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FMUP FACULDADE DE MEDICINA
UNIVERSIDADE DO PORTO

MESTRADO INTEGRADO EM MEDICINA

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David Rodrigues Valente Peres

**Conhecimento, Fonte de Informação e Perceção de
Alunos de Medicina e Internos do Ano Comum
sobre Medidas Básicas em Controlo de Infeção**

**Knowledge, Source of Information and Perception
of Portuguese Medical Students and Junior Doctors
of Infection Control Precautions**

março, 2016

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Knowledge, Source of Information and Perception of
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Mestrado Integrado em Medicina

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Trabalho efetuado sob a Orientação de:

Doutora Maria Amélia Duarte Ferreira

E sob a Coorientação de:

Doutor Milton Severo Barros da Silva

Trabalho organizado de acordo com as normas da revista:

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Eu, **David Rodrigues Valente Peres** abaixo assinado, nº mecanográfico **200202119**, estudante do 6º ano do Ciclo de Estudos Integrado em Medicina, na Faculdade de Medicina da Universidade do Porto, declaro ter atuado com absoluta integridade na elaboração deste projeto de opção.

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NÚMERO DE ESTUDANTE

200202119

DATA DE CONCLUSÃO

DESIGNAÇÃO DA ÁREA DO PROJECTO

EDUCAÇÃO E SIMULAÇÃO MÉDICA

TÍTULO DISSERTAÇÃO/MONOGRRAFIA (riscar o que não interessa)

CONHECIMENTO, FONTE DE INFORMAÇÃO E PERCEÇÃO DE ALUNOS DE MEDICINA E INTERNOS DO ANO COMUM SOBRE MEDIDAS BÁSICAS EM CONTROLO DE INFEÇÃO.

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Maria Amélia Duarte Ferreira

COORIENTADOR (se aplicável)

Milton Severo Barros da Silva

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DE ACORDO COM A LEGISLAÇÃO EM VIGOR, (INDICAR, CASO TAL SEJA NECESSÁRIO, Nº MÁXIMO DE PÁGINAS, ILUSTRAÇÕES, GRÁFICOS, ETC.) NÃO É PERMITIDA A REPRODUÇÃO DE QUALQUER PARTE DESTA TRABALHO.	<input type="checkbox"/>

Faculdade de Medicina da Universidade do Porto, 23 /03 / 2016

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À minha avó,
uma mulher lutadora,
que dedicou a sua vida à família.

Na cadeira de rodas
A avó afaga-lhe a cabeça:
Ele calça-lhe o sapato.

David Rodrigues
In: "O Livro das Semanas", 2015

TITLE PAGE

Knowledge, source of information and perception of Portuguese medical students and junior doctors of infection control precautions.

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WORD COUNT (BODY OF THE TEXT): 2,686

PREVIOUS PRESENTATION: This study is part of a Master Thesis in Medicine of Faculty of Medicine of University of Porto.

These findings were presented, in part, at the “21st Infection and Sepsis Symposium”, Porto (Portugal), 8th March 2016, as a poster presentation.

ABBREVIATED TITLE: Medical students and infection control.

KEY WORDS: knowledge; source of information; perception; medical students; junior doctors; interns; infection control precautions.

ABSTRACT:

OBJECTIVE: Assess the knowledge, source of information and perception of medical students and junior doctors about prevention of transmission of infectious agents in healthcare settings.

DESIGN: Cross-sectional study.

PARTICIPANTS: 5th and 6th year medical students and junior doctors (interns).

METHODS: Knowledge in infection control precautions (ICP) was evaluated using 12 multiple-choice questions and, perception about curriculum adequacy, through five questions in Likert scale. In knowledge score, each correct answer was classified with one point (range, 0-12). In the perception score, each of the five items ranged from 1 (strongly disagree) to 5 (strongly agree) (range, 5-25). Two independent sample T-test or Analysis of Variances (ANOVA) was used to compare means of knowledge and perception scores.

RESULTS: 223 individuals participated. Mean overall knowledge score was 9.35 (SD±1.65) and perception score, 11.68 (SD±3.02). There was a positive association between academic year ($P = .032$), previous training in ICP ($P = .016$) and knowledge. Only 25% of students identified curriculum as the most important source of information for ICP. When asked about obstacles to compliance to ICP, more than half (53.4%) considered “forgetfulness” and “lack of knowledge“ relevant factors. The main strategies proposed by students to acquire competences in ICP, were “bedside teaching” (26.9%) and “curriculum and bedside teaching” (20.2%).

CONCLUSIONS: This study reveals reasonable knowledge in ICP; however, medical students perceived deficiencies in curriculum, which they admit as main source of information in only one quarter of cases. Previous training in ICP and academic year were important factors to increased knowledge.

INTRODUCTION:

Healthcare-associated infections (HAI) are a major public health problem. The last European Point Prevalence Study reported a prevalence of 5.7% (4.5–7.4%) or 81,089 (64,624–105,895) patients with an HAI on any given day in European acute care hospitals.¹ Despite improvements in understanding and designing strategies for HAI prevention, this type of infection continues to lead to substantial morbidity, mortality and (direct and indirect) costs. One of the reasons for this is the substantial differences between the recommendations and daily practice.² Center for Disease Control and Prevention designed infection control precautions (ICP) to prevent transmission of infectious agents among patients and healthcare workers (HCW) in all settings where healthcare is delivered. ICP include Standard Precautions (applied to all patients, regardless of suspected or confirmed diagnosis) and Transmission-Based Precautions (divided in contact, droplet and airborne isolation).³ Compliance to ICP is internationally suboptimal and this has significant implications for staff, patient and care environment safety.⁴ Portuguese Infection and Antimicrobial Resistance Control Program has published Standard Precautions, which all national healthcare institutions should follow.⁵ More recently, the National Annual Report of Antimicrobial Resistance Surveillance recommended that the pre and post-graduation curricula of doctors, and other HCW, should include ICP.⁶ The aim of our study was to assess the knowledge, source of information and perception of final year medical students and junior doctors about the prevention of transmission of infectious agents in healthcare settings.

METHODS:

Subjects and Sampling

This study was directed to the 5th and 6th year students and junior doctors (interns) from Faculty of Medicine of University of Porto, a total of 889 individuals (290, 311 and 288, respectively). In Portugal, after 6 years of medical school, the student has to complete one year of internship before entering residency program. In this year, referred as the intern year, the junior doctor is not allowed to practice unsupervised medicine (only within his/her training internship program). Participants were invited, through email, to complete the questionnaire which was available online, between July and October of 2015.

Questionnaire Design

A questionnaire was obtained and structured in four parts. The first one referred to participant's characteristics (8 questions); the second part addressed their knowledge in ICP (12 multiple choice questions, with only one correct answer) and was adapted from the knowledge domain of a questionnaire of a Swiss study of Sax et al.⁷; the third part (three multiple choice questions) was dedicated to the participant's various sources of information and what they considered to be the main source (based on Amin et al.⁸). In the last part, it was evaluated their perception about the contribution of the academic curriculum to their knowledge in this area, through five questions in Likert scale (based on Amin et al.⁸) and their opinion about the main obstacles to compliance to ICP (four questions in Likert scale, based on Sax et al.⁷).

Statistical Analysis

The Cronbach α test was used to assess the internal consistency of knowledge and perception questionnaire. In the knowledge score a correct answer was classified with one point, ranging between 0 and 12. In the perception score of curriculum adequacy, each of the five items ranged from 1 (strongly disagree) to 5 (strongly agree), ranging between 5 and 25. Two independent sample T-test or Analysis of Variances (ANOVA) was used to compare the means of the knowledge and perception scores. Significance level was fixed as 0.05.

RESULTS:

Overall Population

A total of 225 questionnaires were returned, but two were eliminated due to missing data related to “academic year”, leaving 223 questionnaires for analysis. Considering the target population, the response rate was 25.3%. The average age was 25.2 years (range, 21-48) and 70% were female. Regarding academic year, 38.1% were students from the 5th year, 33.2% of the 6th year and 28.7% were junior doctors (Table 2). A minority (6.3%) had been HCW before entering to medical school and 65.5% of the students admitted never having infection control training before.

Knowledge in ICP

The value of the Cronbach α test was 0.43. The mean of correct answers was 9.35 (SD \pm 1.65) in a universe of 12 knowledge questions. The vast majority identified correctly the main purpose of hand hygiene (97.3%), the risk-guided application of a preventive strategy (97.3%) and the ubiquitous risk in body fluids (96.4%). On the other hand, only 61% answered correctly about glove use, 59.2% for mask indication and 29.6% knew the adequate procedures for contact isolation (Table 1). Regarding the participants characteristics (Table 2), there was a positive association between academic year and knowledge in ICP (9.10, 9.24, 9.79; $P = .032$), as well as previous training in ICP and knowledge (9.16 vs. 9.71; $P = .016$). Gender; being pre-med HCW and the type of source of information didn't show significant statistical association with knowledge score.

Source of Information

We found a variety of opinions related to the most important source of information for infection control knowledge (Table 2), in which 31.4% referred bedside practice, 28.3% bedside teaching, 25% the curriculum and 15.2% self-learning.

Perception of Curricular Adequacy

The value of the Cronbach α test was 0.48. The mean score of answers indicating curricular adequacy was 11.68 (SD \pm 3.02). Half of the students disagreed that “current curriculum provides enough information on ICP” (50.2%) and more than half (53.7%) disagreed that “training sessions about ICP are provided to medical students” (Table 3). They admitted the need to improve in this area (51.1% “agree” and 38% “strongly agree” the need to receive training in ICP). The ones that told us that their main source of information was “self-learning” are the ones that were more dissatisfied with the curriculum ($P = .001$) (Table 2). No association was found between the perception of curricular adequacy and knowledge in ICP ($R = - 0.015$, $P = .822$).

When addressing the factors to explain the obstacles to compliance to ICP (Figure 1), our study revealed that more than half (53.4%) of the students agreed that “forgetfulness” and “lack of knowledge“ were “very important” etiological factors. “Lack of time” was also considered “very important” by 41.7% and “lack of means” was “important” to 52% of the participants.

Figure 2 reflects the strategies proposed by the medical students to acquire competences in ICP, in which 26.9% think the best one is “bedside teaching”, following 20.2% that prefer a combination of “curriculum and bedside teaching” and 15.7% who would prefer to learn through “bedside teaching and practice”. On the other hand, only 1.3% considered self-learning as an isolated strategy to learn about ICP.

DISCUSSION:

This work, dealing with Portuguese medical students and junior doctors, allows to add some important aspects in the area of education of prevention and control of HAI, in terms of knowledge, source of information, perception and strategies to acquire infection control competences.

Knowledge in ICP

In the beginning of the 90's Koenig and Chu reported worrisome results about the lack of knowledge of Universal Precautions in senior medical students at Washington School of Medicine.⁹ Trying to deal with this problem, their colleagues described the positive results they achieved with a training program to medical students.¹⁰ In the meantime, the Center for Disease Control and Prevention updated the guidelines in 1996¹¹ and, more recently, in 2007.³

As Mann and Wood¹² referred, medical students are now having contact with patients earlier in their training and this can be a challenge, in terms of infection control knowledge, for these future doctors. In fact, these investigators reported that 58% of 3rd year medical students from Birmingham University didn't know the indications for alcohol-based handrub, and 35% were unaware of correct glove use.¹² In fact, in our study there were also some issues with poor results, as glove and mask use or the procedures for contact isolation. As already described in other studies,^{13,14} Legeay et al.¹⁵ reported overall poor knowledge of medical students in the field of infection control, especially regarding personal protective equipment before providing care for an isolated patient. They found that the ones who were in final study years were associated with better scores. These results are according to what we found in our study: there was

a positive association between academic year and knowledge in ICP. On the other hand, Jaffe et al.¹⁶ found that students from preclinical years had better knowledge scores in ICP than clinical year students ($P < .001$). They attributed this difference to the more recent contact of preclinical students to the pathophysiology course but, they also concluded that, overall, student's knowledge level was not impressive.¹⁶ Other study⁷ reported that knowledge in this area decreases, as the time since undergraduate training increases. They explained this fact due to the more recent introduction of this topic in basic training, so the new generation of professionals can more easily adopt newer concepts. In our study, a small part of the participants were already HCW before being medical students. Interestingly, these pre-med HCW demonstrated less knowledge than his colleagues, but this association wasn't statistically significant. A study conducted at a Portuguese central and teaching hospital¹⁷ revealed that 7% of the inquired HCW, being the majority medical doctors, didn't know what were Standard Precautions. The authors concluded that there was unsatisfactory knowledge of these measures, enhancing the risk of HAI and recommending the need for training all HCW in this area. In fact, in the present study we found a positive association between the medical students that admitted to have had previous training in ICP and their knowledge in this area.

Source of Information

In contrast with our results, Tavalacci et al.¹⁸ finds that 86.7% of the 250 French healthcare students inquired, referred that the curriculum was the most important source of knowledge of ICP. On the other hand, the proportion that admitted to be "self-learning" is similar to our study. As alternative sources, they referred bedside practice and bedside teaching. La-Rotta et al.¹⁹ found that 52.4% of the 208 Brazilian doctors

studied also admitted that, the main source of knowledge of biosafety issues, was the undergraduate education (curriculum), following hospital in-training (30.4%) and self-learning (22.1%). In an Italian study²⁰ the HCW reported that their core source of information was training courses (71%), followed by scientific literature (48.2%). However, most of them (85.3%) admitted the need to update what they already knew.

Perception of Curricular Adequacy

Amin et al.⁸ reported that Saudi medical students perceived deficiencies in curriculum and training in ICP, admitting the need to improve in this area. In the present study, we can also conclude that the students who are more unhappy with the curriculum, are the ones that admit to have as main source of information “self-learning”. In a Dutch study²¹, the majority of the medical students qualified their hygiene behavior as inadequate, which may explain why 61% considered it useful to receive more information on ICP. The authors concluded that this points to an educational deficit in the medical curriculum. On the other hand, Herbert et al.²² found that 70% of 192 Austrian medical students considered their knowledge in hygiene standards as “excellent” or “good” and 74% referred having received a professional introduction to these guidelines but a vast majority (79%) still felt the need for more training in this area in their medical education. Interestingly, although two-thirds of a population of 273 Iranian nurses, midwives and students had previous infection control courses, 90.9% of them still admitted the need for more education in this area.²³ In a French study,²⁴ 94% of the participant medical students considered hygiene a priority when working in clinical areas, however 66.5% were dissatisfied by their hospital hygiene training. Regarding the most relevant factors in explaining the obstacles to compliance to ICP, we agree with Sax et al.⁷ findings: they reported that almost half (47.1%) of the students

referred “lack of knowledge“, followed by “lack of time” (41.7%) and “forgetfulness” (39.1%). Among a population of students and residents of Obstetrics, Helfgott et al.²⁵ described that the reasons HCW did not comply with ICP was mainly due to time constraints, “too much trouble” and perception of patient as not being infected.

Strategies to acquire infection control competences

As Cooke et al.²⁶ referred, students should have the opportunity to explore a variety of learning activities and methods that could allow them to achieve adequate competences. In our study, we identified that the main strategies proposed by the medical students to acquire competences in ICP, were “bedside teaching” and a combination of “curriculum and bedside teaching”. As reported in several studies,²⁷⁻²⁹ doctors were less likely to have had ICP training (when compared to nurses) and more likely to answer incorrectly. Although education may not ensure adherence to the recommendations, specific training should address gaps in knowledge and gaps between knowledge and practice.³⁰ This idea is reinforced by Berhe et al.,³¹ who suggested that educational programs should be tailored according to occupational category. Calabro et al.,³² after implementing an intervention (with a pre-test, a lecture, a demonstration of Standard Precautions in clinical scenario, an exercise on hand hygiene and a post-test) in 200 medical students, reported a significant increase in knowledge scores. Pan et al.³³ interviewed medical students who were observers in the hand hygiene campaign and concluded they believed to have gained more knowledge regarding hand hygiene compliance attitudes and cross-transmission epidemiology. In an Irish study,³⁴ an online infection control training course for medical students was developed and evaluated, with a statistically significant improvement in the knowledge level among the 517 students studied. In other study,³⁵ Portuguese medical students were inquired about their intention to comply with hand

hygiene. The authors found that the 1st year students perceived professors as the most significant role model, while the 6th year students focused on colleagues, as relevant social referents to model their compliance behavior. They concluded about the relevance of role models and mentors, as key factors in teaching hand hygiene to medical students. This idea was supported by Kaur et al.³⁶ that referred that sustainability of the practice of hand hygiene is likely to need role models and cultural change in infection control area. In fact, Frenk et al.³⁷ defended that, among other factors, coaching, instruction and role models are important for the development of major attributes of professional behavior, identity and values. In a detailed document, the “Commission on Education of Health Professionals for the 21st Century” believes that the future will be shaped by adaptation of competencies to specific contexts, having as reference the global flows of information and knowledge.³⁷

Our study has some limitations, such as, the population studied is not representative of all Portuguese medical students (we studied a sample of one of the eight Portuguese medical schools, which have different curricula between them). Other limitation is that knowledge does not necessarily translate into attitude and practice. However, Askarian et al.³⁸ found a statistically significant positive correlation between knowledge *vs.* attitude; knowledge *vs.* practice and practice *vs.* attitude in a group of 468 medical students towards ICP.

We can conclude that our study revealed reasonable knowledge in basic concepts of ICP. However, this sample of Portuguese medical students and junior doctors perceived deficiencies in curriculum and training received in this area, admitting the need to improve it. We found a positive association between academic year and knowledge, as well as, previous training in ICP and knowledge. Interestingly, only 25% of the students identified, as the main source of information for infection control knowledge, the

curriculum and, when asked about the obstacles to compliance to ICP, more than half considered “forgetfulness” and “lack of knowledge“ very important etiological factors. Finally, the strategies proposed by medical students to acquire competences in ICP, were mainly “bedside teaching” and a combination of “curriculum and bedside teaching”. In 2009, the WHO’s World Alliance for Patient Safety published the Patient Safety Curriculum Guide for Medical Schools³⁹. This guide was designed to build basic knowledge and skills for medical students and to improve their future clinical practice. It is comprised of 11 topics, being one of them “Minimizing infection through improved infection control”.⁴⁰ It is our opinion that would be an important resource for Portuguese Medical Schools to implement in their curricula these pedagogical tools in order to improve the competences of the future doctors in infection control and patient safety areas.

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TABLES

Table 1. Questionnaire to evaluate the knowledge of medical students and junior doctors in ICP and its distribution of correct answers (adapted from Sax et al.⁷).

Question	Correct answer	N (%)
1- What is the most important vehicle of transmission of infectious agents in the hospital?	Hands.	192 (86.1)
2- What are non-sterile gloves used for?	Protect HCW from contact with blood or other body fluid.	136 (61.0)
3- Hand hygiene immediately before caring for a patient.	Is useful to protect the patient.	217 (97.3)
4- You have to examine the joint mobility of a patient.	Hand antisepsis before and after touching patient.	189 (84.8)
5- You have to draw blood from and examine the lungs of a patient who coughs. Do you put on a mask?	Yes, always.	132 (59.2)
6- There is a suspicion of lung tuberculosis case. When does patient need isolation in single room and HCW wear high-efficiency masks when entering the room?	Immediately.	184 (82.5)
7- A patient is colonized with MRSA. You help to install him in his bed. What preventive measures to apply?	Gown, gloves and hand antisepsis before and after care.	66 (29.6)
8- You have to draw blood from patient A, who has no sign of infection, then from patient B, who has hepatitis C. What preventive measures do you take?	Hand antisepsis and gloves for both patients.	192 (86.1)
9- Prevention against transmission of infectious agents consists mainly of:	Preventive measures according to risk of transmission.	217 (97.3)
10- Does splashing of a patient's body fluids in a HCW's eye represent a risk for systemic infection?	Yes, regardless of the type of splashing.	215 (96.4)
11- You have to insert a peripheral vascular access. Is there any risk of cross-transmission during the procedure?	Yes, for the patient and HCW.	178 (79.8)
12- What could be the risk of dismantling the false ceiling in a corridor of a ward?	Can be dangerous to the health of some patients.	167 (74.9)

HCW- Healthcare Worker; MRSA- Methicillin-Resistant *Staphylococcus aureus*

Table 2. Knowledge and perception of curricular adequacy scores related to ICP, according to participant's characteristics.

	N (%)	Knowledge score		Perception of curricular adequacy score	
		Mean (SD)	<i>P</i> -value	Mean (SD)	<i>P</i> -value
TOTAL	223 (100)	9.35 (1.65)		11.68 (3.02)	
Age (years)					
≤ 24	140 (62.8)	9.29 (1.74)	0.454	11.63 (3.11)	0.756
> 24	83 (37.2)	9.46 (1.50)		11.76 (2.88)	
Gender					
Female	156 (70.0)	9.45 (1.50)	0.173	11.74 (2.79)	0.680
Male	67 (30.0)	9.12 (1.96)		11.54 (3.50)	
Academic Year					
5 th year	85 (38.1)	9.10 (1.60)	0.032	11.53 (2.97)	0.770
6 th year	74 (33.2)	9.24 (1.69)		11.66 (2.92)	
Intern	64 (28.7)	9.79 (1.62)		11.89 (3.21)	
Pre-med Healthcare Worker					
No	209 (93.7)	9.34 (1.65)	0.604	11.72 (3.06)	0.476
Yes	14 (6.3)	9.08 (1.62)		11.08 (2.35)	
Ever had Infection Control Training					
No	146 (65.5)	9.16 (1.69)	0.016	11.44 (3.07)	0.104
Yes	77 (34.5)	9.71 (1.52)		12.13 (2.88)	
Most Important Source of Information for Infection Control Knowledge					
Self-learning	34 (15.2)	9.12 (2.21)	0.478	9.94 (3.22)	0.001
Curriculum	56 (25.1)	9.16 (1.64)		12.36 (3.01)	
Bedside teaching	63 (28.3)	9.43(1.57)		12.16 (2.80)	
Bedside practice	70 (31.4)	9.54 (1.41)		11.54 (2.83)	

Table 3. Perception of medical students of current curricular adequacy and training needs in ICP (adapted from Amin et al.⁸).

Statements	Strongly disagree N (%)	Disagree N (%)	Neutral N (%)	Agree N (%)	Strongly agree N (%)
Current curriculum provides enough information on ICP.	32 (14.1)	114 (50.2)	25 (11.0)	52 (22.9)	4 (1.8)
Training sessions about ICP are provided to medical students.	34 (15.0)	122 (53.7)	33 (14.5)	37 (16.3)	1 (0.4)
Tutors provided us enough information on ICP before clinical rotations.	25 (11.0)	90 (39.6)	49 (21.6)	60 (26.4)	3 (1.3)
I learned about ICP using case scenarios and simulations.	49 (21.6)	111 (48.9)	29 (12.8)	37 (16.3)	1 (0.4)
I need to receive training on ICP.	0 (0)	4 (1.8)	19 (8.4)	116 (51.1)	88 (38.8)

ICP- Infection Control Precautions.

FIGURES

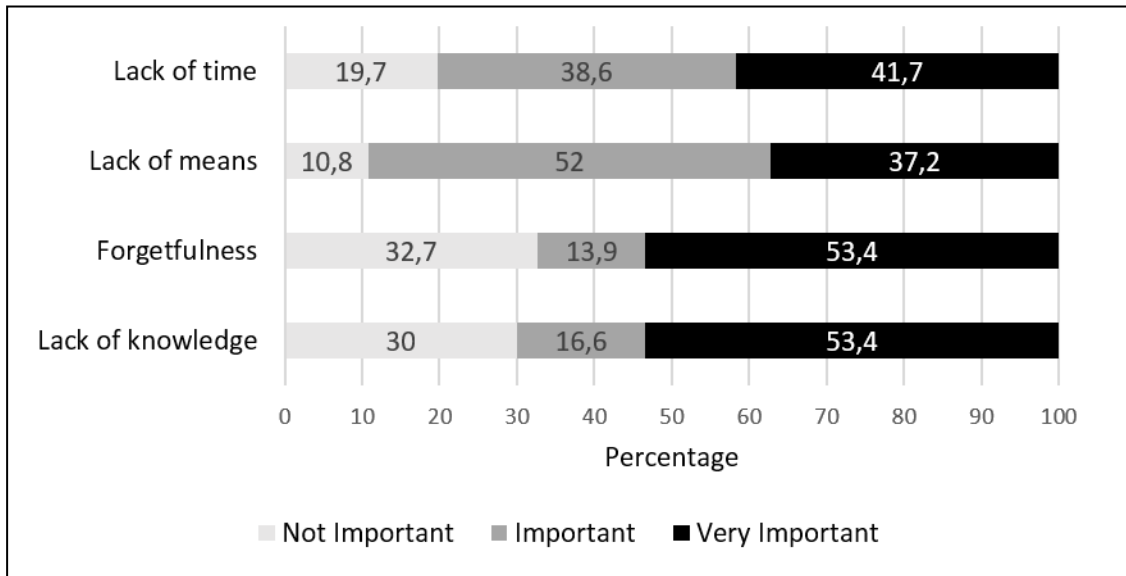


Figure 1. Perception of participants of obstacles to compliance to ICP (adapted from Sax et al.⁷).

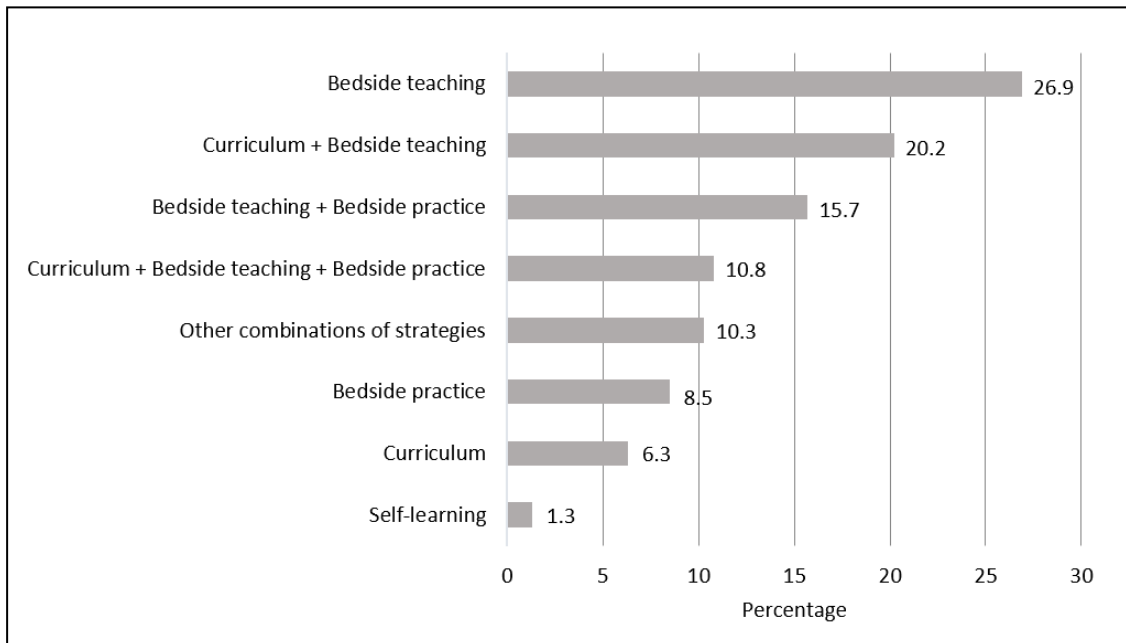


Figure 2. Strategies proposed by participants to acquire competences in ICP.

AGRADECIMENTOS

À Prof. Doutora Amélia Ferreira, pelo seu apoio na orientação deste trabalho, com o seu dinamismo e sentido prático, bem como pelo seu valioso contributo na área da educação médica em Portugal.

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À minha fantástica família, à minha mãe Fernanda, ao meu pai António, ao meu tio David, à Luzia e à Melissa, por serem excelentes pessoas e amigos, pelas oportunidades e constante apoio que me têm dado ao longo da minha vida e na prossecução deste objetivo da minha vida... ser Médico. Por não desistirem de mim, mesmo nos momentos mais difíceis.

Aos meus amigos, que sempre estiveram lá quando precisei, por tornarem as barreiras quotidianas mais fáceis de ultrapassar, pela sua boa disposição e apoio nas ocasiões menos fáceis, em especial à Ema, ao João, à Emília, ao Anderson, ao Fernando, ao Carlos, ao meu grupo de amigos da Católica e de Leça.

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Obrigado, Elisabete, pela companhia nas longas jornadas de estudo na biblioteca.

U. PORTO

FMUP FACULDADE DE MEDICINA
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ANEXOS

Parecer da Comissão de Ética para a Saúde

Normas da Revista *Infection Control and Hospital Epidemiology*

FMUP

**COMISSÃO DE ÉTICA PARA A SAÚDE DO CENTRO HOSPITALAR DE S. JOÃO -
EPE
Parecer**

Título do Projecto: Conhecimento, fonte de informação e percepção de alunos de medicina e internos do ano comum sobre medidas básicas em controlo da infecção.

Nome do Investigador Principal: David Rodrigues Valente Peres
Aluno do Mestrado Integrado em Medicina da Faculdade de Medicina da Universidade do Porto
Licenciado em Microbiologia pela Universidade Católica do Porto

Objectivo do Projecto: Dissertação de Mestrado

Local onde decorrerá o Estudo: Faculdade de Medicina da Universidade do Porto

Orientador do Estudo: Prof^a. Doutora Maria Amélia Duarte Ferreira
Directora da Faculdade de Medicina da Universidade do Porto

Concepção e Pertinência do Estudo:

Verifica-se que em Portugal, de acordo com dados recentes, a taxa de infecção hospitalar é mais elevada que a média europeia, apresentando também uma elevada taxa de resistência bacteriana aos antimicrobianos conforme expresso no resultado de vigilância epidemiológica da European Resistance Surveillance Network (2013).

Atendendo a esta situação preocupante a Direcção Geral de Saúde através dum documento recente recomenda entre outras medidas que “deverá ser crescentemente incluído nos currículos pré-graduados e pós-graduados de médicos, enfermeiros, veterinários e farmacêuticos o ensino da prevenção e o controlo da infecção e da resistência aos antimicrobianos”.

Este estudo em sintonia com as recomendações da DGS propõe-se avaliar junto do aluno de Medicina e internos do ano comum o seu conhecimento, fonte de informação e percepção sobre as medidas básicas em controlo de infecção no sentido de não só compreender a realidade desta temática mas também abrir a possibilidade de elaborar propostas da melhoria duma situação que tanto preocupa o meio hospitalar, médicos e profissionais de saúde como os doentes e a sociedade civil em geral.

Os objectivos que este estudo pretende atingir são os seguintes:

1º — Avaliar o conhecimento dos alunos do 3º e 6º ano do Mestrado Integrado em Medicina e dos internos do ano comum sobre 5 itens em Precauções Básicas em Controlo de Infecções (PBCI);

2º — Comparar os resultados obtidos procurando uma possível correlação entre anos pré-clínicos, anos clínicos e ano comum.

3º — Avaliar as fontes de informação dos alunos /IAC’S sobre as PBCI’s.

4º – Avaliar a percepção dos alunos/IAC’S e respectivo contributo da sua formação académica.

Para cumprir com estes objectivos será utilizado um questionário em plataforma web-based, à população alvo em dois períodos diferentes. Junho para alunos do 6º ano e IAC’s e Setembro para os restantes alunos.

O Questionário é constituído por 5 grupos de questões, de resposta verdadeiro ou falso os primeiros quatro, sendo o último (5) de resposta em escala.

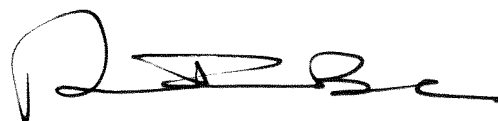
O estudo prevê-se terminar em Dezembro 2015.

No próprio Questionário existe uma informação ao participante sobre os seus objectivos e o carácter voluntário da participação, bem como uma garantia de anonimização e confidencialidade dos dados recolhidos.

O Estudo afigura-se pertinente pelo que proponho à CES a sua aprovação.

Porto e C.H. de S. João - EPE, 15/05/2015

O Relator

A handwritten signature in black ink, appearing to read 'Rui Barbosa', with a large initial 'R' and a long horizontal stroke.

(Eng. Rui Barbosa)

7. SEGURO

a. Este estudo/projecto de investigação prevê intervenção clínica que implique a existência de um seguro para os participantes?

SIM (Se sim, junte, por favor, cópia da Apólice de Seguro respectiva)

NÃO

NÃO APLICÁVEL

8. TERMO DE RESPONSABILIDADE

Eu, **David Rodrigues Valente Peres**, abaixo-assinado, na qualidade de Investigador Principal, declaro por minha honra que as informações prestadas neste questionário são verdadeiras. Mais declaro que, durante o estudo, serão respeitadas as recomendações constantes da Declaração de Helsínquia (com as emendas de Tóquio 1975, Veneza 1983, Hong-Kong 1989, Somerset West 1996 e Edimburgo 2000) e da Organização Mundial da Saúde, no que se refere à experimentação que envolve seres humanos. Aceito, também, a recomendação da CES de que o recrutamento para este estudo se fará junto de doentes que não tenham participado em outro estudo no decurso do actual internamento ou da mesma consulta.

Porto, 22 Abril / 2015



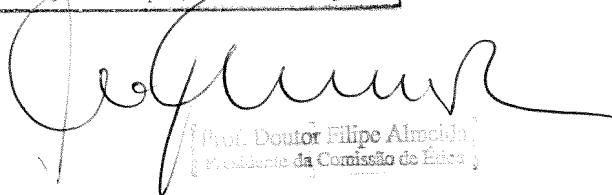
O Investigador Principal

PARECER DA COMISSÃO DE ÉTICA PARA A SAÚDE DO CENTRO HOSPITALAR DE S. JOÃO

emitido na reunião plenária da CES

de 15 Maio / 2015

A Comissão de Ética para a Saúde
APROVA por unanimidade o parecer do
Relator, pelo que nada tem a opor à
realização deste projecto de investigação.



Prof. Doutor Filipe Almeida
Presidente da Comissão de Ética

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Abbreviations should conform to those given in the *AMA Manual of Style*. Symbols for units of measurement (mm, mL) should not be followed by periods. Chemical or generic names of drugs, materials, and equipment are strongly preferred; a proprietary name may be given only after it is preceded by the generic or chemical name the first time it appears and must be followed by the name of the manufacturer or supplier. Terms and abbreviations must be defined at first use, separately for the abstract, the body, and each table and figure. Use only common abbreviations and use as few as possible; and do not abbreviate terms used fewer than 5 times. Abbreviate genus names after first mention.

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Objective. Begin with a clear statement of the precise objective or question addressed in the report. If more than one objective is addressed, indicate the main objective and state only key secondary objectives. If an a priori hypothesis was tested, it should be stated.

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The main sections and subdivisions of the body text should be indicated by side heads flush with the left margin and two lines above the text.

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Acknowledgments

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Examples:

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- *Financial support.* H.S.C. received grant support from the Department of Veterans Affairs Rehabilitation Research and Development Service Merit Review (C2234-MD and C3-2442MD), D.B.L. received support from the US Public Health Service (grant HC41024), and A.E.T. received salary support from an Emerging Infectious Diseases Cooperative Agreement. C.U. receives 2% salary support from Aventis Pasteur for work on another study.
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- *Potential conflicts of interest.* E.F.M. reports that she has been a consultant to Merck, Novartis, and GlaxoSmithKline and is member of the speakers' bureaus for Ortho McNeil and Novartis. J.A.S. reports that he received research funding from Bayer and Ortho McNeil and that he has been a consultant for Bayer and Pfizer. J.D.C. reports that he is an employee of AB Biodisk.

- *Potential conflicts of interest.* All authors report no conflicts of interest relevant to this article.

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Examples:

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- *Manuscript preparation.* Statistical and other analyses were done by 3M Medical Division.
- *Manuscript preparation.* MedCommunications (Philadelphia) provided assistance in preparing and editing the manuscript.

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Journal article (examples)

1. Pittet D, Simon A, Hugonnet S, Pessoa-Silva CL, Sauvan V, Perneger TV. Hand hygiene among physicians: performance, beliefs, and perceptions. *Ann Intern Med* 2004;141:1-8.
2. Camins BC, Richmond AM, Dyer KL, et al. A crossover intervention trial evaluating the efficacy of a chlorhexidine-impregnated sponge in reducing catheter-related bloodstream infections among patients undergoing hemodialysis. *Infect Control Hosp Epidemiol* 2010;31:1118-1123.

Journal article in press (example)

3. Figueroa P, Johanssen KL, Price FG, et al. Outbreak of *Acinetobacter* infection in a neonatal intensive care unit. *Pediatr Infect Dis J* (in press).

Paper presented at a professional meeting (example)

4. Chen LF, Freeman JT, Sexton DJ, Choi YI, Anderson DJ. NHSN definition of laboratory-detected BSI is overly sensitive for *Enterococcus*. In: Program and abstracts of the 19th Annual Scientific Meeting of the Society for Healthcare Epidemiology of America (SHEA); March 18–22, 2009; San Diego, CA. Abstract 359.

Book (example)

5. Heoprich PD. *Infectious Diseases*. 2nd ed. New York, NY: Harper & Row; 1977.

Chapter in a book (example)

6. Schaffner W. Psittacosis: ornithosis, parrot fever. In: Beeson PB, McDermott W, Wyngaarden JB, eds. *Cecil Textbook of Medicine*. 15th ed. Philadelphia, PA: W. B. Saunders; 1979:336-338.

Web page (example)

7. Clinical laboratory fee schedule. Centers for Medicare and Medicaid Services website. http://www.cms.gov/ClinicalLabFeeSched/02_clinlab.asp#TopOfPage. Published 2010. Accessed April 2, 2010.

TABLES

Prepare tables with the MS Word table editor; text formatted to look like a table by use of tabs and hard returns is not acceptable and will be rejected. Include tables in the same file as the rest of the manuscript, not in separate files. Tables should be double spaced. Number tables in the order in which they are cited in the text, and provide a descriptive title for each table.

Every column in a table requires a head that describes the contents of the cells below. The units of measure for all data must be clearly stated in the heads, in the stub (leftmost) column, or in data cells, as appropriate. Do not use vertical lines, and do not use ditto marks for repeated information.

List and define any abbreviations in a note below the table, above the table footnotes (no footnote designator is required for this line), even if the abbreviations have been defined in the text. Use superscript letters for footnote designators.

Tables that are too large to be reproduced in print, if accepted for publication, will appear only in the online version of the article, and information about the online-only table (including a full or partial title) will be included in the print version of the article.

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All artwork (figures, photographs, and illustrations) should be submitted as digital files. The required format is TIFF or EPS, with the following resolutions: 1,200 dpi for line figures (eg, graphs), 600 dpi for grayscale figures (eg, photographs), and 300 dpi for color figures. PowerPoint, Word, and JPEG files will not be accepted. Each figure or illustration must be a stand-alone file, separate from the text file, and named to match the number cited in the text (eg, fig1.eps). Do not include titles and legends in illustration files.

Figure legends should be double spaced on a separate page of the manuscript. (This is because a figure is reproduced as an image file, whereas the legend that accompanies the figure is typeset as text.) Place figure titles and explanations in the legend, not on the figure image. On the other hand, graphic elements that require definition, such as symbols, are best placed and defined in available open space within the figure itself.

The text of the figure legend should concisely and accurately label what the figure depicts and define any abbreviations or terms used within it. The figure legend should not describe or restate methods, nor state or restate detailed findings, nor state a claim or conclusion drawn from the data displayed. Such statements belong in the appropriate section of the body text, not in a figure legend.

Supplemental Material (Online-Only Material)

An increasingly appealing option for journal authors is the inclusion of Supplementary Material with the traditional manuscript text. Supplementary Material is defined as any content that supports, but is not key to, the understanding of a print- and / or online-published item's message. Given that Supplementary Material is exclusively published online, it may include file types that are incompatible with a print format, eg., color versions of black and white figures, videos, audio, and Excel files containing interactive elements. Designation of content as "online-only" should not be used to shorten the anticipated print version of a submission.

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The author is solely responsible for the content of this material. Supplementary Material will be made available only in its original format and will not be subject to copy editing, or typesetting.

As the submission of Supplementary files becomes more prevalent we would like to offer some guidelines for submission of Supplementary files to Cambridge University Press journals production.

Most common types of Supplementary Material

Common types of Supplementary Material include audio and video files and large datasets or tables. Datasets, tables, and other textual material are commonly submitted as PDF, Excel, or Word files. Our recommendations for the various types of files can be found in Appendix 1 at the end of this document.

For each video, provide a citation in the appropriate place in the manuscript text and include a title and pertinent copy, preferably limited to 20 words.

This citation will appear in print as a boxed text and also specify the video file format. In the case of multiple video files, number them in the order in which they should be viewed.

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APPENDIX: Supplemental file submission requirements

Accepted formats: pdf, doc/docx, xls/xlsx, ppt/pptx, jpeg, tiff, png, and zip

Other acceptable file formats

Audio Files

- Preferred formats: mp3 or mp4
- Accepted formats: AAC, AIFF or WAV
- Maximum file size 15Mb

Video Files

Video files should be submitted according to the following specifications.

- Preferred formats: mpg/mpeg, mp4 or mov

- Acceptable formats: wmv or avi
- Maximum file size: 15Mb
- Minimum dimensions: 320 pixels wide by 240 pixels deep
- Verify that the videos are viewable in QuickTime or Windows Media Player

SUPPORTING DOCUMENTS

Include a cover letter with your submission; the cover letter should state that all authors have read and approved the submission of the manuscript. The letter also should state that the manuscript has not been published elsewhere and that it is not currently under consideration for publication by another journal. Include the names and contact information for any individuals who are especially qualified to review the manuscript; you may also name any individuals who may not be able to provide an unbiased review.

Any closely related manuscripts that have not yet been published should be included with the manuscript being submitted; *ICHE* does not publish articles that overlap substantially with work published or in press elsewhere.

REVIEW AND PUBLICATION PROCESS

Each manuscript is evaluated by two editors; most are sent to two outside reviewers. Authors are notified as soon as possible regarding the acceptability of their manuscripts. Note that acceptability may sometimes hinge on whether the manuscript is within the scope of the journal, the originality and quality of the study, and appropriateness and utility for our readership.

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Every manuscript that is accepted for publication, except for Supplemental Appendix material, is edited according to the journal's style and format requirements before it is published online and in print. After the manuscript has been edited and typeset, the author responsible for correspondence will receive an e-mail message from the Cambridge University Press production staff, containing instructions for obtaining page proofs in PDF form from a secure Web site. Authors are asked to respond to all queries from the Press's production editors and to provide any additional corrections within 48 hours after the proof notification. Once page proofs are sent, authors will be able to order reprints or offprints of their article or a printed copy of the issue by visiting the Cambridge University Reprint Order Center online at: <http://www.sheridan.com/cup/eoc>

U. PORTO

FMUP FACULDADE DE MEDICINA
UNIVERSIDADE DO PORTO

APÊNDICE

Questionário do Estudo

FMUP

- QUESTIONÁRIO -

No âmbito de um estudo a ser desenvolvido na área da educação médica, subordinado ao tema **“Conhecimento, fonte de informação e percepção dos alunos de medicina e internos do ano comum sobre medidas básicas em controlo de infeção”** agradeço a disponibilidade e o contributo com o preenchimento do seguinte questionário.

População-alvo: alunos do 5º e 6º ano da FMUP e IACS 2015 que fizeram o curso na FMUP.

Orientação: Prof. Doutora Maria Amélia Ferreira

Coorientação: Prof. Doutor Milton Severo

De salvaguardar que será garantido o anonimato e confidencialidade de toda a informação recolhida.

Obrigado pelo seu contributo.

David Peres (aluno do MIMED da FMUP)

Email: david.r.peres@gmail.com

NOTA: Este estudo tem a aprovação da Comissão de Ética para a Saúde do Centro Hospitalar de São João.

PARTE I - IDENTIFICAÇÃO

Idade: _____ anos

Sexo: feminino masculino

Ano Curricular em que esteve inscrito a 31 de Julho de 2015: _____

Contingente de acesso ao curso: geral
 licenciados
 outro: _____

Antes de entrar no curso de medicina já exerceu uma profissão como profissional de saúde?

sim não

Se é IAC, instituição de saúde onde exerce funções: _____

Já participou em alguma sessão de formação em controlo de infeção associada a cuidados de saúde?

sim não

Se respondeu "sim" na pergunta anterior, pf especifique o tema, a duração (em horas) e quem organizou a referida formação:

PARTE II - CONHECIMENTO SOBRE PRECAUÇÕES EM CONTROLO DE INFEÇÃO (PCI)

Por favor escolha a alínea mais correta.

1- Qual é o veículo de transmissão mais importante de agentes infecciosos no hospital?

- a. Dispositivos médicos.
- b. Ar.
- c. Mãos.
- d. Alimentos.

2- Em que situação estão indicadas luvas não esterilizadas?

- a. Para proteger os profissionais de saúde quando têm contacto com a pele intacta de um doente.
- b. Para proteger o doente da transmissão de um agente infeccioso através das mãos.
- c. Para proteger os profissionais de saúde quando têm contacto com sangue ou outros fluidos orgânicos.
- d. Para proteger os profissionais de saúde quando o doente tem uma infeção sintomática.

3- A higiene das mãos imediatamente antes de cuidar de um doente:

- a. Protege os profissionais de saúde.
- b. Protege o doente.
- c. Protege o meio ambiente.
- d. É útil somente para doentes infetados.

4- Tem que avaliar a mobilidade articular de um doente. Como procede?

- a. Higieniza as mãos e coloca luvas antes de tocar no doente.
- b. Higieniza as mãos antes e depois de tocar o doente.
- c. Higieniza as mãos, coloca luvas e um avental antes de tocar no doente e, após o exame, higieniza novamente as mãos.
- d. Não faz nada em particular, uma vez que o doente claramente não está infetado.

5- Tem que colher sangue e proceder a auscultação pulmonar de um doente que está a tossir. Coloca uma máscara?

- a. Sim, sempre.
- b. Sim, mas apenas se o doente tem pneumonia e apresenta expectoração abundante.
- c. Não, não é necessário.
- d. Não, uma vez que o doente não está infetado.

6- Durante a visita médica, o médico assistente suspeita que um doente tem tuberculose pulmonar. Deverá isolar o doente num quarto individual e usar uma máscara tipo respirador quando entrar no quarto?

- a. Somente se a suspeita de tuberculose for confirmada por exame direto de uma amostra respiratória.
- b. Imediatamente.
- c. Somente se o teste tuberculínico foi positivo neste doente.
- d. Somente se existem doentes de risco na mesma enfermaria.

7- Um doente está colonizado com *Staphylococcus aureus* resistente à metilina (MRSA). Está a ajudá-lo a instalar-se na cama. Que medidas aplica?

- a. Nenhuma em especial.
- b. Máscara, luvas, bata e higiene das mãos antes e após os cuidados.
- c. Higiene das mãos antes e após os cuidados.
- d. Bata, luvas e higiene das mãos antes e após os cuidados.

8- Os doentes A (sem sinais de infeção) e B (com hepatite B) deverão colher sangue. Que medidas tomar?

- a. Utilização de luvas, máscara e higiene das mãos para o doente B, mas somente higiene das mãos para o doente A.
- b. Higiene das mãos para ambos doentes e, adicionalmente, utilização de luvas para o doente B.
- c. Higiene das mãos e luvas para ambos os doentes.
- d. Sem medidas especiais de proteção, mas tomando cuidado para não ter contacto com o sangue colhido.

9- A prevenção contra a transmissão de agentes infecciosos consiste principalmente em:

- a. Isolamento de todos os doentes infetados.
- b. Internamento de todos os doentes em quartos individuais.
- c. Aplicação de medidas de prevenção, de acordo com o risco de transmissão.
- d. Tratamento adequado das infeções.

10- Será que a exposição ocular de um profissional de saúde a fluídos orgânicos representa um risco para contrair uma infeção?

- a. Sim, mas apenas se o doente tem uma infeção conhecida.
- b. Não, pois os profissionais de saúde têm um sistema imunitário competente.
- c. Sim, constitui um risco.
- d. Não, se o profissional de saúde estiver vacinado contra a hepatite B.

11- Procede a uma gasimetria arterial num doente. Existe algum risco de transmissão cruzada durante este procedimento?

- a. Sim, para o profissional de saúde.
- b. Sim, para o doente.
- c. Sim, para o doente e para o profissional de saúde.
- d. Não, para nenhum deles.

12- Qual poderá ser o risco do desmantelamento de um teto falso no corredor de uma enfermaria?

- a. Não representa qualquer ameaça à saúde dos doentes.
- b. Representa somente um problema técnico e logístico.
- c. Poderá representar um perigo para a saúde de alguns doentes.
- d. Tem quase sempre consequências graves para a saúde dos doentes.

PARTE III - FONTE DE INFORMAÇÃO

13- Quais foram as fontes de informação que permitiram que respondesse a estas perguntas?
(pode responder mais do que uma opção)

- Auto-aprendizagem.
- Currículo académico (aulas teóricas ou teórico-práticas).
- Ensino tutorial na prática clínica.
- Prática clínica.

14- Qual foi a fonte de informação mais importante que permitiu que respondesse a estas perguntas? (pf responda somente a uma opção)

- Auto-aprendizagem.
- Currículo académico (aulas teóricas ou teórico-práticas).
- Ensino tutorial na prática clínica.
- Prática clínica.

15- Qual considera ser a estratégia mais adequada para obter competências sobre precauções básicas e de isolamento em controlo de infeção? (pode responder a mais do que uma opção)

- Auto-aprendizagem.
- Currículo académico (aulas teóricas ou teórico-práticas).
- Ensino tutorial na prática clínica.
- Prática clínica.

PARTE IV – PERCEÇÃO

16- Pf escolha somente uma opção por cada alínea, segundo o seu grau de concordância.

	Discordo fortemente	Discordo	Não concordo nem discordo	Concordo	Concordo fortemente
O currículo académico fornece informação suficiente em PCI.					
São ministradas sessões de treino/ orientação sobre PCI aos alunos de medicina.					
Os tutores fornecem informação sobre PCI antes da rotação clínica.					
Aprendi as PCI através de simulações e casos clínicos					
Sinto necessidade de sessões de treino sobre PCI.					

PCI - precauções em controlo de infeção

17- “No quotidiano as orientações para prevenção da infeção nem sempre são aplicadas”.

Qual a importância de cada um destes fatores para justificar esta afirmação?

Pf escolha somente uma opção por cada alínea.

	Pouco Importante	Importante	Muito Importante
Falta de conhecimento			
Esquecimento			
Falta de meios			
Falta de tempo			

Chegou ao fim do questionário. Agradeço o seu contributo!

O investigador,

David Peres.

Se estiver interessado no resultado deste trabalho, pf deixe o seu contacto de email:
