



**SOUTH AFRICAN SOCIETY
OF ANAESTHESIOLOGISTS (SASA)**

**POSITION STATEMENT:
Utilisation of Operation Theatres During Planned
and Unplanned Power Outages**

POSITION STATEMENT

UTILISATION OF OPERATING THEATRES DURING PLANNED AND UN-PLANNED POWER OUTAGES

1. Pre-amble

The reliable provision of electrical power from the national grid at date of publication remains a major concern and has huge implications on patient safety and the ability of practitioners to provide a safe and efficient anaesthetic service to our patients.

The Society thus provides this guidance to its members.

Since January, 2019 over 60% of all major incidents reported by a major private hospital group were related to power outages. Similar situations have occurred in government hospitals, resulting in the Western Cape's Deputy Director-General issuing a statement on the issue.

2. Legal considerations

- **The Occupational Health and Safety Act 85 of 1993 (OHSA)**

The OHSA, as amended is the over-riding Act on the issue of safety in hospitals and other installations.. Two matters need to be highlighted:

- a) The 16.1 and 16.2 appointees have the final decision about whether a hospital is safe to proceed with surgical cases, provided that the risk can be mitigated. These positions are usually filled by the Chief Executive Officer of the company (16.1 appointee) or the hospital manager (16.2 appointee)
- b) The Act further states that the employer has to provide a work environment that is safe, including routine maintenance to eliminate, mitigate and reduce the risk of danger to external healthcare providers, employees and patients.

- **SA National Standards Electrical Guidelines 10142 (SANS)**

This is the only permissible electrical guideline to follow. It contains a section on minimum power requirements for a medical facility and refers to a power supply from a "safe source" which shall be energised when the usually supplied power source (Eskom / city grid) fails.

- **HPCSA Ethical Rules**

Practitioners are further advised to take these rules into consideration. While the failure of a power supply may be beyond the control of practitioners, response in terms of clinical judgement and decision-making against the advice or guidance of the facility manager may lay medical staff vulnerable to serious criticism, possible censure by the HPCSA and civil action or even criminal charges.



3. Sources of power supply

3.1 National / city grid

3.2 Uninterrupted power supply (UPS)

- Must activate within less than 0.5 seconds upon failure of the main grid and provide a bridge until generator power is established
- Must provide power to most essential medical devices in theatres, ICU and recovery areas
- UPS's have a limited capability in terms of time, dependent on load requirements but should, in terms of SANS 10142, be able to sustain the system for a minimum of 20 minutes.
- UPS batteries generally have a life-span of 10 years and should be replaced accordingly as part of an on-going preventative maintenance programme.
- Newer Lithium based batteries are guaranteed for at least 10 years, but are extremely costly (approximately R 21 000 per unit).

3.3 Critical generator supply

- These units should respond within 30 seconds following a failure of the main grid and supply power to emergency lights, pharmacy fridges (including fridges in critical service areas), UPS recharging support, medical gas compressors and central suction units, wards and critical elevators.
- They should be able to function for at least 24 hours or for a minimum of 3 hours per generator to complete surgery underway.
- A sufficient fuel supply should be available on site to sustain these generators. It is important to note that the bulk storage of fuel may be limited by fire danger regulations, that delivery of fuel may be affected by traffic disruptions due to failure of traffic signals and that, in the unlikely event of the declaration of a State of Emergency, the government may exercise its right to commandeer all fuel supplies nationally. Furthermore, diesel cannot be stored for long periods of time as it adulterates. Rotation of diesel is an essential part of preventative maintenance.

3.4 Baseload generator supply

- These units will supply alternative power within longer than 30 seconds and will provide power to essential and non-essential areas.
- They may also supply back-up to the critical generator supply if configured accordingly, but should not be regarded as the primary back-up supply.

3.5 Alternative power sources

- Wind turbines and solar panels may be utilised to supplement power supply and provide additional charge to UPS, but should not be seen as a reliable source of energy for medical facilities, particularly in the face of varying weather conditions.

4. The multi-disciplinary team (MDT)

Every medical facility should establish a MDT to discuss and rehearse policy around the usage of theatres and ICU facilities during power outages. This team should involve surgeons, anaesthesiologists, theatre managers and hospital managers.



5. Recommended, but not considered essential

Although not legally required, the following are recommended

5.1 At least one fully-charged battery operated mobile suction unit should be available for each theatre unit, particularly to facilitate the extubation and care of patients in the recovery room

5.2 At least one fully-charged battery operated mobile operating light should be available for each theatre unit to complete major surgery under unacceptable conditions

5.3 The engineering department of every healthcare facility should, on a monthly basis, provide the following to the theatre manager, hospital manager / CEO and the MDT:

- Proof that all generators have been serviced according to schedule
- That monthly full-load generator tests have been conducted. These should be performed in hours in which the expected load will be minimal and healthcare providers should be advised in writing of such tests
- That sufficient fuel supplies for the generator / generators are on site

5.4 A supply of emergency torches (preferably with a reliable source of batteries or rechargeable) should be available for each theatre.

5.5 A contingency plan should be made available to all staff, including a possible evacuation plan for anaesthetized patients.

6. Clinical considerations

In the event of a main grid power failure, the following algorithm is advocated (*see next page*)

Normal Grid	UPS	Critical Load Generator	Base Load Generator	Alternative Power Supplies	Action
√	√	√	√	Not to be considered	Normal functionality
X	√	√	√	Not to be considered	Normal functionality, provided sufficient fuel supplies are reliably available
X	√	√	X	Not to be considered	Complete ongoing surgery and cancel any elective work. Emergencies may be performed
X	√	X	X	Not to be considered	Only perform emergencies which can be completed within the load time capability of the UPS
X	X	X	X	Not to be considered	Close facility and divert all patients



7. Conclusion

The provision of a safe and reliable source of electrical power in healthcare facilities, both in the private and public sector remain of the utmost importance, particularly in the light of existing infrastructure concerns.

Each healthcare facility should establish a multidisciplinary team who will jointly determine the capabilities of the facility to provide backup power. Ideally, an action plan should be drawn up and communicated to all clinicians and staff.

References

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5. Personal communication with Tony Behrman, Medical Business Consultant, Medical Protection Society, South Africa
6. Occupational Health and Safety Act 85 of 1993, as amended. Government Notice 2471 in Government Gazette 15369 dated 29 December 1993
7. SANS 10142 2018
<https://store.sabs.co.za/pdfpreview.php?hash=ce7b332aa55337caab6aa570a7ae498fe0bb70fd&preview=yes>
8. HPCSA Ethical Rules