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Leveraging E-Learning Infrastructure in Times of Rapid Change: Use of the National Sexually Transmitted Diseases Curriculum in the Era of COVID-19

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Abstract: The National Sexually Transmitted Diseases Curriculum is an e-learning platform. New registrations and learning group creations in March to April 2020 were compared with previous 12-month data. Substantial increases in registrations and learning groups demonstrate that the National Sexually Transmitted Diseases Curriculum was successfully leveraged to meet rapidly shifting training needs due to the COVID-19 pandemic.

In the United States, rates of sexually transmitted infections (STIs) have increased in recent years, highlighting a national need for more health care professionals to gain competency in the diagnosis, treatment, and prevention of STIs.¹ The National Sexually Transmitted Diseases Curriculum (NSTDC) is an e-learning platform that provides free, interactive training on the diagnosis and management of STIs, with a strong emphasis on and congruity with recommendations in the Centers for Disease Control and Prevention STD treatment guidelines.^{2,3} The NSTDC was developed at the University of Washington with funding from the Centers for Disease Control and Prevention through the National Network of STD Prevention Training Centers. A prior evaluation of the NSTDC demonstrated robust demand for this online educational tool, which has been used by a broad range of health professionals throughout the United States.²

The NSTDC uses a flexible, dual-functionality design and navigation system that provides access to the same information on the site via 2 different modalities: (1) through a modular, self-directed, longitudinal learning platform, or (2) by quick access viewing of any site content.² Learners who engage in self-directed learning have flexibility to choose the number and order of the modules they complete. The modular content is augmented by an interactive board-review style “Question Bank”; content on the question bank can be viewed through either the self-directed learning or quick access platforms.²

The NSTDC also offers a novel learning group function whereby a designated group leader (e.g., teacher, program director, or clinic supervisor) can establish and oversee a group of learners

on the NSTDC.² This feature allows academic training programs, clinical training programs, and practicing clinicians to create learning groups that share similar educational objectives and goals. The leader has access to the progress of members in their learning group and can assign specific self-study modules and question banks to be completed. This group functionality has been used in a variety of settings, including medical training programs, clinics, and classrooms.²

The COVID-19 pandemic has created enormous challenges for all aspects of the medical field, including challenges in delivering health professions education. Because of physical distancing requirements, most in-person trainings and classrooms shifted to virtual learning platforms, thereby increasing the interest and need for online curriculum.^{4–7} Herein, we describe findings from an NSTDC program evaluation on how learners leveraged the NSTDC e-learning platform to meet rapidly shifting training needs due to the COVID-19 pandemic.

METHODS

To understand the initial impact of COVID-19 on use of the NSTDC, we reviewed data collected from learner registrations and creation of learning groups (defined as ≥ 2 members) from March to April 2020 and compared it with the previous 12-month averages. Qualitative data collected during learning group creation were reviewed to identify groups created in response to online training needs due to COVID-19. For members who joined learning groups identified as being created in response to COVID-19, we reviewed self-study module and question bank completion data.

We further evaluated learning group and member data collected from the standardized Health Professional Application for Training form for learning groups with ≥ 2 members from March to April 2020 and compared it with previous 12-month data. Learning groups were categorized as academic-graduate, academic-undergraduate, government, nongovernmental organization/community-based organization/nonprofit, and private/community practice. The learning group members' professions were categorized as (1) prescribers (physicians, nurse practitioners, physician assistants, and dentists), (2) registered nurses, and (3) nonclinicians. Data were analyzed with Tableau Desktop 2020.4.

RESULTS

From March 2019 to February 2020, an average of 992 new learners registered per month on the NSTDC. During the first 2 months of the major initial surge of the COVID-19 pandemic in the United States, the number of learner registrations increased to 1330 in March 2020 and 1850 in April 2020, representing a respective 34% and 86% increase above the monthly average in the prior 12 months (Fig. 1). Similarly, the number of learning groups created increased from 3 per month in March 2019 to February 2020 to 12 in March 2020 and 17 in April 2020, representing a

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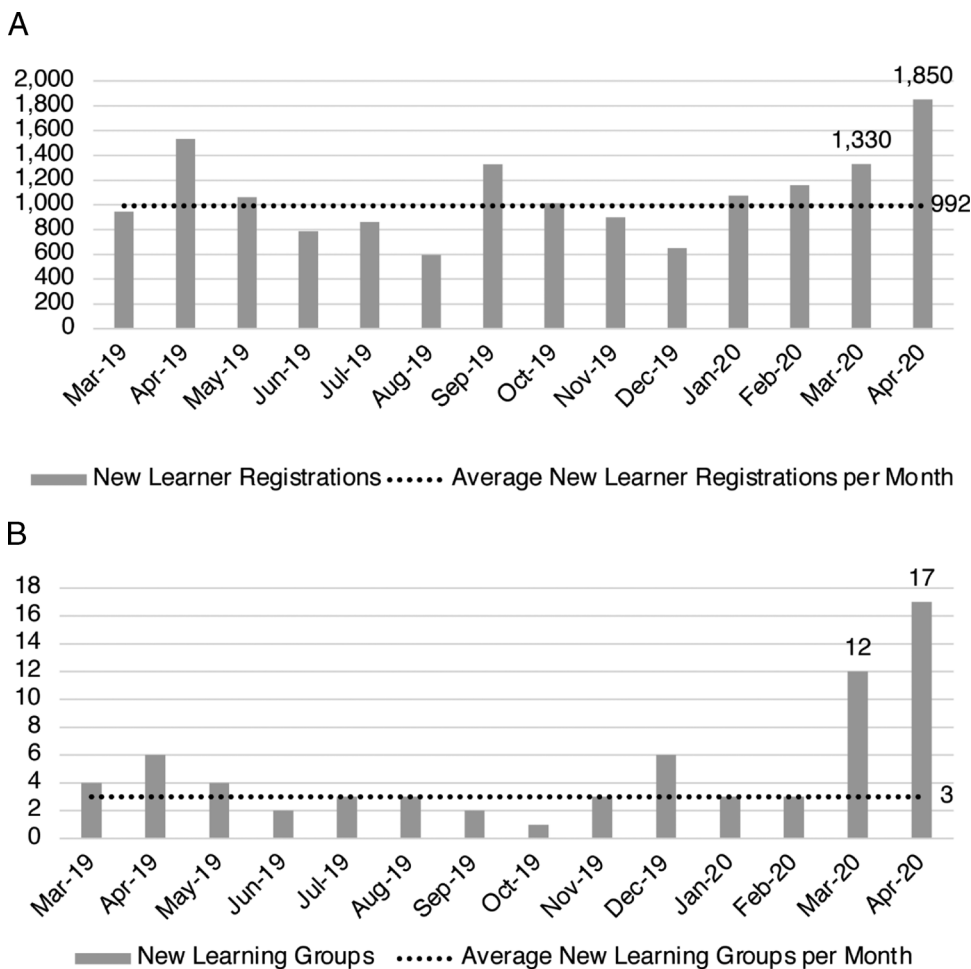


Figure 1. A, New learner registrations created on the NSTDC per month from March 2019 to April 2020 compared with average number of new learner registrations created on the NSTDC per month from March 2019 to February 2020. B, New learning groups created on the NSTDC per month from March 2019 to April 2020 compared with average number of new learning groups created on the NSTDC per month from March 2019 to February 2020.

respective 300% and 467% increase above the monthly average in the prior 12 months.

Of the 40 learning groups created from March 2019 to February 2020, 42.5% (n = 17) were located in the US Census Bureau South region and 25.0% (n = 10) in the Midwest region (Table 1). Among the 29 learning groups created in March to April 2020, 41.4% (n = 12) were located in the Midwest region and 31.0% (n = 9) in the South region. The proportion of academic-undergraduate and academic-graduate learning groups increased from 20.0% (n = 8) and 22.5% (n = 9), respectively, in March 2019 to February 2020 to 37.9% (n = 11) and 37.9% (n = 11), respectively, in March to April 2020.

Among the 29 groups created in March to April 2020, 31.0% (n = 9) listed the COVID-19 pandemic in response to the optional question of why the learning group was created. Six of the learning groups were created by the same institution to fill gaps in undergraduate laboratory coursework, one to replace an adolescent medical rotation, one to replace a pediatric residency rotation, and one to train staff during a clinic closure. All undergraduate laboratory coursework learning groups required completion of all 7 self-study modules to “satisfy learning outcomes for a required STI lab that has been modified...[in] response to

COVID-19.” All 89 members completed all self-study modules. The adolescent medicine rotation learning group created “online learning opportunities for rotators during [the] COVID-19 outbreak, since our usual outpatient clinical learning opportunities are very disrupted.” Five members completed at least one self-study module or question bank topic each. The pediatric residency rotation learning group used “modules and independent learning [while] direct patient care experiences and teaching are limited due to social distancing.” One of the 5 members completed 3 self-study modules, and the others did not complete content for credit. Finally, the clinic staff learning group asked “staff to complete relevant learning materials and [continuing education unit] courses that target our patient population.” All 9 members completed all self-study modules, and 1 member completed all 17 question bank topics.

DISCUSSION

During the first 2 months of COVID-19–related lockdown measures in the United States, we observed a marked increase in use of the NSTDC. In particular, we saw increases in the creation of learning groups for academic graduate and undergraduate students. The learning groups were well distributed geographically,

TABLE 1. NSTDC Learning Group and Member Characteristics, March 2019 to April 2020

	March 2019–February 2020		March 2020–April 2020	
	n	%	n	%
Learning group characteristics				
Total learning groups with ≥2 members	40		29	
US Census Bureau Region				
South	17	42.5	9	31.0
Midwest	10	25.0	12	41.4
West	6	15.0	4	13.8
Northeast	7	17.5	4	13.8
Type				
Government	11	27.5	2	6.9
Academic-graduate	9	22.5	11	37.9
Academic-undergraduate	8	20.0	11	37.9
Private/community practice	8	20.0	4	13.8
NGO/CBO/nonprofit	4	10.0	1	3.4
Learning group member characteristics				
Total learning group members joined	403		324	
Profession/discipline				
Nonclinician	177	43.9	186	57.4
Registered nurse	177	43.9	77	23.8
Prescriber	49	12.2	61	18.8

CBO indicates community-based organization; NGO, nongovernmental organization.

with a high percentage located in the South, where STI rates are highest in the United States.⁸ This striking increase in NSTDC use during the early months of the COVID-19 pandemic points toward the importance and scalability of well-developed e-learning platforms to address rapidly changing educational needs across a variety of health care settings.

Data from the pre-COVID-19 era support the acceptability of online learning platforms and suggest that online learning curricula lead to similar, if not better, knowledge gains when compared with traditional offline learning among health care professionals.^{9–13} Although data related to online training efficacy during the COVID-19 era are limited, studies suggest online learning provides health professions students with greater flexibility, consistent access to learning materials, improved efficiency, and the ability to engage in self-paced learning in a preferred and COVID-safe environment.^{14–17} In one study that evaluated a COVID-19 era online quality improvement (QI) curriculum for medical students at the University of Maryland School of Medicine, students demonstrated improvement in QI knowledge, and all students reported that the virtual learning experience was an effective way to deliver QI content and that they were more likely to engage in QI work because of the online course.¹⁸

The surge of new registrants and learning groups on the NSTDC in the first 2 months of the COVID-19 pandemic points toward the ability to leverage e-learning platforms during times of rapidly changing training needs and demonstrates the importance of this educational infrastructure.¹⁹ Although only 31% of learning groups established in March and April of 2020 explicitly listed COVID-19 as the reason for forming their learning group, we suspect this is a gross underestimate because reason for learning group formation was not a required question and not systematically collected. Given the marked 300% and 467% increase in learning group formation in March 2020 and April 2020, respectively, we suspect most learning groups formed to augment education and training programs impacted by pandemic-related social distancing measures. Furthermore, although we have not systematically evaluated how the NSTDC has been used throughout the pandemic, preliminary data indicate that usage has remained above average, suggesting that the curriculum continues to be used to meet evolving educational needs.

Although some elements of health professions education will likely return to in-person training during the next year, we anticipate the COVID-19 pandemic will have a long-lasting impact in this field, such that online learning will be incorporated more frequently and intentionally into future health professional education.²⁰ It will be increasingly important to understand the evolving training needs of health care professionals and ensure that available training modalities, including e-learning platforms, meet dynamic educational needs. To this end, we will continue to evaluate learning trends and motivations among NSTDC learners to better understand how to optimize this flexible e-learning platform to meet the increasing need for health care provider competency in the diagnosis, treatment, and prevention of STIs.

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