clincs in the United States, Panama, Thailand, India, China, and Mexico for stem cell therapies.

Discussion | More than 1000 medical crowdfunding campaigns for 5 treatments that are unsupported by evidence or potentially unsafe raised more than $6.7 million. Another study found that 408 campaigns raised more than $1 million for unproven stem cell interventions.6 The present study included a broader set of treatments and suggests that medical crowdfunding is being used for multiple problematic treatments. These results reveal that a wide scope of campaigns for unsupported, ineffective, or potentially dangerous treatments are moderately successful in obtaining funding. Assuming that the funds raised are spent to pay for these treatments, donors indirectly contributed millions of dollars to practitioners to deliver dubious, possibly unsafe care.

This study has limitations. Only 5 treatments and 4 platforms were analyzed. These were selected because of clinical experience and visibility. Whether the results generalize is unknown. Native search engines vary in quality; an external search engine may have yielded more results. Despite expressed intent, campaigners may not have used funds on specified treatments.

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Characterization of Licensees During the First Year of Missouri’s Assistant Physician Licensure Program

To address a shortage of primary care physicians in rural areas, the Missouri legislature created a new category of physician licensure called the assistant physician.1,2 The assistant physician licensee must be a citizen or legal resident of the United States, have graduated from a recognized medical school, have English-language proficiency, have passed Steps 1 and 2 of the US Medical Licensing Examination (USMLE) (or equivalent), and have not completed a residency.

Assistant physicians are limited to providing primary care services in underserved areas.2 Assistant physicians can only practice under collaborative practice agreements with fully licensed physicians and with a scope of practice and responsibilities consistent with advanced practice nurses and physician assistants.

The licensee is responsible for securing a collaborative practice agreement, which requires a 30-day period treating patients with the collaborating physician. Subsequently, assistant physicians can practice within 50 miles and with review of 10% of all charts. The collaborating physician must be immediately available for consultation electronically or in person.

There is no time limit on practice as an assistant physician or in obtaining a collaborative agreement once licensed. Arkansas, Kansas, and Utah have enacted similar but more restrictive legislation, and other states have considered doing the same. We describe the cohort of licensees from the first year of this novel license in Missouri.

Methods | We requested data on all assistant physician licensees from January 1, 2017, through December 31, 2017, from the Missouri Board of Healing Arts (the Board) via access from sunshine laws. We received deidentified, aggregate data on medical school, USMLE examination performance, and, when applicable, the locations of collaborative practices.

We cross-referenced practice locations against health professional shortage areas by zip code using the geocoding function on healthlandscape.org.7 We compared USMLE pass rates of assistant physicians for all 4 Step examinations with both the US and international medical graduate cohorts taking the USMLE during 2012 through 2016, which is the period when the assistant physicians would have taken the examinations.

We tested 2 sample proportions with a 2-sided \( P < .05 \) for significance and used R statistical software version 3.5 (R Foundation for Statistical Computing). The Mercy Hospital St Louis institutional review board determined this study was exempt.

Results | During 2017, the Board licensed 99 assistant physicians, 25 (25.3%) of whom had a collaborative agreement. Of
the 99 licensed assistant physicians, 92 were international medical school graduates (92.9%), of whom 76 (82.6%) were from schools in the Caribbean region. Seven assistant physicians were US medical school graduates (7.1%); of these 7, six were from allopathic schools and none were from schools in Missouri.

All 25 licensees practicing under a collaborative agreement were international graduates. Of these 25, twenty (80.0%) were working in a federally designated health professional shortage area.

The USMLE performance for the assistant physician licensees was provided for 92 of the 99 assistant physicians (92.9%). Assistant physicians had significantly lower USMLE pass rates on all 4 Step examinations compared with the matching cohort of US medical graduates and for 3 Step examinations (except for Step 1) compared with international medical graduates (Table).

**Discussion** Concerns about assistant physician licensure were raised based on the first year of experience in Missouri. Pass rates for all USMLE Step examinations were significantly lower than those of US medical school graduates; this was also true when comparing with international medical school graduates, with the exception of Step 1. Failure of the Step 2 examination has been associated with increased disciplinary action and worse clinical outcomes.4,5

Only 25% of the licensees had secured collaborative agreements during the first year and thus were the only ones able to practice. Despite requirements that the collaborative practice be located in underserved areas, 20% were not in primary care health professional shortage areas.

Limitations of this study include lack of data on applicants or licensees, practice settings, or employers. In addition, data were available only for 1 year.

Future research should study the quality and safety of the care that assistant physicians provide and their clinical roles and career path, as well as patient perceptions. The Missouri legislature recently broadened the licensure beginning in 2019; however, it is unclear what effect these changes will have.6

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