

ROUTINE STERILE GLOVE AND INSTRUMENT CHANGE AT THE TIME OF ABDOMINAL WOUND CLOSURE TO PREVENT SURGICAL SITE INFECTION (CHEETAH): A PRAGMATIC, CLUSTER-RANDOMISED TRIAL IN SEVEN LOW-INCOME AND MIDDLE-INCOME COUNTRIES

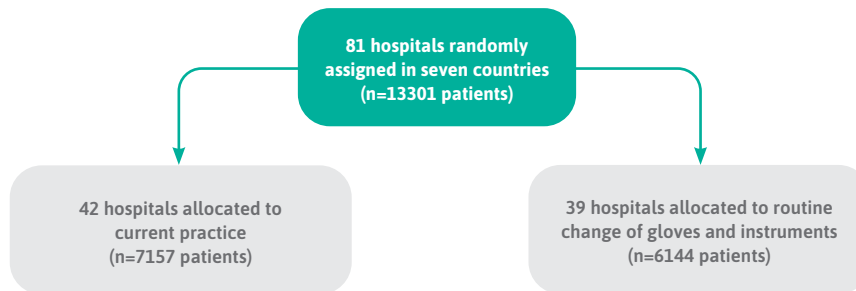
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BACKGROUND

Surgical site infection (SSI) is the most common surgical complication in abdomen surgery around the world. SSIs are not only costly, it also disproportionately affects patients in low-income and middle-income countries.

OBJECTIVES AND METHODS

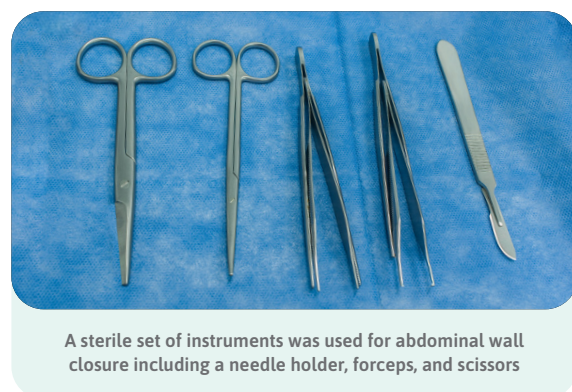
ChEETAh was a multicentre, cluster randomised trial, in seven low-income and middle-income countries aimed to examine whether routine change of gloves and instruments immediately before abdominal wound closure reduced SSI. This trial was conducted across a wide range of countries, operation types, and hospitals. It included large, tertiary-level hospitals with advanced perioperative services to small rural hospitals with few beds.



Clusters were randomly assigned with 42 hospitals allocated to current practice versus 39 hospitals allocated to intervention with routine change of gloves and instruments before wound closure. Inclusion criteria were defined as adults and children undergoing emergency or elective abdominal surgery, with an intraoperative finding of clean-contaminated, contaminated, or dirty and at least one abdominal incision of 5cm or greater, and excluded cesarean section surgeries.

Primary outcome was SSI within 30 days post-operatively (participant level), assessed by US Centers for Disease Control and Prevention criteria and on the basis of intention-to-treat principle to treat principle and classified from the American Society of anesthesiologist Physical Status Grade System.

The control groups carried out current practices representing the local standard of care. Intervention groups practiced routine change of sterile gloves and use of separate, sterile Instruments. The intervention protocol took place after completion of the abdominal component of the operation but before handling the wound edges to facilitate closure and included the two following key components:



RESULTS

There was strong evidence to suggest that routine change of gloves and instruments reduced the risk of SSI. The SSI rate was 1280 (18.9%) of 6768 in the current practice group versus 931 (16.0%) of 5789 in the intervention group (adjusted risk ratio 0.87, 95% CI 0.79-0.95, p=0.0032).

		SSI rate	Adjusted risk ratio (95% CI)	p value
Primary analysis	Current practice group	1280/6768 (18.9%)	Reference	0.0032
	Intervention group	931/5789 (16.1%)	0.87 (0.79-0.95)	
Sensitivity - Per protocol	Current practice group	1280/6768 (18.9%)	Reference	0.0010
	Intervention group	919/5693 (16.1%)	0.84 (0.76-0.93)	
Sensitivity - Best case scenario	Current practice group	1280/6848 (18.7%)	Reference	0.0009
	Intervention group	931/5831 (16.0%)	0.81 (0.72-0.92)	
Sensitivity - Worst case scenario	Current practice group	1360/6848 (19.9%)	Reference	0.0059
	Intervention group	973/5831 (16.7%)	0.86 (0.78-0.95)	
Sensitivity - Target reached – 200	Current practice group	1050/5313 (19.8%)	Reference	0.0004
	Intervention group	684/4127 (16.6%)	0.82 (0.74-0.91)	
Sensitivity - 50% target reached	Current practice group	1200/5241 (19.2%)	Reference	0.0002
	Intervention group	831/5145 (16.2%)	0.84 (0.77-0.93)	
Sensitivity - Minimisation adjusted only	Current practice group	1280/6768 (18.9%)	Reference	<0.0001
	Intervention group	931/5789 (16.1%)	0.66 (0.60-0.73)	

Primary and sensitivity analyses of the primary outcome
Intraclass correlation coefficient for primary analysis model=0.06 (95% CI 0.05-0.07). SSI=surgical site infection.

CONCLUSION

The ChEETAH trial showed that **by changing gloves and instruments before wound closure, SSI rate was reduced by 13%** at 30 days after surgery compared with the control group. Routine glove and instrument change is a simple and cost-effective intervention that could **prevent as many as 1 in 8 SSIs**, reducing the global burden of postoperative complications and benefit patients receiving surgery worldwide.

APPLICATION FOR PRACTICE

Based on this evidence, routinely changing gloves and instruments before wound closure is recommended to reduce the risk of SSI.

Practice changes in the Operating Room to decrease risk of SSI

1



Surgeons, surgical assistants, and all scrub staff change sterile gloves (or outer gloves if double gloved) prior to wound closure

2



Routine change to sterile instruments prior to wound closure

3



Implement and adopt guidelines for practice change in Operating Room

Note: This clinical summary is written by clinicians at Ansell Healthcare Products, LLC. Please refer to the actual study for full text information.

Ademuyiwa AO, Adisa AO, Bhangu A, et al. Routine sterile glove and instrument change at the time of abdominal wound closure to prevent surgical site infection (ChEETAH): A pragmatic, cluster-randomised trial in seven low-income and middle-income countries. *The Lancet*. Published online October 2022.

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