**Hand Hygiene Programme Successes in Member Countries of the INICC**
**Dr. Victor Rosenthal, International Nosocomial Infection Control Consortium**
**Broadcast live from the 2017 ICPCNC Conference, Auckland**

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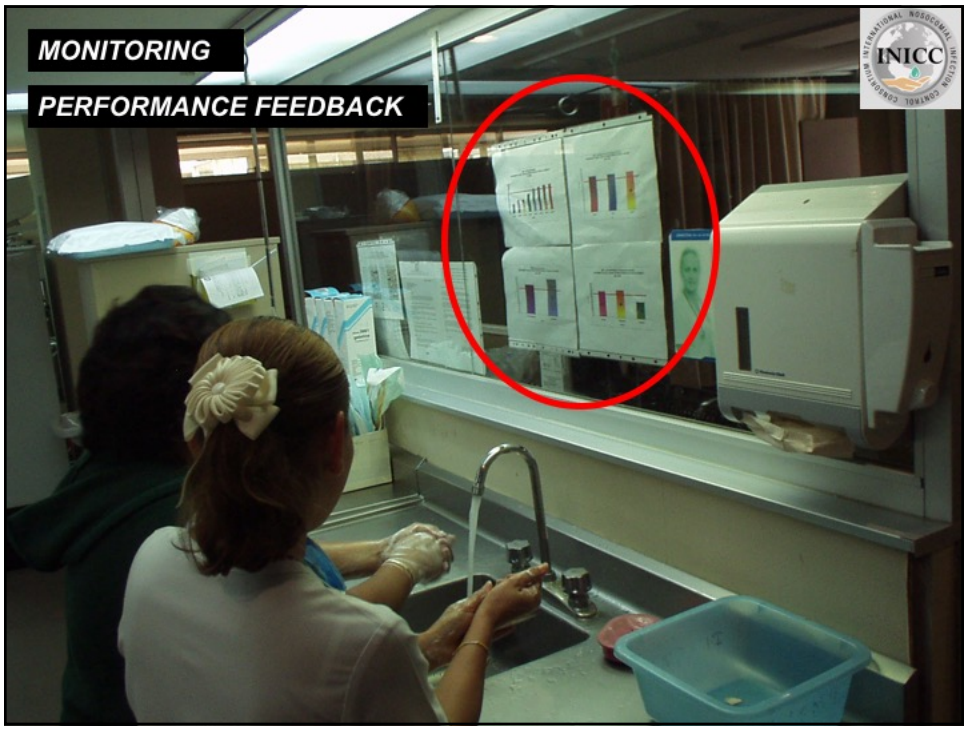


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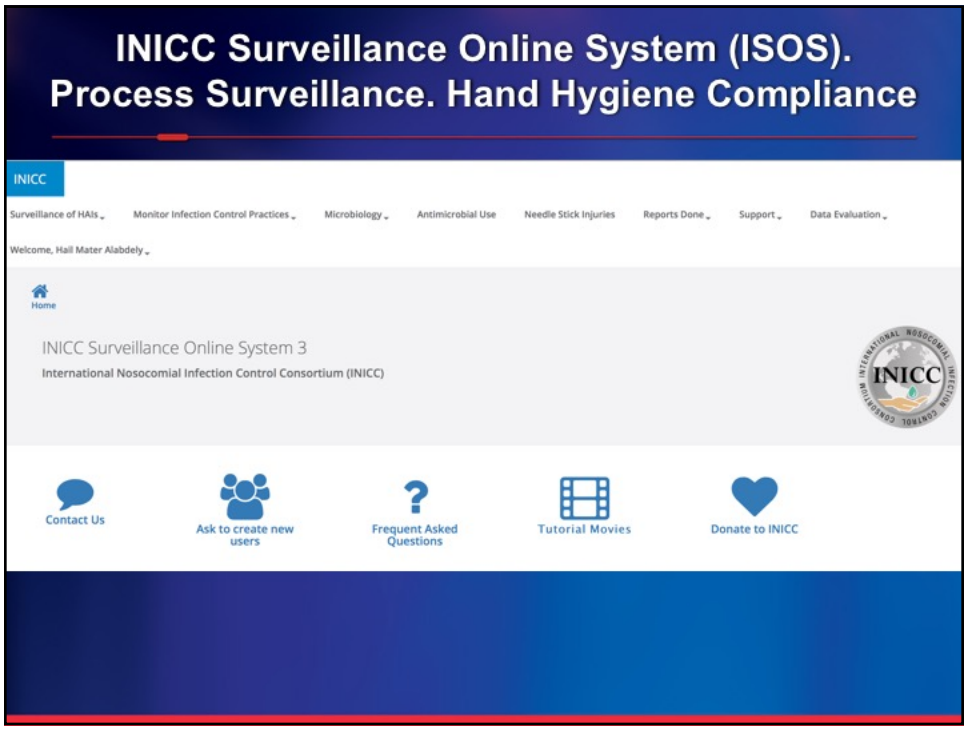
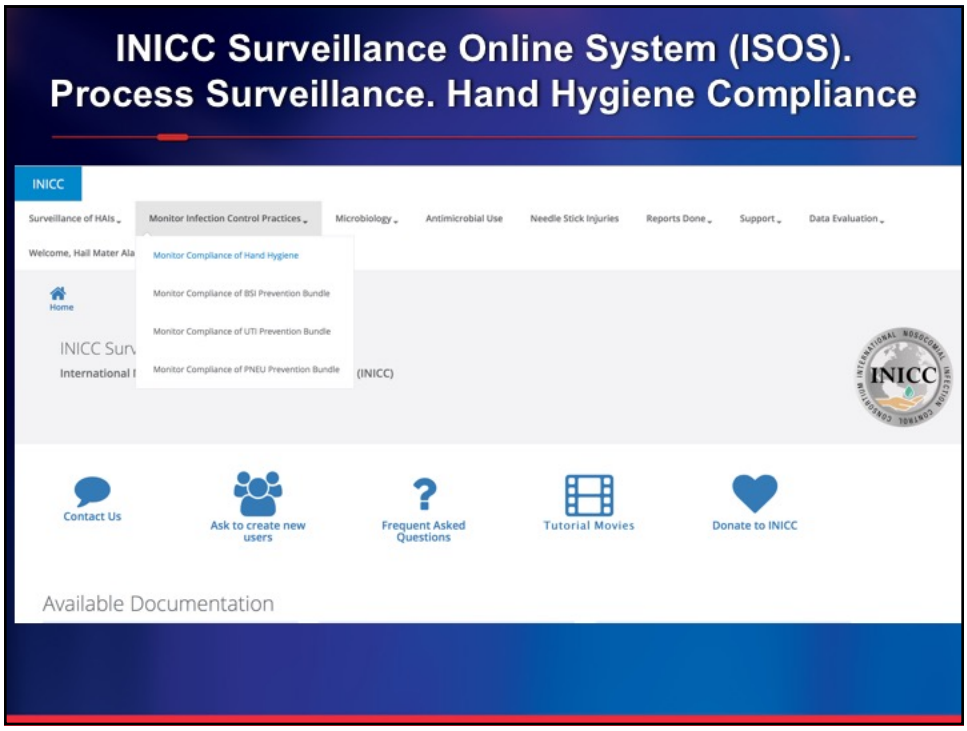

INICC Surveillance Online System (ISOS).
Process Surveillance. Hand Hygiene Compliance
INICC
Surveillance of HAIs
Monitor Infection Control Practices
Microbiology
Antimicrobial Use
Needle Stick Injuries
Reports Done
Support
Data Evaluation
Welcome, Hail Mater Alabdely
Home
INICC Surveillance Online System 3
International Nosocomial Infection Control Consortium (INICC)
Contact Us
Ask to create new users
Frequent Asked Questions
Tutorial Movies
Donate to INICC


INICC Surveillance Online System (ISOS).
Process Surveillance. Hand Hygiene Compliance
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Microbiology
Antimicrobial Use
Needle Stick Injuries
Reports Done
Support
Data Evaluation
Monitor Compliance of Hand Hygiene
Monitor Compliance of BSI Prevention Bundle
Monitor Compliance of UTI Prevention Bundle
Monitor Compliance of PNEU Prevention Bundle
(INICC)
Contact Us
Ask to create new users
Frequent Asked Questions
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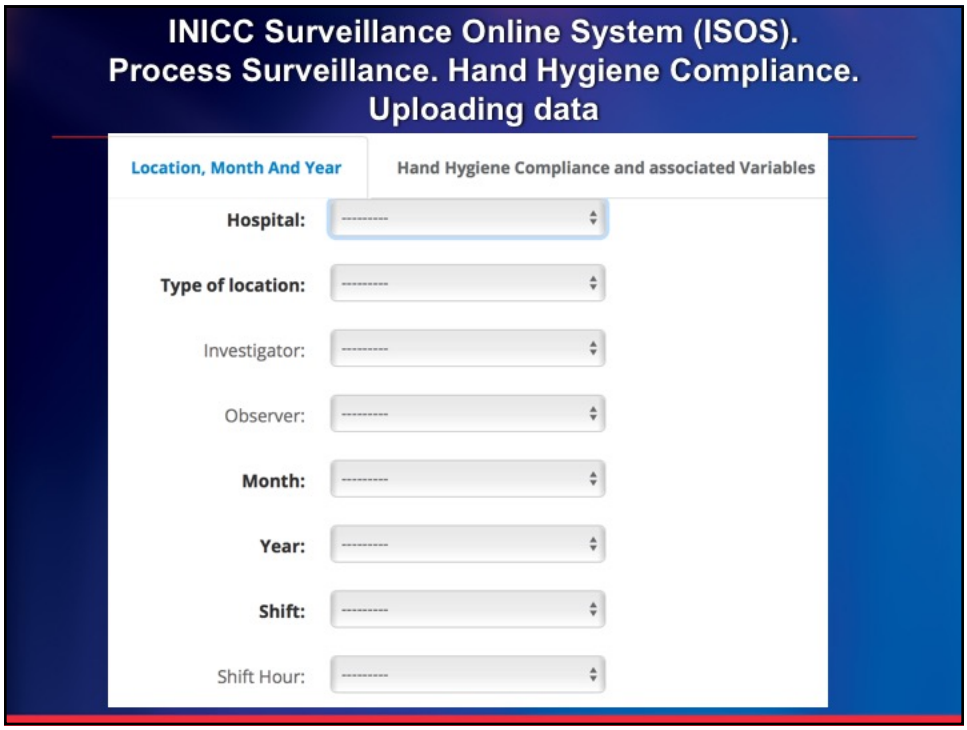
Available Documentation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Process Surveillance. Hand Hygiene Compliance.
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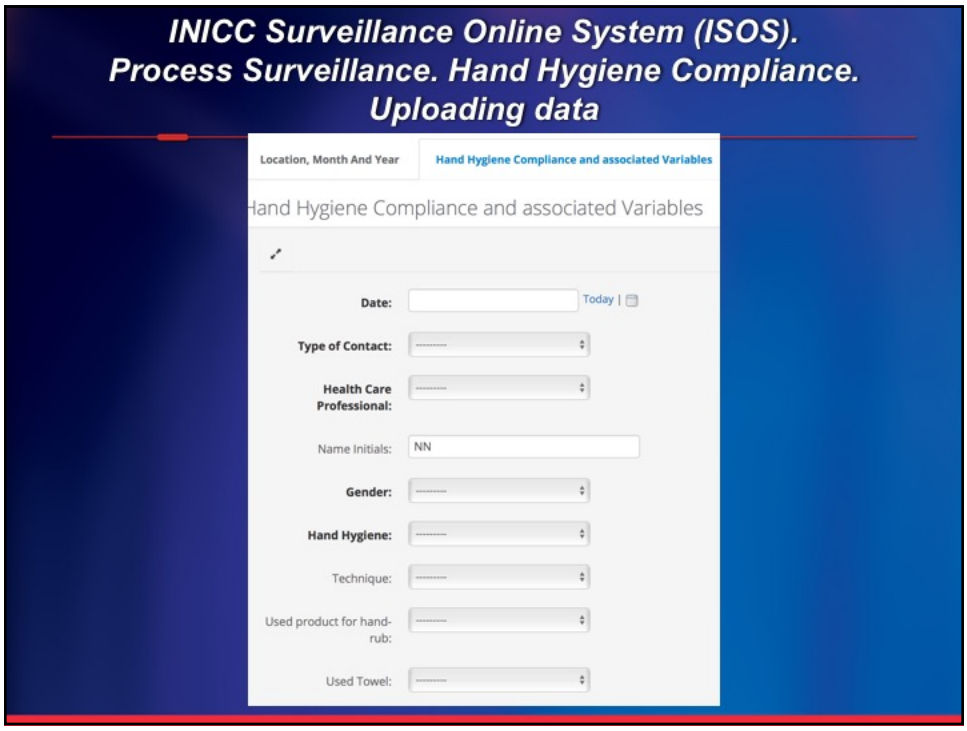
Hand Hygiene Compliance and associated Variables
Hospital:
Type of location:
Investigator:
Observer:
Month:
Year:
Shift:
Shift Hour: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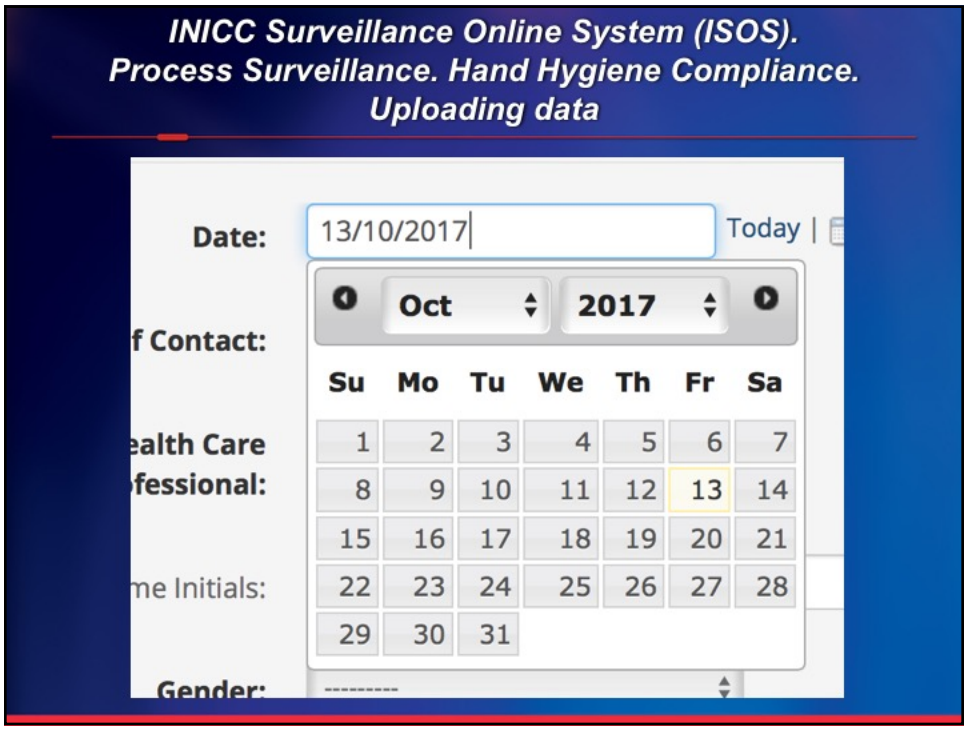
Process Surveillance. Hand Hygiene Compliance.
Uploading data
Location, Month And Year
Hand Hygiene Compliance and associated Variables
Hand Hygiene Compliance and associated Variables
Date:
Today
Type of Contact:
Health Care Professional:
Name Initials:
NN
Gender:
Hand Hygiene:
Technique:
Used product for hand-rub:
Used Towel: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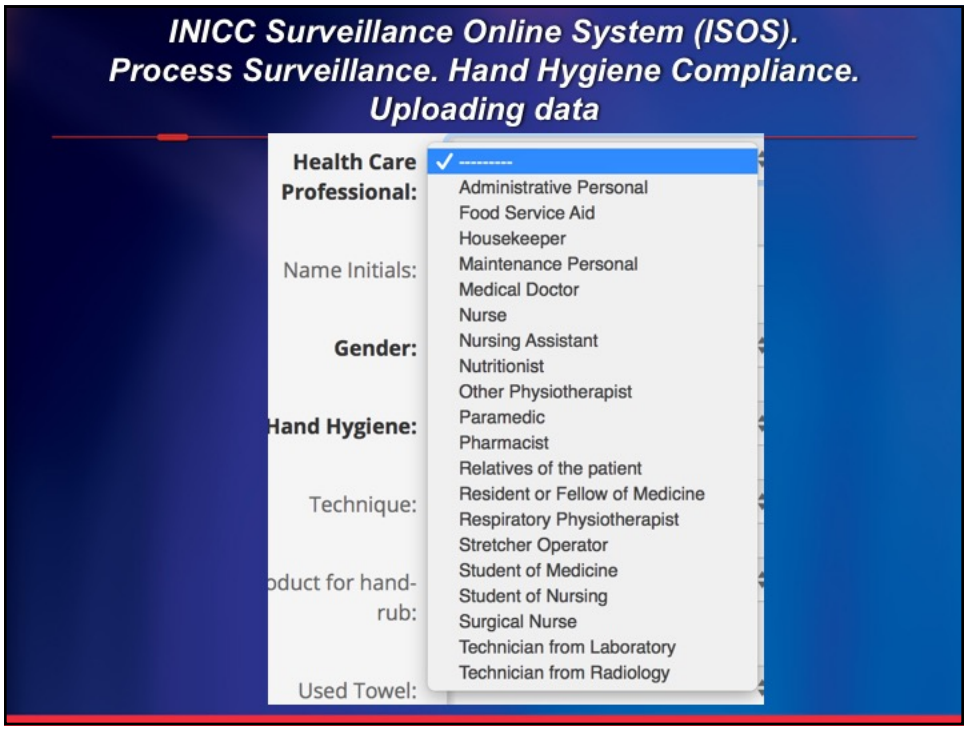
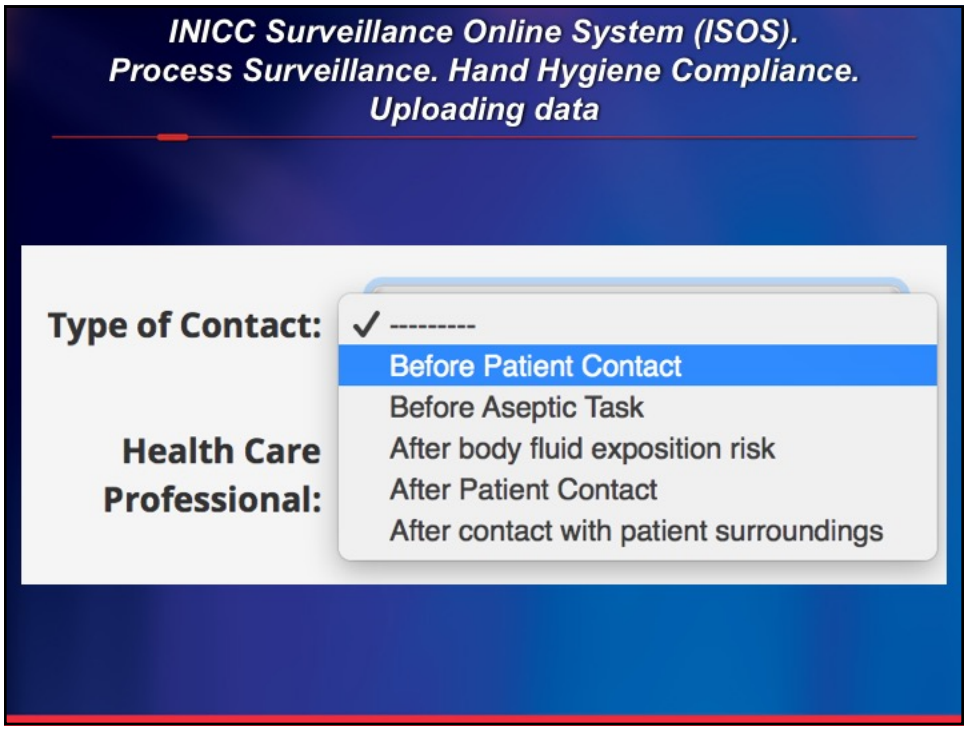
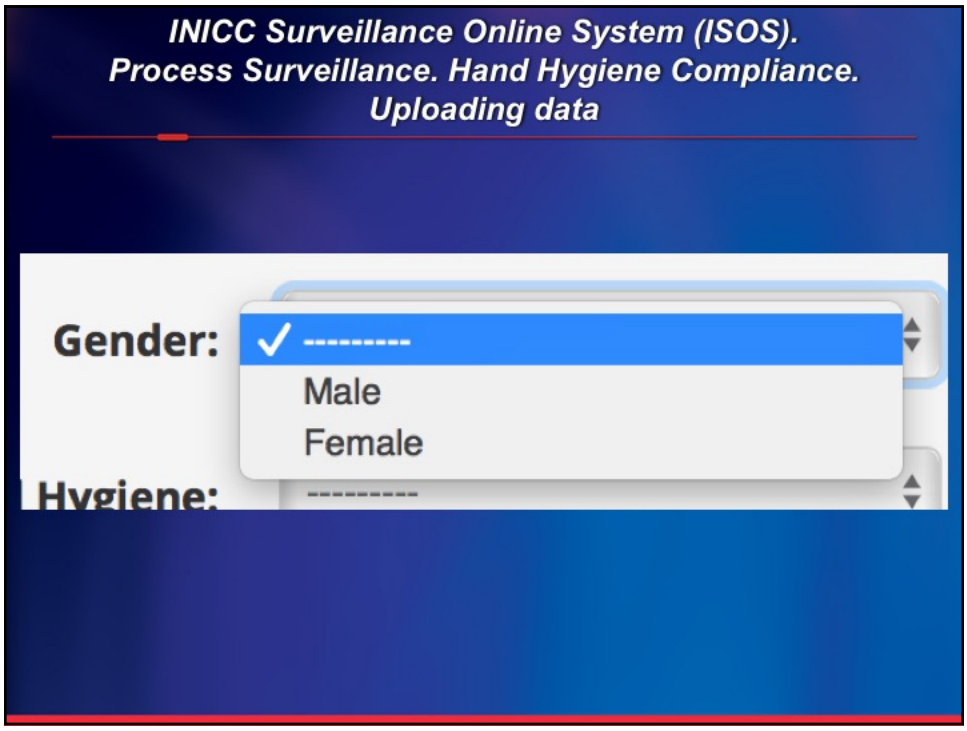
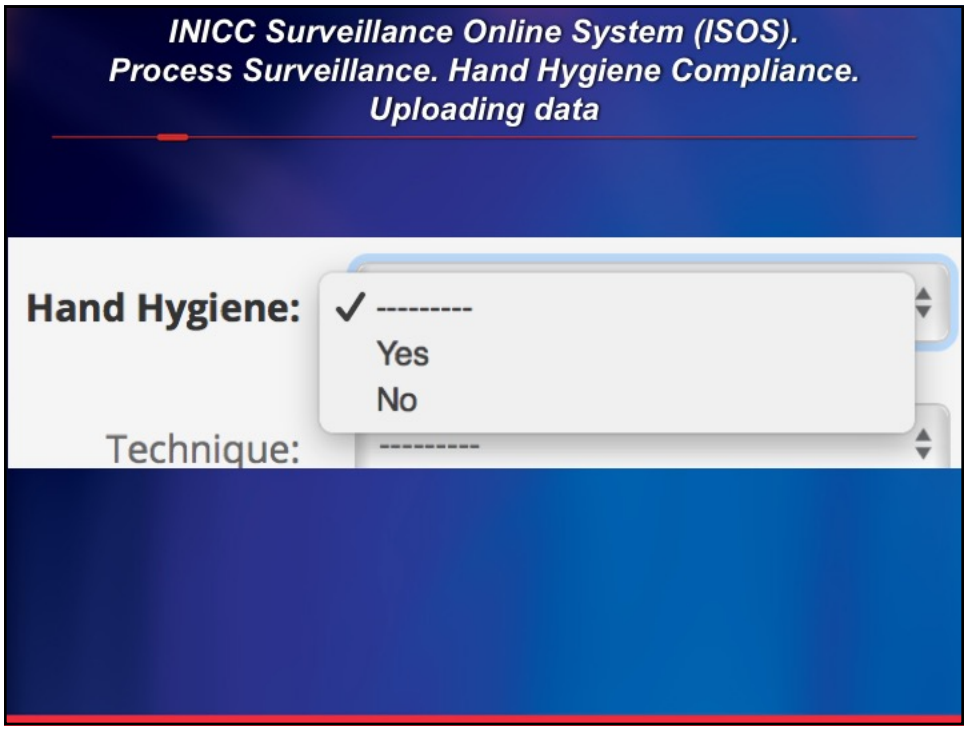
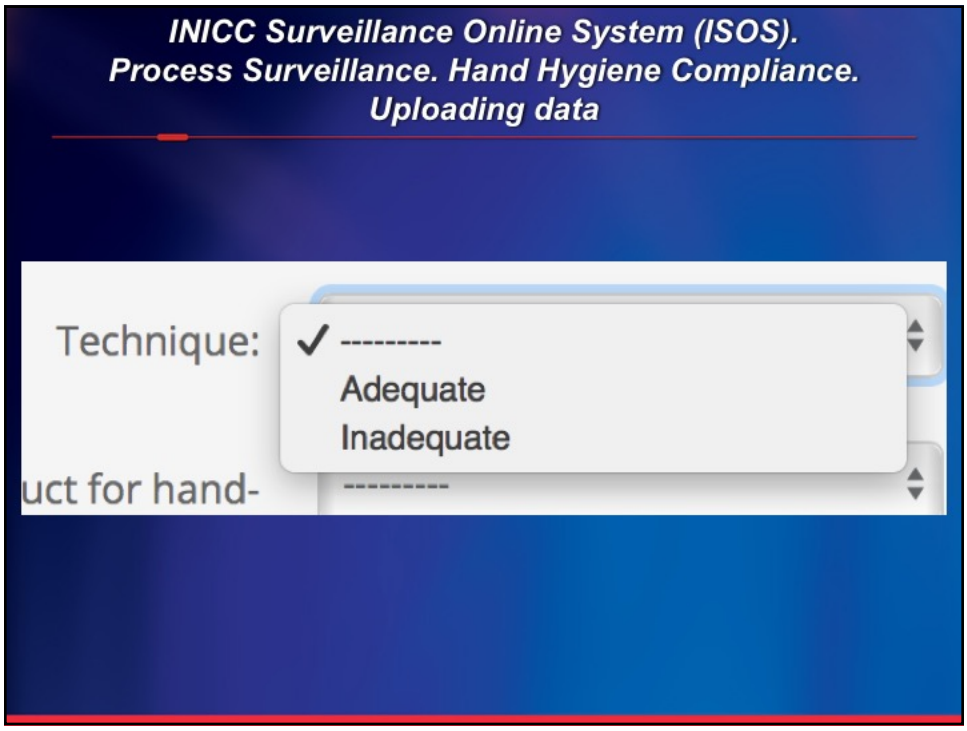
Uploading data
Date:
13/10/2017
Today
Oct
2017
Su Mo Tu We Th Fr Sa
1 2 3 4 5 6 7
8 9 10 11 12 13 14
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31
Gender:
---------

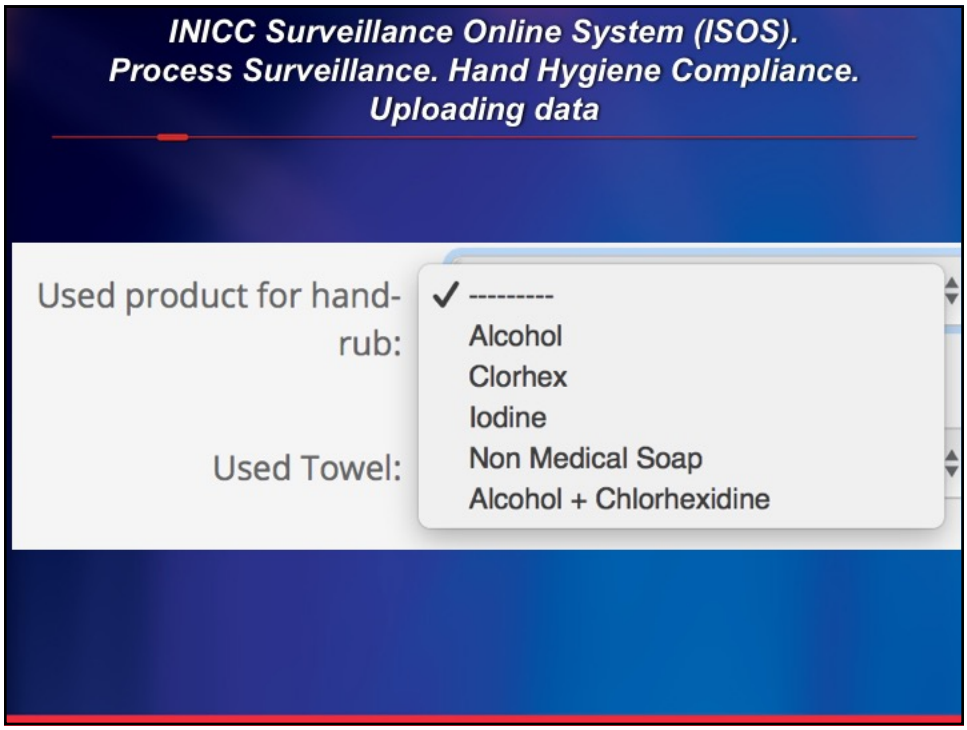

INICC Surveillance Online System (ISOS).
Process Surveillance. Hand Hygiene Compliance.
Uploading data
Health Care Professional:
Name Initials:
Gender:
Hand Hygiene:
Technique:
Used Towel:
---------
Administrative Personal
Food Service Aid
Housekeeper
Maintenance Personal
Medical Doctor
Nurse
Nursing Assistant
Nutritionist
Other Physiotherapist
Paramedic
Pharmacist
Relatives of the patient
Resident or Fellow of Medicine
Respiratory Physiotherapist
Stretcher Operator
Student of Medicine
Student of Nursing
Surgical Nurse
Technician from Laboratory
Technician from Radiology

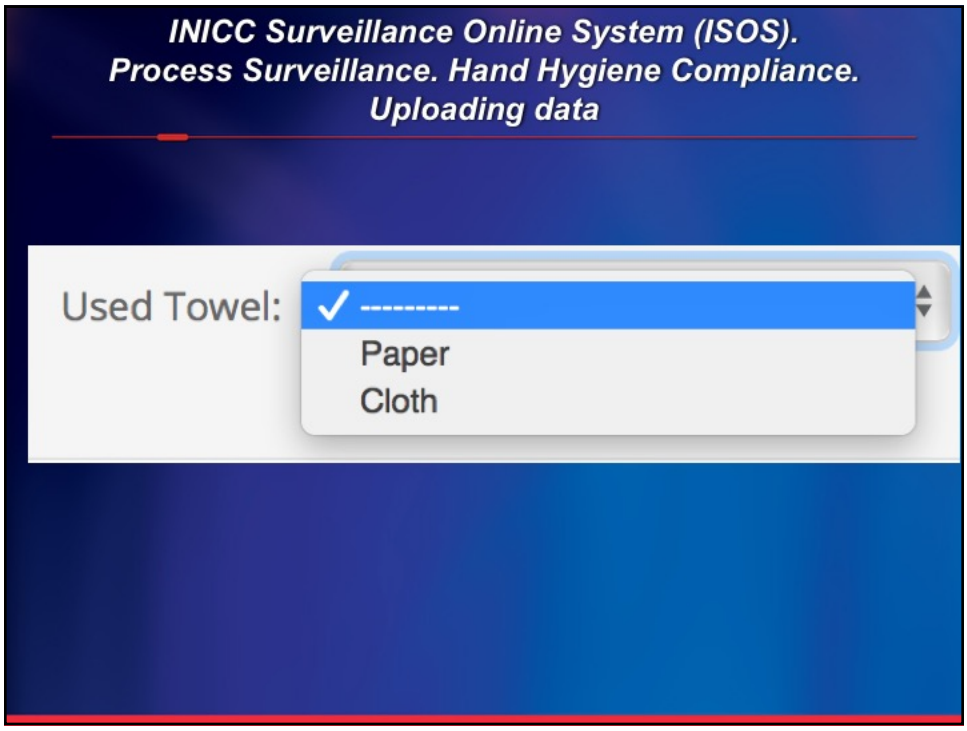

INICC Surveillance Online System (ISOS).
Process Surveillance. Hand Hygiene Compliance.
Uploading data
Type of Contact:
---------
Before Patient Contact
Before Aseptic Task
After body fluid exposition risk
After Patient Contact
After contact with patient surroundings
Health Care Professional:

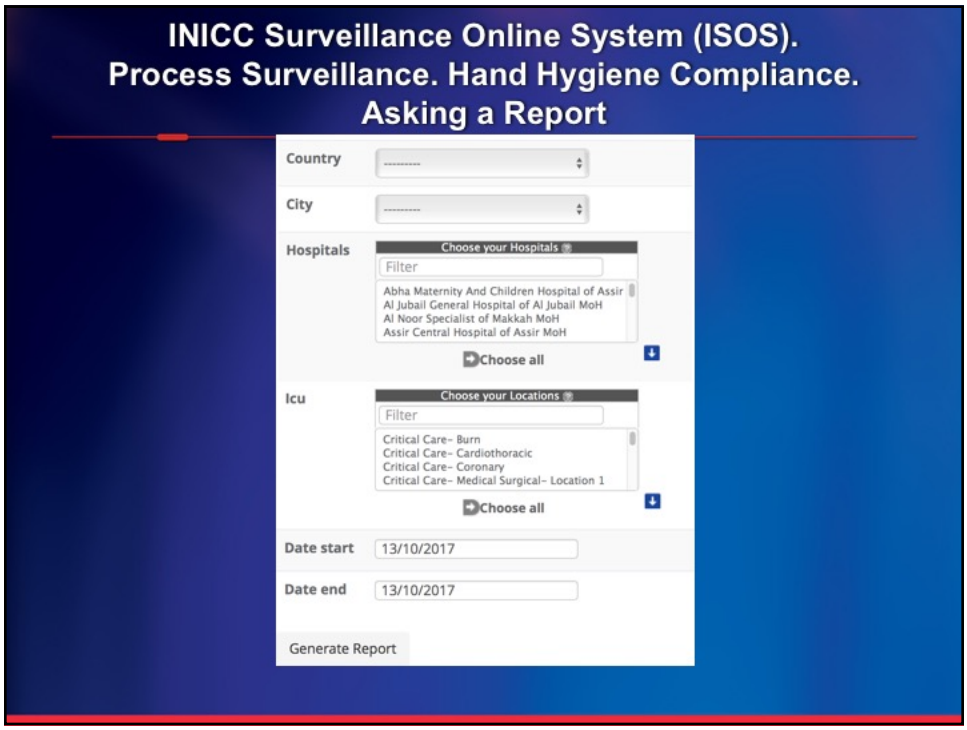

INICC Surveillance Online System (ISOS).
Process Surveillance. Hand Hygiene Compliance.
Uploading data
Gender:
---------
Male
Female
Hygiene:
---------

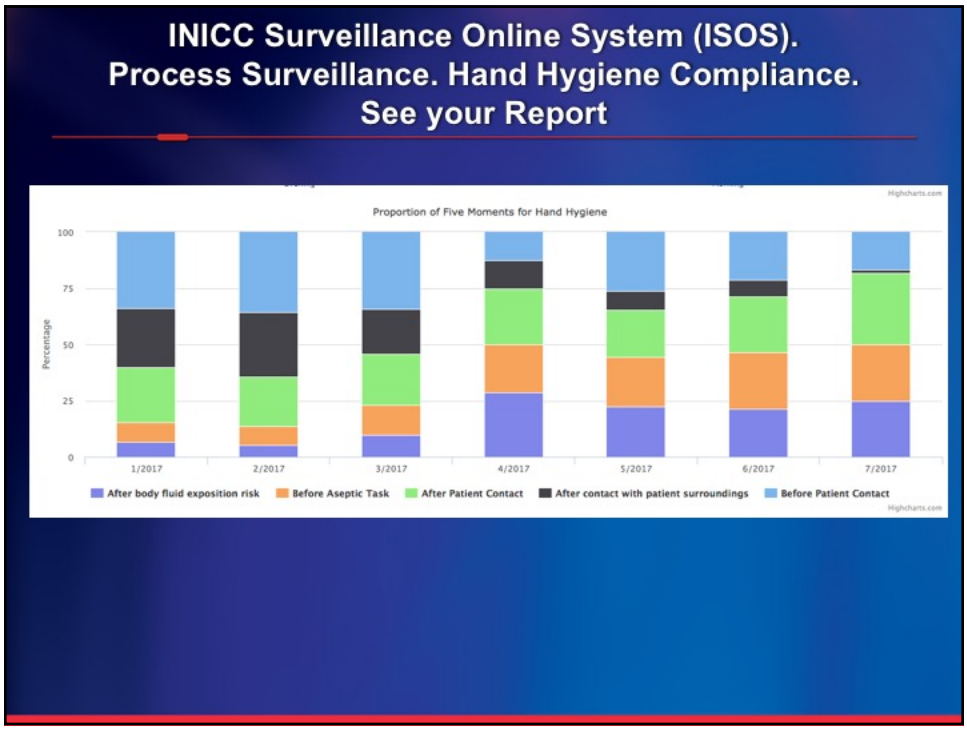

INICC Surveillance Online System (ISOS).
Process Surveillance. Hand Hygiene Compliance.
Uploading data
Hand Hygiene:
---------
Yes
No
Technique:
---------

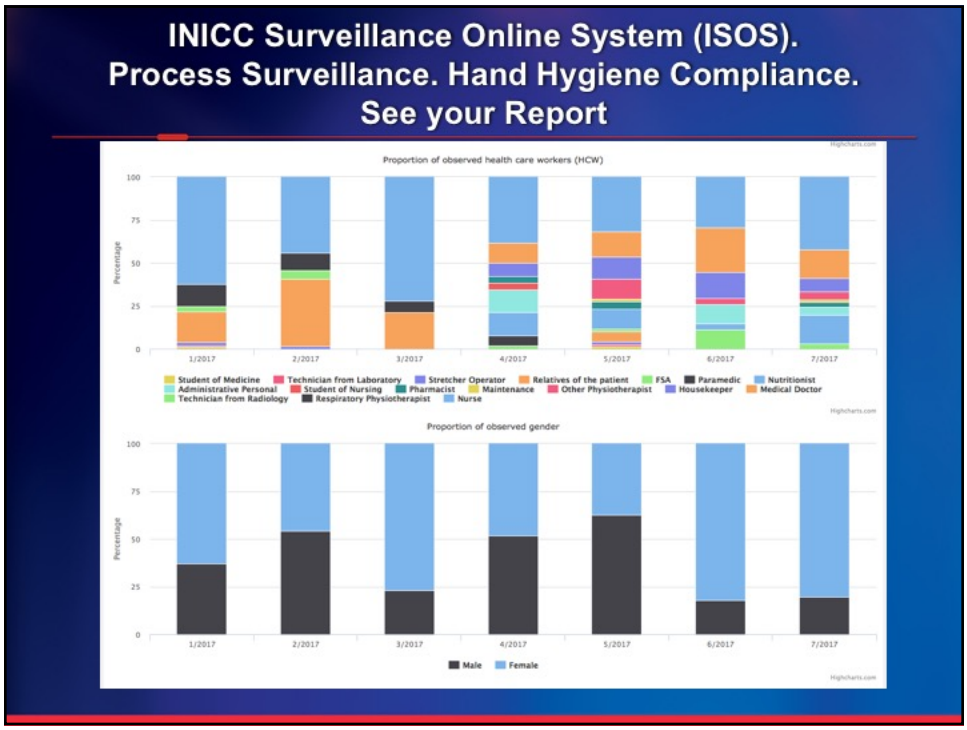

INICC Surveillance Online System (ISOS).
Process Surveillance. Hand Hygiene Compliance.
Uploading data
Technique:
---------
Adequate
Inadequate
uct for hand-
---------

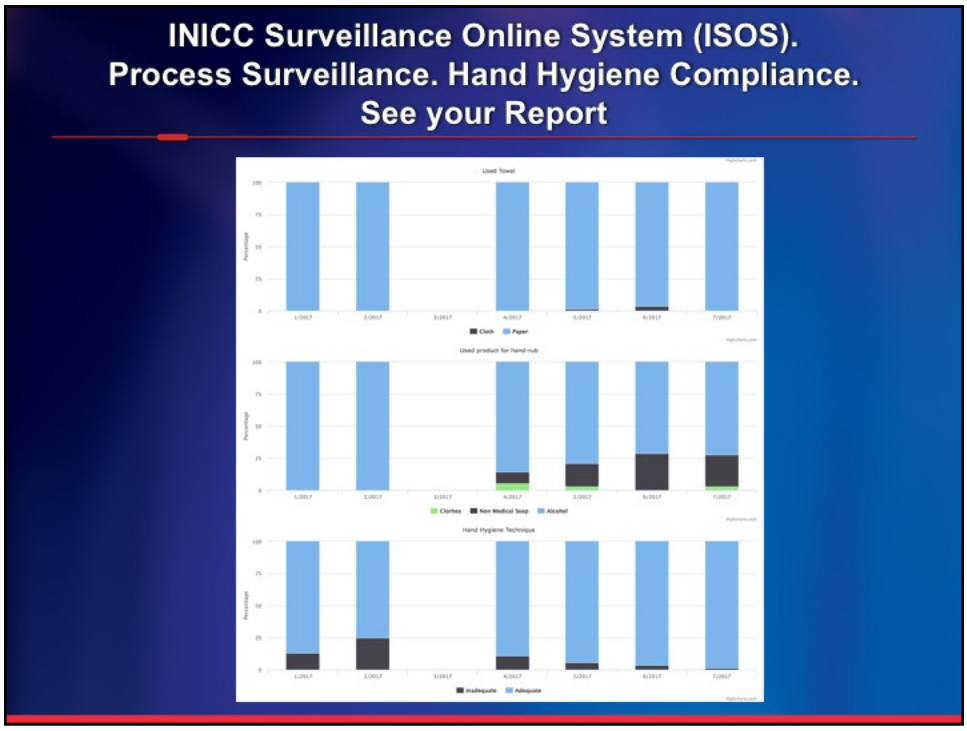

INICC Surveillance Online System (ISOS).
Process Surveillance. Hand Hygiene Compliance.
Uploading data
Used product for hand-rub:
Used Towel:
---------
Alcohol
Clorhex
Iodine
Non Medical Soap
Alcohol + Chlorhexidine

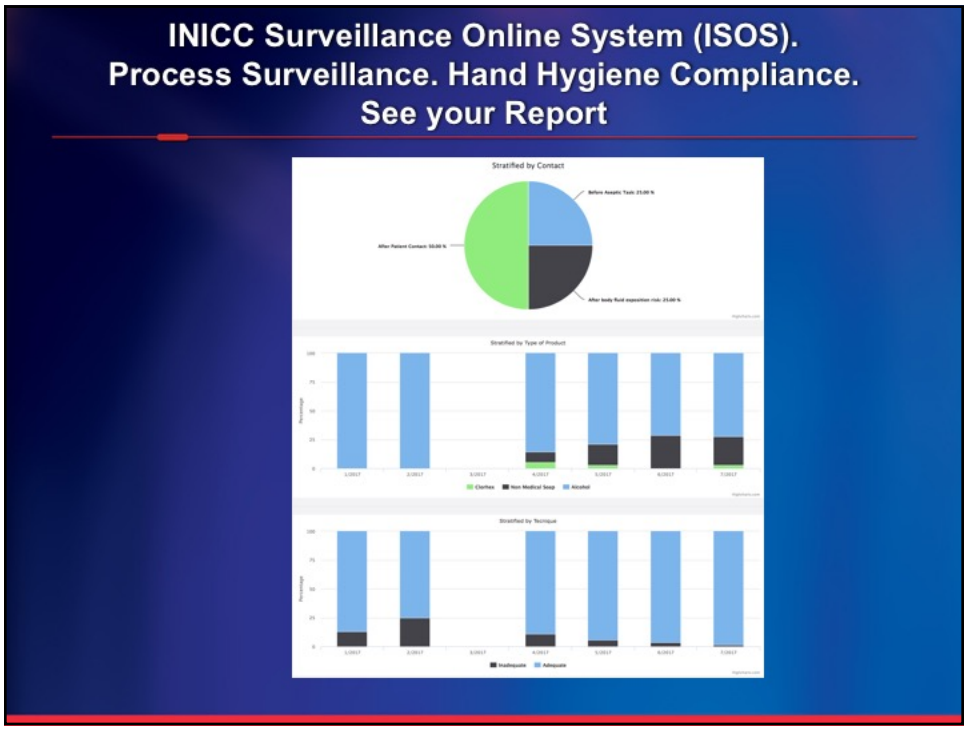

INICC Surveillance Online System (ISOS).
Process Surveillance. Hand Hygiene Compliance.
Uploading data
Used Towel:
---------
Paper
Cloth

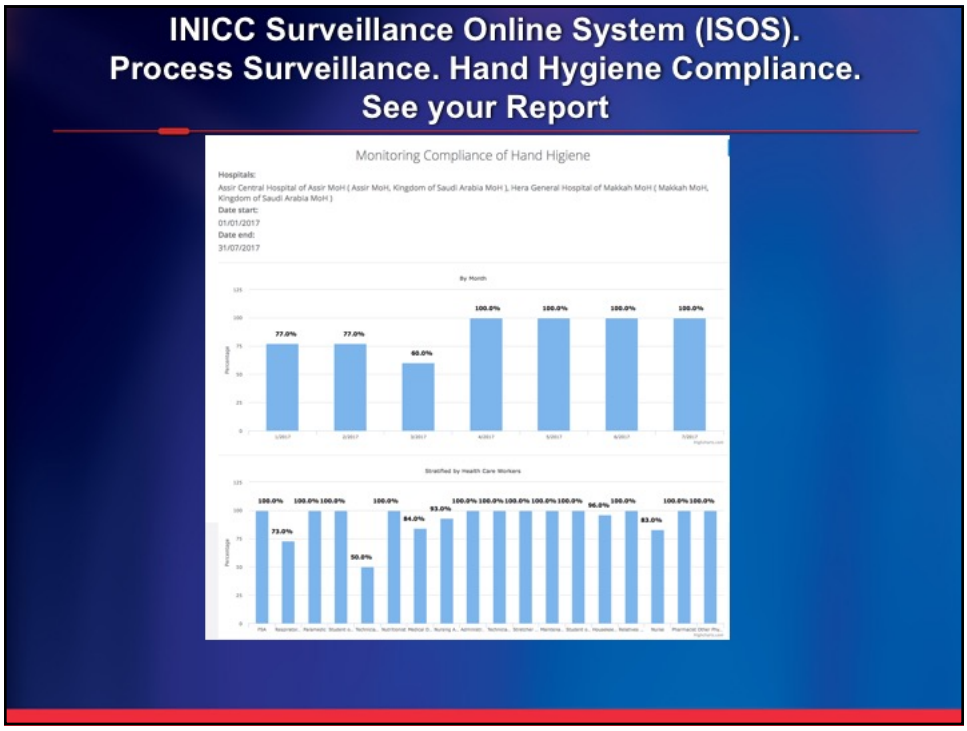

INICC Surveillance Online System (ISOS).
Process Surveillance. Hand Hygiene Compliance.
Asking a Report
Country
City
Hospitals
Choose your Hospitals
Filter
Abha Maternity And Children Hospital of Assir
Al Jubail General Hospital of Al Jubail MoH
Al Noor Specialist of Makkah MoH
Assir Central Hospital of Assir MoH
Choose all
Icu
Choose your Locations
Filter
Critical Care- Burn
Critical Care- Cardiothoracic
Critical Care- Coronary
Critical Care- Medical Surgical- Location 1
Choose all
Date start
13/10/2017
Date end
13/10/2017
Generate Report


INICC Surveillance Online System (ISOS).
Process Surveillance. Hand Hygiene Compliance.
See your Report
Proportion of Five Moments for Hand Hygiene
Percentage
100
75
50
25
0
1/2017
2/2017
3/2017
4/2017
5/2017
6/2017
7/2017
After body fluid exposition risk
Before Aseptic Task
After Patient Contact
After contact with patient surroundings
Before Patient Contact


INICC Surveillance Online System (ISOS).
Process Surveillance. Hand Hygiene Compliance.
See your Report
Proportion of observed health care workers (HCW)
Percentage
100
75
50
25
0
1/2017
2/2017
3/2017
4/2017
5/2017
6/2017
7/2017
Student of Medicine
Technician from Laboratory
Stretcher Operator
Relatives of the patient
FSA
Paramedic
Nutritionist
Administrative Personal
Student of Nursing
Pharmacist
Maintenance
Other Physiotherapist
Housekeeper
Medical Doctor
Technician from Radiology
Respiratory Physiotherapist
Nurse
Proportion of observed gender
Male
Female


INICC Surveillance Online System (ISOS).
Process Surveillance. Hand Hygiene Compliance.
See your Report
Used Towel
Cloth
Paper
Used product for hand-rub
Clorhex
Non Medical Soap
Alcohol
Hand Hygiene Technique
Inadequate
Adequate

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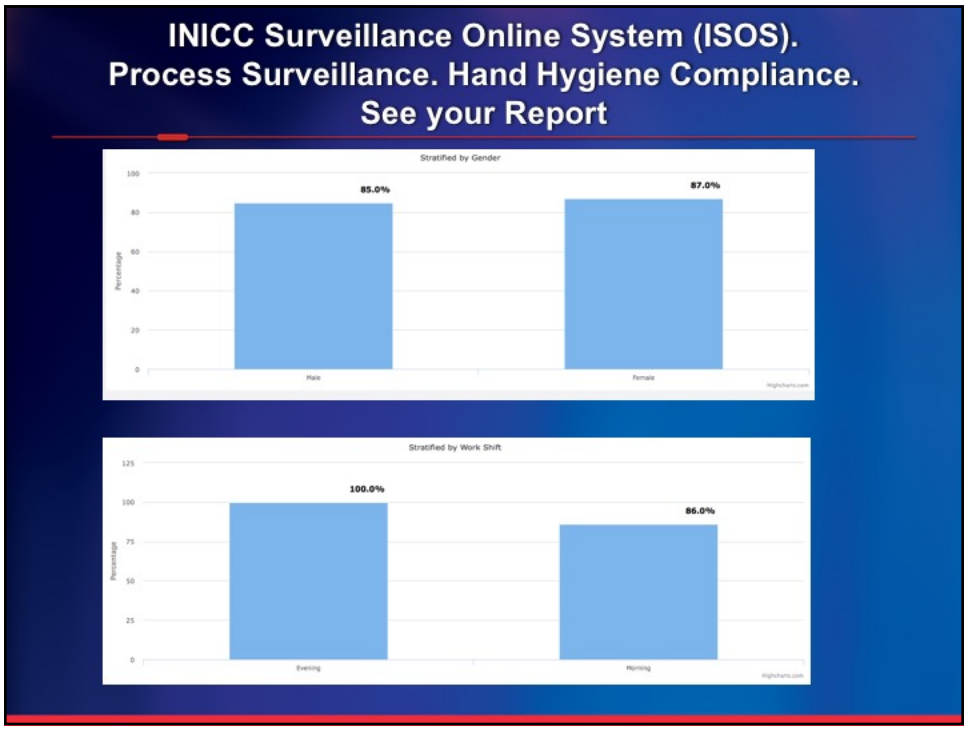
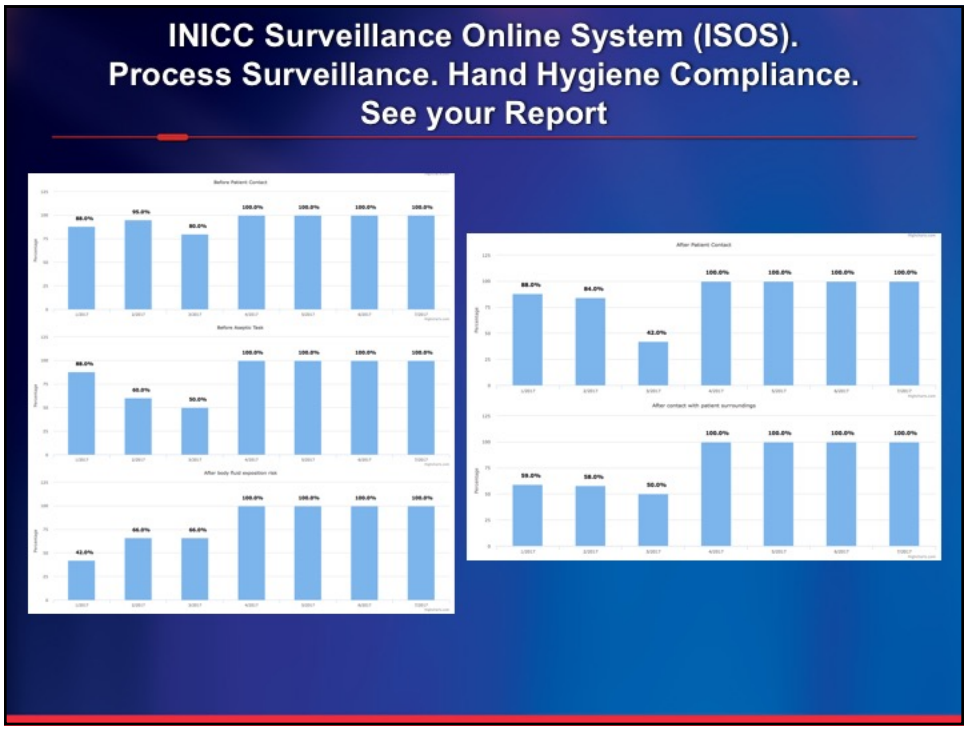

INICC Surveillance Online System (ISOS).
Process Surveillance. Hand Hygiene Compliance.
See your Report
Stratified by Gender
85.0%
87.0%
Male
Female
Stratified by Work Shift
100.0%
86.0%
Evening
Morning


INICC Surveillance Online System (ISOS).
Process Surveillance. Hand Hygiene Compliance.
See your Report

## Hand Hygiene Compliance in Argentina

### Reduction in nosocomial infection with improved hand hygiene in intensive care units of a tertiary care hospital in Argentina

Victor D. Rosenthal, MD, MSc, CIC,[a] Sandra Guzman, RN,[a] and Nasia Safdar, MD[b]
Buenos Aires, Argentina, and Madison, Wisconsin

***Background:*** Hand hygiene is a fundamental measure for the control of nosocomial infection. However, sustained compliance with hand hygiene in health care workers is poor. We attempted to enhance compliance with hand hygiene by implementing education, training, and performance feedback. We measured nosocomial infections in parallel.
***Methods:*** We monitored the overall compliance with hand hygiene during routine patient care in intensive care units (ICUs); 1 medical surgical ICU and 1 coronary ICU, of 1 hospital in Buenos Aires, Argentina, before and during implementation of a hand hygiene education, training, and performance feedback program. Observational surveys were done twice a week from September 2000 to May 2002. Nosocomial infections in the ICUs were identified using the National Nosocomial Infections Surveillance (NNIS) criteria, with prospective surveillance.
***Results:*** We observed 4347 opportunities for hand hygiene in both ICUs. Compliance improved progressively (handwashing adherence, 23.1% (268/1160) to 64.5% (2056/3187) (RR, 2.79; 95% CI: 2.46-3.17; $P < .0001$). During the same period, overall nosocomial infection in both ICUs decreased from 47.55 per 1000 patient-days (104/2187) to 27.95 per 1000 patient days (207/7409) RR, 0.59; 95% CI: 0.46-0.74, $P < .0001$).
***Conclusion:*** A program consisting of focused education and frequent performance feedback produced a sustained improvement in compliance with hand hygiene, coinciding with a reduction in nosocomial infection rates in the ICUs. (Am J Infect Control 2005;33:392-7.)

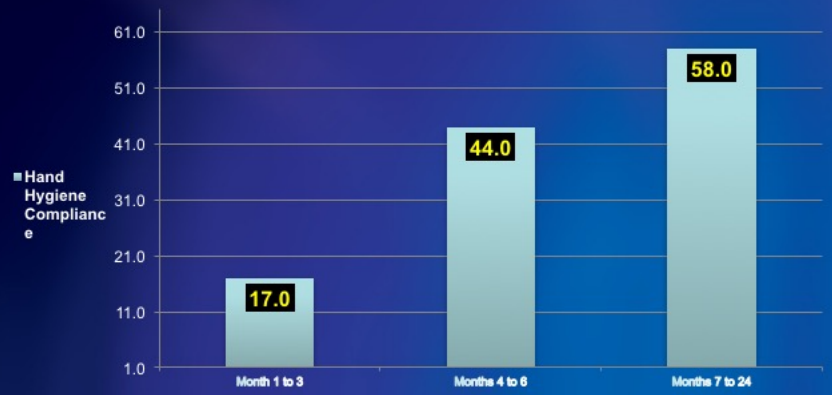
## Hand Hygiene Compliance and HAI Rate

## Hand Hygiene Compliance in Argentina

**Effect of education and performance feedback on handwashing: The benefit of administrative support in Argentinean hospitals**

Victor Daniel Rosenthal, MD, MS, CIC[a]
Rita D. McCormick, RN, CIC,[b]
Sandra Guzman, RN, ICP[a]
Claudia Villamayor, RN, ICP[c]
Pablo W. Orellano, MS[d]
Buenos Aires, Argentina, and Madison, Wisconsin

## Hand Hygiene Compliance




*AJIC 2003*

## Features of the participating hospitals

**Table 1.** Features of the participating hospitals

| Hospital | Type of facility | Training activities | Administrative support* (compliance/criteria) | Total beds | ICU beds | Initial ratio sink:beds | Final ratio sink:beds |
|---|---|---|---|---|---|---|---|
| A | Public | Yes | 0/9 | 250 | 20 | 1:10 | 1:10 |
| B | Private | No | 9/9 | 150 | 32 | 1:10 | 1:2 |
| C | Private | Yes | 7/9 | 180 | 20 | 1:2 | 1:2 |

*(1) Participation in infection control committee, (2) willingness to meet with infection control representative, (3) support for installation of additional sinks as needed, (4) evaluation and approval of submitted infection control policies in timely manner, (5) provision of appropriate hand hygiene supplies, (6) active participation in performance feedback process, (7) admonishment of suboptimal performance when indicated, (8) willingness to pay for services of hospital epidemiologist activities, (9) willingness to share activities and success of the infection control efforts in other meetings.*

## Variables associated with poor Hand Hygiene. Logistic regression analysis

| Variable | OR | (95% CI) | *P* value |
|---|---|---|---|
| Administrative support | 5.57 | (5.25-6.31) | .0000 |
| Sex | 0.79 | (0.73-0.86) | .0000 |
| Days | 0.89 | (0.79-1.00) | .058 |
| Procedure | 0.84 | (0.78-0.90) | .0000 |
| Unit | 1.43 | (1.30-1.59) | .0000 |
| Work shift | 0.98 | (0.93-1.03) | .519 |
| HCW | 0.66 | (0.63-0.70) | .000 |

## Hand Hygiene Compliance in Argentina

*J Nurs Care Qual*
Vol. 00, No. 00, pp. 1–9
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### Impact of INICC Multidimensional Hand Hygiene Approach in ICUs in Four Cities in Argentina

*Victor D. Rosenthal, MD, MSc, CIC; Mónica Viegas, MD; Daniel Sztokhamer, MD; Guillermo Benchetrit, MD; Beatriz Santoro, MD; Carlos Esteban Lastra, RN; Adriana Romani, MD; Beatriz Marta Alicia Di Núbila, MD; Diana Lanzetta, MD; Leonardo J. Fernández, MD; María Adelaida Rossetti, MD; Claudia Migazzi, MD; Clarisa Barolin, MD; Estela Martínez; Claudio Bonaventura; Maria de los Ángeles Caridi, MD; Adriana Messina, MD; Beatriz Ricci, MD; Luisa C. Soroka, MD; María Laura Frías, MD*

## Hand Hygiene Compliance

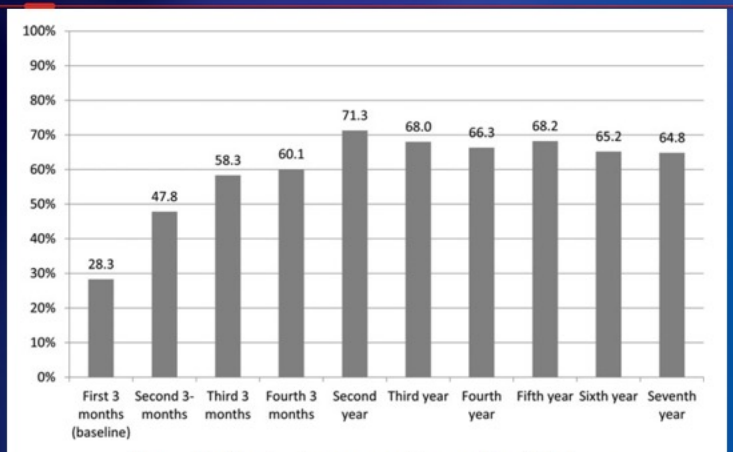


**Figure.** Hand hygiene improvement by year of participation.

*JNCQ 2015*

## Variables associated with poor Hand Hygiene. Logistic regression analysis

The following variables were significantly associated with poor hand hygiene compliance:

- Males versus females
  - 56.8% vs 66.4%;
  - 95% CI, 0.83-0.88;
  - P < 0.001,

***Women more than men***

- Physicians versus nurses
  - 46.6% vs 67.8%;
  - 95% CI, 0.67-0.7;
  - P < 0.001.

***Nurses more than doctors***

## Hand Hygiene Compliance in Colombia

International Journal of Infectious Diseases 19 (2014) 67–73

Contents lists available at ScienceDirect

International Journal of Infectious Diseases

journal homepage: www.elsevier.com/locate/ijid

Impact of the International Nosocomial Infection Control Consortium (INICC) multidimensional hand hygiene approach in three cities of Colombia☆

Nayide Barahona-Guzmán[a], María Eugenia Rodríguez-Calderón[b], Victor D. Rosenthal[c,*], Narda Olarte[d], Wilmer Villamil-Gómez[e,f], Catherine Rojas[g], Marena Rodríguez-Ferrer[a], Guillermo Sarmiento-Villa[a], Alfredo Lagares-Guzmán[a], Alberto Valderrama[d], Antonio Menco[e], Patrick Arrieta[e,f], Luis Enrique Dajud-Cassas[f], Mariela Mendoza[f], Alejandra Sabogal[g], Yulieth Carvajal[g], Edwin Silva[g]

[a] Universidad Simón Bolívar, Barranquilla, Colombia
[b] Hospital La Victoria, Bogotá, Colombia
[c] International Nosocomial Infection Control Consortium (INICC), Corrientes Ave 4580, Floor 12, Apt D, Buenos Aires, ZIP 1195, Argentina
[d] Hospital El Tunal ESE, Bogotá, Colombia
[e] Clínica Santa María, Sucre, Colombia
[f] Clínica de la Sabana, Sucre, Colombia
[g] Centro Policlínico del Olaya, Bogotá, Colombia

## Hand Hygiene Compliance

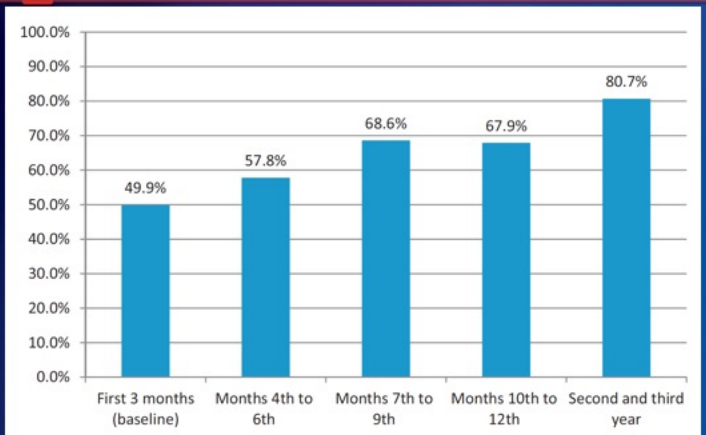


**Figure 2.** Hand hygiene improvement by year of participation.

*IJID 2014*

## Variables associated with poor Hand Hygiene. Logistic regression analysis

Hand hygiene compliance by type of variable: logistic regression, multivariate analysis

| Variable | Adjusted OR (95% CI) | *p*-Value |
|---|---|---|
| Type of hospital (baseline: Public) | 1 | |
| Private | 0.65 (0.54–0.80) | 0.001 |
| Sex (baseline: Female) | 1 | |
| Male *Women more than men* | 0.88 (0.79–0.98) | 0.024 |
| Type of professional (baseline: Nurses) | 1 | |
| Physicians | 0.41 (0.36–0.47) | 0.001 |
| Ancillary staff *Nurses more than doctors* | 0.92 (0.84–1.01) | 0.092 |
| Type of contact (baseline: Invasive) | 1 | |
| Non-invasive | 0.42 (0.38–0.47) | 0.001 |
| Type of ICU (baseline: Adult) | 1 | |
| Adult ICU | 0.56 (0.46–0.69) | 0.001 |
| Pediatric ICU | 0.28 (0.22–0.37) | 0.001 |
| Work shift (baseline: Morning) | 1 | |
| Afternoon | 0.77 (0.71–0.85) | 0.001 |
| Night | 0.70 (0.63–0.78) | 0.001 |

OR, odds ratio; CI, confidence interval; ICU, intensive care unit.

## Hand Hygiene Compliance in China

PUBLIC HEALTH 129 (2015) 979–988

Available online at www.sciencedirect.com

Public Health

journal homepage: www.elsevier.com/puhe

Original Research

### Impact of the International Nosocomial Infection Control Consortium (INICC) Multidimensional Hand Hygiene Approach in five intensive care units in three cities of China

D. Su [a], B. Hu [b], V.D. Rosenthal [c,*], R. Li [d], C. Hao [a], W. Pan [a], L. Tao [b], X. Gao [b], K. Liu [d]

[a] The First Affiliated Hospital Shanxi Medical University, Tai Yuan, China
[b] Zhongshan Hospital, Fudan University, Shanghai, China
[c] International Nosocomial Infection Control Consortium (INICC), Buenos Aires, Argentina
[d] Beijing Chao-Yang Hospital, Capital Medical University, Beijing, China

## Hand Hygiene Compliance

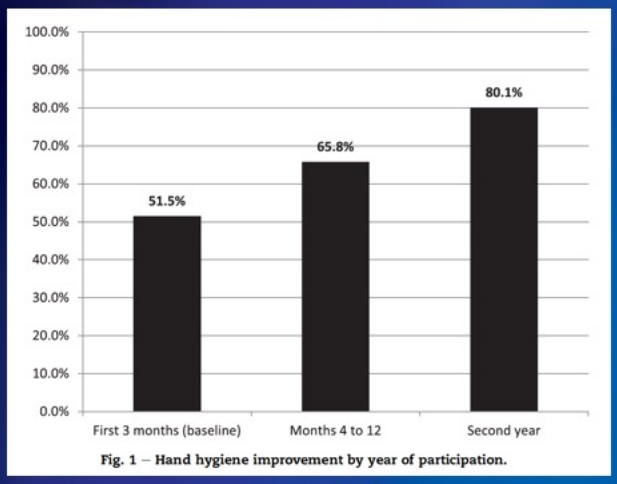


Fig. 1 – Hand hygiene improvement by year of participation.

*PH 2015*

## Variables associated with poor Hand Hygiene. Logistic regression analysis

**Table 4 – Hand hygiene compliance by type of variable. Logistic regression, multivariate analysis.**

| Variable | Adjusted OR | 95% CI | P-value | |
|---|---|---|---|---|
| Sex (baseline: female) | 1.0 | | | |
| Male | 0.76 | 0.6–0.98 | 0.04 | *Women more than men* |
| Type of professional (baseline: nurses) | 1.0 | | | |
| Physicians | 0.82 | 0.63–1.1 | 0.13 | *Nurses more than doctors* |
| Ancillary staff | 0.57 | 0.32–1.0 | 0.06 | |
| Type of contact (baseline: invasive) | 1.0 | | | |
| Non-invasive | 0.98 | 0.8–1.22 | 0.9 | |
| Type of ICU (baseline: adult) | 1.0 | | | |
| Work shift (baseline: morning) | 1.0 | | | |
| Afternoon | 0.54 | 0.42–0.7 | 0.0001 | |

ICU, intensive care unit; OR, odds ratio; CI, confidence interval.

## Hand Hygiene Compliance in Brazil

American Journal of Infection Control 43 (2015) 10-5

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Major article

### Impact of the International Nosocomial Infection Control Consortium (INICC) multidimensional hand hygiene approach in 3 cities in Brazil

Eduardo A. Medeiros MD[a], Gorki Grinberg MD[b,c,d], Victor D. Rosenthal MD, MSc, CIC[e,*], Daniela Bicudo Angelieri RN[a], Iselde Buchner Ferreira RN[b], Raquel Bauer Cechinel RN[b], Bruna Boaria Zanandrea MD[c], Carolina Rohnkohl MD[c], Marcos Regalin MD[c], Jamile Leda Spessatto MD[d], Ricardo Scopel Pasini MD[d], Shaline Ferla MD[d]

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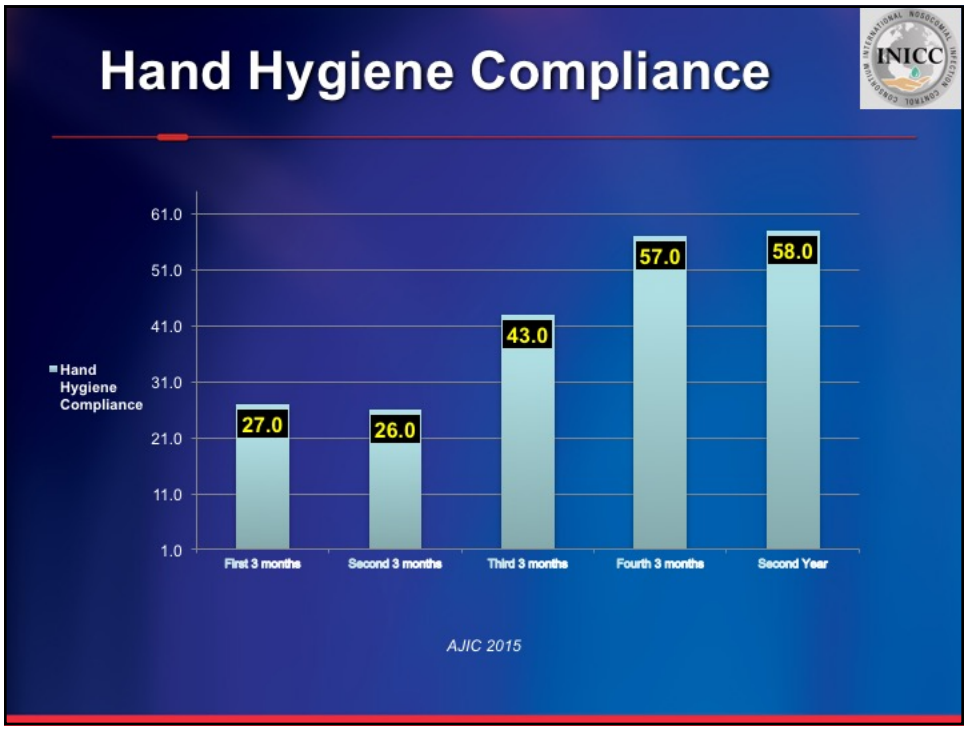


## Variables associated with poor Hand Hygiene. Logistic regression analysis

HH compliance by type of variable

| | | | Univariate analysis | | | Multivariate analysis | | |
|---|---|---|---|---|---|---|---|---|
| Variable | % (no. of HH/no. of opportunities) | Comparison | Relative risk | 95% CI | *P* value | Adjusted OR | 95% CI | OR *P* value |
| Type of hospital | | | | | | | | |
| Academic | 42 (911/2,159) | Academic vs private | .94 | 0.87-1.01 | .041 | 1.0 | | |
| Private | 40 (1,061/2,678) | | | | | 0.9 | 0.8-1.0 | .07 |
| Sex | | | | | | | | |
| Female | 38 (1,451/3,769) | Female vs male | .80 | 0.7-0.9 | .0001 | 0.72 | 0.62-0.84 | .0001 |
| Male | 49 (521/1,068) | | | | | 1.0 | | |
| HCWs | | | | | | | | |
| Nurses | 55 (406/738) | Nurses vs physicians | .86 | 0.76-0.98 | .02 | 1.0 | | |
| Physicians | 48 (272/572) | Nurses vs ancillary staff | .70 | 0.6-0.76 | .0001 | 0.64 | 0.51-0.8 | .0001 |
| Ancillary staff | 37 (1,294/3,527) | Physicians vs ancillary staff | .77 | 0.7-0.9 | .0005 | 0.5 | 0.4-0.6 | .0001 |
| Procedure | | | | | | | | |
| Noninvasive | 41 (1,491/3,653) | Noninvasive vs invasive | .99 | 0.94-1.1 | .90 | 1.0 | | |
| Invasive | 41 (481/1,184) | | | | | 0.99 | 0.94-1.1 | .90 |
| Work shift | | | | | | | | |
| Morning | 48 (764/1,604) | Morning work shift vs afternoon work shift | .76 | 0.7-0.83 | .0001 | 1.0 | | |
| Afternoon | 36 (570/1,579) | Morning work shift vs night work shift | .81 | 0.74-0.9 | .0001 | 0.65 | 0.6-0.75 | .0001 |
| Night | 39 (638/1,654) | Afternoon work shift vs night work shift | .94 | 0.85-1.0 | .16 | 0.73 | 0.63-0.84 | .0001 |

*CI*, confidence interval; *HCW*, health care worker; *HH*, hand hygiene; *OR*, odds ratio.

***Women less than men***

***Nurses more than doctors***

## Hand Hygiene Compliance in Mexico

ORIGINAL ARTICLE

Impact of the International Nosocomial Infection Control Consortium (INICC) Multidimensional Hand Hygiene Approach During 3 Years in 6 Hospitals in 3 Mexican Cities

*María Guadalupe Miranda-Novales, MD,* Martha Sobreyra-Oropeza, MD,† Víctor Daniel Rosenthal, MD,‡ Francisco Higuera, MD,§ Alberto Armas-Ruiz, MD,|| Irma Pérez-Serrato, RN,¶ Héctor Torres-Hernández, MD,** Irma Zamudio-Lugo, MD,* Eric M. Flores-Ruiz, MD,* Roberto Campuzano, MD,|| Jorge Mena-Brito, MD,|| Martha Sánchez-López, MD,¶ Amalia Chávez-Gómez, RN,** Jaime Rivera-Morales, MD,** and Julián E. Valero-Rodríguez, MD**

## Hand Hygiene Compliance

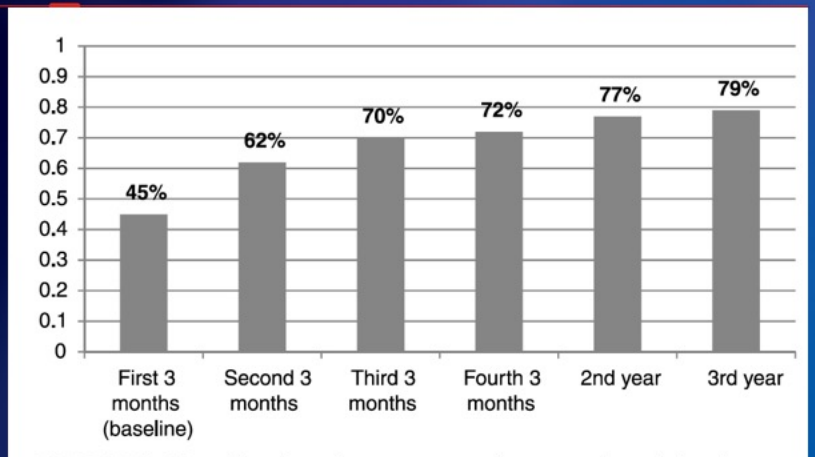


**FIGURE 1.** Hand hygiene improvement by year of participation.

*JPS 2015*

## Variables associated with poor Hand Hygiene. Logistic regression analysis

**TABLE 4.** Hand Hygiene Compliance by Type of Variable. Logistic Regression, Multivariate Analysis

| Variable | Adjusted OR | 95% CI | *P* |
|---|---|---|---|
| Type of hospital (baseline: public) | 1.0 | | |
| Academic | 0.36 | 0.33–0.40 | 0.0001 |
| Sex (baseline: male) | 1.0 | | |
| Female | 0.98 | 0.89–1.1 | 0.8 |
| Type of professional (baseline: ancillary staff) | 1.0 | | |
| Physicians | 0.76 | 0.68–0.85 | 0.0001 |
| Nurses | 0.51 | 0.44–0.6 | 0.0001 |
| Type of contact (baseline: invasive) | 1.0 | | |
| Noninvasive | 0.58 | 0.53–0.62 | 0.0001 |
| Type of ICU (baseline: adult) | 1.0 | | |
| Newborn | 0.53 | 0.48–0.6 | 0.0001 |
| Pediatric | 0.87 | 0.75–1.0 | 0.048 |
| Work shift (baseline: morning) | 1.0 | | |
| Afternoon | 0.91 | 0.84–1.0 | 0.04 |
| Night | 0.74 | 0.67–0.82 | 0.0001 |

*Women similar to men*

*Nurses less than doctors*

## Hand Hygiene Compliance in India

Journal of Infection and Public Health (2015) 8, 177–186

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http://www.elsevier.com/locate/jiph

The impact of the International Nosocomial Infection Control Consortium (INICC) multicenter, multidimensional hand hygiene approach in two cities of India

Murali Chakravarthy[a], Sheila Nainan Myatra[b], Victor D. Rosenthal[c,*], F.E. Udwadia[d], B.N. Gokul[a], J.V. Divatia[b], Aruna Poojary[d], R. Sukanya[a], Rohini Kelkar[b], Geeta Koppikar[d], Leema Pushparaj[a], Sanjay Biswas[b], Lata Bhandarkar[d], Sandhya Raut[b], Shital Jadhav[d], Sulochana Sampat[b], Neeraj Chavan[d], Shweta Bahirune[d], Shilpa Durgad[d]

[a] Fortis Hospitals, Bangalore, India
[b] Tata Memorial Hospital, Mumbai, India
[c] International Nosocomial Infection Control Consortium (INICC), Buenos Aires, Argentina[†]
[d] Breach Candy Hospital Trust, Mumbai, India

## Hand Hygiene Compliance

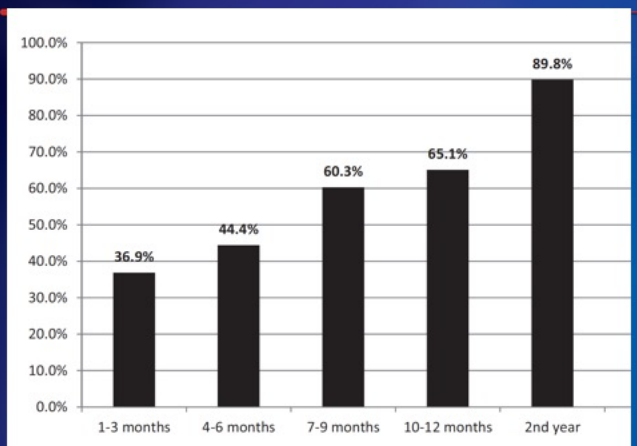


**Figure 1** Hand hygiene improvement by year of participation.

*JIPH 2015*

## Variables associated with poor Hand Hygiene. Logistic regression analysis

| Variable | % (# HH/# opportunities) | Comparison | Adjusted OR | 95% CI | *P* value |
|---|---|---|---|---|---|
| Type of hospital (baseline: private) | | | | | |
| Private | 74.2% (1151/1552) | | 1 | | |
| Academic | 66.3% (1366/2060) | Ac vs. Pr | 0.49 | 0.42–0.60 | 0.001 |
| Sex (baseline female) | | | | ***Women similar to men*** | |
| Female | 71.2% (1801/2528) | F vs. M | 1 | | |
| Male | 66.1% (716/1084) | | 0.86 | 0.70–1.07 | 0.186 |
| Type of professional (baseline: physicians) | | | | ***Nurses less than doctors*** | |
| Physicians | 74.0% (883/1194) | Ph vs. AS | 1 | | |
| Nurses | 70.5% (1519/2154) | Ns vs. Ph | 0.77 | 0.62–0.96 | 0.018 |
| Ancillary staff | 43.6% (115/264) | Ns vs. AS | 0.23 | 0.16–0.31 | 0.001 |
| Type of contact (baseline: invasive) | | | | | |
| Invasive | 82.8% (681/822) | NI vs. I | 1 | | |
| Non-invasive | 79.0% (1680/2127) | | 1.02 | 0.82–1.3 | 0.850 |
| Work shift (baseline: night) | | | | | |
| Afternoon | 71.6% (815/1139) | M vs. A | 1.0 | | |
| Morning | 67.2% (968/1440) | M vs. N | 0.96 | 0.79–1.20 | 0.723 |
| Night | 71.1% (734/1033) | A vs. N | 0.92 | 0.74–1.1 | 0.447 |

## Hand Hygiene Compliance in Turkey

Original Article

Journal of Infection Prevention

Journal of Infection Prevention
1–9
DOI: 10.1177/1757177414560249
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**Impact of the International Nosocomial Infection Control Consortium (INICC) Multidimensional Hand Hygiene Approach, over 8 years, in 11 cities of Turkey**

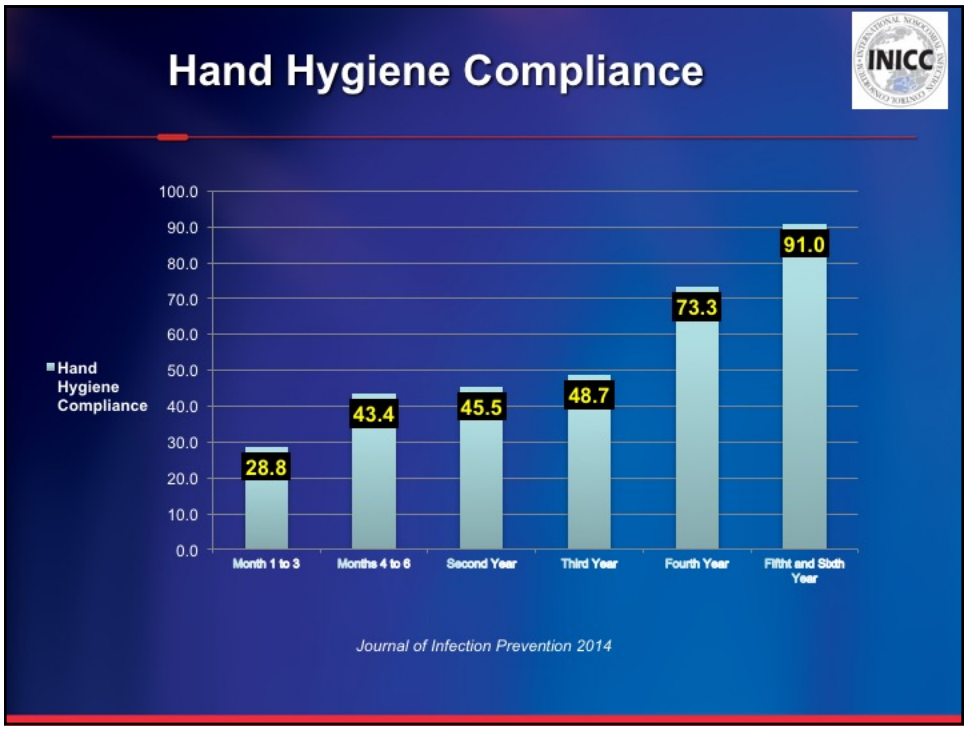
Hakan Leblebicioglu[1], Iftihar Koksal[2], Victor D. Rosenthal[3], Özay Arıkan Akan[4], Asu Özgültekin[5], Tanil Kendirli[6], Nurettin Erben[7], Ata Nevzat Yalcin[8], Sercan Ulusoy[9], Fatma Sirmatel[10], Davut Ozdemir[11], Emine Alp[12], Dinçer Yıldızdaş[13], Saban Esen[1], Fatma Ulger[1], Ahmet Dilek[1], Hava Yilmaz[1], Gürdal Yýlmaz[2], Selçuk Kaya[2], Hülya Ulusoy[2], Melek Tulunay[4], Mehmet Oral[4], Necmettin Ünal[4], Güldem Turan[5], Nur Akgün[5], Asuman İnan[5], Erdal Ince[6], Adem Karbuz[6], Ergin Çiftçi[6], Nevin Taşyapar[6], Melek Güneş[6], Ilhan Ozgunes[7], Gaye Usluer[7], Ozge Turhan[8], Nurgul Gunay[8], Eylul Gumus[8], Oguz Dursun[8], Bilgin Arda[9], Feza Bacakoglu[9], Mustafa Cengiz[14], Leyla Yilmaz[14], Mehmet Faruk Geyik[11], Ahmet Şahin[11], Selvi Erdogan[11], Aysegul Ulu Kılıc[12] and Ozden Ozgur Horoz[13]

## Variables associated with poor Hand Hygiene. Logistic regression analysis

INICC

| Variable | Adjusted OR | 95% CI | P.Value | |
|---|---|---|---|---|
| **Sex (baseline: Female)** | 1 | | | |
| Male | 0.93 | 0.86 - 1.00 | 0.056 | *Women similar than men* |
| **Type of professional (baseline: nurses)** | 1 | | | |
| Physicians | 1 | 0.94 - 1.1 | 0.804 | *Nurses similar than Doctors* |
| Ancillary Staff | 0.69 | 0.64 - 0.75 | 0.001 | *Nurses better than anc staff: 31%* |
| **Type of contact (baseline: invasive)** | 1 | | | |
| Non-invasive | 0.65 | 0.61 - 0.96 | 0.001 | *Invasive better than Non: 35%* |
| **Type of ICU (baseline: pediatric)** | 1 | | | |
| Adult ICU | 0.22 | 0.19 – 0.24 | < 0.001 | *Pediatric better than Adult ICU: 18%* |
| **Work Shift (baseline: Morning)** | 1 | | | |
| Afternoon | 0.97 | 0.91 - 1.03 | 0.372 | |
| Night | 0.65 | 0.59 - 0.74 | 0.001 | *Morning better than Night: 35%* |

**Hand Hygiene Programme Successes in Member Countries of the INICC**
**Dr. Victor Rosenthal, International Nosocomial Infection Control Consortium**
**Broadcast live from the 2017 ICPCNC Conference, Auckland**



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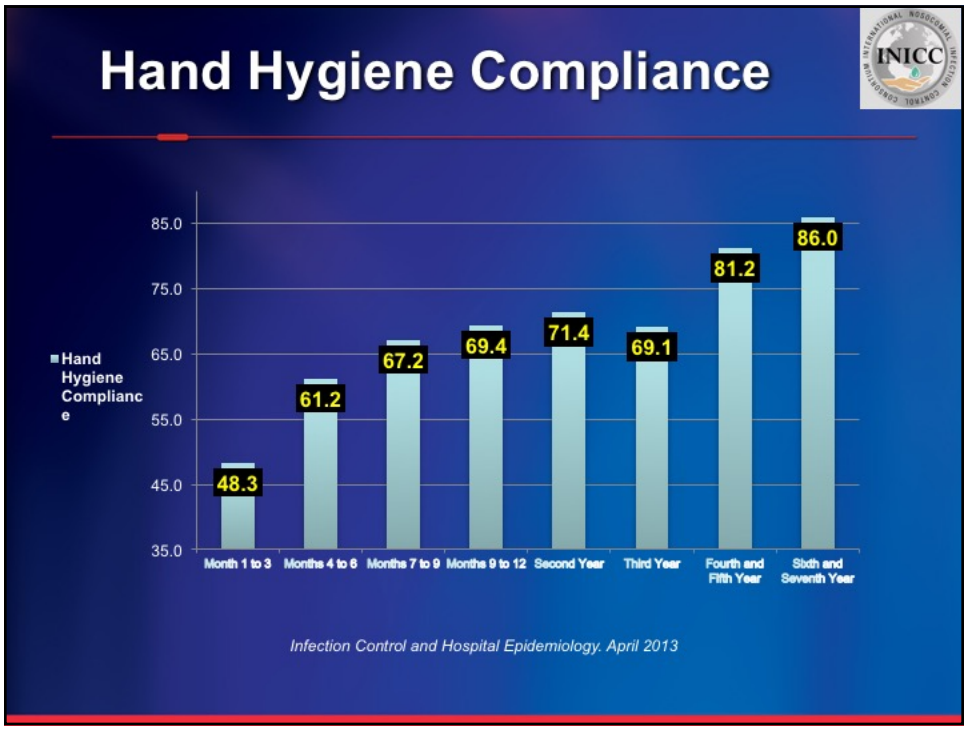
## Characteristics of the Participating Hospitals (from April 1999 to December 2012)

| | ICUs, n | Number of observat |
|---|---|---|
| Country | | |
| Argentina | 11 | 21998 |
| Brazil | 4 | 4837 |
| China | 5 | 2079 |
| Colombia | 11 | 13512 |
| Costa Rica | 1 | 303 |
| Cuba | 1 | 434 |
| Greece | 1 | 2315 |
| El Salvador | 3 | 1691 |
| India | 18 | 32869 |
| Lebanon | 1 | 1728 |
| Lithuania | 1 | 1565 |
| Macedonia | 1 | 3418 |
| Mexico | 10 | 13201 |
| Pakistan | 3 | 1830 |
| Panama | 1 | 551 |
| Peru | 5 | 6610 |
| Philippines | 9 | 17844 |
| Poland | 1 | 102 |
| Turkey | 12 | 22840 |
| All countries | 99 | 149,727 |
| Type of ICU, n | | |
| Adult | 80 (81%) | 131882 |
| Pediatric | 9 (9%) | 9081 |
| New Born | 10 (10%) | 8764 |
| All ICUs | 99 (100%) | 149,727 |
| Type of hospital, n (%) | | |
| Academic Teaching | 27 (42%) | 50515 |
| Public Hospital | 16 (25%) | 40530 |
| Private Community | 22 (34%) | 58682 |
| All hospitals | 65 (100%) | 149,727 |

## Variables associated with poor Hand Hygiene. Logistic regression analysis

| Variable | Adjusted OR | 95% CI | P. value |
|---|---|---|---|
| Gender (baseline: Female) | 1.0 | | |
| Male *Women better than men: 9%* | 0.91 | 0.89 – 0.93 | < 0.001 |
| Type of professional (baseline: nurses) | 1.0 | | |
| Physicians *Nurses better than Doctors: 32%* | 0.68 | 0.66 – 0.70 | < 0.001 |
| Ancillary Staff | 0.52 | 0.51 – 0.54 | < 0.001 |
| Type of contact (baseline: invasive) | 1.0 | | |
| Non-invasive | 0.95 | 0.93 – 0.98 | < 0.001 |
| Type of ICU (baseline: New Born) | 1.0 | | |
| Adult ICU *Neonatal better than Adult ICU: 51%* | 0.49 | 0.47 – 0.52 | < 0.001 |
| Pediatric ICU | 0.58 | 0.54 – 0.62 | < 0.001 |
| Work Shift (baseline: Night) | 1.0 | | |
| Afternoon | 0.79 | 0.76 – 0.81 | < 0.001 |
| Morning | 0.83 | 0.81 – 0.86 | < 0.001 |


Hand Hygiene Compliance
INICC
85.0
75.0
65.0
55.0
45.0
35.0
Hand Hygiene Compliance
48.3
61.2
67.2
69.4
71.4
69.1
81.2
86.0
Month 1 to 3
Months 4 to 6
Months 7 to 9
Months 9 to 12
Second Year
Third Year
Fourth and Fifth Year
Sixth and Seventh Year
Infection Control and Hospital Epidemiology. April 2013

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## Conclusions

1. In Argentina, Colombia, and China, hand hygiene compliance is better among women and nurses compared to men and doctors.
2. In Brazil, Mexico, Turkey and India, hand hygiene compliance is similar or worst among women and nurses compared to men and doctors.
3. Globally hand hygiene compliance is better among women and nurses compared to men and doctors.
4. INICC Surveillance Online System (ISOS) was successful in measuring and improving adherence with HH
5. ISOS allow ICP to upload data of compliance with HH and fast creation of charts.
6. Improving HH adherence was associated with reduction of HAI rates

**Thank you very much**

**Contact us by email:**
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