

THE ECOSYSTEM OF EVIDENCE

Navigating the future
of the ecosystem of evidence

Artificial intelligence and digital transformation
in research and healthcare

11th EBHC International Conference
Taormina, 21st – 24th October 2026

#EBHC2026

Tracing the thread

Curriculum-mapping document analysis of longitudinal evidence-based health care integration in Stellenbosch University's renewed MBChB curriculum

Steve Jacobs[1,2] · MBChB, BSc/MSc, MPhil

Simone Titus-Dawson[2] · Anel Schoonees[1] · Inge Sonn[3] · Anke Rohwer[1]

[1] Division of Epidemiology and Biostatistics
[2] Department of Health Professions Education
[3] Undergraduate Research Office
Faculty of Medicine and Health Sciences, Stellenbosch University,
Cape Town, South Africa

Stellenbosch UNIVERSITY IYUNIVESITHI UNIVERSITEIT

Centre for Evidence Based Health Care

GIMBE EVIDENCE FOR HEALTH

International Society for Evidence-Based Health Care

Background

We know what to teach (??) and how…

AGREED

Five steps, 68 core competencies

The Sicily statement defined the five steps[1]; an international Delphi agreed competencies spanning Ask to Evaluate[2].

KNOWN

Integrate it clinically and assess it

Multifaceted, clinically integrated teaching with assessment improves knowledge, skills and attitudes[3].

THE GAP

Teaching and assessment rarely go beyond Appraise

Most evaluated interventions centre on appraisal and none measured patient benefit[4]; no validated EBM tool assesses the Evaluate step[5].



WHERE MOST TEACHING AND ASSESSMENT SITS

THE GAP

1 Dawes M, et al. BMC Med Educ 2005;5:1 (Sicily statement) · 2 Albarqouni L, et al. JAMA Netw Open 2018;1(2):e180281 · 3 Young T, et al. PLoS One 2014;9(1):e86706
4 Albarqouni L, et al. BMC Med Educ 2018;18:177 (85 controlled studies) · 5 Kumaravel B, et al. Syst Rev 2020;9:91 (12 validated tools)

Background

2017 Stellenbosch University began renewing the MBChB

WHY THE CURRICULUM HAD TO BE RENEWED

Global call for reform

Lancet Commission, Carnegie, GCSA and WHO (2010–13): transformative, socially accountable education

Population health needs

Health systems need graduates trained in primary health care, teamwork and leadership

South African imperatives

ASSAf (2018): relevant, socially accountable graduates who address SA's burden of disease

Institutional strategy

Part of SU's institution-wide programme renewal from 2017, aligned with SU Vision 2040

Educational shift

From fragmented, disease-centred teaching to integrated, patient-centred learning: knowing, doing, being

HPCSA ACCREDITATION VISIT · 2017

The HPCSA recommended a review of the MBChB and **explicitly asked for a more visible research footprint**

Background

At its 2017 accreditation visit, the HPCSA recommended a review of the MBChB

What the HPCSA asked the renewed programme to deliver

Less content, better taught

Reduce factual overload and focus on the competencies graduates actually need.



Competency-based & longitudinal

Align training with population health needs and build capability across all years, not as a once-off.



Evidence-based practice

Graduates must demonstrate a lifelong commitment to reflective learning, as well as the creation, dissemination, application and translation of knowledge.



Background

- International agenda
- Health professions education needed to change
- EBHC as core competency
- Local partnership set the context
- Curriculum review mapped the baseline
- Educators identified implementation gaps
- Evidence established effective teaching approaches

SURMEPI

Stellenbosch University Rural Medical Education Partnership Initiative

YEAR 5 SCHOOL REPORT

Established the local curriculum-strengthening context and institutional priorities for EBHC education.

Research

Taking stock of evidence-based healthcare in the undergraduate medical curriculum at Stellenbosch University: Combining a review of curriculum documents and input from recent graduates

A Rohwer,[1] BCur, MScClinEpi; B Willems,[1] MB ChB; T Young,[1,2] MB ChB, FCPHM, MMed

Mapped the existing curriculum and identified gaps through document review and graduate feedback.

South African Family Practice 2015; 57(6):354–360
http://dx.doi.org/10.1080/20786190.2015.1090689

Open Access article distributed under the terms of the Creative Commons License [CC BY-NC-ND 4.0]
http://creativecommons.org/licenses/by-nc-nd/4.0

S Afr Fam Pract
ISSN 2078-6190 EISSN 2078-620
© 2015 The Author(s)
RESEARCH

Perspectives of undergraduate module convenors at a South African academic institution on medical student training in evidence-based health care: a qualitative study

Taryn Young[ab*], Anke Rohwer[a], Jimmy Volmink[ab] and Mike Clarke[c]

Revealed variation in teaching, assessment, coordination and faculty support across modules and clinical rotations

OPEN ACCESS Freely available online

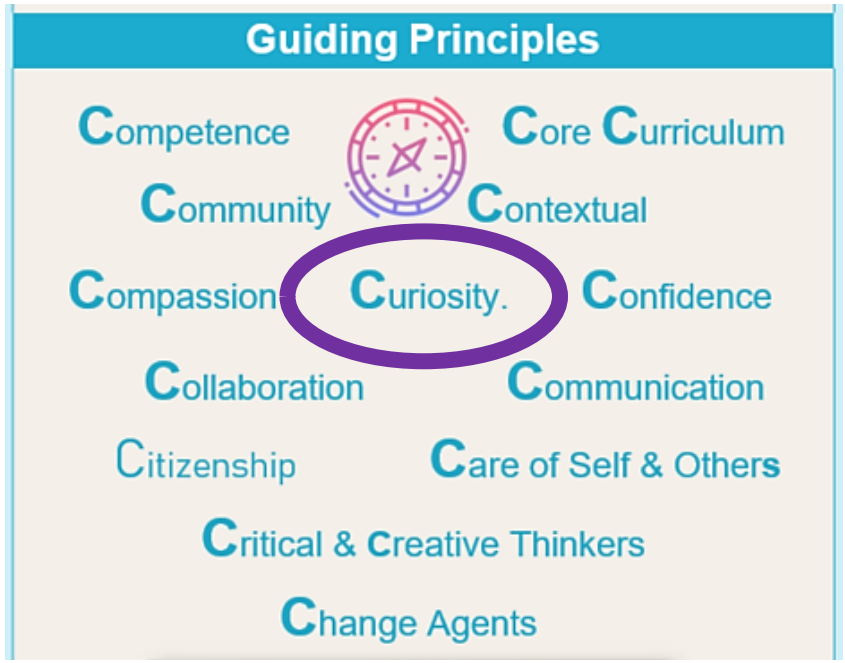
PLOS ONE

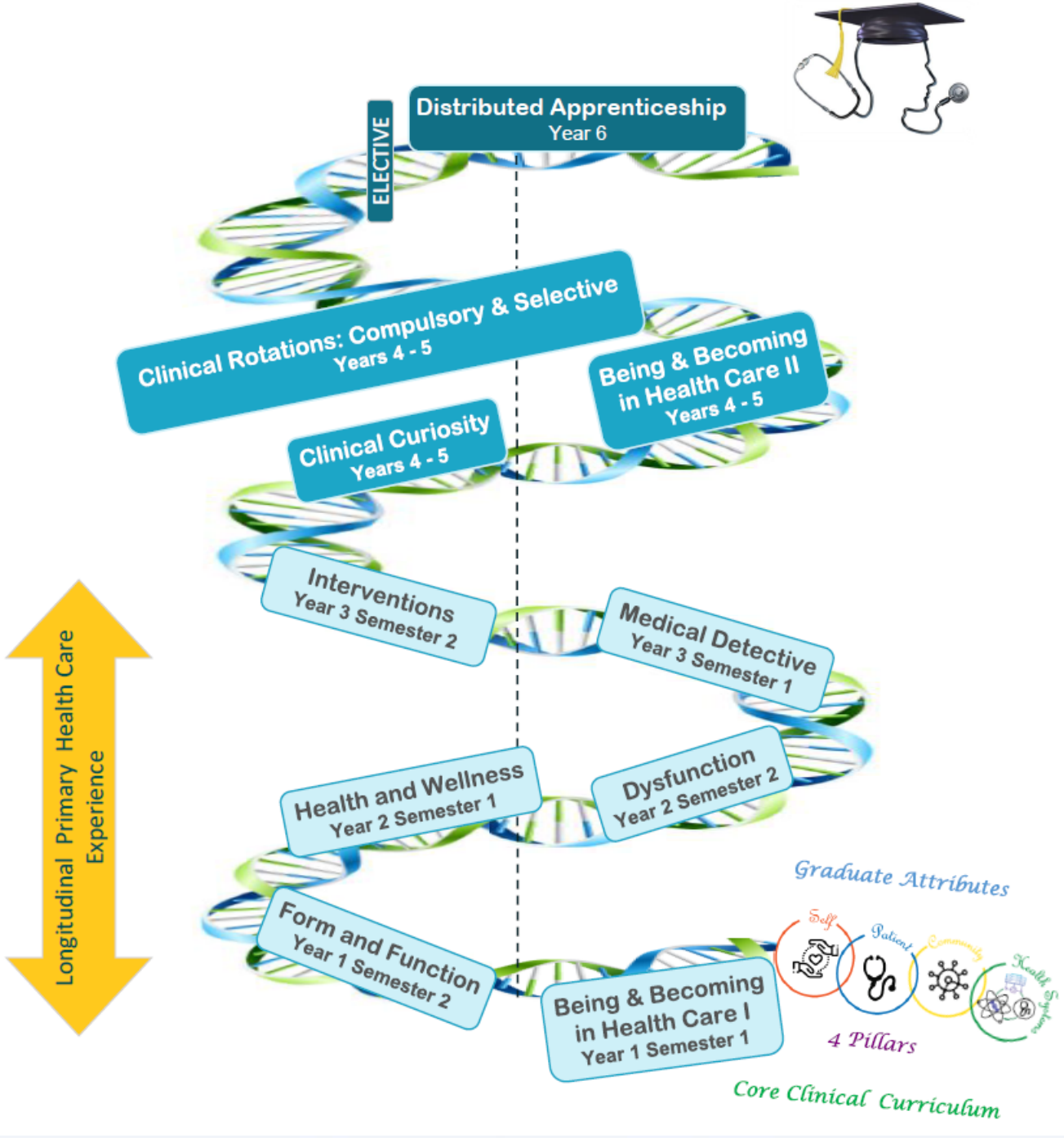
What Are the Effects of Teaching Evidence-Based Health Care (EBHC)? Overview of Systematic Reviews

Taryn Young[1,2,3*], Anke Rohwer[1], Jimmy Volmink[1,2], Mike Clarke[4]

Showed that active, clinically integrated and longitudinal approaches are more effective than stand-alone teaching.

Background


Guiding Principles
Competence
Core Curriculum
Community
Contextual
Compassion
Curiosity.
Confidence
Collaboration
Communication
Citizenship
Care of Self & Others
Critical & Creative Thinkers
Change Agents


ELECTIVE
Distributed Apprenticeship
Year 6
Clinical Rotations: Compulsory & Selective
Years 4 - 5
Being & Becoming in Health Care II
Years 4 - 5
Clinical Curiosity
Years 4 - 5
Interventions
Year 3 Semester 2
Medical Detective
Year 3 Semester 1
Health and Wellness
Year 2 Semester 1
Dysfunction
Year 2 Semester 2
Form and Function
Year 1 Semester 2
Being & Becoming in Health Care I
Year 1 Semester 1
Longitudinal Primary Health Care Experience
Graduate Attributes
Self
Patient
Community
Health System
4 Pillars
Core Clinical Curriculum

Background

Clinical Curiosity threads *using* and *doing* research through all six years of the Stellenbosch University renewed MBChB curriculum

USING RESEARCH
Ask → Acquire → Appraise → Apply → Evaluate

DOING RESEARCH
Methods → ethics → protocol → dissemination

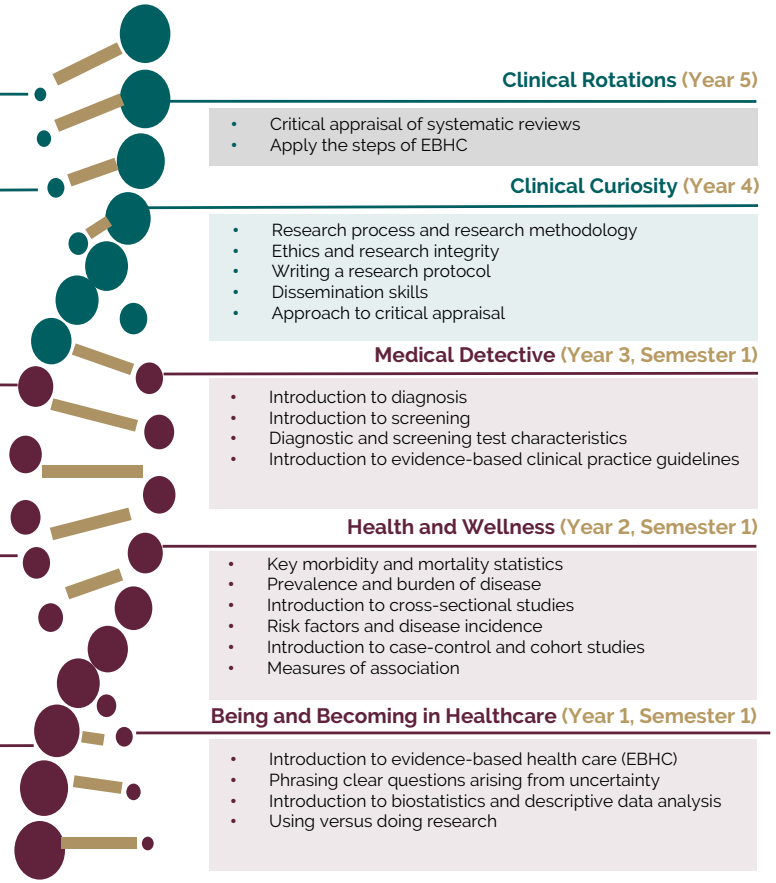
Distributed Apprenticeship (Year 6)
- Critical appraisal of clinical practice guidelines
- Apply the steps of EBHC

Clinical Rotations (Year 4)
- Critical appraisal of RCTs
- Apply the steps of EBHC
- Observe and reflect on practicing EBHC
- Consider implementation of EBHC

Interventions (Year 3, Semester 2)
- Introduction to randomised controlled trials (RCTs)
- Introduction to systematic reviews
- Hypothesis testing
- Estimation (95% confidence intervals)
- Critical engaging with clinical practice guidelines

Dysfunction (Year 2, Semester 2)
- Introduction to qualitative research methodologies
- Qualitative data
- Trustworthiness of qualitative research
- Complementarity of quantitative and qualitative research

Form and Function (Year 1, Semester 2)
- Searching for research evidence
- Populations, sampling and threats to validity
- Introduction to hypothesis testing and estimation



Clinical Rotations (Year 5)
- Critical appraisal of systematic reviews
- Apply the steps of EBHC

Clinical Curiosity (Year 4)
- Research process and research methodology
- Ethics and research integrity
- Writing a research protocol
- Dissemination skills
- Approach to critical appraisal

Medical Detective (Year 3, Semester 1)
- Introduction to diagnosis
- Introduction to screening
- Diagnostic and screening test characteristics
- Introduction to evidence-based clinical practice guidelines

Health and Wellness (Year 2, Semester 1)
- Key morbidity and mortality statistics
- Prevalence and burden of disease
- Introduction to cross-sectional studies
- Risk factors and disease incidence
- Introduction to case-control and cohort studies
- Measures of association

Being and Becoming in Healthcare (Year 1, Semester 1)
- Introduction to evidence-based health care (EBHC)
- Phrasing clear questions arising from uncertainty
- Introduction to biostatistics and descriptive data analysis
- Using versus doing research

Distributed clinical apprenticeship — Year 6

Pre-apprenticeship Phase — Year 5, Year 4

Learnership Phase — Year 3, Year 2, Year 1

Background

RESEARCH QUESTION

To what extent are EBHC competencies constructively aligned and coherently integrated across the Clinical Curiosity longitudinal thread in the renewed MBChB curriculum at Stellenbosch University?

Aim

To evaluate Clinical Curiosity as a longitudinal EBHC curriculum and its potential as a transferable model for strengthening evidence-informed clinical practice.

Objectives

PHASE 1 · MAP

Map how EBHC competencies are represented, scaffolded and constructively aligned across outcomes, teaching and assessment in Years 1–4

PHASE 2 · INTERPRET

Extends the submitted abstract

Explore how international EBHC experts judge the thread's strengths and gaps, and what they advise for Years 5–6

Methods

PHASE 1 · MAP

Qualitative document analysis, 2022–2025

68	301	203.5
curriculum artefacts	learning outcomes	scheduled teaching hours

Sources module and session guides, timetables, teaching materials, assessment tasks, programme records

Coded (ATLAS.ti) EBHC domain · doing research · Bloom's level · constructive alignment · CREATE category

PHASE 2 · INTERPRET

Semi-structured expert interviews, 45–60 min

5 **international EBHC and health professions education experts**

- 10–30 years' experience; purposive and snowball sampling
- Given the Phase 1 map to interpret; advised on Years 5–6
- Planned 8–12; information power judged sufficient

Frameworks: Dawes 2005; Albarqouni 2018; Anderson & Krathwohl 2001; Biggs 1996; Tilson 2011

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

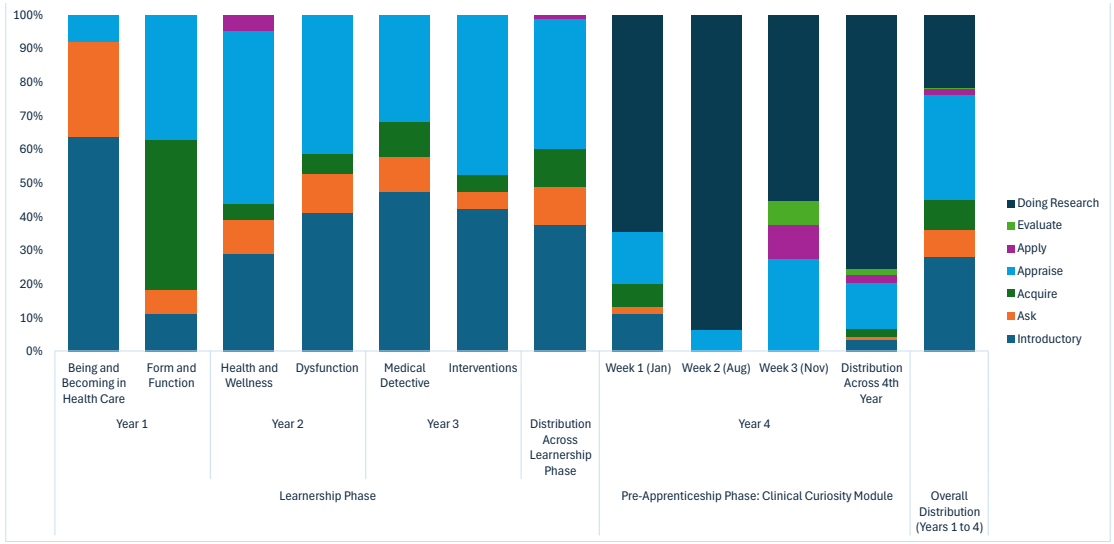
Phased in from 2022 · **mapped in this study, 2025**

2026–2027 · **findings inform development**

Results

The thread builds EBHC early and repeatedly, but Apply and Evaluate stay marginal

Learning outcomes by EBHC competency and module, % (n = 301)



- **Early and repeated engagement:** EBHC concepts are introduced in Year 1 and revisited across successive modules.
- **Increasing cognitive complexity:** no Bloom's Evaluate-level outcomes appear in Years 1–3; all 15 emerge in Year 4, with 74% of Create outcomes.
- **From using evidence to doing research:** about a third of outcomes address the research process, protocol development and dissemination, all in Year 4; Apply and Evaluate stay marginal.
- **Teaching remains largely didactic:** lectures and self-study exceed 70% of the 203.5 hours; only Year 4 approaches 40% interactive formats.
- **Assessment favours knowledge:** 75–80% of tasks are knowledge- and skill-focused; affective and behavioural assessment is under 20%, mainly in Year 4.

STRONGEST REPRESENTATION

Asking focused questions, acquiring evidence and critical appraisal

WEAKER REPRESENTATION

Applying evidence in complex clinical contexts and evaluating decisions and outcomes, especially in Years 1–3

Results

Experts recognised the same taper and traced it to structure, culture and governance

> *"The easiest stuff to do… is defining questions, searching for the literature, and critically appraising it."*
>
> **Expert P:03**

> *"Most of our tools are still focused on those first three steps… there's much less that actually captures what happens when you're with a patient."*
>
> **Expert P:05**

WHY THE TAPER PERSISTS

Structural constraints
Distributed sites, large cohorts, accreditation-driven priorities

Cultural influences
Hierarchy and workload outweigh evidence use

Faculty and governance
Ad hoc, supervisor-dependent expectations

Longitudinal integration needs clinical ownership, not central coordination alone

Results

Experts' advice for Years 5–6: make Apply and Evaluate observable and assessed where care happens

Make evidence use clinically authentic

- Start from uncertainty in real patient care
- Use guidelines, protocols and syntheses pragmatically
- Ask students to justify applicability to patient and setting

Make participation feasible

- Brief, repeated evidence tasks
- Prompts in case discussions and workplace-based assessments
- Feedback close to the encounter; protected time

Make expectations visible

- Explicitly assess Apply and Evaluate
- Shared prompts and supervision tools across sites
- Co-assess with clinicians, backed by faculty development

Prepare for a changing evidence environment

- Critical judgement, verification and transparency
- Responsible use of AI-supported evidence tools
- Emphasis on good questions and interpreting syntheses

Limits

The map shows the intended curriculum, not what students experience or can do

Intended, not enacted. Documents miss informal bedside teaching and what students actually experience.

Years 1–4 only. Year 5 began in 2026 and Year 6 begins in 2027.

Counts are not competence. Outcome frequency shows curricular emphasis, not educational adequacy or student performance.

Five experts; insider researchers. Fewer than the 8–12 planned. Reflexive memoing, second-author review and an audit trail addressed our insider position.

Conclusions

Architecture enables progression; clinical enactment needs aligned assessment and workplace support

1. A longitudinal thread moved EBHC from fragmented teaching to a coherent, scaffolded pathway with strong Ask–Acquire–Appraise foundations.
2. Architecture alone did not close the gap seen internationally: Apply and Evaluate remain marginal in outcomes and assessment.
3. Closing it needs clinical ownership in Years 5–6: authentic, feasible and visible evidence use, assessed where care happens.

NEXT STEPS

- Use the experts' advice to shape Years 5–6
- Link the curriculum map to student performance data

stevejacobs@sun.ac.za
Stellenbosch University, Cape Town

References

1. Young T, Rohwer A, Volmink J, Clarke M. What are the effects of teaching evidence-based health care (EBHC)? Overview of systematic reviews. PLoS One. 2014;9(1):e86706.
2. Maggio LA, Tannery NH, Chen HC, ten Cate O, O'Brien B. Evidence-based medicine training in undergraduate medical education: a review and critique of the literature published 2006–2011. Acad Med. 2013;88(7):1022–8.
3. Dawes M, Summerskill W, Glasziou P, et al. Sicily statement on evidence-based practice. BMC Med Educ. 2005;5:1.
4. Albarqouni L, Hoffmann T, Straus S, et al. Core competencies in evidence-based practice for health professionals: consensus statement based on a systematic review and Delphi survey. JAMA Netw Open. 2018;1(2):e180281.
5. Anderson LW, Krathwohl DR, editors. A taxonomy for learning, teaching, and assessing: a revision of Bloom's taxonomy of educational objectives. New York: Longman; 2001.
6. Biggs J. Enhancing teaching through constructive alignment. High Educ. 1996;32(3):347–64.
7. Tilson JK, Kaplan SL, Harris JL, et al. Sicily statement on classification and development of evidence-based practice learning assessment tools. BMC Med Educ. 2011;11:78.
8. Malterud K, Siersma VD, Guassora AD. Sample size in qualitative interview studies: guided by information power. Qual Health Res. 2016;26(13):1753–60.

Acknowledgements Prof Simone Titus-Dawson (supervisor and research mentor); the Clinical Curiosity team; the Department of Health Professions Education, Stellenbosch University.