

# A new health care profession in rural district hospitals: a case study of the introduction of Clinical Associates in Shongwe hospital

M Bac<sup>a\*</sup>, JMA Hamm<sup>a</sup>, PC van Bodegraven<sup>a</sup>, B Pater<sup>ab</sup> and JM Louw<sup>a</sup>

<sup>a</sup>Faculty of Health Sciences, Department of Family Medicine, School of Medicine, University of Pretoria, South Africa

<sup>b</sup>Institute for Health Policy and Management, Erasmus University of Rotterdam, Rotterdam, The Netherlands

\*Corresponding author, email: [martin.bac@up.ac.za](mailto:martin.bac@up.ac.za)

**Background:** One of the reasons to develop training courses for medical mid-level workers in South Africa is a shortage of doctors. The introduction of this new profession has led to task sharing and redefining of professional boundaries. The primary aim of this study is to evaluate the introduction of new healthcare professionals in a rural hospital district.

**Methods:** This multi-method qualitative research study used a semi-structured questionnaire to assess the effectiveness of Clinical Associates. A review of documents from 2012 to 2015 was done including a longitudinal study of the development of the Bachelor in Clinical Medical Practice (BCMP) programme at Shongwe hospital.

**Results:** Three Clinical Associates in 2011 and six Clinical Associates in 2014 completed questionnaires. Student satisfaction increased as measured with the Med IQ tool. At the end of 2013 Shongwe Clinical Learning Centre (CLC) had improved from last position out of 17 CLCs in 2011 to position number eight in 2014.

Casualty was run by Clinical Associates and during observations it became clear that Clinical Associates were able to take responsibility for outpatient departments (OPDs), the emergency unit and some wards with supervision by a doctor.

**Conclusion:** The introduction of the BCMP programme and the establishment of a Clinical Learning Centre in Shongwe hospital have led to improved patient care and a more conducive environment for teaching and learning. With the availability of more Clinical Associates vacant medical officer posts can be converted to employ Clinical Associates to serve patients without an increase in the cost of total human resources.

**Keywords:** clinical associates, primary health care team, rural health, task sharing

## Introduction

South Africa is trying to deal with a huge shortage of doctors<sup>1</sup> as well as nurses and other health workers in the public sector.<sup>2</sup>

In 2008 there were 250 000 healthcare professionals employed in the country, with a total population of 48.7 million. In the public sector the shortage of healthcare professionals was 80 000 and in some of the provinces the vacancy rates for doctors was 50%.<sup>3</sup> This has been one of the reasons to develop training courses for medical mid-level workers in South Africa. The Pick report on Human Resources (2001) was instrumental in the decision in 2002 by the national government to develop a new cadre of mid-level medical workers.<sup>4</sup> In 2005 a national task team presented the curriculum and the course outline to the deans of the medical schools in South Africa.<sup>5</sup> Three institutions responded positively to the invitation to develop and offer the Bachelor in Clinical Medical Practice (BCMP) degree. The first three Clinical Associates graduated in 2010 from the Walter Sisulu University. Since then the number steadily increased to 400 Clinical Associates in 2014.<sup>6</sup> Clinical Associates are mid-level medical workers who are trained to assist doctors with routine tasks, with a focus on rural district hospitals.<sup>7</sup>

The aim of this study is to evaluate the introduction of Clinical Associates in a rural district hospital in Nkomazi sub-district in Mpumalanga as part of an ongoing evaluation of the BCMP programme at the University of Pretoria.

## Objectives

The primary objective of this study is to describe the functioning of Clinical Associates in a rural district hospital in Mpumalanga in South Africa from 2011 to 2014. The second objective of the

study is to measure whether the introduction of Clinical Associates is a cost-effective strategy to strengthen the medical team.

## Methods

Shongwe hospital is an old mission hospital, founded by the Swedish mission in 1935. The hospital caters for a population of about 200 000 people. The hospital has suffered from severe shortages of manpower due to its isolated location. The hospital has 350 beds and renders level one hospital services. Seventeen clinics in the surrounding area refer patients to Shongwe hospital. It has employed between 4 and 11 doctors at a time over the past 4 years. There are about 20 doctors who do sessions at Shongwe hospital, mainly during weekends and after hours. In 2010 Shongwe hospital was visited by staff members of the Department of Family Medicine from the University of Pretoria and it was agreed that Shongwe hospital can become a Clinical Learning Centre (CLC) for BCMP students. The CLC received basic equipment and a small library and the local Family Physician was appointed as the facilitator for the BCMP students. By 2015 there were seven qualified Clinical Associates employed at Shongwe hospital.

## Data collection and analysis

A multi-method qualitative research design was used.<sup>8</sup>

1. From January 2012 to January 2015 a review of documents was done.
2. In 2011 and 2014 the BCMP second year and third year students' satisfaction at Shongwe hospital was measured by using the

MedIQ questionnaire.<sup>9</sup> It is composed of four sub-scales: preceptor activity, the learning environment, learning opportunities and learner involvement. Composite satisfaction scores were used to present results.

3. Interviews were audio recorded during October 2013 and a semi-structured questionnaire was used. The interviews were conducted by two researchers (MB and BP).
4. Different potential cost-saving scenarios were developed with a health economist to illustrate the potential cost saving when a medical officer post was converted to Clinical Associate posts.

### Ethical considerations

This study is part of the monitoring and evaluation of the BCMP programme and there is an approved protocol. Ethical clearance for the study was obtained from the Research Ethics Committee of the University of Pretoria (approval number: 56/2011).

### Results

#### Review of documents

The first three students were placed at Shongwe in 2011 and there were misunderstandings with the doctors and the nurses regarding their role and the way BCMP students learn. All three students were unhappy and wanted to leave the CLC. After multiple interventions and clarifications the programme continued and in 2012 the first two qualified Clinical Associates were appointed at Shongwe hospital. At this time the hospital had four doctors and the medical team was unstable because of a high turnover of doctors. The fact that the scope of practice for Clinical Associates had not been approved at that time led to problems because some of the doctors were not willing to countersign the prescriptions and the pharmacists refused to issue any medication that was prescribed by a Clinical Associate.

In 2014 it was reported that the appreciation for Clinical Associates and BCMP students had much improved and the number of students was increased to six final- (third-) year students. The teaching team at Shongwe hospital was strengthened by the appointment of one of the Clinical Associates as junior lecturer. Subsequently five extra Clinical Associates were appointed at Shongwe hospital as well as one Clinical Associate to run the male medical circumcision (MMC) programme.

#### Outcomes of the MedIQ instrument

A total of three Clinical Associates in 2011 and six Clinical Associates in 2014 completed MedIQ questionnaires giving a response rate of 100%. Table 1 depicts the mean and standard deviations (SD) of the composite scores of all four sub-scales. The scores run from 0 to 5 for each question. There was an obvious increase in satisfaction but the numbers are too small to calculate a *p*-value. Student satisfaction as measured with the Med IQ tool at the end of 2013 indicated that Shongwe CLC had improved from last position out of 17 CLCs in 2011 to position number eight in 2014.

#### Interviews

During October 2013 interviews were conducted with the Clinical Manager, the Nursing Services Manager of the hospital, the Nursing Manager of the emergency unit, a qualified Clinical Associate and a third year BCMP student. One of the questions dealt with was the amount of responsibility that was given to Clinical Associates and whether this was not excessive for their level of training.

**Table 1:** Outcomes of the MedIQ instrument in Shongwe

Shongwe	2011 (n = 3)	2014 (n = 6)	SD 2011	SD 2014
Preceptor/supervisor	2.80	4.99	1.09299	0.75463
Learning opportunities	2.44	4.84	0.48785	0.77688
Learning involvement	2.55	3.60	0.37770	0.51627
Learning environment	1.71	4.51	0.43204	0.91595

Researcher: "How much responsibility do you have? And how much responsibility do doctors give you?"

Clinical Associate: "In terms of work? I am comfortable in everything now because I think (I) know all procedures I do, I did since someone see me doing; watched me and then they take you to second stages and you do it with them then we go to the last stage whereby I do it and the mentor watches me. Then the last stage they allow you to do it while they are not with you, and when you need something or don't know anything you can call them. So it was very difficult last year. I think it was huge last year. But I loved it because I have learned a lot. But I still remember one day I had to run quickly to a female to do a procedure and I had to start on my own. I think in a way the pressure made me strong. This year is better because we have learned to run most of the departments."

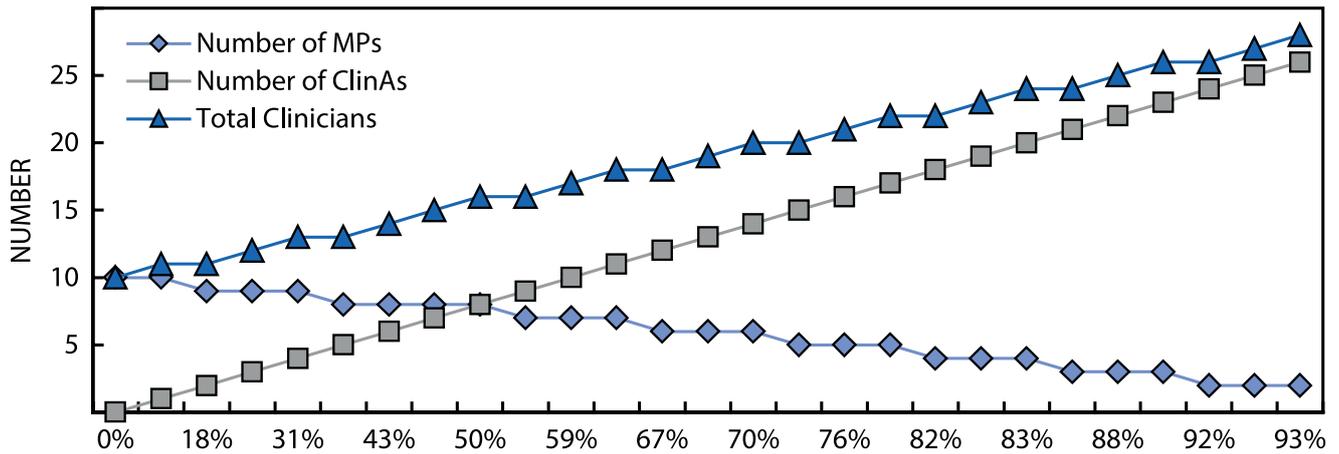
The relationship with some of the nursing staff was not good in the beginning due to the fact that the way the BCMP students learn is very different from the learning of other healthcare professionals such as nurses and doctors. However, over the years there was a growing acceptance of this new cadre of healthcare workers.

Researcher: "And do you get sufficient support from nurses?"

Clinical Associate: "Yes. I think that is the relationship that created me, with the nurses. Because last year they taught me a lot of things. My willingness to learn grew, listening to them, listening to their advises and a lot of their advises were true. So my relationship with them, I love it, because I am what I am today because of that relationship."

**Table 2:** Calculation of average salary over 10 years for Clinical Associates compared with Medical Practitioners

Year	ClinA	MP
Year 1	R 196 278	R 512 505
Year 2	R 199 224	R 637 845
Year 3	R 202 215	R 647 421
Year 4	R 205 248	R 657 126
Year 5	R 208 323	R 666 981
Year 6	R 211 449	R 676 986
Year 7	R 214 617	R 687 144
Year 8	R 217 839	R 729 315
Year 9	R 221 106	R 740 247
Year 10	R 224 421	R 751 353
Average	R 210 072	R 670 692



**Figure 1:** Number of clinicians that can be employed with an annual budget of R 7 million compared with the percentage of Clinical Assistants in the team.

Researcher: "Do you feel like you are part of the medical team?"  
 Clinical Associate: "Yes, I feel like I am part of this medical team. When going to a department most of the people don't know you, they heard about you but are not comfortable working with you. So this improves in time, you have to go and prove yourself, and then they realise that this person is not what they expected from him."  
 Unit Manager 1: "And they are doing this work out of their love; it is coming from their heart."

It was encouraging to observe the positive attitude that developed among the staff during the period of observation and monitoring.

Clinical Manager: "On a daily basis I see them improving from that I have seen since they have started here."  
 Clinical Associate: "It is stressful sometimes, but because of the situation I ended up coping with the situation."

**Cost implications**

Clinical Associates are employed on level seven of public service act appointees not covered by the occupation-specific dispensation. According to Appendix A of the Department of Public Service Administration Circular 1 of 2015 this translates to an annual total cost to employer package of between R 196 278

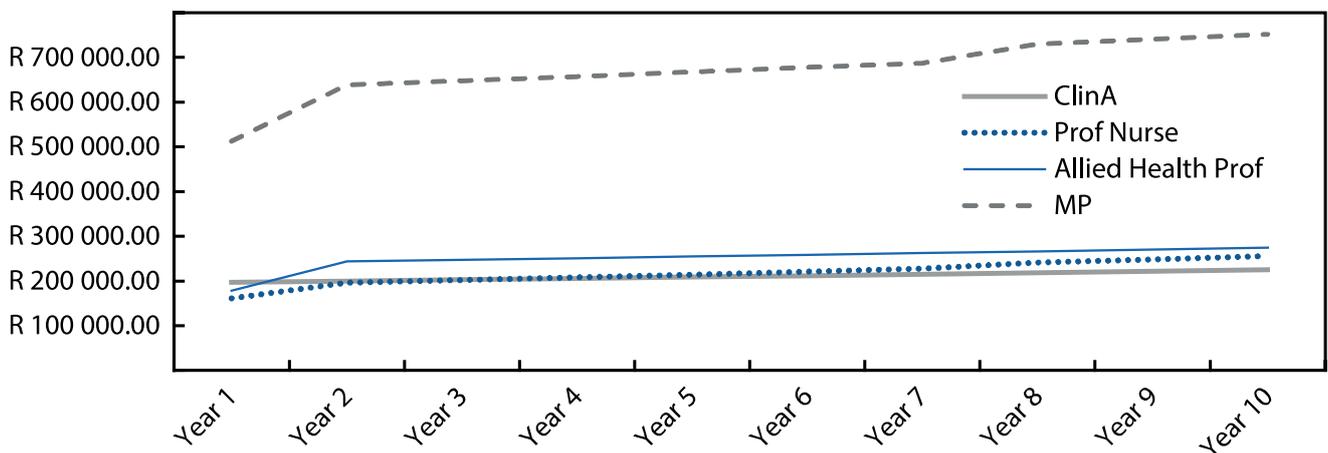
in the first year and R 224 421 in the 10th year of employment as shown in Table 2. Over a 10-year period a Clinical Associate will therefore cost the employer an average of R 210 072 per annum without taking into account any overtime.

A Medical Officer (Medical Practitioner) will cost on average R 670 692 per annum in the first 10 years of employment without taking into account any overtime.

Over the past four years Shongwe Hospital employed between 4 and 11 Medical Officers. A combination of 8 Clinical Associates and eight Medical Officers will cost approximately R 7 000 000 per annum. In Figure 1 the numbers of clinicians that can be employed with such a budget are displayed. The hospital can thus choose to employ for example 14 Clinical Associates with 6 Medical Officers to have 20 clinicians compared with 16 while the total annual budget remains unchanged. However, if the hospital chooses to employ 9 Medical Officers there will only be enough funds for 4 Clinical Associates resulting in a total of 13 clinicians.

Figure 2 shows the salary costs for the different healthcare workers over a 10-year period.

Shongwe hospital started 2012 with only four medical practitioners. This meant a huge workload for those four. With



**Figure 2:** Comparison of salary notches for 4 healthcare professionals over the first 10 years of employment.

**Table 3:** Comparing the cost of a mixed team of 13 clinicians vs. 7 Medical Officers

Year	Cost of employing a mixed team			
	4 MPs	9 CAs	4 MPs + 9 CAs	7 MPs
Year 1	R 2 050 020	R 1 766 502	R 3 816 522	R 3 587 535
Year 2	R 2 551 380	R 1 793 016	R 4 344 396	R 4 464 915
Year 3	R 2 589 684	R 1 819 935	R 4 409 619	R 4 531 947
Year 4	R 2 628 504	R 1 847 232	R 4 475 736	R 4 599 882
Year 5	R 2 667 924	R 1 874 907	R 4 542 831	R 4 668 867
Year 6	R 2 707 944	R 1 903 041	R 4 610 985	R 4 738 902
Year 7	R 2 748 576	R 1 931 553	R 4 680 129	R 4 810 008
Year 8	R 2 917 260	R 1 960 551	R 4 877 811	R 5 105 205
Year 9	R 2 960 988	R 1 989 954	R 4 950 942	R 5 181 729
Year 10	R 3 005 412	R 2 019 789	R 5 025 201	R 5 259 471
Average	R 2 682 769	R 1 890 648	R 4 573 417	R 4 694 846
Total over 10 years	R 26 827 692	R 18 906 480	R 45 734 172	R 46 948 461

Notes: MPs = Medical Practitioners; CAs = Clinical Associates.

the availability of more Clinical Associates such a situation may be significantly improved by converting 3 vacant medical officer posts to appoint 9 Clinical Associates to have 13 clinicians available to serve patients without an increase in total HR cost. The cost of such a team is demonstrated in Table 3.<sup>10</sup>

### Conclusion and recommendations

This case study of the introduction of the BCMP programme in Shongwe hospital illustrates the challenges when a new programme is started as well as the obstacles such as resistance by healthcare workers, overworked doctors, ignorance concerning the role of Clinical Associates and the lack of an approved scope of practice.

The introduction of the BCMP programme and the establishment of a CLC in Shongwe hospital have led to improved patient care and a more conducive environment for teaching and learning.

Waiting times in casualty and OPDs have been reduced and BCMP students and Clinical Associates carry a considerable part of the workload of the medical team. This is the realisation of the scenario predicted by the study conducted among BCMP students by Moodley<sup>11</sup> where more than 50% of the students intended to work in rural practice.<sup>11</sup>

There are ample opportunities to improve the utilisation of Clinical Associates in rural district hospitals such as Shongwe when the scope of practice has been approved (in the meantime the scope of practice was approved in November 2016). Clinical Associates can also start to work in the community clinics and community health centres (CHCs) and assist the Primary Health Care (PHC) nurses with the workload of patients with chronic diseases such as HIV and TB. Additional training in surgery and anaesthetics is important and can make them more useful in theatre as is the case in other hospitals.

The utilisation of Clinical Associates is still in its initial phase but th Mpumalanga province will make use of around 100 Clinical Associates in 2016. They will form about 10% of the clinicians in the public sector in Mpumalanga. This has an important financial impact on the budget of hospitals and the province and has the

potential to increase the number of clinicians considerably while the budget remains the same if some of the medical officer posts are converted to Clinical Associate posts.

The limitation of this study is that this is a case study and is not necessarily representative of all other rural district hospitals. There are insufficient quantitative data available to prove that the quality of care or patient satisfaction has improved during the past four years.

It is recommended that the training of Clinical Associates be scaled up to provide more clinicians in rural hospitals and this study illustrates that this can be successfully done in a relatively short period of time.

**Conflict of interest** – The author (MB) is a senior lecturer in the BCMP programme at the University of Pretoria responsible for BCMP third years since 2010.

**Funding** – This study was funded by the University of Pretoria.

**Acknowledgements** – The authors thank all participants who were interviewed as well as the managers and healthcare workers at Shongwe hospital including the CLC lecturers Dr G. Ogwal, family physician and C. Mpangane, clinical associate.

### References

1. Department of Labour [Internet]. The shortage of medical doctors in South Africa. Pretoria: Department of Labour; 2008. [cited 2016 Jan 11]. Available from: [http://www.labour.gov.za/DOL/downloads/documents/research-documents/Medical%20Doctors\\_DoL\\_Report.pdf](http://www.labour.gov.za/DOL/downloads/documents/research-documents/Medical%20Doctors_DoL_Report.pdf)
2. Hugo J, Allan L. Doctors for tomorrow: family medicine in South Africa. Grahamstown: NISC; 2008.
3. Burch V, Reid S. Fit for learning? The appropriate education of health professionals in South Africa. *S Afr Med J*. 2011;101(1):25–6.
4. Pick W, Khanyisa N, Cornwall J, et al. Human resources for health: a national strategy. Pretoria: National Department of Health; 2001.
5. Hugo J, Tshabalala Z, Couper I, et al. Midlevel Medical Worker Programme for South Africa: curriculum and training plan. Report to National Department of Health. Pretoria: Family Medicine Education Consortium; 2005.
6. Couper ID, Hugo JFM. Addressing the shortage of health professionals in South Africa through the development of a new cadre of health worker: the creation of Clinical Associates. *Rural Remote Health*. 2014;14(3):2874.
7. Hugo J, Hugo D, Common Mawela L. Conditions and task gap for midlevel medical workers in district hospitals in South Africa: information to inform curriculum development. Report to Human Resource Planning Directorate, National Department of Health, Pretoria. Brits: Madibeng Centre for Research; 2005.
8. Baxter P, Jack S. Qualitative case study methodology: study design and implementation for novice researchers. *Qual Rep*. 2008;13(4):544–59.
9. Memon SJ, Louw JM, Bac M, et al. Students' perceptions of the instructional quality of district hospital-based training. *Afr J Prm Health Care Fam Med*. 2016;8(1):a1028. doi:10.4102/phcfm.v8i1.1028
10. Hamm J, van Bodegraven P, Bac M, et al. Cost effectiveness of clinical associates: A case study for the Mpumalanga province in South Africa. *Afr J Prm Health Care Fam Med*. 2016;8(1):a1218. doi:10.4102/phcfm.v8i1.1218
11. Moodley SV, Wolvaardt E, Louw M, et al. Practice intentions of clinical associate students at the University of Pretoria. *South Africa Rural Remote Health*. 2014;14:2381–92.

Received: 05-07-2016 Accepted: 26-09-2016