Worcestershire Acute Hospitals NHS Trust

Guideline for Conscious Sedation Practice in Adult Interventional Radiology Procedures

This guidance does not override the individual responsibility of health professionals to make appropriate decision according to the circumstances of the individual patient in consultation with the patient and /or carer. Health care professionals must be prepared to justify any deviation from this guidance.

INTRODUCTION

This guideline has been introduced in line with other departments for example Endoscopy, when sedation is often required to be administered.

Sedation is often required for radiology interventional procedures as it can be unpleasant and/or painful.

Conscious sedation has been defined as:

"A technique in which the use of a drug or drugs produces a state of depression of the central nervous system enabling treatment to be carried out, but during which verbal contact with the patient is maintained throughout the period of sedation. The drugs and techniques used to provide conscious sedation should carry a margin of safety wide enough to render loss of consciousness unlikely."
Royal College of Anaesthetists (2002)

Over-sedation during a procedure can lead to respiratory complications requiring reversal of sedation. Previous reports into the use of sedation in endoscopy have advised the use of clear protocols for the administration of sedation including patient monitoring and recording of vital signs during sedation.

This protocol is written for **adult** patients within the Radiology setting only.

THIS GUIDELINE IS FOR USE BY THE FOLLOWING STAFF GROUPS:
Medical and non-medical staff working within Radiology.

Lead Clinician(s)

IR Lead Consultant Radiologist

	DATE
APPROVED AT RADIOLOGY DGM	13.12.18
REVIEWED	9th January 2024
Review Date This is the most current document and should be used until a revised version is in place	9th January 2027

Key amendments to this guideline

Date	Amendment	By:
02.01.20	Pg 1 'WHO checklist' changed to LocSSIP	Radiology intervention team review
02.01.19	Pg 2 wording changed to 'continuous monitoring in all sedated patients'	Radiology intervention team review
9th Jan 24	Document reviewed with no amendments	

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DETAILS OF GUIDELINE

Pre-procedure

Health care staff should complete a 'check list' and complete the Radiology LocSSIP to identify any risk factors which should include:

Identified risk factors for excessive sedation in patients include the following:

- upper GI bleeds
- severe liver disease
- obtunded consciousness (stroke or dementia)
- Acute chest infection.
- sickle cell anaemia

Patients must be given instructions on activities before and after the procedure.
Generally patients should fast for a minimum of 2 hours after consuming clear fluids and 6 hours after consuming light meals before the administration of sedation.
However in an emergency situation, the discretion should be that of the radiologist performing the procedure, as there is insufficient evidence to suggest that recent food intake is an absolute contraindication to sedation.

Appropriate consent should be obtained prior to administration of sedo-analgesia either from the patient or if the patient lack capacity from the consultant in charge of the care of the patient.

During procedure

A) Monitoring

Access - A venflon should be in situ prior to the start of the procedure.

Resuscitation equipment and sedation reversing/antagonist drugs must be available in the procedure room. Nursing / radiography staff must check that suction is functioning prior to procedure.

Staffing requirements:

- An appropriately trained nurse / radiographer in resuscitation techniques should monitor the patient's condition during the procedure.
- A radiographer competent in interventional procedures
- An appropriately trained nurse/radiographer competent to administer controlled drugs.

All patients should have baseline observations recorded at the start of the procedure and the radiologist should be made aware of any concerns.

There should be continuous monitoring in all sedated patients

All sedated patients should have oxygen throughout the procedure.

B) Sedatives and Analgesia

Medicines to be used in Radiology:

All medicines to be prescribed at the start of the procedure:

Midazolam

A maximum of 5mg should be drawn up.
It is recommended that the maximum dose should be **5mg** although the manufacturer recommended dose is 7.5mg.
Elderly patients (>70yrs) should be given **1mg** initially with a suitable pause to observe effect. Max bolus dose is 1mg in the elderly. Max dose in elderly 2mg.

Medicines should be prepared immediately prior to the procedure by the radiologist and the member of staff who will administer the drugs.
It should be drawn up in a 5ml labelled syringe from an ampoule which is 5mg in 5ml so that 1ml contains 1mg of midazolam.

Caution: Sedatives such as Benzodiazepines have no analgesic properties, and attempts to use them to control pain will result in significant overdose (BSG 2003.)

The bolus of sedation should be administered by the health professional trained in IV administration under the direct instruction of the radiologist, who will instruct on dose.

Fentanyl

If this is being co-administered this should be given before the midazolam due to its synergistic effects and again a pause, particularly in the elderly (>70years), to observe effect.

Max bolus dose is 25mcg in the elderly. Dose reduction of the midazolam may be required. Maximum dose of fentanyl should not exceed 100mcg. Max 25mcg in the elderly.

This should be drawn from a 100mcg in 2 ml vial to the 2ml mark in a 2.5ml labelled syringe so that 0.5mls contains 25mcgs.

Tramadol

The usual dose is 50mg or 100mg 4 to 6 hourly by either intramuscular or intravenous routes. Intravenous injections must be given slowly over 2–3 minutes. The dose should be adjusted according to the severity of the pain and the response.

For post-operative pain, an initial bolus of 100mg is administered. During the 60 minutes following the initial bolus, further doses of 50mg may be given every 10-20 minutes, up to a total dose of 250mg including the initial bolus. Subsequent doses should be 50mg or 100mg 4- 6 hourly up to a total daily dose of 400mg.

Care should be taken when treating patients with respiratory depression, or if concomitant CNS depressant drugs are being administered, or if the recommended dosage is significantly exceeded, as the possibility of respiratory depression cannot be excluded in these situations. At therapeutic doses respiratory depression has infrequently been reported.

Reversal Agents

Indications:

- Oxygen saturation <90% on pulse oximetry – *this is dangerous and requires immediate intervention*
- Deep sedation (unarousable)
- Slow recovery after procedure
- Significant co-morbidities
- Risk of aspiration
- Patients who are restless or violent following sedation - can improve by reversing the sedation.

PLEASE NOTE:

THE MEDICAL EMERGENCY TEAM (2222) MUST BE CALLED FOR EMERGENCY APNOEA AND DESATURATION / AIRWAY COMPROMISE.

Reversal agents must be prescribed prior to the start of the procedure

Reverse midazolam with flumazenil:

1) Administer flumazenil 200mcg over 15s

2) Then a further 100mcg IV at 60seconds interval if required

3) Maximum dose should be 1mg

The half-life of Flumazenil is approximately 50 minutes. The elimination time for Midazolam is approx. 4-5 hours, allowing the possibility of resedation after one hour.

Reverse opiates with naloxone:

1) Administer naloxone 200mcg IV as bolus

2) Further increments 100-200mcg IV can be given every 2 min according to response.

Note naloxone has a short half-life.

Post procedure Guidance

Clinical monitoring must be continued into the recovery area and post procedure document provided with instructions for nursing staff.

Day case patients should be accompanied home by a responsible adult who should then stay with them for at least 12 hours if they live alone.

Clear written instructions should be given to this person as to what to do and whom to contact in event of any problems arising.

It is recommended that patients who have been sedated with an intravenous benzodiazepine do not drive a car, operate machinery, sign legal documents or drink alcohol for 24 hours.

MONITORING TOOL

Radiologists will keep full records of all radiology procedures performed including complication.

Audits should be carried out at regular intervals and these should be repeated to ensure practice is compliant with national guidelines. Annual audits are recommended. Radiology staff are responsible for implementing the audits; however it is the responsibility of all staff to ensure audits are being performed and progress monitored.

Review of audit data to be discussed at Radiology directorate governance meetings and acted upon as appropriate.

REFERENCES

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APPENDIX 1

Midazolam side-effects: increased appetite, jaundice, hypotension, cardiac arrest, heart rate changes, anaphylaxis, thrombosis, laryngospasm, bronchospasm, respiratory depression and

respiratory arrest (particularly with high doses or on rapid injection) drowsiness, confusion, ataxia, amnesia, headache, euphoria, hallucinations, fatigue, dizziness, vertigo, involuntary movements, paradoxical excitement and aggression (especially in children and elderly) dysarthria, urinary retention, incontinence, changes in libido; blood disorders; muscle weakness; visual disturbances; salivation changes; skin reactions; on intravenous injection, pain, thrombophlebitis.

***Opioid side effects*:** most common – nausea, vomiting, constipation and drowsiness. Large doses produce respiratory depression and hypotension.

Tramadol:
Contraindications: Acute respiratory depression; comatose patients; head injury (opioid analgesics interfere with pupillary responses vital for neurological assessment); raised intracranial pressure (opioid analgesics interfere with pupillary responses vital for neurological assessment); risk of paralytic ileus
Side effects: **most common –** as above (opioid side effects)

Flumazenil side effects: nausea, vomiting and flushing; if awakening is too rapid, agitation, anxiety and fear, transient increase in blood pressure and heart rate in intensive care patients; very rarely convulsions (particularly in epileptics) (BNF 2007).
Cautions: Epileptics who have received prolonged benzodiazepine therapy are at risk of convulsions.
Contraindication: life threatening condition (for example: intracranial pressure, status epilepticus).

Naloxone side effects: hypotension, hypertension, ventricular tachycardia and fibrillation, dyspnoea, pulmonary oedema, and cardiac arrest

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