**Audit on safe use of Hyoscine-N-butyl bromide (Buscopan) in patients with significant pre-existing cardiac conditions for radiologic procedures**

**Descriptor:**

Audit on safe use of Hyoscine-N-butyl bromide for radiologic procedures

**Background:**

Hyoscine-N-butyl bromide (Buscopan) is a medication commonly administered to facilitate image acquisition during radiologic studies. The antimuscarinic properties of Buscopan allow it to reduce bowel motion-artifacts, to achieve adequate bowel distension in enterographic and colonographic procedures, and to reduce tubal spasm in hysterosalpingography.

Despite its routine use in clinical and radiologic procedures, Buscopan is not without risks. Buscopan’s antimuscarinic properties and known inhibitory effects on the parasympathetic nervous system can result in significant tachycardia, hypotension, and myocardial infarct [1].  Reports from the Australian Therapeutic Goods Administration (TGA) and New Zealand’s Centre for Adverse Reaction Monitoring (CARM) have reported 28 cases and 9 cases of adverse cardiac events from the years 2013-2017 respectively [2,3]. Following 8 deaths of patients in the United Kingdom who received parenteral Buscopan, The Royal College of Radiologists (RCR) and British Society of Gastrointestinal & Abdominal Radiology (BSGAR) issued a joint statement on the safe use of Buscopan in patients with pre-existing cardiac conditions [4].

## The Cycle

**The standard:**

As per the joint BSGAR and RCR guidance on Buscopan:

1. Enquiry as to the presence of any of the following, as these would typically result in Buscopan being withheld:

• Recent acute coronary syndrome, including myocardial infarction and unstable angina

• Uncontrolled cardiac failure

• Cardiac tachyarrhythmia

2. Radiologists evaluating the risk-benefit ratio, in conjunction with Clinicians when necessary, on a case by case basis to determine whether the potential for improved diagnostic performance outweighs the risk of Buscopan injection.

3. Close observation of patients during and immediately after procedures.

4. The consideration of accurate documentation of decisions in pre/post procedure checklists, RIS (Radiology Information System) and Radiological reports for example

Remarks: A time period of post myocardial infarct of one month will be utilized for adequate margin of safety in view of the usual timeline of post-myocardial infarct complications with arrhythmic complications and structural complications of myocardial infarct occurring within 3 days and 1 month, respectively [5]. Furthermore, cardiac structural and remodeling changes have been known to occur up to several weeks post-infarction [6].

**Target:**

A 3-month audit period with 100% compliance to pre-administration and post-procedural checklists as well as accurate documentation of decisions in reports.

## Assess local practice

**Indicators:**

The percentage of examinations (MR pelvis, prostate, rectum, colonography, enteroclysis, enterography, CT colonography, CT enterography, Barium enema, Hysterosalpingogram) in which Buscopan was administered with clear and accurate documentation of the aforementioned items.

**Data items to be collected:**

1. Total number of examinations in a 3-6 month timeframe in which Buscopan was administered.

2. For such cases, was pre-administration checklist filled out? Were all major contraindications of Buscopan excluded before adminstration?

For high-risk patients:

3. Was there adequate RIS documentation of such consideration of benefit outweighing risk regarding Buscopan administration?

4. Was monitoring provided during and immediately after procedure, including cardiac monitoring and vitals?

5. Was there accurate documentation of medication administration, post-procedural patient condition, and any adverse events in the radiology information system (RIS) or radiologist report?

**Suggested number:**

All examinations where Buscopan are given in a 3-month period will be audited. If less than 50 incidents of Buscopan administration occur within a 3-month period, 50 consecutive cases will be utilized.

**Suggestions for change if target not met:**

1. Publicize importance of safe use of Buscopan and safety checklists through communication of written materials to radiography staff, nursing staff and radiologists. Communication during departmental meetings.

2. RIS template to facilitate ease of documentation thus promoting adherence.

3. Reaudit in 3-6 months after intervention with continued identification of possible areas of improvement.

4. Continue the audit spiral to ensure sustained compliance.

**Resources:**

1. Centralized nursing or pharmacologic records to log instances of Buscopan administration.

2. Centralized storage of copies of hardcopy completed checklists OR Radiology information system (RIS) note taking section summarizing completion of checklists. RIS notes or report documenting patient monitoring during/after examination for high risk patients.

3. RIS template to facilitate documentation in radiology reports.

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**Published Date:**

Wednesday 6 September 2023

**Last Reviewed:**

Thursday 16 March 2023