National Institute for Health and Care Excellence

4-year surveillance (2016) – Sickle cell disease: managing acute painful episodes in hospital (2012) NICE guideline CG143

Appendix A: Summary of new evidence from surveillance

Individualised assessment at presentation

143 – 01 How should an acute painful sickle cell episode be managed using pharmacological interventions?

Recommendations derived from this question

1.1.1 Treat an acute painful sickle cell episode as an acute medical emergency. Follow locally agreed protocols for managing acute painful sickle cell episodes and/or acute medical emergencies that are consistent with this guideline.

1.1.2 Throughout an acute painful sickle cell episode, regard the patient (and/or their carer) as an expert in their condition, listen to their views and discuss with them:

- the planned treatment regimen for the episode
- treatment received during previous episodes
- any concerns they may have about the current episode
- any psychological and/or social support they may need

1.1.3 Assess pain and use an age-appropriate pain scoring tool for all patients presenting at hospital with an acute painful sickle cell episode.

1.1.4 Offer analgesia within 30 minutes of presentation to all patients presenting at hospital with an acute painful sickle cell episode (see also recommendations 1.1.7 to 1.1.11).

1.1.5 Clinically assess all patients presenting at hospital with an acute painful sickle cell episode, including monitoring of:

- blood pressure
- oxygen saturation on air (if oxygen saturation is 95% or below, offer oxygen therapy)
- pulse rate
- respiratory rate
- temperature.

Surveillance decision

No new information was identified at any surveillance review.

143 – 02 What clinical signs and symptoms should be used to identify patients who are likely to have acute complications associated with an acute painful sickle episode?

Recommendations derived from this question

1.1.6 Assess all patients with sickle cell disease who present with acute pain to determine whether their pain is being caused by an acute painful sickle cell episode or whether an alternative diagnosis is possible, particularly if pain is reported as atypical by the patient.

Surveillance decision

No new information was identified at any surveillance review.

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143 – 03 What information do people need during an acute painful sickle cell episode?

Recommendations derived from this question

1.1.2 Throughout an acute painful sickle cell episode, regard the patient (and/or their carer) as an expert in their condition, listen to their views and discuss with them:

- the planned treatment regimen for the episode
- treatment received during previous episodes
- any concerns they may have about the current episode
- any psychological and/or social support they may need

Surveillance decision

No new information was identified at any surveillance review.

Primary analgesia

143 – 04 How should an acute painful sickle cell episode be managed using pharmacological interventions?

Recommendations derived from this question

1.1.7 When offering analgesia for an acute painful sickle cell episode:

- ask about and take into account any analgesia taken by the patient for the current episode before presentation
- ensure that the drug, dose and administration route are suitable for the severity of the pain and the age of the patient
- refer to the patient's individual care plan if available.

1.1.8 Offer a bolus dose of a strong opioid by a suitable administration route, in accordance with locally agreed protocols for managing acute painful sickle cell episodes, to:

- all patients presenting with severe pain
- all patients presenting with moderate pain who have already had some analgesia before presentation.

1.1.9 Consider a weak opioid as an alternative to a strong opioid for patients presenting with moderate pain who have not yet had any analgesia.

1.1.10 Offer all patients regular paracetamol and NSAIDs (non-steroidal anti-inflammatory drugs) by a suitable administration route, in addition to an opioid, unless contraindicated.*

1.1.11 Do not offer pethidine for treating pain in an acute painful sickle cell episode.

*The use of NSAIDs should be avoided during pregnancy, unless the potential benefits outweigh the risks. NSAIDs should be avoided for treating an acute painful sickle cell episode in women in the third trimester. See the 'British National Formulary' for details of contraindications

Surveillance decision

No new information was identified at any surveillance review.

Reassessment and ongoing management

143 – 05 How should an acute painful sickle cell episode be managed using pharmacological interventions?

Recommendations derived from this question

1.1.12 Assess the effectiveness of pain relief:

- every 30 minutes until satisfactory pain relief has been achieved, and at least every 4 hours thereafter
- using an age-appropriate pain scoring tool
- by asking questions, such as:

– How well did that last painkiller work?

– Do you feel that you need more pain relief?

1.1.13 If the patient has severe pain on reassessment, offer a second bolus dose of a strong opioid (or a first bolus dose if they have not yet received a strong opioid).

1.1.14 Consider patient-controlled analgesia if repeated bolus doses of a strong opioid are needed within 2 hours. Ensure that patient-controlled analgesia is used in accordance with locally agreed protocols for managing acute painful sickle cell episodes and/or acute medical emergencies.

1.1.15 Offer all patients who are taking an opioid:

- laxatives on a regular basis
- anti-emetics as needed
- antipruritics as needed.

1.1.16 Monitor patients taking strong opioids for adverse events, and perform a clinical assessment (including sedation score):

- every 1 hour for the first 6 hours

- at least every 4 hours thereafter.

1.1.17 If the patient does not respond to standard treatment for an acute painful sickle cell episode, reassess them for the possibility of an alternative diagnosis.

1.1.18 As the acute painful sickle cell episode resolves, follow locally agreed protocols for managing acute painful sickle cell episodes to step down pharmacological treatment, in consultation with the patient.

Surveillance decision

No new information was identified at any surveillance review.

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143 – 06 What clinical signs and symptoms should be used to identify patients who are likely to have acute complications associated with an acute painful sickle episode?

Recommendations derived from this question

1.1.17 If the patient does not respond to standard treatment for an acute painful sickle cell episode, reassess them for the possibility of an alternative diagnosis.

Surveillance decision

No new information was identified at any surveillance review.

Possible acute complications

143 – 07 What clinical signs and symptoms should be used to identify patients who are likely to have acute complications associated with an acute painful sickle episode?

Recommendations derived from this question

1.1.19 Be aware of the possibility of acute chest syndrome in patients with an acute painful sickle cell episode if any of the following are present at any time from presentation to discharge:

- abnormal respiratory signs and/or symptoms
- chest pain
- fever
- signs and symptoms of hypoxia:
  - oxygen saturation of 95% or below or
  - an escalating oxygen requirement.

1.1.20 Be aware of other possible complications seen with an acute painful sickle cell episode, at any time from presentation to discharge, including:

- acute stroke
- aplastic crisis
- infections

- osteomyelitis
- splenic sequestration

Surveillance decision

No new information was identified at any surveillance review.

Management of underlying pathology

143 – 08 How should an acute painful episode be managed using pharmacological interventions?

Recommendations derived from this question

1.1.21 Do not use corticosteroids in the management of an uncomplicated acute painful sickle cell episode.

Surveillance decision

This review question should not be updated.

Magnesium

2-year surveillance summary
A randomised, double-blind, placebo-controlled trial[2] of magnesium sulphate in 104 children aged 4-18 years old with acute painful sickle cell episodes found that magnesium sulphate does not reduce the length of stay in hospital, pain scores, or cumulative dose of analgesics when compared to placebo.

4-year surveillance summary
A randomised, double-blind, placebo-controlled trial[1] was conducted in 208 children and adolescents aged 4-21 years comparing intravenous magnesium compared with saline placebo. The study found that the addition of magnesium (40 mg/kg) did not shorten length of stay, reduce opioid use or improve the quality of life in children hospitalised with sickle cell pain crisis.

Topic expert feedback
Topic experts have identified the randomised, double-blind, placebo-controlled trial[1] noted above.

Impact statement
New evidence is unlikely to impact on guideline recommendations as the study showed no benefit compared to the placebo.

New evidence is unlikely to change guideline recommendations.

Low-molecular-weight heparins

2-year surveillance summary
No relevant evidence was identified.

4-year surveillance summary
A systematic review[3] searched for randomised control trials that assessed the effect of low-molecular-weight heparins in the management of vaso-occlusive crises in patients with sickle cell. The review identified 2 studies, comprising 287 participants, which neither support nor refute the use of low-molecular-weight heparins for management of painful episodes. One study, reported that tinzaparin (low molecular weight heparin) lead to a reduction in pain severity ($P < 0.01$). Participants treated with

tinzaparin also had statistically significantly fewer hospitalisation days than participants in the group treated with placebo, with a mean difference of -4.98 days (95% confidence interval -5.48 to -4.48). The second study used dalteparin and found that pain intensity reduced compared to placebo by -1.30 points on the visual analogue scale (95% confidence interval -1.60 to -1.00). The second study was downgraded due to low quality of evidence.

Topic expert feedback
No relevant evidence was identified.

Impact statement
New evidence is unlikely to impact on guideline. This is because the authors of the systematic review report that due to the risk of bias and the quality of evidence, the evidence base for the use of low molecular weight heparins for the management of sickle cell painful episode is incomplete.

New evidence is unlikely to change guideline recommendations.

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143 – 09 Which non-pharmacological interventions should be used in the management of an acute painful sickle cell episode?

Recommendations derived from this question

1.1.22 Encourage the patient to use their own coping mechanisms (for example, relaxation techniques) for dealing with acute pain.

Surveillance decision

No new information was identified at any surveillance review.

Non-pharmacological interventions

143 – 10 How should an acute painful episode be managed using non-pharmacological interventions?

Recommendations derived from this question

1.1.22 Encourage the patient to use their own coping mechanisms (for example, relaxation techniques) for dealing with acute pain.

Surveillance decision

No new information was identified at any surveillance review.

Setting and training

143 – 11 Where should an acute painful sickle cell episode be managed?

Subquestion

What skills and knowledge are required by healthcare professionals and teams providing care?

Recommendations derived from this question

1.1.23 All healthcare professionals who care for patients with an acute painful sickle cell episode should receive regular training, with topics including:

- pain monitoring and relief
- the ability to identify potential acute complications
- attitudes towards and preconceptions about patients presenting with an acute painful sickle cell episode.

1.1.24 Where available, use daycare settings in which staff have specialist knowledge and training for the initial assessment and treatment of patients presenting with an acute painful sickle cell episode.

1.1.25 All healthcare professionals in emergency departments who care for patients with an acute painful sickle cell episode should have access to locally agreed protocols and specialist support from designated centres.

1.1.26 Patients with an acute painful sickle cell episode should be cared for in an age-appropriate setting.

1.1.27 For pregnant women with an acute painful sickle cell episode, seek advice from the obstetrics team and refer when indicated.

Surveillance decision

No new information was identified at any surveillance review.

Discharge Information

143 – 12 What information do people need during an acute painful sickle cell episode?

Recommendations derived from this question

1.1.28 Before discharge, provide the patient (and/or their carer) with information on how to continue to manage the current episode, including:

- how to obtain specialist support
- how to obtain additional medication
- how to manage any potential side effects of the treatment they have receive

Surveillance decision

No new information was identified at any surveillance review.

Research recommendations

Prioritised research recommendations

These research recommendations were deemed priority areas for research by the Guideline Committee, therefore at this 4-year surveillance review time point a decision will be taken on whether to retain the research recommendations or stand them down.

RR – 01 For patients with an acute painful sickle cell episode, what are the effects of different opioid formulations, adjunct pain therapies and routes of administration on pain relief and acute sickle cell complications?

New evidence was found but an update is not planned because as the evidence base is insufficient. This research recommendation will be considered again at the next surveillance point.

RR – 02 Are therapeutic doses of low-molecular-weight heparin (LMWH) effective, compared with prophylactic doses of LMWH, in reducing the length of stay in hospital of patients with an acute painful sickle cell episode?

New evidence was found but an update is not planned because as the evidence base is insufficient. This research recommendation will be considered again at the next surveillance point.

RR – 03 For patients with an acute painful sickle cell episode, are psychological interventions, in conjunction with standard care, effective in providing pain relief?

No new relevant evidence has been found since the research recommendation was first made. Therefore it is proposed to remove this research recommendation from the NICE research recommendations database and NICE version of the guideline.

RR – 04 For patients with an acute painful sickle cell episode, are non-pharmacological interventions, such as massage, effective in improving their recovery from the episode?

No new information was identified at any surveillance review. However, after topic expert feedback it is proposed to keep this research recommendation.

RR – 05 Are daycare units cost effective compared with emergency settings for treating patients with an acute painful sickle cell episode?

No new evidence was found but it is not expected that this research recommendation would be answered by systematic reviews or RCTs. Therefore it is proposed to keep this research recommendation.

References

1. Brousseau DC, Scott JP, Badaki-Makun O et al. (1-10-2015) A multicenter randomized controlled trial of intravenous magnesium for sickle cell pain crisis in children. Blood 126:1651-1657.

2. Goldman RD, Mounstephen W, Kirby-Allen M et al. (2013) Intravenous Magnesium Sulfate for Vaso-occlusive Episodes in Sickle Cell Disease. Pediatrics 132:e1634-e1641.

3. van Zuuren EJ and Fedorowicz Z. (2015) Low-molecular-weight heparins for managing vaso-occlusive crises in people with sickle cell disease. [Review][Update of Cochrane Database Syst Rev. 2013;6:CD010155; PMID: 23760785]. Cochrane Database of Systematic Reviews 12:CD010155.