

# **Protocol for the use of an Mechanical CPR Device for Westmead Hospital Emergency Department**



## **The Zoll AutoPulse® Mechanical CPR Machine**



**Draft 1**

**Westmead Hospital February 2014**

## OVERVIEW

Westmead Hospital (WMH) is located in Western Sydney within New South Wales (NSW) providing a variety of Emergency, In-patient and Out-patient services. The hospital services one of the fastest growing geographic populations in NSW.

There are currently approximately 700 beds and approximately 63,000 patients presenting to the Emergency Department (ED) each year (2013 figures).

### Westmead Hospital – 2014



A significant number of patients present to the Emergency Department at Westmead Hospital with an Australasian Triage Scale (ATS) Category 1. Of these a small proportion present in Cardiac Arrest by ambulance or suffer a Cardiac Arrest in the ED.

The table below shows that there 1,086 Category 1 “Resuscitation” presentations to Westmead Emergency in the recorded data in 2011-12.

### Westmead Emergency Presentations 2011-12

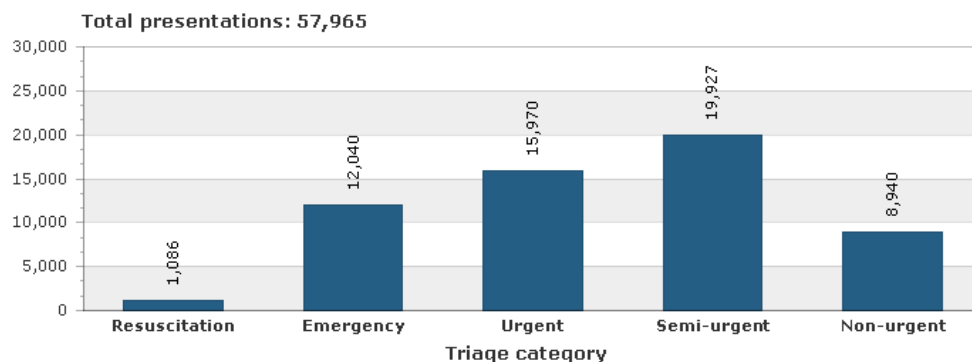


Table 1 – Accessed 30/1/14 - <http://www.myhospitals.gov.au/hospital/westmead-hospital/services/emergency-department/presentations>

## **Rationale for the use of Mechanical CPR**

Stabilisation and Transfer of critically unwell patients may present logistical challenges.

In particular, patients presenting in Cardiac Arrest with a potentially reversible cause may need extended periods of Cardiopulmonary Resuscitation (CPR) in the Emergency Department.

Ongoing provision of CPR can be challenging in terms of resource allocation as well as effectiveness and quality of the chest compressions provided by the trained rescuers.

WMH is a teaching hospital of the University of Sydney (USyd) School of Medicine. There have been multiple recent developments at Westmead in terms of quality improvement initiatives as well as research and education. The use of the Zoll AutoPulse® in selected patients presenting with Cardiac Arrest reflects Westmead embracing cutting edge technology. The Cardiac Catheter laboratory is also trialing a similar device in 2014.

Interim analysis of recent research into the effectiveness of Mechanical CPR in the Simulation setting at Westmead have shown improvements in the quality and number of chest compressions provided when compared with Standard CPR by trained rescuers.

### **Aims of the Zoll AutoPulse® in the Emergency Department**

The proposed use of the Zoll AutoPulse® Mechanical CPR device would be of benefit in selected patients presenting in Cardiac Arrest where a senior clinician anticipates on going CPR for >15 minutes from the time of arrival in the Emergency Department.

### **INDICATIONS FOR THE USE OF THE ZOLL AUTOPULSE®**

Use of the Zoll AutoPulse® requires **Criteria 1 or 2 plus** ALL of Criteria 3 to 5 fulfilled:

(1) Patients presenting in Cardiac Arrest – CPR ongoing by Ambulance Rescuers

**or**

(2) Patients suffering a Cardiac Arrest in the Emergency Department

**with**

(3) An expectation by a Senior Clinician that CPR will be on-going for >10mins

**and**

(4) An absence of the specific Contraindications (outlined on the next page)

**and**

(5) Presence of a Senior Nurse (Nurse Educator or Unit Manager) and/or Doctor trained in the use of the Zoll AutoPulse®

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### **Times of use for the Zoll AutoPulse®**

The Zoll AutoPulse® will be used during working hours (e.g. 7am to 6pm) under the supervision of the 'on the floor' Staff Specialist.

Under extenuating circumstances trained individuals may use the Zoll AutoPulse® outside of the stipulated hours noted above with permission of the Nurse Unit Manager (NUM), Clinical Nurse Consultant (CNC) or on-call Staff Specialist.

**Contraindications to use of the Zoll AutoPulse®**

- 1) Traumatic Arrest
- 2) Age <18 (as per the Zoll AutoPulse Manual)\*
- 3) Patients weighing more than 130kg
- 4) Cardiac Arrest is considered a terminal event by the clinician
- 5) CPR is deemed to be futile by the Medical team
- 6) Known Advanced Care Directive that indicates no CPR in the event of Cardiac Arrest
- 7) Family Requesting to not use the device
- 8) No Trained Staff Members present at the Cardiac Arrest

**Relative Contraindications**

- 1) End Tidal CO<sub>2</sub> consistently <10
- 2) >30mins Cardiac Arrest with Asystole
- 3) Pregnancy and Cardiac Arrest
- 4) Adult Patients weighing less than 45kg
- 5) Staff Unfamiliarity

## Training Requirements

The Zoll AutoPulse® is a delicate piece of equipment that requires careful maintenance and training in safe use during CPR. The use of the machine by untrained individuals may result in damage to the machine, the machine not working and/or delays in CPR provision.

### Key Steps in the Use of the Zoll Autopulse®

- **Storage**

The machine will be stored in the Clinical Nurse Consultant (CNC) Office next to the Registrars room – access can be obtained by contacting the on the floor NUM if the room is not occupied. The machine is kept on a purpose built trolley. Batteries are stored in the same office as the machine on the left hand shelf – these batteries must always be charged. Each battery will allow for up to 1 hour of Chest Compressions by the machine. Batteries are expensive and must be carefully maintained. To check charge on the battery press the button on the bottom (4 lights indicate the degree of charge)

Battery Charger (kept in the CNC office)



- **Set-up**

Set-up is a key step in order for the device to work safely and effectively:

A Quick guide to the machine is on Page 13 and 14 and also attached to the Zoll Trolley  
An AutoPulse LifeBand should be installed in the device.

To install a new LifeBand we need to follow specific steps listed as follows:

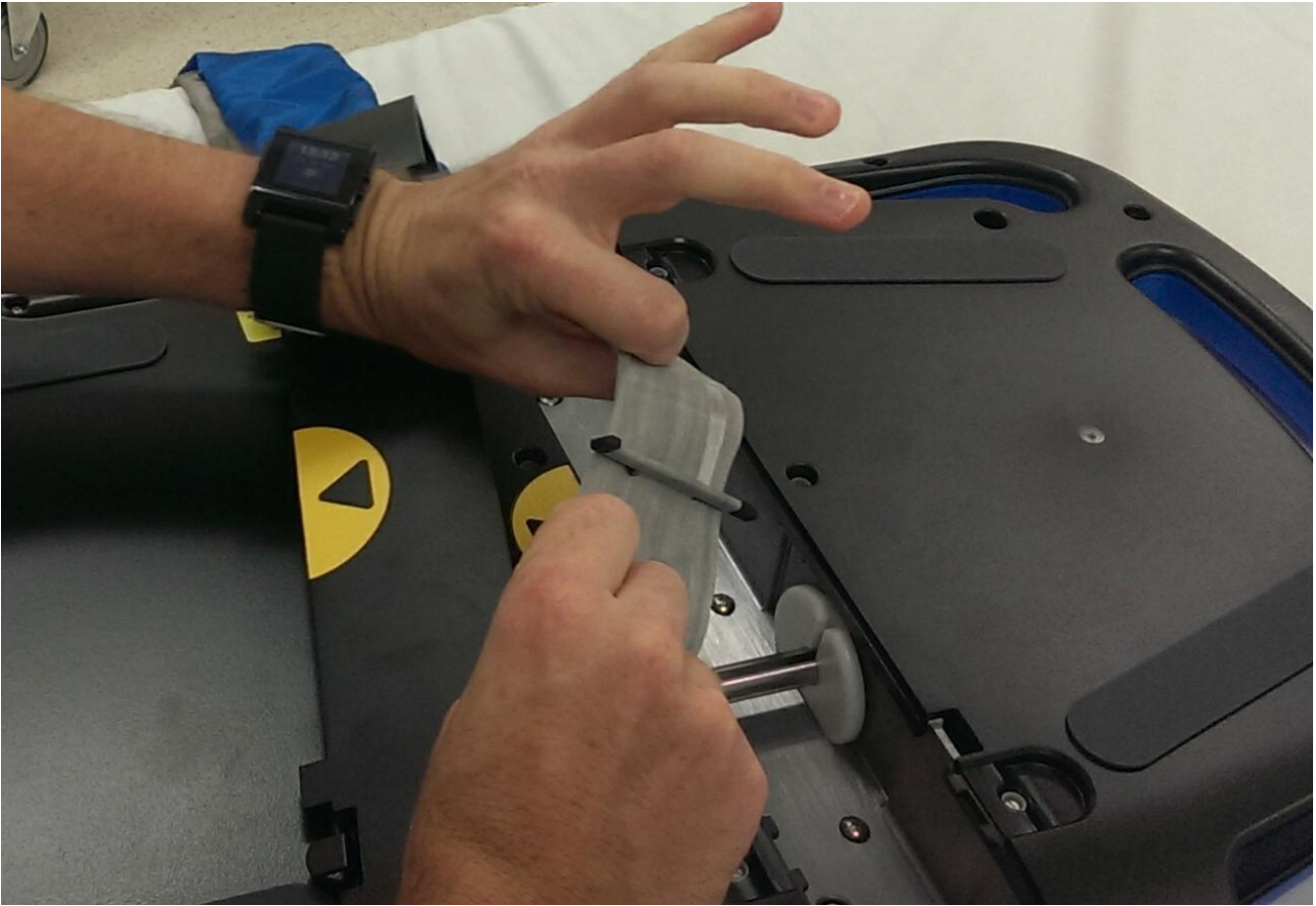


- 1) Open 2 clips on back of machine
- 2) Lift up Plastic Inserts



- 3) Push the Plastic Wings inside the device forward and gently slide the old band out
- 4) Insert the new band into the grooves





5) Close the plastic ends (reverse of opening the device)

6) Check that the arrows line up

Arrows lining up on back of machine



7) Switch on the device ready for patient use



- **Selection of patients**

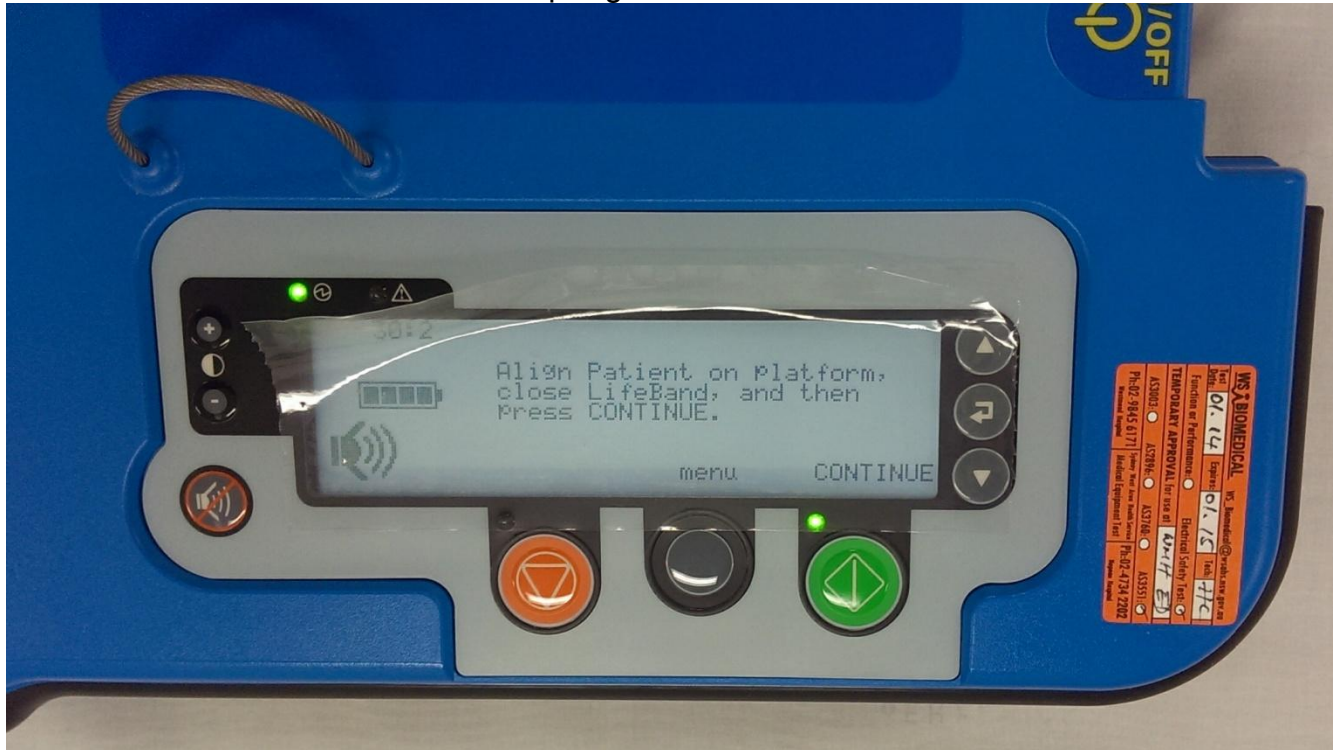
Patients are selected on the basis of criteria for use outlined on page 4 and an absence of contraindications outlined on page 5

- **Applying the Device to the patient**

- Switch on the AutoPulse and unfasten the LifeBand (see large picture on next page)

#### Control Panel

- On switch is denoted “on/off” at the Top Right corner



The Photo on the next page shows the position of the board on the Resus Bed – note that the LifeBand is open before placing the patient on the board.



The Zoll AutoPulse® - Westmead Emergency 2014



- All clothing should be removed from the patient (can get caught in machinery)
- CPR should be continued with minimal interruptions
- When the device is ready 3 rescuers should lift the patient forward
- The patient should be held briefly in a semi-seated position



- A fourth rescuer should insert the device behind the patient lining up the patients axilla with the markings on the AutoPulse board



- The LifeBand should then be fastened and held over the patient lining up with yellow line on the board
- The machine should be started using the menu panel on the right hand side

- **Cleaning**

Cleaning of the AutoPulse is straightforward. Use standard alcohol or hospital cleaning solutions and thoroughly wipe clean the device after use.

Do NOT immerse the device in water as this may damage electrical components.

- **Reporting the use of the machine and data collection**

The Zoll AutoPulse® captures data on CPR provided.

For quality improvement purposes we seek to record this data (which is wiped from the device automatically every 24 hours).

Therefore, please inform Margaret Murphy, Andrew Coggins or Amith Shetty after the device has been used by email so data can be downloaded in a timely manner.

A Staff Specialist and NUM should always be aware that the machine has been used.

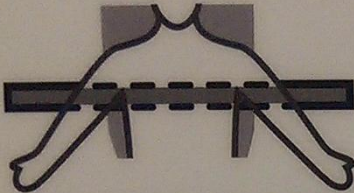
Users take responsibility for caring for the machine and placing it back in the office.



## Appendix – Quick Guide (this is attached to the Trolley)

### AutoPulse® Quick Reference Guide

**For Adult ( $\geq 18$  years) Non-Traumatic Cardiac Arrest**  
**Maximum Patient Weight 300 lbs.**



- Remove ALL clothing from torso (both front and back) to ensure skin-to-platform contact
- Align armpits onto yellow line on Platform



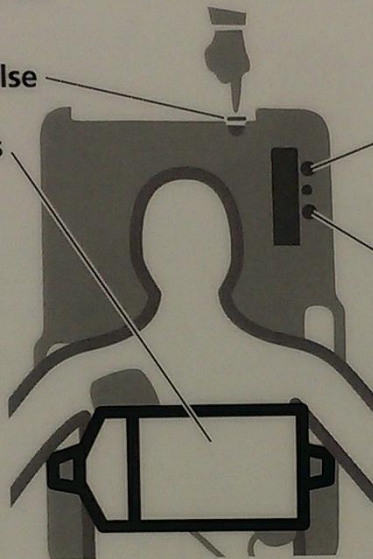
Do not twist the chest bands



Maintain chest bands at 90 degrees to Platform and free of obstructions

1. Power up AutoPulse

2. Close chest bands



3. Press CONTINUE (green button)

4. Press START (green button) to begin compressions

To pause or stop operation press STOP (orange button)

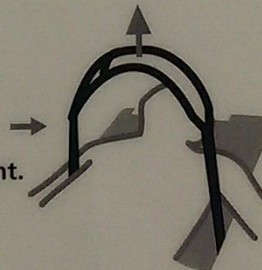
Follow all local protocols and procedures.

Review User Guides and complete in-service training.

### Troubleshooting

#### For Fault/User Advisory

- Lift up and fully extend both chest bands.
- Check both lateral and vertical patient alignment.
- Verify that chest bands are not twisted, are 90 degrees to the Platform and are free of obstructions.
- Press RESTART (green button) and follow on-screen instructions to begin compressions.



If you cannot rectify problem immediately open chest bands and revert to manual CPR.

← LifeBand® instructions on other side

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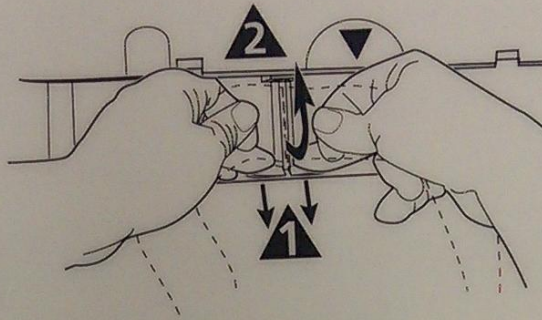


## AutoPulse® Quick Reference Guide

# LifeBand® Load-distributing Band

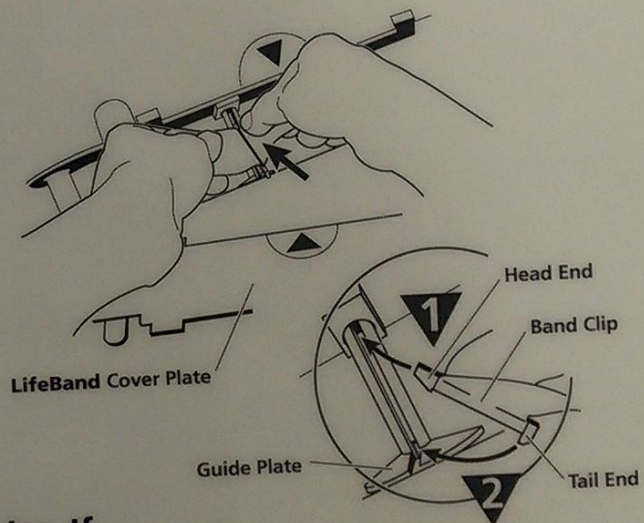
## Removing LifeBand

- Place AutoPulse face down.
- Lift hinged skirts, pinch 4 locking tabs and remove Cover Plate.
- Grasp the Band with the thumb and index finger of both hands. ▲ Push in the Guide Plate, using both middle fingers and, ▲ pull up the Band to remove the clip from the shaft.



## Installing new LifeBand

- Match arrow on the Cover Plate with arrow on Platform.
- ▼ Insert Head end of Band Clip into slot. ▼ Press Tail end of Band Clip into Guide Plate slot and feel for "click." Rotate shaft in either direction to verify Band Clip is seated in slot. Ensure that Band is not twisted.
- Snap Cover Plate in place and flip down hinged skirts.
- **Important: power on AutoPulse. If a Fault/User Advisory is displayed, check installation of the Band Clip into the Drive Shaft slot.**



← AutoPulse deployment on other side

**ZOLL®**

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