APPSA
Association for Peri-operative Practitioners in South Africa

Journal

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- APPSA is a non-profit organisation which exists for the benefit of its members. This is accomplished by way of congresses, local meetings and travel grants, with the express goal of raising the standard of peri-operative practice in South Africa

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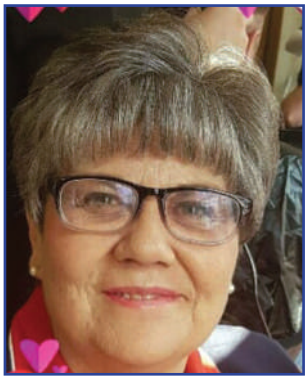

From The President

Dear Colleagues and fellow peri-operative practitioners,

I trust this letter finds you well-rested and rejuvenated after a good break. On behalf of the National Executive Board, I extend a warm welcome to all our Chapter Presidents and delegates as we embark on this new year together. As we step into 2026, I encourage each of you to bring a positive and dedicated spirit to our association. The strength of APPSA lies in the collective commitment of practitioners like you, as together we continue to elevate our profession across South Africa.

The landscape of professional development has undergone a remarkable transformation. Technology has revolutionised how we learn, connect, and grow in our field. We are witnessing an exciting shift toward webinars, virtual learning platforms, and high-technology training methods that make quality education more accessible than ever before. This evolution presents us with unprecedented opportunities to enhance our skills and knowledge without the constraints of geography or time. In saying that, 2026 may present all of us with financial challenges. Markets fluctuate daily, costs continue to rise, and we must navigate these economic realities with wisdom and adaptability. However, our commitment to excellence in peri-operative care remains unwavering, and together we will find innovative ways to support our members and advance our profession.

I am thrilled to announce that we are already laying the groundwork for our **National Congress** in **early May 2027. Please mark your calendars and save the date!** This Congress will be more than just another event - it will be a celebration of our profession, a showcase of innovation, and a testament to our collective dedication. Let us work together to make it the most memorable Congress APPSA has ever hosted. Remember, to be eligible for discounted Congress fees, you have to be a fully paid-up APPSA member for TWO FULL YEARS prior to the Congress. So, I am calling on each Chapter to prioritise membership registration for 2026. Let's raise our numbers and strengthen APPSA's voice. Every new member makes us stronger, more influential, and better positioned to advocate for the needs and rights of peri-operative practitioners nationwide. Our goal is clear: to become THE authoritative voice of peri-operative practitioners in South Africa. We can only achieve this through robust membership that represents the true strength of our profession. Reach out to those working in ORs across your regions - invite them to join this professional home where their voices matter and their careers can flourish. When we grow our membership, we grow our influence with healthcare institutions, regulatory bodies, and policy makers. A stronger APPSA means better representation, more resources for professional development, and greater recognition of the critical role we play in patient care.

To all peri-operative practitioners in South Africa: your expertise, compassion, and dedication are the heartbeat of quality surgical care in our nation. As we navigate the challenges and embrace the opportunities of 2026, remember that you are part of something greater than yourself. You are part of APPSA - a community committed to excellence, innovation, and the highest standards of patient care. Let us move forward with enthusiasm, support one another through challenges, celebrate our successes, and continue to grow both individually and collectively. Together, we will shape the future of peri-operative practice in South Africa. I look forward to working with each of you in the year ahead and to seeing you at Congress 2027.

Warm regards,
Marilyn de Meyer: APPSA National President

From The Editor

South Africa's healthcare system is in crisis - and the National Department of Health is doing nothing to address it. In fact, it appears to be doing the exact opposite.

In a series of written questions to Minister of Health, Dr Aaron Motsoaledi, Parliament's Health Portfolio Committee is seeking clarity on how his department spent the R1,778-billion that was meant to create 1 750 new healthcare positions but has not done what it was intended to do. The Minister has been asked to explain exactly how many doctors, nurses, and specialists were employed with this money, broken down by province, and why, despite this massive allocation, public hospitals remain dangerously understaffed. Instead of more doctors and nurses, the National Department of Health (NDoH) has actually reduced its headcount by 12,1% at a time when there are more than 27 000 vacancies nationwide, including over 2 000 doctors and nearly 17 000 nurses.

Take Inkosi Albert Luthuli Hospital in Durban as one example. This hospital is KwaZulu-Natal's only facility offering certain specialist services - particularly cardiac care - and yet the hospital is operating at 40% below surgical capacity due to frozen posts, severe ICU staff shortages, and critical shortages of surgical consumables and equipment. Daily surgery schedules have reportedly been cut by 60%, while children in need of ICU care are sometimes admitted too late for effective treatment because there are simply not enough nurses. And in the cardiac unit, there is only one cardiologist who is expected to see up to 60 patients per day. This is a recipe for disaster. A catastrophe waiting to happen. It is not just a nursing crisis. It is a healthcare crisis of epic proportions.

But it is not just at tertiary healthcare level that the National and Provincial Departments of Health are failing. In Gauteng, Carletonville Hospital is facing another water crisis as Merafong Municipality has not paid its R1,4-billion water bill. As a result, Rand Water has again throttled water supply by as much as 40%. Noordheuwel Primary Healthcare Clinic had a river of sewage running through the grounds for eight months before the problem was solved. There was not one single working toilet for staff or patients. It was only resolved after countless newspaper articles, TikTok videos, Facebook posts and my pressure in the Gauteng Legislature forcing the Gauteng MEC of Health's hand to resolve the issue.

Add in suppliers not getting paid. Whether they are multi-nationals or township entrepreneurs, service providers to the Gauteng Department of Health (GDoH) were compromised when the GDoH failed to pay invoices valued at R5,110-billion within the stipulated 30-day period in Quarter 1 of the 2025/2026 financial year. This is criminal to the loyal suppliers who depend on the 30-day payment agreement to employ staff, pay their suppliers and keep their doors open. Hard-working South Africans are battling to keep afloat, and both the national and provincial Departments of Health are killing businesses and patients ... Something needs to change - and fast.

Madeleine Hicklin
Editor

Pre-Operative Anaemia And Clinical Outcomes In The South African Surgical Outcomes Study

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INTRODUCTION

In high-income countries, pre-operative anaemia has been associated with increased post-operative morbidity and mortality[1]. Pre-operative anaemia is a common problem, with three large database studies in Europe and America estimating the prevalence to be between 25% and 30%[2-4]. Anaemia is also associated with increased peri-operative blood transfusions, a practice independently associated with morbidity and mortality[5]. Growing evidence supports increasingly restrictive transfusion strategies in surgical and critical care patients, and as a result allogeneic transfusions can no longer be considered an appropriate isolated management strategy for surgical patients with pre-operative anaemia[6,7].

Furthermore, the demographics of the South African (SA) surgical population differ significantly from those of the populations in which the morbidity associated with pre-operative anaemia has been described. SA non-cardiac surgical patients are younger, have fewer non-communicable diseases, and undergo significantly more urgent and emergency procedures than their European counterparts[8]. The prevalence of pre-operative anaemia and the associated post-operative outcomes in SA patients may therefore differ from those described in the published international literature.

In SA's resource-restricted setting, it is imperative to prioritise simple interventions that are likely to be associated with improved patient outcomes. Should pre-operative anaemia be independently associated with post-operative morbidity and mortality, correction of pre-operative anaemia may be a simple intervention to improve surgical outcomes.

OBJECTIVES

The primary objective was to determine the association between pre-operative anaemia and in-hospital mortality in SA adult non-cardiac, non-obstetric surgical patients. Secondary objectives were to describe the prevalence of pre-operative anaemia in adult SA surgical patients, and to determine the association between pre-operative anaemia and:

(i) Length of post-operative hospital stay; and
(ii) Admission to critical care units

METHODS

This study was a secondary analysis of the South African Surgical Outcomes Study (SASOS) (University of Cape Town Human Research Ethics Committee ref. no. HREC R010/2014).

Setting

SASOS was a seven-day national multicentre prospective observational cohort study. Patients aged >16 years undergoing in-patient non-cardiac, non-obstetric surgery between 07h00 on 19 May and 06h59 on 26 May 2014 in 50 participating government-funded hospitals across all nine provinces of SA were recruited into the study. Exclusions were planned day-case surgery and radiological procedures not requiring anaesthesia. Patients aged <18 years attending hospitals associated with the University of the Witwatersrand were excluded from the study because they were deemed unable to give consent.

In total, 3 927 patients from 45 hospitals were included in the study. The data collected included patient demographics and comorbidities, selected pre-operative blood tests (including haemoglobin concentration (Hb)), the urgency of the surgery, the surgical specialty and the anaesthetic technique. Details of the study design and procedures have been described in the primary article[8]. The primary outcome was in-hospital mortality, which was censored at 30 days for patients who were still in hospital. Data on length of stay and critical care admission were also collected.

The independent risk predictors for mortality identified in SASOS were age (years), American Society of Anesthesiologists (ASA) classification ≥2, major surgery, urgent or emergency surgery, infection or injury as an indication for surgery, upper gastro-intestinal tract (GIT) surgery, and the comorbidities of stroke or transient ischaemic attack and metastatic cancer. The independent risk predictors for critical care admission were ASA classification ≥2, intermediate or major surgery, urgent or emergency surgery, injury as an indication for surgery, upper GIT surgery, head and neck surgery, neurosurgery and thoracic surgery.

Definitions

The last recorded Hb prior to surgery was recorded as the pre-operative Hb. Anaemia and its subclassifications were defined as Hb <13 g/dL in males (mild 11 - 12.9, moderate 8 - 10.9, severe <8) and <12 g/dL in non-pregnant females (mild 11 - 11.9, moderate 8 - 10.9, severe <8), according to the World Health Organization sex-based criteria[9].

Statistical analysis

Categorical variables were described as proportions and compared using χ^2 tests, Pearson's χ^2 tests and Fisher's exact tests. The continuous variables age (years), Hb (g/dL) and length of hospital stay (days) were described as means and standard deviations if normally distributed or as medians and interquartile ranges (IQRs) if not.

A multivariate logistic regression analysis was performed to determine the association between pre-operative anaemia and in-hospital mortality or critical care admission. Two analyses were conducted for each outcome:

(i) Anaemia entered as a binary variable; and
(ii) Anaemia entered as mild, moderate or severe categorical data

To determine whether pre-operative anaemia was independently associated with mortality or critical care admission, we forced all the independent risk factors of mortality and critical care admission identified in the primary SASOS analysis[8] into the respective anaemia models. A post hoc multivariate analysis for the independent predictors of anaemia in SASOS was conducted. To determine the optimal Hb cut-point for anaemia associated with mortality, a receiver operating characteristic (ROC) curve was generated. Univariate and multivariate statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS), version 23 (SPSS Inc., USA).

RESULTS

The study recruitment is shown in Fig. 1. Pre-operative haemoglobin data were available for 3 610/3 927 (91.9%) of the SASOS patients. The patient characteristics are shown in Table 1. The prevalence of pre-operative anaemia was 1 725/3 610 (47.8%), with 711 patients (19.7%) presenting with mild anaemia, 863 (23.9%) with moderate anaemia and 151 (4.2%) with severe anaemia. In univariate analysis there was a significant association between pre-operative anaemia and female gender, an ASA classification of ≥3, congestive heart failure, insulin-dependent diabetes, metastatic cancer, HIV/AIDS, urgent or emergency surgery, and gynaecological and vascular surgery.

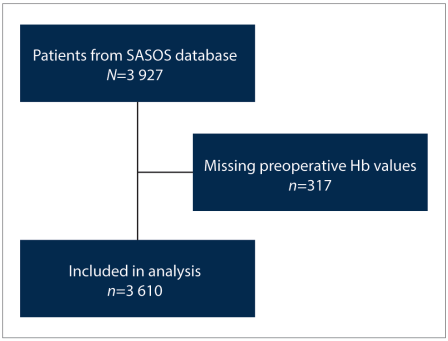

Fig. 1. Flow diagram of patient recruitment for the study. (SASOS = South African Surgical Outcomes Study; Hb = haemoglobin.)

Pre-operative anaemia, in-hospital mortality and critical care admission

The incidence of mortality associated with anaemia is shown in Table 2. Anaemic patients were significantly less likely than those who were not anaemic to survive to hospital discharge. The risk factors independently associated with mortality and critical-care admission in SASOS are shown in Tables 3 and 4, respectively.

Anaemia was independently associated with mortality (odds ratio (OR) 1.657, 95% confidence interval (CI) 1.055 - 2.602; p=0.028) and critical-care admission (OR 1.487, 95% CI 1.081 - 2.046; p=0.015) in the presence of all the independent predictors of mortality and critical-care admission derived in the original SASOS model[8]. All the original independent predictors for mortality and critical-care admission remained in the models when anaemia was forced into the model, with the exception of a history of stroke in the mortality model. Fig. 2 shows the ROC curve for anaemia and survival to hospital discharge. The optimal Hb cut-point was 10.95 g/dL, with an area under the curve of 0.662 CI (0.608 - 0.716).

Table 1. Baseline characteristics of patients with and without anaemia

	Total	Anaemic	Not anaemic	*p*-value
Age (years), mean (SD)	43.6 (17.6)	43.7 (18.0)	43.3 (17.0)	0.514
Hb (g/dL), mean (SD)	12.3 (2.5)	10.3 (1.7)	14.2 (1.4)	<0.001
Female, *n* (%)	1 807/3 610 (50.1)	913/1 725(52.9)	894/1 885 (47.4)	0.001
ASA, *n* (%)				<0.001
1	1 549/3 588 (43.2)	647/1 714 (37.7)	902/1 874 (48.1)	
2	1 266/3 588 (35.3)	560/1 714 (32.7)	706/1 874 (37.7)	
3	630/3 588 (17.6)	395/1 714 (23)	235/1 874 (12.5)	
4	129/3 588 (3.6)	101/1 714 (5.9)	28/1 874 (1.5)	
5	14/3 588 (0.4)	11/1 714 (0.6)	3/1 874 (0.2)	
Primary indication for surgery, *n* (%)				<0.001
Non-communicable disease	1 724/3 598 (47.9)	786/1 720 (45.7)	938/1 878 (49.9)	
Infection	686/3 598 (19.1)	378/1 720 (22.0)	308/1 878 (16.4)	
Injury	1 188/3 598 (33.0)	556/1 720 (32.3)	632/1 878 (33.7)	
History of				
Coronary artery disease	150/3 560 (4.2)	68/1 701 (4.0)	82/1 859 (4.4)	0.560
Congestive heart failure	53/3 560 (1.5)	35/1 701 (2.1)	18/1 859 (1.0)	0.008
Insulin-dependent diabetes	159/3 560 (4.5)	105/1 701 (6.2)	54/1 859 (2.9)	<0.001
Non-insulin-dependent diabetes	213/3 560 (6.0)	113/1 701 (6.6)	100/1 859 (5.4)	0.120
Metastatic cancer	94/3 560 (2.6)	63/1 701 (3.7)	31/1 859 (1.7)	<0.001
Cirrhosis	7/3 560 (0.2)	5/1 701 (0.3)	2/1 859 (0.1)	0.210
Stroke/TIA	53/3 560 (1.5)	32/1 701 (1.9)	21/1 859 (1.1)	0.072
COPD/asthma	222/3 560 (6.2)	87/1 701 (5.1)	135/1 859 (7.3)	0.008
HIV/AIDS	493/3 560 (13.8)	294/1 701 (17.3)	199/1 859 (10.7)	<0.001
Grade of surgery, *n* (%)				0.085
Minor	1 213/3 571 (34.0)	582/1 709 (34.1)	631/1 862 (33.9)	
Intermediate	1 561/3 571 (43.7)	706/1 709 (41.3)	855/1 862 (45.9)	
Major	797/3 571 (22.3)	421/1 709 (24.6)	376/1 862 (20.2)	
Urgency of surgery, *n* (%)				<0.001
Elective	1 619/3 598 (45.0)	620/1 718 (36.1)	999/1 880 (53.1)	
Urgent	1 201/3 598 (33.4)	659/1 718 (38.4)	542/1 880 (28.8)	
Emergency	778/3 598 (21.6)	439/1 718 (25.6)	339/1 880 (18.0)	
Type of surgery, *n* (%)				
Orthopaedic	1 017/3 610 (28.2)	445/1 725 (25.8)	572/1 885 (30.3)	0.003
Breast	97/3 610 (2.7)	35/1 725 (2.0)	62/1 885 (3.3)	0.023
Gynaecological	514/3 610 (14.2)	309/1 725 (17.9)	205/1 885 (10.9)	<0.001
Vascular	132/3 610 (3.7)	93/1 725 (5.4)	39/1 885 (2.1)	<0.001
Upper GIT	150/3 610 (4.2)	83/1 725 (4.8)	67/1 885 (3.6)	0.066
Lower GIT	386/3 610 (10.7)	164/1 725 (9.5)	222/1 885 (11.8)	0.031
Hepatobiliary	87/3 610 (2.4)	33/1 725 (1.9)	54/1 885 (2.9)	0.065
Plastics	228/3 610 (6.3)	119/1 725 (6.9)	109/1 885 (5.8)	0.171
Urology	193/3 610 (5.3)	83/1 725 (4.8)	110/1 885 (5.8)	0.183
Kidney	13/3 610 (0.4)	9/1 725 (0.5)	4/1 885 (0.2)	0.165
Head and neck	200/3 610 (5.5)	73/1 725 (4.2)	127/1 885 (6.7)	0.001
Neurosurgery	127/3 610 (3.5)	49/1 725 (2.8)	78/1 885 (4.1)	0.037
Thoracic	65/3 610 (1.8)	38/1 725 (2.2)	27/1 885 (1.4)	0.103
Other	396/3 610 (11.0)	190/1 725 (11.0)	206/1 885 (10.9)	0.958

Hb = haemoglobin; ASA = American Society of Anesthesiologists; TIA = transient ischaemic attack; COPD = chronic obstructive pulmonary disease; GIT = gastrointestinal tract.

Table 2. In-hospital mortality of patients with and without anaemia, and by subgroups

	In-hospital mortality, *n* (%) (95% CI)	OR (95% CI)	*p*-value
No anaemia	35/1 885 (1.9) (1.2 - 2.5)	Ref	
Anaemia	84/1 725 (4.9) (3.9 - 5.9)	2.706 (1.814 - 4.036)	<0.001
Anaemia subgroups			
None		Ref	
Mild	13/711 (1.8) (0.8 - 2.8)	0.984 (0.518 - 1.872)	0.962
Moderate	61/863 (7.1) (5.4 - 8.8)	4.020 (2.632 - 6.142)	<0.001
Severe	10/151 (6.6) (2.7 - 10.6)	3.749 (1.819 - 7.727)	<0.001

CI = confidence interval: OR = odds ratio.

Table 3. Independent predictors of mortality

	OR (95% CI)	*p*-value
Age	1.018 (1.005 - 1.030)	0.005
Anaemia	1.657 (1.055 - 2.602)	0.028
ASA		
1	Ref	
2	2.887 (1.342 - 6.209)	0.007
3	5.802 (2.694 - 12.493)	<0.001
4	24.206 (10.640 - 55.065)	<0.001
5	15.069 (3.417 - 66.453)	<0.001
History of		
Stroke/TIA (mortality model)	2.361 (0.965 - 5.778)	0.060
Metastatic cancer (mortality model)	2.973 (1.399 - 6.319)	0.005
Grade of surgery		
Minor	Ref	
Intermediate	1.669 (0.871 - 3.200)	0.123
Major	3.218 (1.666 - 6.216)	0.001
Urgency of surgery		
Elective	Ref	
Urgent	1.878 (1.057 - 3.334)	0.032
Emergency	2.900 (1.607 - 5.235)	<0.001
Type of surgery		
Upper GIT	2.915 (1.570 - 5.411)	0.001
Primary indication for surgery recorded		
Non-communicable disease	Ref	
Infection	1.661 (0.932 - 2.961)	0.085
Injury	2.115 (1.261 - 3.547)	0.005

OR = odds ratio; CI = confidence interval; ASA = American Society of Anesthesiologists; TIA = transient ischaemic attack; GIT = gastrointestinal tract.

Table 4. Independent predictors of critical care admission

	OR (95% CI)	*p*-value
Anaemia	1.487 (1.081 - 2.046)	0.015
ASA		
1	Ref	
2	1.403 (0.895 - 2.201)	0.140
3	4.895 (3.236 - 7.405)	<0.001
4	12.110 (7.086 - 20.694)	<0.001
5	7.564 (2.240 - 25.538)	0.001
Grade of surgery		
Minor	Ref	
Intermediate	2.230 (1.307 - 3.805)	0.003
Major	8.735 (5.192 - 14.696)	<0.001
Urgency of surgery		
Elective	Ref	
Urgent	2.335 (1.550 - 3.520)	<0.001
Emergency	3.090 (2.049 - 4.660)	<0.001
Indication for surgery		
Non-communicable disease	Ref	
Infection	1.014 (0.652 - 1.575)	0.952
Injury	1.515 (1.059 - 2.169)	0.023
Type of surgery		
Upper GIT	2.910 (1.756 - 4.824)	<0.001
Head and neck	4.550 (2.533 - 8.174)	<0.001
Neurosurgery	7.523 (4.659 - 12.149)	<0.001
Thoracic	4.431 (2.224 - 8.828)	<0.001

OR = odds ratio; CI = confidence interval; ASA = American Society of Anesthesiologists; TIA = transient ischaemic attack; GIT = gastrointestinal tract.

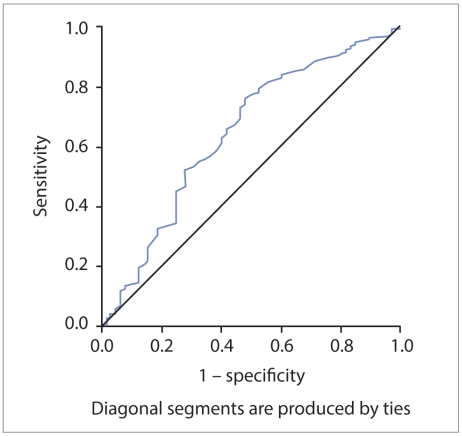

Fig. 2. Receiver operating characteristic curve for preoperative anaemia and survival to hospital discharge.

Pre-operative anaemia and length of hospital stay

Patients with pre-operative anaemia remained in hospital significantly longer than those with a normal pre-operative Hb (median four days (IQR 1 - 10) v. 2.5 days (IQR 1 - 5), respectively) (p<0.001).

Predictors of anaemia

There was an independent association between pre-operative anaemia and ASA classification of 3 and 4, insulin-dependent diabetes, metastatic cancer, HIV, and urgent and emergency surgery (Table 5).

Table 5. Independent predictors of anaemia

	OR (95% CI)	*p*-value
Age	1.003 (0.998 - 1.008)	0.244
Gender (female)	1.082 (0.915 - 1.279)	0.358
ASA		
1	Ref	
2	1.131 (0.934 - 1.368)	0.207
3	2.408 (1.873 - 3.096	<0.001
4	5.019 (3.063 - 8.223)	<0.001
5	2.802 (0.724 - 10.855)	0.136
History of		
Coronary artery disease	0.531 (0.360 - 0.783)	0.001
Congestive heart failure	1.357 (0.714 – 2.578)	0.351
Insulin-dependent diabetes	1.749 (1.197 - 2.556)	0.004
Non-insulin-dependent diabetes	1.152 (0.840 - 1.580)	0.380
Metastatic cancer	1.982 (1.226 - 3.205)	0.005
Cirrhosis	2.644 (0.443 - 15.779)	0.286
Stroke/TIA	1.202 (0.647 - 2.230)	0.560
COPD/asthma	0.527 (0.384 - 0.725)	<0.001
HIV/AIDS	1.580 (1.258 - 1.983)	<0.001
Grade of surgery		
Minor	Ref	
Intermediate	0.900 (0.760 - 1.065)	0.220
Major	1.136 (0.922 - 1.399)	0.230
Urgency of surgery		
Elective	Ref	
Urgent	1.835 (1.537 - 2.191)	<0.001
Emergency	1.837 (1.490 - 2.264)	<0.001
Primary indication for surgery recorded		
Non-communicable disease	Ref	
Infection	0.784 (0.629 - 0.976)	0.030
Injury	1.122 (0.885 - 1.423)	0.340

OR = odds ratio; CI = confidence interval; ASA = American Society of Anesthesiologists; TIA = transient ischaemic attack; COPD = chronic obstructive pulmonary disease.

DISCUSSION

Statement of principal findings

The study showed a high prevalence of pre-operative anaemia (47.8%) in SA patients presenting for non-cardiac and non-obstetric surgery. Pre-operative anaemia was independently associated with in-hospital mortality, increased admission to critical care units and a longer hospital stay.

Context

Our study findings of an association between pre-operative anaemia and post-operative mortality are in keeping with similar large studies of the American College of Surgeons National Surgical Quality Improvement Program database (ACS NSQIP) and the European Surgical Outcomes Study (EuSOS) database[2-4].

However, our study presents data from a middle-income country, while the others present data from predominantly high-income countries. Furthermore, it was observed that the burden of comorbidities in SASOS was significantly lower than that reported in EuSOS[4,8]. A higher prevalence of anaemia, but with fewer comorbidities, suggests that a nutritional iron deficiency anaemia may be a proportionately larger contributor to the aetiology of anaemia in SA than in the other studies. It is therefore possible that a larger proportion of pre-operative anaemia may be reversible in SA compared with other published cohorts. This is important in view of the fact that pre-operative anaemia is associated with significant peri-operative morbidity and mortality.

Internationally, increasing awareness of the risks and expenses associated with allogeneic blood transfusions has resulted in a shift of focus from transfusion as a treatment for peri-operative anaemia to a more holistic patient blood management (PBM) strategy[10].

PBM is an evidence-based approach that aims to identify and address the three pillars of haematological risk that face surgical patients through:

(i) Identification and treatment of pre-operative anaemia
(ii) Minimisation of peri-operative blood loss; and
(iii) Management of post-operative anaemia by optimising the patient's physiological reserve together with the adoption of restrictive haemoglobin transfusion triggers[11,12].

This approach has been associated with a reduction in:

(i) Peri-operative morbidity and mortality
(ii) Peri-operative blood loss and transfusions
(iii)Length of hospital stay; and
(iv) Costs[13].

Indeed, in recognition of these benefits, in 2010 the World Health Assembly urged member states to promote PBM as a transfusion alternative where appropriate[14]. Our study suggests that pre-operative anaemia is common in SA, and it provides impetus to actively adopt a PBM approach in SA. We believe that this has the potential to improve surgical outcomes in this country. Future local research should attempt to determine the types of pre-operative anaemia and appropriate treatment regimens.

Study strengths and weaknesses

A major strength of this study is that it was possible to control for other independent predictors of mortality and critical-care admission using the full SASOS data set. The finding that anaemia is associated with mortality and critical-care admission in SA is therefore robust. A further strength is that this study included all the government-funded tertiary hospitals and 55.4% of the government-funded regional and tertiary hospitals in SA[8]. These data therefore have generalisability for these surgical populations in SA.

A potential weakness of the study is that surgical populations attending private hospitals were not included, and the results may therefore not be generalisable to this population. Similarly, government-funded district hospitals were poorly represented, and these data may therefore not be generalisable to these hospitals. However, the finding that anaemia is independently associated with peri-operative mortality in SA is consistent with other surgical studies[1], and would suggest that our data are probably generalisable to the entire SA surgical population.

Owing to the original study design, we could not distinguish acute from chronic anaemia. Acute anaemia is associated with morbidity, and chronic anaemia negatively affects the outcome associated with acute anaemia. While emergency surgery was independently associated with anaemia, injury as an indication for surgery was not. We therefore conclude that it is unlikely that the entire signal of morbidity and mortality associated with anaemia in this study was due to acute anaemia. We could also not control for peri-operative blood transfusions. It is likely, however, that blood administration and anaemia are both independently associated with post-operative mortality[15], and we therefore believe that this weakness should not compromise the interpretation of our findings. Furthermore, it is also possible that the prevalence and severity of pre-operative anaemia may have been underestimated in this study, owing to pre-operative transfusions. A major limitation of this work is the potential role of multiple testing on the significance of these findings, as this is a secondary analysis of the SASOS dataset. Should one correct for a second analysis for mortality and a second analysis for critical-care admission, an adjusted two-sided significance level of 0.05/2 = 0.025 could be considered appropriate. If one applies this approach, anaemia remains independently associated with critical-care admission but not mortality. For these reasons, the data presented here should be considered hypothesis generating at best.

CONCLUSIONS

SA patients have a higher prevalence of pre-operative anaemia than reported in other international cohorts, and this is associated with surgical mortality. Simply transfusing patients peri-operatively can no longer be considered an acceptable solution, owing to the morbidity associated with blood transfusion. Education and institution of PBM programmes in SA are important to reduce the morbidity and mortality associated with pre-operative anaemia.

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Fatigue, An Unexplored Factor In Patient And Staff Safety In Healthcare

By Kate Woodhead, RGN DMS

BACKGROUND

In safety critical industries such as healthcare, it is important to recognise the mechanisms for managing the many areas of risk to both staff and patients. Staff are one of the most important elements of the NHS and are it's most critical asset. The major ways to ensure a happy and healthy workforce is to look after them. This was undertaken during COVID-19 as far as was possible and in the year following the pandemic, but has since been dropped from the operational guidance. Fatigue - both acute and chronic - are aspects of staff experience which has had little attention, specifically relating to errors and patient safety. This is gaining traction now with shortages of staff, pressure to deliver on the backlog, and degradation in cognitive performance - all contributing to patient safety incidents.

The Health Services Safety and Investigations Body (HSSIB) has recently produced a report[1] looking specifically at the impact of fatigue on staff and patient safety. The narrow aspect of the report, however important, indicates this should be put into a broader context of the present conditions of service which staff and patients are experiencing in the NHS.

STAFF SHORTAGES

The NHS needs Trusts to have the right number of staff in the right roles at the correct times and in the appropriate locations. This is hardly possible at this time due to the number of vacancies across the NHS.

Staff shortages, combined with workload pressures, add significantly to stress experienced by individual workers, particularly but not exclusively professional frontline staff. It directly affects the quality and safety of care delivered and is regularly reported by staff saying they are unable to deliver the quality of care that they wish to. Staff say that there are insufficient numbers of staff to deliver safe care on two thirds (69%) of shifts[2]. It is known that Trusts are being encouraged to reduce the number of locum and agency staff to fill short-term vacancies and shifts on a cost basis. This is based on a framework agreement between NHS England and each Trust, and is agreed and reviewed regularly to reduce expenditure[3].

The option which Trusts have, is to increase their use of bank staff - which in turn can lead to excessive fatigue as there is little oversight of the number of hours individual staff are working. The Long-Term Workforce Plan published under the last government identified that they would, backed with £2.4-billion, train significantly more professional staff as well as focusing on retention of existing staff by allowing greater flexibility and career progression and improving culture, leadership and well-being while continuing to focus on equality and inclusion.

They also identified that they would reform the ways that are worked so that healthcare staff have the right multi-disciplinary skills in order to add new digital and technological innovations to enable the staff to focus on delivering patient care. I believe it is unlikely that all of these elements will be supported by the new Department of Health and Social Care, going forward.

WORKING CONDITIONS

A survey undertaken in 2021 of nearly 5 000 staff in the NHS found that 47.5% felt their work was undervalued by the government, 20.6% felt undervalued by their employer and 17.7% by the public[5]. Working conditions in the NHS are a source of significant concern with 41% of staff reporting feeling unwell as a result of work-related stress in the last 12 months. Many staff are overwhelmed by it and feel demoralised, overstretched or burnt out. Many low paid workers are leaving for better paid jobs away from healthcare. NHS staff are often required to work beyond their shift hours with little consideration for their domestic circumstances or work:life balance.

STAFF FATIGUE AND ITS CONSEQUENCES

Being fatigued at the end of a shift is expected, and if it is not present, so the overriding culture believes, you haven't been working hard enough. Acutely, fatigue is known to impair performance and is linked subsequently to patient safety.

The HSSIB undertook their investigations in a number of different Trusts and their report is intended to help healthcare organisations, regulators, policymakers, patient safety leads and the public understand the risk that healthcare staff fatigue poses to patient and staff safety, and to make improvements in this area.

The findings are many, and some have been selected here[6] to represent what is felt to be topics of interest to the readers, together with the connection to patient safety incidents:

- Staff fatigue contributes directly and indirectly to patient harm. However, there is little evidence available to help understand the size and scale of the risk, how it impacts on patient safety, and those staff groups who may be most at risk of fatigue
- There was variation in how the concept of fatigue was understood and the impact it could have on patient safety and staff safety across the healthcare system. This inconsistent understanding prevented fatigue risks being addressed
- Staff fatigue is not routinely captured as part of patient safety event reporting or routinely considered as part of patient safety event learning, or other governance processes
- Fatigue was perceived by organisations and staff as an individual staff risk, with limited organisational accountability. This sometimes led to a blame culture and punitive actions when staff were fatigued, and limited actions to drive improvement
- Fatigue arises from a number of personal and organisational factors, which can overlap. Organisational factors that contributed to staff fatigue included workload, long shifts, insufficient rest facilities and inadequate rest breaks during and between shifts. Personal factors that contributed to an increased risk of fatigue included caring responsibilities, menopause, pregnancy, religious practices and socio-economic factors

- There are barriers to acknowledging the risk posed by staff fatigue. These include historical beliefs and norms around working long and additional hours, pride and 'heroism' of NHS staff
- The demands on healthcare services, and workforce and financial constraints, limited the ability of some organisations to address fatigue risks
- There is limited regulatory and national oversight of the risks posed to patient safety by staff fatigue in healthcare.

As a result of the findings, the HSSIB makes a number of safety recommendations. The over-arching recommendation is that the organisation asks/recommends that the Department of Health and Social Care reviews any current processes which capture staff fatigue related data. The review should identify how information about factors impacting on staff fatigue should be collated and further enhanced to aid the understanding of fatigue risk in healthcare. This data will then help to inform the development of any future strategy and action to address staff fatigue risk and it's impact on patient safety.

There is a considerable problem with reviewing present data as, at present, there is no agreed understanding of what fatigue is defined as - and how it is understood by staff. HSSIB recommends that the NHS staff council via the Health and Safety and Well-being Group, develop and test a consensus statement which should help to support a consistent understanding and the factors which might impact on staff fatigue and patient safety.

At present, the definition used by HSSIB is the one devised by the International Civil Aviation Organisation and reads as follows:

A physiological state of reduced mental or physical performance capability resulting from sleep loss, extended wakefulness, circadian phase [the natural daily internal body clock]*, and/or workload (mental and/or physical activity) that can impair a person's alertness and ability to perform safety-related operational duties*

PATIENT SAFETY INCIDENT RESPONSE FRAMEWORK

The NHS Patient Safety Strategy was updated in 2019 by the Patient Safety Incident Response Framework (PSIRF) which sets out how the service can develop and maintain effective systems and processes for responding to patient safety incidents in order to learn from them and improve patient safety. The PSIRF replaced the Serious Incident Framework. The PSIRF demonstrated a complete change to the way in which organisations approached and learned from incidents. It involves a 'considered and proportionate' response using a range of system-based approaches[7].

A systems-based approach views the work system which includes a wide variety of different element such as, the external environment (organisation), internal environment (tools and technology, tasks, and people), work processes (including physical, cognitive and social/behavioural aspects) and the relationship between these and the resulting outcomes in healthcare.

Investigations held at a variety of different NHS Trusts found that the most common consequence of fatigue described by staff were:

- Medication errors
- Impaired decision making
- Reduced attention and vigilance
- Incivility (rude and disrespectful behaviour)

A Medical Defence Union survey (n 481) in 2025 found that 22% of members felt sleep deprived on a daily basis and a further 19% on a weekly basis. Specifically, 35% said tiredness had impaired their ability to treat patients and 34% said tiredness may have played a part[8].

During the investigation by HSSIB, they were told that fatigue affected the judgement and performance of staff. When they are tired they struggled to concentrate, took longer to perform routine tasks and were less able to control their emotions. Staff said that communication, compassion and teamwork suffered, impacting on interactions with patients and other staff.

It was also reported by Troth following a survey of night shift workers, that 42% reported microsleeps while driving home and 48% reported knowing that they were too tried to drive but drove anyway[9].

CONCLUSION

It is perhaps no surprise to those who have worked long shifts on stressful wards and departments, especially overnight with fewer staff, that patient safety incidents are now connected to fatigue. In other safety-critical industries, fatigue is a recognised hazard which impairs the sufferer and their ability to do their job. To mitigate and reduce the opportunity for harm, other industries have fatigue risk management systems based on scientific principles and knowledge as well as operation experience.

The investigation undertaken by HSSIB demonstrates the awareness in healthcare but lacking any evidence, there is no consideration of suitable mitigation factors. Stakeholders considered that healthcare was a long way from considering and managing the risk of staff fatigue at this level.

The culture in the NHS is too far away at present for fatigue management to be implemented, some senior leaders interviewed by HSSIB felt it could be destructive. They suggested that the culture needed to accept that it was safe for staff to speak up and ensure that low levels of staffing were suitably tackled.

Staff who were engaged with the investigation felt that it would be very useful if the CQC were to include fatigue within it's inspection framework. However, some experts also expressed that it was not yet time to regulate for staff fatigue[10]. Key reasons included:

- The need for a clear understanding of what fatigue is in healthcare
- Clarity on what actions healthcare providers should be taking to manage fatigue risk
- Training regulatory staff in understanding fatigue
- Limitations in how healthcare may understand and manage risk across the healthcare system. This has been explored in HSSIB investigations on safety management - 'Safety Management Systems' and 'Safety Management: Accountability Across Organisational Boundaries'
- Unintended consequences for staff and organisations if fatigue risk management measures are not implemented correctly

It seems that there is a great deal of work still to do, although any staff member asked to show how it has affected them and their ability to deliver care, will have experience of the harm that fatigue can do in clinical situations.

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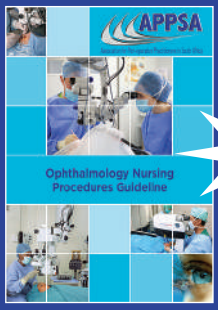
APPSA GUIDELINES



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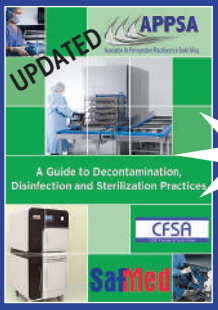

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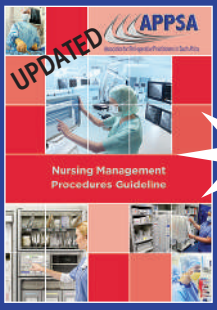

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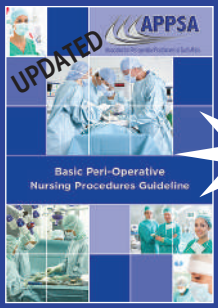

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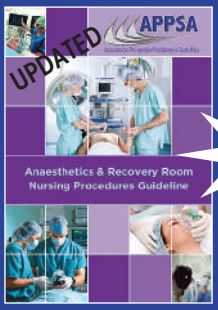

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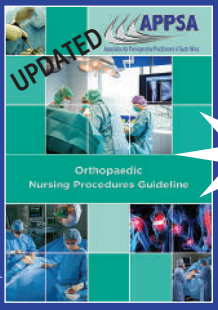

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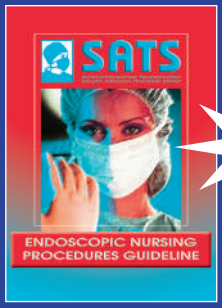

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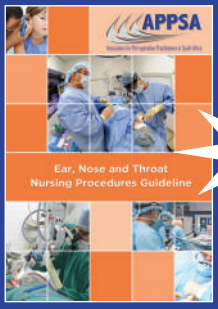

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Preparation Of Nursing Students For Operating Room Exposure: A South African Perspective

By S Breedt[1], Dip General Nursing, Psychiatric Nursing and Midwifery, Dip Operating Room Science, Dip Nursing Management, Dip Nursing Education, B Advanced Nursing, M HPE; and M J Labuschagne[2], MB ChB, MMed (Opht), PhD

BACKGROUND

The nursing student entering the operating room (OR) for the first time often finds it an intimidating environment. Misconceptions and misunderstandings frequently result in a negative experience, leading to the inability to optimise the learning opportunity. The OR could be perceived by many nurses' standards as a demanding, hostile, overwhelming, high-paced and high-stress working environment, and even more so by a student nurse who is a novice in the OR[1]. Nursing students often do not know what is expected of them or how to do the work[2,3]. Global and local shortages of OR nurses[4-7] put student nurses under even more pressure. Furthermore, OR personnel expect students to function as experienced members of the OR team, while students might have the perception of being useless and feeling out of place[3,5]. Currently, in the South African (SA) context, student nurses are being placed in the OR even though they have very limited theoretical teaching or practical training for this work[8].

Several international studies[5,9,10] where preparation programmes were implemented prior to OR placement, described positive outcomes and a positive impact on learning in the OR. Recruitment and retention of OR nursing staff are additional benefits of preparation programmes[5,9,10]. Meyer[3] and Van der Merwe[8] found that students need an improved preparation programme before being placed in the OR. The participants in these studies were of the opinion that the development of such a programme would enhance student nurses' learning during placement and their overall perception of the OR[3,8].

In SA, OR placement is mandated by the SA Nursing Council (SANC)[11]. Most of the students are placed in the OR with limited preparation, contributing to compromise student nurses' learning during clinical placement[8]. George *et al*[7] reported that in 2009, ~18.0% of registered nurses were sedentary, 65% of nurses who were trained between 1997 and 2005 did not appear on the SANC register, and 76% of registered professional nurses were facing retirement within the next decade. This situation may result in a group of young and inexperienced registered nurses, who do not have the support and guidance of a large cluster of experienced registered nurses to become established in their new roles as registered nurses. The current international and local shortages of qualified registered nurses put increased pressure on student nurses, contributing to anxiety and even fear of the situation in the OR[4].

With regard to the OR as a learning environment, Meyer[3] and Van der Merwe[8] stated that for learning in the OR to be effective, students have to feel that they are being supported, encouraged and included as

part of the team. For student nurses to cope with the complex OR environment and participate as team members, they need to be prepared sufficiently[12]. Educational approaches to this type of preparation have been described extensively and include strategies and methods such as demonstrations, working in small groups, simulation, practical assessment and feedback[13,14]. Research that focuses on the preparation of student nurses for their first rotation in the OR is limited, both internationally and in SA. The findings of this study could contribute towards the improvement and/or development of a student nurse's preparation programme for OR rotation. A programme resulting from the findings could have a positive impact on SA students' OR rotation in terms of learning and general experience, similar to the international examples mentioned by Gregory *et al*[9] and Hope *et al*[10].

This study was conducted at an academic training hospital in SA to obtain the views of nursing students and permanent OR staff, who were directly involved with and affected by student nurses' placement in the OR, the current OR preparation programme and how it could be improved to better prepare the student nurse for OR placement. Furthermore, their opinions with regard to the best modes of delivery of such a programme were determined. Based on the results of the study, the principal researcher intended to develop a preparation programme that would prepare the nursing student before OR placement. The matters that needed to be addressed were:

(i) What an OR preparation programme should consist of regarding its content; and
(ii) The optimal method of delivery of such a programme.

METHODS

A descriptive qualitative study design was employed, with the intention to explore the content and delivery methods of an OR programme[15]. The investigation focused on the practical problems encountered by participants during their training, who all shared the unique experience of being novices in the OR, and to acquire practical solutions[16].

The nominal group technique (NGT) has been proven to be a feasible and reliable method for the production and prioritisation of responses relating to a specific phenomenon enquiry[17,18], and was used as data collection method for this study. The NGT process included the following steps: preparation (design, room and meeting preparation), silent idea generation, recording of the ideas, discussion of the ideas, preliminary voting, discussion of preliminary voting and final voting[19].

Setting and sample

The setting was an academic hospital, affiliated to the University of the Free State, Bloemfontein, SA, where undergraduate and post-graduate students from various disciplines are trained. The study included only one institution, but future studies might include more institutions, even private hospitals. Purposive sampling was done so that participants could objectively contribute to this specific phenomenon[17].

The inclusion criteria for the sample of the following two groups were:

(i) **Group 1** – undergraduate nursing students (n=8) with no prior OR exposure, who very recently completed their OR rotation; and

(ii) **Group 2** – permanently employed personnel (n=5), including registered/scrub nurses, anaesthetic nurses and floor/circulating nurses, working in ORs where students had completed their clinical placement.

As all participants were able to express themselves in English, it was the language used to conduct the NGT discussions, even though the participants spoke different languages.

Data collection and measures

The research was carried out in 2016 in a quiet room in the OR complex of the academic hospital while participants were on duty on Saturdays, because that day is not extremely busy and participants are in the OR complex should an emergency occur. The NGT discussions were conducted under the supervision of an experienced facilitator, with the researcher as an observer in the room. Both were unknown to the students. Two questions were posed to the two nominal groups: *'What should an operating room preparation programme consist of?'* and *'What would be the most optimal way to present the programme?'*

Data were collected from the two group discussions; both indicated what would be valuable skills for a novice OR student nurse to acquire, and the most effective methods to teach the students these skills. Data were documented as accurately and comprehensively as possible to ensure that the findings of the study were dependable. The rigour of this qualitative study was ensured by it having truth-valued, applicable, consistent, neutral and authentic data and results. The reliability of qualitative data is to a considerable extent determined by the methodological competence, sensitivity and integrity of the researcher[20], which in turn contributes to its trustworthiness and credibility. This study invites the reader into the phenomenon being researched by enabling them to develop an intensified understanding of the issues being addressed[17].

Ethical approval

The Ethics Committee of the Faculty of Health Sciences at the University of the Free State granted institutional approval to conduct the study (ref. no. ECUFS 202/2015). Permission was also obtained from the university and hospital authorities. Before the NGT discussions started, all participants were informed that participation was voluntary and would not in any way impose on or affect their human rights. They were made aware that they had the right to stop participating at any point without any form of penalty or discrimination. All participants had to give written informed consent to participate in the nominal group discussions.

Data analysis

Ideas and theories regarding the phenomenon were developed by the participants during the NGT process. Participants had to rank their chosen statements, which were placed in order of the most important to least important. The most important statement was scored with a 6 and the least important with a 1. The top 6 votes were indicated, and votes with their rankings were recorded. The researcher was involved with the data collection observer during the process[17], resulting in simultaneous collection and analysis of data. The data were captured by transcribing the participants' ideas verbatim. The text was then interpreted by the researcher to find similarities and identify categories/themes[17,21]. The categories that were identified during the NGT were used when compiling the description of the content and modes of delivery of the preparation programme[17].

RESULTS

With regard to a proposed preparation programme, the top 6 statements of both groups were combined and categorised according to their similarity. The categories that were identified and ranked are listed in Table 1. The main categories were documentation (29%), maintaining of sterility (19%), equipment use (19%), OR preparation (15%), swab and instrument control (10%) and orientation (8%). Both NGT groups identified these categories, which were in line with the needs of student nurses and OR personnel in a functioning, busy OR.

Both groups listed methods that they felt were best suited for presenting a preparation programme. Suggested modes of delivery included practical demonstrations and simulation, visual learning, practical group sessions, preplacement preparation and formal lectures with written tests. The suggestions were tabulated, categorised and prioritised according to group consensus (Table 2). In the student group, simulation, demonstrations and videos were considered the best modes of delivery for the preparation programme compared with those of the OR staff, who put more emphasis on lectures and booklets. This could be ascribed to the generation gap between the two groups. Demonstration and simulation, however, were top of the list in both groups.

Table 1. Combined findings for the top 6 statements regarding question 1: 'What should the content of an OR preparation programme consist of?'

Category	Statement	Group	Votes, *n*	Final ranking
Documentation	Learnt how to use and complete intraoperative documentation and OR registers	1	37	1
	Receiving a patient in the OR	1	18	2
	Receiving a patient in the OR – consent and what questions to ask	2	12	
Maintaining of sterility	How to correctly open sterile packs	1	17	5a
	Identification of sterile and non-sterile areas in the operating room	2	11	8a
	Pouring of solution into sterile containers	2	6	10
	Preparation of a sterile trolley	2	9	9
Equipment use	How to use the suction unit	1	11	8b
	Use of the suction unit	2	0	
	How to use the diathermy machine	1	17	5b
	Application of diathermy plate	2	8	9
	Knowing how the tourniquet works – use, hazards, application time limits, how it looks	2	0	14a
	How and where the OR lights are turned on and how to operate the ear, nose and throat headlight	1	0	14b
	How the OR beds functions	1	4	12
	How to use operating room doors – how and when too open and close	2	5	11a
	Use and hazards of the bear hugger	2	0	12
OR preparation	Preparing the OR before each patient	2	16	6
	Preparing the OR bed before each patient	2	13	7
	Collecting of the refrigerated drugs and preparing intravenous infusions for assisting with anaesthesia	2	2	13
	Basic procedural routine to be explained to know what to do and when	1	0	14d
	Patient privacy in the OR – no over-exposure, cover patients	2	5	11b
Swab and instrument control	Counting of swabs and instruments: want to be able to differentiate between different swabs and instruments– the names and what each looks like	1	24	3
Orientation	Student to know how to introduce themselves – name, what type and year student, what they want to learn	2	18	4
	Placement to one discipline a week – to be orientated and instructed in one discipline at a time	1	0	14c

OR = operating room.

Table 2. Methods proposed for the presentation of an OR preparation programme for student nurses, and combined ranking of the two groups

Students	Permanent OR personnel	Combined ranking
Demonstrations and simulation	Simulation presentation and demonstration	Demonstration and simulation
Videos pre- and post-clinical placement	Lecture with pictures and a booklet to recheck information	Visual learning aids
Lectures and PowerPoint presentations	Formal lectures and a test during rotation	Formal lectures with assessment
Practice sessions in small groups	Formal lectures	Practical small-group sessions
Preparation programme before rotations	Simulation with outcomes	Preplacement preparation

OR = operating room.

DISCUSSION

Content of a preparation programme

From a medico-legal perspective, ***documentation in the OR*** is of vital importance to safeguard patients and healthcare personnel[22,23]. Competence with OR documentation is a skill that takes time to accomplish, and the staff indicated that they needed student nurses to be reasonably skilled in the completion of intra-operative documentation. They also felt that they did not have adequate time to teach student nurses during procedures, which is one of the main areas where student involvement increased their stress levels and workload.

Participants listed ***maintaining sterility*** as one of the areas that the student nurse should be well acquainted with. The problem that had been raised was that students were mostly 'unaware' that they were contaminating a sterile field, adding pressure on OR personnel, which often culminated in permanent staff becoming anxious and agitated. The fear of doing something incorrectly and being unsure of what was expected, caused student nurses to become anxious; they would often withdraw and not participate. Currently, the students' programme includes a theoretical lecture, demonstrations and practical training and assessment pertaining to basic general aseptic principles. However, this programme is inadequate, as students are not competent to comply with the sterility principles applicable to the OR.

When equipment in the OR fails, it can lead to a catastrophe[24]. The term equipment was used as an over-arching concept that enveloped numerous statements by participants. All participants were of the opinion that student nurses should be able to use some of the basic equipment in the OR. The inability to correctly manage basic OR equipment could lead to misuse of or damage to it, which might result in malfunction and/or harm to the patient. Student nurses thought that they were perceived as being 'dumb' or 'stupid' or 'not interested' when following or participating in the procedure while they were unsure of what equipment was being referred to or how to make the required adjustments.

OR preparation was mentioned by both groups. On the one hand, students did not feel sure of what OR personnel expected. On the other hand, the personnel thought that students did not want to participate in routine work in the OR. Students felt that they had to do what registered nurses do; however, the role of the student in the OR should be made clear in advance. To become an excellent OR nurse, one should be able to be an excellent student nurse.

Swab and instrument control was an area of concern for student nurses. They mostly felt unable to differentiate between the various swabs and instruments, and therefore were apprehensive of being responsible for a miscount that could have a negative impact on the staff or patient.Participants in the personnel group felt that during the ***orientation of students***, the latter should be made more aware of

the importance of correct and thorough introduction to the specific OR staff they had been allocated to. This would ensure that students are allocated correctly to reach their specific clinical goals, as students from various healthcare professions receive their training in the hospital OR complex.

Mode of delivery of a preparation programme

In reply to the second question regarding the optimal format of transferring the content of an improved preparation programme, different categories were identified by both groups. During the nominal group discussions, the participants suggested modes that are presented in order of highest ranking.

Simulation and demonstrations was the category that was rated highest in the combined section by both groups, despite permanent staff members having no or little simulation experience. The student participants indicated that simulation was one of the more effective ways to transfer knowledge to clinical practice. Simulation gives the student the chance to observe and practise actions, and can be used to train both technical and non-technical skills, such as communication, teamwork and professionalism. Demonstrations of certain procedures, equipment functioning and protocols could be incorporated into simulations with scaffolding from 'show and tell' to a simulation where students can perform the procedure or action themselves with feedback through debriefing[25].

Most students preferred ***visual learning*** and mentioned examples such as videos, PowerPoint presentations, pictures and booklets. In Dale's[26] cone of experience, people generally remember between 30% and 50% of what they see and hear. Today's technology-dependent learners prefer visual teaching aids to gather and process new knowledge and to apply it in the clinical situation[27].

Formal lectures and written tests were proposed by the permanent OR staff, but nursing students did not mention this format. It could probably be ascribed to lectures currently being part of the students' training and the main frame of reference of the older staff members. Contributing to these frames, students are being exposed to newer teaching strategies, such as simulation, to which the older OR personnel had little or no exposure. Dale[26] postulated that learners remember only 20% of what they hear in a lecture, opposed to 80% - 90% if they simulate a real experience or perform a task.

Practical group sessions could assist students in learning, training and practising what they should apply, especially through simulation. Students preferred smaller groups for demonstrations, ensuring that all group members have the opportunity to practise their skills. Deliberate practice principles of technical skills should be introduced to allow students to master skills. In smaller groups, students tend to support each other, and it would allow the lecturer to observe all group members to identify problems and assist where needed[28].

Preplacement preparation prior to the student's placement is preferred, so that the newly-acquired information may be implemented while fresh in the student's memory. E-learning of theoretical principles can form part of the preplacement preparation before contact time with preceptors or faculty. Principles of the flip-the-classroom concept can be introduced to augment the preplacement preparation to enhance the learning experience with empowered and engaging students[29]. A comprehensive and well-prepared programme would benefit the students' perceptions of the OR and have a positive impact on their learning while there.

Study limitations

The study population was linked to one training institution. The specific expectations may not be reproducible in another study with a different unit of analysis in an alternative context. However, the main categorical findings (documentation, swab and instrument control, maintaining of sterility and equipment use) are basic and should correlate with the needs and expectations at other institutions.

RECOMMENDATIONS

Education

- The findings of the study could contribute to the development of a preparation programme for this institution, institutions in Africa and internationally
- The improved programme could be presented at different nursing schools and also for different nursing qualification levels where clinical placement of students in an OR is obligatory
- A preparation programme could also include students in other professions who rotate in the OR

Clinical practice

- The programme could be adjusted and implemented in other healthcare settings to prepare nurses and other healthcare professionals with no previous OR exposure for placement in the OR

Future research

- A follow-up study should be conducted with a larger sample group, including students from other nursing schools, provinces and countries

CONCLUSION

The problem identified was that student nurses rotating in the OR for the first time were not adequately prepared for their placement. This study provided a platform whereby participants had the opportunity to give their opinion on what was needed in a preparation programme that would improve the student nurses' participation and learning.

Shortcomings identified were that students needed more preparation prior to placement in the OR. Specific content that participants felt should be included in a preparation programme included documentation, equipment, maintaining sterility, orientation, swab and instrument control and theatre preparation.

All stakeholders were of the opinion that an improved preparation programme was needed, as it would have a direct and positive impact on students' learning and impression of the OR. Moreover, it could result in recruiting more students to choose OR nursing as a career.

This study provides first-hand research into the needs, content and modes of delivery of a preparation programme for student nurses in SA prior to first placement in the OR.

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The Landscape Of Peri-Operative Nursing Education In Africa: A Scoping Review

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INTRODUCTION

Access to safe surgical care is a pressing global and public health problem. It is estimated that 4.8-billion people globally do not have access to surgical care and that at least 4.2-million people die each year within the first 30 days after surgery[1, 2]. Disparities in access to surgical care exist, with greater than 95% of the unmet needs for surgical care found in low-income and middle-income countries[2] (LMICs). Similar disparities exist in the distribution of these deaths, with LMICs experiencing a disproportionate burden of post-operative deaths compared to high-income countries (HICs). One group estimated that half of the deaths that occur within the first 30 days after surgery take place in LMICs[1].

Additionally, a study conducted by the GlobalSurg Collaborative[3] found that the 30-day mortality for abdominal surgery was three times higher in LMICs compared to HICs, even after being adjusted for prognostic factors (2016).

Optimising peri-operative care provides a potential solution to improve patient outcomes and reduce post-operative deaths by delivering patient-centered, multi-disciplinary care across the surgical continuum of care[4, 5]. Peri-operative care requires an interdisciplinary team of healthcare providers, including an adequate number of trained nurses, to optimise patient outcomes. Peri-operative nurses impact surgical outcomes at all intersections along the surgical care continuum and, therefore, play a critical role in peri-operative medicine both in and outside of the operating room (OR).

In May 2023, the World Health Organization (WHO) called for countries to integrate operative care into nursing curricula and offer post-graduate operative care training for nurses under Resolution WHA76.2 (6). Increasing access to peri-operative education for nurses is associated with greater clinical knowledge and improved practice in peri-operative settings. In one example, a cross-sectional study in Ethiopia assessing nurses' practices with peri-operative hypothermia prevention found that nurses with a Bachelor's Degree, Master's Degree, or other specialised perioperative training had better knowledge of the prevention of peri-operative hypothermia compared to nurses with more limited educational training[7].

Although nurses comprise 37% of the 3.6-million health workers in Africa, nursing education varies greatly across the continent and many nurses do not have access to peri-operative education as a nursing subspecialty[8]. There is a gap in the literature evaluating the current availability of peri-operative nursing education in Africa. The purpose of this article is to provide a landscape of the available peri-operative nursing education opportunities across the African continent, hypothesising that greater access to peri-operative education for nurses is associated with safe surgical care, including reduced surgery-related deaths and improved patient outcomes.

METHODS

This review aims to answer the following research question: 'What is the current landscape of peri-operative education among nurses in Africa?' This was achieved through a scoping review of the relevant literature using the PRISMA-ScR Checklist[9]. Articles were considered for inclusion if they were related to nursing education or training in Africa across the peri-operative continuum of care and if they were available in English. Articles were excluded if there was no abstract or author information available, or if the full text of the article was not available online.

The initial aim was to evaluate nursing education programmes in Africa that have a peri-operative subspecialty, however, the preliminary search in the electronic databases PubMed and CINAHL revealed few studies. As a result, the search terms were expanded to include surgical training and surgical nursing clinical competencies. After a search was generated, each article title and abstract was then reviewed for the inclusion and exclusion criteria. The search descriptors used in PubMed were as follows:

- (((perioperative nurse education in Africa) AND "Africa"[MeSH]) AND "Peri-operative Nursing"[MAJR]) AND "Peri-operative Nursing/education"[MeSH]
- ((((perioperative nurse education) AND (training)) AND (surgery)) AND (nurse) AND (Africa))
- (((critical care nursing in low middle income setting) AND (training) AND (nursing))

A total of 77 articles were generated using these search terms, however, only 14 (18.2%) were selected for further review based on the relatedness of the title and abstract to the inclusion and exclusion criteria. The search descriptors used to generate relevant articles in CINAHL were: *(Peri-operative nursing education) AND "Africa."* A total of 7 articles resulted from the search and based on a review of the article titles and abstracts, 1 (14.3%) was selected for additional use of the study criteria. To supplement the small number of selected articles, a general search on Google Scholar was conducted using *"peri-operative nursing education in Africa AND training AND curriculum AND competencies AND nursing"* as search criteria. The titles and abstracts of the generated articles were reviewed, resulting in the selection of an additional 7 articles for further review.

Of note, while nurse anesthetists are nurses in the peri-operative space that contribute significantly to providing quality surgical care, this review did not include anesthesia training and focused solely on peri-operative nurse training.

The selected studies were then charted and analysed for key findings across several phases. The titles and abstract were read and entered into an Excel sheet, as well as the author names, publication date, country of origin, and country of settlement - the country the article was evaluating[10]. A total of 22 articles were read in full by one author and analysed for their relatedness to the research question. Of the 22 articles that were reviewed in full, 10 were selected for the scoping review as reflected in Table 1, and 12 were excluded from further evaluation. Relevant gray literature was also included in the results to provide greater context to the study findings, such as the Global Profile of Nursing Regulation, Education, and Practice published by the National Council of State Boards of Nursing[11]. The results and findings from each article were summarized in the Excel chart and then evaluated for patterns and trends.

RESULTS

General nursing education is well-established across Africa. The National Council of State Boards of Nursing compiled data from 43 African countries, revealing that the mean length of general nursing education programmes on the continent is 3.25 years, although the majority of programmes are 3 to 4 years[11]. Burundi and Gambia had the shortest nursing programme lengths of those examined, with a duration of 2 and 2.5 years, respectively[11]. After completing their training, all nurses must pass an examination before they are able to practice any nursing role, except for Botswana, Gambia, and Mauritius, which only require an exam for some nursing roles[11].

TABLE 1 Articles included in analysis.

Article title	References	Country of settlement	Country of origin
Building the Case for Nurses' Continuous Professional Development in Ethiopia: A Qualitative Study of the Sick Kids-Ethiopia Pediatrics Perioperative Nursing Training Program	Abebe et al. (19)	Ethiopia	Ethiopia and Canada
National surgical, obstetric, anesthesia and nursing plan, Nigeria	Seyi-Olajide et al. (15)	Nigeria	Nigeria and United States
Critical care nursing practice and education in Rwanda	Munyiginya et al. (13)	Rwanda	Rwanda, South Africa, and Canada
Perioperative Nursing Training in Rwanda in Partnership with American Universities: The Journey So Far | Rwanda Journal of Medicine and Health Sciences	Mukantwari et al. (14)	Rwanda	Rwanda
Anesthetic nurse training in KwaZulu-Natal government hospitals: exploring strengths and deficiencies | Southern African Journal of Anesthesia and Analgesia	Maharaj et al. (20)	South Africa	South Africa
The development of critical care nursing education in Zambia	Carter et al. (21)	Zambia	Zambia, United Kingdom
Improving Perioperative Nursing Practices in Africa	Woodhead (17)	African Continent	United Kingdom
Perioperative Nursing E-Learning Foundational Programme (PeN Programme)	The UN Global Surgery Learning Hub (18)	Online	ECSA Health Community, Ireland
A Global Profile of Nursing Regulation, Education, and Practice	National Council of State Boards of Nursing (11)	Global	n/a
Higher Diploma in Peri-Operative Theater Nursing	Nairobi Women's Hospital College (12)	Kenya	Kenya

PERI-OPERATIVE NURSING EDUCATION OPPORTUNITIES

In Kenya, the Nairobi Women's Hospital College hosts a higher diploma in peri-operative theater nursing that is one-year long[12]. To be eligible, applicants must have a diploma in nursing or other nursing degree and at least one-year of prior working experience[12]. The programme was designed to provide nurses with the skills and competence to provide specialised care to patients across the surgical continuum of care. The college also offers a higher diploma in critical care nursing[12].

In 2012, the Rwandan Ministry of Health (MoH) developed a 7-year project called the Human Resources for Health (HRH) in collaboration with the United States (US) government to increase the number of healthcare professionals in Rwanda, including nurses. Prior to this project, nurses typically were trained in critical-care nursing on the job, or traveled abroad to obtain further specialised training[13]. The Rwandan MoH aimed to develop new nursing education programmes, including critical care programmes, under the mentorship of US faculty[13]. One such programme exists at the University of Rwanda (UR). The university created a Master's in Peri-operative Nursing programme with the HRH under the MoH[14]. The

programme consists of common and specialty modules taught in the classroom and clinical settings, as well as a dissertation[14]. To improve the sustainability of the programme, UR recruits its programme graduates to join the training staff[14]. Mukantwari *et al.*[14] reported on two graduated classes and found that 11 of the 19 sampled graduates work in teaching hospitals, while 7 of the 19 work in higher education (2021).

Nigeria included a plan to increase peri-operative nurse retention in their National Surgical, Obstetric, Anaesthesia, and Nursing Plan for 2019 to 2023. Smile Train, a non-governmental organisation that provides free cleft palate care in LMICs, implemented a peri-operative nursing care programme in 2021 called *Nursing Care Saves Lives*[15]. An initial 24 nurses are being trained as part of a pilot programme that utilises the train-the-trainer method in hopes of scaling up the programme across the country[15]. The t raining is five-days long and provides nurses with the skills they need to provide safe peri-operative care to children with clefts[16]. The efficacy of the pilot programme is yet to be evaluated.

Additionally, international organisations have implemented specialised peri-operative training programmes in Africa. Friends of African Nursing (FoAN) is a charity based in the United Kingdom (UK) that aims to provide peri-operative education for nurses in partnership with the WHO Safe Surgery Saves Lives campaign[17]. FoAN volunteers teach week-long programmes delivered over the course of four-years, consisting of theory-based curricula, clinical practice programmes, and leadership courses[17]. The organisation utilises to train-the-trainer method in which nurses are trained to teach the curriculum and are then provided with seed funding from FoAN to develop new peri-operative educational programmes in Africa[17].

Virtual learning opportunities are also available to nurses who wish to strengthen their peri-operative skillset. For instance, East, Central, and Southern Africa College of Nursing and Midwifery (ECSACONM) created the Peri- operative Nursing E-Learning Foundational Programme (PeN Programme) and it is now offered online on the learning platform the UN Global Surgery Hub[18]. The programme is provided open-access and free of charge and consists of 30 one-hour long modules that are asynchronous and selfpaced[18]. The purpose of the course is to strengthen nurses' theoretical and practical understanding of how to deliver high-quality care in surgical care settings[18].

EVALUATION OF PERI-OPERATIVE NURSING EDUCATION PROGRAMMES

A qualitative evaluation of the Sick Kids-Ethiopia Paediatrics Peri-operative Nursing Training programme evaluated the training experience of nine nurses who completed the programme[19]. The programme is four-weeks longs and consists of classroom sessions and practical assessments[19]. The study findings indicated that participants had improved knowledge, skills, confidence, and job retention following the completion of the programme[19]. A similar study was conducted investigating the state of anaesthetic nurse training in the KwaZulu-Natal government hospitals in South Africa[20]. The study consisted of 73 qualitative interviews[20]. However, the authors reported that 76% of programme participants had no anaesthetic training in nursing school, leading to insufficient knowledge of their current practice[20]. The authors also concluded that subsequent workplace training was not sufficient[20]. In Zambia, nursing is regulated by the Nurses and Midwifery Act of 2001, and all nursing education must be competence-based to ensure nurses are able to provide high-quality and comprehensive care to patients[21]. The Lusaka

College of Nursing implemented a year-long Advanced Diploma in Critical Care Nursing in 2012 in collaboration with the General Nursing Council of Zambia[21]. The programme instruction consists of 19 weeks of theoretical curriculum and 32 weeks of practical training[21]. An evaluation of the programme indicated that it was effective in increasing nurses' knowledge and skills in critical care delivery[21]. As a result, the MoH in Zambia aims to use this programme as the foundation to develop a Bachelor of Science in critical care nursing[21].

DISCUSSION

Despite the advancement of peri-operative care as a nursing subspecialty, significant barriers remain in countries developing their peri-operative nursing workforce. Quality peri-operative care requires not only quality education, but also an adequate number of nurses in the workforce. Many African countries are experiencing severe nursing shortages. According to the WHO, approximately 81% of the world's nursing workforce is located in the Americas, Europe, and Western Pacific, despite only comprising 51% of the world's total population (2020). This imbalance is largely due to income-driven factors, with HICs having a nursing density of 107.7 nurses per 10 000 population while the nursing density in LMICs is 9.1 nurses per 10 000 population[22]. Thus, despite the well-defined and central role of nurses in surgical care, many LMICs lack the available nursing personnel to optimise care delivery.

Additionally, both current and aspiring nurses face several barriers to accessing peri-operative education programmes and supplemental training. Online programmes, such as the PeN Programme offered by ECSACONM and the UN Global Surgery Hub, require access to a computer and a reliable wireless network. It is also difficult for practicing nurses to study while working, and nurses may be hesitant or unable to take time away from work to further their education as it can lead to a loss of income. Moreover, the cost of educational programmes and training also acts as a deterrent.

The authors reflected on their experiences working in peri-operative care throughout the surgical care continuum in the OR and acute and critical-care settings. They discussed several additional possible explanations for why nurses may be hesitant to pursue additional peri-operative education, including the lack of dedicated time to this patient population. In many regions of Africa, nurses rotate between wards, and thus, their exposure to this population is constrained by the amount of time they spend at each ward. This limits their ability to receive comprehensive peri-operative training, as well as their ability to understand quality peri-operative care and invest themselves into this population. Nurses may also lose their peri-operative skills and knowledge after rotating to a new ward. Additionally, the authors also cited the presence of negative attitudes by some nurses toward working with patients in their peri-operative areas. This could be due to a knowledge deficit and the challenges of learning new skills. Lastly, nurses may be hesitant to get further training because they do not see or experience the issues that would be better addressed with additional peri-operative training.

This article, while comprehensive, may be limited in its application. This article is a compilation of the most recent and relevant existing literature but is not a reflection of all published studies.

Additionally, the findings are limited by what information is available in the literature, which may not reflect all available educational opportunities for peri-operative nurses. While the purpose of this article

was to detail all professional nursing training programmes dedicated to peri-operative nursing in Africa, it must be acknowledged that general professional nursing training often includes competencies in surgical nursing. Additional research could include a review of the perioperative training and competencies within existing professional nursing programmes. Lastly, the scope of this article did not include the contributions made by nurse anaesthetists in peri-operative care. Further research will create a stronger evidence base for investing in comprehensive peri-operative nursing education to increase patient safety and improve health outcomes among surgical patients.

CONCLUSION

Providing greater peri-operative educational opportunities for both prospective and existing nurses in LMICs has the potential to reduce disparities in surgical patient outcomes and improve inequities in the distribution of peri-operative nurses across the globe. Beyond curriculum and educational programme development, peri-operative nursing programmes must address barriers to accessing education to ensure student success by providing social, economic, and academic support, such as mentorship and opportunities for continued learning[23].

Lack of funding, inadequate staffing, inadequate compensation, and lack of mentorship are among the on-going obstacles countries face toward establishing new peri-operative nursing programmes[24]. It is critical to prioritise and advocate for the development of peri-operative nursing through advancing education and research, as well as inclusion in local, regional, and national agendas, to provide safe surgical care to patients across the globe.

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APPSA Position Statement On Staffing And Delegation Of Tasks For Peri-Operative Nurses

INTRODUCTION

APPSA endorses, the South African Nursing Council (SANC) board notice on the nursing standards for health establishments in South Africa *(SANC c, 2024)*. The notice does not specify the Operating Room, however this department is seen as an area within a health establishment where peri-operative nursing care is provided.

APPSA further acknowledges that in the absence of regulated staffing norms in South Africa *(Abrahams & Brijball Parumasur, 2025; Denosa, 2012)* each healthcare facility should have a guideline available to determine minimum safe staffing and on-call needs. Considerations must include the qualifications and skills of available staff, as well as the individual need of each surgical patient, technological advances and procedural complexity. In addition, there should be a standardised protocol for delegation and supervision available to ensure safe surgical care *(AORN b, 2021; SANC c, 2024)*.

Staffing plans should consider the need for extended shifts or extended working hours. Adequate rest periods should be allocated between shifts and on-call allocation. Nurse fatigue can lead to patient care errors and work-related injuries like needle-stick and musculo-skeletal injuries *(Nijkamp & Foran, 2021: 15; Rahmani et al, 2025)*.

RATIONALE

Peri-operative nursing care is delivered in a fast-paced, pressurised environment, making this a complex care delivery unit. Peri-operative practitioners should be delegated to provide care within their scope of practice, experience and skill as well as allowed to apply the scientific nursing process in daily task allocation *(SANC a)*.

RECOMMENDATIONS:

All areas of the Operating Room Department should be staffed to ensure safe patient care. The below is international and national best practice:

Reception area: At least one peri-operative practitioner who can take over from the pre-operative unit practitioner and confirm needed safety checks with the practitioner and the patient. The perioperative practitioner must be competent to observe patients for reaction to pre-medication and provide emergency care should this be needed.

Operating or procedure rooms: For each procedure three (3) peri-operative practitioners should be allocated in the three distinct roles: scrub, circulating and anaesthetic assistance roles. These roles should not be combined as this adds undue expectations and stress to the specific practitioner. An additional practitioner can be allocated when expert skill is needed for advanced technologies (such as robotic-assisted devices) or complex surgical or anaesthetic procedures (for example, multi-procedural cases or patient complexity) as well as high through-put theatre lists *(AORN, 2022: ACORN, 2024:3; Royal College of Nursing, 2012:11)*.

The scrub role is mostly performed by a Professional Nurse Practitioner, or by an Enrolled Nurse (EN) who completed an additional course and was found competent in the scrub role. The EN can be allocated to less complex or diagnostic procedures. This role can also be allocated to a qualified operating room assistant (ORA).

The circulating and anaesthetic assistant roles can be allocated to any of the three (3) categories of nursing staff or ORA. Of note is the recommendation from the South African Society for Anaesthesiologist (SASA) that the anaesthetic assistant may not be allocated to perform other duties than that of an anaesthetic assistant peri-operatively. This has been done to ensure safe peri-anaesthetic care *(SASA, 2022: 11)*. This is mainly due to new pharmacotherapeutics, the advances and complexity of anaesthesia and associated technology.

Recovery room: is mainly staffed with Professional Nurse Practitioners with the following ratios:

- One nurse practitioner to two patients (1:2) for uncomplicated extubated patients
- One nurse practitioner to each patient (1:1) for a patient who has not recovered protective reflexes yet
- Two nurse practitionerss to one patient (2:1) for a critically- ill or complicated patient

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APPSA Position Statement On Surgical Assistance By Nurse Practitioners During Surgical Procedures

INTRODUCTION

APPSA endorses the importance of any healthcare facility/company written policies to guide perioperative practitioners in situations that may arise when requested to act as a surgical assistant. In addition, there should be clear guidelines on the escalation and support process and all surgical care practitioners should be made aware of these.

Surgical procedures are seen as any surgical or diagnostic intervention performed by a medical practitioner as part of the treatment plan. This includes endoscopic and interventional procedures.

APPSA acknowledge that some suppliers do offer CE-accredited courses to all healthcare practitioners. However, neither these providers nor their courses are approved by SANC and can thus not prevent disciplinary action, should harm occur to the surgical patient.

RATIONALE

Peri-operative practitioners working within South Africa may not act as a surgical assistant, first or second *(SANC 1 & 2)*. Should a surgeon need support from the peri-operative practitioner for an additional unplanned assistance task, this task may not be for an extended period, nor should it interfere with the primary focussed nursing tasks of the peri-operative practitioner. This includes their performance of surgical counts, preparing for the next steps of the surgical procedure or supervising the circulating or anaesthetic nurse practitioner. The peri-operative practitioner must be allowed to leave the requested task at any time without catastrophic outcomes for the patient.

In a stat-emergency situation, they may assume the surgical assistant role only if there is no other medical practitioner on the premises of the facility available *(Hall et al, 2014: 245; HPCSA, 2021)* and they may not act in the scrub role at the same time.

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APPSA Position Statement On Surgical Attire And Personal Protective Equipment (PPE)

INTRODUCTION

APPSA endorses the wearing of correct surgical attire and personal protective equipment (PPE) for all peri-operative practitioners providing direct patient care in South Africa. It is expected that each healthcare facility will provide peri-operative practitioners in their employment with updated guidelines on the components of surgical attire and PPE as well as an adequate supply of items.

APPSA acknowledges that in certain circumstances, privately-owned surgical attire can be worn, as well as laundered at home. This is, however, not promoted.

RATIONALE

To prevent possible surgical site infections (SSI), all peri-operative practitioners must wear clean, freshly -laundered surgical attire daily. Correct surgical attire and PPE provide an effective barrier against the spread of practitioner skin micro-organisms to the patient, while also protecting the practitioner against blood or bodily fluids from the patient *(AORN a, 2022; AORN b, 2022; Philips & Hornacky, 2021).*

Standards for surgical attire

Surgical attire should be constructed of tightly-woven, stain-resistant, durable, low- flammable and low-linting material such as microfibre-types of material.

Due to the impact of high-temperature laundering, the material of the surgical attire can disintegrate, therefore the components should be replaced often (or at least annually). **Note: Fleece material is not allowed. It may be warm, but it is highly flammable, can shed lint, accumulates dust and skin, and harbours moisture.**

Components of surgical attire/scrubs

- ***Pants/skirt and short sleeve top:***
  - Must fit comfortably while preventing shafting that can increase skin shedding
- ***Head covering:***
  - Can be disposable or of reusable material
  - Should fit securely to cover the scalp, hair and ears
  - Religious head coverings should be compliant with the uniform policy and loose ends tucked into the scrub top
- ***Foot gear:***
  - Those stipulated exclusively for the operating room complex must be worn
  - Must be comfortable and supportive to minimise fatigue
  - The soles of foot gear should be resistant to punctures and be slip-proof for personal safety
  - Must be washed after use, or when visibly soiled. The material of the shoes should allow for automated washing at a high temperature, for example rubber shoes or polymer materials (polyurethane, polyvinyl chloride)
  - Should comply with the stipulations in the uniform policy of each healthcare facility

Note: Imitations of Crocs with endearments are not allowed. Due to the nature of the material, it can lead to slips and falls.

- ***Long sleeve jackets:***
  - May not interfere with or prevent hand hygiene practices
  - The long sleeve jacket must be fastened to prevent flaps contaminating the sterile field
- ***Overgown for leaving the Operating Room Complex:***
  - The wearer must wear a clean overgown every time the operating room complex is left and discard the overgown in the dirty linen receiver upon return
  - Only to use when leaving the operating room complex within the hospital building, including to visit a patient in the nursing unit. When leaving the hospital building, outside clothes must be worn
  - The overgown should cover the scrubs down to knee length
  - The overgown must be fastened to protect the integrity of the scrubs
- ***Jewellery:***
  - A 'bare below the elbow' approach is advised to not interfere with hand hygiene practices or cause harm to the patient
  - Necklaces and chains are prohibited due to grating of the skin that can increase shedding
  - No dandling earrings are allowed. Pierced ear studs must be covered by head gear
- ***PPE:***
  - A full-front barrier apron to protect against liquid(s) and/or cleaning agent(s)
  - A single face mask should fit comfortable over the nose and mouth and should be worn when entering a restricted area
  - Eyewear and eye protection to protect the eyes of the direct care team
  - Non-sterile gloves when handling any item contaminated with blood or bodily fluids

Note: Visibly soiled or contaminated scrubs should be replaced before a subsequent surgical procedure.

RECOMMENDATIONS FOR HOME LAUNDERING

Hospital-owned surgical attire should be laundered at the hospital's laundering facility under controlled conditions, and where the process can be validated. Self-owned surgical attire is laundered at home by the wearer. It is not possible to validate the home laundering process, therefore individuals should adhere to the recommendations below to prevent the spread of infection and potential harm to themselves or family members.

- The surgical attire should be covered during transport home and to the hospital. It is not advised that the wearer goes home in potentially contaminated surgical attire, nor comes to the hospital in surgical attire
- Keep contaminated, re-usable surgical attire separate from other clothing
- Wash re-usable surgical attire as the last load and on it's own (separate from other clothing)
- Immediately wash your hands after placing contaminated, re-usable surgical attire in the washing machine
- Do not place your hands or arms in the water while the surgical attire is being washed
- Wash the surgical attire for a minimum of 15 minutes at water temperatures of between 60°C and 69°C.

- Chlorine bleach should be added to the wash load. The specific amount is not indicated *(Sehulster 2015; Svetanoff et al. 2021)*
- Remove the surgical attire from the washing machine and clean the washing machine inside, especially the lid. This can prevent biofilm formation on the inside of the washing machine
- Tumble-dry the surgical attire for 25 minutes at the highest possible temperature after washing
- Iron the surgical attire after tumble-drying

Note: An employee who cannot launder surgical attire in a washing machine should notify the unit manager. Hand washing of contaminated surgical attire is not advised or supported.

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APPSA Position Statement On Surgical Counts

INTRODUCTION

APPSA endorses the importance of written policies and procedures for surgical counting, and strict adherence to the above. APPSA supports and encourages all health facilities to develop and implement such a policy and procedure. Further in support of patient safety culture, APPSA recommends the implementation and on-going education of such programmess, and the investigation of all events of deviation.

RATIONALE

Ensuring patient safety requires a team approach, and the attention of all surgical team members. "The Safe Surgery Saves Lives" campaign implemented by the World Health Organisation (WHO), in 2009, as adopted by South Africa and APPSA, challenges us to improve safety standards that can be applied in all surgical procedures *(WHO, 2009)*.

In South Africa the surgical team is obligated by the National Patients' Rights Charter stipulated in the Constitution to ensure a safe environment (DoH). Nurses are furthermore regulated by the South African Nursing Council (SANC) in their scope of practice to establish and maintain an environment in which safe health care can be provided *(SANC b, 2022)*.

The purpose of surgical counts is to protect the surgical patient from unintentional retention of surgical items that can remain behind after wound closure. Surgical items such as - but not limited to - all types of swabs (including throat packs), needles, surgical instruments and guidewires can remain behind without the intention to do so. Each member of the surgical team contributes to surgical counts during the surgical procedure *(AORN, 2021)*.

It has been identified that the retention of any surgical item has led to significant patient harm, that includes delayed wound healing, sepsis and death. This can also lead to litigation against the individual surgical team member(s) or the hospital group.

A peri-operative practitioner thus act within her/his scope of practice and competency framework to *(SANC a; AORN, 2021; NatSSIPs, 2023: 47)*:

- Assesses and identify the potential surgical items that can be retained per surgical procedure
- Develops a plan to prevent the retention of these identified surgical items
- Implement a surgical count procedure by preparing the needed items to perform the surgical counts, and performing the counts before, during and on closure of the procedure
- Informing the surgeon after each count of the outcome
- Documenting the outcome of the count in the patient records
- Calling for assistance should there be a miscount

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APPSA Position Statement On Surgical Counts

INTRODUCTION

APPSA recommends that all healthcare facilities should have an occupational safety programme available to guide peri-operative practitioners in the prevention of sharp injuries and subsequent blood borne infection(s).

RATIONALE

The fast-paced peri-operative care environment is a high-risk area for a sharp injuries, especially for novice practitioners. An occupational safety programme should include:

- Protocols to safely pass sharp items between practitioners, for example the hands-free technique when passing blades
- Immediate actions to take if an injury with a sharp item did occur
- Visible reporting guides to follow an injury
- Confidential counselling after exposure with access to treatment
- Regular audits to ensure compliance to the safety programme
- Proper investigation with feedback on the root cause and/or contributing factors that lead to the sharp injuries

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APPSA Position Statement On The Role Of The Peri-Operative Practitioner

INTRODUCTION

APPSA believes that peri-operative practitioners play an important part in surgical care, in that they prepare and provide supportive nursing care throughout the peri-operative journey of a surgical patient *(SANC, 2022).*

RATIONALE

As per the Patient's Rights Charter, every surgical patient has the right to a high standard of care, according to individual needs (DoH, ND). To meet the rights of the patient and to provide optimal peri-operative nursing care, each peri-operative practitioner should:

- Continuously update and maintain their existing knowledge and skill needed in a changing healthcare environment
- Ensure that individual CPD points are accumulated and provided to SANC to receive an annual licence to practice *(SANC c, 2021)*
- Ensure and strive to make use of critical thinking, sound clinical judgement and good communication skills in the provision of direct and indirect patient care

Note: Nurse practitioners must make certain that the CPD provider is approved by SANC. APPSA sees the registered peri-operative practitioner as an invaluable member of the team, the nursing team lead, and they should therefore be encouraged to develop and maintain such skills to facilitate optimal peri-operative patient care.

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APPSA 2026 Study Days

EASTERN CAPE (EAST LONDON)

7 March
6 June
3 October

Contact person: Irene Owen. Email: Ireneowen89@gmail.com

EASTERN CAPE (GQEBERHA/PE SUB-CHAPTER)

18 April
2 August

Contact person: Ina van Wyk. Email: ina.vanwyk@lifehealthcare.co.za; or
Janine Prins: Email: janine.prince@lifehealthcare.co.za

FREE STATE

28 February - Plastic Surgery & CSSD
9 May - Anaesthetic preparation; Roles during CPR in theatre; Blocks; Intravenous Anaesthesia
25 July - Ethics; Living Will; Consent; Procedure-related deaths; Social Media
10 October - TBC

Contact person: Gretha Botha. Email: Gretha.Botha@Mediclinic.co.za

GAUTENG

7 March
16 May
22 August
17 October

Contact person: Marilyn de Meyer; Email: marilyndemeyer3@gmail.com

WESTERN CAPE

21 February
30 May
25 July
3 October

Contact person: Erna Roos. Email: Erna.Roos@Mediclinic.co.za

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P
Persistence

First and foremost, a surgical patient prep should be effective in killing microbes. And no surgical prepping solution has as much clinical documentation to support its efficacy story as DuraPrep solution.
Studies show that DuraPrep solution remains bactericidal at least 48 hours* against resident bacteria after blood and saline challenge, and at least 12 hours against transient bacteria.
*ASTM E1173

O
One-step paint application

DuraPrep solution provides antimicrobial kill in a single, painted coat. Nothing is faster. Nothing is easier. Which may explain why it's been used in more than 25 million surgical procedures.
DuraPrep solution keeps it simple. There is one set of application instructions and one dry time wherever you work.

W
Water insoluble film bacteria

Skin antiseptics disinfect, but do not sterilize skin. Remaining flora can migrate to the wound through irrigation, instruments, or surgeon's gloves.
DuraPrep solution dries to a water-insoluble film that immobilizes bacteria not killed, reducing the risk of microbial migration to the surgical incision/wound when an incise drape isn't used.

E
Enhanced drape adhesion

Incise drapes are used to create a sterile surface in procedures where the consequence of infection can have serious morbidity or mortality. But when a drape lifts at the wound edge, the exposed skin allows for the potential of bacteria being transferred into the wound. Therefore, it is important to consider the effect of different preps on drape adhesion.
In clinical studies, the polymer-basedfilmof povacrylex in DuraPrep solution showed significantly greater drape adhesion than Competitor antiseptic skin prep, as well as other water soluble preps.

R
Resitant to blood/ saline wash-off

The unique formulation of povacrylex holds its ground even when challenged by blood/saline. The resistance to removal throughout the procedure optimizes the persistence and bactericidal power of iodine.

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