

Cleft Lip v.1: Pre-Operative

[Executive Summary](#)

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PHASE I

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! Candidates for NasaoAlveolar Molding (NAM)

- Unilateral or bilateral complete cleft lip and palate
- Any cleft with significant nasal deformity

! Reassess NAM if:

- Poor feeding
- Poor weight gain
- Respiratory issues or obstructive sleep

Inclusion Criteria

- Patients with unrepaired cleft lip (with or without cleft palate) referred to Craniofacial Center

Exclusion Criteria

- Patients with previous cleft lip repair
- Patients with cleft palate only

First Contact:

Family Service Coordinator call and estimation of patient needs

Prenatal or Pre-Adoption?

Yes

Prenatal/Pre Adoption Visit

- Pediatrician
- Social Work
- Nurse
- +/- Plastic Surgeon

! [NAM candidate](#)

First Patient Visit (s)

- **Pediatrician:** health status, other abnormalities, breathing, feeding, growth assessments
- **Social Work**
- **Nurse:** Feeding, lip taping, follow up weight checks (phone check in)
- **Photographer**
- **Plastic Surgeon:** surgical plan, decisions on presurgical molding
- **Orthodontist evaluation if:**
 1. Cleft lip and cleft palate
 2. Cleft lip and cleft of the gumline

! **Pre-op checklist:**
Pediatrician activates & RN completes care progression

Presurgical Molding?

Yes

No Presurgical NAM

Presurgical NAM

Return Visits

- **Orthodontist:**
 - Impression for NAM
 - NAM appliance delivered
 - Weekly visits
- **Nurse:** feeding visits x 1st 2 NAM visits w/ appliance
- **Nurse/MA:** phone check ins
- **Dietitian:** if not gaining weight
- **OT/PT:** if feeding difficulties
- **Plastic Surgeon:** assess surgical readiness
- **Social work:** if needed
- **Pediatrician:** if needed
- **Audiologist:** if referred newborn hearing screen or if risk factors (example: family history of hearing loss)

! [Re-assess NAM](#)

Return Visits

- **Nurse:** visits to assist in feeding if needed, Nursing/MA Phone check ins
- **Nurse:** visit at 6-8 weeks of age if cleft palate
- **Dietitian:** evaluation if not gaining weight
- **OT/PT:** if feeding difficulties
- If performing lip taping or other non-NAM molding, assess progress
- **Social work:** if needed
- **Pediatrician:** if medical evaluation, subspecialty coordination needed
- **Audiologist:** if referred newborn hearing screen or if risk factors (example: family history of hearing loss)

Surgical plan is activated when pre-op checklist is complete

Pre-Operative Scheduling by Plastic Surgery Coordinator:

- Plan PASS Clinic
- OR and Admission
- Follow-up visits

Pre-Operative Visit

- **Plastic Surgeon:** surgical consent
- **Social Work**
- **Nurse:** Pre-Op Education
- **Pediatrician:** if medical clearance is required
- **Photographer:** Pre-operative photos

Cleft Lip v.1: Intra-Operative

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PHASE 2

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Inclusion Criteria

- Patients with unrepaired cleft lip (with or without cleft palate) referred to Craniofacial Center

Exclusion Criteria

- Patients with previous cleft lip repair
- Patients with cleft palate only

Routine OR Care

- **PACU Nurse:** Check in
- **Plastic Surgeon/Resident:** Surgical check in
- **Anesthesiologist:** Check in

OR Plan:

Anesthesia OR Plan:

- Oral intubation with cuffed straight tube secured to midline of chin
- Pre-operative cefazolin (or alternate antibiotic if allergic) with re-dosing Q3 hours
- Opioids as needed
- 1 dose of IV Ketorolac 0.5mg/kg at end of case

Surgeon OR Plan:

- Infraorbital nerve block at beginning of case
- Throat pack
- Nasal stents as needed
- Augmentation of infraorbital nerve block at end of case
- Vaseline/antibiotic ointment applied to lip

!
Inpatient
post op
checklist

Plastic Surgeon: Meets with family in surgical center

Recovery Room (PACU)

- **PACU Nurse:** Call surgical center when patient is ready for parent
- **Parent:** Early reunification and feeding in PACU
- **Anesthesiologist:** No scheduled opioid medication orders

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Cleft Lip v.1: Post-Operative

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PHASE 3

Inclusion Criteria

- Patients with unrepaired cleft lip (with or without cleft palate) referred to Craniofacial Center

Exclusion Criteria

- Patients with previous cleft lip repair
- Patients with cleft palate only

Inpatient/Surgical Unit:

Inpatient Nursing:

- Lip Cleaning
- Moist Q-tips
- Vaseline
- Nasal Stent flushes
- Pain Management
- Feeding

Discharge Readiness Assessed by Inpatient Nursing/Surgical Team:

- Taking feeds by mouth and able to support hydration/nutrition at home
- Pain well controlled with minimal or no opioid medication
- Parents comfortable with lip cleaning and stent care
- Post operative surgical follow up in place

Post op Clinic 1 Week Follow up:

- **ARNP/Plastic Surgeon:** Suture removal
- **Photographer:** Post operative images
- **Nurse:** Nasal stent exchange as planned

!
Follow up
visit Post-Op
Checklist at 1
week visit

Post-Op Clinic 4-8 weeks Follow up:

- **Plastic Surgeon:** Follow up
- If 7-8 months of age, include Pediatrician, Audiology, Speech Pathology and Otolaryngology if cleft of secondary palate

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Executive Summary

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Objective

The primary objectives of the cleft lip pathway are 1) to improve the quality, efficiency and safety of care for children with cleft lip and 2) to improve communication about cleft lip care among team members and with families. We will achieve these objectives through development of an algorithm, pathway and standard ordering processes agreed upon by the craniofacial multidisciplinary team. This project focuses on care of the infant or child with an unrepaired cleft lip (with or without cleft palate) from 1st contact with the craniofacial center through post-operative care after lip surgery. Additionally, through the CSW process, we have worked towards early feeding and parent reunification in the PACU after cleft lip repair. Our goal is to have 80% of children with unrepaired cleft lip on the pathway.

Recommendations

1. Infants undergoing primary cleft lip repair will be reunited with parents and offered early feeding in the PACU
2. Ibuprofen can be used safely for pain control in healthy infants and children older than 6 months of age who have normal renal and liver function.
3. There is not enough evidence on the safety or efficacy of ibuprofen in infants under 6 months of age to make a recommendation for or against use of ibuprofen in this age group (see clinical considerations).
4. A single IV ketorolac dose can safely be used in infants 2-6 months of age (see Seattle Children's formulary).
5. Use of infraorbital nerve blocks intra-operatively during cleft lip repair is recommended.
6. Infraorbital nerve blocks can be used intraoperatively for cleft lip repair and do not appear to substantially impact or delay oral feeding post-operatively.
7. Complications following cleft lip repair, while uncommon, are more likely to occur in children with underlying or pre-existing medical conditions and co-morbidities.
8. Monitoring for post-operative complications after cleft lip surgery is necessary to optimize patient safety and health and inform safe discharge practices.
9. We recommend early return to oral feeding after cleft lip repair, and will plan to monitor the effects on post-operative status and care.
10. There are risks associated with Nasoalveolar molding (NAM) that should be discussed when introducing the therapy.
11. For children undergoing NAM, routine re-assessment in NAM clinic is recommended.
12. Quality data is needed to inform best practices in nasal stenting.

Rationale

- Safety/Quality of care will be improved by ensuring patient readiness for surgery, optimizing pain management, and standardizing aspects of post-operative care via a pathway, checklists, and tracking complications.
- Delivery of care will be improved by reducing length of PACU admission, ensuring readiness for discharge, and avoiding re-admissions/unplanned return visits
- Engagement is grounded in the fact that the pathway has been developed by a multidisciplinary team of MDs and RNs from the OR, PACU, ambulatory and inpatient units.

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Executive Summary

We were benefited by having members of the pharmacy, PACU nursing, ward nursing, anesthesiology, mid-level provider staff, surgical staff, and CIS governors included on our team.

- Patient/Family Satisfaction will be addressed by implementing clinical standard work that will assure the highest quality of care.

Evidence

There were 24 papers included in the development of this pathway along with detailed discussions and consensus among providers in the various areas of treatment.

Implementation Items

- CIS power plan
- CIS Safety Checklists
- Cleft Lip Pathway Algorithm
- Process to allow early reunification with parents and feeding in the PACU
- Parent experience questionnaire
- Training – PACU Presentation completed by Dr. Raymond Tse for Cleft Lip Education

Metrics Plan

- Count of Inpatient/observation discharges
- Median Length of Stay
- Duration of stay in PACU
- Power plan compliance
- Average charges per case
- Readmission or Return to ER and Reason
- % of eligible patients with the checklist activated
- Opiates given Post cleft lip repair
- Antibiotics prescribed after cleft lip surgery discharge (>3 days post discharge)
- Audit Reports – Pathway Care Progression/Surgical readiness and Checklists

PDCA Plan

The CSW owner and committee will follow metrics, continue to review medical literature and make improvements to the pathway as needed.

Revision History

Date Approved: **June 2014**
Next Review Date: **June 2017**

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Executive Summary

Approved by the CSW Cleft Lip Pathway Team on June 2014

CSW Cleft Lip Pathway Team:

Craniofacial Plastic Surgery; Project Co-Owner
Craniofacial Pediatrician; Project Co-Owner
Anesthesia

Orthodontics
Pharmacy

Craniofacial Pediatrics
Pain Management CNS
Pain Management
Surgical Unit CNS
Pharmacy Informatics
Craniofacial Family Service Coordinator
Craniofacial RN
Craniofacial Nurse Practitioner
PACU CNS
Craniofacial Pediatrician
Craniofacial Dietitian
Craniofacial Surgery Coordinator

Raymond Tse, MD
Kelly Evans, MD
Karen Wong, MD
Michael Collins, MBBS, MD
Hitesh Kapadia, DDS, PhD
Thomas Neimeth, PharmD
Lindsey Seibel, PharmD
Michael Cunningham, MD, PhD
Lisa Peters, MN, RN-BC
Gary Walco, PhD
Erin Moriarty, MSN, RN
Wendy Paul, RPh
Sherilyn Grote
Dawn Leavitt, RN-BC, BSN
Bay Sittler, ARNP
Pam Christensen, MN, RN-BC, CPN
Anne Hing, MD
Cam Lanier, RD, CD
Valerie Hoffman

Clinical Effectiveness Team:

Consultant:	Jean Popalisky, DNP
Project Leader:	Jennifer Magin, MBA
KM Analyst:	James Johnson/Suzanne Spencer, MBA, MHA
CIS Informatician:	Mike Leu, MD
CIS Analyst:	Heather Marshall
Librarian:	Jamie Gray, MLS, AHIP
Program Coordinator:	Asa Herrman

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Additional Information

Candidates for Nasoalveolar Molding (NAM)

- Unilateral or bilateral complete cleft lip and palate
- Any cleft with significant nasal deformity

Reassess NAM if:

- Poor feeding
- Poor weight gain
- Respiratory issues or obstructive sleep

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Anesthesia OR Plan

Cleft Lip Anesthesia Guidelines

- **Primary** repair around 3-6 months (can be older if adopted from overseas)
- The aim is for a quick wake up with reduced pain and little agitation with quick feeding
- Intubation can be difficult if patient has associated cleft palate +/- syndrome
- **Straight Cuffed ETT** placed in center of mouth and directed towards feet. **Taped in midline** onto chin. Watch for kinking and depth of ETT. Straight connector and rolled towel under circuit to support it.
- Infraorbital block/infiltration – by attending surgeon at beginning with local.
 - **Mix 50:50 0.5% Lidocaine + 0.25% Bupivacaine = maximum dose 1ml/kg (total for whole case)**
 - If case >2 hours then re-dose infraorbital block at the end of case with 50:50 mix not to exceed max dose calculated at beginning of case = **1mg/ml**
- Intraoperative opioids - **Please inform surgeon of type and total amount of OR narcotic given.**
- Cephazolin 20mg/kg or equivalent for allergy as intraoperative antibiotic.
- Ketolorac 0.5mg/kg at end of case – please ask surgeon if OK
- Ondansetron (in older infants) if indicated.
- Extubate awake
- Propofol 0.5-1mg/kg at end of case for sevoflurane agitation
- Early feeding and maternal holding of the child. Aiming for fast discharge to floor.
- Swaddling in OR/PACU, instead of arm restraints
- Smaller **post op** doses of **PRN** narcotic and early transition to oral meds
- Oral ibuprofen if **> 6 months** post op
- **No PR acetaminophen** due to concerns for total dose. Oral acetaminophen in PACU if not contraindicated which will then be scheduled regularly on floor

Last Modified: June 18, 2014

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Evidence Ratings

We used the GRADE method of rating evidence quality. Evidence is first assessed as to whether it is from randomized trial, or observational studies. The rating is then adjusted in the following manner:

Quality ratings are *downgraded* if studies:

- Have serious limitations
- Have inconsistent results
- If evidence does not directly address clinical questions
- If estimates are imprecise OR
- If it is felt that there is substantial publication bias

Quality ratings can be *upgraded* if it is felt that:

- The effect size is large
- If studies are designed in a way that confounding would likely underreport the magnitude of the effect OR
- If a dose-response gradient is evident

Quality of Evidence:

- ★★★★ High quality
- ★★★○ Moderate quality
- ★★○○ Low quality
- ★○○○ Very low quality
- Expert Opinion (E)

Reference: Guyatt G et al. J Clin Epi 2011: 383-394

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Summary of Version Changes

- **Version 1 (6/18/2014):** Go live

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Medical Disclaimer

Medicine is an ever-changing science. As new research and clinical experience broaden our knowledge, changes in treatment and drug therapy are required.

The authors have checked with sources believed to be reliable in their efforts to provide information that is complete and generally in accord with the standards accepted at the time of publication.

However, in view of the possibility of human error or changes in medical sciences, neither the authors nor Seattle Children's Healthcare System nor any other party who has been involved in the preparation or publication of this work warrants that the information contained herein is in every respect accurate or complete, and they are not responsible for any errors or omissions or for the results obtained from the use of such information.

Readers should confirm the information contained herein with other sources and are encouraged to consult with their health care provider before making any health care decision.

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Bibliography

Literature Search

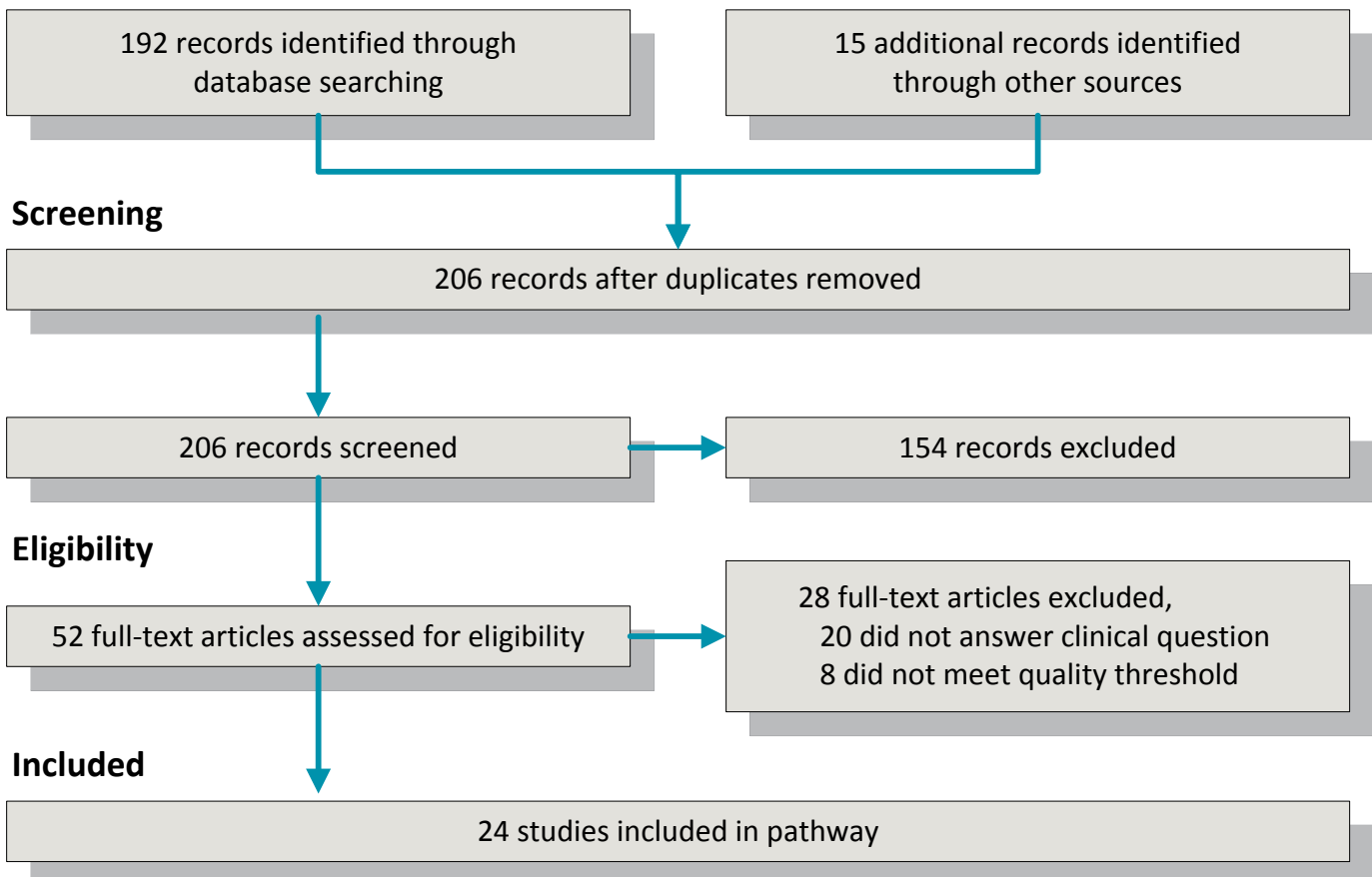
Studies were identified by searching electronic databases using search strategies developed and executed by a medical librarian. Two searches were executed. The scout search focusing on cleft lip was performed on July 16th and 17th, 2013 in the following databases: on the Ovid platform – Medline (1946 to date), Cochrane Database of Systematic Reviews (2005 – June 2011); elsewhere – Embase, National Guidelines Clearinghouse, Clinical Evidence, and TRIP. Retrieval was limited to literature from 1993-forward and children 0-18. Two secondary searches were performed on December 9th, 2013 and January 23rd, 2014 respectively. For this search the Cochrane Central Register of Controlled Trials was included along with Medline and Embase. The search focused on clinical questions specific to feeding, complications and pain management. Limits of English language and infants or children under 12 were used depending on the question. Additional articles were identified and added by the team throughout the process.

In Medline, appropriate Medical Subject Headings (MeSH) were used, along with text words, and the search strategy was adapted for other databases using their controlled vocabularies, where available, along with text words. Owners assisted with identifying appropriate MeSH. Search publication limits of consensus development, guidelines, meta-analyses, practice guidelines, controlled clinical trial, randomized controlled trial, multicenter studies, overall, technical report, and systematic reviews were used. Additional MeSH publication headings of critical pathways, clinical protocols, guidelines as topic, and practice guidelines as topic were also included. The use of clinical queries therapy, prognosis, & causation (all balanced) filters, EBMR Reviews, and the command exp epidemiologic studies were also included. Systematic reviews as a title word rounded out the publications search.

Jamie M. Gray, MLS, AHIP

June 5, 2014

Identification



Flow diagram adapted from Moher D et al. BMJ 2009;339:bmj.b2535

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Cleft Lip Citation

Title: Cleft Lip Pathway

Authors:

- Seattle Children's Hospital
- Kelly Evans
- Raymond Tse
- Pam Christensen
- Hitesh Kapadia
- Mike Leu
- Jennifer Magin
- Erin Moriarty
- Jean Popalisky
- Bay Sittler
- Karen Wong

Date: June 18, 2014

Retrieval Website: <http://www.seattlechildrens.org/pdf/cleft-lip-pathway.pdf>

Example:

Seattle Children's Hospital, Evans K, Tse R, Christensen P, Kapadia H, Leu M, Magin J, Moriarty E, Popalisky J, Sittler B, Wong K, 2014 June. Cleft Lip Pathway. Available from: <http://www.seattlechildrens.org/pdf/cleft-lip-pathway.pdf>

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