

## SG008 Entrapment and Extrication

1. Key Recommendations for operational use		
For use by: All pre-hospital clinicians. Internet: Yes		
1	Scene safety	<ul style="list-style-type: none"> <li>• Refer to <b>SG002 Safety at Scene</b>.</li> <li>• Adhere to mandatory PPE level including helmet, eye protection &amp; sharp resistant gloves.</li> <li>• The Fire Service Incident Commander has overall responsibility for scene safety and has full discretion to scrutinise individual PPE adherence.</li> <li>• Consider specific services that may be required to facilitate extrication depending on scene, such as SORT, MRT and specifically trained operatives (technical rescue / USAR etc).</li> <li>• Consider location of vehicles / personnel and whether their position is impeding effective extrication.</li> </ul>
2	Medical role	<ul style="list-style-type: none"> <li>• Use the <b>joint decision model</b> to: <ul style="list-style-type: none"> <li>- <b>create a patient focused extrication plan with the primary focus of minimising extrication time.</b></li> </ul> </li> <li>• <b>Liaise</b> with Fire &amp; Rescue and Ambulance incident commanders.</li> <li>• Clarify <b>current extrication plan</b>.</li> <li>• Make an <b>early assessment</b> of the entrapped casualties.</li> <li>• <b>Agree extrication plan</b> based upon casualty assessment.</li> <li>• Be prepared to <b>change / adapt</b> plan following dynamic casualty assessment.</li> <li>• Avoid impeding extrication with unnecessary in situ interventions.</li> <li>• Brief and plan <b>post extrication tasks</b> with team.</li> <li>• Plan for deterioration post extrication.</li> </ul>
3	Terminology	<ul style="list-style-type: none"> <li>• <b>Immediate Release:</b> <ul style="list-style-type: none"> <li>- removal of the casualty from the vehicle by any means as able at the potential expense of spinal stabilisation</li> </ul> </li> <li>• <b>Emergency Plan:</b> <ul style="list-style-type: none"> <li>- viable plan to achieve an expedited but controlled extrication on a rescue board based upon initial clinical assessment or if condition deteriorates</li> </ul> </li> <li>• <b>Full Plan:</b> <ul style="list-style-type: none"> <li>- a full plan involves removal of all doors and roof of a vehicle aiming for maximal space creation around the casualty to allow full access to remove in-line on a rescue board.</li> </ul> </li> <li>• <b>Mechanical Entrapment:</b> <ul style="list-style-type: none"> <li>- casualty is trapped in the vehicle due to a physical impingement retaining them in situ.</li> </ul> </li> <li>• <b>Medical Entrapment:</b> <ul style="list-style-type: none"> <li>- casualty able to be moved but suspected or confirmed injuries / clinical condition are preventing safe self-extrication.</li> </ul> </li> <li>• Often there is a combination of both.</li> </ul>

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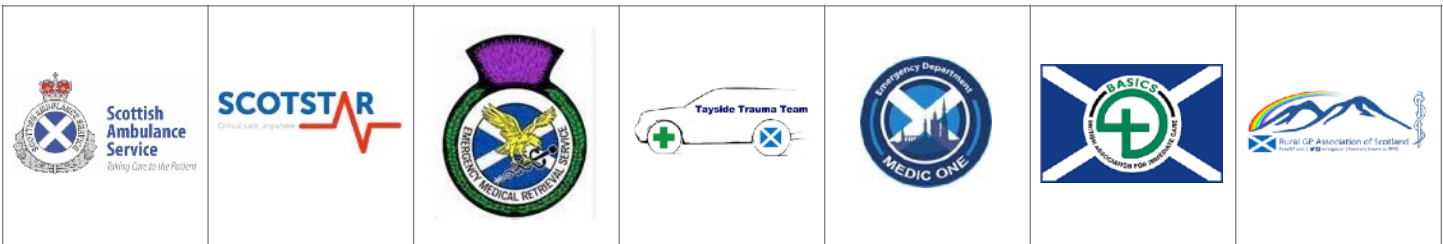
4	Application	<ul style="list-style-type: none"> <li>• <b>Immediate Release:</b> <ul style="list-style-type: none"> <li>• Medical: Based upon clinical judgement, for example: <ul style="list-style-type: none"> <li>- casualties in, or progressing to, cardiac or respiratory arrest.</li> <li>- uncontrollable major haemorrhage.</li> <li>- unmanageable airway.</li> </ul> </li> <li>• Environmental: Based upon scene hazard, for example: <ul style="list-style-type: none"> <li>- vehicle fire.</li> <li>- submergence.</li> <li>- police directive.</li> </ul> </li> </ul> </li> <li>• <b>Emergency Plan:</b> <ul style="list-style-type: none"> <li>- unstable / deteriorating patient.</li> <li>- it could be as simple as removing side door.</li> <li>- some degree of casualty manipulation is accepted.</li> <li>- Emergency Plan <b>MUST</b> be in place and viable prior to Full Plan.</li> <li>- May be the only viable extrication plan from outset.</li> </ul> </li> <li>• <b>Full Plan:</b> <ul style="list-style-type: none"> <li>- continually reassess patient condition and time to extricate.</li> <li>- revert to Emergency Plan if patient deteriorates.</li> </ul> </li> <li>• <b>At all times:</b> <ul style="list-style-type: none"> <li>- a dynamic assessment is required of the patient's condition versus time to extricate.</li> <li>- consider rally points.</li> <li>- plans can be adapted to achieve controlled extrication in a shorter timescale but still be considered as a Full Plan.</li> <li>- consider clinical indications for extremity amputation: refer to <b>CG014 Emergency Surgical Procedures</b> and <b>QRG04 Amputation</b>.</li> </ul> </li> </ul>
5	Self Extrication	<ul style="list-style-type: none"> <li>• Alert, co-operative and stable patients who are not distracted or physically trapped should be given the opportunity to self-extricate and lie on an ambulance trolley for assessment.</li> <li>• Self- or minimally-assisted extrication should be the standard first line extrication for patients who are conscious and likely to be able to stand with assistance.</li> <li>• Self-extrication may require gentle patient handling.</li> <li>• Initiation of self-extrication is not an expectation of SFRS personnel.</li> <li>• Decisions relating to self-extrication rely on effective communication amongst services.</li> </ul>
6	Penthrox	<ul style="list-style-type: none"> <li>• Consider <b>Penthrox</b> as a useful analgesic for entrapped patients.</li> </ul>

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7	Ketamine	<ul style="list-style-type: none"><li>• Form a plan to manage recognised complications.</li><li>• Consider the viability and rapidity of extrication and access to the patient prior to administration.</li><li>• Communicate the expected patient response to the extricating team.</li></ul>
8	Resources	<ul style="list-style-type: none"><li>• SORT can provide optimal scene lighting, shelter and heating and can facilitate extrication from specific hazardous scenes such as railways.</li><li>• Refer to <b>OG038 SORT</b>.</li></ul>

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2. Document History				
Reference Number	SG008			
Version	2			
Writing group (Lead author in bold)	Mike Donald	Emergency Physician	Tayside Trauma Team	
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Date for review	June 2026			
Distribution	BASICS Scotland		✓	
	Medic 1		✓	
	Referring centres via service websites		✓	
	Rural GPs Association of Scotland		✓	
	SAS	Specialist Services Desk	X	
	ScotSTAR	Air Ambulance		✓
		EMRS North		✓
		EMRS West		✓
		Neonatal		X
		Paediatric		X
Tayside Trauma Team		✓		



### 3. Scope and purpose

- Overall objectives:

The aim of this guideline is to promote a shared model and understanding between the services attending physically or medically entrapped casualties. The intention is to clarify terminology and define roles, particularly of the medical teams in relation to the dynamic assessment of the casualty and the subsequent plans required for casualty extrication. Ultimately the aim is to achieve an appropriate, safe and timely extrication for the casualty as far as possible.

- Statement of intent:

This guideline is not intended to be construed or to serve as a standard of care. Adherence to guideline recommendations will not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgement must be made by the appropriate healthcare professional(s) responsible for clinical decisions regarding a particular clinical procedure or treatment plan.

- Feedback:

Comments on this guideline can be sent to: [sas.cpg@nhs.scot](mailto:sas.cpg@nhs.scot)

- Equality Impact Assessment:

Applied to the ScotSTAR Clinical Standards group processes.

- Guideline process endorsed by the Scottish Trauma Network Prehospital, Transfer and Retrieval group.

4. Explanatory Statements	
	[Reference]
<p><b>4.2. Medical role</b></p> <p>Interventions for an entrapped casualty should aim to facilitate the extrication and temporise the clinical problem (eg. IV access for analgesia, pressure dressing for bleeding wounds etc). For a patient requiring a higher level of intervention, focus should be on extricating the casualty in a timely manner according to their clinical condition. Ambulance and medical personnel should be aware that clinical observations may prolong entrapment time and therefore should be kept to the minimum required. SFRS personnel are trained to deliver initial casualty care in situ. Embedding additional medical personnel may be unnecessary and delay extrication.</p>	[1,2,3,8]
<p><b>4.3. Terminology</b></p> <p>Terminology can confuse extrication. This accepted terminology is current within the SFRS Standard Operating Procedure. Purposefully, methods of extrication such as roof removal, dashboard roll, boot access <i>etc</i> are not described as the responsibility of undertaking a full plan extrication and the decision as to how to perform it rests with the SFRS. The key concept is the use of Multi-Professional Standardised Terminology to facilitate a shared understanding of when it is appropriate to instigate a particular extrication plan.</p>	[4,8]
<p><b>4.4. Application</b></p> <p>The absolute indications for immediate release should be based upon clinical judgement. Basic principles of care should be adhered to with respect to the management of immediate threat to life over and above spinal care. Attempts at limiting spinal movement can be made but these should not impede the extrication. Consensus of clear indications to remove a casualty from a vehicle by immediate release would include cardiac arrest, respiratory arrest and where control of major haemorrhage or airway compromise is not possible with the patient <i>in situ</i>.</p> <p>Environmental hazard e.g. fire, water or following a Police directive for a security threat would justify an immediate release of a casualty. The Fire Service Incident Commander, based upon their ongoing risk assessment of the incident, could also instigate this.</p> <p>In the case of a physically entrapped patient who would otherwise require immediate release, an assessment of the degree of entrapment and requirements to free the casualty should be promptly made, balanced against the potential viability of the casualty and associated risk to the rescuer, particularly for environmental risks. Amputation of an extremity may be required to facilitate extrication.</p> <p>Re-evaluation and communication are essential. In the case of a deteriorating patient, the clinical requirement to move from full to emergency, or emergency to immediate release should be clearly communicated to the Fire Incident Commander.</p>	[1,2,4,8]

### 4.5. Self-extrication

Patients regardless of their injuries should be assessed for suitability for (assisted) self-extrication. The immobilisation and extrication of casualties who would otherwise be capable of self-extricating could be detrimental to patient care and has been demonstrated to cause more spinal movement than a compliant casualty self-extricating.

A stable, alert and co-operative patient should be given the opportunity to self-extricate and lie flat on an ambulance trolley where an assessment can be made. It may be the case that immobilisation is subsequently felt to be indicated following assessment.

SFRS personnel are not specifically trained on self-extrication and will default to in-line spinal immobilisation unless directed otherwise by FIO or attending ambulance or medical officers.

[5,6,7,8]

### 4.6. Ketamine

Plan to manage the recognised complications of Ketamine. Consider the risk versus benefit for a casualty who is entrapped; the emergency plan should be viable in case of unexpected complications. The expected effects of ketamine can be interpreted as an unexpected patient deterioration by the extricating team. Clearly communicate the likely effects following administration.

## 5. References

1. JESIP. Joint Doctrine: The Interoperability Framework. Edition 2 July 2016.
2. JESIP. Joint Decision Model. [www.jesip.org.uk](http://www.jesip.org.uk)
3. <https://www.readyscotland.org/media/1497/preparing-scotland-responding-to-emergencies.pdf>
4. Fire and rescue service manual. [www.firescotland.gov.uk](http://www.firescotland.gov.uk)
5. Dixon *et al.* Confirmation of suboptimal protocols in spinal immobilisation? *Emerg Med J* 2015; 32: 939-945.
6. <https://www.nice.org.uk/guidance/ng41/resources/spinal-injury-assessment-and-initial-management-1837447790533>
7. <https://fphc.rcsed.ac.uk/media/1764/pre-hospital-spinal-immobilisation.pdf>
8. Nutbeam *et al.* A Delphi study of rescue and clinical subject matter experts on the extrication of patients following a motor vehicle collision. *Scand J Trauma Resusc Emerg Med* 2022; 30: 41.