South Australian Paediatric Clinical Practice Guidelines

Propranolol in Infantile Haemangioma

Note:

This guideline provides advice of a general nature. This statewide guideline has been prepared to promote and facilitate standardisation and consistency of practice, using a multidisciplinary approach. The guideline is based on a review of published evidence and expert opinion.

Information in this statewide guideline is current at the time of publication.

SA Health does not accept responsibility for the quality or accuracy of material on websites linked from this site and does not sponsor, approve or endorse materials on such links.

Health practitioners in the South Australian public health sector are expected to review specific details of each patient and professionally assess the applicability of the relevant guideline to that clinical situation.

If for good clinical reasons, a decision is made to depart from the guideline, the responsible clinician must document in the patient's medical record, the decision made, by whom, and detailed reasons for the departure from the guideline.

This statewide guideline does not address all the elements of clinical practice and assumes that the individual clinicians are responsible for discussing care with consumers in an environment that is culturally appropriate and which enables respectful confidential discussion. This includes:

- The use of interpreter services where necessary,
- Advising consumers of their choice and ensuring informed consent is obtained,
- Providing care within scope of practice, meeting all legislative requirements and maintaining standards of professional conduct, and
- Documenting all care in accordance with mandatory and local requirements

Explanation of the aboriginal artwork:
The aboriginal artwork used symbolises the connection to country and the circle shape shows the strong relationships amongst families and the aboriginal culture. The horse shoe shape design shown in front of the generic statement symbolises a woman and those enclosing a smaller horse shoe shape depicts a pregnant woman. The smaller horse shoe shape in this instance represents the unborn child. The artwork shown before the specific statements within the document symbolises a footprint and demonstrates the need to move forward together in unison.

Cultural safety enhances clinical safety.

To secure the best health outcomes, clinicians must provide a culturally safe health care experience for Aboriginal children, young people and their families. Aboriginal children are born into strong kinship structures where roles and responsibilities are integral and woven into the social fabric of Aboriginal societies.

Australian Aboriginal culture is the oldest living culture in the world, yet Aboriginal people currently experience the poorest health outcomes when compared to non-Aboriginal Australians.

It remains a national disgrace that Australia has one of the highest youth suicide rates in the world. The over representation of Aboriginal children and young people in out of home care and juvenile detention and justice system is intolerable.

The cumulative effects of forced removal of Aboriginal children, poverty, exposure to violence, historical and transgenerational trauma, the ongoing effects of past and present systemic racism, culturally unsafe and discriminatory health services are all major contributors to the disparities in Aboriginal health outcomes.

Clinicians can secure positive long term health and wellbeing outcomes by making well informed clinical decisions based on cultural considerations.

The term 'Aboriginal' is used to refer to people who identify as Aboriginal, Torres Strait Islanders, or both Aboriginal and Torres Strait Islander. This is done because the people indigenous to South Australia are Aboriginal and we respect that many Aboriginal people prefer the term 'Aboriginal'. We also acknowledge and respect that many Aboriginal South Australians prefer to be known by their specific language group(s).

Public-I4-A2

Government of South Australia
SA Health

Purpose and Scope of PCPG

This guideline is aimed at medical staff who are involved in the treatment of children with infantile haemangiomas. These guidelines are based on anecdotal and consensus opinion, with support of a recently published randomised, controlled study.

Flowchart

Management for the use of Propranolol in infantile haemangiomas

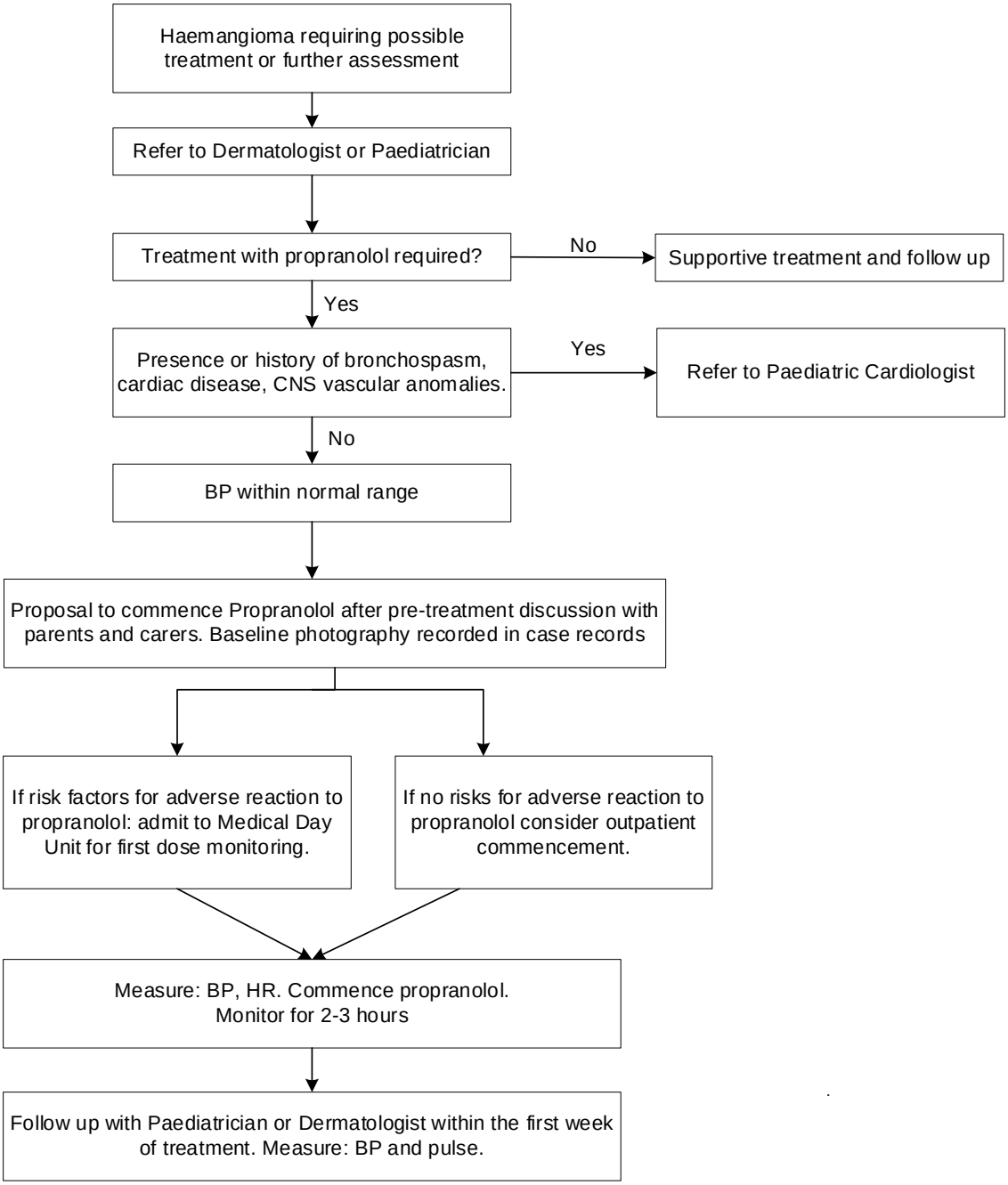

Table of Contents

Purpose and Scope of PCPG 2
Flowchart 2
Management for the use of Propranolol in infantile haemangiomas 2
Table of Contents 3
Summary of Practice Recommendations 3
Important points 3
Abbreviations 3
Definitions 3
Introduction 4
Assessment 5
Management 5
References 6
Acknowledgements 7
Document Ownership & History 7

Summary of Practice Recommendations

Important points

- Haemangiomas usually do not require treatment, however treatment is required if:
  - the location is life-threatening (such as airway obstruction or cardiac failure), or
  - there are local complications, or
  - there are cosmetic concerns (especially lip, nose and ear sites), or
  - there are functional risks such as potential anatomical distortion and scarring[1].
- Patients must be reviewed by a paediatrician or dermatologist before commencing propranolol.
- Patients must be reviewed by a paediatrician or dermatologist during the first 7 days of treatment**.**

Abbreviations

RICH	rapidly involuting congenital haemangioma
NICH	non-involuting congenital haemangioma
P	posterior cranial fossa abnormalities
H	haemangioma
A	arterial anomalies
C	cardiac including aortic coarctation
E	eye
S	sternal and midline clefts

Definitions

Infantile haemangioma	common soft tissue tumour in children aged less than 1 year

Introduction

- Infantile haemangiomas are the most common soft tissue tumour in children aged less than 1 year and occur in 4-10% of infants.
- They are more common in female and premature infants.
- They often are not present at birth but appear in the first weeks of life.
- In the first 3 to 6 months of life, haemangiomas may grow quickly, before entering a stabilisation phase. Subsequently, haemangiomas begin to spontaneously resolve and regression is complete in 60% of 4 year olds and 76% of 7 year olds.
- Propranolol has become accepted as an effective and relatively safe treatment option. This guideline intends to standardise this treatment modality.

Synonyms of infantile haemangioma include:

- haemangioma of infancy
- strawberry naevus.

Subgroups include congenital haemangiomas:

- RICH = rapidly involuting congenital haemangioma
- NICH = non-involuting congenital haemangioma.

It is critical to distinguish infantile haemangioma from the group of birthmarks classified as vascular malformations4. Forms of vascular malformations include:

- capillary (“port-wine stain”)
- venous
- lymphatic
- mixed
- arterio-venous.

Vascular malformations are usually well-formed at birth, do not involute with time, and have not been shown to respond to treatment with propranolol.

PHACES syndrome is a rare association of infantile haemangioma–

P - posterior cranial fossa abnormalities

H - haemangioma

A - arterial anomalies

C - cardiac including aortic coarctation

E - eye

S - sternal and midline clefts

Due to potential vascular, cerebral circulation and cardiac involvement propranolol has been shown to be associated with additional risks in these patients, particularly ischaemic cerebral events.

Assessment

The patient needs to be assessed to determine if treatment is necessary. Treatment may be required if there are:

- potentially life- or function- threatening problems including cardiac failure, respiratory distress or ocular compromise
- potential anatomical distortion and scarring, especially lip, nose and ear sites
- cosmetic considerations.
- The presence of a history of bronchospasm, cardiac disease, CNS vascular anomalies (suspected PHACE syndrome, large cervicofacial haemangiomas) need to be excluded or further investigated before initiating treatment with propranolol.
- All patients should be reviewed by a dermatologist and paediatrician.
- For small and superficial infantile haemangiomas which require treatment topical beta-blocker (most commonly timolol drops or gel formulation) may be effective and considered as an alternative to oral propranolol.

Management

Initial management

Baseline investigations

- Blood pressure (BP)
- Electrocardiograph (ECG) if clinically indicated due to risk factors
- A Paediatric Cardiologist should be consulted if any findings are concerning
- Pre-treatment and follow-up clinical photography is recommended to provide an objective assessment of progress and response to treatment.
- Propranolol can be commenced at a dose of 2mg/kg/day in 2 divided doses, however the dose may be commenced at 1mg/kg/day before increasing to 2mg/kg/day in infants less than 2 months of age due to an increased risk of hypoglycaemia. In patients at risk of PHACES syndrome special monitoring and lower initial dosing schedules should be considered
- Oral steroids may rarely be used concurrently with propranolol in consultation with a paediatric dermatologist.
- ALL patients commencing propranolol should be observed under medical supervision following administration of the first dose. A decision of whether this is undertaken in consulting rooms, outpatient department or as a hospital inpatient should be based on risks and potential consequences of cardiovascular or metabolic in the event of propranolol adverse reaction.
- Monitor heart rate, blood pressure and observe for bronchospasm hourly for 3 hours after the first dose.
- During the 3 hours of monitoring perform blood glucose assessment if there are any concerns regarding hypoglycaemia.
- Consider monitoring with every mg/kg increase in dosage if clinical concern, or in patients at increased risk of adverse effects.
- Neonates aged 0-4 weeks corrected, small for gestational age, weight less than 2.5kg or with clinical concerns (ie at risk of hypoglycaemia) should be admitted as inpatient/outpatient for observation at initiation of therapy.
- If significant abnormality occurs, cease propranolol and consult with a paediatrician.

Ongoing management

- An appointment with a paediatrician or dermatologist is required during the first 7 days of treatment. Enquiry regarding any adverse effect of propranolol should be undertaken.
- BP, pulse should be assessed and documented on review.
- Treatment often is required to continue up to 1 year of age, as the haemangioma may begin to proliferate after treatment ceases.
- Propranolol may be weaned over weeks to monitor potential cardiovascular and growth rebound consequences.
- If infants receiving propranolol for infantile haemangioma have reduced food intake, fever or significant respiratory illness propranolol should be temporarily withheld until recovery.
- Hypoglycemia occurs infrequently and can be minimized with appropriate education of caregivers on the importance of administering propranolol during or immediately after a feeding and of temporarily withdrawing therapy during periods of fasting (including poor oral intake because of illness or before general anesthesia) or vomiting.
- Patients with haemangioma receiving propranolol should be monitored in consultation with a paediatric dermatologist who will guide further management if treatment with propranolol is ineffective.
- Criteria for discontinuation include:
    1. adverse effects - cardiac, hypoglycaemia, behavioural (sleep / unsettled)
    2. poor response - progressive growth or severe ulceration
    3. planned - weaning of the therapy after 6 - 12 months of treatment.

References

1. Léauté-Labrèze et al A Randomized, Controlled Trial of Oral Propranolol in Infantile Hemangioma. N Engl J Med 2015: 372;(8); 735-46.
2. Pavlakovic et al. Hyperkalemia Complicating Propranolol Treatment of an Infantile Hemangioma. Pediatrics 2010;126;e1589-e1593.
3. Darrow D et al. Diagnosis and Management of Infantile Hemangioma.Pediatrics 2015 :136(4);e1061-1104.
4. Mulliken JB, Glowacki J. Hemangiomas and vascular malformations in infants and children: a classification based on endothelial characteristics. Plast Reconstr Surg. Mar 1982;69(3):412-22.
5. Liu LS, Sokoloff D, Antaya RJ. Twenty-four-hour hospitalization for patients initiating systemic propranolol therapy for infantile hemangiomas – is it indicated? Pediatr Dermatol 2013; 30: 554-560.
6. Liens L, Orchard D. Haemangiomas – Treating those that won't fade away. Medicine Today 2018; 19(6): 30-34.
7. Léauté-Labrèze et al. Propranolol for Severe Hemangiomas of Infancy. The New England Journal of Medicine. , published online June 12 2008.
8. Moyakine A et al. Propranolol treatment of infantile hemangioma (IH) is not associated with developmental risk or growth impairment at age 4 years. J Am Acad Dermatol 2016; 75: 59-63.e1.
9. Moehrle M et al. Topical timolol for small hemangiomas of infancy. Pediatr Dermatol 2013; 30:245-249.
10. Smithson SL et al. Consensus statement for the treatment of infantile haemangiomas with propranolol. Australas.J. Dermatol. 2017:58(2);155-9.
11. Krowchuk D et al. Clinical Practice Guideline for the Management of Infantile Hemangiomas.Pediatrics. 2019:143(1);1-28.

Acknowledgements

The South Australian Paediatric Clinical Practice Guidelines gratefully acknowledge the contribution of clinicians and other stakeholders who participated throughout the guideline development process particularly:

Write Group Lead
Lachlan Warren

Write Group Members
Myfanwy Geyer
Carol La Vanda

SAPCPG Reference Group Members

Document Ownership & History

Developed by: SA Child & Adolescent Health Community of Practice
Contact: Health.PaediatricClinicalGuidelines@sa.gov.au
Endorsed by: SA Safety and Quality Strategic Governance Committee
Next review due: 04/07/2024
ISBN number: 978-1-74243-910-5
PDS reference: CG318
Policy history: Is this a new policy (V1)? **N**
Does this policy amend or update and existing policy? **Y**
If so, which version? **V1**
Does this policy replace another policy with a different title? **N**
If so, which policy (title)?

Approval Date	Version	Who approved New/Revised Version	Reason for Change
04/07/19	V2	SA Safety and Quality Strategic Governance Committee	Formally reviewed in line with 1-5 year scheduled timeline for review.
21/08/13	V1	SA Safety and Quality Strategic Governance Committee	Original approved version