

Dismantling of the U.S. Cytotechnology Educational Infrastructure is Premature and Carries Significant Risks

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Recently several senior veteran cytotechnologist educators have expressed alarm over the sudden and unexpected closure or planned closure of a significant number of well-established cytotechnology training schools in the United States. Given the “graying” of the existing U.S. cytotechnologist workforce, now averaging approximately 50 years of age, the decline in number of schools of cytotechnology from a historical high of 120 to now roughly 37 is causing concern over whether or not the U.S. will have an adequate cytotechnologist workforce in the very near future. Among remaining schools, approximately 200 cytotechnologists are graduating each year. This small number of new cytotechnologists is being added each year to an active national workforce of around 6,500 cytotechnologists. The screening of approximately 64 million Pap tests is one of the primary responsibilities of this workforce, but other essential functions extend into cytologic evaluations of other non-gynecologic organ systems, laboratory administration, and cytogenetic and molecular testing. The public relies on the cytotechnology workforce far more than most people realize.

The current round of cytology school closures has occurred against the backdrop of a number of articles in the lay press which have erroneously implied the imminent end of cervical cytology screening due to the introduction of the human papilloma virus (HPV) vaccine and the HPV DNA test. These articles have largely appeared following publication of international trials comparing HPV DNA testing to screening with the conventional Pap smear, which is now less than 10% of the U.S. market. In contrast, the United States now relies almost exclusively on optimized liquid-based cytology and increasingly on location-guided, computer-assisted screening. According to veteran educators, budget-constrained allied health school administrators have seen the news articles and related commercial advertisements, formed opinions, and questioned the continued relevance of schools of cytotechnology. Since there are never good times for these administrators who manage chronically underfunded allied health educational budgets, removal of resources for some cytology schools has appeared to be an attractive opportunity for budgetary savings.

Such closure actions, however, are very premature. Current vaccination schemes still call for the patients who receive vaccination to undergo cervical screening when they reach maturity and begin sexual activity. Additionally, we still have a generation of women who are either not candidates for vaccination or who will receive less protection due to preimmunization exposure to HPV. These women will need cytology services in much the same manner as currently delivered. Furthermore, organized HPV vaccination programs are just beginning and the costs are high. Vaccinating the poorest among us at over \$300.00 per series is not likely to occur in the short term. Also of note, the currently available vaccines do not cover the entire range of high-risk HPV types. In addition, by

report, the HPV injection may be painful, which could further reduce compliance and effectiveness of the vaccine.

Only one HPV DNA test is FDA approved, and its approved indications are exclusively for adjunctive use along with cervical cytology. Remarkably, the current approved test has no internal adequacy standard to prevent erroneous negative reporting on sparsely cellular or even acellular samples. The reliance on testing from liquid-based cytology vials further suggests that it will be difficult for the manufacturer to too strongly discourage the use of cytology. According to the manufacturer, no clinical trials to seek FDA approval as a stand alone primary screening test are anticipated in the near future. Despite the inability of the manufacturer of the sole FDA-approved HPV DNA test to publicly advocate off-label, stand-alone HPV testing and the absence of acknowledged plans for early clinical trials, a few investigators are often cited in lay press articles predicting the imminent demise of the Pap test. Whether or not the manufacturer will be effective in muting these misleading communication messages regarding modern Pap testing remains to be seen.

Concern over the premature closure of U.S. schools of cytotechnology has been of sufficient concern that the American Society of Cytopathology has recently formulated a letter of concern to allied school educators. This letter has been cosigned by a number of other cytology and pathology professional organizations and also, significantly, by the American College of Obstetricians and Gynecologists. A modeling study of emerging cervical cancer screening issues and challenges in a recent issue of the *Journal of the National Cancer Institute* cautions that the potential benefits could be neutralized, and even reversed, if screening were to substantially decrease¹. This would obviously be a great misfortune, given the promise of new primary prevention vaccine era. Schools of cytotechnology are a valuable resource in the ongoing efforts for cervical cancer screening and detection of nongynecologic cancers. Support of cytotechnology school infrastructure in the United States is important to ensure an adequate and appropriately-trained cytotechnology workforce.

¹ Goldhaber JD, Stout NK, Salamon JA, et al. Cost-effectiveness of Cervical Cancer Screening with Human Papillomavirus DNA testing and HPV-16,18 Vaccination. *JNCI*. 2008;100(5):308-320.