	Infection Rate (per 1000 Patient-Days)	Relative Risk (95% CI)	*P*
eiHAIs								
Overall	298	94 153.5	3.17	303	86 800.4	3.49	1.10 (.94, 1.29)	.23
Acinetobacter baumannii	53	94 153.5	0.56	55	86 800.4	0.63	1.13 (.77, 1.64)	.54
Clostridiodes difficile	57	94 153.5	0.61	59	86 800.4	0.68	1.12 (.78, 1.62)	.53
ESBL *Escherichia coli*	25	94 153.5	0.27	20	86 800.4	0.23	.87 (.48, 1.56)	.64
ESBL KP	34	94 153.5	0.36	31	86 800.4	0.36	0.99 (.61, 1.61)	.96
MRSA	116	94 153.5	1.23	122	86 800.4	1.41	1.14 (.88, 1.47)	.31
VRE	13	94 153.5	0.14	16	86 800.4	0.18	1.34 (.64, 2.78)	.44
Device infections[a]								
Overall	36	86 858.3	0.41	35	81 721.0	0.43	1.03 (.65, 1.65)	.89
CAUTI	19	86 858.3	0.22	17	81 721.0	0.21	.95 (.49, 1.83)	.88
CLABSI	17	86 858.3	0.20	18	81 721.0	0.22	1.13 (.58, 2.18)	.73

1. Dhar et al, Clin Infect Dis 2024

The bottom line

PX-UV disinfection following terminal cleaning had no significant impact on eiHAI acquisition

Caveats:

- Double-blinded sham-controlled study
- Only tracked eiHAI temporally related to each unit (≥D4 of admission or ≤3 days of discharge) – possible missed eiHAI on wards with high turnover

Table 4. Thoroughness of Manual Cleaning in Study Rooms

Intervention Type	No. of Surfaces Tested	No. of Surfaces Thoroughly Cleaned	Percentage of Surfaces Cleaned
PX-UV	4069	2223	54.63
ICU	1422	805	56.61
Non-ICU	2647	1418	53.57
Sham	4265	2377	55.73
ICU	1393	822	59.00
Non-ICU	2872	1555	54.14

Implications:

- Several RCTs of UV and other automated disinfection devices – no clear benefit over existing terminal cleaning performed to a high standard

1. Dhar et al, Clin Infect Dis 2024

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Decolonisation?

ICU: universal decolonization reduces:

Line-related + all-cause bacteraemia in ICU

New MDRO colonization in ICU

REDUCE

Huang et al., NEJM 2013

Wards: universal decolonization does not reduce:

All-cause bacteraemia*

New MDRO colonization*

**Except among patients with invasive medical devices*

ABATE

Huang et al., Lancet 2019

Home: sustained targeted MRSA decolonization reduces:

MRSA infection & hospitalization

All-cause infection & hospitalization

CLEAR

Huang et al., NEJM 2019

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

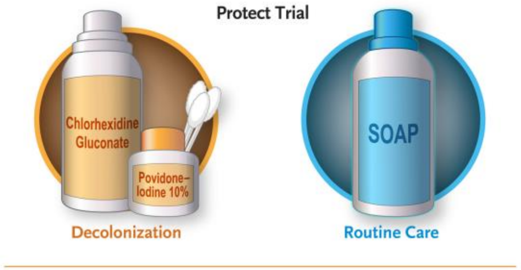
Decolonization in Nursing Homes to Prevent Infection and Hospitalization

L.G. Miller, J.A. McKinnell, R.D. Singh, G.M. Gussin, K. Kleinman, R. Saavedra, J. Mendez, T.D. Catuna, J. Felix, J. Chang, L. Heim, R. Franco, T. Tjoa, N.D. Stone, K. Steinberg, N. Beecham, J. Montgomery, D.A. Walters, S. Park, S. Tam, S.K. Gohil, P.A. Robinson, M. Estevez, B. Lewis, J.A. Shimabukuro, G. Tchakalian, A. Miner, C. Torres, K.D. Evans, C.E. Bittencourt, J. He, E. Lee, C. Nedelcu, J. Lu, S. Agrawal, S.G. Sturdevant, E. Peterson, and S.S. Huang

PROTECT

Miller et al., NEJM 2023

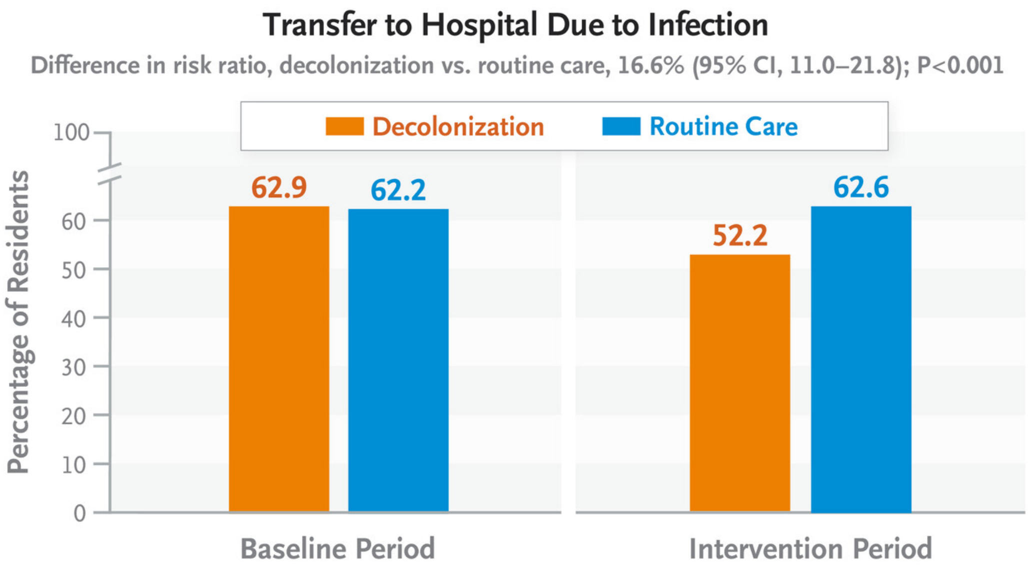
28 Nursing Homes
28,956 NH residents

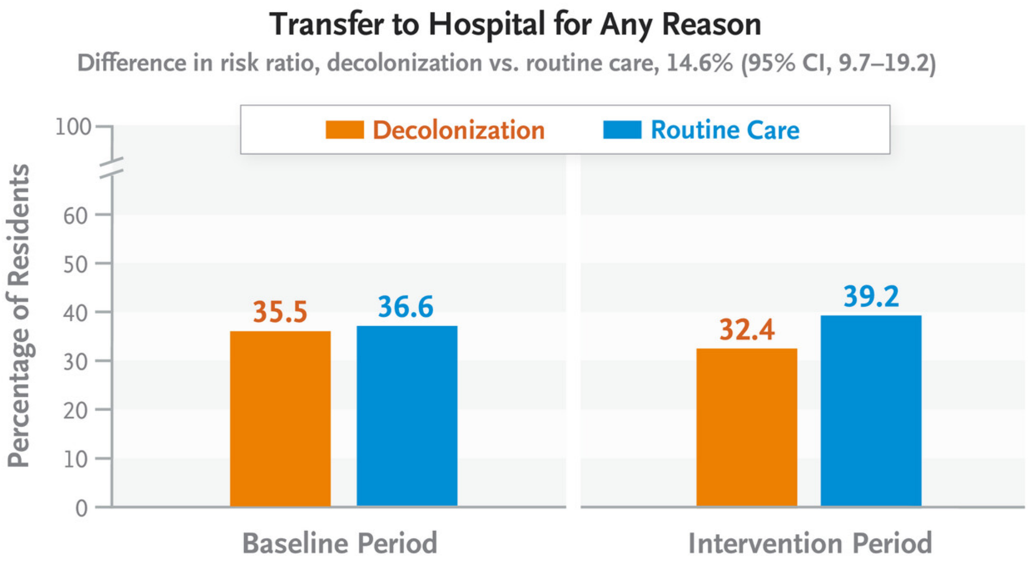


Design	Open-label cluster randomized controlled trial
Participants	Nursing Homes in Los Angeles and Orange County, California
Intervention	Universal decolonization (daily CHG bathing + 5d nasal povidone-iodine every 2nd week)
Comparator	SOC: routine bathing
Outcomes	1. Transfers to hospital due to infection (ICD-10 codes) 2. Transfers to hospital (all-cause) 3. MDRO carriage (before/after PPS of 50 random residents per NH facility)
Timeframe	2015 – 2018 — **Baseline (18m)** · **4m** · **Intervention (18m)**

1. Miller et al, N Engl J Med 2023

Outcomes: Transfers to hospital





Primary analysis:
16.6% difference in Risk Ratio
[95% CI: 11.0-21.8]

9.7
to prevent one infection-related hospital transfer

8.9
to prevent one hospital transfer for any reason

1. Miller et al, N Engl J Med 2023

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Impact on MDRO colonization?

Table 3. Prevalence of MDRO Carriage during the Baseline Period and near the End of the Intervention Period.*

MDRO or Sample	Prevalence in the Routine-Care Group		Prevalence in the Decolonization Group		Risk Ratio (95% CI)†
	Baseline Period (N=700)	Intervention Period (N=650)	Baseline Period (N=700)	Intervention Period (N=550)	
	percent (number of positive samples)				
Any MDRO	48.3 (338)	47.2 (307)	48.9 (342)	32.0 (176)	0.70 (0.58–0.84)
Any MRSA	37.6 (263)	36.9 (240)	36.4 (255)	25.1 (138)	0.73 (0.59–0.92)
Nostril swab sample	29.1 (203)	27.1 (176)	29.9 (209)	22.0 (121)	0.81 (0.62–1.05)
Skin swab sample	26.1 (183)	25.4 (165)	22.6 (158)	11.6 (64)	0.58 (0.42–0.79)
VRE	5.9 (41)	5.1 (33)	8.3 (58)	2.2 (12)	0.29 (0.14–0.62)
ESBL producer	15.9 (111)	17.9 (116)	16.7 (117)	9.2 (51)	0.50 (0.34–0.75)
CRE	1.4 (10)	0.6 (4)	0.4 (3)	0.4 (3)	3.53 (0.44–28.52)

1. Miller et al, N Engl J Med 2023

The bottom line

Routine decolonization reduced hospital transfers for infection and was associated with reduction in all-cause transfers

Caveats:

- US setting - California
  - 60% of transfers to hospital for infection (open label)
  - MDRO prevalence: baseline 36% MRSA colonization
- What is the mechanism for reducing infections?
- Impact on VRE/ESBL interesting – possibly indirect effect related to reduced antimicrobial prescribing?
  - Could universal decolonization have an impact on MDRO prevalence at a public health level?

1. Miller et al, N Engl J Med 2023

JAMA | Original Investigation

Reducing Hospitalizations and Multidrug-Resistant Organisms via Regional Decolonization in Hospitals and Nursing Homes

Gabrielle M. Gussin, MS; James A. McKinnell, MD; Raveena D. Singh, MA; Loren G. Miller, MD, MPH; Ken Kleinman, ScD; Raheeb Saavedra, AS; Thomas Tjoa, MPH, MS; Shruti K. Gohil, MD, MPH; Tabitha D. Catuna, MPH; Lauren T. Heim, MPH; Justin Chang, MD; Marlene Estevez, BA; Jiayi He, MS; Kathleen O'Donnell, MPH; Matthew Zahn, MD; Eunjung Lee, MD, PhD; Chase Berman, BS; Jenny Nguyen, BA; Shalini Agrawal, BS; Isabel Ashbaugh, MSc; Christine Nedelcu, BS; Philip A. Robinson, MD; Steven Tam, MD; Steven Park, MD, PhD; Kaye D. Evans, BA, MT; Julie A. Shimabukuro, BS; Bruce Y. Lee, MD, MBA; Emily Fonda, MD, MMM; John A. Jernigan, MD, MS; Rachel B. Slayton, PhD, MPH; Nimalie D. Stone, MD, MS; Lynn Janssen, MS; Robert A. Weinstein, MD; Mary K. Hayden, MD; Michael Y. Lin, MD, MPH; Ellena M. Peterson, PhD; Cassiana E. Bittencourt, MD; Susan S. Huang, MD, MPH; for the CDC Safety and Healthcare Epidemiology Prevention Research Development (SHEPheRD) Program

SHIELD

Gussin et al., JAMA 2024

	Part	Non-P
Hospitals	16	7
LTACH	3	0
NH	16	50

Design	Multicentre quasi-experimental interventional study
Participants	Hospitals, LTACHs, Nursing Homes in Orange County, CA (US)
Intervention	(Participating facilities only) Universal decolonization (CHG ± intranasal povidone-iodine)
Comparator	Targeted decolonization (5 days)
Outcomes	Baseline vs End-of-intervention PPS: 1. MDRO prevalence in screening (participating facilities) 2. Incident MDRO clinical cultures (non-screening samples; all facilities) 3. Infection-related hospitalisations, deaths, healthcare costs (NH only)
Timeframe	Baseline: Sept 2016 – Apr 2017; EOS: Aug 2018 – Apr 2019

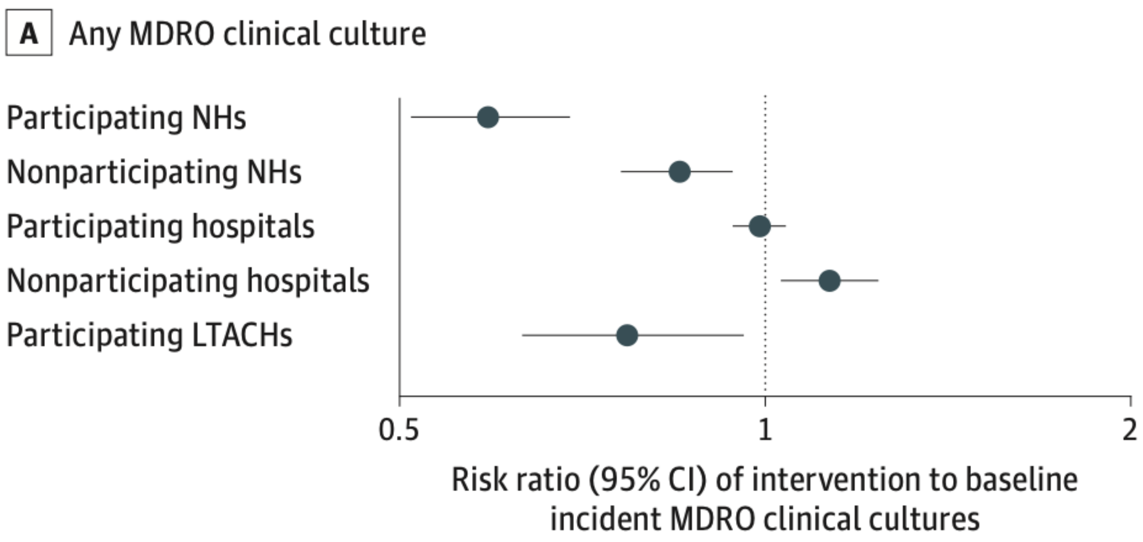
1. Gussin et al, JAMA 2024

Impact of decolonization on MDRO

Screening prevalence in participating facilities

Impact of decolonization on:	OR	95% CI	P value
Any MDRO	0.48	0.40–0.57	<0.001
MRSA	0.54	0.45–0.64	<0.001
VRE	0.49	0.39–0.62	<0.001
ESBL	0.59	0.49–0.71	<0.001
CPE	0.89	0.49–1.62	0.7

Prevalence in clinical cultures (all facilities)



1. Gussin et al, JAMA 2024

The bottom line

Routine decolonization is associated with a reduction in MDRO screening prevalence

Also reduction in MDRO from clinical cultures from Nursing Homes (but not Hospitals!)

Participating NH > Non-participating NH, but still some flow-on effect to non-participating?

Caveats:

- US setting - Los Angeles and Orange county, California
- Similar impact on VRE/ESBL (enteric colonization) interesting
- What is the mechanism for reducing infections?

Implications:

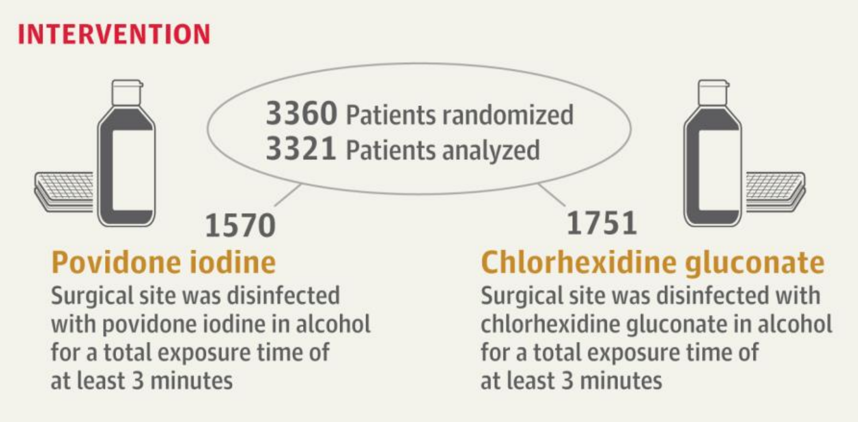
- Multiple large cluster-RCTs showing benefit of universal decolonization – from same study group and same geographic region
- Same impact with differences/changes in CHG resistance or lower % transfers for infection?

1. Miller et al, N Engl J Med 2023
2. Gussin et al, JAMA 2024

JAMA | Original Investigation

Povidone Iodine vs Chlorhexidine Gluconate in Alcohol for Preoperative Skin Antisepsis
A Randomized Clinical Trial

Andreas F. Widmer, MD, MS; Andrew Atkinson, PhD; Stefan P. Kuster, MD; Aline Wolfensberger, MD; Steffi Klimke, RN; Rami Sommerstein, MD; Friedrich S. Eckstein, MD; Florian Schoenhoff, MD; Guido Beldi, MD; Christian A. Gutschow, MD; Jonas Marschall, MD; Alexander Schweiger, MD; Philipp Jent, MD

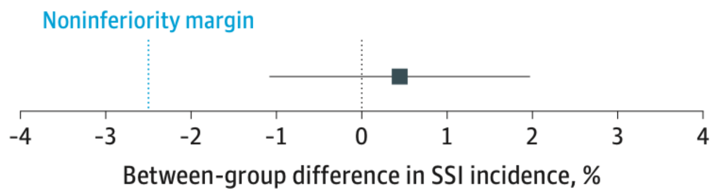


Design	Multicentre cluster-randomized, investigator-blinded, crossover non-inferiority trial
Participants	3360 patients undergoing cardiac or abdominal surgery (3 hospitals in Switzerland)
Intervention	Povidone-iodine in alcohol
Comparator	Chlorhexidine gluconate in alcohol
Outcomes	1. SSI after abdominal surgery (≤30d) or cardiac surgery (≤1y) – US CDC definitions 2. SSI rates by procedure type
Timeframe	Sept 2018 – Mar 2020; sites randomized each month (cluster-periods)

1. Widmer et al, JAMA 2024

The bottom line

Figure 2. Difference of Overall Occurrence of Surgical Site Infection (SSI) Between Alcoholic Povidone Iodine and Chlorhexidine Gluconate With Noninferiority Margin and 95% CIs



Patients with surgical site infections

Povidone iodine — **5.1%** (80 of 1570 patients)

Chlorhexidine gluconate — **5.5%** (97 of 1751 patients)

Povidone iodine was noninferior to chlorhexidine gluconate, both in alcohol:

Between-group difference, 0.4%
(95% CI, −1.1% to 2.0%)

Table 2. Adjusted and Unadjusted Outcomes, Chlorhexidine Gluconate in Alcohol as Reference

Patient characteristics	Povidone iodine (n = 1570)	Chlorhexidine gluconate (n = 1751)	Absolute difference (95% CI), %	Relative risk (95% CI)
Overall SSI, No. (%)	80 (5.1)	97 (5.5)	0.4 (−1.1 to 2.0)	0.92 (0.69 to 1.23)
Type of SSI, No./total No. (%)[b]				
Superficial	32/1526 (2.1)	29/1691 (1.7)	−0.4 (−1.3 to 0.6)	1.22 (0.74 to 2.01)
Deep incisional	15/1509 (1.0)	20/1682 (1.2)	0.2 (−0.6 to 1.0)	0.84 (0.43 to 1.63)
Organ space	29/1523 (1.9)	40/1702 (2.3)	0.4 (−0.6 to 1.5)	0.81 (0.51 to 1.30)
Abdominal	38/559 (6.8)	59/596 (9.9)	3.1 (0.3 to 6.5)	0.69 (0.46 to 1.02)
Superficial	15/536 (2.8)	14/551 (2.5)	−0.3 (−2.4 to 1.8)	1.10 (0.54 to 2.60)
Deep incisional	3/524 (0.6)	10/547 (1.9)	1.4 (−0.2 to 2.9)	0.31 (0.09 to 1.13)
Organ space	20/541 (3.7)	35/572 (6.1)	2.4 (0.3 to 5.1)	0.60 (0.35 to 1.03)
Cardiac	42/1011 (4.2)	38/1155 (3.3)	−0.9 (−2.6 to 0.8)	1.26 (0.82 to 1.94)
Superficial	17/990 (1.7)	15/1140 (1.3)	−0.4 (−1.5 to 0.7)	1.31 (0.66 to 2.60)
Deep incisional	12/985 (1.2)	10/1135 (0.9)	−0.3 (−1.3 to 0.6)	1.38 (0.60 to 3.19)
Organ space	9/982 (0.9)	5/1130 (0.4)	−0.5 (−1.2 to 0.3)	2.07 (0.70 to 6.16)

1. Widmer et al, JAMA 2024

The bottom line

Figure 2. Difference of Overall Occurrence of Surgical Site Infection (SSI) Between Alcoholic Povidone Iodine and Chlorhexidine Gluconate With Noninferiority Margin and 95% CIs

Povidone-iodine in alcohol was non-inferior to chlorhexidine gluconate in alcohol for skin antisepsis prior to abdominal or cardiac surgery

Caveats:

- Individual patients not randomized – used cluster-randomized crossover design
- Follow up post cardiac surgery shortened from 365 to 90 days for last 16 months (clusters) due to COVID-19 pandemic; overall study outcome similar in post-hoc sensitivity analyses
- Emergency surgery, surgery in pregnant patients excluded

Implications:

- Skin antisepsis with povidone-iodine is non-inferior to chlorhexidine

1. Widmer et al, JAMA 2024

ORIGINAL ARTICLE

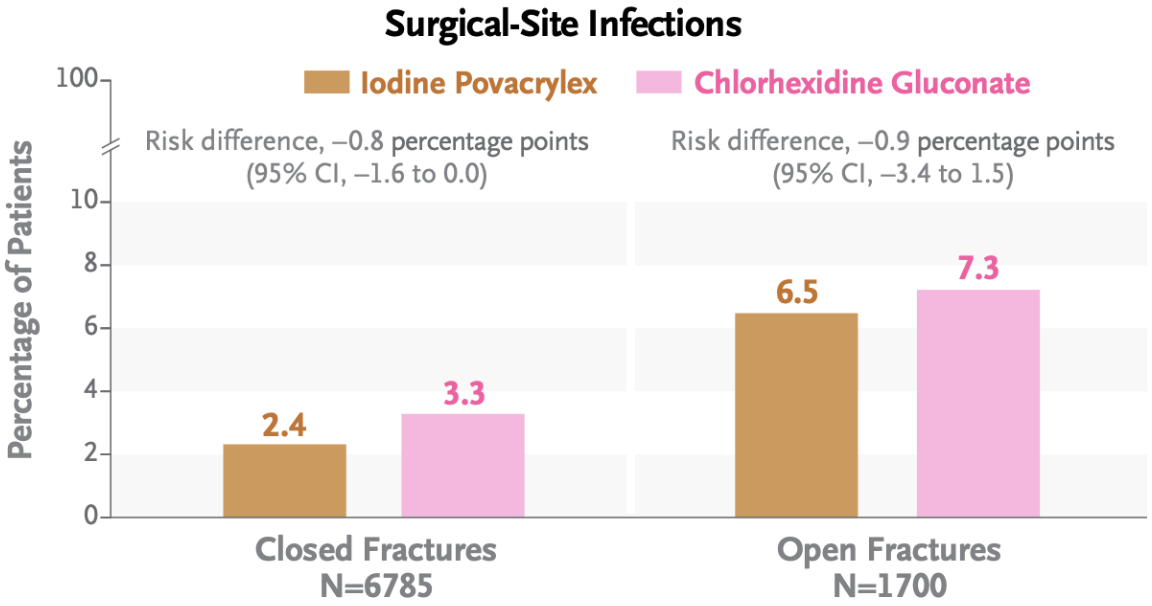
Skin Antisepsis before Surgical Fixation of Extremity Fractures

The PREP-IT Investigators*

Design	Multicentre cluster-randomized, crossover intervention trial in 25 hospitals US + Canada
Participants	Patients undergoing surgical fixation of limb fractures
Intervention	Iodophor: 0.7% iodine povacrylex + 74% isopropyl alcohol
Comparator	Chlorhexidine: 2% chlorhexidine gluconate + 70% isopropyl alcohol
Outcomes	1. SSI after fixation surgery (superficial incisional ≤30d or deep incisional/organ-space (≤90d) – US CDC definitions 2. Unplanned fracture-related reoperation within 1 year
Timeframe	After initial randomization, sites crossover every 2m. Follow up to12m post fracture.

1. PREP-IT investigators, NEJM 2024

The bottom line



Outcome	Iodine Povacrylex	Chlorhexidine Gluconate
	no./total no. (%)	
Closed-fracture population		
Surgical-site infection: primary out-come§	77/3205 (2.4)	108/3272 (3.3)
Superficial infection in ≤30 days	20/3205 (0.6)	27/3272 (0.8)
Deep infection in ≤90 days	29/3205 (0.9)	54/3272 (1.7)
Organ-space infection in ≤90 days	28/3205 (0.9)	27/3272 (0.8)

OR 0.74 (0.55–1.00)
P = 0.049
Risk difference = -0.8 percentage points
NNT = 125

1. PREP-IT investigators, NEJM 2024

The bottom line

Skin antisepsis with iodine povacrylex in alcohol resulted in fewer SSI than with chlorhexidine gluconate among patients with closed fractures requiring surgical fixation

Caveats:

- Open-label pragmatic trial – patients and surgeons aware; adjudication committee blinded
- Just reached statistical significance; small effect size
- Funded by NFP-NGO (Patient Centered Outcomes Research Institute) – no role in trial; product manufacturers also not involved in any way

Implications:

- Not all iodophors are equal? Iodine povacrylex possibly better than chlorhexidine?

1. PREP-IT investigators, NEJM 2024

Iodine povacrylex

- Novel iodophor
- Povacrylex copolymer[1]
    - *“Water-insoluble deliverer of free iodine”*
    - *“Resistant to fluids and blood”*
      (free iodine is bound/inactivated by organic matter)
    - *“... dries to a water-insoluble film”*

- Other studies iodine povacrylex vs CHG:
    - RCT of 788 elective colorectal surgery[2]
        - Failed to meet non-inferiority margin
    - Prospective observational before-and-after study of 3209 general surgical operations[3]
        - Lower SSI rates with iodine povacrylex vs CHG: 3.9% vs 7.1%

3M™ DuraPrep™ Surgical Solution
(Iodine Povacrylex [0.7% available iodine] and Isopropyl Alcohol, 74% w/w)
Patient Preoperative Skin Preparation

Australian Register of Therapeutic Goods (ARTG)

Search the ARTG by name, ID or sponsor. Search results includeproduct name and formulation details, sponsor (company) and manufacturer details, Consumer Medicines Information (CMI) and Product Information (PI). Not all CMI and PI documentsare available.

Listen Print Share

Access our ARTG search page for advanced search functionality.

Results for "povacrylex"

povacrylex

There were no matching results.

1. PREP-IT investigators, NEJM 2024
2. Broach et al., Ann Surg 2017
3. Swenson et al., Infect Control Hosp Epidemiol 2009

Taurolidine/Heparin Lock Solution and Catheter-Related Bloodstream Infection in Hemodialysis

A Randomized, Double-Blind, Active-Control, Phase 3 Study

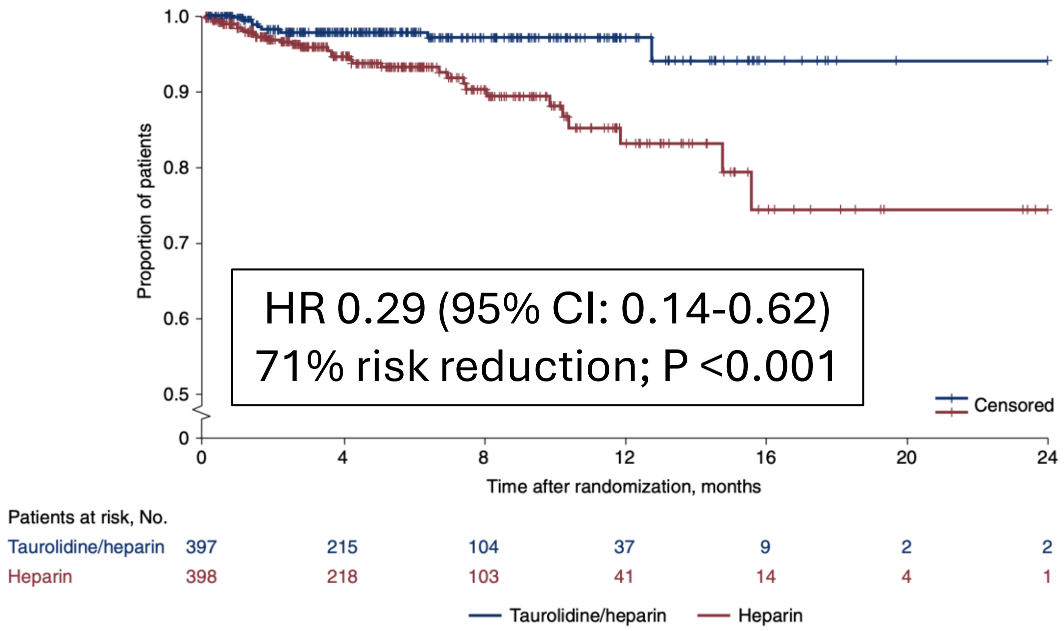
Anil K. Agarwal,[1] *Prabir Roy-Chaudhury*,[2,3] *Phoebe Mounts*,[4] *Elizabeth Hurlburt*,[4] *Antony Pfaffle*,[4] *and Eugene C. Poggio*[5]

Design	Multicentre double-blind, active-control, randomized trial in 70 US hospitals
Participants	Adult patients with CKD on hemodialysis via central venous catheter (CVC)
Intervention	Taurolidine/heparin catheter lock solution
Comparator	Heparin catheter lock solution
Outcomes	1. Time to CRBSI (blinded adjudication committee) 2. CVC removal for any reason
Timeframe	2015-2018(!); review every 4 weeks; final visit 28d after removal of last lock

1. Agarwal et al., Clin J Am Soc Nephrol 2023

Pre-planned interim analysis after first 28 CRBSI:

Primary Analysis	Taurolidine/Heparin	Heparin
Interim	6 CRBSI (2%) 0.14 events per 1000 catheter days 95% CI: 0.06-0.30	22 CRBSI (7%) 0.49 events per 1000 catheter days 95% CI: 0.32-0.75
Completion	9 CRBSI (2%) 0.13 events per 1000 catheter days 95% CI: 0.07-0.26	32 CRBSI (8%) 0.46 events per 1000 catheter days 95% CI: 0.33-0.66



Secondary	Taurolidine	Heparin
CVC removed, n	236 (59%)	225 (57%)
Time to removal, d	197 [171-224]	225 [187-248]
Event rate	3.48 (3.06-3.95)	3.23 (2.84-3.69)
	HR 1.08 [95% CI 0.90-1.29]	
	P value = 0.42	

1. Agarwal et al., Clin J Am Soc Nephrol 2023

The bottom line

Taurolidine/heparin was more effective than heparin alone as a central venous catheter lock solution to prevent CRBSI

Caveats:

- Impact mainly on late CRBSI infections (>3 months)
- True effect or artefact?
- CRBSI definition =
    - 1. Positive BC from CVC + peripheral/other line; and
    - 2. clinical suspicion of infection

Implications:

- DefenCath not TGA approved; Taurolock available
- More high-quality evidence required

1. Agarwal et al., Clin J Am Soc Nephrol 2023

CATERPILLAR

Van den Bosch et al., J Hosp Infect 2024

The CATERPILLAR study: an assessor-blinded randomized controlled trial comparing a taurolidine—citrate—heparin lock solution to a heparin-only lock solution for the prevention of central-line-associated bloodstream infections in paediatric oncology patients

C.H. van den Bosch [a,*], Y.G.T. Loeffen [b], A.F.W. van der Steeg [a], J.T. van der Bruggen [c], F.N.J. Frakking [c], M. Fiocco [a,d,e], C.P. van de Ven [a], M.H.W.A. Wijnen [a], M.D. van de Wetering [a]

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[c] Department of Medical Microbiology, University Medical Centre Utrecht, Utrecht, The Netherlands
[d] Medical Statistics, Mathematical Institute, Leiden, The Netherlands
[e] Department of Biomedical Data Science Section Medical Statistics, Leiden University Medical Centre, Leiden, The Netherlands

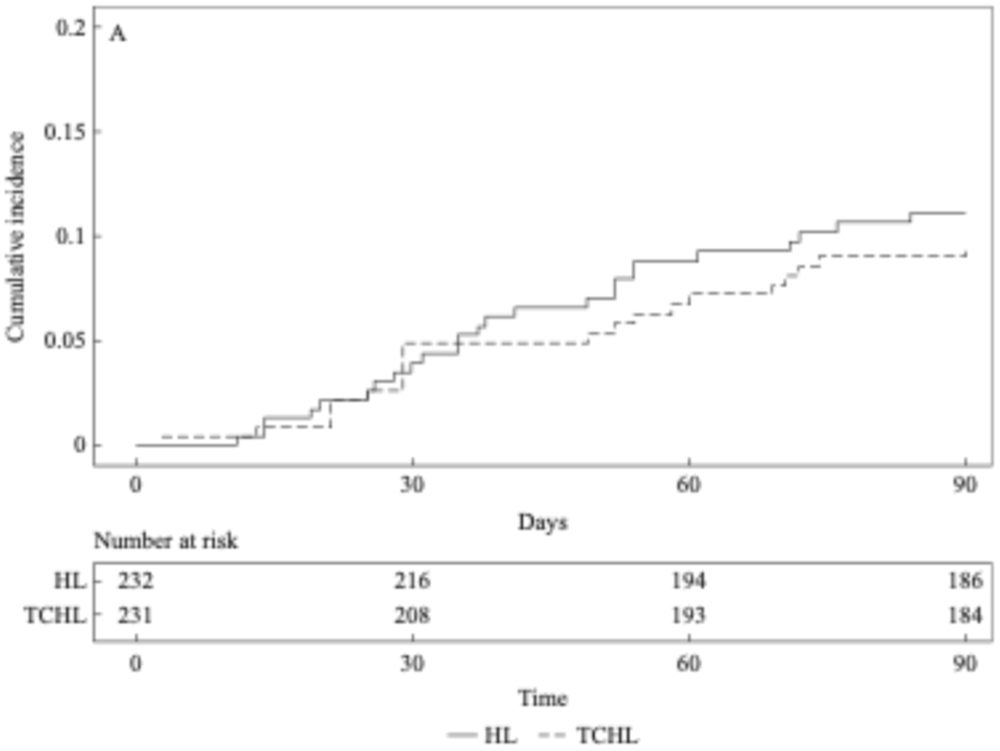
Design	Single centre assessor-blinded, randomized controlled trial in Netherlands
Participants	Paediatric oncology patients with tunnelled CVAD (central venous access device)
Intervention	Taurolidine/citrate/heparin catheter lock solution
Comparator	Heparin catheter lock solution
Outcomes	1. Incidence of CLABSI (US CDC/NHSN criteria) 2. Time to 1st CLABSI, CLABSI incidence per 1000 CVAD days, incidence of thrombosis, bacteraemia, local site infections, CVAD removal, SAE, ICU admission, mortality
Timeframe	90 day follow up post CVAD insertion

1. Van den Bosch et al., J Hosp Infect 2024

The bottom line

Table II
CLABSI-related outcomes for intention-to-treat (*N* = 463) and per-protocol analysis (*N* = 252)

Variable	Intention-to-treat analysis				
	HL group (*N* = 232, 18,559 CVAD-days)		TCHL group (*N* = 231, 18,398 CVAD-days)		
	No. (%) of patients	IR per 1000 CVAD-days	No. (%) of patients	IR per 1000 CVAD-days	IRR (95% CI)
CLABSI	26 (11.2%)	1.40	21 (9.1%)	1.14	0.81 (0.46–1.45)
Common commensal CLABSI[a]	11 (4.7%)	0.59	8 (3.5%)	0.43	0.73 (0.30–1.82)
Recognized pathogen CLABSI[a]	15 (6.5%)	0.81	13 (5.6%)	0.71	0.87 (0.42–1.84)
CLABSI-related hospital admission	25 10.8%)	1.35	18 (7.8%)	0.98	0.73 (0.40–1.33)
CLABSI-related removal	8 (3.4%)	0.43	8 (3.5%)	0.43	1.01 (0.38–2.69)
CLABSI-related PICU admission	3 (1.3%)	0.16	1 (0.4%)	0.05	0.34 (0.03–3.23)
CLABSI-related death	0	0	0	0	NA



1. Van den Bosch et al., J Hosp Infect 2024

The bottom line

There was no difference between taurolidine/citrate/heparin and heparin alone as a CVAD lock solution to prevent CLABSI in paediatric oncology patients

Caveats:

- Single centre, but investigator-initiated study
- CLABSI definition – excluded BSI related to MBI

Implications:

- More high-quality evidence required
- Comparison against other antimicrobial lock solutions e.g. ethanol lock
- Could consider for patients with recurrent CLABSI and limited alternative line options

1. Van den Bosch et al., J Hosp Infect 2024

Evidence in intravascular device infections

Incidence and risk factors for central venous access device failure in hospitalized adults: A multivariable analysis of 1892 catheters

Amanda Corley RN, MAdvPrac, PhD[1,2,3,4,5] | Ruth H. Royle RN, MEcon[3,6] |
Nicole Marsh RN, MAdvPrac, PhD[1,2,3,4,5] |
Emily N. Larsen RN, GDipHlthRes, PhD (Cand)[1,2,3,4] |
E. Geoffrey Playford MBBS (Hons), MMed (Clin Epi), PhD, FRACP, FRCPA[7] |
Matthew R. McGrail PhD[8] | Naomi Runnegar MBBS, FRACP, FRCPA[7,9] |
Robert S. Ware BSc, PhD[3,6] | Nicole C. Gavin RN, MAdvPrac, PhD[4,5,10,11] |
Evan Alexandrou RN, PhD[4,12,13] | Marghie Murgo RN, MCritCareNurs[5] |
John R. Gowardman MBChB, FCICM, FRACP[11,14] |
Adrian Regli MD, PhD, FCICM[15,16,17] | Claire M. Rickard RN, PhD[1,2,3,4,5,18]

Effect of infusion set replacement intervals on catheter-related bloodstream infections (RSVP): a randomised, controlled, equivalence (central venous access device)–non-inferiority (peripheral arterial catheter) trial

Claire M Rickard, Nicole M Marsh, Emily N Larsen, Matthew R McGrail, Nicholas Graves, Naomi Runnegar, Joan Webster, Amanda Corley, David McMillan, John R Gowardman, Debbie A Long, John F Fraser, Fenella J Gill, Jeanine Young, Marghie Murgo, Evan Alexandrou, Md Abu Choudhury, Raymond J Chan, Nicole C Gavin, Azlina Daud, Annamaria Palermo, Adrian Regli, E Geoffrey Playford

Design	Post hoc analysis of CVAD data from prior RCT (RSVP)
Participants	Adult patients with CVAD (tunnelled, non-tunnelled, PICC)
Outcomes	1. Incidence of all-cause CVAD failure 2. CLABSI (CDC/NHSN definitions), occlusion, dislodgement
Timeframe	RSVP RCT recruited patients from 10 Australian hospitals 2011-2016

1. Corley et al., J Hosp Med 2024
2. Rickard et al., Lancet 2021

TABLE 2 Incidence rates of device failure per 1000 catheter days, by device and complication type.

Device type	All-cause failure IR per 1000 catheter days (95% CI)	Failure by complication type IR per 1000 catheter days (95% CI)		
		CLABSI	Occlusion	Dislodgement
NTCVADs	7.8 (5.9–10.3)	3.3 (2.2–5.1)	1.4 (0.7–2.7)	2.1 (1.2–3.6)
PICCs	8.4 (6.9–10.3)	3.4 (2.5–4.6)	2.0 (1.4–3.0)	1.5 (1.0–2.4)
TCVADs	5.6 (4.2–7.5)	5.0 (3.6–7.0)	0.1 (0.02–0.9)	0.1 (0.02–0.9)

Abbreviations: CI, confidence interval; IR, incidence rate; NTCVAD, nontunneled central venous access device; PICC, peripherally inserted central catheter; TCVAD, tunneled central venous access device.

All-cause CVAD failure = 10.2% (193/1892)
5.3% failed due to CLABSI
1.8% occlusion; 1.7% dislodged

Implications:
More work to be done to reduce CVAD-related infections

1. Corley et al., J Hosp Med 2024

Evidence for peripheral catheters

Cochrane Library

Cochrane Database of Systematic Reviews

Dressings and securement devices to prevent complications for peripheral arterial catheters (Review)

Schults JA, Reynolds H, Rickard CM, Culwick MD, Mihala G, Alexandrou E, Ullman AJ

Standard polyurethane (SPU) ± tissue adhesive
Bordered polyurethane vs SPU
SPU ± sutureless securement devices
SPU vs Integrated securement dressings

Cochrane Library

Cochrane Database of Systematic Reviews

Peripherally inserted central catheter design and material for reducing catheter failure and complications (Review)

Schults JA, Kleidon T, Charles K, Young ER, Ullman AJ

Integrated valve technology
Anti-thrombogenic surface modification
Antimicrobial-impregnated catheters

1. Schults et al., Cochrane Database Syst Rev 2024
2. Schults et al., Cochrane Database Syst Rev 2024

Evidence for peripheral catheters

"We are very uncertain whether different dressings and securement devices reduce the risk of peripheral arterial catheter complications or failure."

Small sample sizes
Low-quality methods
Infrequent outcome events

"There is a lack of strong evidence to evaluate the benefits and risks of PICC design and material (e.g. silicone vs polyurethane) to prevent catheter complications, infection, and failure."

Small sample sizes
Infrequent outcome events

1. Schults et al., Cochrane Database Syst Rev 2024
2. Schults et al., Cochrane Database Syst Rev 2024

Antivirals for post-exposure prophylaxis of influenza: a systematic review and network meta-analysis

Yunli Zhao, Ya Gao, Gordon Guyatt, Timothy M Uyeki, Ping Liu, Ming Liu, Yanjiao Shen, Xiaoyan Chen, Shuyue Luo, Xingsheng Li, Rongzhong Huang, Qiukui Hao

n = 33 studies
19,096 individuals

Design	Systematic review and network meta-analysis
Question	How does the importance of effects and quality of evidence influence our use of antivirals for post-exposure prophylaxis of influenza?
Intervention	Antivirals – oseltamivir, zanamivir, laninamivir, baloxavir, amantadine, rimantadine
Comparator	Other antiviral or placebo
Outcomes	Symptomatic or asymptomatic infection Admission to hospital All-cause mortality Adverse events related to antivirals Serious adverse events

1. Zhao et al., Lancet 2024

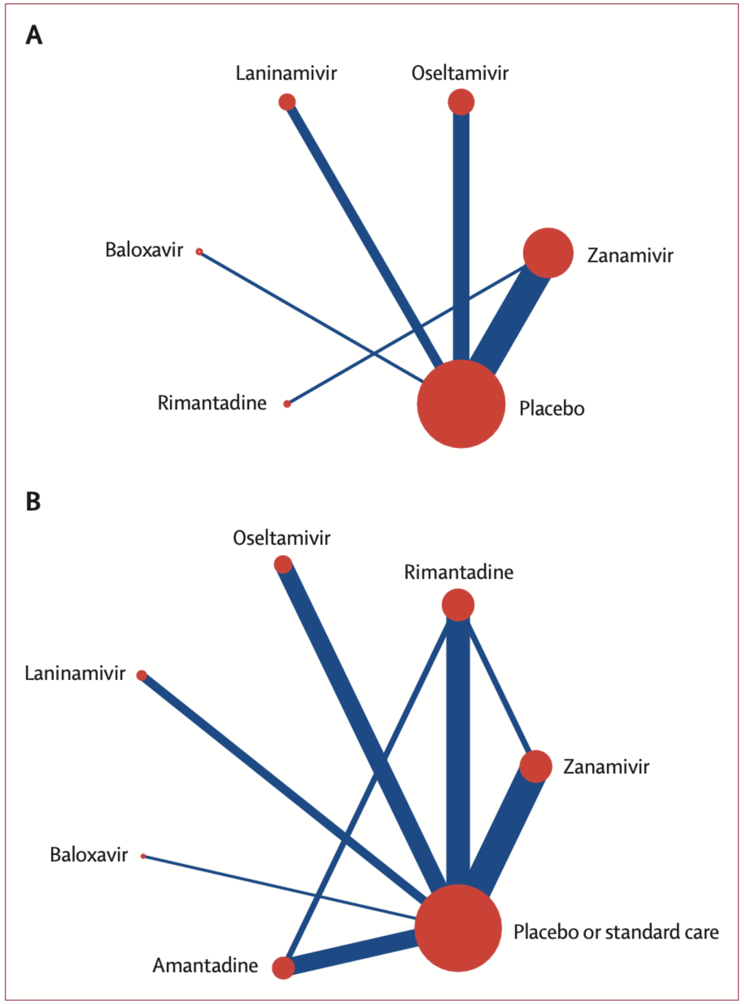


***Figure 2:* Network plots of trials included in meta-analyses**
(A) Trials evaluating laboratory-confirmed symptomatic influenza.
(B) Trials evaluating laboratory-confirmed influenza. The size of the circle represents the number of participants. The connecting lines represent direct comparisons. The width of the line represents the number of trials.

	Symptomatic influenza*	Admission to hospital	Mortality	Adverse events related to drugs	Serious adverse events
Seasonal influenza					
Baseline risk†	78 per 1000	25 per 1000	Various	36 per 1000	Various
MID‡	55 per 1000 (low-risk population) or 30 per 1000 (high-risk population)§	15 per 1000	3 per 1000	10 per 1000	5 per 1000
Zanamivir	–51 (–58 to –39)	NA	1 (–1 to 2)	3 (–6 to 14)	0 (–3 to 4)
Oseltamivir	–47 (–58 to –30)	3 (–8 to 22)	0 (–2 to –2)	NA	3 (–2 to 7)
Laninamivir	–44 (–55 to –29)	NA	0 (–11 to 11)	14 (–6 to 49)	0 (–11 to 11)
Baloxavir	–44 (–60 to –16)	NA	0 (–5 to 5)	6 (–22 to 88)	–3 (–10 to 5)
Amantadine	NA	NA	8 (–5 to 21)	NA	0 (–18 to 18)
Rimantadine	–19 (–56 to 83)	NA	4 (–8 to 15)	–2 (–8 to 14)	4 (–26 to 19)

Certainty of evidence
High certainty · Moderate certainty · Low certainty · Very low certainty · No evidence

1. Zhao et al., Lancet 2024

The bottom line

For populations at high risk of severe influenza, the neuraminidase inhibitors and baloxavir probably reduce symptomatic influenza (RR 0.35-0.43)

Caveats:

- May have little to no effect in low-risk populations

Implications:

- Supports current thinking, but robust direct comparisons lacking
- Evidence currently only supports use in high-risk populations

1. Zhao et al., Lancet 2024

JAMA Internal Medicine | Original Investigation

Association Between Daily Toothbrushing and Hospital-Acquired Pneumonia
A Systematic Review and Meta-Analysis

Selina Ehrenzeller, MD; Michael Klompas, MD, MPH

n = 15 studies
10,742 individuals

Design	Systematic review and meta-analysis
Question	Is daily toothbrushing among hospitalized patients associated with prevention of hospital-acquired pneumonia and improved outcomes?
Intervention	Daily toothbrushing
Comparator	Routine oral care (e.g. ICU – gauze/swab soaked in chlorhexidine)
Outcomes	HAP/VAP (variable criteria)
Context	Countries: Iran (3), Brazil (3), India (2), Spain (2), China (2), US (1), Malaysia (1), Taiwan (1)

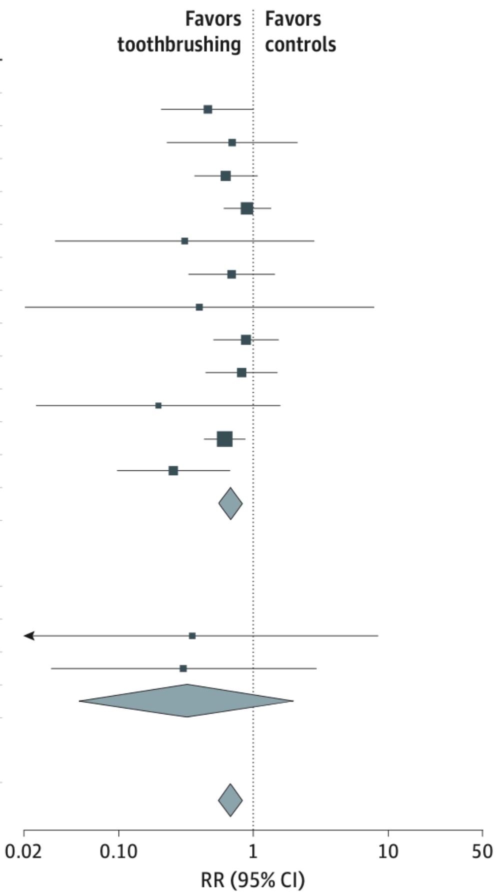
1. Ehrenzeller et al., JAMA Intern Med 2024

The bottom line

Figure 3. Association of Toothbrushing With Hospital-Acquired Pneumonia (HAP)

Source	Experimental group No. of events	Experimental group No. of patients	Control group No. of events	Control group No. of patients	RR (95% CI)	Weight, %
1.1.1 VAP						
Bellissimo-Rodrigues et al,[42] 2014	8	98	17	96	0.46 (0.21-1.02)	5.3
Chacko et al,[44] 2017	5	104	7	102	0.70 (0.23-2.14)	2.7
de Lacerda Vidal et al,[41] 2017	17	105	28	108	0.62 (0.36-1.07)	11.5
Falahinia et al,[39] 2016	19	34	21	34	0.90 (0.61-1.35)	21.0
Félix,[51] 2016	1	30	3	28	0.31 (0.03-2.82)	0.7
Gong et al,[31] 2018	9	40	13	40	0.69 (0.33-1.43)	6.3
Khan et al,[49] 2017	0	4	1	5	0.40 (0.02-7.82)	0.4
Lorente et al,[45] 2012	21	217	24	219	0.88 (0.51-1.54)	10.8
Pobo et al,[46] 2009	15	74	18	73	0.82 (0.45-1.50)	9.1
Salarzehi et al,[32] 2021	1	30	5	30	0.20 (0.02-1.61)	0.8
Singh et al,[43] 2022	32	110	52	110	0.62 (0.43-0.88)	26.9
Yao et al,[44] 2011	4	28	14	25	0.26 (0.10-0.67)	3.5
Subtotal	132	**874**	203	**870**	**0.68 (0.57-0.82)**	99.0
Heterogeneity: $\tau^2 = 0.00$; $\chi^2_{11} = 10.37$ ($P = .50$); $I^2 = 0\%$						
Test for overall effect: $z = 4.13$ ($P < .001$)						
1.1.2 NV-HAP						
Bellissimo-Rodrigues et al,[42] 2014	0	29	1	31	0.36 (0.02-8.39)	0.3
Giuliano et al,[47] 2021[a]	1	393	3	360	0.31 (0.03-2.92)	0.7
Subtotal	1	**422**	4	**391**	**0.32 (0.05-2.02)**	1.0
Heterogeneity: $\tau^2 = 0.00$; $\chi^2_{1} = 0.01$ ($P = .94$); $I^2 = 0\%$						
Test for overall effect: $z = 1.21$ ($P = .23$)						
Total	133	**1296**	207	**1261**	**0.67 (0.56-0.81)**	100.0

Heterogeneity: $\tau^2 = 0.00$; $\chi^2_{13} = 11.01$ ($P = .61$); $I^2 = 0\%$
Test for overall effect: $z = 4.23$ ($P < .001$)
Test for subgroup differences: $\chi^2_{1} = 0.63$ ($P = .43$); $I^2 = 0\%$



Overall to prevent HAP/VAP:
133 vs 207
RR 0.67 (95% CI: 0.56-0.81)
P <0.001
Low heterogeneity

Association with ICU mortality:
187 vs 230
RR 0.81 (95% CI: 0.69-0.95)
P = 0.008
Low heterogeneity
High risk of bias

1. Ehrenzeller et al., JAMA Intern Med 2024

The bottom line

Brush your teeth in hospital!

Caveats:

- Consistent effect from diverse healthcare settings – I^2 = 0% (?)
  - Variable intervention and background dental care
  - Variable HAP/VAP definitions
- None of the studies were blinded – risk of bias

Implications:

- Little harm/adverse effects; Resource implications?
- Supports some recent evidence suggesting role of oral microbiome in influencing HAI
  - Difficult to separate from effect of systemic antibiotic treatment in Selective Oral Decontamination (SOD) trials
- Further trials planned e.g. HAP PrEveNtion (HAPPEN) study

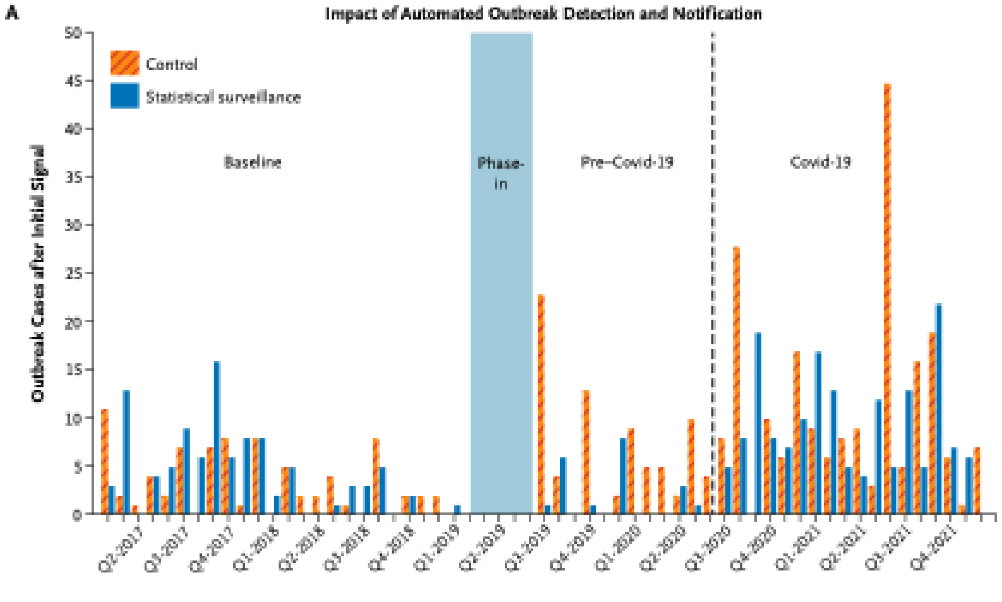
1. Ehrenzeller et al., JAMA Intern Med 2024

NEJM Evidence
Published April 23, 2024
NEJM Evid 2024; 3 (5)
DOI: 10.1056/EVIDoa2300342

ORIGINAL ARTICLE

A Trial of Automated Outbreak Detection to Reduce Hospital Pathogen Spread

Meghan A. Baker, M.D., Sc.D.,[1,2] Edward Septimus, M.D.,[1,3] Ken Kleinman, Sc.D.,[4] Julia Moody, M.S.,[5] Kenneth E. Sands, M.D., M.P.H.,[1,5] Neha Varma, M.P.H.,[6] Amanda Isaacs, M.S.P.H.,[6] Laura E. McLean, M.Ed.,[5] Micaela H. Coady, M.S.,[6] Eunice J. Blanchard, M.S.N., R.N.,[5] Russell E. Poland, Ph.D.,[1,5] Deborah S. Yokoe, M.D., M.P.H.,[7] John Stelling, M.D., M.P.H.,[2] Katherine Haffenreffer,[6] Adam Clark,[2] Taliser R. Avery, M.S.,[1] Selsebil Sljivo, M.P.H.,[6] Robert A. Weinstein, M.D.,[8,9] Kimberly N. Smith, M.B.A.,[5] Brandon Carver,[5] Brittany Meador,[5] Michael Y. Lin, M.D., M.P.H.,[8] Sarah S. Lewis, M.D., M.P.H.,[10] Chamaine Washington, M.P.H.,[6] Megha Bhattarai, M.B.A.,[6] Lauren Shimelman,[6] Martin Kulldorff, Ph.D.,[2*] Sujan C. Reddy, M.D., M.Sc.,[11] John A. Jernigan, M.D., M.S.,[11] Jonathan B. Perlin, M.D., Ph.D.,[5,12†] Richard Platt, M.D., M.S.,[1] and Susan S. Huang, M.D., M.P.H.,[13] for the Centers for Disease Control and Prevention (CDC) Prevention Epicenters Program



Design	Cluster-randomized trial
Participants	82 community hospitals in HCA Healthcare system across 16 states in US
Intervention	Automated WHONET-SaTScan tool – real-time alerts to IPC teams
Comparator	Automated WHONET-SaTScan tool in background with no alerts to IPC teams
Outcomes	1. Number of additional cases after 1st outbreak signal from tool 2. Outbreak duration (1st outbreak signal to last outbreak case)
Timeframe	24m baseline (2017-2019), 5m phase-in (2019), 30m intervention (2019-2022)

1. Baker et al., NEJM Evidence 2024

Austin HEALTH Doherty Institute THE UNIVERSITY OF MELBOURNE

Table 3. Impact of Statistical Outbreak Surveillance versus Routine Care, Overall and by Pre–Covid-19 and Covid-19 Subsets.*				
	Control	Statistical Outbreak Surveillance		
Analysis	Relative Rate (CI) (Intervention Period to Baseline Period)	Relative Rate (CI) (Intervention Period to Baseline Period)	Overall Difference-in-Differences	P Value
Outbreak Cases after First Signal (Primary Outcome)				
Overall	1.81 (1.11, 2.96)	1.41 (0.88, 2.24)	0.78 (0.40, 1.52)	0.46
Pre–Covid-19 subset	2.19 (1.16, 4.14)	0.78 (0.36, 1.73)	0.36 (0.13, 0.99)	
Covid-19 subset	1.66 (0.98, 2.81)	1.56 (0.96, 2.54)	0.94 (0.46, 1.92)	
Adjusted†	1.65 (1.04, 2.61)	1.11 (0.72, 1.72)	0.67 (0.36, 1.26)	
Duration of Outbreak after First Signal (Secondary Outcome)				
Overall	1.12 (0.81, 1.56)	0.88 (0.64, 1.21)	0.79 (0.50, 1.24)	
Pre–Covid-19 subset	1.19 (0.78, 1.80)	0.90 (0.49, 1.66)	0.76 (0.36, 1.59)	
Covid-19 subset	1.09 (0.76, 1.56)	0.88 (0.63, 1.23)	0.80 (0.49, 1.31)	
Patient's Risk of Being in an Outbreak (Post Hoc Outcome)				
	Odds Ratio (CI)	**Odds Ratio (CI)**	**Odds Ratio (CI)**	
Overall	1.94 (1.76, 2.13)	1.24 (1.13, 1.36)	0.64 (0.56, 0.73)	
Pre–Covid-19 subset	1.25 (1.10, 1.43)	0.54 (0.46, 0.63)	0.43 (0.35, 0.53)	
Covid-19 Subset	2.36 (2.14, 2.60)	1.68 (1.53, 1.85)	0.71 (0.62, 0.82)	

1. Baker et al., NEJM Evidence 2024

The bottom line

Unable to demonstrate the benefit of automated outbreak surveillance on size and duration of outbreaks

Caveats:

- Affected by COVID-19 pandemic (approx. 10 months into intervention period)
- Many outbreak detections unable to be acted upon
- Post hoc analyses – retrospective identification of outbreaks in baseline period:
    - Outbreak detection software 419 outbreaks vs manual detection 23 outbreaks

Implications:

- Artificial intelligence likely to be better at identifying patterns/outbreaks than humans
- Still requires refinement
- Have to be able to act on information!

1. Baker et al., NEJM Evidence 2024

Clinical Infectious Diseases

MAJOR ARTICLE

IDSA Infectious Diseases Society of America · hivma hiv medicine association · OXFORD

Rapid Environmental Contamination With *Candida auris* and Multidrug-Resistant Bacterial Pathogens Near Colonized Patients

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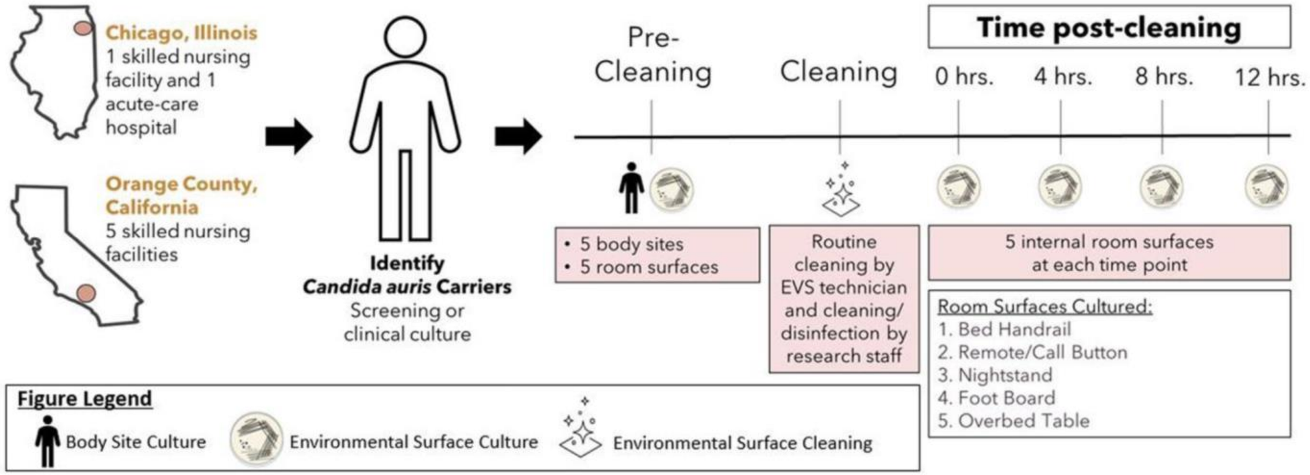
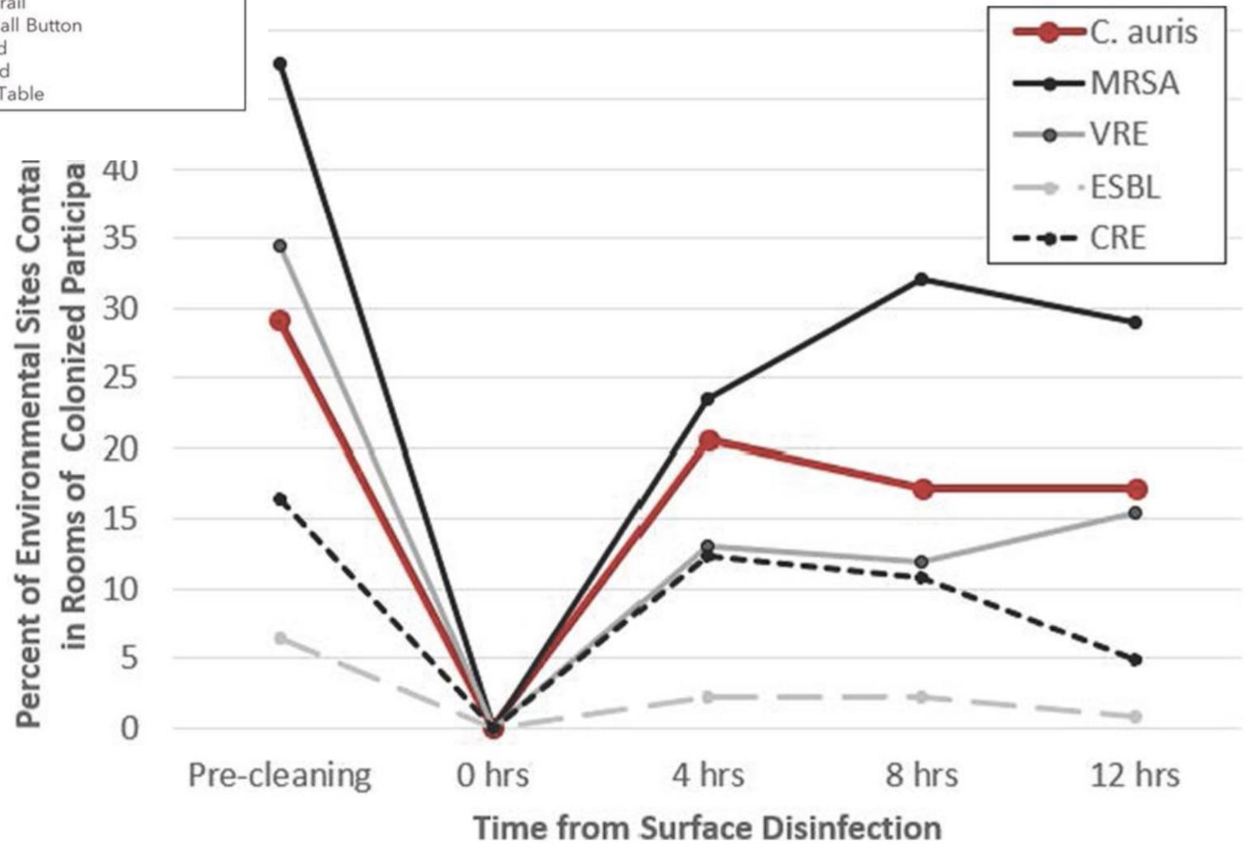
Design	Prospective multicentre observational study of environmental contamination
Participants	41 patients across 1 acute care hospital + 6 skilled nursing facilities
Observation	Candida auris and bacterial MDRO colonization of room environmental surfaces Sampling at 0, 4, 8, 12 hours after disinfection

1. Sansom et al., Clin Infect Dis 2024





1. Sansom et al., Clin Infect Dis 2024

The bottom line

MDRO can be detected in the room environment within hours of occupancy by a colonized individual

Implications:

- Highlights importance of regular and thorough cleaning
- Further data on increased intensity of cleaning/disinfection required

1. Sansom et al., Clin Infect Dis 2024

The Journal of Infectious Diseases
MAJOR ARTICLE

Comparison of Daily Versus Admission and Discharge Surveillance Cultures for Multidrug-Resistant Organism Detection in an Intensive Care Unit

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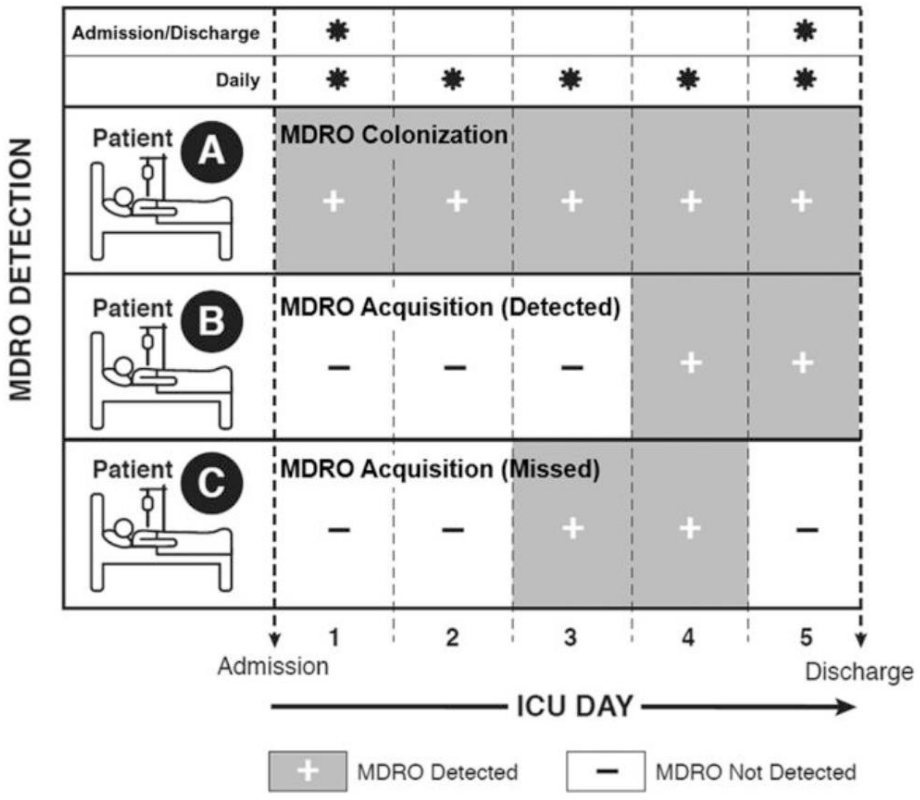
Design	Prospective single-centre observational study of patient colonisation
Participants	Patients in a 25-bed ICU
Observation	Detection of VRE, ESBL, CPE from daily rectal/faecal swabs vs admission + discharge swabs over 12 months

1. Sansom et al., J Infect Dis 2024

The bottom line

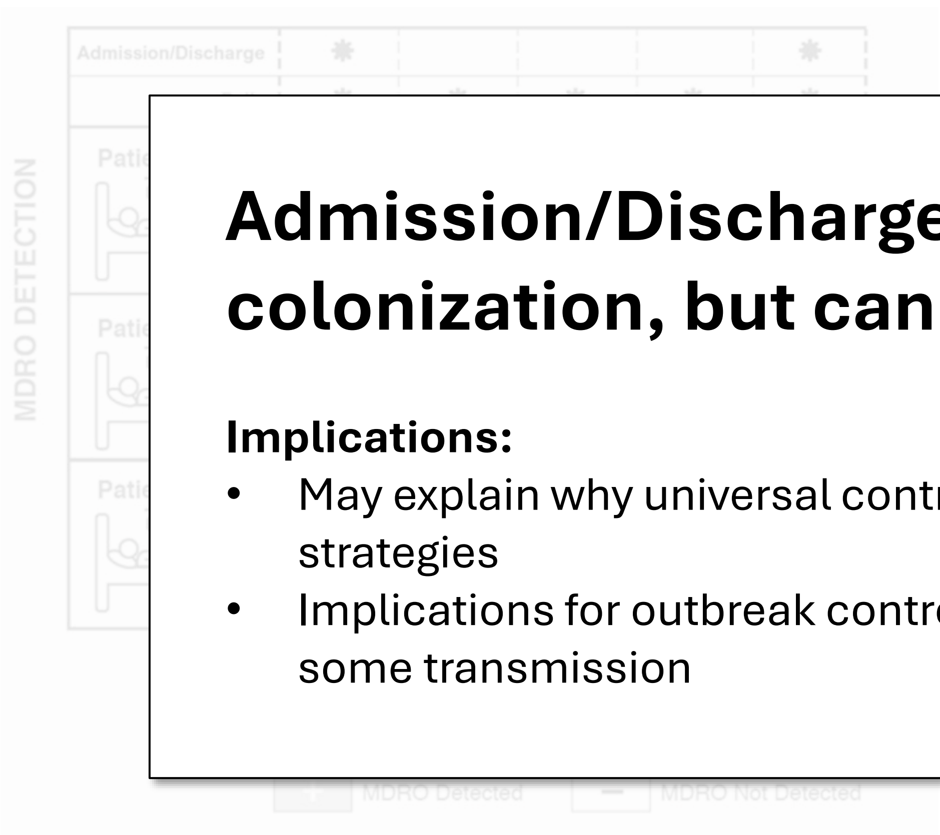


DETECTIONS	Detect Daily	Detect Adm+Dis	Prop. Detect (95% CI)	*P*
VRE	218	188	0.86 (0.81-0.91)	<0.001
CPE	33	30	0.91 (0.82-1.00)	0.248
3GC-R	265	237	0.89 (0.85-0.93)	<0.001
ESBL	136	121	0.90 (0.85-0.95)	<0.001

ACQUISITIONS	Acquis Daily	Acquis Adm+Dis	Prop. Acquis (95% CI)	*P*
VRE	69	40	0.58 (0.47-0.69)	<0.001
CPE	10	7	0.70 (0.37-1.00)	0.248
3GC-R	72	49	0.68 (0.57-0.79)	<0.001
ESBL	32	18	0.56 (0.39-0.73)	0.001

1. Sansom et al., J Infect Dis 2024

The bottom line



Admission/Discharge surveillance detects most MDRO colonization, but can miss transmission (acquisition)

Implications:

- May explain why universal control strategies have generally out-performed targeted strategies
- Implications for outbreak control – admission + discharge screening strategy may miss some transmission

DETECTIONS	Detect Daily	Detect Adm+Dis	Prop. Detect (95% CI)	P
3GC-R	72	49	0.68 (0.57-0.79)	<0.001
ESBL	32	18	0.56 (0.39-0.73)	0.001

1. Sansom et al., J Infect Dis 2024

SCIENCE TRANSLATIONAL MEDICINE | RESEARCH ARTICLE

FECAL MICROBIOTA TRANSPLANTATION

Fecal microbiota transplantation promotes reduction of antimicrobial resistance by strain replacement

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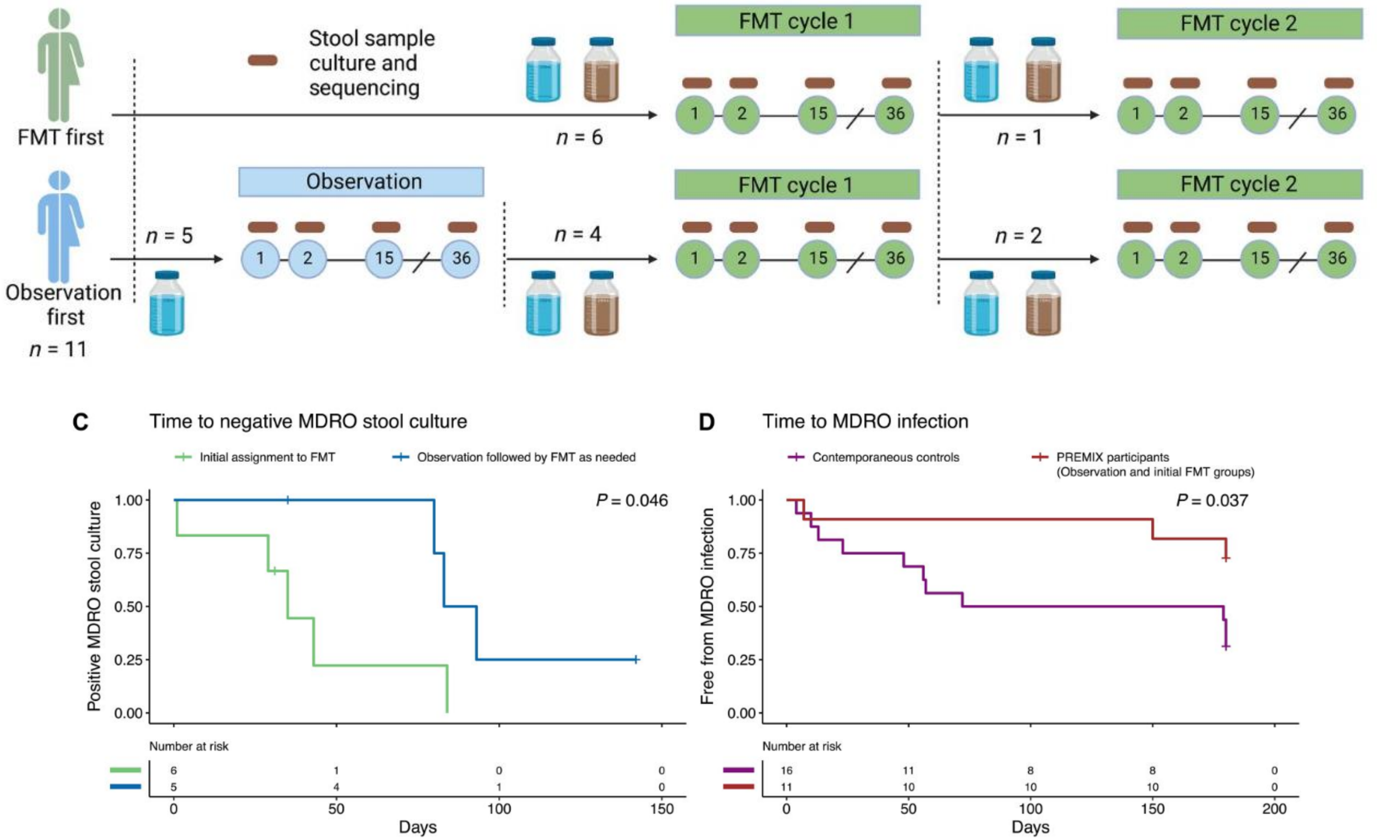
Design	Pilot randomized controlled trial (Emory University, US)
Participants	11 renal transplant recipients with MDRO colonization
Intervention	Bowel prep + FMT (retention enema)
Comparator	Bowel prep alone
Rescue	FMT cycle (maximum 2 x FMT)
Outcomes	1. Safety 2. Efficacy on MDRO colonization 3. Immunological effects – frequency of renal allograft biopsy + rejection
Timeframe	2018 – 2020

1. Woodworth et al., Sci Transl Med 2023



1. Woodworth et al., Sci Transl Med 2023

The bottom line

Faecal Microbiota Transplantation offers promise for reducing colonization with MDRO

Caveats:

- Appears safe, well-tolerated
- Optimal dose and duration of effect are unknown

Implications:

- Targeted intervention to reduce MDRO colonization possibly more effective than universal skin decolonization interventions (e.g. CHG bathing) at individual level for VRE/ESBL/CPE, but clinical trials are lacking
- “Reduction in colonization” vs “Eradication of colonization”

1. Woodworth et al., Sci Transl Med 2023

The End