

# South African Vaccination and Immunisation Centre

Annual Report 2016



**SAVIC**



South African  
Vaccination &  
Immunisation  
Centre





## Motto

Dedicated to strengthening immunisation services

## Vision

An African continent free of vaccine-preventable diseases

## Mission

Committed to increasing knowledge on vaccine-preventable diseases and improving the quality and sustainability of immunisation services

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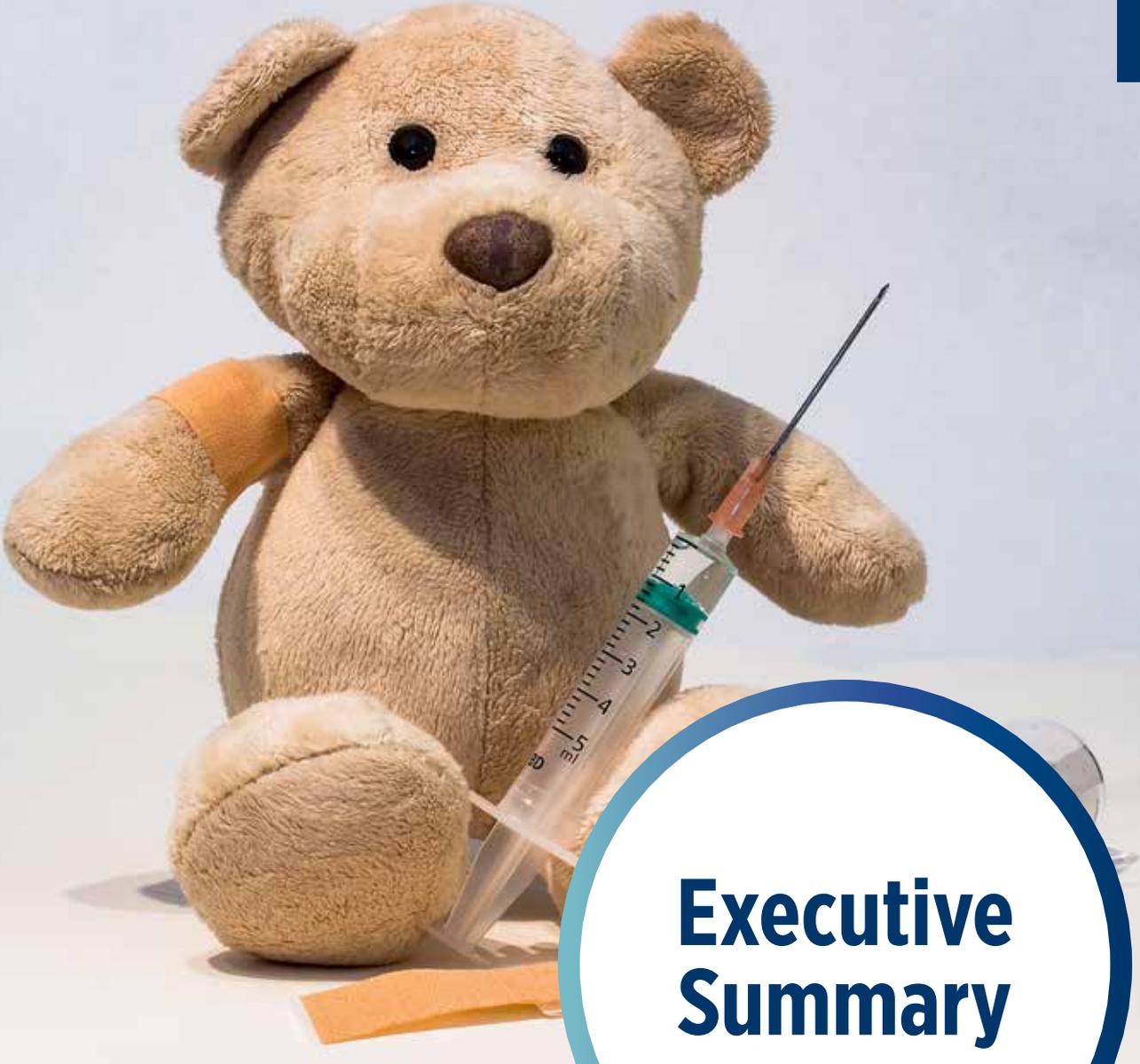
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## List of Abbreviations

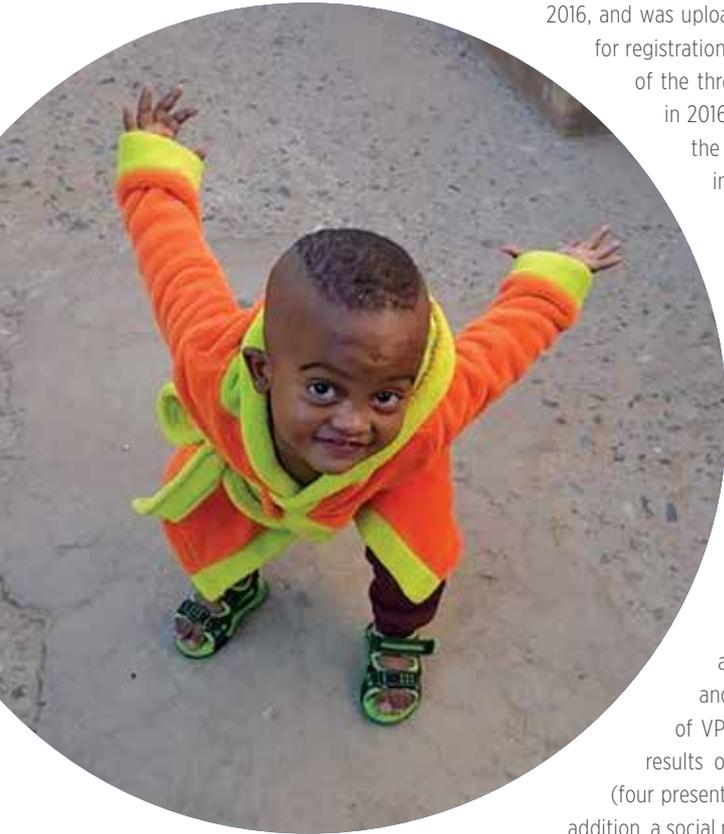
<b>CPD</b>	Continuing professional development	<b>NDoH</b>	National Department of Health
<b>ECAVI</b>	East Africa Centre for Vaccines and Immunization	<b>NESI</b>	Network for Education and Support in Immunisation
<b>EPI</b>	Expanded Programme on Immunisation	<b>OPV</b>	Oral polio vaccine
<b>EPI-SA</b>	EPI of South Africa	<b>SAMRC</b>	South African Medical Research Council
<b>GSK</b>	GlaxoSmithKline	<b>SAVIC</b>	South African Vaccination and Immunisation Centre
<b>HCert</b>	Higher Certificate	<b>SMU</b>	Sefako Makgatho Health Sciences University
<b>HCWs</b>	Healthcare workers	<b>VPD</b>	Vaccine-preventable disease
<b>HPV</b>	Human papillomavirus	<b>VSC</b>	Vaccinology Short Course
<b>IMVACC</b>	International Master of Advanced Studies in Vaccinology	<b>WHO</b>	World Health Organization
<b>MSD</b>	Merck Sharp & Dohme	<b>WHO/AFRO</b>	WHO Regional Office for Africa
<b>NAGI</b>	National Advisory Group on Immunization		



# Executive Summary

Immunisation is one of the most cost-effective and successful public health interventions in the history of mankind. Since it was launched in 1995, the Expanded Programme on Immunisation (EPI) of South Africa (EPI-SA) has closely followed World Health Organization (WHO) guidelines, and currently provides free immunisation against 11 vaccine-preventable diseases (VPDs). As new vaccines become available and are recommended by the WHO, countries face many challenges in introducing these vaccines into their existing immunisation programmes, and South Africa is no exception. Universities have an important responsibility and role in supporting ministries of health in the prevention and control of VPDs, since they are responsible for research, education and training of healthcare workers (HCWs). The South African Vaccination and Immunisation Centre (SAVIC) was established in 2003, as a network of partners in the field of vaccination and immunisation. SAVIC is a Public Private Academic alliance between the National Department of Health (NDoH), the vaccine industry, academic institutions and other stakeholders. Its activities are undertaken in close collaboration with the NDoH, Network for Education and Support in Immunisation (NESI, based at the University of Antwerp), the WHO and its partners. During 2016, this network was extended by signing a Memorandum of Understanding with the East Africa Centre for Vaccines and Immunization (ECAVI), based at Makerere University in Uganda and Egerton University in Kenya, which was a major highlight for SAVIC. The strategic operational areas of SAVIC include Education and Training, Operational Research and Technical Support and Advocacy. Several activities were undertaken within each of these areas in 2016.

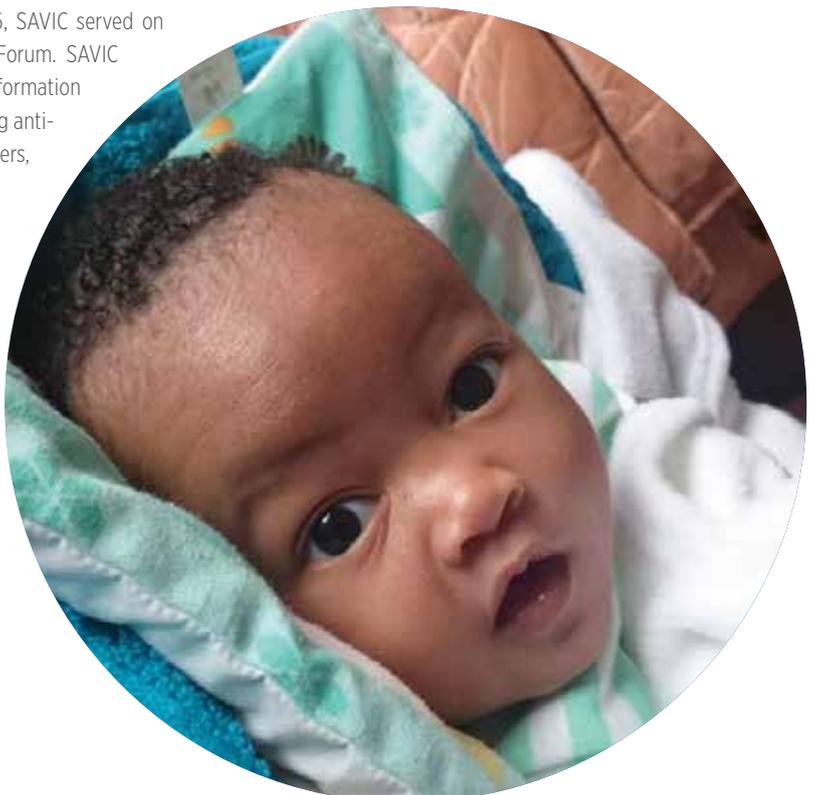
In the area of **Education and Training**, two important milestones regarding Vaccinator Accreditation of South African HCWs, were reached. First, the online HCert (Vaccinology) programme was approved by the Department of Higher Education and Training in



2016, and was uploaded onto the Council for Higher Education website at the end of 2016, for registration and approval by the South African Qualifications Authority. Second, two of the three Vaccinology Short Courses (VSCs) developed by SAVIC were piloted in 2016. Other important highlights in the area of Education and Training were the two meetings for the joint SAVIC/NESI Project “Improving skills and institutional capacity to strengthen country adolescent immunisation programmes and health systems in the African Region”. The first was the Human papillomavirus (HPV) Workshop for eastern African countries, on “Implementing HPV vaccination in Africa: opportunities for strengthening adolescent health”, held in Nairobi, Kenya, in March 2016. The second was an experience-exchange meeting, the “HPV Symposium for eastern and southern African countries: Strengthening HPV vaccination and adolescent health programmes in Africa”, which was held in Johannesburg, South Africa, in November 2016. Another important highlight was the 4<sup>th</sup> WAKA HPV Africa Symposium, co-organised by Dr Lisbeth Lebelo: “HPV in Africa: collaborations and the way forward”, held in Vereeniging, South Africa, in September 2016.

In the area of **Operational Research**, during 2016, SAVIC members authored or co-authored several research outputs in the fields of social and behavioural issues related to vaccination uptake and the epidemiology of VPDs. These included five publications in international journals, while the results of these studies were presented at local (ten presentations), national (four presentations) and international (six presentations) conferences during 2016. In addition, a social media tracking project in collaboration with DigitLab commenced in 2016, and the first report covering 11 320 South African vaccination-related conversations during June to November 2016 was produced at the end of 2016.

In the area of **Technical Support and Advocacy**, SAVIC regularly participates in vaccinology courses and meetings, both as lecturers and as participants, which allows SAVIC members to remain at the cutting edge of new developments in vaccinology. During 2016 SAVIC lectured and facilitated group work in the TropEd Advanced Vaccinology Course in Berlin. SAVIC members received training from the NDoH on HPV data capturing, and on logistical aspects and the validation process of the trivalent oral polio vaccine (OPV) to bivalent OPV switch. In addition, a SAVIC member gained an Advanced Certificate in Health Management in May 2016, and became a member of the South African Institute of Health Care Managers. Also, a SAVIC member was accepted for the International Master of Advanced Studies in Vaccinology (IMVACC), and attended the kick-off meeting in Lausanne in 2016. Furthermore, a SAVIC member participated in the Fondation Mérieux Symposium on Strategies to increase vaccine acceptance and uptake, in Annecy in 2016. During 2016, SAVIC served on the Executive Committee of the National Vaccinators Forum. SAVIC members were active players in disseminating correct information on the benefits of vaccines to communities and countering anti-vaccination messages, through the Internet, newspapers, magazines and meetings with HCWs in 2016.





# Background

It is well established that immunisation is one of the most cost-effective and successful public health interventions in the history of mankind. In 1974 the WHO established the Expanded Programme on Immunisation (EPI), which originally provided universal vaccination against six VPDs (tuberculosis, polio, diphtheria, tetanus, pertussis and measles), to children under the age of six years.

Over the next four decades, as safe and effective vaccines became available against other infectious diseases causing high global burdens of mortality and morbidity, these were incorporated into the EPI, which is currently estimated to prevent 2.5 million deaths globally every year. Since it was launched in 1995, the EPI of South Africa (EPI-SA) has closely followed WHO guidelines, and currently provides free immunisation against 11 VPDs, having added vaccines against five VPDS to the traditional six. These are vaccines against hepatitis B (1995), *Haemophilus influenzae* type b infection (1999), invasive pneumococcal disease (2009), rotavirus diarrhoea (2009) and cervical cancer (2014). EPI-SA has achieved many successes, with neonatal tetanus being eliminated by 2002; no wild-type poliovirus transmission reported since 1989; >60% reduction in hepatitis B virus prevalence in those born after 1995; >40% reduction of pneumococcal disease in all age groups since 2009; and a 60% reduction in rotavirus-associated hospitalisations since 2009. Furthermore, since its inception EPI-SA has enjoyed tremendous political and financial support from the National Treasury, which has allowed it to be an African leader in introducing new and underutilised vaccines. For example, South Africa was the first African country to introduce into their EPI (a) the pneumococcal conjugate vaccine; (b) the rotavirus vaccine; and (c) a hexavalent vaccine against diphtheria, tetanus, pertussis, polio, *Haemophilus influenzae* type b infection and hepatitis B.

As new vaccines become available and are recommended by the WHO, countries face many challenges in introducing these vaccines into their existing immunisation programmes and South Africa is no exception. These include decision-making and prioritisation of these vaccines against other competing health programmes; addressing strengths and weaknesses in the immunisation programme; managing more complicated vaccination schedules; developing multi-year plans to ensure sustainable use of the new vaccines; integration of these vaccines in the broader context of health systems; and building and maintaining public trust in these vaccines. Thus, continued and increased efforts are required not only to accelerate action to vaccinate children against VPDs, but to reach and maintain high vaccination coverage.

Globally, universities have an important responsibility and role in supporting their respective ministries of health in the prevention and control of VPDs, since they are responsible for research, education and training of HCWs. SAVIC was established at the Medical University of Southern Africa (MEDUNSA, which subsequently became the Medunsa Campus of the University of Limpopo, and is now the Sefako Makgatho Health Sciences University [SMU]) in 2003, as a network of partners in the field of vaccination and immunisation. Since its inception SAVIC has worked very closely with NESI, and since January 2012, SAVIC has functioned as a NESI focal office for the southern African region.

SAVIC is a Public Private Academic alliance between the NDoH, the vaccine industry, academic institutions and other stakeholders, with its activities undertaken in close collaboration with the NDoH, NESI, the WHO and its partners. SAVIC was established to strengthen collaborations between academics, the NDoH, the vaccine industry and other stakeholders, with the overall aim of supporting immunisation services. Although there are a number of players in the field of vaccines and immunisation, SAVIC has a unique aim of strengthening immunisation programmes by bridging the gap through cascading of up-to-date vaccine-related information to the community and operational-level staff with various innovative outreach programmes. Thus, SAVIC creates a platform whereby experts from universities, the NDoH and provincial departments of health, the vaccine industry, non-governmental organisations and Public/Private Partnerships interact in a joint effort to improve public health programmes concerning VPDs.



# Strategic Operational Areas

The **strategic operational areas of SAVIC** focus on three issues:

- Education and Training
- Operational Research
- Technical Support and Advocacy

Within each strategic area, there are several objectives that were realised by specific activities undertaken in the year under review. Some of these activities were undertaken in collaboration with other stakeholders such as the Kenya Paediatric Association, National Advisory Group on Immunisation (NAGI), NDoH, NESI, North-West University, SMU, South African Medical Research Council (SAMRC), University of Antwerp, University of Limpopo, University of Nairobi, WHO Regional Office for Africa (WHO/AFRO), and the vaccine industry.

## Education and Training

During 2016 a number of activities were conducted that addressed the objectives under this strategic goal, which include a) organising education and training programmes; b) contributing to the improvement of pre-service EPI training programmes/curricula for training institutions; and c) contributing to the improvement of knowledge of in-service staff through dedicated themed programmes.

### **Vaccinator accreditation: Progress with offering the Higher Certificate in Vaccinology [HCert (Vaccinology)] programme**

The online HCert (Vaccinology) programme, developed in partnership with the NDoH, NAGI, the vaccine industry, and academics from the SMU departments of Virology, Microbiology, Public Health, Pharmacy and Nursing Sciences, was approved by the Department of Higher Education and Training in 2016, and was uploaded onto the Council for Higher Education website at the end of 2016, for registration and approval by the South African Qualifications Authority. To recap, the HCert (Vaccinology) programme is a new qualification that is not offered by any university in South Africa. It is a basic introductory programme for in-service HCWs who work in EPI-SA and private sector clinics offering infant / childhood vaccination services. HCert (Vaccinology) is designed to equip HCWs with the theoretical knowledge and practical expertise necessary for running an up-to-date clinic offering infant / childhood vaccination services. HCert (Vaccinology) introduces students to key concepts in vaccinology, and at the end of the programme students will be knowledgeable about VPDs, vaccines, vaccination and immunisation, and will be able to apply this knowledge in the practice of vaccine delivery and administration within the framework of EPI-SA and private sector vaccination programmes. The programme is divided into two blocks consisting of 11 modules over 30 weeks. The full details of this programme were published in the SAVIC 2015 Annual Report, which is available on request (please email varsetile@savic.ac.za). It is envisaged that the programme will be accredited by the end of 2017, which would then allow the qualification to be offered from 2018. Furthermore, funding from Sanofi Pasteur for piloting of the programme on 20 volunteers was secured at the end of 2016, and piloting will take place during 2017.

### **Vaccinator accreditation: Piloting of the SAVIC Vaccinology Short Courses: 9–10 June 2016 and 1–2 September 2016**

Throughout the process of developing the HCert (Vaccinology) programme, several stakeholders pointed out that online programmes may not be accessible to all HCWs, especially those working in the rural areas of South Africa where Internet connectivity is a challenge. Also, SAVIC has been made aware that not all HCWs want to gain a qualification, but they do want to stay up-to-date in the field of vaccinology for continuing professional development (CPD) purposes. In addition, many older HCWs have expressed the view that face-to-face lectures would be preferable for them, as they do not feel comfortable interacting with new technology to which they are unaccustomed. Thus SAVIC heeded the call to offer this programme in a series of short courses for certificates of attendance which are CPD-accredited by the Health Professions Council of South Africa, by developing three Vaccinology Short Courses (VSCs) that are based on the modules of the HCert (Vaccinology).

These VSCs were developed during 2015 and the first half of 2016. The first two VSCs were subsequently piloted in 2016, with the primary objective of evaluating them based on (a) feedback from participants and observers provided via a course evaluation form for each day, and (b) the results of the pre-course / post-course questionnaire administered to participants, in order to evaluate whether or not the courses improved their knowledge. The results of these evaluations will be used to improve the short courses. A secondary objective of piloting the VSCs in 2016 was to allow potential sponsors to experience them first-hand, so that subsequent proposals for funding will be supported by evidence of the existence and quality of the VSCs, and the ability of SAVIC to run these VSCs efficiently and effectively.

Each of the pilot VSCs were offered over two days. The first day was mainly dedicated to presenting up-to-date information followed by discussions, on the three or four modules included in each VSC. Homework assignments were given to participants on Day 1, which together with the recorded Day 1 video presentations, allowed for reflection on what they learned and further equipped them to participate in the group work carried out on Day 2. The group work involved a hypothetical scenario set for each module covered on Day 1, upon which a different multiple-choice question (MCQ) for each group was based, with each MCQ being designed to assess deep-level learning. This activity allowed participants to apply what they have learned, with the basic facts that are needed to formulate the answers to all questions having been covered during Day 1. After working together to decide which answers are correct / incorrect, a member from each group presented these answers and explained why they were correct / incorrect. Thereafter the lecturer for each module provided formative feedback on all questions and answers, followed by a discussion period, which allowed participants to assess their own performance and again deepen their learning. In addition, a questionnaire was administered to participants pre-course and post-course, with the answers and explanations for the answers being provided at the end of each course, allowing participants to perform self-assessment and again reflect on what they had learned during the course.

The first VSC (Modules 1 to 4) was piloted on 9–10 June 2016, and was very well received by participants (six from the private sector; seven from the public sector; two postgraduate students) and observers (two from the private sector; four SMU academics). The majority of participants rated the course between “very good” to “excellent”, with the only part that received a lower rating of “good” being the homework, as a number of participants could not get the videos on the USBs to work. A post course evaluation of pre-course knowledge regarding the four modules found that the mean knowledge score increased from 46.7% to 67.1%.

The second VSC (Modules 5, 6 and 8) was piloted on 1–2 September 2016, and was also very well received by participants (two from the private sector; five from the public sector; 13 postgraduate students, two SMU academics) and observers (two from the private sector; one SMU academic). The majority of participants rated the course “very good” to “excellent”, with the only part that received a lower rating of “good” being the discussion and presentation, as a number of participants found some of these sessions too long. A post-course evaluation of pre-course knowledge regarding the three modules found that overall, the mean knowledge score increased from 48.3% to 58.1%. Because there were a large group of postgraduate students who were not practicing as vaccinators, the analysis was further stratified. The mean knowledge score of the postgraduate students increased from 22.9% to 52.6%, while the knowledge of the in-service HCWs increased from 56.7% to 61.6%. The third VSC will be piloted on 19–20 April 2017. Finally, funding for the attendance of the 2017 VSCs for ten public sector HCWs was secured from GSK in 2016.

### **HPV Workshop for eastern African countries – Implementing HPV vaccination in Africa: opportunities for strengthening adolescent health. Sarova Panafric Hotel, Nairobi, Kenya, 22–23 March 2016.**

This workshop was the last of three meetings planned for the joint SAVIC/NESI Project “Improving skills and institutional capacity to strengthen country adolescent immunisation programmes and health systems in the African Region”. It was organised by SAVIC, NESI and SAMRC, with the objectives of: (a) Promoting successful and effective introduction of HPV vaccination and other adolescent health interventions in the eastern African region; (b) Creating a multi-disciplinary resourceful team of experts to support and advocate for the introduction of HPV vaccines and other adolescent health interventions in the eastern African region; and (c) Increasing synergy between academics, educators and Ministries of Health to revive and strengthen school-based health programmes as delivery platforms of adolescent immunisation services in the eastern African region. This workshop was made possible through a grant from the Government of Flanders, with additional support from NESI, SAMRC, SAVIC, WHO/AFRO, University of Nairobi, Kenya Paediatric Association and GSK.

The workshop was attended by 66 delegates, including participants and facilitators. Ministry of Health participants included representatives from Ethiopia, Kenya, Mauritius, Mozambique, Oman, Seychelles, Tanzania and Uganda. Academic participants were from Mekelle University (Ethiopia), Jimma University (Ethiopia), Manhiça Health Research Centre (Mozambique), ECAVI (Uganda and Kenya), Kenya Paediatric Association, Kenya Medical Training College, Cheikh Anta Diop University (Senegal), Universitas Padjadjaran (Indonesia), and ICAP Columbia University (Kenya). Facilitators were from WHO/AFRO, WHO/Kenya, WHO/International Agency for Research on Cancer (IARC), Gavi The Vaccine Alliance, PATH, SAMRC, Kenya Medical Research Institute, and academia (Aga Khan University, University of Nairobi, University of the Free State, NESI and SAVIC). The workshop was also attended by industry delegates.

Keynote presentations on Day 1 highlighted the global burden of cancers caused by HPV; key aspects of cervical cancer screening in Africa; latest developments in HPV vaccines; cost-effectiveness of vaccines; adolescent health interventions; delivery platform for HPV vaccination; and effective communication strategies for building public trust in HPV vaccination. Participants worked in groups during the evening of Day 1 and morning of Day 2, after which each country presented their respective status of HPV vaccine implementation and other adolescent health interventions. These were grouped in three sessions: (a) countries with a national HPV vaccination programme; (b) countries with a demonstration project; and (c) countries planning for HPV vaccine introduction. Participants worked in groups during the evening of Day 2,



**Delegates of the HPV Workshop for eastern African countries: Implementing HPV vaccination in Africa: opportunities for strengthening adolescent health**

after which the country group presentations were made on Day 3. These presentations highlighted the strengths, gaps and challenges faced by each country, based on the feedback received during Day 2, and how to address these. The last session focused on monitoring and evaluation of HPV vaccination programmes, the importance of a cancer registry and early impact of HPV vaccination. Based on the evaluation forms completed after each day of the workshop, the participants benefited greatly.

**The 4<sup>th</sup> WAKA HPV Africa Symposium, BON Hotel Riviera on Vaal, Vereeniging, Gauteng, South Africa, 22–24 September 2016.**

This three-day meeting was attended by 25 participants from seven countries (Belgium, Burundi, DRC, Ethiopia, Kenya, Namibia, South Africa). The objectives of this symposium were to (a) discuss the progress on projects presented in previous WAKA HPV AFRICA symposia; (b) expand the collaborations between African researchers and other international researchers on cervical cancer and other HPV related diseases; (c) prepare for the upcoming HPV 2017 congress; and (d) most importantly, decide on the way forward for the North-South-South network. The symposium also discussed treatment of precancerous cervical lesions; HPV screening and cytology for cervical cancer screening; and quality control and quality assurance for cytology. The pathologist perspective of cervical cancer screening using a pap smear and quality control were discussed in detail. Self-sampling devices for HPV detection were also discussed with a presentation on many different devices that are commercially available. Molecular biology for the detection of HPV and its strengths in epidemiological studies, and research on other HPV related cancers were also part of the discussions. The first day of the meeting was dedicated to an interactive workshop on quality management systems for HPV testing. For the first half of the second day, delegates attended the South African Society of Gynaecologic Oncology Congress 2016. The afternoon of the second day and the third day were dedicated to presentations by PhD students of their research, in preparation for the upcoming HPV world congress. The meeting ended with a discussion of practical issues regarding cervical cancer research and lab based research in low income countries, and academic capacity building. The presentations were given by both the different collaborating African PhD students (from DRC, Ethiopia, Burundi, South Africa and Zambia) and international experts in the field. The symposium was attended by clinicians, medical scientists, postgraduate students, representatives from the diagnostics and therapeutic companies and other interested parties and stakeholders in the field of HPV research and cervical cancer. The fourth meeting was organised by Dr Ramokone Lisbeth Lebelo and Prof. Selokela Gloria Selabe from the Department of Virology, Faculty of Health Sciences, SMU, and Prof. John-Paul Bogers and Prof. Jean-Pierre Van Geertruyden from the University of Antwerp.

**HPV Symposium for eastern and southern African countries: Strengthening HPV vaccination and adolescent health programmes in Africa. Southern Sun OR Tambo International Airport Hotel, Johannesburg, South Africa, 21–22 November 2016.**

Following on the great success of the meetings held in 2015 and 2016 for the joint SAVIC/NESI Project “Improving skills and institutional capacity to strengthen country adolescent immunisation programmes and health systems in the African Region”, further funding was secured for organising this follow-up experience-exchange symposium. It was organised by SAVIC, NESI and SAMRC, with the objectives of: (a) discussing recent advances in HPV vaccines and their use; (b) discussing adolescent health interventions to be delivered alongside HPV vaccination; (c) exchanging lessons learnt and best practices regarding HPV vaccination and adolescent health services among participating countries; and (d) strengthening a multi-disciplinary team of experts to support and advocate for the introduction of HPV vaccination and other adolescent health interventions in the African Region. This symposium was made possible through a grant from the Flemish Interuniversity Council (specifically the INCO programme of VLIR-UOS), with additional support from the Belgian Development Cooperation, NESI, SAMRC, SAVIC, WHO/AFRO, Merck Sharp & Dohme (MSD), GSK and Roche.



Delegates of the 4<sup>th</sup> WAKA HPV Africa Symposium

The symposium was attended by 87 delegates, including participants and facilitators. Participants were from Angola, Botswana, Ethiopia, Malawi, Mauritius, Mozambique, Namibia, Rwanda, Seychelles, South Africa, South Sudan, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe. Facilitators were from WHO/AFRO, WHO/South Africa, WHO/IARC, Gavi, SAMRC, Centre for Infectious Disease Research in Zambia (CIDRZ) and academia (University of the Free State, University of Cape Town, University of Witwatersrand, Stellenbosch University, SAVIC and NESI). There were also delegates from industry. Based on the evaluations completed by participants, the meeting was found to be highly beneficial.

## Operational Research

In May 2016, SAVIC members graduated three masters-level students working in the field of VPDs. The following activities were conducted within SAVIC's key research areas.

### Behavioural and social issues

This key area is concerned with factors related to uptake of immunisation, including the influence of cultural practices, the anti-vaccination lobby and the knowledge, attitudes and practices of HCWs regarding vaccination. The main objectives are to identify barriers to, and predictors of vaccination uptake and the utilisation of vaccination services in the current immunisation programmes. SAVIC was successful in obtaining a three year NRF grant for investigating anti-vaccination lobbying in South Africa, with the first year of funding being 2016. Collaborators on this project include NESI, the South African Medical Research Council, North-West University and University of Limpopo. During 2016, the results of several studies were shared at local, national, and international meetings (see Annex 1). Also, an analysis of data collection methods for three vaccination coverage studies which gave recommendations for an affordable approach to collecting valid immunisation coverage data in low and middle-income countries, was shared at local and national level (see Annex 1). Finally, a social media tracking project in collaboration with DigitLab commenced in 2016. This project uses software to track vaccination conversation on South African social media platforms including online news platforms, Twitter, blogs and online forums. These conversations are qualitatively analysed according to the sentiment expressed regarding vaccines. The first report covering 11 320 conversations during June to November 2016 was produced for SAVIC at the end of 2016 (see Annex 1).

### Epidemiology of VPDs

This key area focuses on improving knowledge of VPDs and the impact of vaccination on the burden of VPDs through collecting, analysing and sharing data on VPDs. During 2016, the results of several studies were published in international journals (see Annex 1). In addition, some of these results were presented at local, national and international conferences (see Annex 1).



Delegates of the HPV Symposium for eastern and southern African countries: Strengthening HPV vaccination and adolescent health programmes in Africa.

## Technical Support and Advocacy

The main objective for this strategic goal is to allow rapid dissemination of up-to-date information on vaccines and immunisation issues originating at global, regional and national levels, to HCWs working within EPI-SA. In order to achieve this SAVIC has, since its inception, embarked on numerous networking activities that advocate for strengthening immunisation services in South Africa and in this way has expanded its partnerships locally and abroad. SAVIC is a faculty member of vaccinology courses and workshops regionally and internationally and provides technical expertise in various meetings and events. To remain at the cutting edge of developments within the field of vaccinology, SAVIC members themselves attend advanced courses, conferences and workshops every year. Furthermore, SAVIC members are active players in disseminating correct information on the risks and benefits of vaccines to communities and countering anti-vaccination messages, through targeted national radio stations, newspapers, magazines, and electronic social media. The following activities took place in 2016:

### Technical Support



Prof. Jeffrey Mphahlele

**TropEd Advanced Vaccinology Course. Institute for Tropical Medicine and International Health, Berlin, Germany, 11–22 January 2016.**

SAVIC is a faculty member for this advanced course, which is presented annually. Prof. Jeffrey Mphahlele participated in the 2016 course and facilitated the group work on rotavirus vaccines. He gave lectures on immunising the immuno-compromised, rotavirus vaccines, and HIV vaccines.

#### Advocacy

Prof. Hannelie Meyer was nominated as the SAVIC representative to the National Vaccinator's Forum in January 2016 and was subsequently elected onto the Executive Committee. The National Vaccinators Forum is an initiative to give vaccinators one unified voice, with its mission to provide high quality, informed and accurate immunisation services to the children of South Africa and to advocate education for immunisation and immunisation practices.



Prof. Hannelie Meyer

SAVIC members are active players in disseminating correct information on the benefits of vaccines to communities and countering anti-vaccination messages, through the Internet, national radio stations, newspapers and magazines. During 2016 SAVIC advocated for vaccines and immunisation using social media (Twitter accounts: @HannelieMeyer, @HealthHerd and @SAVICinfo) and were interviewed by Beeld newspaper and Child Mag magazine. Furthermore, Prof. Rose Burnett presented a lecture on "Vaccine hesitancy – a practical guide" at an industry event held in 2016, to assist healthcare workers in advocating for vaccination.



Dr Lisbeth Lebelo

### Capacity building of SAVIC members

#### Tablet training for HPV data capturing. Waterkloof Ridge, Pretoria, 6 January 2016.

From 2016 onwards HPV vaccinators were expected to start using tablets for capturing their campaign data in order to improve the quality of data collected. Dr Lebelo attended the training-of-the trainers' sessions which was organised by the NDOH in partnership with HISP in preparation for the HPV vaccination campaign that was planned to start from 16 February–11 March 2016.



Ms Bontle Motloug

#### Global Switch from trivalent oral polio vaccine (tOPV) to bivalent OPV (bOPV) training. Burgers Park Hotel, Pretoria, South Africa, 12 February 2016.

Ms Bontle Motloug attended the training workshop on logistical aspects and the validation process of the tOPV-bOPV switch. The objectives of the meeting were to orientate partners and EPI managers regarding the validation of the switch, gaps and challenges in South Africa with regard to the switch, and the role of partners in the validation process.



Dr Ramokone Maphoto

#### Advanced Certificate in Health Management, Foundation for Professional Development, 31 August 2015–21 May 2016.

Dr Ramokone Maphoto graduated with an Advanced Certificate in Health Management from the Foundation for Professional Development. The course covered topics such as Action Research Proposal writing and Portfolio of Evidence submission, Leadership, Strategic Operations, Project Management, Monitoring and Evaluation, Resource Mobilisation, Financial Management and Strategic Marketing. The attainment of this certificate has now allowed her to be a member of the South African Institute of Health Care Managers (SAIHCM).

#### International Master of Advanced Studies in Vaccinology (IMVACC) Kick-off Meeting. University of Lausanne, Switzerland, September 5–7, 2016.

Ms Bontle Motloug was accepted for the IMVACC programme in 2016 and attended this first contact session. The topics covered during the meeting were: efficacy studies of influenza vaccines; development of science-based, international regulatory standards; the road to HIV vaccines; development of Dengue vaccines; new vaccines for tuberculosis.



Prof. Rose Burnett

#### Fondation Mérieux Symposium on: Strategies to increase vaccine acceptance and uptake. Les Pensières, Annecy, France, 26–28 September 2016.

Prof. Rose Burnett participated in this event organised by Fondation Mérieux. This meeting brought together experts from around the world who work towards increasing understanding in vaccination hesitancy/refusal, in order to develop and improve on public interventions. These interventions aim to increase public confidence in vaccination, thereby increasing global vaccination uptake.





# Ongoing SAVIC Network

During 2016, SAVIC signed a Memorandum of Understanding with ECAVI. SAVIC and ECAVI share the common goals of promoting and encouraging the use of current vaccines; the uptake of new vaccines; and improved immunisation coverage in Eastern and Southern Africa, through supporting and promoting (a) epidemiological, laboratory-based and behavioural research in the field of vaccine preventable diseases and cancers; (b) training and capacity building of healthcare workers; (c) adherence to immunisation schedules; and (d) continued research into vaccine development and utilisation of new vaccines in Eastern and Southern Africa. In addition, since 2004 SAVIC has expanded our network of partners at national, regional and global levels, having collaborated over the years with academics and officials from the following institutions:

## National Higher Education Institutions

### Free State Province

- University of the Free State

### Gauteng Province

- National Institute for Communicable Diseases
- Tshwane University of Technology
- University of Pretoria
- University of Witwatersrand
- University of South Africa

### KwaZulu-Natal Province

- University of KwaZulu-Natal

### Limpopo Province

- Limpopo Nursing Colleges: Sovenga and Thohoyandou
- University of Limpopo

**Northwest Province**

- North-West University

**Western Cape Province**

- Stellenbosch University
- University of Cape Town

**National and Provincial Organisations**

- National Department of Health
- Provincial Departments of Health
- South African Military Health Services
- South African Nursing Council
- South African Medical Research Council
- The Democratic Nursing Association of South Africa

**Regional and International Partners**

- ECAVI, NESI, UNICEF and WHO/AFRO





# Annex 1

## Publications in international peer-reviewed journals

Amponsah-Dacosta E, **Rakgole JN**, Gededzha MP, Lukhwareni A, Blackard JT, Selabe SG, **Mphahlele MJ**. Evidence of susceptibility to lamivudine-based HAART and genetic stability of hepatitis B virus (HBV) in HIV co-infected patients: A South African longitudinal HBV whole genome study. *Infect Genet Evol.* 2016 Sep;43:232–8. doi: 10.1016/j.meegid.2016.05.035.

Gededzha MP, Muzeze M, **Burnett RJ**, Amponsah-Dacosta E, **Mphahlele MJ**, Selabe SG. Complete genome analysis of hepatitis B virus in human immunodeficiency virus infected and uninfected South Africans. *J Med Virol.* 2016; 88(9):1560–6.

Nyaga MM, Peenze I, Potgieter CA, Seheri LM, Page NA, Yinda CK, Steele AD, Matthijnssens J, **Mphahlele MJ**. Complete genome analyses of the first porcine rotavirus group H identified from a South African pig does not provide evidence for recent interspecies transmission events. *Infect Genet Evol.* 2016 Mar;38:1–7.

Powell EA, Boyce CL, Gededzha MP, Selabe SG, **Mphahlele MJ**, Blackard JT. Functional analysis of ‘a’ determinant mutations associated with occult HBV in HIV-positive South Africans. *J Gen Virol.* 2016 Jul;97(7):1615–24. doi: 10.1099/jgv.0.000469.

Sondlane TH, Mawela L, Razwiedani LL, Selabe SG, **Lebelo RL**, **Rakgole JN**, **Mphahlele MJ**, Dochez C, De Schryver A, **Burnett RJ**. High prevalence of active and occult hepatitis B virus infections in healthcare workers from two provinces of South Africa. *Vaccine.* 2016; 34(33):3835–9.

## Publication in national peer-reviewed journal

Schellack N, Modau T, Van der Sandt N, Pople T, **Meyer JC**. 2016. Travel vaccines: information for healthcare practitioners. *South African Pharmaceutical Journal*; 83(10):45–54.

## Published technical report

Dochez C, **Musyoki A**, **Burnett RJ**, Were F, Mbola Mbassi S, Mphahlele MJ. Implementing HPV vaccination in Africa: opportunities for strengthening adolescent health. World Health Organization Global Immunization News. April 2016, p9.

## Peer-reviewed presentations at international conferences

**Burnett RJ**, Mmoledi G, Dochez C, Seheri LM, **Mphahlele MJ**. Suboptimal under one year-old vaccination coverage in South African children with diarrhoea attending a tertiary hospital in Gauteng Province in 2011–2014. 10<sup>th</sup> Vaccine Congress. NH Grand Hotel Krasnapolsky, Amsterdam, Netherlands, 4–7 September 2016.

Dochez C, **Burnett RJ**, **Mphahlele MJ**. Introduction of a new vaccine into national immunisation programmes in Africa: the role of capacity building. Eighth European & Developing Countries Clinical Trials Partnership Forum, New Government Complex, Lusaka, Zambia. 6–9 November 2016.

**Lebelo RL**, Thys S, Benoy I, Depuydt C, Bogers J-P, **Mphahlele MJ**. Identification of human papillomavirus types causing lesions in penile cancerous, pre-cancerous and benign lesions using laser microdissection. 17<sup>th</sup> ICID. Hyderabad, India. 2–5 March 2016.

**Musyoki A**, Mogorosi O, Msibi T, Monokuane S, **Mphahlele MJ**. The outcome of cancer treatment is independent of baseline HIV viral load and CD4 + cell count status: a pilot study from South Africa. 17<sup>th</sup> ICID. Hyderabad, India. 2–5 March 2016.

Ndlovu P, **Meyer JC**, Schellack N. Perceptions and beliefs of parents from a rural district in KwaZulu-Natal, South Africa regarding pneumococcal disease vaccination - a qualitative study. 10<sup>th</sup> Vaccine Congress, Amsterdam, Netherlands. 4–7 September, 2016.

Sondlane TH, Mawela L, Razwiedani LL, Selabe SG, **Lebelo RL, Rakgole JN, Mphahlele MJ**, Dochez C, De Schryver A, Burnett RJ. First report on occult hepatitis B virus infection in South African healthcare worker. 10<sup>th</sup> Vaccine Congress. NH Grand Hotel Krasnapolsky, Amsterdam, Netherlands, 4–7 September 2016.

## Peer-reviewed presentations at national conferences

**Burnett RJ**, Fernandes L, **Motloung BR**, Ndlovu TH, Simango HA, Kibuuka DK, Dochez C, **Mphahlele MJ**. Time for an affordable approach to collecting valid immunisation coverage data in low and middle-income countries – a case study from South Africa. Public Health Association of South Africa Conference 2016. East London International Convention Centre, East London, 19–22 September 2016.

**Burnett RJ**, Mmoledi G, Dochez C, Seheri LM, **Mphahlele MJ**. Suboptimal under one year-old vaccination coverage in South African children with diarrhoea attending a tertiary hospital in Gauteng Province in 2011–2014. Public Health Association of South Africa Conference 2016. East London International Convention Centre, East London, 19–22 September 2016.

**Motloung BR**, Fernandes L, **Burnett RJ**. Vaccination coverage in children aged 12–23 months old in Refilwe township, Gauteng Province. Public Health Association of South Africa Conference 2016. East London International Convention Centre, East London, 19–22 September 2016.

Sondlane TH, Mawela L, Razwiedani LL, Selabe SG, **Lebelo RL, Rakgole JN, Mphahlele MJ**, Dochez C, De Schryver A, **Burnett RJ**. First report on occult hepatitis B virus infection in South African healthcare worker. Public Health Association of South Africa Conference 2016. East London International Convention Centre, East London, 19–22 September 2016.

## Peer-reviewed presentations at local conferences

Amponsah-Dacosta E, Gaelejwe LR, **Musyoki AM**. Genetic analysis of viral quasi species in a patient suspected of infection with a hepatitis B virus recombinant strain. Sefako Makgatho Health Sciences University 2<sup>nd</sup> Research Days. Sefako Makgatho Health Sciences University, Pretoria, Pretoria, 23–25 August 2016.

**Burnett RJ**, Mmoledi G, Dochez C, Seheri LM, **Mphahlele MJ**. Suboptimal under one year-old vaccination coverage in South African children with diarrhoea attending a tertiary hospital in Gauteng Province in 2011–2014. Sefako Makgatho Health Sciences University 2<sup>nd</sup> Research Days. Sefako Makgatho Health Sciences University, Pretoria, Pretoria, 23–25 August 2016.

**Burnett RJ**, Fernandes L, **Motloung BR**, Ndlovu TH, Simango HA, Kibuuka DK, Dochez C, **Mphahlele MJ**. Time for an affordable approach to collecting valid immunisation coverage data in low and middle-income countries – a case study from South Africa. Sefako Makgatho Health Sciences University 2<sup>nd</sup> Research Days. Sefako Makgatho Health Sciences University, Pretoria, Pretoria, 23–25 August 2016.

Matshonyonge F, Nyaga MM, Seheri ML, **Mphahlele MJ**. Whole genome analyses of diminishing G4 strains collected in southern Africa between 1985 and 2011. Sefako Makgatho Health Sciences University 2<sup>nd</sup> Research Days. Sefako Makgatho Health Sciences University, Pretoria. 23–25 August 2016.

**Motloung BR**, Fernandes L, **Burnett RJ**. Vaccination coverage in children aged 12–23 months old in Refilwe township, Gauteng Province. Sefako Makgatho Health Sciences University 2<sup>nd</sup> Research Days. Sefako Makgatho Health Sciences University, Pretoria, Pretoria, 23–25 August 2016.

Ndlovu P, **Meyer JC**, Schellack N. Perceptions and beliefs of parents towards pneumococcal disease and vaccination in rural KwaZulu-Natal. Sefako Makgatho University Research Days, August 23–25, 2016.

Ngomane TG, Peenze I, Seheri ML, **Mphahlele MJ**. Genetic diversity of group A rotavirus strains circulating in pigs from five provinces in South Africa during 2007, 2008 and 2015. Sefako Makgatho Health Sciences University 2<sup>nd</sup> Research Days. Sefako Makgatho Health Sciences University, Pretoria. 23–25 August 2016.

Peenze I, Seheri M, Nyaga M, Steele D, **Mphahlele MJ**. Whole genome sequencing analysis reveals high stability of genotype constellations of porcine and bovine rotavirus strains in South Africa. Sefako Makgatho Health Sciences University 2<sup>nd</sup> Research Days. Sefako Makgatho Health Sciences University, Pretoria. 23–25 August 2016.

Seheri LM, Gededzha M, Nyaga M, Monteiro S, Esona M, Peenze I, Steele D, Mwenda J, **Mphahlele MJ**. Phylodynamic analyses of human and bovine G6 rotavirus strains from Guinea Bissau and South Africa. Sefako Makgatho Health Sciences University 2<sup>nd</sup> Research Days. Sefako Makgatho Health Sciences University, Pretoria. 23–25 August 2016.

Seheri LM, Peenze I, Molatjane C, Magagula NB, Nyaga MM, Rakau K, Esona MD, Nyangao J, Pursem V, Page NA, Steele AD, Mwenda JM, **Mphahlele MJ**, African Rotavirus Surveillance Network. Rotavirus strains diversity in the African region before and after vaccine introduction. Sefako Makgatho Health Sciences University 2<sup>nd</sup> Research Days. Sefako Makgatho Health Sciences University, Pretoria. 23–25 August 2016.

## Unpublished technical report

DigitLab on behalf of SAVIC. Anti-vaccination lobbying research project results for 1 June 2016 to 29 November 2016.

## Keynote/plenary/guest speaker/course/workshop presentations

**Burnett RJ.** Introduction to vaccinology. SAVIC Vaccinology Short Course: Modules 1 to 4. Sefako Makgatho Health Sciences University, Pretoria, South Africa. 9–10 June 2016.

**Burnett RJ.** Vaccine hesitancy – a practical guide. Sanofi Pasteur Westrand CME Meeting. Benvenuto Hotel and Conference Centre, Randburg, South Africa. 25 October 2016.

**Lebelo RL.** Update of HPV laboratory tests. Workshop for eastern African countries: Implementing HPV vaccination in Africa: opportunities for strengthening adolescent health. Sarova Panafric Hotel, Nairobi, Kenya. 22–23 March 2016.

**Maphoto KR.** Introduction to viral vaccine-preventable diseases. SAVIC Vaccinology Short Course: Modules 5, 6 and 8. Sefako Makgatho Health Sciences University, Pretoria, South Africa. 1–2 September 2016.

**Meyer JC.** Introduction to vaccine manufacture and distribution. SAVIC Vaccinology Short Course: Modules 1 to 4. Sefako Makgatho Health Sciences University, Pretoria, South Africa. 9–10 June 2016.

**Meyer JC.** Vaccines against viral and bacterial vaccine-preventable diseases. SAVIC Vaccinology Short Course: Modules 5, 6 and 8. Sefako Makgatho Health Sciences University, Pretoria, South Africa. 1–2 September 2016.

**Mogale NM.** Introduction to the Expanded Programme on Immunisation of South Africa. SAVIC Vaccinology Short Course: Modules 1 to 4. Sefako Makgatho Health Sciences University, Pretoria, South Africa. 9–10 June 2016.

**Mphahlele MJ.** Immunising the immuno-compromised. TropEd Advanced Vaccinology Course. Berlin, Germany. 11–22 January 2016.

**Mphahlele MJ.** Rotavirus vaccines. TropEd Advanced Vaccinology Course. Berlin, Germany. 11–22 January 2016.

**Mphahlele MJ.** HIV vaccines. TropEd Advanced Vaccinology Course. Berlin, Germany. 11–22 January 2016.

**Musyoki AM.** Measuring the impact of HPV vaccination. Workshop for eastern African countries: Implementing HPV vaccination in Africa: opportunities for strengthening adolescent health. Sarova Panafric Hotel, Nairobi, Kenya. 22–23 March 2016.

**Musyoki AM.** Introduction to the human immune response against infectious diseases. SAVIC Vaccinology Short Course: Modules 1 to 4. Sefako Makgatho Health Sciences University, Pretoria, South Africa. 9–10 June 2016.

**Selaledi BM.** Vaccination schedules and administration. SAVIC Vaccinology Short Course: Modules 5, 6 and 8. Sefako Makgatho Health Sciences University, Pretoria, South Africa. 1–2 September 2016.

## Postgraduate students graduated in 2016

**Name:** Ms Lucinda Gaelejwe  
**Degree:** BSc (Hons) Virology  
**Title:** Genetic analysis of viral quasi species in a patient suspected of infection with a hepatitis B virus recombinant strain  
**Supervisor:** Dr AM Musyoki  
**Co-supervisor:** Ms E Amponsah-Dacosta

**Name:** Ms Bontle Motloug  
**Degree:** MPH  
**Title:** Vaccination coverage in children aged 12–23 months old in Refilwe township, Gauteng Province  
**Supervisor:** Dr L Fernandes  
**Co-supervisor:** Prof. RJ Burnett

**Name:** Ms Portia Xolile Ndlovu  
**Degree:** MSc (Med)  
**Title:** Perceptions and beliefs of parents towards pneumococcal diseases and vaccination in rural KwaZulu-Natal  
**Supervisor:** Prof. JC Meyer  
**Co-supervisor:** Prof. N Schellack

**Name:** Mr Silas Nunu  
**Title:** Hepatitis B virus vaccination policies for healthcare workers in referral and district hospitals in Botswana  
**Supervisor:** Dr L Fernandes  
**Co-supervisor:** Prof. RJ Burnett

# Acknowledgements

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- a. Past and present MEDUNSA and University of Limpopo Medunsa Campus staff members who were involved in SAVIC from the outset.
- b. The Department of Epidemiology and Social Medicine, University of Antwerp, who were involved in the Flemish Interuniversity Council-funded Own Initiative Project, "Improvement of the health of future generations by strengthening infant immunisation programmes in South Africa", from which SAVIC originated. This was an inter-university project between MEDUNSA and the University of Antwerpen and the EPI-SA of the NDoH, the goals of which were to enhance MEDUNSA's institutional strength and capacity in the field of VPDs and immunisation, and to strengthen the immunisation programmes in three provinces in South Africa, namely Gauteng, Northwest and Limpopo Provinces. SAVIC was recognised and acknowledged as a centre of excellence by MEDUNSA's Executive Management in August 2003.
- c. Funding, donations and in-kind donations that were received from:

## Current funding and donations

<b>2003–present:</b>	MEDUNSA / University of Limpopo, Medunsa Campus/SMU
<b>2005–present:</b>	Sanofi Pasteur
<b>2012–present:</b>	NESI
<b>2014–2016:</b>	Flemish Government
<b>2015–present:</b>	National Research Foundation of South Africa
<b>2015–2016:</b>	Roche
<b>2015–2016:</b>	SAMRC
<b>2016:</b>	Flemish Interuniversity Council

## Previous funding

<b>2015:</b>	The Biovac Institute
<b>2012–2015:</b>	Aspen Pharmacare / GSK
<b>2009–2010:</b>	WHO
<b>2008–2010:</b>	GSK
<b>2007–2009:</b>	Wyeth and Becton Dickinson
<b>2006:</b>	Pfizer Laboratories
<b>2003–2008:</b>	Flemish Interuniversity Council

SAVIC receives unrestricted educational grants towards its annual activities from the vaccine industry and NESI. The Sefako Makgatho Health Sciences University provides funding towards administration, management and some research activities. Additional funds are raised during the organisation of meetings from various stakeholders. SAVIC practices strict operational and scientific independence. None of the sponsors is involved in the strategic objectives of SAVIC, and SAVIC declares that its operations, unless where otherwise acknowledged, are independent of sponsors.





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