



Health  
Illawarra Shoalhaven  
Local Health District



THE UNIVERSITY OF  
SYDNEY



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**Chest injury protocol (ChIP)**  
**IMPLEMENTATION STRATEGY**  
The Wollongong Hospital  
Shoalhaven Memorial District Hospital

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Version 1.1  
30/11/2017

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## VERSION HISTORY

Version #	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	[REDACTED]	6/11/17	[REDACTED]	6/11/17	
1.1	[REDACTED]	30/11/17	[REDACTED]	30/11/17	updated to do

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# 1 Introduction

## 1.1 Purpose

The purpose of this document is to outline a plan for the implementation of a Chest Injury care bundle protocol (ChIP) for The Wollongong and Shoalhaven Memorial District Hospitals (TWH and SDMH respectively).

This document is part of a larger plan to more widely test and implement ChIP (Figure 1).

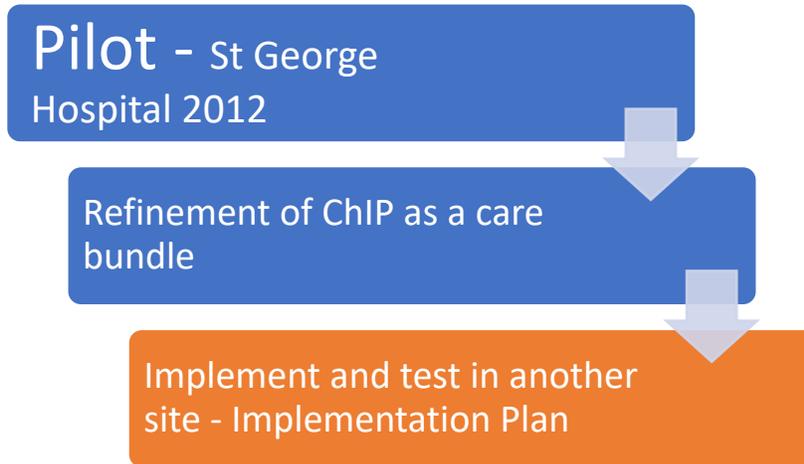


Figure 1: Overall process of ChIP testing and implementation

## 1.2 Intervention design

Table 1: Implementation Overview

Implementation Focus	Elements of the intervention
<b>WHAT</b> is being implemented (Innovation)	Evidence-based guidelines for blunt chest injury (ChIP) Overarching aim: reduce pneumonia rates in blunt chest injury patients
<b>WHO</b> is being targeted (Recipients)	Staff activating and responding to ChIP: Surgical teams Pain/Anaesthetic teams Emergency department staff Physiotherapists Admissions staff Ward staff
<b>WHERE</b> (Context)	Acute health care setting: TWH and SDMH Activated in emergency department Local context assessment
<b>HOW</b> (Facilitation)	Facilitation teams: external/internal expert and novice facilitators, clinical leaders, project manager and information specialist Tailored facilitation support at the individual team level Learning resources from Fisher and Paykel Development of audit

(Harvey & Kitson, 2016)

Behaviour change theories support this implementation. The Behaviour Change Wheel was used in conjunction with the Theoretical Domains Framework (TDF) (Figure 2) (Rycroft-Malone, 2004). This was to support the implementation further ensuring that intervention strategies would be appropriate for behaviour change to occur.

A survey of staff has been undertaken to inform the implementation process. The survey was based on the 14 domains of the TDF. Through mapping to the TDF, the survey has identified facilitators and barriers to implementation.

Intervention strategies were then identified in a step-by-step process to find intervention functions and policy changes that would need to occur for change to occur. The APEASE criteria (Affordability, Practicability, Effectiveness and cost-effectiveness, Acceptability, Side-effects and safety, and Equity) was used to identify if interventions were suitable for implementation. The resulting plan is in Table 2.

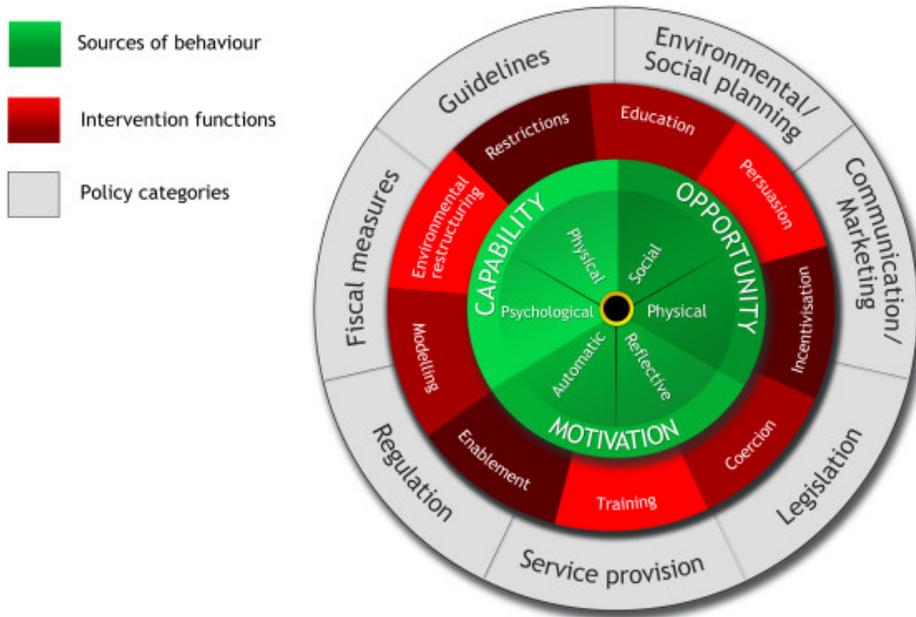


Figure 2. The behaviour change wheel with intervention functions and policy categories (Michie, van Stralen, & West, 2011)

Table 2.

Intervention functions	TDF components served by intervention functions	BCTs to deliver intervention functions	Policy categories through which BCTs can be delivered	Intervention strategy
<p><b>Education</b> <b>Persuasion,</b> <b>Incentivisation,</b> <b>Training,</b> <b>environmental restructuring,</b> <b>modelling,</b> <b>enablement,</b></p>	<p>Physical skills Knowledge Memory, attention and decision processes Professional/ social role and identity Beliefs about consequences Emotion Environmental context and resources Social influences</p>	<p>Information about health consequences Feedback on behaviour Prompts/cues Feedback on outcome(s) of behaviour Information about others' approval Credible source Verbal persuasion about capability Identification of self as role model Material reward (outcome) – pizza party Incentive (outcome) Commitment Demonstration of behaviour Instruction on how to perform behaviour Habit formation Adding objects to the environment Restructuring the physical environment Social Support</p>	<p>Communication/ marketing, guidelines, regulation, environmental/soci al planning</p>	<ol style="list-style-type: none"> <li>1. Involve stakeholders in policy development</li> <li>2. Open policy to comment</li> <li>3. Set up of pager</li> <li>4. In-services provided to ED and ward nurses and doctors, ICU regs, surgical registrars, physios, switch</li> <li>5. Some of the in-services on HFNP by F&amp;P</li> <li>6. In-services on epidural/PVB/PCA</li> <li>7. eMR icon added to FirstNet to identify CHIP</li> <li>8. Guideline on intranet with easy search tool</li> <li>9. Order Triflos</li> <li>10. Video about CHIP</li> <li>11. Newsletters – ED, ward, and surgical newsletters to inform of CHIP</li> <li>12. Change champions self-elected from each area</li> <li>13. Research nurses</li> <li>14. Flyers with information with free chips to eat</li> <li>15. Location of HFNP equipment, labelling of</li> <li>16. Emails to all staff involved</li> <li>17. Medical and nursing handover</li> <li>18. Flyers in bathroom</li> <li>19. Emails for managers</li> <li>20. Clinical managers book notice</li> </ol>

### **1.3 The Intervention (Innovation): ChIP Overview**

ChIP is a care bundle of evidenced-based interventions for patients with a mild-moderate blunt chest injury (BCI). It aims to improve the outcomes of patients with blunt chest injury. ChIP has been used at another hospital resulting in a reduction in pneumonia by 56% (Curtis et al., 2016). The protocol has been refined with a literature review of interventions for blunt chest injury. The protocol can be found in Appendix A.

### **1.4 Recipients**

The people involved in the implementation of this intervention are staff members who are involved in the activation and response to ChIP. This includes:

- Emergency nurses, doctors and clerical staff
- Surgical doctors
- Anaesthetics doctors
- Ward nurses caring for patients with BCI
- Physiotherapists
- Switchboard staff
- ICU liaison nurse
- ICU doctors
- Pain team

To ensure adequate involvement of recipients a survey of these staff was conducted.

#### **1.4.1 Assumptions and Constraints**

Stakeholders have been consulted before development of this plan, and it is assumed that their support will continue for the implementation process. All stakeholders will be consulted in the development process to increase the sense of ownership (Harvey & Kitson, 2016).

### **1.5 Context**

The Wollongong and Shoalhaven Memorial District Hospitals (TWH and SDMH respectively) are the two sites where ChIP will be implemented. They are both within the same local health district (Illawarra-Shoalhaven).

## **2 Management Overview**

The responsibility of management will lie with the ISLHD emergency clinical nurse consultants [REDACTED]. Executive sponsors are Critical Care Co-Directors [REDACTED] (medical) and [REDACTED] (nursing), ISLHD Emergency services - medical director [REDACTED] and ISLHD Emergency services - service lead [REDACTED].

Major tasks for management include:

- Communication with key stakeholders
- Review and approval of policy

## **2.1 Description of Implementation**

CHIP will go live in both sites on the same day on 22<sup>nd</sup> November 2017. The activation system through the communications team will be active from one week before (15/11/17).

Intervention Strategies are:

1. Involve stakeholders in policy development
2. Open policy to comment
3. Set up of pager
4. In-services provided to ED and ward nurses and doctors, ICU regs, surgical registrars, physios, switch
5. Some of the in-services on HFNP by F&P
6. In-services on epidural/PVB/PCA
7. eMR icon added to FirstNet to identify CHIP
8. Guideline on intranet with easy search tool
9. Order Triflos
10. Video about CHIP
11. Newsletters – ED, ward, and surgical newsletters to inform of CHIP
12. Change champions self-elected from each area
13. Research nurses
14. Flyers with information with free chips to eat
15. Location of HFNP equipment, labelling of
16. Emails to all staff involved
17. Medical and nursing handover
18. Flyers in bathroom
19. Emails for managers

## **2.2 Points-of-Contact**

Stakeholders have been included from all areas involved, and a full list can be found in Appendix B.

## **2.3 Major Tasks**

- Provide overall planning and coordination for the implementation
- Provide appropriate training for personnel
- Ensure that all manuals applicable to the implementation effort are available when needed
- Provide all needed technical assistance
- Schedule any special computer processing required for the implementation
- Perform site surveys before implementation
- Ensure that all prerequisites have been fulfilled before the implementation date
- Prepare site facilities for implementation
- Identifying and engaging with key stakeholders

## 2.4 Implementation Schedule

Task	Plan date by	Team member	Date completed
Stakeholders approve policy	14/8/17	██████	20/11/17
Policy submitted for general online comment	15/10/17	██	18/10/17
Organise set up the CHIP pager	1/11/17	██████	20/11/17
Organise dates and instructor (e.g. ICU liaison, research nurses) for In-services for CHIP: Wards ICU ED Surgical registrars Anaesthetics Physiotherapists	20/11/17	██████	31/10/17
Development of training materials (update PPT)	15/11/17	██	30/10/17
Guideline on the intranet with easy search option	1/11/17	██	In progress
Order TRIFLOs	15/11/17	██	Done
Education for HFNP from F&P - Discuss with F&P - Organise times	15/11/17	██	20/11/17
Flyers for ED	1/11/17	██	30/10/17
Get chips packets to go with flyers in tea room	15/11/17	██	30/10/17
Ensure HFNP marked with instructions	1/11/17	██████	23/10/17
EMR icon	1/11/17	██	16/10/17
Hire Casual research nurses	1/11/17	██████	Contracts issued 31/10/17
Research nurses informed of roles and can start championing process	15/11/17	██	10/11/17

Video - Get video footage - Put it together	1/11	██████	Complete
Email to managers - Checking if being implemented - Audit	20/11/17	██████	progress
Email to staff - Draft email for each area list them here	20/11/17	██	20/11/17
Notice for Newsletters - Surgical newsletter - EDs	15/11/17	██	Surg NL – 30/10
TWH clinical managers handover book notice	20/11/17	██████████	20/11/17

**2.5 Security and Privacy**

There are no breaches in security or privacy of patients or staff foreseen by the implementation of ChIP.

**3 Implementation Support**

**3.1 Resources**

**3.1.1 Equipment**

Limited high flow nasal prong (HFNP) sets are available. However, eight sets are being provided by Fisher and Paykel for use in the implementation which should suffice. However, not all staff are familiar with HFNP use and may need training in this area. Fisher and Paykel have kindly agreed to provide training support in this area.

**3.1.2 Software**

The usual software will be used, i.e. FirstNet; however, as special Icon has been added for ChIP

**3.2 Documentation**

Two protocols have been published relating to the implementation of ChIP.

- ██████ ISLHD ChIP protocol (Appendix A) Link ██████
- ██████ ISLHD HFNP protocol – Link ██████

**3.3 Personnel**

**Facilitators**

Facilitators will be from existing staff.

**Research Nurses**

Funding has been received as part of a larger project to support the implementation of CHIP from the HCF Research Foundation; some funds will be dedicated to the hiring of research nurses to support implementation.

#### Super users (Clinical champions)

Two super users in each area, need to have three years' experience in the area and will receive training and first preference to attend sessions. They will assist on the floor, provide guidance, help with questions.

#### Instructors for in-services:

- Personnel from F&P
- ICU liaison
- Nurse educators
- Senior doctors
- Facilitators if needed
- Research nurses

### **3.4 Implementation Impact**

May have some initial increased requirements on staff. This will be reduced by an allocation of research nurses and clinical champions to provide extra facilitation.

### **4.1 Evaluation**

The uptake of CHIP will be measured for six - twelve months post-implementation with a four-week gap as a buffer. This is part of a larger study and ethics will be sought. Furthermore, a second survey of staff may be done post-implementation for their evaluation if uptake levels are low.

### **4.2 Glossary**

BCI – Blunt chest injury

CHIP – Chest Injury Protocol

ED – emergency department

HFNP – High flow Nasal Prongs

ISLHD – Illawarra Shoalhaven Local Health District

MRN – Medical record number

PT – Physiotherapist

## APPENDIX A: ChIP POLICY

### 1. POLICY STATEMENT

This policy describes the activation and response of a blunt chest injury pathway (ChIP), which promotes early intervention for patients who present to the Emergency Department (ED) with a blunt chest injury (proven or suspected rib fractures, or a painful chest injury)

### 2. AIMS

*Briefly state the aim of the policy that will help people understand this procedure.*

To describe the activation and response process for patients who present to the Emergency Department (ED) with a blunt chest injury.

### 3. TARGET AUDIENCE

*Include an outline of who the policy applies to.*

All clinicians who care for patients with blunt chest wall injury are responsible. In particular:

- Emergency Department (ED) medical and nursing staff
- Surgical registrars (covering ED)
- Physiotherapists
- Switch board staff
- Pain service / anaesthetics
- ICU liaison / resource nurses

### 4. RESPONSIBILITIES

*Outline clearly and succinctly the precise actions that are required of those responsible for enacting this policy.*

Members of this team will receive a message via their page to review patients with blunt chest wall injury who meet criteria. This policy also describes the recommended treatments to tailor for each patient dependent on their needs.

1. All patients with isolated blunt chest injury (radiological or clinical diagnosis) are to be considered for this pathway
2. The role of the ED Doctor and/or nurse is to assess the patient for likelihood of injury, attend to their immediate analgesia (+/- opiates), respiratory support needs and likelihood of admission before the ChIP page is activated (see Appendix 1)
3. To activate the ChIP page call 991 (TWH) or 9222 (SDMH), ChIP and patient MRN
4. The ChIP page will alert the on call Surgical registrar, Pain service (Anaesthetic Registrar TWH out of hours), Trauma CNC, ICU registrar, ICU Liaison Nurse, ASET (Aged Services Emergency Team) and Physiotherapist to enable early contact and optimal management. Where possible, the patient should be assessed by the responding clinicians within 60 minutes of the page activation.
5. When the required services are not available (eg after hours), the person carrying the pager should check for ChIP calls and review the patient as a priority when next on site.
6. The emergency or surgical registrar should arrange consultations with specialist teams such as Aged Care as needed.

7. All patients with proven or suspected rib fractures, or a painful chest injury requiring admission should be admitted under the surgical team on call.
8. A bundle of care including the following interventions should be charted, initiated and adapted for each patient according to their analgesic and respiratory support needs.
  - Patient education on deep breathing and coughing and the following treatments
  - Chest support pillow / splint (eg folded rolled towel)
  - Incentive spirometry (triflow)
  - Supplemental Oxygen, humidified via highflow nasal prongs – should commence at 50lt/min and titrated to an SpO<sub>2</sub> goal in patients with pain not well controlled by oral analgesia and/or lung disease. A haemo/pneumothorax does not exclude the use of HFNP. Management of the haemo/pneumothorax should be discussed with the admitting consultant / fellow
  - Analgesic regimen: PO Paracetamol and PO Oxycodone hydrochloride with Naloxone hydrochloride (Targin) or Oxycontin regularly if no contraindications/allergies & appropriate dose. PRN Oxycodone hydrochloride (Endone). NSAIDs should be considered in patients without contraindications
  - If inadequate analgesia despite above, escalate early to pain service for PCA
  - Regional anaesthesia techniques, such as an Epidural, paravertebral or intercostal block, should be considered on a case by case basis. In particular those patients with: 3 or more rib fractures and/or age greater than 55 years. Additional consideration and factors that may infer patient benefit to those with (or without) the above factors include flail segment/s, underlying lung disease, history of smoking
  - Aperiets and anti-emetics
  - Early mobilisation as clinically appropriate
9. Patient should be admitted to a ward with HFNP capability. If the patient has increasing FiO<sub>2</sub> requirements to maintain respiratory function and observations between the flags, they should have an ICU review and admission.
10. Weaning of analgesia and HFNP should be conducted on individual patient needs. The patient should be discharged when their pain is well controlled with oral analgesia, their respiratory function has been optimised and any other factors (i.e. mobility and any medical issues that may have precipitated a fall) are resolved
11. ChIP patients should be followed up by their GP within 3 days and their analgesia. Discharge letter should include instruction on this for the GP.
12. Patients and their family should be educated throughout their admission and prior to discharge on the importance of continuing with regular analgesia as prescribed, signs of deterioration and advice to represent if necessary. The following fact sheet should be provided and explained to the patient

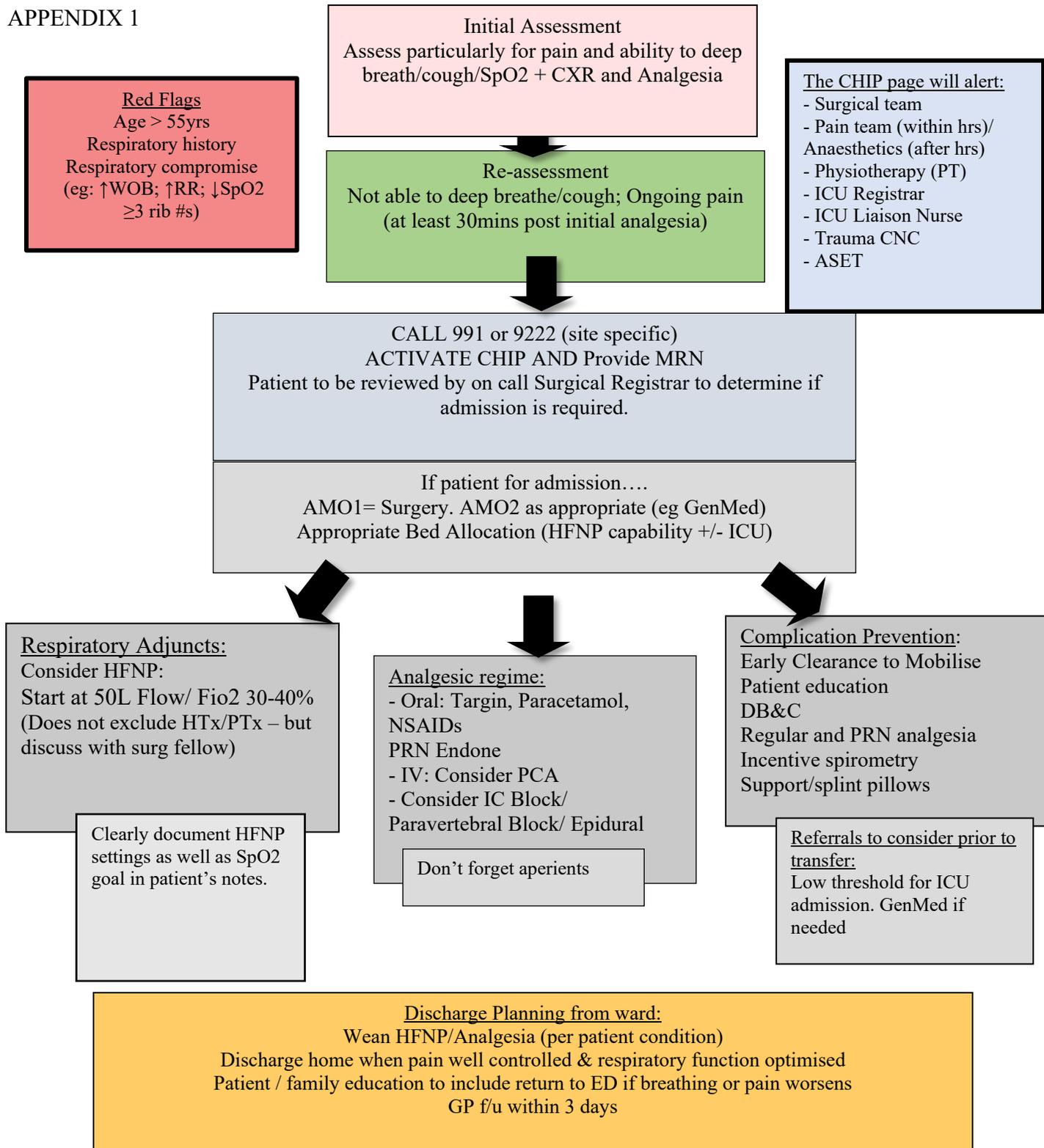
[https://www.aci.health.nsw.gov.au/\\_data/assets/pdf\\_file/0010/294337/Fractured\\_Ribs\\_Patient\\_Factsheet\\_2015.pdf](https://www.aci.health.nsw.gov.au/_data/assets/pdf_file/0010/294337/Fractured_Ribs_Patient_Factsheet_2015.pdf)

5. DEFINITIONS  
HFNP: High Flow nasal prong  
Blunt chest injury: Proven or suspected rib fractures, or a painful chest injury  
Bundle of care: A group of evidence based interventions administered for specific conditions
6. DOCUMENTATION  
*None required.*
7. AUDIT  
The activation and appropriate use of the protocol will be evaluated by a formal research project, then ongoing monitoring will be monitored by the existing trauma service quality improvement program. Regular reports are conducted, feedback is provided where appropriate

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APPENDIX 1



**APPENDIX B: Stakeholders\***

Key stakeholders	Rationale
<b>District level</b>	
<b>Facilitators</b>	Facilitate the implementation process. Clinical champion, protocol development, local
<b>Site Implementation Representative SDMH</b>	Facilitate the implementation process. Clinical champion, protocol development, local
<b>Business sponsors</b>	Representative from HCF – funding body of overarching project Representative from Fisher and Paykel- funding of HFNC machines and will provide support
<b>Executive sponsors</b>	Critical Care Co-Directors. Executive support ISLHD Emergency services - medical director Executive support
	Executive support Determine appropriate ward allocation and engage with NUMs
<b>DDON / DONs at each site</b>	Exec endorsement
<b>Surgical</b>	Support required as patients will be admitted under them
<b>ED District Nurse educator</b>	Clinical champion, enforce with staff, Protocol development, local knowledge
<b>Physiotherapy District manager</b>	Representative of physiotherapists
<b>Trauma committee</b>	
	Exec endorsement
<b>Research Office</b>	Research support, smoothness of ethics process
<b>Switchboard</b>	Support implementation
<b>TWH</b>	
<b>Activators</b>	

<b>ED Director</b>	Clinical champion, enforce with staff
<b>ED medical staff</b>	
<b>ED NUM</b>	Clinical champion, enforce with staff
<b>ED Clinical NUM / patient flow</b>	Clinical champion, enforce with staff, Protocol development, local knowledge
<b>ED CNC</b>	
<b>ED CNE</b>	Clinical champion, enforce with staff
<b>ED nursing staff</b>	
<b>Responders</b>	
<b>Surgeons</b>	
<b>Anaesthetics / pain team</b>	Patients will be reviewed by them (in and out of hours). Need agreement
<b>Physiotherapy manager</b>	Support required as patients will be reviewed by them
<b>ICU Director</b>	Support required as patients will potentially be reviewed by them
<b>ICU liaison nurse / Clinical Resource nurse / ICU NUM</b>	Patient should be reviewed by them
<b>Support</b>	
<b>DON</b>	
<b>ED equipment officer</b>	
<b>Switch board</b>	
<b>Trauma service</b>	
<b>Bed managers / AH</b>	Appropriate bed allocation
<b>CNC for surgery</b>	Patient should be reviewed by them
<b>Ward NUMs</b>	
<b>SDMH</b>	
<b>Activators</b>	
<b>ED Director</b>	Clinical champion, enforce with staff

<b>ED NUM</b>	Clinical champion, enforce with staff
<b>ED medical staff</b>	
<b>ED CNC</b>	
<b>ED CNE</b>	Sharyn Balzer (SDMH)
<b>ED nursing staff</b>	
<b>ED Clinical NUM / patient flow</b>	Clinical champion, enforce with staff, Protocol development, local knowledge
<b>Responders</b>	
<b>Surgery</b>	Support required as patients will be admitted under them
<b>Anaesthetics / Pain team</b>	
<b>Physiotherapy</b>	Support required as patients will be reviewed by them
<b>ICU</b>	Support required as patients will potentially be reviewed by them
<b>Support</b>	
<b>DON</b>	
<b>ED equipment officer</b>	
<b>Switch board</b>	Support Implementation
<b>Trauma service</b>	N/A
<b>Bed managers / AH</b>	Appropriate bed allocation
<b>Ward NUMs</b>	

\*Columns with names, contact details and status have been removed to protect confidentiality.

## APPENDIX C: References

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