defined as those who graduated between 2016 and 2018 (n=27). In May 2018, 2 investigators (M.G. and S.M.) independently searched for abstracts and publications via PubMed and Google search engines using resident names, mentor names, and project titles. We sought confirmations from residents and/or mentors and performed an updated review in April 2019. Projects were counted as acceptances if the resident name was included as an author, irrespective of authorship order or whether the resident actually presented. We compared the proportions of accepted abstracts and manuscripts using Fisher's exact tests. Institutional review board approval was waived because this did not qualify as research on human subjects.

RESULTS: The proportion of poster presentations increased from 44% (n=12) to 89% (n=24) after program implementation (P=.001). Oral abstract presentations were unchanged (n=3 [11%] in both groups). Manuscript publications increased from 26% (n=7) to 63% (n=17) after program implementation (P=.01).

CONCLUSION: Scholarly productivity is often viewed as a marker of a program's academic rigor and a reflection of the quality of research training.[2] Scholarly productivity during residency also has implications for the individual resident on future employment opportunities, including fellowship matching, the pursuit of academic careers, and participation in subsequent research activities.[2,5] Our study demonstrates that the incorporation of dedicated faculty as APDs to create and lead a highly structured research program significantly improved scholarly productivity among residents and the faculty members that mentor them. We recognize several enablers that contributed to programmatic success that included the residents within the program, many of whom are interested in academic careers and have a baseline interest in research. The incorporation of APDs across 2 of the 3 sites at which residents rotate provided ongoing support, particular when troubleshooting was needed. Further, we recognize that programmatic success also relied on the high levels of scholarly productivity by the APDs themselves and that we had administrative support available within the department for institutional review board submission and statistical analyses. We also recognize barriers to program sustainability that include mentor burnout and a lack of expertise by some faculty to provide mentorship, despite interest. Our experience highlights the need for a program-specific approach that includes oversight by dedicated faculty members to achieve a robust resident research program. ■

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Transvaginal ultrasound is superior to transabdominal ultrasound in the identification of a short cervix

OBJECTIVE: Many centers have implemented universal transabdominal cervical length (TACL) screening, despite evidence of poor reproducibility.[1] Our objective was to evaluate the technical limitations that may reduce the effectiveness of 1 such program.

STUDY DESIGN: We performed a cross-sectional study of singleton pregnancies between $16^{0/7}$ and $23^{6/7}$ weeks gestation. We defined eligible patients as those with singleton gestations without traditional risk factors for spontaneous preterm birth. In the preexposure period (June—December

TABLE
Patient demographic characteristics and select outcomes

Variable	Preexposure period (June–December 2016; n=616)	Postexposure period (June–December 2017; n=669)	*P* value[a]
Demographic characteristics[b]			
Age, y	30 (26–34)	30 (27–34)	.78
Gravidity	2 (1–4)	2 (1–3)	.42
Parity, preterm births	0 (0–0)	0 (0–0)	.74
Gestational age at scan, wk	20 (20–20)	20 (20–20)	.99
Body mass index, kg/m^2	28.6 (25–33.5)	25.8 (22.3–30.2)	<.001
Primary outcome: reflex transvaginal cervical length, n (%)	5 (0.8)	16 (2.4)	.03
Secondary outcomes			
Transabdominal cervical length, n (%)			
N	534 (86.7)	624 (93.3)	<.001
<35 mm	236 (38.3)	250 (37.4)	.12
<30 mm	22 (3.6)	9 (1.3)	.004
Transvaginal cervical length, n (%)			
N	25 (4.1)	34 (5.1)	.38
<25 mm	2 (0.3)	2 (0.3)	.57
Vaginal progesterone, n (%)	3 (0.5)	2 (0.3)	.46
Gestational age at delivery, wk[b]	39.1 (38.3–40.0)	39.1 (38.3–40.0)	.72
Preterm birth <37 weeks gestation, n (%)	56 (9.1)	64 (9.6)	.77
Spontaneous preterm birth, n (%)			
<37 wk	25 (4.1)	30 (4.5)	.71
<32 wk	6 (0.97)	6 (0.9)	.89

[a] Determined by Chi square or Fisher's exact tests (categoric data) and Wilcoxon rank-sum test (for nonparametric continuous data); [b] Data are given as median (25th–75th percentile).

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2016), TACL was performed without a protocol for reflex transvaginal scanning. In the postexposure period (June–December 2017), routine TACL was performed according to the methods described by Saul et al,[2] and reflex transabdominal cervical length (TVCL) ultrasound scans were performed if the TACL measured <30 mm or transabdominal views were limited. The primary outcome was the proportion of reflex TVCL ultrasound scans, which were defined as TVCL ultrasound scans that were performed in response to suspected shortened or suboptimal TACL. Secondary outcomes included the number of TACL <30 mm and various obstetric outcomes. Six sonographers participated in a reproducibility study in which we calculated intraclass correlation coefficients to evaluate inter- and intrarater agreement of TACL measurements. The study was approved by the Institutional Review Board.

RESULTS: Complete data were available for 616 patients in the preexposure group and 669 patients in the postexposure group. Although there was a small difference in body mass index (median, 28.6 kg/m^2 [interquartile range, 25.0–33.5 kg/m^2] vs median, 25.8 kg/m^2 [interquartile range, 22.3–30.2 kg/m^2]; *P*<.001), there were no other differences in demographics (Table). In the postexposure group, 34 patients (5.1%) had transvaginal ultrasound scans. Almost one-half of transvaginal scans (16/34; 47.1%) were performed reflexively; 9 scans were performed because of TACL <30 mm, and 7 scans were due to poor visualization of TACL landmarks. The other transvaginal scans were performed for routine obstetric indications (eg, placental assessment). Only 2 patients (0.3%) in the postexposure group were found to have TVCL <25 mm. There were no differences in secondary outcomes. The intraclass correlation coefficients for TACL measurements was 0.15 (95% confidence interval, 0.04–0.45); the within-subject variance was 0.11 (95% confidence interval, 0.10–0.13).

CONCLUSION: Cervical length screening is important to implement treatment with vaginal progesterone or other interventions to reduce preterm births.[3] Compared with universal TVCL screening, the TACL screening program substantially reduced the frequency of transvaginal scanning. However, TACL screening identified fewer cases of short cervices than expected, and TACL measurements were poorly reproducible. This study underscores that many short cervices were missed[4] and that the poor intraclass correlation coefficients for TACL measurements were a likely explanation.

Most studies that investigate TACL screening have performed transvaginal ultrasound scans concurrently and have highlighted the challenges that are associated with transabdominal scanning. These studies focused on test performance in ideal conditions and not in real-world scenarios.[5] Accordingly, our study provides information about the impact of universal TACL screening using a 30-mm cut-off point in clinical practice, and the results raise important questions about the technical limitations that reduce the effectiveness of TACL screening. Until there are more convincing data to support TACL screening, we urge providers to consider the possibility that the primary benefit of universal TACL screening is the avoidance of transvaginal scanning rather than the identification of high-risk patients. ■

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