



Fig. 1.

models of intervention. The use of "diagonal" models that incorporate horizontal health systems strengthening can transform multidisciplinary partnerships into long-term collaboratives essential for sustained reduction of HAIs.

Funding: None Disclosures: None Doi:10.1017/ice.2020.731

Presentation Type:

Poster Presentation

Digital Education on Prudent Antibiotic Use—Evaluation of a Massive Open Online Course for General Practitioners in Germany

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Background: Antimicrobial resistance is a growing global health problem predominantly driven by overuse of antibiotics. In humans, most antibiotics are used outside the hospital. Overprescribing for acute respiratory infections (ARIs) is common despite clear guidelines. The need for further training of general practitioners is well known. **Objective:** To develop and evaluate a massive open online course (MOOC) on antibiotic therapy of common infectious diseases in general practice. **Methods:** A 4-week MOOC was developed on the basis of previous face-to-face trainings (platform, Hasso Plattner Institute for Digital

Engineering) and was conducted 3 times between July 10, 2017, and May 31, 2019. The course was promoted through various general practitioner (GP) networks, local multipliers, and conferences and in the local trade press. In addition to epidemiological background information, the focus was on guideline-based diagnostics and treatment of ARI, side effects of antibiotics, correct drug selection, dosage and duration of indicated antibiotic therapy, as well as aspects of doctor-patient communication. Content included videos, self-tests, additional written material, and an optional exam. At the end of the course, participants were asked to complete a voluntary, anonymous online assessment questionnaire (LimeSurveyPro software). Usage data from the MOOC platform and data from the questionnaire were analyzed using IBM SPSS statistical software. Results: In total, 2,177 registered persons retrieved content (= learners). The proportion of learners dropped from 99.6% in week 1 to 40.7% in week 4. However, among those attending week 4, the average proportion of content used was still high (74.5%). Furthermore, 27.5% of learners completed the course, 23.8% took the exam, and 19.7% passed the exam. Moreover, 284 learners answered the assessment questionnaire (response rate, 13.0%); 62.3% were women, and the mean age was 45.9 years. Also, 225 participants (79.2%) stated that they were physicians; 122 of these worked as general practitioners (54.2% of physicians). Among the other physicians, 23% stated were in specialist training and 15.6% had a different specialist designation. The average overall rating of the course was 1.31 (1 = very good to 6 = not sufficient).General practitioners rated it slightly better than other physicians (1.23 vs 1.41). The clinical relevance was rated at 1.27 (GPs vs other physicians, 1.18 vs 1.35). For all scores, see Table 1. Conclusions: A massive open online course appears to be an appropriate format in which to deliver clinical relevant content concerning prudent antibiotic use in the outpatient setting. It is a good complement to existing

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	General Practitioners		Other Physicians		Other Professions		Total	
	N	Average score	N	Average score	Ν	Average score	Ν	Average
Overall Course	118	1.23	98	1.41	57	1.3	273	1.31
Technical Organization	121	1.31	99	1.43	57	1.14	277	1.32
Selection of Topics	121	1.24	99	1.34	58	1.28	278	1.28
Selection of Speakers	119	1.47	99	1.53	58	1.36	276	1.47
Presentation	121	1.52	100	1.52	57	1.51	278	1.52
Informativeness	121	1.31	99	1.52	57	1.44	277	1.41
Clinical Relevance	120	1.18	98	1.35	51	1.35	269	1.27
Knowledge Gain	121	1.58	100	1.66	58	1.5	279	1.59
Discussion with Speakers	67	2.07	53	1.85	29	1.62	149	1.91
Exchange with colleagues	64	2.28	49	2.02	27	1.81	140	2.1

Table: User Assessment of Different Aspects of the Online Course

N = number of evaluators; Score-Scale: 1 (very good) – 6 (not sufficient)

face-to-face formats and helps to cover needs related to antibiotic training.

Funding: None Disclosures: None Doi:10.1017/ice.2020.732 Daniel Li, Northeast Ohio VA Healthcare System; Natalia Pinto Herrera, Northeast Ohio VA Healthcare System; Heba Alhmidi, The Cleveland VA Medical Research & Education Foundation; Jennifer Cadnum, Cleveland VA Medical Center; Curtis Donskey, Cleveland VA Medical Center

Presentation Type: Poster Presentation

Dissemination of Methicillin-Resistant *Staphylococcus aureus* (MRSA) and Viral Surrogate Markers Outside Patient Rooms

Background: Patients with methicillin-resistant *Staphylococcus aureus* (MRSA) colonization often shed MRSA, resulting in contamination of surfaces in their room. It is not known whether MRSA-colonized patients also frequently contaminate surfaces

Figure. Dissemination of MRSA and Viral Surrogate Markers to Surfaces Outside Patient Rooms



