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## From training to sustainability: Supporting clinician-scientist career pathways

**To the Editor:** We read with great interest the article by Dangor *et al.*[1] describing the clinician-scientist pathways developed at the University of the Witwatersrand (Wits). Their experience offers more than an institutional model for South Africa; it highlights a wider challenge confronting academic medicine internationally: how to convert research training into sustainable careers that preserve clinical engagement, scientific independence and long-term academic contribution.

The clinician-scientist occupies a distinct position between patient care and scientific enquiry, translating clinical observations into research questions and returning new knowledge to practice.[1,2] Yet this workforce remains vulnerable across both high-income and resource-constrained settings. Prolonged training, service-delivery pressures, limited protected research time, salary disparities, insecure grant-dependent funding and poorly defined career structures continue to discourage recruitment and retention.[1,3-5] These pressures are particularly consequential where locally generated evidence is essential to address disease burdens, health-system constraints and population priorities that may not be adequately represented by research conducted elsewhere.

The Wits model is valuable because it addresses several stages of the career continuum rather than relying on isolated research opportunities. Undergraduate research exposure, the intercalated MB BCh-PhD programme, clinician PhD support and dedicated clinician-scientist posts with substantial protected research time illustrate how institutions can deliberately create structured career pathways rather than leave career development to individual persistence.[1] However, training itself should not be regarded as the endpoint. The true test of a clinician-scientist pathway is whether trained individuals remain in academic medicine and are able to build durable, clinically grounded research careers.

For this reason, future evaluation of programmes such as Wits should extend beyond enrolment, degree completion, or short-term publication output. Longitudinal outcomes should include retention in academic medicine, sustained protected research time, acquisition of independent funding, first- and senior-author publications, postgraduate supervision, mentorship of younger clinicians, continued clinical activity and contribution to research addressing relevant health priorities. Such measures would help to determine whether institutional investment produces a lasting clinician-scientist workforce rather than a temporary increase in research qualifications. They would also capture whether programmes generate the mentorship capacity and visible role models needed to sustain the next generation of clinician-scientists.

A second challenge is scalability. Models that depend on dedicated posts, salary support, protected time and institutional research infrastructure may not be directly transferable to every setting. Adaptation will require collaboration among universities, health services, governments and funding agencies, with protected research time recognised as a legitimate component of academic clinical work rather than an optional activity.[1,3,4] The principle, however, is broadly applicable: sustainable clinician-scientist careers require structures that align clinical service, research opportunity, mentorship and financial security.

The Wits experience demonstrates that clinician-scientist development can be deliberately supported rather than left to individual resilience. Its broader significance lies in showing that the global clinician-scientist workforce should be judged not only by how many researchers are trained, but by whether academic systems enable them to remain clinically grounded, scientifically productive and professionally sustainable over time.

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## Response to: From training to sustainability: Supporting clinician-scientist career pathways

**To the Editor:** We thank the authors for their thoughtful and supportive comments regarding the development of clinician-scientist pathways in South Africa. Our article was written primarily to provide practical guidance for clinicians considering a clinician-scientist career, while also describing the relatively recent establishment of clinician-scientist pathways at the University of the Witwatersrand (Wits). We therefore welcome the authors' extension of the discussion to the critical issues of long-term evaluation and sustainability of clinician-scientist programmes.

We agree that the Wits clinician-scientist initiatives should be evaluated as interventions rather than simply as training programmes. While traditional metrics such as publication output are important, they are insufficient on their own to determine programme success. We are currently monitoring clinician-scientist research trajectories, including research productivity, competitive grant applications and awards. These research performance metrics have also been incorporated into annual performance appraisal processes. While many of the Wits clinician-scientist programmes are relatively new, encouraging signals are evident from earlier initiatives. For example, among the 19 clinicians who completed PhDs through the Carnegie Clinician Scientist Programme, 11 have subsequently assumed senior academic or research leadership positions, including appointments as Dean, Head of School and several academic heads of department. Although these observations do not constitute a formal programme evaluation, they provide preliminary evidence that structured investment in clinician-scientist development can contribute to the creation of an academically and scientifically productive workforce.

An important indicator of research independence will be the extent to which clinician-scientists are able to secure competitive grant funding and establish sustainable research programmes over a 5 - 10-year period. Such measures will complement the current monitoring of research productivity, professional development and academic contribution, providing a more comprehensive understanding of career development and long-term impact.

In considering sustainability, we additionally aim to evaluate the broader capacity-building and catalytic effects of these pathways.

This includes assessing the extent to which initial institutional investment in clinician-scientists is offset by subsequent competitive research funding, as well as the financial and non-financial benefits generated for academic institutions, health systems and society more broadly. Ultimately, while retention in academic medicine and the establishment of durable research careers are important measures of success, the overarching goal of clinician-scientist programmes is to improve patient care and population health. The value of these programmes therefore lies not only in training individual researchers, but also in strengthening research ecosystems, fostering future generations of clinician-scientists, and contributing to meaningful improvements in healthcare delivery and health outcomes.

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