

CURRICULUM VITAE: Hanlie du Raan**1. PERSONAL INFORMATION**

Name: Hanlie Du Raan (Dr)
Maiden Name: Naudé
Birth Date: 1968 - 06 - 20
Birth Place: Pretoria
Married status: Married to C.B. du Raan, 1998
Nationality: South African
Church Affiliation: Dutch Reformed Church
Home address: Floradale
Bloemfontein
P.O. Box 13474, Noordstad, 9302
Business address: Department of Medical Physics
Medical Faculty
UOFS
P. O. Box 339 (G68)
Bloemfontein 9300
Present Position: Chief Medical Physicist

2. Qualifications

1985 Matriculation exemption at Gerrit Maritz High School, Pretoria:
Subjects: Afrikaans (A), English (B), Science (B), Mathematics (B), Biology (A), German (B) and History (A).

1986 BSc I: Physics, Mathematics, Applied Mathematics, Chemistry
(University of Pretoria)

1987 BSc II Physics, Mathematics, Applied Mathematics, Computer Science
(University of Pretoria)

1988 BSc III Physics, Mathematics
(University of Pretoria)
Received degree with distinction

1990: B Med Sc Hons (Biophysics) (University of the Orange Free State)

1991: Registered as a Medical Physicist with the SA Medical and Dental Council.

1993: M Med Sc (Biophysics) (University of the Orange Free State): Title: 'Die effek van verskillende attenuasie-korreksietegnieke op die kwantifisering van radionukliedverspreiding' (The effect of different attenuation correction techniques on the quantification of radio nuclide distributions)
Received degree with distinction

1998: PhD (Biophysics) (University of the Orange Free State): Title: 'Scatter and attenuation correction techniques for absolute quantification of radionuclide distributions with SPECT'

3. Previous employment, Professional career

1988 During third year B Sc employed by the Applied Mathematics Department of the University of Pretoria as a student assistant

1989 Employment by the University of the Orange Free State (UOFS) as assistant researcher.

1990 Employment by the Provincial Administration of the Free State as assistant medical physicist

1991 Joint employment by the Provincial Administration and UOFS as Medical Physicist.

1994 Promoted to Senior Medical Physicist

1997 Promoted to Principle Medical Physicist

1999 Promoted to Chief Medical Physicist

September 1993 - August 1994:

One year leave period at the UOFS and Provincial administration

Work at the Department of Nuclear Medicine, St Jan's Ziekenhuis, Genk, Belgium

4. Membership of Organizations

Member of the SA Association of Physicists in Medicine and Biology (SAAPMB)

Member of the SA Society of Nuclear Medicine (SASNM)

Registered at the South African Health Profession Council

5. Serving on committees:

Member of the Council of the SA Nuclear Medicine association (1998 / 1999; 2000 / 2001)

Secretary of the South African Medical Physics Society (1999, 2000)

SASNM Congress organising committee (1999/2000)

SAAPMB Congress organising committee (2000/2001)

6. Special awards.

- SAAPMB Council's Incentive Award for a paper presentation at the 30th annual congress and summerschool of the SAAPMB at Dikhololo, March 1990
The evaluation of the Dornhorst model for the determination of red cell survival times. H Naudé, W le R Rabé, JAH de Lange, MG Lötter, BH Meyer, PN Badenhorst, A du P Heyns and PC Minnaar.
- Best poster representation in the Laboratory poster session during the 28th Faculty Forum of the Faculty of Medicine, UOFS. 15, 16 August 1996. Implementation of a scanning line source for attenuation correction in SPECT ('Implementering van 'n skanderende lynbron vir attenuasie korreksie in GEFET'). H Naudé, PD du Toit, A van Aswegen, MG Lötter.
- Awarded the SAANM best presentation at the 8th Bennieal and 2nd African Congress of the SA Society of Nuclear Medicine, Cape Town, 1998. Attenuation correction of SPECT images using attenuation coefficient maps obtained from simultaneous acquisition of transmission and emission data. Naude, H., Van Aswegen, A., Herbst, C.P., Lötter, M.G., Du Toit P.D., Otto, A.C.
- Awarded the SAAPMB Meditech prize for the presentation with the best computer applications at the 39th SAAPMB and 2nd SARPA Congress at Mount Amanzi, Hartbeespoort, 11 – 14 May 1999. Attenuation correction of SPECT images using attenuation coefficient maps obtained from simultaneous acquisition of transmission and emission data. Du Raan, H., Van Aswegen, A., Herbst, C.P., Lötter, M.G., Du Toit P.D., Otto, A.C.
- Awarded the Chris Jansen Medal for outstanding research contribution in Nuclear Medicine. South African Society of Nuclear Medicine, Bloemfontein, April 2000.
- Awarded the Radi Kotze Medal for outstanding research contribution in Medical Physics by iThemba Labs (NRF) (2002).

7. Academic contributions:

7.1 University responsibilities:

Lecturing responsibilities

FST 703 (Physics for MSc Physiotherapy students):	1991 – current
BFK 603 (Atomic Physics for Medical Physics Hons students)	2002 – current
MEF 113 (Medical students – 2 Sessions)	2002 – current
MFN 214 (Medical students – 5 Sessions)	2002 – current
Pharmacology Hons students (1 Session)	2002 – current

Acting as promotor / study leader

MSc (Medical Physics) Thesis	1999
2 MSc (Medical Physics) Mini-theses	2001 – 2002
HEM 801 (Thesis for Magister in Medicine – Haematology)	2003

7.2 General:

- Provided software training on Siemens ICON computer:
 - Harare, Zimbabwe: December 1995
 - Durban, Addington Hospital: June 1996
- Lecturer at the Regional Workshop on Quality Control of Spect Systems, IAEA, Cairo, Egypt, October 1999
- Examiner for College Exams (Nuclear Medicine) October 2003

8. Overseas Research visits**1993/1994:**

Worked as medical physicist in the department of Nuclear Medicine, St Jan's Ziekenhuis, Genk, Belgium for the duration of one year. During this year three international congresses were attended:

- European Annual Nuclear Medicine Congress, Lausanne, Switzerland, October 1993
- Society of Nuclear Medicine Congress, Orlando, USA, June 1994
- European Annual Nuclear Medicine Congress, Dusseldorf, Germany, August 1994

1997:

- Attended the Society of Nuclear Medicine Congress, San Antonio, Texas, USA, June 1997 and presented a poster presentation.
- Attended a computer training course at "Sopha Medical Vision", Brussels, Belgium, June 1997. A new computer system was purchased for the Nuclear Medicine department. During the 3 week stay in Belgium I had the opportunity to visit several Nuclear Medicine departments in Belgium and The Netherlands.

1999:

- Lecturer at the Regional Workshop on Quality Control of Spect Systems, IAEA, Cairo, Egypt, October 1999

2000:

- Part of the "International Atomic Energy Agency", Scintillation Camera Acceptance Testing Team, 10-16 March, Cairo, Egypt".
- Attended the congress of the European Association of Nuclear Medicine, Paris, France, 2-6 September 2000.

9. Publications:

1. MG Lötter, WIR Rabe, AH de Lange, H Naudé, AC Otto, B Meyer, AduP Heyns, PN Badenhorst. Reference Values for Red Cell Survival Times. J Nucl Med 1991; 32: 2245-2248
2. H Naudé, A van Aswegen, CP Herbst, MG Lötter, PH Pretorius. A Monte Carlo evaluation of the channel ratio scatter correction method. Physics in Medicine and Biology: (1996) 41: 1059 – 1066
3. A van Aswegen, A Roodt, J Marais, JM Botha, H Naudé, MG Lötter, L Goedhals, MJ Doman, AC Otto. Radiation dose estimates of ¹⁸⁶Re-hydroxyethylidene diphosphonate for palliation of metastatic osseous lesions: An animal model study. Nuclear Medicine Communications, 1997; vol. 18, 582-588.

4. Gert G, Lötter MG, van Aswegen A, Otto AC, Naudé H, Dunn M (1997): Glomerular filtration rate determination via urine activity measurement with a scintillation camera. *Physica Medica*, vol. 13 (Suppl 1), 319-321.
5. AC Otto, H. Naude, A van Aswegen, MG Lötter, DJR du Toit, MG Nel, J Marais. Uptake of 123I-BMIPP in the normal heart with exercise. *Cardiovascular Journal of SA*, 1998; 3: C151-C154.
6. H du Raan, MG Lötter, GW Harris, A van Aswegen, AC Otto, MG Nel, PN Badenhorst, KA Verbeke and AM Verbruggen. Measurement of plasma volume using ⁹⁹Tc^m-labelled DMP-HSA. *Nuclear Medicine Communications*, 2000, 21, 539 – 544
7. H du Raan, P du Toit A van Aswegen MG Lötter, CP Herbst, TN van der Walt en AC Otto. Implementation of TC-99m and Ce-139 scanning line source for attenuation correction in SPECT using a dual opposing detector scintillation camera. *Medical Physics*, 2000, 27, 1523-1534

10. Congress presentations.

(i) Local:

Presentations during the annual Faculty Forum at the UOFS:

1. JAH de Lange, H Naudé, MG Lötter, BH Meyer, PN Badenhorst, A du P Heyns and PC Minnaar. An evaluation of the counting method of Cr-51 labelled red cells for the determination of blood loss in normal persons. 21st Academic day of the Faculty of Medicine of the UOFS, UOFS Bloemfontein, August 1990.
2. MG Lötter, W le R Rabe, JAH de Lange, H Naudé, PN Badenhorst, A du P Heyns, AC Otto and BH Meyer. The choice of a mathematical model for the calculation of mean red cell survival time. 21st Academic day of the Faculty of Medicine of the UOFS, UOFS Bloemfontein, August 1990
3. JAH de Lange, H Naudé, CP Herbst, A v Aswegen, MG Lötter, AC Otto, G Groenewoud and H Luus. Evaluation of the effect of Cilazapril and Enalapril on renal function with the use of radionuclides. 21st Academic day of the Faculty of Medicine of the UOFS, UOFS Bloemfontein, August 1990.
4. H Naudé, CP Herbst, A van Aswegen, MG Lötter. 'n Vergelyking van die beeldingseienskappe van iteratiewe en terugprojeksie tomografiese rekonstruksie tegnieke dmv OWK analise. (Comparison of imaging qualities for iterative and backprojection tomographic reconstruction techniques using ROC) Academic day of the faculty of Medicine, UOFS, Bloemfontein, August 1992
5. M Lötter, J van der Wath, H Naudé. 'n Vergelykende studie tussen I-123 tiroïed opnames soos bepaal met 'n sintillasieteller en gamma-kamera tegniek. . (A comparison between I-123 thyroid uptake calculation using a scintillation counter and a gamma-camera) Academic day of the faculty of Medicine, UOFS, Bloemfontein, August 1992.
6. H Naudé, CP Herbst, A van Aswegen, MG Lötter. The influence of size and position of a reference source for absolute quantitation of radionuclide images. Faculty forum of the faculty of Medicine, UOFS, Bloemfontein, 1994

7. J Marais, A van Aswegen, A Roodt, JM Botha, H Naudé, L Goedhals, MJ Doman. MG Lötter, AC Otto. Dose estimates of Re-186 HEDP for palliative treatment: initial experiences in animals. Faculty forum of the faculty of Medicine, UOFS, Bloemfontein, 1995
8. Y Parthoens, L Kiebooms, L Lievens, E Vermeulen, H Naudé. Continuous on-line monitoring of left ventricular heart functions with a non-imaging probe. Faculty forum of the faculty of Medicine, UOFS, Bloemfontein, 1995
9. H Naudé, PD du Toit, A van Aswegen, MG Lötter. Implementering van 'n skanderende lynbron vir attenuasie korreksie in GEFET (Implementation of a scanning line source for attenuation correction in SPECT.) Faculty forum of the faculty of Medicine, UOFS, Bloemfontein, 1996.
10. G Gert, MG Lötter, A van Aswegen, H Naudé, AC Otto. Glomerular filtration rate determination via *in vivo* urine activity measurement with a scintillation camera Faculty forum of the faculty of Medicine, UOFS, Bloemfontein
11. DJR du Toit, M Dunn, H Naudé, A Thlapane, S Thekiso, PD du Toit. Accuracy of replicate determinations of GFR measured by direct urine quantification with ^{99m}Tc-DTPA. Faculty forum of the faculty of Medicine, UOFS, Bloemfontein, 1996
12. AC Otto, H Naudé, DJR du Toit, A van Aswegen, J Marais. The uptake of ¹²³I 15-(p-iodophenyl)-3R,S-methyl pentadecanoic acid (¹²³I-BMIPP) in the normal heart with submaximal treadmill exercise Faculty forum of the faculty of Medicine, UOFS, Bloemfontein, 1996
13. MG Nel, WSJ Otto, AC Otto. GHJ Engelbrecht, H Naudé, J van Staden, S Oosthuizen, HMJ Janse van Rensburg. Early experience with Tc-99m sestamibi uptake in bronchial carcinoma. Fakulteitsforum van die Fakulteit Geneeskunde, UOVS, Bloemfontein, 1997.
14. PD du Toit, H Naude, A van Aswegen, C Herbst. Omskakeling van attenuasiekoëffisiënte gemeet met 'n ¹³⁹Ce skandeer transmissielynbron na emissie met ^{99m}Tc in GEFET. Fakulteitsforum 1998.
15. H Naude, GW Harris, MG Lötter, A van Aswegen, MG Nel, AC Otto. Plasma volume measurement using ^{99m}Tc labeled DMP-HAS. Faculty Forum 1998.
16. MG Nel, AC Otto, M Dunn, E Reinecke, C Markgraaff, EF Nel, H Naude, G Kemp. the evaluation of ^{99m}Tc Sestamibi mammography in patients with breast carcinoma. Faculty Forum 1998.
17. H Naude, A van Aswegen, CP Herbst, MG Lötter, PD du Toit, AC Otto. Attenuasie korreksie van GEFET beelde m.b.v. attenuasie koëffisiënt matrikse wat verkry is vanaf gelyktydige opname van transmissie en emissie data. Fakulteitsforum 1998.
18. Du Toit PD, Du Raan H, Lötter MG en Van Aswegen A. Bepaling van attenuasiekoëffisiënt omskakeling vanaf transmissie na emissie in tomografie gemeet met twee sintillasiëkameras kollimators. Fakulteitsforum 1999.
19. H du Raan, A van Aswegen, N Mdletshe, MG Lötter, J van Staden, AC Otto. Evaluering van attenuasie- en verstrooiingskorreksies op miokardiale perfusie studies. Fakulteitsforum 2000.

(ii) National

1. H Naudé, W le R Rabe, JAH de Lange, MG Lötter, BH Meyer, PN Badenhorst, A du P Heyns and PC Minnaar. The evaluation of the Dornhorst model for the determination of red cell survival times. SAAPMB 30th Annual congress and Summerschool, Dikhololo, March 1990.
2. JAH de Lange, H Naudé, MG Lötter, BH Meyer, PN Badenhorst, A du P Heyns and PC Minnaar. An evaluation of the counting method of Cr-51 labelled red cells for the determination of blood loss in normal persons. SAAPMB 30th Annual congress and Summerschool, Dikhololo, March 1990
3. MG Lötter, WL Rabe, JAH de Lange, H Naudé, PN Badenhorst, A du P Heyns, AC Otto and B Meyer. The selection of a mathematical model for the calculation of the mean red cell survival time. SA Society of Nuclear Medicine, 4th Congress, Berg-en-dal, September 1990.
4. JAH de Lange, H Naudé, B Oelofse, CP Herbst, A van Aswegen, MG Lötter, AC Otto and G Groenewoud. The radionuclide evaluation of the effects of Cilazapril and Enalapril on renal function. SA Society of Nuclear Medicine, 4th Congress, Berg-en-dal, September 1990.
5. JAH de Lange, H Naudé, MG Lötter, BH Meyer, PN Badenhorst, A du P Heyns and PC Minnaar. An evaluation of the counting method of Cr-51 labelled red cells for the determination of blood loss in normal persons. SA Society of Nuclear Medicine, 4th Congress, Berg-en-dal, September 1990.
6. MG Lötter, AJ v Rensburg, MA Sweetlove, JP Roodt. H Naudé, PN Badenhorst, A v Aswegen and A du P Heyns. An evaluation of In-111 labelled platelet uptake in the liver and spleen by means of planar scintillation camera imaging. SAAPMB 31st Annual congress and Summerschool, Cape Town, March 1991.
7. JS Engelbrecht, H Naudé, CA Willemse, MG Lötter. Film Dosimetry for electron beams. SAAPMB 32nd Annual congress and Summerschool, Midrand, March 1992.
8. CP Herbst, H Naudé, A van Aswegen, MG Lötter. 'n Vergelyking van die beeldingseienskappe van iteratiewe en terugprojeksie tomografiese rekonstruksie tegnieke dmv OWK analise. (A comparison of imaging qualities for iterative and backprojection tomographic reconstruction techniques using ROC) SAAPMB 32rd Annual congress and summerschool, Midrand, March 1992.
9. CP Herbst, H Naudé, A van Aswegen, MG Lötter. 'n Vergelyking van die beeldingseienskappe van iteratiewe en terugprojeksie tomografiese rekonstruksie tegnieke dmv OWK analise. (A comparison of imaging qualities for iterative and backprojection tomographic reconstruction techniques using ROC) Nuclear Medicine Congress, Belville, September 1992.
10. H Naudé, CP Herbst, A van Aswegen. A Monte Carlo program to simulate nuclear medicine images. SAAPMB 33rd Annual congress and summerschool, 8 - 12 Maart 1993, Bloemfontein.

11. J van der Wath, MFJ Lötter, H Naudé. 'n Vergelykende studie tussen I-123 tiroïed opnames soos bepaal met 'n sintillasieteller en gamma-kamera tegniek. (A comparison between I-123 thyroid uptake calculation using a scintillation counter and a gamma-camera) SAAPMB 33rd Annual congress and summerschool, 8 - 12 Maart 1993, Bloemfontein.
12. H Naudé, CP Herbst, A van Aswegen, MG Lötter. The influence of size and position of a reference source for absolute quantitation of radionuclide images. 34th Annual SAAPMB Congress, Pretoria, 1994
13. H Naudé, MG Lötter, A van Aswegen, CP Herbst, PH Pretorius, AC Otto. The comparison of organ radioactivity quantification with the scintillation camera using geometrical mean attenuation correction without scatter correction and with scatter correction applying the Channel Ratio Method. 35th Annual SAAPMB Congress, Cape Town, May 1994
14. A van Aswegen, A Roodt, J Marais, JM Botha, H Naudé, MG Lötter, L Goedhals, MJ Doman, AC Otto. Dose estimates of Re-186 HEDP for palliative treatment: initial experience in animals. 36 Annual SAAPMB Congress, Pretoria 1996
15. G Gert, MG Lötter, A van Aswegen, H Naudé, AC Otto. Glomerular filtration rate determination via *in vivo* urine activity measurement with a scintillation camera. 7th biennial congress of the South African Society of Nuclear Medicine, Durban, September 1996. (paper)
16. AC Otto, H Naudé, DJR du Toit, A van Aswegen, J Marais. The uptake of ¹²³I 15-(p-iodophenyl)-3R,S-methyl pentadecanoic acid (¹²³I-BMIPP) in the normal heart with submaximal treadmill exercise. 7th biennial congress of the South African Society of Nuclear Medicine, Durban, September 1996. (paper)
17. H Naudé, PD du Toit, A van Aswegen, MG Lötter. Implementation of a scanning line source for attenuation correction in SPECT. 7th biennial congress of the South African Society of Nuclear Medicine, Durban, September 1996. (paper)
18. J van Staden, L Rabé, MG Lötter, H Naudé. Dead time measurement of scintillation counters, using a computer program. 7th biennial congress of the South African Society of Nuclear Medicine, Durban, September 1996. (poster)
19. M Dunn, H Naudé, DJR du Toit, A Thlapane, S Thekiso, PD du Toit. Accuracy of replicate determinations of GFR measured by direct urine quantification with ^{99m}Tc-DTPA. (Poster) 7th biennial congress of the South African Society of Nuclear Medicine, Durban, September 1996.
20. H Naudé, A van Aswegen, MG Lötter, PD du Toit, PH Pretorius, CP Herbst. Implementation of a scanning line source (Tc-99m & Ce-139) for attenuation correction in SPECT using a dual opposing head scintillation camera. 37th Annual SAAPMB Congress, Cape Town, 1997.
21. G Gert, MG Lötter, A van Aswegen, H Naudé, AC Otto. Glomerular filtration rate determination with *in vivo* urine activity measurement with a scintillation camera. 37th Annual SAAPMB Congress, Cape Town, 1997.

22. PD du Toit, H Naude, MG Lötter, A van Aswegen, CP Herbst. Conversion of attenuation coefficient measured with a ¹³⁹Ce transmission line source to emission with ^{99m}Tc in SPECT. 38 Annual SAAPMB Congress, Berg en Dal, Kruger Park 1998.
23. H Naude, MG Lötter, GW Harris, A van Aswegen, AC Otto, MG Nel. Plasma volume measurement using ^{99m}Tc DMP-HAS. 38 Annual SAAPMB Congress, Berg en Dal, Kruger Park 1998.
24. Naude, H., Van Aswegen, A., Herbst, C.P., Lötter, M.G., Du Toit P.D., Otto, A.C. Attenuation correction of SPECT images using attenuation coefficient maps obtained from simultaneous acquisition of transmission and emission data. 8th Bennieal and 2nd African Congress, SA Society of Nuclear Medicine, Cape Town, 1998.
25. Parthoens, Y., Bamps, K., Vercammen, S., Kiebooms, L., Lievens, L., Naude, H., Bauduin, C. Study of attenuation correction for Thallium heart perfusion studies using dual energies. 8th Bennieal and 2nd African Congress, SA Society of Nuclear Medicine, Cape Town, 1998.
26. Naude, H., Lötter, M.G., Harris, G.W., Van Aswegen, A., Otto, A.C., Nel, M.G. Plasma volume measurement using ^{99m}Tc labeled DMP-HSA. 8th Bennieal and 2nd African Congress, SA Society of Nuclear Medicine, Cape Town, 1998.
27. Nel, M.G., Otto, A.C., Engelbrecht, G.H.J., Dunn, M., Reinecke, E., Markgraaff, C., Nel, E.F., Naude, H., Kemp, G., Du Toit, R.S. The evaluation of ^{99m}Tc SESTAMIBI mammography in patients with breast carcinoma. 8th Bennieal and 2nd African Congress, SA Society of Nuclear Medicine, Cape Town, 1998.
28. Otto, A.C., Nel, M.G., Engelbrecht, G.H.J., Oosthuizen, S., Janse van Rensburg, H.M.J., Otto, W.S.J., Naude, H., Van Staden, J. Early experience with ^{99m}Tc-SESTAMIBI uptake in bronchial carcinoma. 8th Bennieal and 2nd African Congress, SA Society of Nuclear Medicine, Cape Town, 1998.
29. Du Raan H., Van Aswegen, A., Herbst, C.P., Lötter, M.G., Du Toit P.D., Otto, A.C. Attenuation correction of SPECT images using attenuation coefficient maps obtained from simultaneous acquisition of transmission and emission data. 39th SAAPMB and 2nd SARPA Congress, Mount Amanzi, Hartbeespoort, 1999.
30. Du Toit PD, Du Raan H., Lötter MG, Van Aswegen A. Bepaling van attenuasiekoëffisiënt omskakeling vanaf transmissie na emissie in tomografie gemeet met twee sintillasiëkameras kollimators. Fakulteitsforum 1999.
31. PD du Toit, H du Raan, MG Lötter, A van Aswegen. Determination of attenuation coefficient conversion from transmission to emission in tomography measured using two scintillation camera collimators. SASNM Congress, Bloemfontein, 2000.
32. N Mdletshe, H du Raan, A van Aswegen, MG Lötter, J van Staden. An evaluation of attenuation and scatter correction in myocardial perfusion studies. SASNM Congress, Bloemfontein, 2000.
33. N Mdletshe, H du Raan, A van Aswegen, MG Lötter, J van Staden, AC Otto. An evaluation of attenuation and scatter correction on myocardial perfusion studies. SAAPMB [Y2k/50]th Congress, Durban, 2000.

34. H du Raan. Applications of Monte Carlo Simulations in Nuclear Medicine. SAAPMB [Y2k/50]th Congress, Durban, 2000. (*Invited lecture*)
35. PD du Toit, H du Raan, MG Lötter, A van Aswegen. Determination of attenuation coefficient conversion from transmission to emission in tomography measured using two scintillation camera collimators. SAAPMB [Y2k/50]th Congress, Durban, 2000.
36. H du Raan. Imaging in Nuclear Medicine. International Committee for Future Accelerators (ICFA) instrumentation school, April 2001, National Accelerator Centre, Faure, South Africa. (*Invited lecture*)
37. A van Aswegen, J van Staden, S Acho, H du Raan, MG Lötter. Development of a gated blood pool software phantom for inter-institutional comparison on the African continent. 41st SAAPMB congress and Monte Carlo Winter school, Bloemfontein, 2001.
38. PD du Toit, MG Lötter and H du Raan. Comparison of attenuation coefficients obtained from monte carlo simulations and physical measurements using a collimated scanning line source filled with Tc-99m and Ce-139. 41st SAAPMB congress and Monte Carlo Winter school, Bloemfontein, 2001.
39. K.V. Mugabe, H. du Raan, M.G. Lötter Development of a software phantom for the evaluation of gated cardiac blood pool studies. 42nd SAAPMB congress and Mount Amanzi Winter school, Pretoria, 2002.
40. Mugabe KV, Du Raan H, Lötter MG, Otto Ac Development of a Software Phantom for the evaluation of gated cardiac blood pool studies. 10th Congress of the South African Society of Nuclear Medicine, Stellenbosch, 2002.
41. Makgere SS, du Raan H, van Staden J, Lötter MG, Otto Ac The reproducibility and accuracy of left ventricular function determined by gated myocardial perfusion spect studies. 10th Congress of the South African Society of Nuclear Medicine, Stellenbosch, 2002.
42. KV Mugabe, H du Raan, MG Lötter, Development of a Software Phantom for the evaluation of gated cardiac blood pool studies. UFS Faculty of Health Sciences Forum, 2002.
43. VAN STADEN, J.A., OTTO, A.C., HERBST, C.P., DU RAAN, H., LÖTTER M.G. Effective attenuation coefficients for compensator materials 43rd Congress of the South African association of Physicists in Medicine and Biology, Faure, 2003,
44. Van Staden JA, Otto AC, Herbst CP, du Raan H and Lotter MG. Comparison of automatic quantification software for the measurement of left ventricular ejection fraction in gated myocardial perfusion SPECT..35th Faculty Forum, Faculty of Health Sciences, University of the Free State, August 2003.

(iii) International

1. H Naudé, CP Herbst, A van Aswegen, MG Lötter, AC Otto. The evaluation of the accuracy of the channel ratio method to quantify radionuclide activity by using Monte Carlo techniques. EANM Congress, Lausanne, Switzerland 11-14 Oktober 1993
2. H Naudé, MG Lötter, A van Aswegen, PH Pretorius, CP Herbst, AC Otto. Accuracy of organ radioactivity quantification comparing the geometrical mean and channel ratio techniques. Society of Nuclear Medicine, 41st Annual Meeting, June 1994
3. H Naudé, CP Herbst, MG Lötter, A van Aswegen. The influence of size and position of a reference source for absolute quantization of radionuclide images. World Congress on Medical Physics and Biomedical Engineering, September 1994.
4. G Gert, MG Lötter, A van Aswegen, H Naudé, AC Otto. Glomerular filtration rate determination with *in vivo* urine activity measurement with a scintillation camera. European Federation of Medical Physics Conference, Trieste, Italy, 1996.
5. A van Aswegen, MG Lötter, A Roodt, J Marais, JM Botha, H Naudé, L Goedhals, MJ Doman, AC Otto. Dose estimates of Re-186 HEDP for palliative treatment of bone metastases: Initial experience in animals. European Federation of Medical Physics Conference, Trieste, Italy, 1996.
6. A van Aswegen, MG Lötter, A Roodt, J Marais, JM Botha, H Naudé, L Goedhals, MJ Doman, AC Otto. Dose estimates of Re-186 HEDP for palliative treatment of bone metastases: Initial experience in animals. EANM Post Conference meeting: Recent Advances in Nuclear Oncology, Lund, Sweden, 1996.
7. H Naudé, A van Aswegen, MG Lötter, PD du Toit, PH Pretorius, CP Herbst. Implementation of a scanning line source (Tc-99m & Ce-139) for attenuation correction in SPECT using a dual opposing head scintillation camera. 44th Annual meeting of the society of Nuclear Medicine, San Antonio, Texas, USA. 1997.
8. G Gert, H Naudé, MG Lötter, A van Aswegen, AC Otto, M Dunn. Glomerular filtration rate determination with *in vivo* urine activity measurement with a scintillation camera. 44th Annual meeting of the society of Nuclear Medicine, San Antonio, Texas, USA. 1997.
9. H du Raan. Introduction to quality control in Nuclear Medicine. Regional Workshop on Quality Control of Spect Systems, IAEA, Cairo, Egypt, October 1999 (*Invited lecture*)
10. H du Raan. Practical aspects of the SPECT systems. Regional Workshop on Quality Control of Spect Systems, IAEA, Cairo, Egypt, October 1999 (*Invited lecture*)
11. H du Raan. Planar QC procedures and phantoms. Regional Workshop on Quality Control of Spect Systems, IAEA, Cairo, Egypt, October 1999 (*Invited lecture*)
12. H du Raan. SPECT QC and acceptance testing protocols. Regional Workshop on Quality Control of Spect Systems, IAEA, Cairo, Egypt, October 1999 (*Invited lecture*)
13. H du Raan. Artefacts in SPECT imaging. Regional Workshop on Quality Control of Spect Systems, IAEA, Cairo, Egypt, October 1999 (*Invited lecture*)
14. H du Raan. Recommended QC programme in a Nuclear Medicine department. Regional Workshop on Quality Control of Spect Systems, IAEA, Cairo, Egypt, October 1999 (*Invited lecture*)

(iv) Invited Lectures:

1. H du Raan. Introduction to quality control in Nuclear Medicine. Regional Workshop on Quality Control of Spect Systems, IAEA, Cairo, Egypt, October 1999
2. H du Raan. Practical aspects of the SPECT systems. Regional Workshop on Quality Control of Spect Systems, IAEA, Cairo, Egypt, October 1999
3. H du Raan. Planar QC procedures and phantoms. Regional Workshop on Quality Control of Spect Systems, IAEA, Cairo, Egypt, October 1999
4. H du Raan. SPECT QC and acceptance testing protocols. Regional Workshop on Quality Control of Spect Systems, IAEA, Cairo, Egypt, October 1999
5. H du Raan. Artefacts in SPECT imaging. Regional Workshop on Quality Control of Spect Systems, IAEA, Cairo, Egypt, October 1999
6. H du Raan. Recommended QC programme in a Nuclear Medicine department. Regional Workshop on Quality Control of Spect Systems, IAEA, Cairo, Egypt, October 1999

7. H du Raan. Applications of Monte Carlo Simulations in Nuclear Medicine. SAAPMB [Y2k/50]th Congress, Durban, 2000.

8. H du Raan. Imaging in Nuclear Medicine. International Committee for Future Accelerators (ICFA) instrumentation school, April 2001, National Accelerator Centre, Faure, South Africa.

SERVICE RENDERING:

Dr Du Raan has been registered with the Health Professions Council as a medical physicist since 1991. She was involved in projects covering the whole spectrum of the field medical physics. Dr Du Raan's has been responsible for rendering a Medical Physics service in the medical speciality of Nuclear Medicine since 1992. As medical physicist in a nuclear medicine department Dr Du Raan is concerned with the application of physics in nuclear medicine to improve health care. She helps to provide a professional service to patients.

She is responsible for the correct functioning of equipment used in the nuclear medicine department used daily for clinical investigations. It is important she deals with any problem that occurs as quickly and in the most cost-effective way. Problems are often solved without consulting the technical support of servicing agents. This results that patient care is not delayed and saves cost to the Province. It is important that the imaging equipment that performs daily diagnostic investigations should function optimally. For this purpose quality control procedures have to be performed on all imaging equipment. Tests are performed on a daily, weekly and monthly basis to assure that correct information is obtained during a patient study. She is responsible for assisting in the quality control of the gamma cameras that are routinely used in the nuclear medicine department for diagnosis of patients. She is involved in optimising and developing techniques to improve the quality of the images that are acquired and in this way improve the accuracy of the patient diagnosis.

She has been asked to finalise the request as well as report form for Nuclear Medicine studies on the Hospital Information System. The system is updated as new studies are introduced from time to time in the Nuclear Medicine Department. A high standard service can be surrendered to the doctors who relies on the Nuclear Medicine studies for further treatment and evaluation of patients. Patient information from previous studies can be traced back easily.

The responsibility of the safe handling of radiopharmaceuticals is also included in her duties. Dr Du Raan is also responsible for the haematological studies that are performed at the nuclear medicine department. These studies are performed over several days and have to be carried out with great care. She is precise in performing patient study procedures and quality control procedures. If new procedures are developed she documents it well and make sure it is accessible to other personnel that would need it.

Since the Director of the Department of Medical Physics resigned in 2001 Dr du Raan had taken over several responsibilities that contribute to her workload. She is responsible for the job descriptions of the medical physicists working in the Nuclear Medicine department. This added a lot to her administrative duties.