

**ALGO 5  
Newborn Hearing Screener**

**In-Service**

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Clinical Educator

**ALGO 5 – In-Service Objectives**

- Understand ALGO 5 AABR™ technology
- Select appropriate baby for screening
- Set-up the ALGO 5 screener
- Prepare a baby for screening
- Enter patient information or retrieve a record
- Enter risk factors
- Run an ALGO 5 newborn hearing screen
- Troubleshoot common screening issues
- Correctly clean-up and shut-down the ALGO 5

**ALGO 5® AABR® Newborn Hearing Screener**



**ALGO 5 - AABR® Technology  
(automated auditory brainstem response)**

- Soft click sounds at 35 dB nHL
  - ▶ Sweep – the instance in which the screener delivers a click and receives a response to the click
- Advanced signal processing technology
- Automated results
  - ▶ PASS
  - ▶ REFER



## ALGO 5 – Screener Components



- Screening module with computer/monitor and keyboard
- Cable assemblies
- Label printer
- Screening station cart
- Barcode scanner and printer (optional)

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4

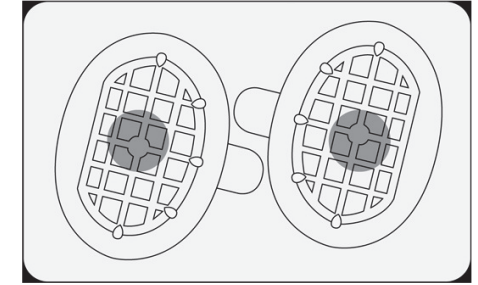
## ALGO 5 – Cable Assemblies and Supplies



Acoustic Transducer Assembly 5  
or ATA5

*Please note that these cable ends contain calibrated components and should be treated with care.*

Flexicoupler Earphones



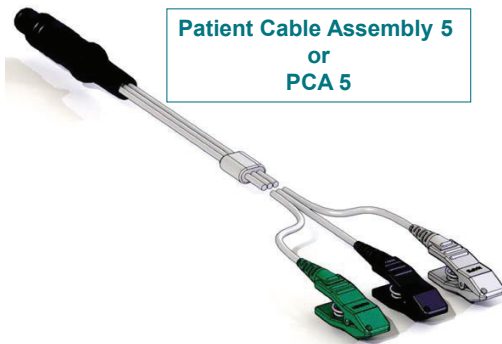
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5

## ALGO 5 – Cable Assemblies and Supplies



Patient Cable Assembly 5  
or  
PCA 5

Attach clip to purple colored  
portion of the Jelly Tab Sensor

Jelly Tab Sensors



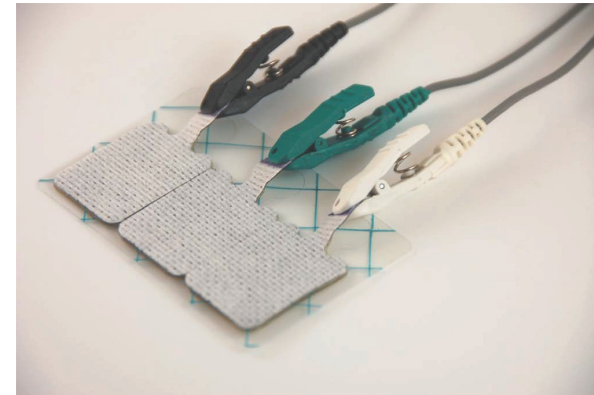
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6

## ALGO 5 – PCA clip alignment to Jelly Tab



Ensure that part of the  
PCA clip with the wire is  
at the bottom.

Correct = wire and patient side of electrode on same side

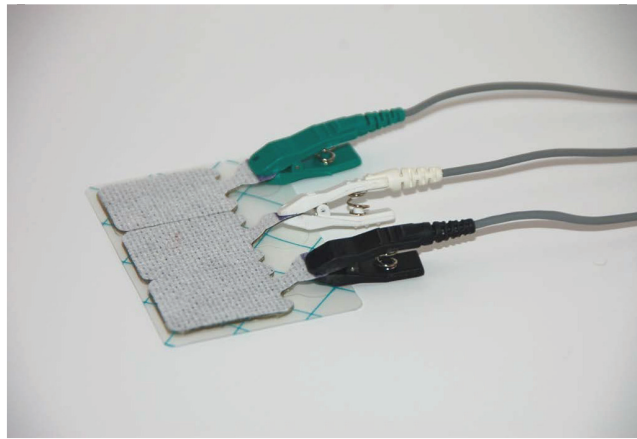
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## ALGO 5 – PCA clip alignment to Jelly Tab

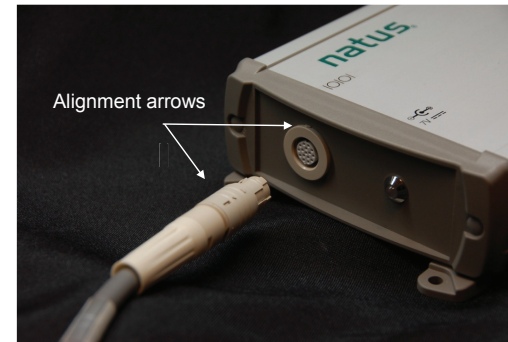


Ensure that part of the PCA clip with the wire is at the bottom.

Incorrect = wire and patient side of electrode on opposite side

## ALGO 5 – DSP Box

### DSP Box



Alignment arrows

When connecting the PreAmp to the DSP ensure that the arrows align on the cable and the DSP connectors.

Do not force the connection.

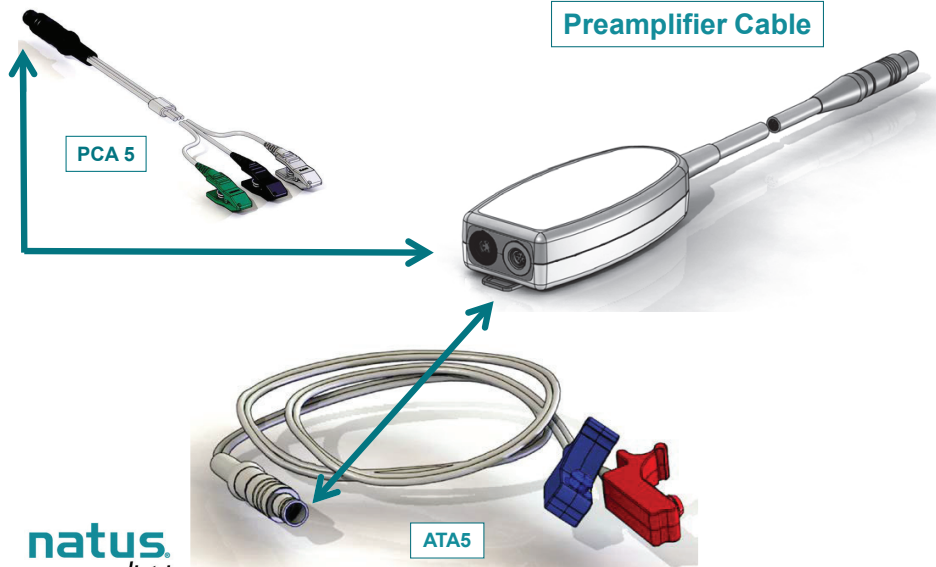
Do not twist the cable while connecting.

A small audible click should be heard when the connection is made.

### Preamplifier Cable

## ALGO 5 – Preamplifier Cable

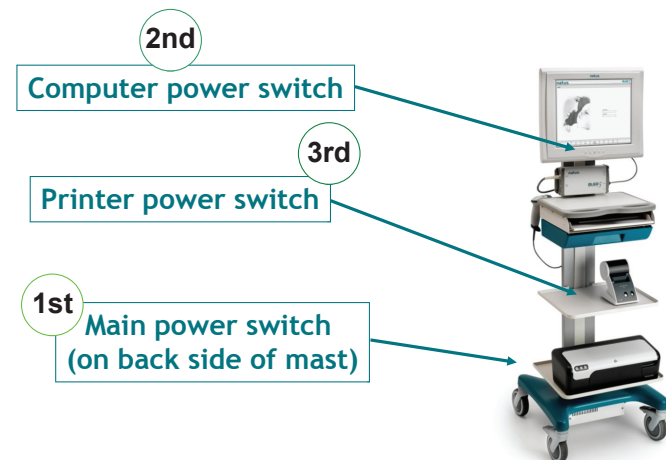
### Preamplifier Cable



PCA 5

ATA5

## ALGO 5 – Setting Up the Screener



2nd

Computer power switch

3rd

Printer power switch

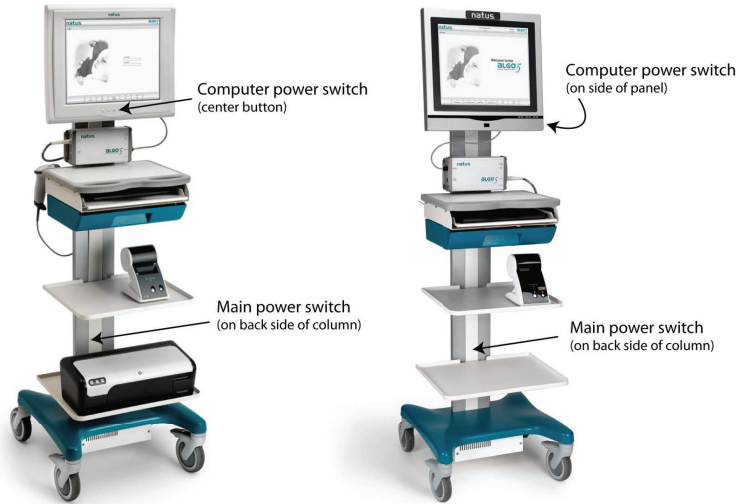
1st

Main power switch  
(on back side of mast)

# Power switch for Panel PC

white PC version

silver PC version



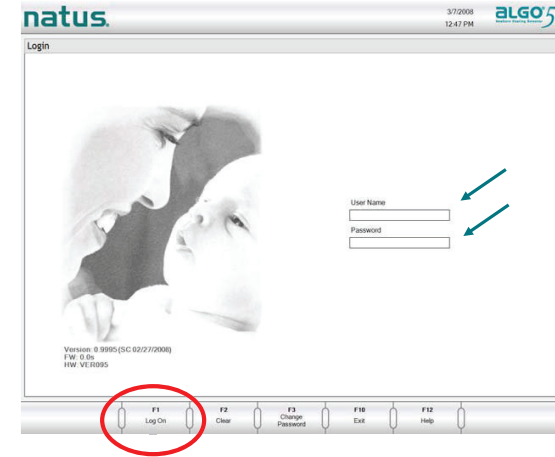
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# ALGO 5 – Login Window



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# ALGO 5 – Main Window



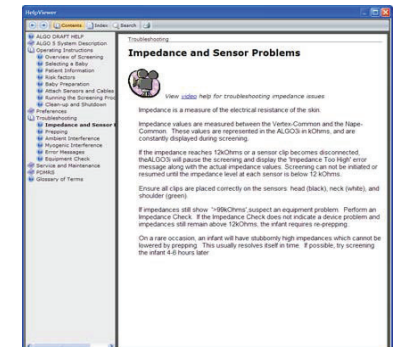
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14

# ALGO 5 – Help Window



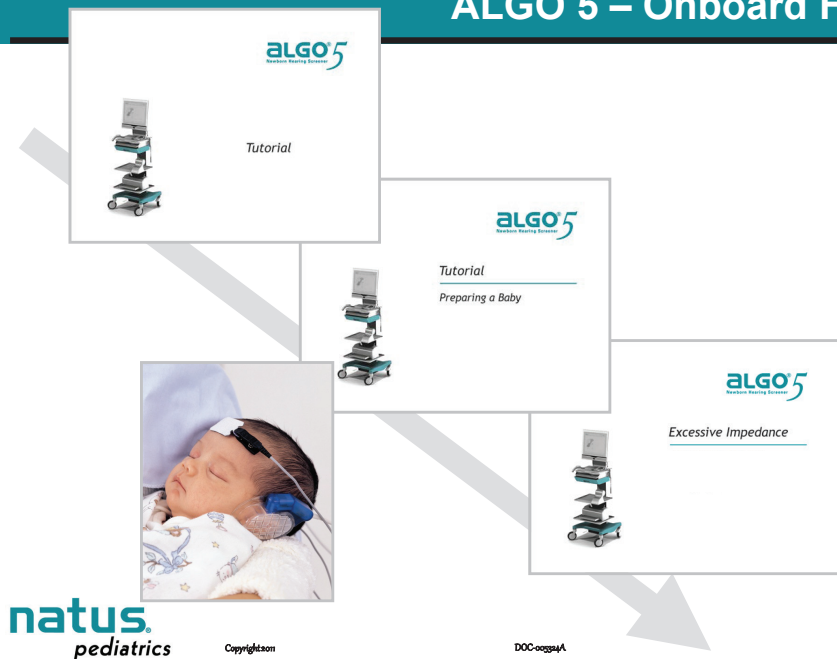
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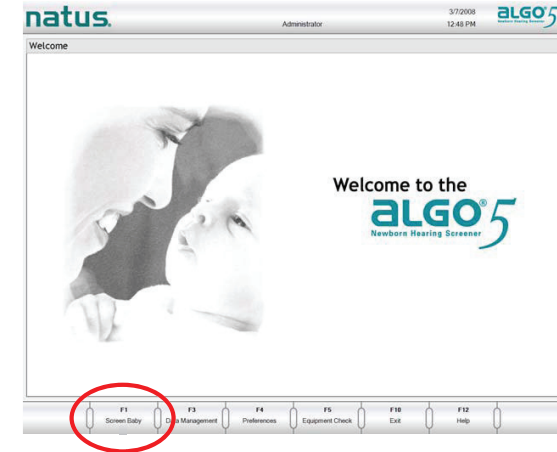
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15

## ALGO 5 – Onboard Help



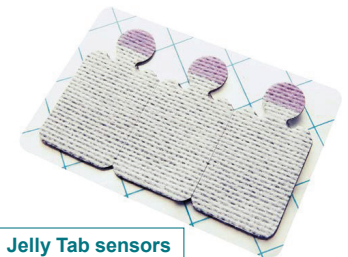
## ALGO 5 – Screen a Baby



## ALGO 5 – Selecting a Baby

- **Important factors in choosing a baby in a favorable state:**
  - ▶ Term, healthy newborns
  - ▶ NICU graduates, 34 weeks gestational age or older
  - ▶ Newborns with normal outer ear anatomy and no obvious deformities of the head or neck
  - ▶ Ready for discharge, or scheduled to go home within a few days
  - ▶ NOT receiving central nervous system (CNS) stimulants
  - ▶ Sleeping or in a relaxed state (usually after a recent feeding)
  - ▶ In an open crib

## ALGO 5 – Preparing the Baby for Screening



## ALGO 5 – Preparing the Baby for Screening



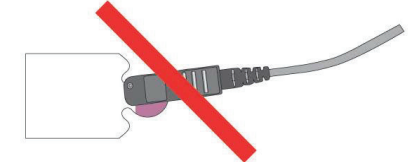
Please ensure that the ATA cables do not cross directly over an electrode.

## ALGO 5 – Preparing the Baby for Screening Attach PCA Clips to Jelly Tab Sensors

Correct clip attachment:  
Clip is attached to the  
purple tab portion of  
sensor only.

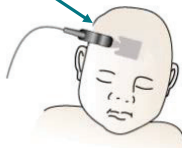


Incorrect clip attachment: Clip  
touches hydrogel portion of sensor.

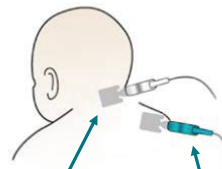


## ALGO 5 – Preparing the Baby for Screening Identify Three Sites for Sensor Placement and Evaluate Skin

Vertex Sensor  
Black PCA Clip



Nape Sensor  
White PCA Clip



Common Sensor  
Green PCA Clip

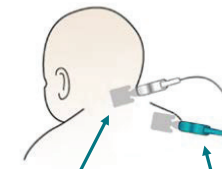


## ALGO 5 – Preparing the Baby for Screening Place Sensors Over the Sites

Vertex Sensor  
Black PCA Clip



Nape Sensor  
White PCA Clip



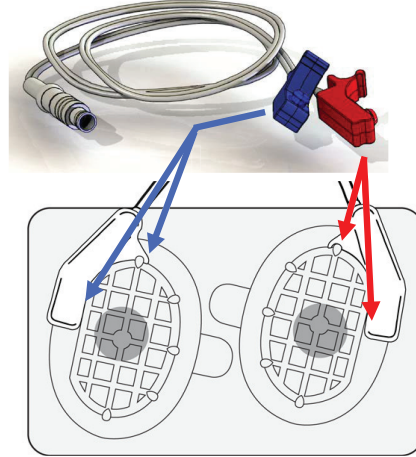
Common Sensor  
Green PCA Clip



## ALGO 5 – Preparing the Baby for Screening

### Attach ATA Cable to Flexicouplers and Apply Flexicouplers to the Baby

ATA 5 Cable “clicks” into Flexicoupler Earphones



Flexicoupler Earphones

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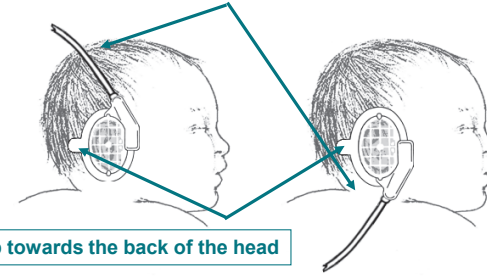
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24

## ALGO 5 – Preparing the Baby for Screening

### Apply Flexicoupler Earphones to the Baby



Tab towards the back of the head



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## ALGO 5 – Patient Data Window

Required fields highlighted with colored background

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## ALGO 5 – Patient Data Window

### NO Previous Screening History

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# ALGO 5 – Patient Data Window WITH Previous Screening History

The screenshot shows the 'Patient Data' window with fields for medical record number, address, and contact information. Below this is a table titled 'Please select the desired patient.' with columns for Medical Record Number, First Name, Last Name, and Date of Birth. The table lists 15 patients, with the first row highlighted. At the bottom, there are 'Load Selected Patient' and 'Cancel' buttons.

| Medical Record Number | First Name | Last Name   | Date of Birth |
|-----------------------|------------|-------------|---------------|
| 112345666             | Irma       | Indigo      | 01/30/2008    |
| 111228888             | Ali        | Jing        | 01/30/2008    |
| 114666778             | bg         | Gonzales    | 01/31/2008    |
| 112557777             | Colin      | Collins     | 01/31/2008    |
| 111226622             | Harry      | Hollins     | 01/31/2008    |
| 111222333             | Adam       | Adams       | 01/31/2008    |
| 121121323             | Nicholas   | Nelson      | 02/01/2008    |
| 113776778             | Ronald     | Rodriguez   | 02/01/2008    |
| 113444556             | Orlando    | Ovitz       | 02/01/2008    |
| 112345667             | Inez       | Indigo      | 01/30/2008    |
| 111333456             | Betty      | Billingsley | 01/31/2008    |
| 113333444             | Koe        | Kdengo      | 01/30/2008    |
| 111122234             | Michael    | Mulliner    | 01/31/2008    |
| 112445555             | Ernst      | Ehrlinger   | 01/31/2008    |

# ALGO 5 – Risk Factors

The screenshot shows the 'Risk Factors' selection screen. It lists various medical conditions with '+' and '-' buttons for selection. Three columns of these buttons are circled in red. At the bottom, there are buttons for 'F1 Continue', 'F2 Previous', and 'F12 Help', with 'F1 Continue' also circled in red.

# ALGO 5 – Screening Method Selection

The screenshot shows the 'Screening Method Selection' screen with two options: 'Both Ears Simultaneously' and 'Both Ears Separately'. Both options are circled in red. At the bottom, there are buttons for 'F1 Continue', 'F2 Previous', and 'F12 Help', with 'F1 Continue' also circled in red.

JCIH 2007 Position Statement recommendation for bilateral screening

Left Ear Only and Right Ear Only must be enabled by the program administrator

The screenshot shows the 'Screening Method Selection' screen with four options: 'Both Ears Simultaneously', 'Both Ears Separately', 'Left Ear Only', and 'Right Ear Only'. The 'Left Ear Only' and 'Right Ear Only' options are highlighted with a red box.

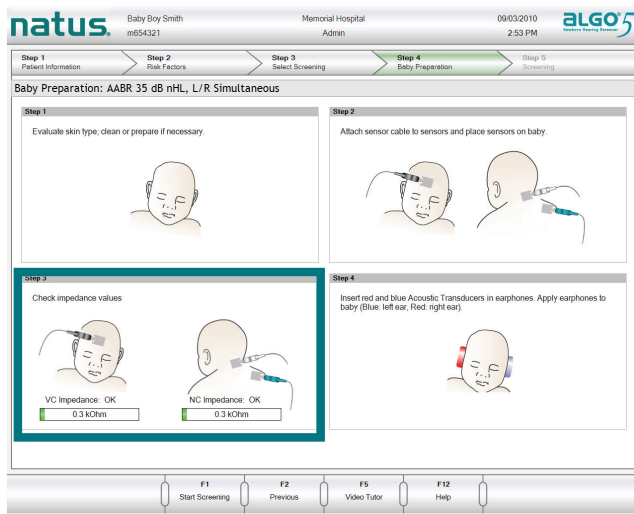
# ALGO 5 – Preparing the Baby for Screening

Identify Three Sites for Sensor Placement and Evaluate Skin

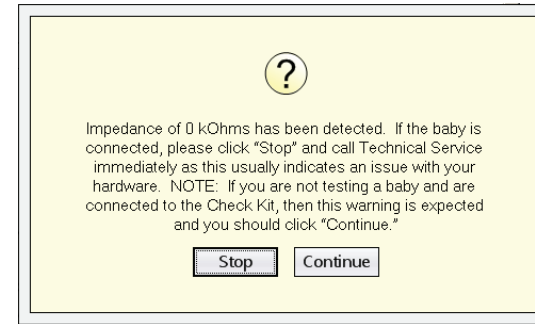
The screenshot shows the 'Baby Preparation' screen with four steps: 1. Evaluate skin type, clean or prepare if necessary; 2. Attach sensor cable to sensors and place sensors on baby; 3. Check impedance values; 4. Insert red and blue Acoustic Transducers in earphones. Apply earphones to baby (Blue: left ear, Red: right ear). Diagrams illustrate the sensor placement and earphone application.



# ALGO 5 – Preparing the Baby for Screening Check Impedance

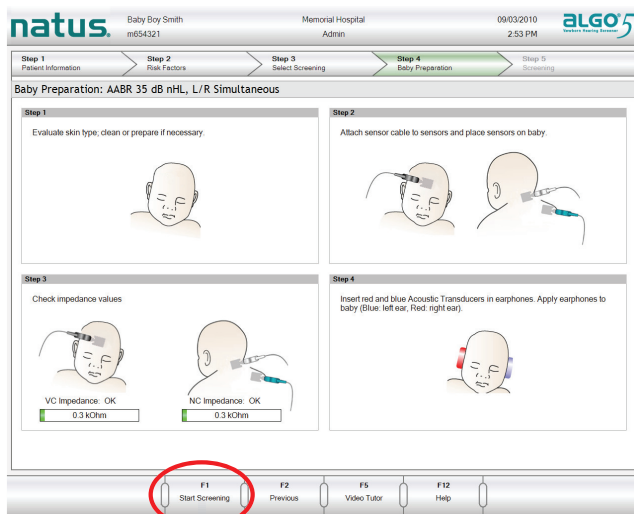


# Zero Impedance warning

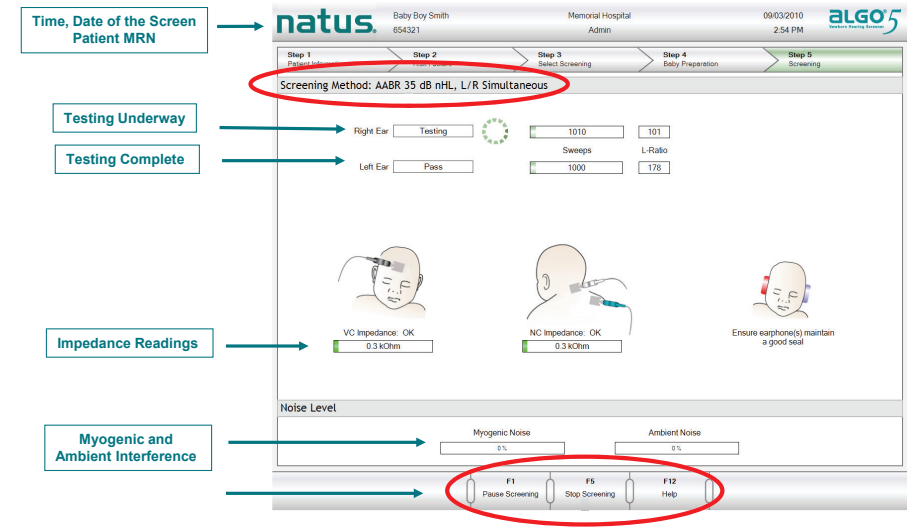


Important: Screening should not continue in this situation.

# ALGO 5 - Running the Screening Procedure



# ALGO 5 – Running the Screening Procedure



## ALGO 5 – Monitoring Interference

**natus** Baby Boy Smith Memorial Hospital 09/03/2010 2:54 PM ALGO 5  
 654321 Admin  
 Step 1 Patient Information Step 2 Risk Factors Step 3 Select Screening Step 4 Baby Preparation Step 5 Screening  
 Screening Method: AABR 35 dB nHL, L/R Simultaneous  
 Right Ear: Testing 1010 Sweeps: 101 L-Ratio: 101  
 Left Ear: Pass 1000 Sweeps: 1000 L-Ratio: 178  
 VC Impedance: OK 0.3 kOhm NC Impedance: OK 0.3 kOhm  
 Ensure earphone(s) maintain a good seal  
 Noise Level: Myogenic Noise 0% Ambient Noise 0%  
 F1 Pause Screening F5 Stop Screening F12 Help

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36

## ALGO 5 – SWEEP Count and Likelihood Ratio

**natus** Baby Boy Smith Memorial Hospital 09/03/2010 2:54 PM ALGO 5  
 654321 Admin  
 Step 1 Patient Information Step 2 Risk Factors Step 3 Select Screening Step 4 Baby Preparation Step 5 Screening  
 Screening Method: AABR 35 dB nHL, L/R Simultaneous  
 Right Ear: Testing 1010 Sweeps: 101 L-Ratio: 101  
 Left Ear: Pass 1000 Sweeps: 1000 L-Ratio: 178  
 VC Impedance: OK 0.3 kOhm NC Impedance: OK 0.3 kOhm  
 Ensure earphone(s) maintain a good seal  
 Noise Level: Myogenic Noise 0% Ambient Noise 0%  
 F1 Pause Screening F5 Stop Screening F12 Help

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37

## ALGO 5 – Observe and Record Results



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38

## ALGO 5 – Printing Results

[Preview the Report(s) to Print]

**natus**  
 ALGO 5 HEARING SCREENING RESULT  
 Smith, Baby Boy  
 m654321  
 Date of Birth: 09/02/2010  
 Gender: Male  
 Screen date: 09/03/2010  
 Screen time: 2:54 PM  
 Method: L/R Simult.  
 Application: 35 dB nHL  
 Duration: 0:50  
 % Myogenic: 0  
 Left ear: Pass  
 Left sweeps: 1000  
 Right ear: Pass  
 Right sweeps: 1500

Print  
 Cancel

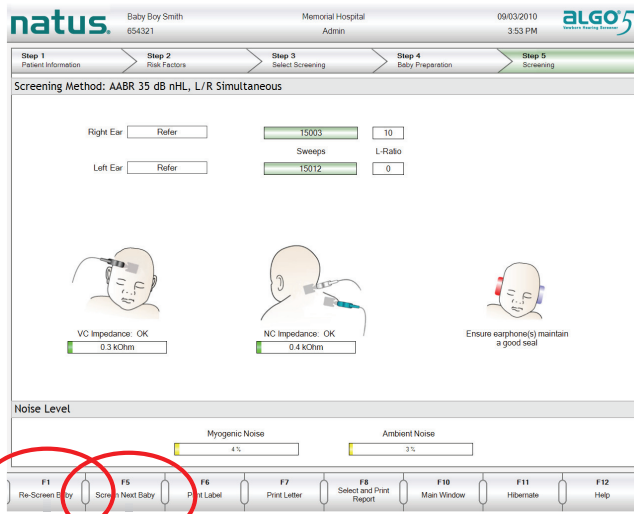
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39

## ALGO 5 - Rescreening



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40

## ALGO 5 – Clean Up

- Remove PCA clip from Jelly Tab Sensors
  - ▶ Clean PCA Cable
  - ▶ **Please use care in handling critical components such as the cables as they can be easily damaged**
- Remove Flexicoupler earphones and ATA Cable
  - ▶ Discard used Flexicoupler earphones
  - ▶ Clean ATA Cable
  - ▶ **Do not tap transducer tips on any surface to dislodge internal debris. Do not insert any instrument inside the transducer tips. The delicate cable ends are calibrated and can easily be damaged.**
- Remove Jelly Tab Sensors from baby
  - ▶ Discard used Jelly Tab Sensors

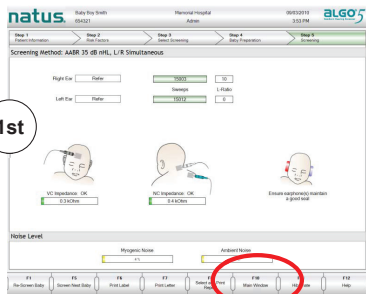
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41

## ALGO 5 – Shut Down



1st



2nd



4th  
Main power switch  
(on back side of column)

Important: Do not turn screener off while baby is still connected.

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42

## Cable storage



Note the options for cable storage available here:

> Hang the preamp and ends of the cables on the hooks provided at the back

> Place the preamp on its hook and the ends of the cables in the drawer

> Place preamp and cables in the cable tray on the side of the cart

Using these methods to store and protect the cables will preserve the delicate cable ends.

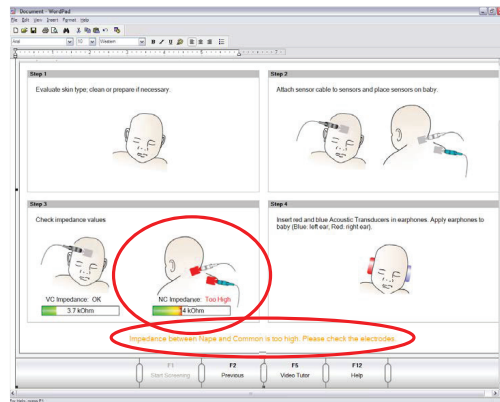
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43

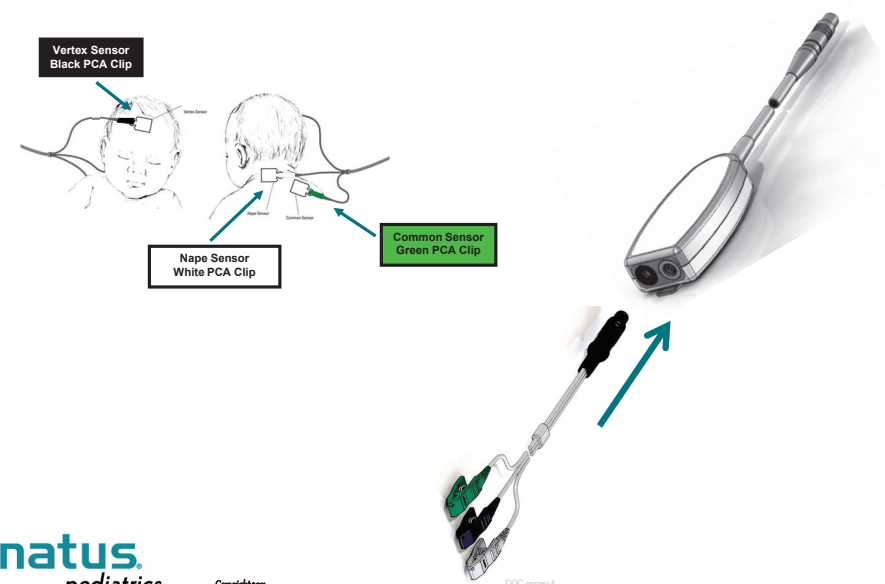
## ALGO 5 Troubleshooting – High Impedance



### ERROR MESSAGES

- IMPEDANCE BETWEEN NAPE AND COMMON IS TOO HIGH. PLEASE CHECK ELECTRODES.
- ELECTRODE IMPEDANCE IS TOO HIGH. PLEASE CHECK ELECTRODES.
- IMPEDANCE BETWEEN VERTEX AND COMMON IS TOO HIGH. PLEASE CHECK ELECTRODES.
- NAPE AND VERTEX SENSORS ARE REVERSED. CORRECT CLIP PLACEMENT AND RE-SCREEN.

## ALGO 5 Troubleshooting – High Impedance



## ALGO 5 – Reprepping Technique



## ALGO 5 – Reprepping Technique

- **Prep with NuPrep gel**
  - ▶ Wait for sensors to settle for 2 to 3 minutes
- **Place a small drop of saline on each site and reapply sensor**
- **If readings are still too high, remove all three Jelly Tab sensors and discard**
  - ▶ Get a fresh set of Jelly Tab sensors
  - ▶ Reprep the three Jelly Tab sensor sites again using NuPrep gel, place the sensors, and recheck readings
- **In exceptional cases try an alcohol swab (if permitted by your nursery protocol)**
  - ▶ Allow alcohol to dry thoroughly and follow with a wet wash with gauze
  - ▶ Then prep with NuPrep gel before placing the sensor

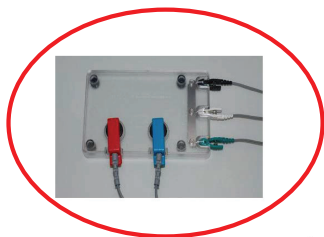
## ALGO 5 – Ambient Interference

**natus** Baby Boy Smith 654321 Memorial Hospital Admin 09/03/2010 3:29 PM **ALGO 5**  
 Step 1 Patient Information Step 2 Risk Factors Step 3 Select Screening Step 4 Baby Preparation Step 5 Screening  
 Screening Method: AABR 35 dB nHL, L/R Simultaneous  
 Right Ear Testing 327 Sweeps L-Ratio 0  
 Left Ear Testing 625 Sweeps L-Ratio 44  
 VC Impedance: OK 3.3 kOhm NC Impedance: OK 4.0 kOhm  
 Ensure earphone(s) maintain a good seal  
 Noise Level: Myogenic Noise 0% **Check Ambient Noise 30%**  
 F1 Pause Screening F5 Stop Screening F12 Help

## ALGO 5 – Myogenic Interference

**natus** Baby Boy Smith 654321 Memorial Hospital Admin 09/03/2010 3:27 PM **ALGO 5**  
 Step 1 Patient Information Step 2 Risk Factors Step 3 Select Screening Step 4 Baby Preparation Step 5 Screening  
 Screening Method: AABR 35 dB nHL, L/R Simultaneous  
 Right Ear Testing 73 Sweeps L-Ratio 0  
 Left Ear Testing 62 Sweeps L-Ratio 0  
 VC Impedance: OK 3.0 kOhm NC Impedance: OK 4.6 kOhm  
 Ensure earphone(s) maintain a good seal  
 Noise Level: **Check Myogenic Noise 30%** Ambient Noise 0%  
 F1 Pause Screening F5 Stop Screening F12 Help

## ALGO 5 - Equipment Check



1. DSP Box Check
2. ATA and PreAmp Cable connections
3. ATA Calibration
4. Artifact Test  
*a sixty second "environment" check*
5. Acoustic Test
6. Impedence Test

**natus**  
 Equipment Check  
 Run Equipment Check  
 DSP Box Test  
 Verifying DSP Box Initialization  
 Cable Connections  
 Verifying Cable Connectivity  
 ATA Calibration  
 <Next calibration: YY XX ZZZZ>  
 Artifact Test Run Artifact  
 Checking Myogenic Noise for 60 seconds  
 Acoustic Test Run Acoustic  
 Checking Speakers and Microphones Result Right Result Left  
 Impedance Test Run Impedance  
 Checking for Cable Impedance Issues

## ALGO 5 – Technical Support

- **USA and CANADA**
  - ▶ 650-802-0400
  - ▶ 800-303-0306
  - ▶ [technical\\_service@natus.com](mailto:technical_service@natus.com)
- **Europe/Middle East/Africa Region**
  - ▶ Genesys Medical Solutions Ltd., UK
    - [Euroservice@Genesysmedicalsolutions.com](mailto:Euroservice@Genesysmedicalsolutions.com)
    - Tel: +44 870 600 9940
    - Fax: +44 870 600 9941
- **Asia Pacific Region**  
**Scanmedics PTY Ltd., Australia**
  - ▶ Tel: + 61 2 9882 2088
  - ▶ [scanmedics@bigpond.com](mailto:scanmedics@bigpond.com)
- Please have your device model and serial number available when calling technical support

## ALGO 5 – In-Service Summary

- Understand ALGO 5 AABR™ technology
- Select appropriate baby for screening
- Set-up the ALGO 5 screener
- Prepare a baby for screening
- Enter patient information or retrieve a record
- Enter risk factors
- Run an ALGO 5 newborn hearing screen
- Troubleshoot common screening issues
- Clean-up and shut-down the ALGO 5

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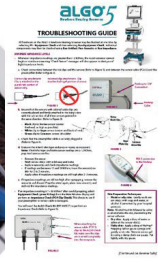
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52

## ALGO 5 – Natus Website Education and Support Tools

- [www.natus.com](http://www.natus.com)
- In-service documents
  - ▶ ALGO 5 Post-test
  - ▶ ALGO 5 Competency check-list
- Infant Prep Tutorial Video
- Quick Guides
  - ▶ ALGO 5 Quick Start
  - ▶ ALGO 5 Troubleshooting
  - ▶ ALGO 5 Tips for Successful Screening
- Additional support documents
  - ▶ Parent education
  - ▶ ALGO 5 Policy/Procedure
  - ▶ ALGO 5 Frequently Asked Questions



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53