IPCNC NEW ZEALAND ANNUAL CONFERENCE

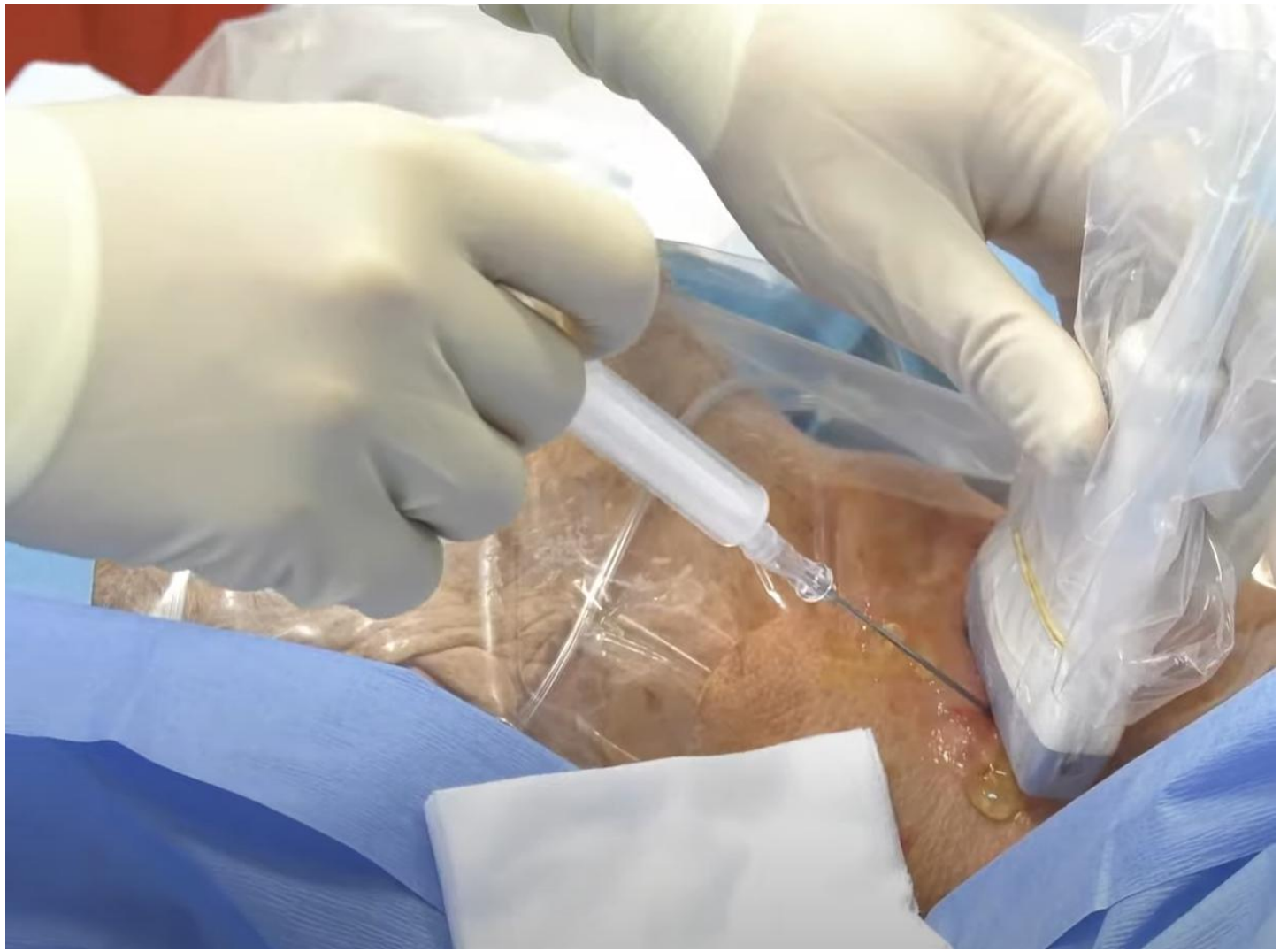
Ultrasound Probes: Aligning with Standards & Decontamination Protocols

Jincy Jerry

Infection Prevention & Control · NHS Ayrshire & Arran, Scotland

Formerly Mater Misericordiae University Hospital, Dublin

Session supported by an educational sponsorship from Tristel. Content is independent; any product references are disclosed.



“The first requirement in a hospital is that it should do the sick no harm.”

Florence Nightingale

Do you know the total number of healthcare-associated infections in your Board/hospital for the last year (including all SSI, UTI, Pneumonia, BSI)?

Do you know how many patients died in your Hospital/ Board because of an infection they acquired here?

What is the estimated number of deaths due to HAIs in adults in New Zealand public hospitals?

The burden of healthcare-associated infections in New Zealand public hospitals 2021

- The incidence rate of HAI was 4.74%, predicting 24,191 HAIs for 2021,
- 76,861 lost bed days,
- 699 deaths
- 9,371 years of life lost (YoLL).
- $955m annual economic burden , comprised of $121m for lost bed days,
- $792m for cost of YoLL,
- $43m ACC claims.
- 24,165 disability-adjusted life years (DALYs) which is greater than many other measured injuries in New Zealand, eg motor vehicle traffic crashes with 20,328 DALY.

Morris AJ, et al., The burden of healthcare-associated infections in New Zealand public hospitals 2021. Infect Control Hosp Epidemiol. 2024 Oct;45(10):1176-1182

Reduction in road deaths for third consecutive year, Police enforcement at a record high

2 min read

The provisional number of road deaths in 2025 is currently 272, down from 292 in 2024.

Crash month	2022	2023	2024	2025	2026*
January	29	22	35	32	25
February	25	33	20	24	31
March	31	26	23	26	32
April	37	30	18	30	35
May	27	27	24	28	19
June	31	31	22	19	27
July	24	25	14	29	21
August	26	29	22	14	19*
September	36	24	17	8	0*
October	34	25	27	21	0*
November	37	30	28	23	0*
December	34	40	41	17	0*
Total	371	342	291	271	209*

https://www.transport.govt.nz/statistics-and-insights/safety-road-deaths

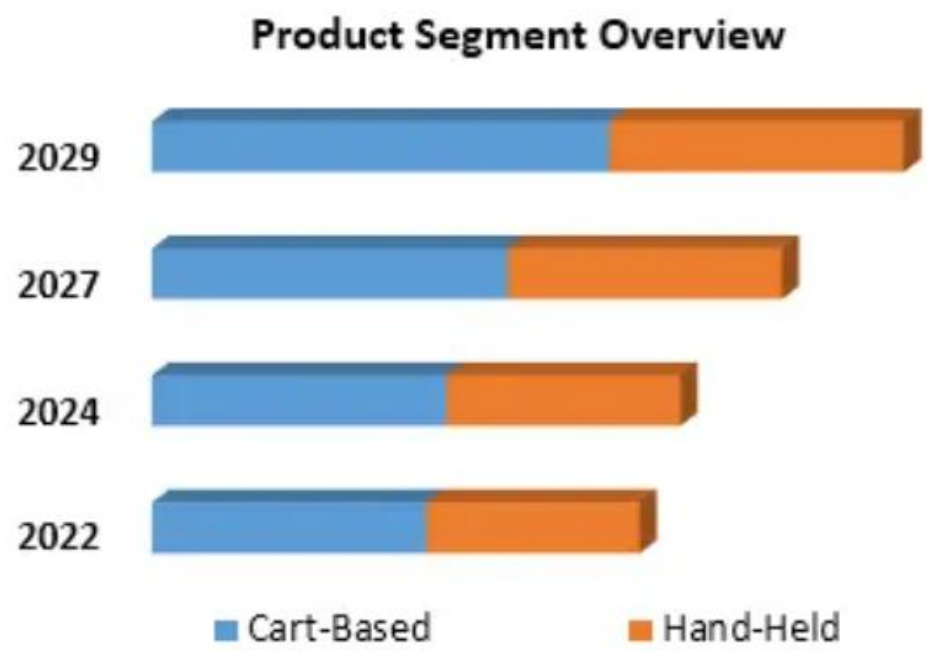
Scary Reality:
Data Scarcity on
Healthcare Infections

"What gets measured gets managed."

— Peter Drucker

"If you can't measure it, you can't improve it.“


Why transducer safety?



https://www.maximizemarketresearch.com/market-report/point-of-care-ultrasound-market/124678/

Benefits and Risks of POCUS

Benefits of point-of-care ultrasound

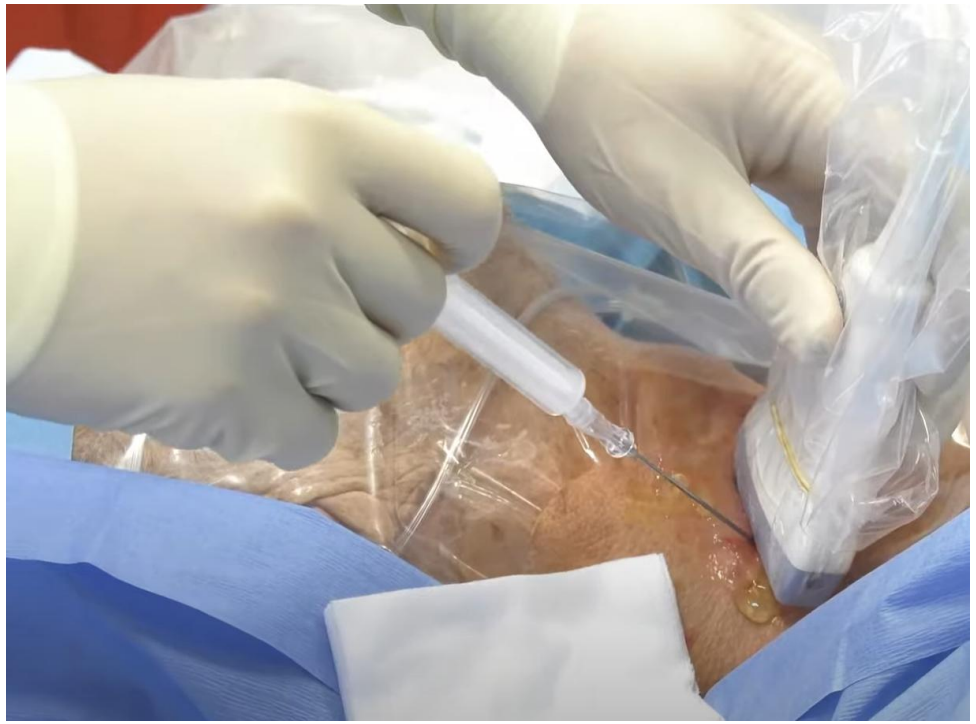
- Faster clinical decisions
- Improved vascular access
- Reduced delays to imaging
- Greater access in remote settings

Risks to be considered

- More users with less IPC knowledge
- More locations without standardised SOPs
- Less access to HLD methods
- More opportunities for workflow shortcuts

If reprocessing is not accessible at the point of care, it will not be performed consistently.

A clinicians' best buddy



- **5 million central venous catheters (CVCs) are placed annually in the United States** **(Ablordeppey et al, 2019)**

- **78% of critically ill patients had some form of CVC inserted in Europe**
  (EPIC study, Vincent et al, 1995)

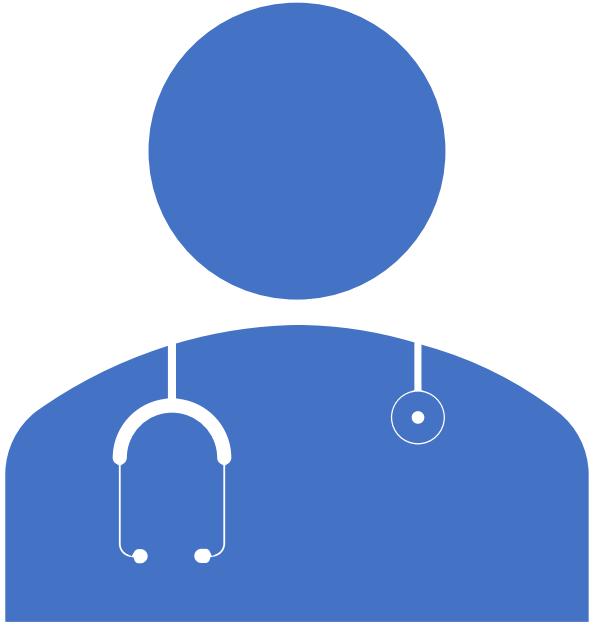
- **3 million obstetric and 8.5 million non-obstetric ultrasound imaging in UK, 10% increase every year**

A clinicians' best buddy

2024-25 UNHS UK procurement

More than 4 million Vascular access devices procured

- 3.9 million PIVC
- 163,372 CVCs
- 72,042 PICC
- 24,723 Midline



A missed IPC Opportunity?


Canada
Saskatchewan
Saskatoon
W
E
Vancouver
Olympia
Helena
Bismarck
Salem
Pierre
St Paul
Boise
Chicago
Salt Lake City
Cheyenne
Lincoln
© 1998 GeoSystems Global Corp.; © 1998 AND Mapping B.V.

Evaluation of emergency department ultrasound machines for the presence of occult blood

- **Location:** Trauma centre emergency department
- **Duration:** 31 days.
- **Testing Schedule:** Once daily plus after every Level 1 trauma.
- **Tested Areas:** Ultrasound machine probes and keyboard.

Study Results

- **Occult Blood Contamination:** Daily Tests -10%, Trauma Assessments: 43%
- **Most frequently contaminated:** Curvilinear Probe (6% daily, 26% after trauma).
- **Second most contaminated** - Keyboard (3% daily, 26% after trauma).
- **No Visible Contamination on Probe or Keyboard**

Poonja Z, Uppal J, Netherton SJ, Bryce R, Lyon AW, Cload B. Evaluation of emergency department ultrasound machines for the presence of occult blood. CJEM. 2019 May;21(3):395-398. doi: 10.1017/cem.2018.447. Epub 2018 Oct 2. PMID: 30277177.


Australia and
New Zealand Political Map
National capitals
State capitals
Towns
Population
Over 1,000,000
250,000 – 1,000,000
Under 250,000
International boundary
State boundary
0 100 200 300 400 500 Miles
0 200 400 600 800 Kilometers
INDONESIA
TIMOR-LESTE
PAPUA NEW GUINEA
SOLOMON ISLANDS
VANUATU
ARAFURA SEA
TIMOR SEA
CORAL SEA
SOLOMON SEA
INDIAN OCEAN
PACIFIC OCEAN
TASMAN SEA
AUSTRALIA
NORTHERN TERRITORY
QUEENSLAND
WESTERN AUSTRALIA
SOUTH AUSTRALIA
NEW SOUTH WALES
VICTORIA
A.C.T.
TASMANIA
NEW ZEALAND
North Island
South Island
Great Australian Bight
Gulf of Carpentaria
Cape York Peninsula
Tropic of Capricorn
Darwin
Alice Springs
Perth
Adelaide
Brisbane
Sydney
Canberra
Melbourne
Hobart
Auckland
Wellington
Christchurch

Advancing infection control in Australasian medical ultrasound practice, 2017

- **395 respondents were from Australia and New Zealand**
- **36% of respondents performed between 12 and 15 scans per day**
- **22% who performed between 16 and 19 scans per day**
- 12 of 334 respondents do not use an approved high-level disinfectant for intracavity scans (TV/TR) every time.
- When the ultrasound transducer comes into contact with blood, 50 of 361 respondents **do not use an approved high-level** disinfectant to clean the transducer every time.

Table 4: Frequency of cleaning the ultrasound machine keyboard and cords.

Cleaning Frequency	Machine keyboard Response % (number)	Machine cord Response % (number)
After each patient	10.97 (43)	35.37 (139)
Once a day	56.12 (220)	31.81 (125)
Once a week	20.66 (81)	15.52 (61)
Once a month	7.91 (31)	8.14 (32)
Once every 6 months	2.04 (3)	3.56 (14)
Never	7.57 (8)	5.60 (22)
Total	392[a]	393[b]

[a] Of a total of 395 respondents, three skipped question.
[b] Of a total of 395 respondents, two skipped question.

Westerway SC, Basseal JM. Advancing infection control in Australasian medical ultrasound practice. Australas J Ultrasound Med. 2017 Feb 23;20(1):26-29. doi: 10.1002/ajum.12046. PMID: 34760467; PMCID: PMC8409851.


A32
Katoomba
Blue
Mountains
National Park
M1
A3
A8
M7
Castle Hill
Penrith
Blacktown
M4
Chatswood
Parramatta
Sydney
Bankstown
Randwick
M5
A9
A1
M31
Campbelltown
M1
Map data ©2026 Google

Potential Infection Control Risks Associated with Ultrasound Equipment - A Bacterial Perspective, 2017

- A total of 171 swabs were analyzed
- Bacterial species were identified using MALDI-TOF and PCR.
- 60% Trans Abdominal probes and 14% of TV probes had bacterial contamination
- Low-level disinfection was **partially effective**, **but 4% of probes** were still contaminated by **spore-forming species**.
- Heated gel samples were highly contaminated with the environmental bacterium (Brevundimonas aurantiaca).

Westerway SC, Basseal JM, Brockway A, Hyett JA, Carter DA. Potential Infection Control Risks Associated with Ultrasound Equipment - A Bacterial Perspective. Ultrasound Med Biol. 2017 Feb;43(2):421-426. doi: 10.1016/j.ultrasmedbio.2016.09.004. Epub 2016 Oct 26. PMID: 28341192.


Banda Sea
Papua New Guinea
Arafura Sea
Port Moresby
Solomon Islands
Timor Sea
NORTHERN TERRITORY
QUEENSLAND
Coral Sea
New Caledonia
Australia
ESTERN STRALIA
Brisbane
Norfolk Island
SOUTH AUSTRALIA
Map data ©2026 Google

Prospective, observational multi-centre survey of ultrasound equipment in Australian emergency departments and ICU

Results:

109 tests for blood and 131 tests for microbial contamination

61% of samples tested positive for blood contamination (95% CI, 52%-71%)

48% tested positive for microbiological contamination (95% CI, 40%-57%)

Transducer leads and transducers had high blood contamination (88% and 57%, respectively) and microbiological contamination (62% and 46%, respectively)

Only 51% of blood-contaminated samples were visibly stained, and visible staining was not associated with microbiological contamination (57%; P=1)

Keys M, Sim BZ, Thom O, Tunbridge MJ, Barnett AG, Fraser JF. Efforts to Attenuate the Spread of Infection (EASI): a prospective, observational multicentre survey of ultrasound equipment in Australian emergency departments and intensive care units. Critical Care and Resuscitation, 2015 Mar;17(1):43-6. PMID: 25702761.


Bergen
Stavanger
SCOTLAND
North Sea
Glasgow
Edinburgh
United Kingdom
Isle of Man
Map data ©2026 GeoBasis-DE/BKG (©2009), Google

Risk of infection following semi-invasive ultrasound procedures in Scotland, 2010 to 2016: A retrospective cohort study using linked national datasets

Study Design

Retrospective analysis of microbiological and prescription data.

Patient records were examined in the **30-day period following a semi-invasive ultrasound probe procedure**.

Over a six-year period, the study followed **almost 1 million people** through linked National Health databases.

Cohorts included **Cardiology**, **gynecology and urology** patients who had undergone/not undergone ultrasound.

1. Scott, D., et. al. (2018). Ultrasound 2018;26(3):168-177

Hazard Ratios & Procedure Risk Interpretation

Relative risk factors and risk-increase percentages across different imaging procedures

Procedure / Metric	Hazard Ratio (HR)	95% Confidence Interval	Risk Interpretation (Percentage Scale)
Transoesophageal Echocardiography	4.92	3.17 – 7.63	**+392% risk increase (nearly 5x the baseline risk)**
Transrectal Ultrasound	3.40	2.90 – 3.99	**+240% risk increase (3.4x the baseline risk)**
↳ Antibiotic Prescription Risk	1.75	1.66 – 1.84	**+75% higher likelihood of antibiotic prescription**
Transvaginal Ultrasound	1.41	1.21 – 1.64	**+41% risk increase (1.41x the baseline risk)**
↳ Antibiotic Prescription Risk	1.26	1.20 – 1.32	**+26% higher likelihood of antibiotic prescription**


MILAN
VENICE
ITALY
FLORENCE
ROME
NAPLES
PALERMO

HPV Contamination in patient and non-patient contact areas

ORIGINAL ARTICLE

Human papillomavirus (HPV) contamination of gynaecological equipment

Caroline Gallay,[1] Elodie Miranda,[1] Sonja Schaefer,[2] Rosa Catarino,[2] Martine Jacot-Guillarmod,[3] Pierre-Alain Menoud,[4] Frederic Guerry,[4] Chahin Achtari,[3] Roland Sahli,[5] Pierre Vassilakos,[6] Patrick Petignat[2]

UNIVERSITY OF PISA

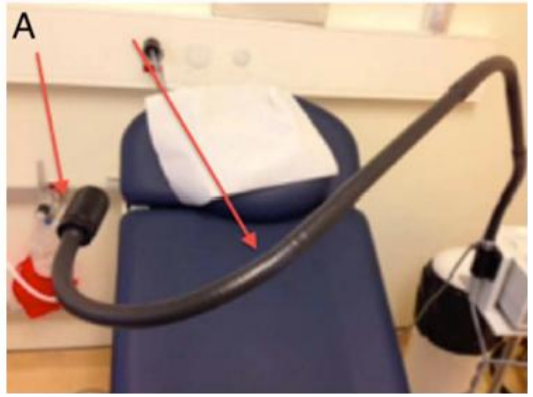
RISK-ASSESSMENT OF IATROGENIC TRANSMISSION OF *HUMAN PAPILLOMAVIRUS* IN GYNAECOLOGICAL PROCEDURES

AZIENDA OSPEDALIERO UNIVERSITARIA PISANA

M.Sidoti[1], B. Conte[1], G. Del Bravo[2], F. Badalucco[1], C. Caligari[3], A. Giannini[2], T. Simoncini[2], B. Casini[1]

1)Department of Translational Research, University of Pisa, Pisa, Italy 2) Gynaecology and Obstetrics Unit, Pisa University Hospital, Pisa, Italy
3) Single cycle degree course in Medicine and Surgery, University of Pisa, Pisa, Italy

P3866

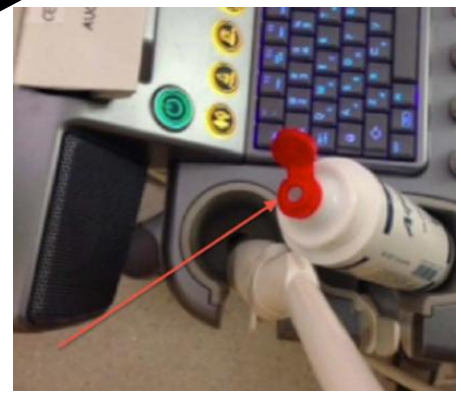


Black lamp

Gl

White lamp

Colposcope handle



Gel botttle

HPV DNA was detected in 32 out of the 179 (17.9%) fomite samples after low level disinfection

- 179 samples
- Arrows po cation where samples were taken from the object.
- The analysed by a semiquantitative real-time PCR.

Gallay C, Miranda, Schaefer S, Catarino R, Jacot-Guillarmod M, Menoud PA, Guerry F, Achtari C, Sahli R, Vassilakos P, Petignat P. Human papillomavirus (HPV) contamination of gynaecological equipment. Sex Transm Infect. 2016 Feb;92(1):19-23. doi: 10.1136/sextrans-2014-051977. Epub 2015 Jun 12. PMID: 26071392

AN ADDITIONAL CONSIDERATION · HPV

Why HPV deserves specific attention

HPV is a distinctive challenge in ultrasound reprocessing…

It is a non-enveloped virus

Harder to inactivate than enveloped viruses

It shows environmental persistence

Can survive on surfaces and equipment

Covers alone cannot be assumed safe

A cover is a barrier, not a substitute for disinfection

The question to ask

Has the chosen disinfectant been tested against native HPV 16 and HPV 18?


Europe
Norwegian Sea
North Sea
Baltic Sea
North Atlantic Ocean
Black Sea
Mediterranean Sea

Insights Imaging. 2016 Dec; 7(6): 841–847.
Published online 2016 Oct 24. doi: 10.1007/s13244-016-0528-z
PMCID: PMC5110482
PMID: 27778309

Infection prevention and ultrasound probe decontamination practices in Europe: a survey of the European Society of Radiology

Christiane Marita Nyhsen,[1] Hilary Humphreys,[2] Carlos Nicolau,[3] Gerhard Mostbeck,[4] and Michel Claudon[5]

- **946 practitioners, 97 % of which were radiologists, mostly working in larger hospital settings**
- **29 % of surface probes, 11 % of endo-cavity probes and 6 % of probes after interventional procedures did not received appropriate disinfection.**

Insights Imaging. 2016 Dec; 7(6): 841–847.
Published online 2016 Oct 24. doi: 10.1007/s13244-016-0528-z
PMCID: PMC5110482
PMID: 27778309

Infection prevention and ultrasound probe decontamination practices in Europe: a survey of the European Society of Radiology

Christiane Marita Nyhsen,[1] Hilary Humphreys,[2] Carlos Nicolau,[3] Gerhard Mostbeck,[4] and Michel Claudon[5]

- **11 % did not always use probe covers for endo-cavity US**
- **23% did not always use probe covers for interventional procedures**
- **30 % used sterile gel sachets for endo-cavity scans**
- **77.5 % used sterile gel for interventional procedures.**

Bacterial contamination of ultrasound probes in emergency departments, 2025

1. High Prevalence of Bacterial Contamination

Bacterial contamination on ED ultrasound probes was remarkably widespread across all participating institutions:

- **University Hospital: 74.3%** of probes were contaminated (Median: 10 CFU, IQR: 0–50).
- **Regional Hospital: 88.2%** of probes were contaminated (Median: 30 CFU, IQR: 1–95).
- **Non-Academic Tertiary Hospital: 92.2%** of probes were contaminated (Median: 40 CFU, IQR: 10–135).

Yamanaka T, Yamamoto R, Yajima K, Yamashita I, Kurihara T, Kujirai D, Moritani K, Kamikura H, Koh H, Sasaki J. Bacterial contamination of ultrasound probes in emergency departments: a multi-centre observational study. Journal of Hospital Infection. 2025. doi: 10.1016/j.jhin.2025.04.015.

Bacterial contamination of ultrasound probes in emergency departments, 2025

2. Contamination by Disinfection / Reprocessing Method

The level of residual bacterial contamination varied significantly depending on the chemical manual cleaning method utilised between patients:

Quaternary Ammonium Wipes Alone: Resulted in the highest contamination levels, with a median of **90 CFU** (IQR: 40–180).

Water-Moistened Wipes Alone: Resulted in a median of **20 CFU** (IQR: 1–90).

Quaternary Ammonium + Ethanol or Hypochlorite Wipe: Reduced the bacterial load to a median of **20 CFU** (IQR: 1–50).

Water-Moistened Wipes + Additional Ethanol Wipe: Proved to be the most effective combination tested, dropping residual bacteria to a median of **10 CFU** (IQR: 0–20).

Yamanaka T, Yamamoto R, Yajima K, Yamashita I, Kurihara T, Kujirai D, Moritani K, Kamikura H, Koh H, Sasaki J. Bacterial contamination of ultrasound probes in emergency departments: a multi-centre observational study. Journal of Hospital Infection. 2025. doi: 10.1016/j.jhin.2025.04.015.

Bacterial contamination of ultrasound probes in emergency departments, 2025

3. Presence of Blood & Drug-Resistant Superbugs

Antibiotic-Resistant Strains: 18.2% of all tested ultrasound probes- **Meticillin-resistant *Staphylococcus aureus* (MRSA)** and **Meticillin-resistant *Staphylococcus epidermidis* (MRSE)**

Macroscopic/Microscopic Blood Contamination: Despite being a non-invasive tool in many applications, blood contamination was detected on **9.8%** of probes at the tertiary hospital, **7.9%** at the university hospital, and **2.0%** at the regional hospital.

Yamanaka T, Yamamoto R, Yajima K, Yamashita I, Kurihara T, Kujirai D, Moritani K, Kamikura H, Koh H, Sasaki J. Bacterial contamination of ultrasound probes in emergency departments: a multi-centre observational study. Journal of Hospital Infection. 2025. doi: 10.1016/j.jhin.2025.04.015.

Outbreaks?

Takeshita *et al. BMC Infectious Diseases* (2022) 22:772
https://doi.org/10.1186/s12879-022-07760-1

BMC Infectious Diseases

RESEARCH Open Access

Incidence of catheter-rela… infections following ultras… central venous catheteriza… review and meta-analysis

Jun Takeshita[1], Kazuya Tachibana[1], Yasufumi Nakajima[2,3] and …

1998 to 2025

Journal of Hospital Infection 98 (2018) 289–294

Available online at www.sciencedirect.com

Journal of Hospital Infection

…sevier.com/locate/jhin

…*pacia* bacteraemia in a …contaminated ultrasound probe gel

R. Abdelfattah[a,*], S. Al-Jumaah[a], A. Al-Qahtani[b], S. Al-Thawadi[c], I. Barron[a], S. Al-Mofada[d]

AORN JO…

THE OFFICIAL VOICE OF PER…

Featured Articles

Infection Transmission Associat… Ultrasound Probes: A Systemati…

Karina de Souza Hajar MSc, RN, Camila Quartim de …
Kazuko Uchikawa Graziano PhD, RN

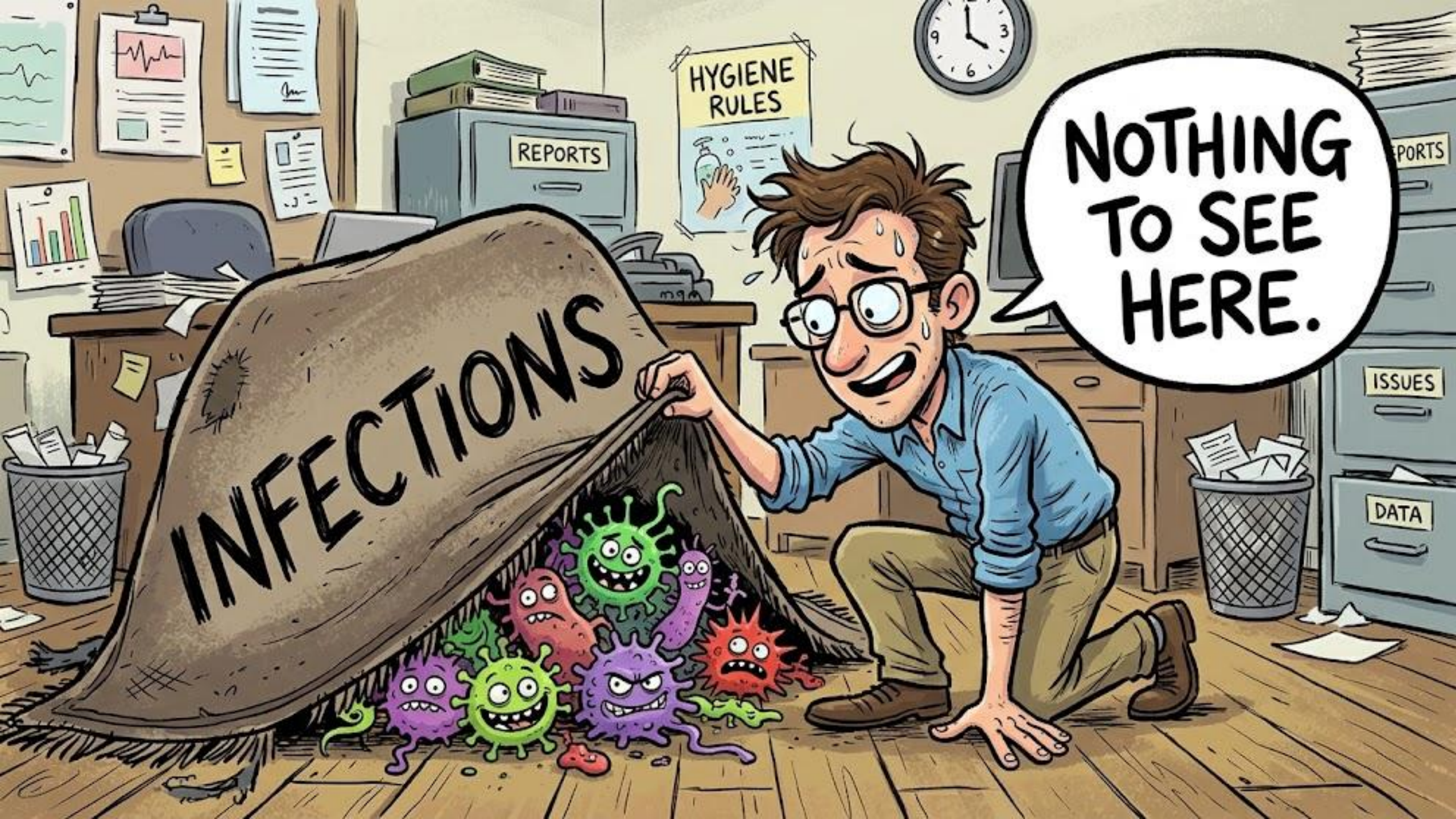
First published: 27 December 2021 | https://doi.org/10.1002/aorn.13572 | Citations: 1

Vol. 36, …

…*lla pneumoniae* Producing …Lactamase, Originating …nography Coupling Gel

…S,[2] ÉRIC ABACHIN,[1] FABRICE LECURU,[3] …T,[2]† AND PATRICK BERCHE[1,2]

…aboratoire de Microbiologie, Faculté de Médecine Necker-Enfants Malades, 75730 Paris Cedex 15,[1] Laboratoire de


INFECTIONS
NOTHING TO SEE HERE.
HYGIENE RULES
REPORTS
ISSUES
DATA

ASUM | Australasian College for Infection Prevention and Control

Guidelines for Reprocessing Ultrasound Transducers (2026)

Non-Invasive Ultrasound Transducer Disinfection Guidelines

Non-Invasive Ultrasound Transducer

Applied to skin and does not penetrate inside the body

Diagnostic Ultrasou

Transthoracic Echo, Musculoskeletal, Vascular, Abdominal

Transducer [illegible] cleaned and then disinfected [illegible] **minimum** of

Low Level Disinfection [1]

Ultrasound Guided Percutaneous Procedure

Vascular access, injection, aspiration, biopsy

Transducer [illegible] cleaned and then disinfected [illegible] **minimum** of

Low Level Disinfection [1]

Sterile transducer cover and gel to maintain aseptic technique

Surgical aseptic technique [2]

Central venous catheter, Regional nerve catheter

Standard aseptic technique [2]

Peripheral vascular catheter, Tissue biopsy or aspiration, Therapeutic injection

[1] A higher level of disinfection may be required where a documented risk assessment identifies an increased risk of pathogen transmission or infection that is not adequately mitigated by low-level disinfection.

[2] For advice on infection prevention measures for different procedures refer to the Australian Guidelines for the Prevention and Control of Infection in Healthcare.

Invasive Ultrasound Transducer Disinfection Guidelines

Invasive Ultrasound Transducer

Penetrates inside the body, either through a body orifice or through the surface of the body (open wound)

Transducer to be applied to:

Sterile Tissue

Vascular system, normally sterile body area

Transducer should have been cleaned **and**

Sterilised [1]

Surgical aseptic technique [2]

Non-sterile Tissue

Transoesophageal Echo, Transvaginal, Transrectal, open wounds

Transducer should be cleaned and then disinfected with a **minimum** of

High Level Disinfection [1]

Standard precautions [2]

Sterile transducer cover

Sterile single use gel

[1] In accordance with requirements outlined in AS5369:2023

[2] Refer to the Australian Guidelines for the Prevention and Control of Infection in Healthcare

Transducer should be cleaned and then disinfected with a **minimum** of

Low Level Disinfection [1]

Transducer should be cleaned and then disinfected with a **minimum** of

Low Level Disinfection [1]

Sterile transducer cover and gel to maintain aseptic technique

Surgical aseptic technique [2]

Central venous catheter,
Regional nerve catheter

Standard aseptic technique [2]

Peripheral vascular catheter,
Tissue biopsy or aspiration,
Therapeutic injection

1 A higher level of disinfection may be required where a documented risk assessment identifies an increased risk of pathogen transmission or infection that is not adequately mitigated by low-level disinfection.

2 For advice on infection prevention measures for different procedures refer to the Australian Guidelines for the Prevention and Control of Infection in Healthcare.

Probe covers don't replace HLD

Figure 1 Examples of probe cover breakages post ultrasound examination.

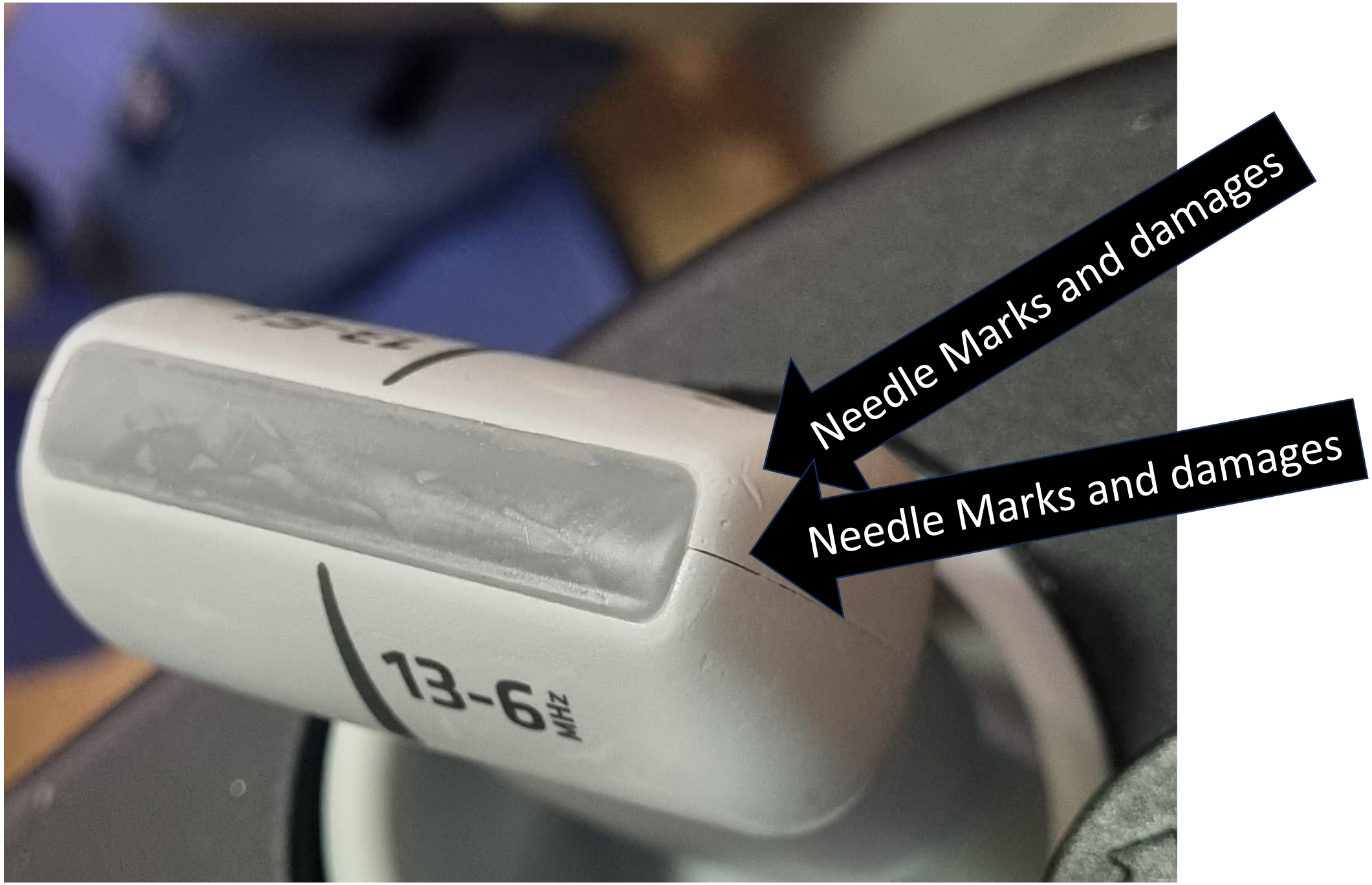
Image from Basseal 2019[4]

Micro-tear not visible to the eye

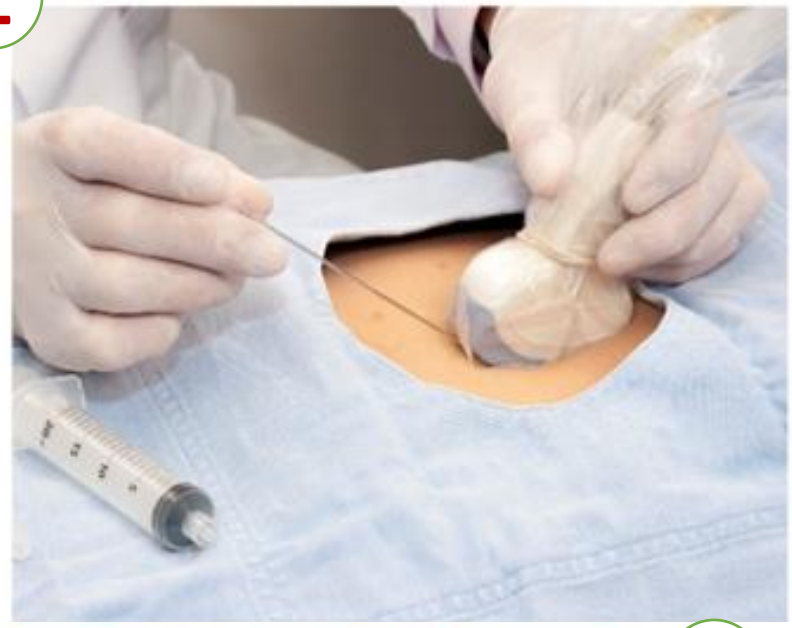
- Literature demonstrates probe covers can fail.
- Condoms break up to **13%** of the time[1-5]
- Commercial covers fail up to **5%** of the time[4]

If the probe cover fails during the patient procedure, and the probe was not properly disinfected, then it is too late for that patient since they may already be infected.

1.Amis S, et al. J Clin Ultrasound. 2000;28(6):295-8.
2.Milki A, et al. Fertil Steril. 1998;69(3):409-11.
3.Masood J, et al. Int Urol Nephrol. 2007;39(4):1121-4.
4.Basseal JM, et al. Infection, Disease & Health. 2020;25(2):77—81.
5.Westerway SC, et al. Ultraschall Med. 2022; 43(2):204—208.


Needle Marks and damages
Needle Marks and damages
13-6 MHz

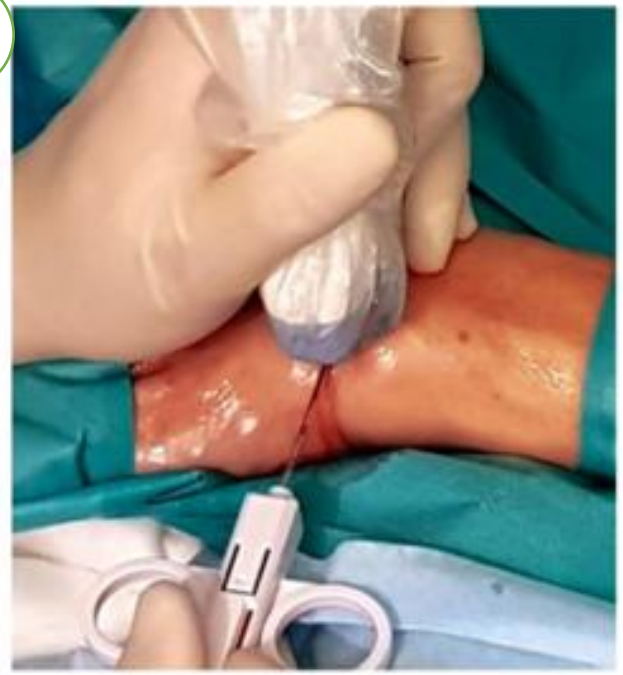
1



2

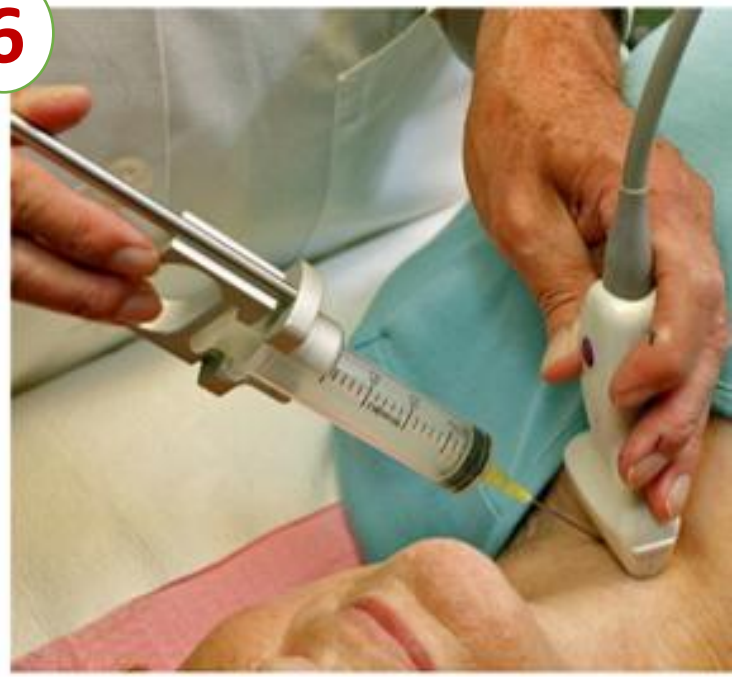
3

4



5

6



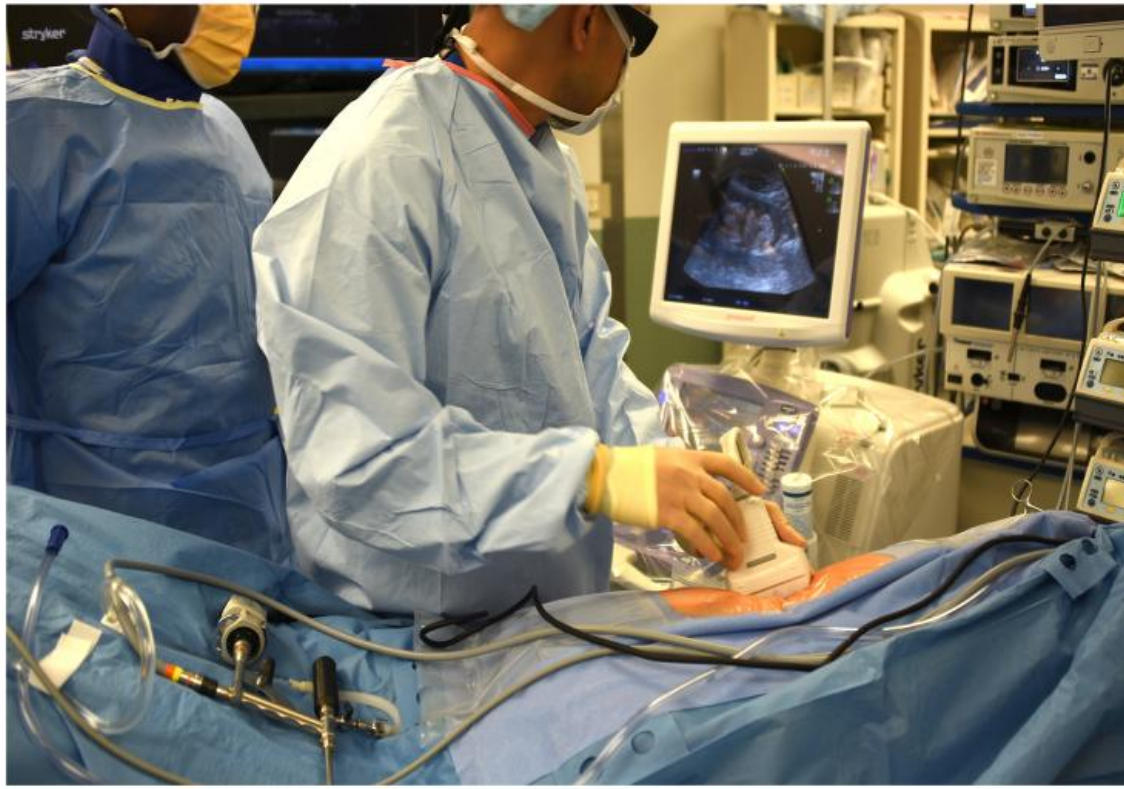
Using your IPC knowledge of infection transmission risk, select all items for which you would recommend low-level disinfection.

Percutaneous procedures

- Any medical procedure or method where access to inner sterile tissue is done by needle-puncture of the skin, rather than by using an "open" approach where inner tissue is exposed

- Ultrasound-guided percutaneous procedures are a varied and complex group of medical procedures involving needle puncture of the skin under the guidance of ultrasound imaging

- Over 140 unique ultrasound-guided percutaneous procedures



Over 140 Distinct Percutaneous Procedures

Intravascular U/G management of large thrombus burden
U/G arterial access
U/G cannulation of the hemodialysis arteriovenous access
U/G central venous catheter insertion
U/G hemodialysis cannulation
U/G percutaneous embolization
U/G peripheral venous access
U/G resuscitative endovascular balloon occlusion of the aorta
U/G peripherally inserted central venous catheter
U/G pharmacomechanical thrombolysis and angioplasty
U/G biopsy of bone lesion
U/G biopsy of breast
U/G biopsy of esophagus
U/G biopsy of liver
U/G biopsy of pancreas
U/G biopsy of pleural fluid
U/G biopsy of pulmonary lesions
U/G biopsy of salivary gland
U/G biopsy of sclerosing mesenteritis
U/G biopsy of thrombus
U/G transcutaneous needle biopsy of the base of the tongue and floor of the mouth
U/G biopsy of papilloma
U/G percutaneous sural nerve biopsy
U/G renal biopsy
U/G chest biopsy
U/G biopsy of thrombus
U/G skeletal muscle biopsy
U/G biopsy of tumour
U/G aspiration of brain abscess
U/G aspiration of cyst
U/G aspiration of gall bladder
U/G aspiration of head and/or neck lumps
U/G aspiration of joints and soft tissues
U/G aspiration of kidney
U/G aspiration of lesions
U/G aspiration of liver
U/G aspiration of lung
U/G aspiration of lymph node
U/G aspiration of omentum
U/G aspiration of parathyroid
U/G aspiration of parotid gland
U/G aspiration of pneumothorax
U/G aspiration of rotator cuff calcific tendinoapthy
U/G aspiration of salivary gland
U/G aspiration of sentinel nodes
U/G aspiration of spleen
U/G aspiration of submandibular glands
U/G aspiration of superficial inguinal node
U/G aspiration of synovial tissue
U/G aspiration of thyroid
U/G aspiration of hematoma
U/G percutaneous aspiration of hyperreactio luteinalis
U/G amniocentesis
U/G paracentesis
U/G pericardiocentesis
U/G drainage of pancreatic pseudocyst
U/G drainage of walled-off pancreatic necrosis
U/G external ventricular drain
U/G liver drainage
U/G percutaneous appendix drainage
U/G percutaneous catheter drainage
U/G percutaneous drainage of diverticula
U/G percutaneous drainage of iliopsoas abscess
U/G percutaneous drainage of splenic abscess
U/G percutaneous drainage of muscle hematomas
U/G percutaneous drainage of spermatic cord abscess
U/G percutaneous drainage psoas abscess
U/G percutaneous pericardial effusion drainage
U/G percutaneous transhepatic gallbladder drainage
U/G puncture and drainage of abdominal and pelvic abscesses
U/G femoral nerve block
U/G ankle block
U/G axillary block
U/G brachial plexus block
U/G cervical nerve root block
U/G celiac plexus neurolysis
U/G continuous peripheral nerve block
U/G penile nerve block
U/G dorsal ramus block
U/G epidural placement of a thoracic paravertebral catheter
U/G genicular nerve block
U/G palatine nerve block
U/G infraorbital nerve block
U/G intercostal nerve and stellate ganglion blocks
U/G laryngeal nerve block
U/G lumbar plexus block
U/G nerve stimulation
U/G neuraxial block
U/G ophthalmic regional anesthesia
U/G paravertebral block
U/G pectoral nerve blocks
U/G percutaneous cryoneurolysis
U/G percutaneous peripheral nerve stimulation
U/G phrenic nerve block
U/G pudendal nerve block
U/G quadratus lumborum nerve block
U/G rectus sheath block
U/G regional blockade for lipoma excision
U/G sciatic nerve block
U/G ophthalmic regional anesthesia
U/G mandibular nerven block
U/G thoracic paravertebral block
U/G thoracolumbar interfascial plane block
U/G transversus abdominis plane block
U/G trigeminal nerve block
U/G autologous tenocyte injection
U/G dry needling with percutaneous paratenon decompression
U/G injection of Botulinum type A toxin
U/G joint injection (steroids, licodaine, hyaluronic acid)
U/G lumbar puncture
U/G percutaneous ethanol injection
U/G percutaneous injection of methylene blue
U/G perineural injection for nerve blockade
U/G thrombin injection
U/G cryoablation
U/G electroporation ablation
U/G ethanol ablation
U/G laser ablation
U/G microwave ablation
U/G radiofrequency ablation
U/G assisted interventions in abdominal treatment
U/G foam sclerotherapy
U/G hydrodissection of the sural nerve
U/G percutaneous irrigation of calcific tendinopathy
U/G percutaneous nephrolithotomy
U/G percutaneous nephrostomy
U/G subacromial bursography
U/G retrograde pedal access
U/G liposuction for hidden arteriovenous fistulas
U/G pharmacomechanical thrombolysis and angioplasty
U/G cryoanalgesia of peripheral nerve lesions
U/G needle lavage
U/G dry needling
Excision with U/G needle localization
Intraoperative U/G percutaneous biopsy of tumor
Intraoperative U/G tracer injection
U/G implantation of iodine seeds
U/G percutaneous renal transplant biopsy
"U/G transplantation of ASCs or placebo to the submandibular glands"
U/G transthoracic punctures
U/G vacuum-assisted excision

Over 140 distinct **Percutaneous** procedures

- Over 140 unique ultrasound-guided percutaneous procedures
- More than 8 different groups.
- Each procedure or group of procedures differ in the:
  - requirements for placement of the probe and needle used to conduct the medical intervention
  - technique used
  - tissue being accessed
- Percutaneous procedures are a broad and complex group of medical inventions that present varying risks of infection. Careful assessment is warranted.

Specialty group	Number of procedures
Nerve block	35
Aspirations	27
Biopsy	18
Drainage	15
Vascular Access	9
Injection	9
Intraoperative	8
Ablation	6
Other	13
Total	140

Ultrasound transducers are reusable medical devices

Reprocessing requirements should be determined by clinical factors, not by past habits or perceived convenience.

- Intended use
- Procedure type
- Patient risk
- Potential pathogen burden
- Ability to achieve consistent compliance

Jerry J.,……Brady D., Closing the Gap in Ultrasound Probe Hygiene: Improving Ultrasound Probe Decontamination through Evidence-Based Interventions
(Ultrasound, DOI: 10.1177/1742271X261484807

Study Aim

- Assess compliance with ultrasound probe decontamination standards across the hospital.
- Benchmark practice against local, national and international guidance.
- Evaluate compliance according to Spaulding classification.
- Assess impact of staff training, SOPs, environmental hygiene and traceability on compliance.
- Develop and evaluate a quality improvement programme.

Audit Criteria

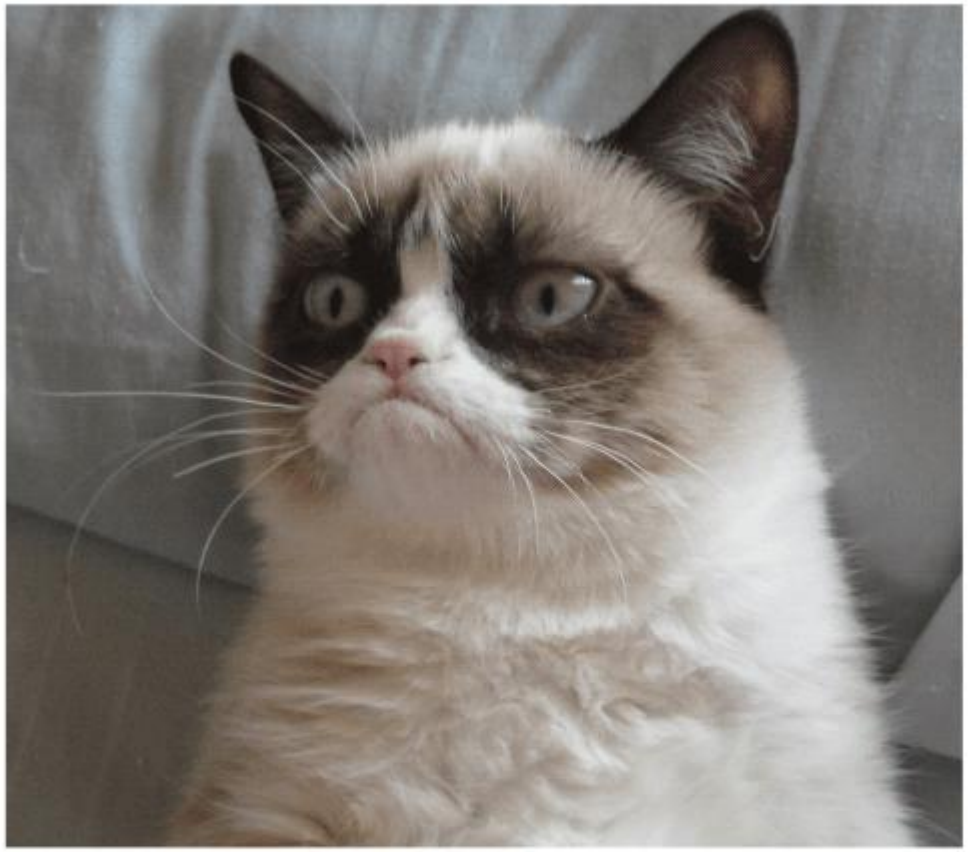
- Correct classification of probes as Critical, Semi-critical or Non-critical.
- Appropriate level of decontamination selected.
- Correct decontamination technique used.
- Compliance with manufacturer IFUs and local SOPs.
- Appropriate use of sterile gel and probe covers.
- Pre-cleaning completed before disinfection.
- Cleaning of probe, cable, console, holder and control panel.
- Adherence to disinfectant contact time.
- Traceability of reprocessing events.

First Audit Results (2022):

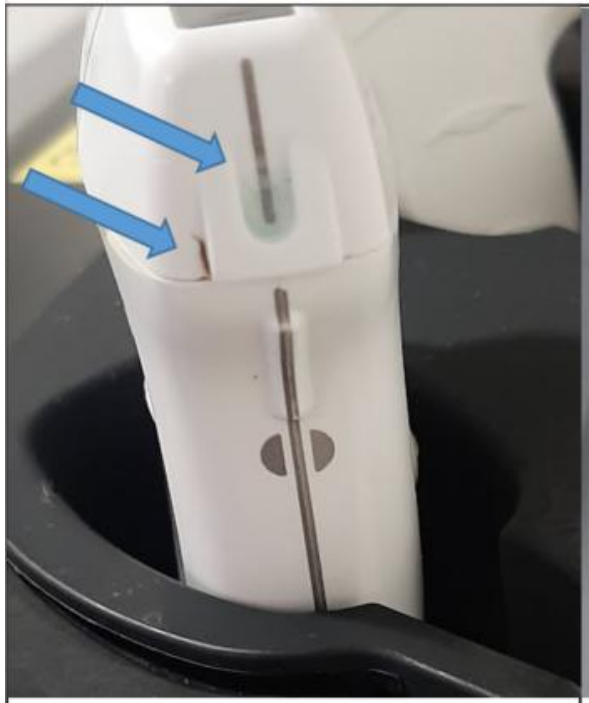
- Critical probes: 15.8% (6/38) compliant.
- Semi-critical probes: 83.3% (5/6) compliant.
- Non-critical probes: 42.4% (14/33) compliant.
- 66.2% of probes returned dirty/uncontained.
- 42.9% missed cleaning of console high-touch points.
- 23.4% used incorrect disinfection method (C. Diff/Mpox).
- 41.6% had no pre-cleaning before disinfection.
- 57% of primary operators had no training.
- Traceability poor, with 90% of critical probes lacking documentation

Findings

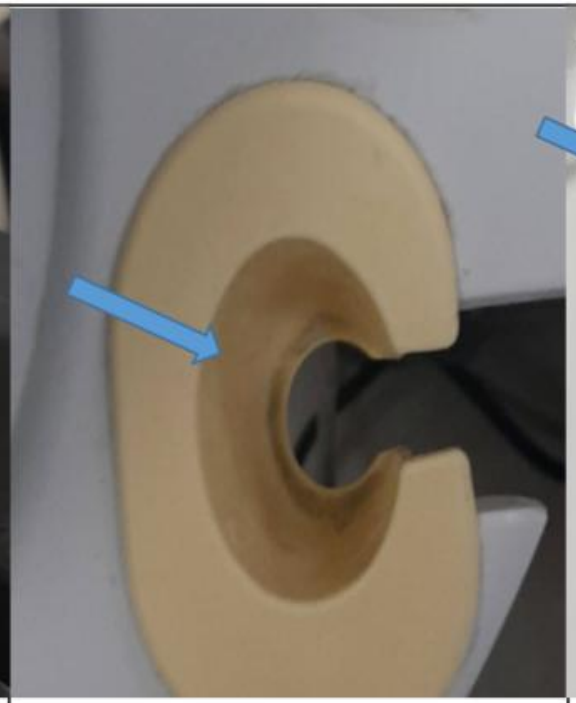
- Ø No policy available in many departments
- Ø Policy out of date
- Ø Inconsistencies within the policy
- Ø Lack of training
- Ø Limited traceability
- Ø Non-compliance to the policy



A missed IPC Opportunity?

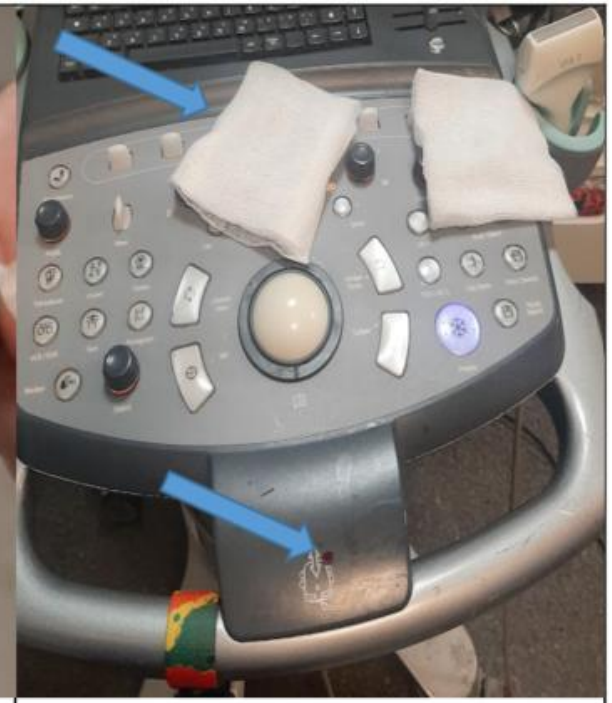


Blood and gel on the probe



U/S holder on console visibly dirty

Dried gel on the probe



Visible blood and gauze squares from previous procedure

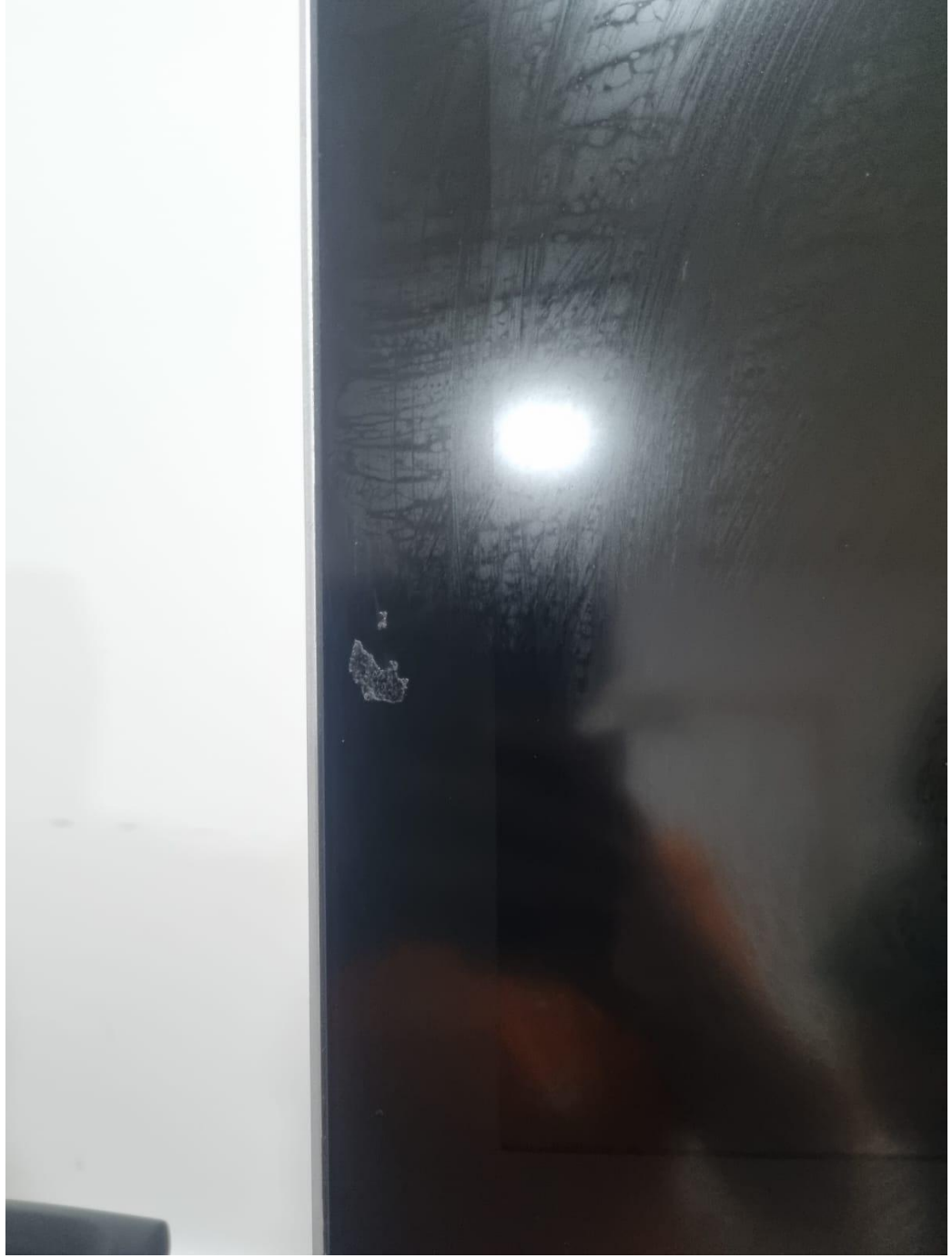
Jerry J.,……Brady D., Closing the Gap in Ultrasound Probe Hygiene: Improving Ultrasound Probe Decontamination through Evidence-Based Interventions (Ultrasound, DOI: 10.1177/1742271X261484807

What Was Incorrect About Technique

Gel not removed from probe pre disinfection and has dried to the surface of the probe.

Gel not removed from orientation marker on probe pre disinfection will render decontamination of this area ineffective


Volume
Clear
P1

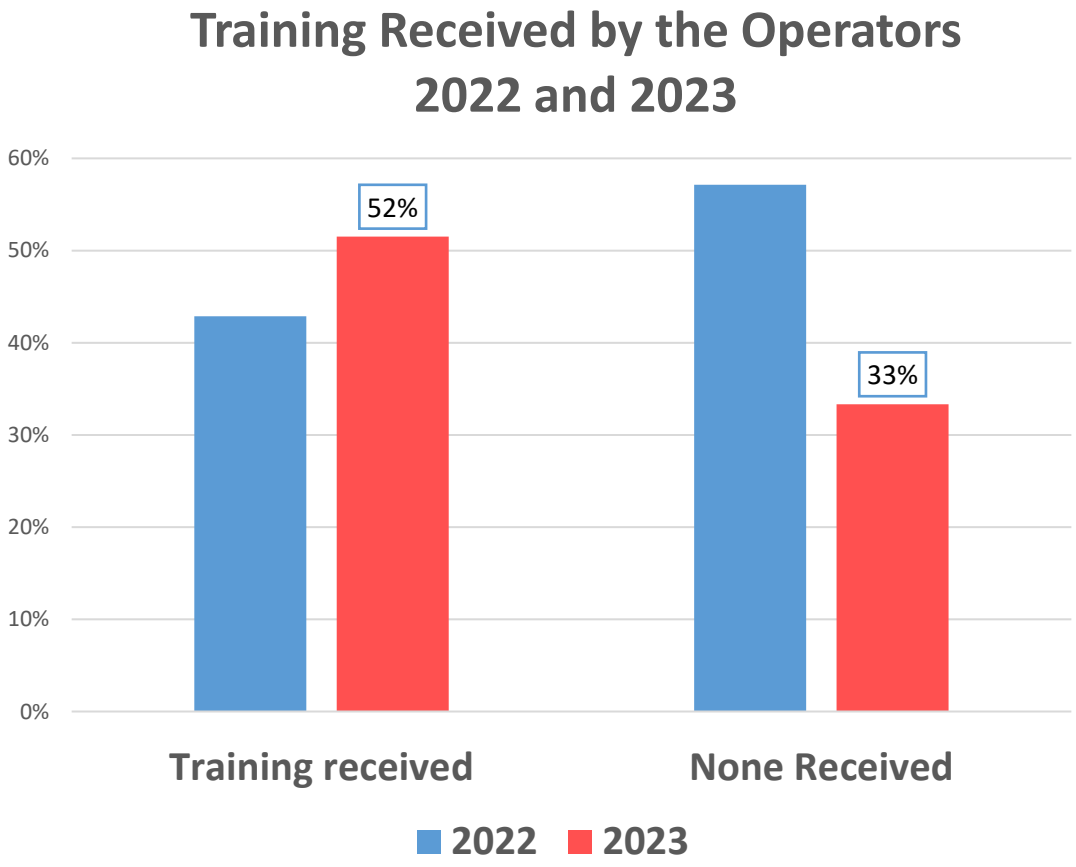


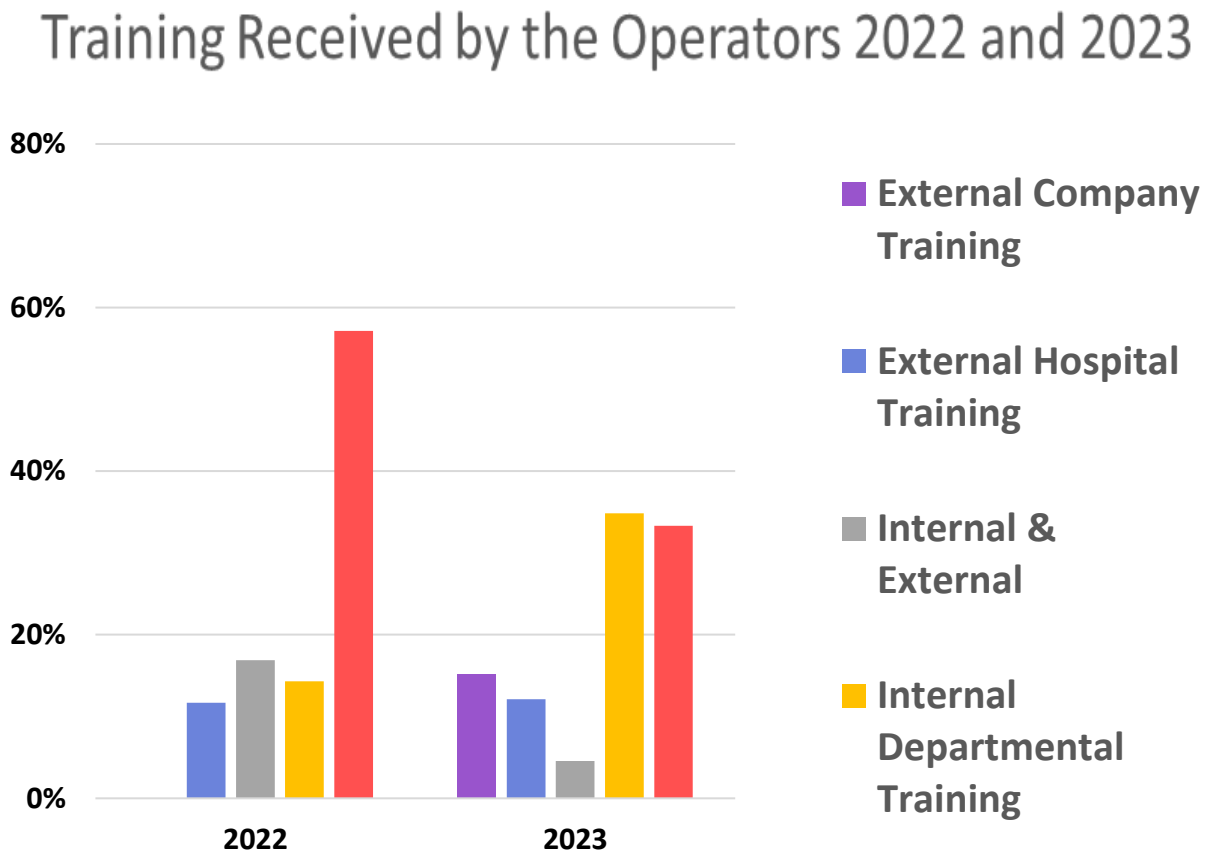

1 MIN
DESOTEX
Wipes System
PREVENT
PT Desinfecção de dispositivos médicos e de superfícies
TR Tıbbi ürün ve yüzey dezenfeksiyonu
médicaux et des surfaces
CLEANISEPT® WIPES MAXI
EN Alcohol-free wipes for rapid
Read label before use.
Universal, comfortable and time-saving
Cleaning and disinfection in one step
Suited for disinfection of medium-sized surfaces
Bereich der Routine.

Quality Improvement Interventions

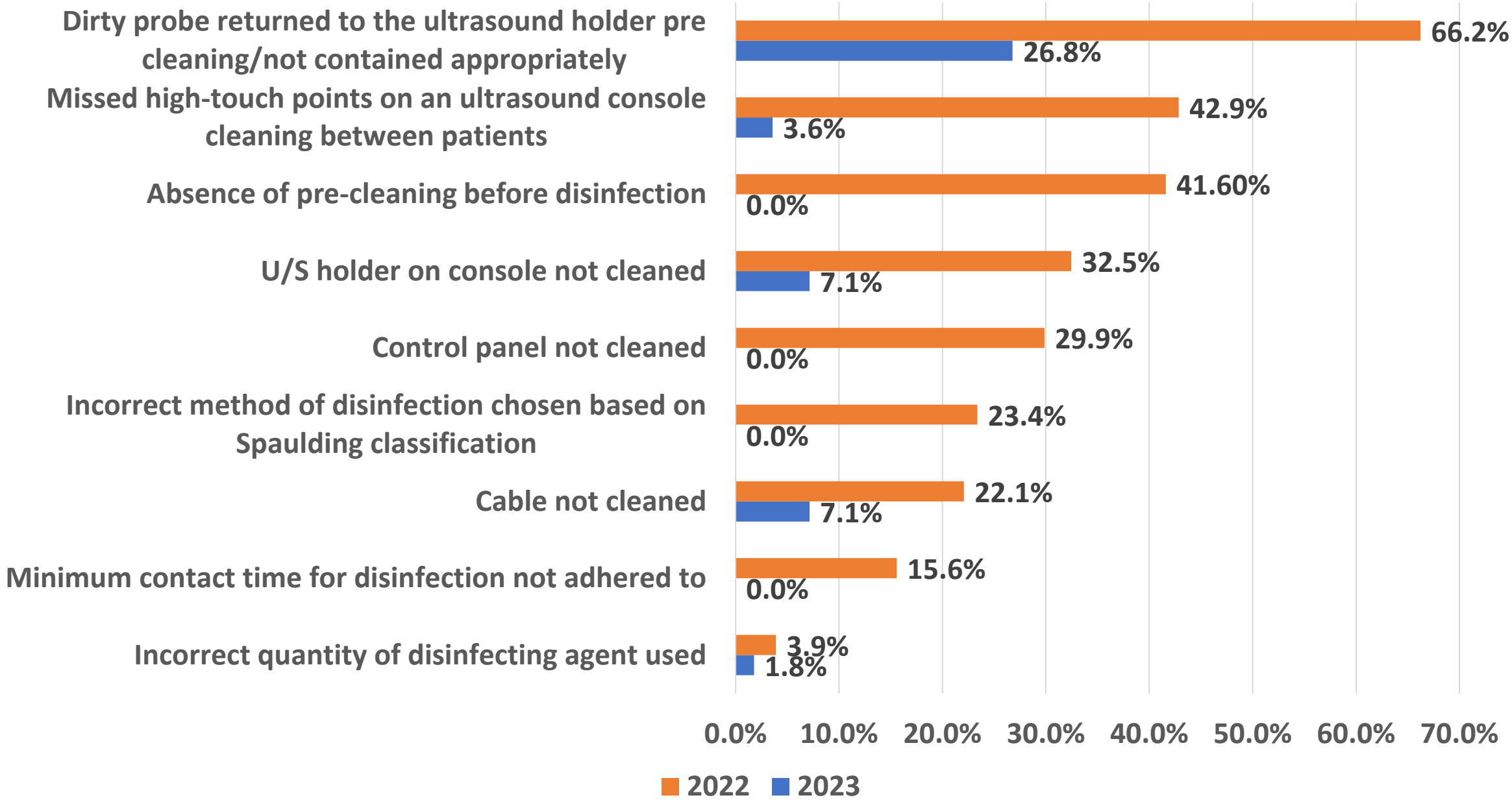
- Hospital-wide ultrasound decontamination policy developed.
- Competency-based staff training introduced.
- Point-of-care HLD equipment made more accessible (Trophon/ Tristel Trio/ CSSD).
- Introduced Intermediate Level disinfection (Tristel Duo)
- Improved environmental cleaning processes
- Recommendation for electronic traceability system.

Ultrasound Probe Reprocessing Audit





High risk Non-compliance Events: 2022 vs2023 2022



Ultrasound Probe Reprocessing Audit 2022 vs 2023

Disinfection Technique Correct	2022	2023
Area 1	60%	80%
Area 2	83%	100%
Area 3	100%	90%
Area 4	20%	70%
Area 5	33%	70%
Area 6	100%	100%
Area 7**	31%	20%
Area 8	10%	
Grand Total	42%	74.24%

We need practical SOPs!

Many infection prevention practices fail not because the SOP is wrong, but because it is difficult to carry out. For POCUS especially, practicality directly effects compliance.

- **Available at the point of care**
- **Easy to follow**
- **Fast acting**
- **Compatible with workflow**
- **Consistently achievable**

Successful decontamination systems share five characteristics

A manual product delivers on them all

Six questions every reprocessing policy should answer

1 Device classification

What type of probe is being used?

2 Procedure risk

Non-critical, semi-critical or critical?

3 Pathogen risk

Which organisms are most concerning for the affected patient population?

4 Workflow reality

Where is the probe actually being used?

5 Compliance

Can staff consistently perform the process?

6 Validation

Is the disinfectant supported by evidence?

Why ILD ultrasound reprocessing ?

Multidrug-resistant organisms

MDROs are a growing clinical concern

Antimicrobial resistance

A defining global public-health challenge

Healthcare-associated infection

Reusable devices sit on the transmission pathway

Expansion of POCUS procedures

Imaging of both non-critical and critical procedures has moved to the point of care

Wider ultrasound use

Beyond traditional imaging departments

IPC strategy review

IPC professionals are re-examining device reprocessing

IN SUMMARY

Six take-home messages

1. Ultrasound reprocessing should be driven by risk assessment, not habit.
2. Contamination extends beyond the transducer face to the wider ecosystem.
3. POCUS needs practical solutions clinicians can access at the point of care.
4. Intermediate-level disinfection suits many non-critical ultrasound devices.
5. High-level disinfection remains essential where classification requires it.
6. Strong, evidence-based, compliable policy reduces transmission risk.

Jincy.jerry@aapct.scot.nhs.uk

Linkedin: @jincyjerry


A Big
Thank You!