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Abstract #1208

Analytical study of infection control measures in Russian ICUs: lessons from the real life

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Introduction and purpose: Epidemiological assumptions show that 2-2.5 millions of patients acquire healthcare-associated infections (HAI) in Russia annually. To uncover reasons for the high prevalence we aimed to assess common practices of infection control (IC) in Russian ICUs.

Methods: The study was conducted in 38 multidisciplinary (MD) ICUs from April to August 2007. Project coordinators worked in each of 23 cities and distributed specific questionnaires among ICUs medical doctors. The data were then collected and analyzed in reference center of the institute of Antimicrobial Chemotherapy of Smolensk State Medical Academy.

Results: Out of 400 ICU physicians' questionnaires 84.5% were from MD and 15.0% from specialized hospitals (SH). No information was provided in 0.5%. Absence of single patient rooms for isolation was noted in 57.5%; presence of one single room was indicated in 12.8%, 2 – in 20.3%, 3 and over - in 9.1% of respondents' answers. Duration of stay in MD hospitals varied from 1.9 to 18.0, in SH – from 1.9 to 36.0 (average 4.5 days). Availability of liquid soap and/or alcohol hand rub dozer in wards was registered in 74.8% of respondents' answers. Use of individual alcohol hand rub solutions after contact with patient reported 62.8% of respondents. Presence of HAI guidelines on antimicrobial chemotherapy was registered by 51.8% respondents only. Compliance with guidelines averaged 82.3%. No guidelines for insertion and catheter care reported 10.8% respondents. Routine MRSA carriage screening on admission to MDH was registered only in 17.8% of respondents and in 26.7% for SH; routine use of mupirocin for MRSA decolonization was registered in 3.6% of respondents in MDH and in SH - in 38.3%.

Discussion: Official statistics indicates prevalence of 30,000 of HAI in Russia annually. This was one of the very first studies to assess real situation with IC that found comparatively low compliance with existing measures in ICUs in combination with virtual absence of quintessential barrier measures, use of alcohol hand rub solutions and adherence to guidelines.

INTRODUCTION AND PURPOSE

According to the official document «On Sanitary and Epidemiologic Situation in Russian Federation» there were 26852 cases of nosocomial infections (NI) (0.8 per 1,000 patients) registered in the year 2006 [1]. In 2004 and 2005 it was 0.9 (30,256 cases) and 0.8 (26,873 cases) per 1000 patients [2, 3]. However this prospective decrease in the prevalence of NI is biased since the official data do not represent true NI morbidity rate and exhibit some nosologic units' shortage in urinary tract infections, pneumonias, surgical site infections [1-3]. However results of prospective studies conducted by Central Research Institute of Epidemiology show that annual number of NI in Russia is not less than 2-2.5 million cases with total annual costs more than 212 millions of USD [4].

We aimed our study to uncover reasons for the high projected NI prevalence and to assess common practices of infection control (IC) in Russian ICUs. Estimating a global trend to the increase in NI morbidity, mortality and costs, IC programs are important and high-quality carrying out of those programs prevents 20% and 40% of NI in developed and developing countries correspondingly [5-7]. By evaluating IC practices we may further plan intervention procedures to improve infection control.

METHODS

The study was conducted in 38 multidisciplinary (MD) ICUs from April to August 2007. Project coordinators worked in each of 23 cities and distributed questionnaires among ICUs medical doctors. Data were then collected and analyzed in a reference center of IAC.

RESULTS

Out of 400 ICU physicians' questionnaires 84.5% (n=338) were from MD and 15.0% (n=60) from specialized hospitals (SH). No information was provided in 0.5% (n=2).

Distribution of clinicians' answers to «From which department majority (>80%) of the patients come to your ICU?» is shown in Figure 1.

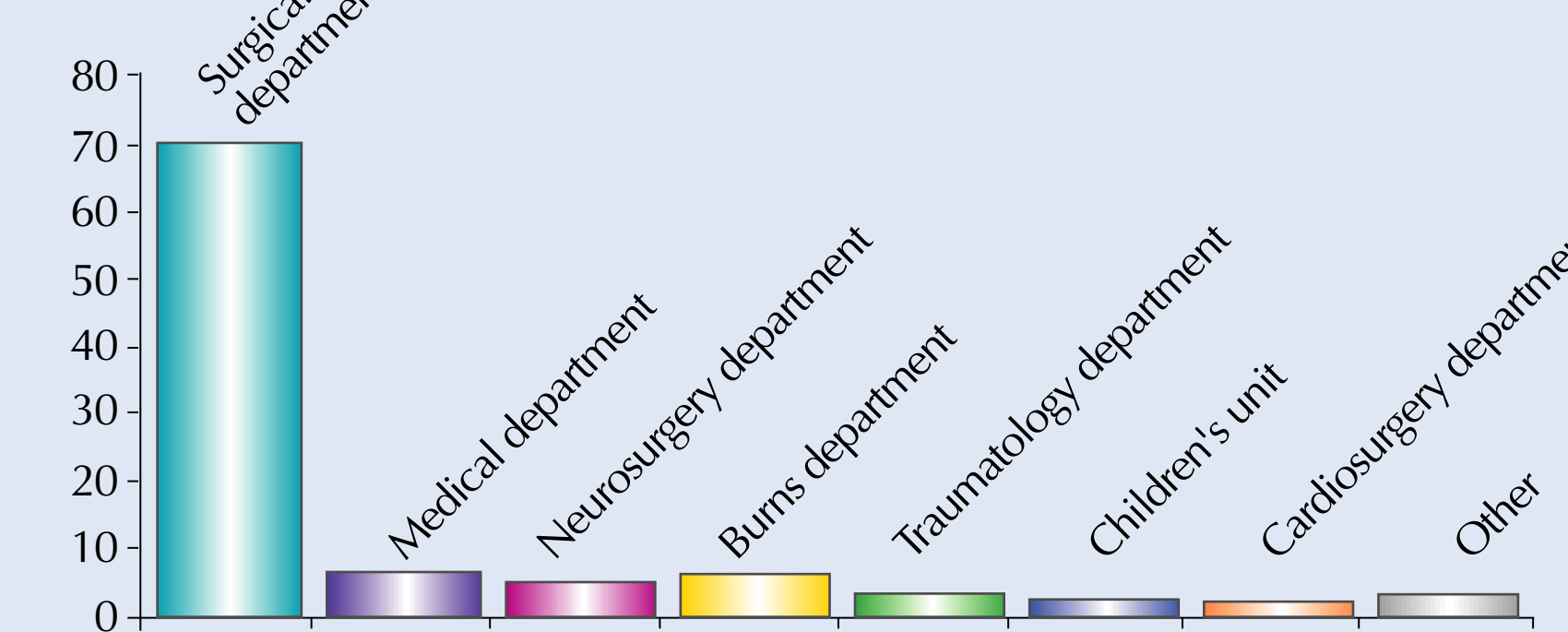


Figure 1. Distribution of clinicians' answers to «From which department majority (>80%) of the patients come to your ICU?» (%)

Absence of single patient rooms for isolation was noted in 57.5%; presence of one single room was indicated in 12.8%, 2 – in 20.3%, 3 and over - in 9.1% of respondents' answers.

Duration of stay in MD hospitals varied from 1.9 to 18.0, in SH – from 1.9 to 36.0 (average 4.5 days).

Number of beds with artificial lung ventilation (ALV) apparatus in ICU varied from 6 to 10 according to 192 respondents' answers (48.0%), from 11 to 20 – 109 respondents' answers (27.25%), from 1 to 5 – 89 respondents' answers (22.25%), from 21 to 25 – 3 respondents' answers (0.75%), 100 beds – 2 respondents' answers (0.5%) and 90 beds – 1 respondents' answers (0.25%), no information was provided in 1.0% of respondents' answers.

Distribution of MD and SH clinicians' answers to «Indicate average number of patients with ALV per year?» is shown in Table 1.

Table 1. Distribution of MD and SH clinicians' answers to «Indicate average number of patients with ALV per year?» (%/per year)

Type of hospital	≤25.0	26.0-50.0	51.0-75.0	76.0-100.0	Not indicated
MD	32.50	37.3	19.2	9.8	1.2
SH	28.30	36.7	11.7	18.3	5.0

The typical number of patients per nurse during the day shift and the night shift, respectively, varied from 1 patient (3.1% and 3.0% of respondents' answers) to 12 patients (0.3% and 0.3% of respondents' answers), in 86.1% and 85.0% of respondents' answers was 2-<5 patients, and in 10.5% and 11.7% respondents' answers was 5-10 patients.

Availability of liquid soap and/or alcohol hand rub dozer in wards was registered in 74.8% of respondents' answers (Figure 2).

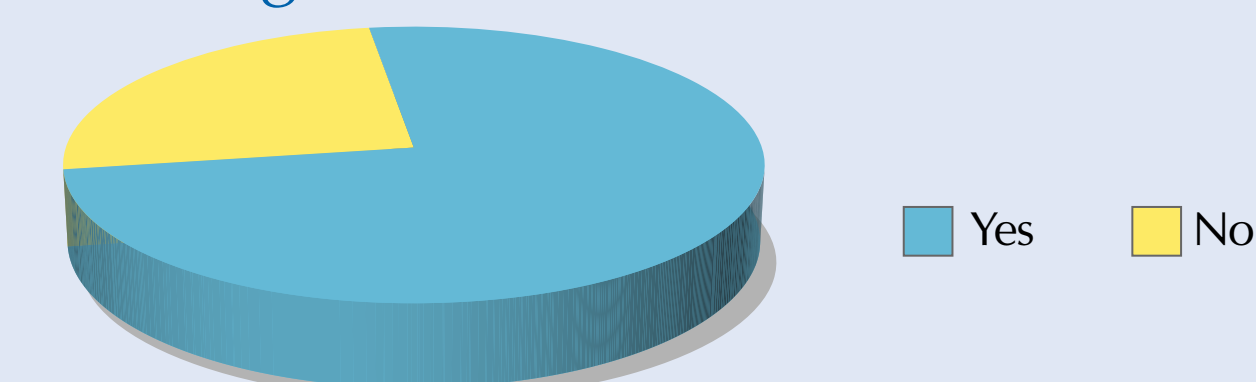


Figure 2. The availability of liquid soap dozer and/or alcohol hand rub dozer in wards (%)

Use of individual alcohol hand rub solutions after contact with patient reported 62.8% of respondents (Figure 3)

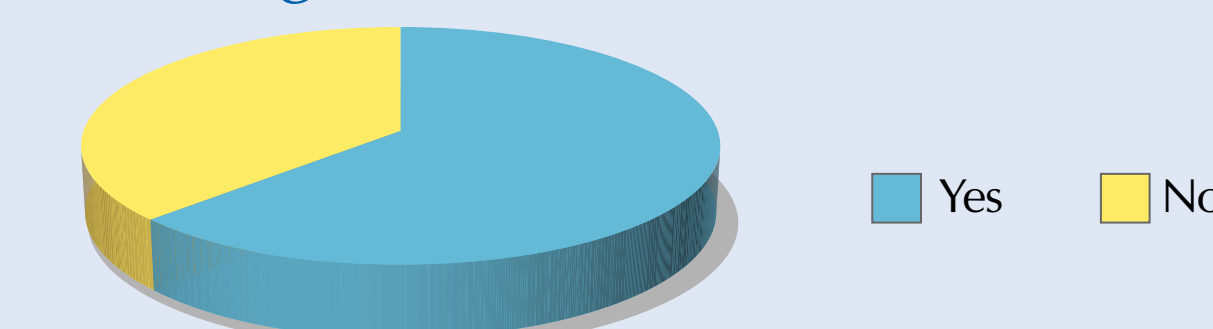


Figure 3. Participants' answers distribution to the question «Is the use of individual alcohol hand rub solutions after contact with patient a routine practice?» (%)

The average use of substances for disinfection of hands in university based (UB) and non-university based (NUB) hospitals is presented in Table 2.

Table 2. Average usage of substances for disinfection of hands in UB and NUB hospitals (%)

Answers	Mean (%)	
	UB	NUB
Only soap with water	67.3	64.3
Only alcohol hand rub solution	34.3	28.6
Both	72.2	69.5

Presence of NI guidelines on antimicrobial chemotherapy was registered by 51.8% respondents only. Compliance with guidelines averaged 82.3%.

According to 379 (94.5%) study participants' answers IC measures take place in their unit, according to the 18 (4.5%) study participants' answers IC measures do not take place in their unit, 3 (0.75%) participants did not indicate their answers.

78.75% of respondents answered that feedback seminars for medical personnel notification on IC measures results took places in their units. Frequency of those seminars is represented in Table 3.

Table 3. Frequency of feedback seminars for medical personnel notification on IC measures results per year

	1-2 times	3-4 times	5-6 times	7-10 times	20 times	Not indicated
Number of respondents' answers (n/%)	79 (19.75)	121 (30.25)	24 (6.0)	6 (1.5)	3 (0.75)	4 (1.0)

Number of NI registered in MD and SH per year is represented in Table 4.

Table 4. Distribution of MD and SH clinicians' answers to «What is a number of NI registered in your unit per year?» (%)

Type of hospital	0-5	6-10	11-15	16-25	26-35	>50	Not indicated
MD	45.0	20.3	17.2	5.3	9.5	2.1	0.6
SH	43.3	35.0	15.0	3.3	3.3	0	0

Distribution of MD and SH clinicians' answers to «Who is responsible for active NI cases finding record-keeping?» is shown in Table 5.

Table 5. Distribution of MD and SH clinicians' answers to «Who is responsible for active NI cases finding record-keeping?» (%)

Type of hospital	Hospital epidemiologist	Head of unit	ICU physician	Infectiologist	ICU nurse	Other
MD	39.0	28.8	20.7	5.0	4.1	2.4
SH	30.7	36.4	19.3	6.8	4.5	2.3

Majority of MD and SH respondents indicated «Microbiology work-up results of clinical material» as a primary infection monitoring method in their ICUs (48.0% and 46.0%, respectively), 31.1% and 35.0% of respondents, respectively, indicated «Direct patients' observation» and 20.9% and 19.0%, respectively, indicated «History cases data analysis» as a primary infection monitoring method in their ICUs.

MD and SH respondents' answers to «Indicate all precaution measures (barrier methods) used during central venous catheter insertion» distributed in the following way: mask usage (24.9% and 25.2%, respectively), catheter insertion site sterile garb lining (22.3% and 23.0%, respectively), catheter insertion site disinfection (25.2% and 25.2%, respectively), sterile gloves usage (25.5% and 26.1%, respectively) and other precaution measures – 2.1% and 0.5%, respectively.

Distribution of MD and SH participants' answers to the questions concerning with insertion and catheter care guidelines is represented in Table 6.

Table 6. Distribution of MD and SH participants' answers to the questions concerning with insertion and catheter care guidelines (%)

Question	Yes		No	
	MD	SH	MD	SH
Are there any guidelines in your hospital/unit concerning with insertion and catheter care rules?	90.5	83.3	90.5	83.3
Do you systematically culture catheter tips provided that catheter is placed for more than 7 days?	68.0	68.3	68.0	68.3

In Table 7 the answers to the questions concerning MRSA are presented.

Table 7. The answers to the questions concerning MRSA (%)

Question	Yes		No	
	MD	SH	MD	SH
Do you use precautions contacting with MRSA patients?	69,8	85,0	30,2	15,0
Do you screen patients on admission for MRSA carriage?	17,8	26,7	82,2	73,3
Do you use mupirocin for decolonization of patients with MRSA nasopharyngeal carriage?	3,6	38,3	96,4	61,7

CONCLUSIONS

1. According to the results the compliance with existing measures in ICUs is defined as comparatively low: 37.2% of physicians do not routinely use alcohol hand rub solution after contact with patient, 48.2% ICUs do not have guidelines on antimicrobial therapy for patients with NI, 25.2% of wards do not have liquid soap dozer and/or alcohol hand rub dozer, the lack of feedback seminars on IC measures results (21.25%), the lack of guidelines for insertion and catheter care (10.8%) and inadequate MRSA infections' management and precautions.

2. This was one of the first studies to assess existing situation with IC in Russian ICUs that showed that improvement of administrative measures for development and introduction of protocols and guidelines on IC is highly needed.

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