

# Standard HRaM Editing Techniques



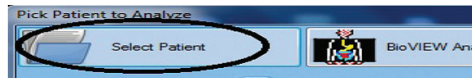
**SANDHILL**  
scientific

## Opening the Study:

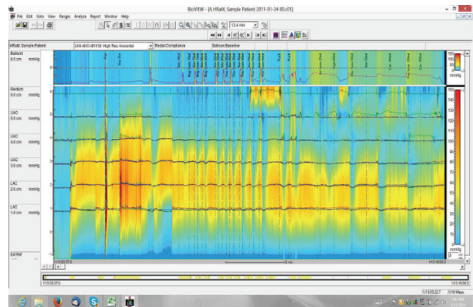
Double click on the Sandhill Applications icon on the desktop. Click 'Analysis'.



Click 'Select Patient': The path to find the patient file is: C:\Sandhill\Patients\ARM



The complete study will open with the waveforms overlaid on top of the ClouseVIEW. Note that for each probe depth from 1 cm to 5 cm there will be four waveforms. Each waveform represents the quadrant where the data is being measured and are color coded for each quadrant: Posterior, Left, Anterior and Right. The Balloon channel is displayed separately above the sphincter channels.



## Correct the Anorectal and Balloon Baseline Measurements

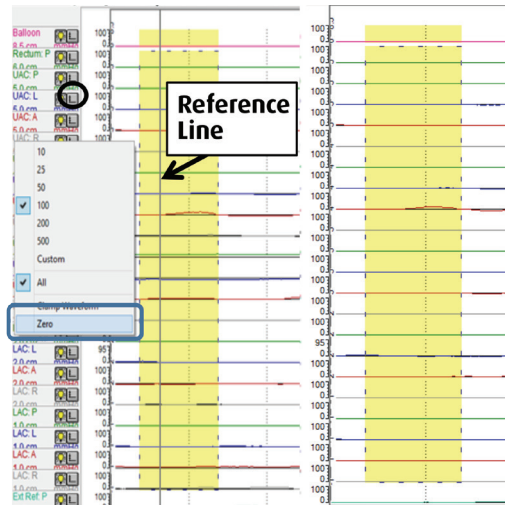
Turn off the ClouseVIEW and change time to 1 minute.



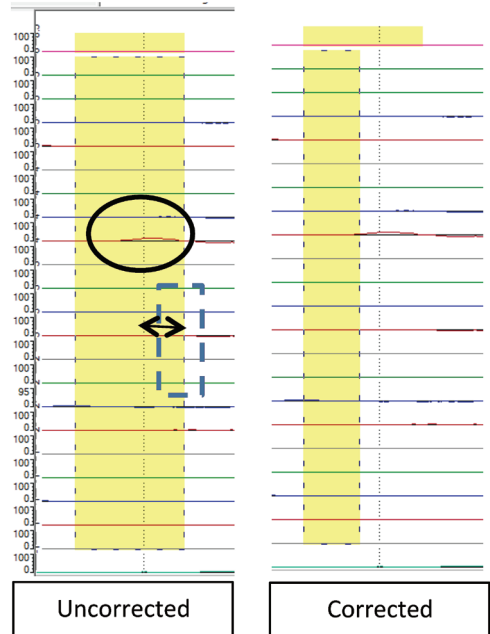
The first two measurements taken are the Balloon and Anorectal baselines. These measurements are taken simultaneously with the balloon baseline measurement located in the most proximal channel and the anorectal baseline measurement is located immediately below in the remainder of the channels used to calculate sphincter data.

\*Zero all channels so that each waveform is positioned on the zero axis, avoiding any areas of contraction or increased pressure:

1. Click once on the tracing in a quiet area. This creates a reference line.
2. Click on any graph button on the left of the tracing.
3. Click 'Zero'. This will adjust all channels onto the zero axis at the reference point.

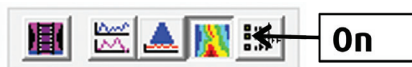


If areas of pressure are observed, adjust the baseline measurement box by clicking and dragging the edges of the measurement box.

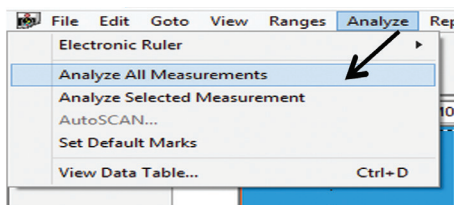


## Edit Pressure Measurements

Turn on ClouseVIEW

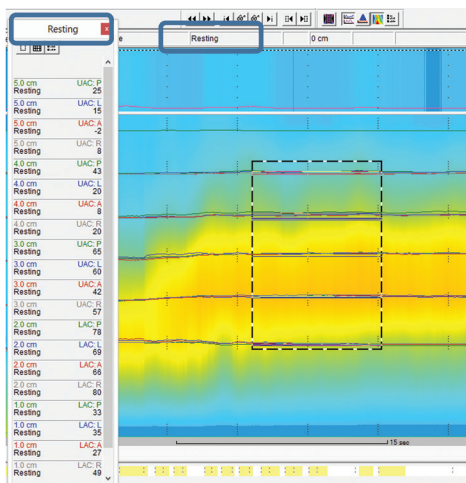


**\*IMPORTANT:** Once the Baselines have been edited, the software must re-analyze all measurements based on these corrections. Click 'Analyze' in the Toolbar and select 'Analyze All measurements'. Do Not Re-Analyze again.



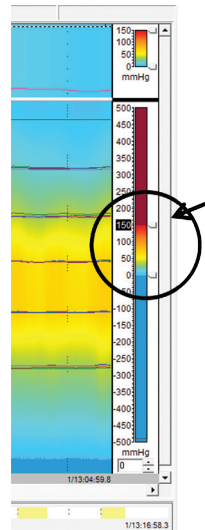
## Resting Pressure

Turn on the Analysis Tool. Click the Tab key on the keyboard to advance to the Resting measurement. The Resting measurement will calculate the pressure within the measurement area for each channel. Assume that the measurement is taken in a quiet area. Click and drag the sides of the box if needed. The values for each channel will be displayed in the analysis box. Note that each quadrant data is color coded both on the wave and in the analysis box.



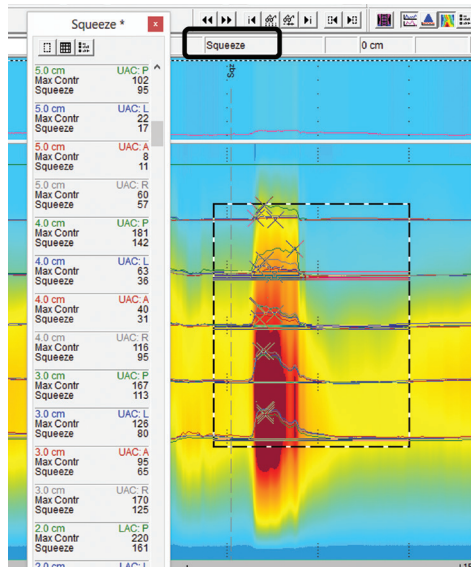
Resting pressure data is measured at each probe depth throughout the sphincter from 1 cm through 5 cm.

If the pressure in the sphincter is weak, the color of the ClouseVIEW can be adjusted. Click the top thumb and drag the color down as needed. Note that there is a color scale for both the balloon channel and the sphincter channels.

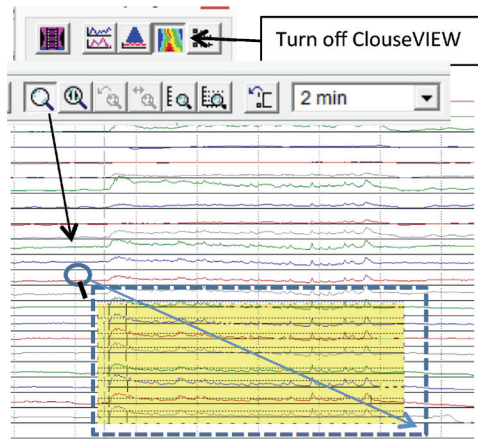


## Squeeze Measurement

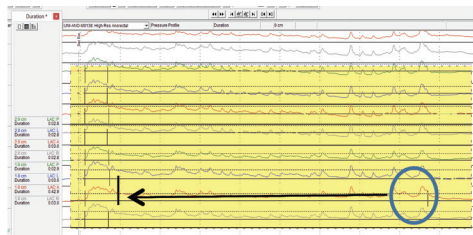
Press 'Tab' to advance to the Squeeze measurement. The Squeeze measurement is calculated at each probe depth from 5 cm to 1 cm from the anal verge. Verify that the measurement box includes the complete squeeze effort with at least 1 second of resting pressure before the squeeze is initiated. The analysis marks (X) indicates the highest pressure exerted.



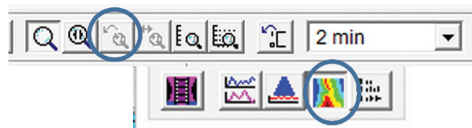
Press 'Tab' to advance to the Squeeze Duration measurement. Squeeze Duration is calculated in the channels positioned at 1 and 2 cm from the anal verge. Turn Off ClouseVIEW. Click and release the Magnify tool. Click and drag across the Duration measurement box.



Correct analysis marks as follows: The first vertical line for each channel should be positioned on the initial upstroke of the pressure wave. The second vertical line for each channel is positioned at the first point where the pressure wave falls below the dotted 50% threshold.



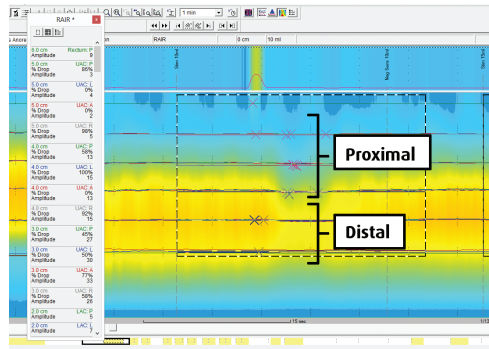
Click 'Last View' to return to original view. Turn 'ClouseVIEW' on.





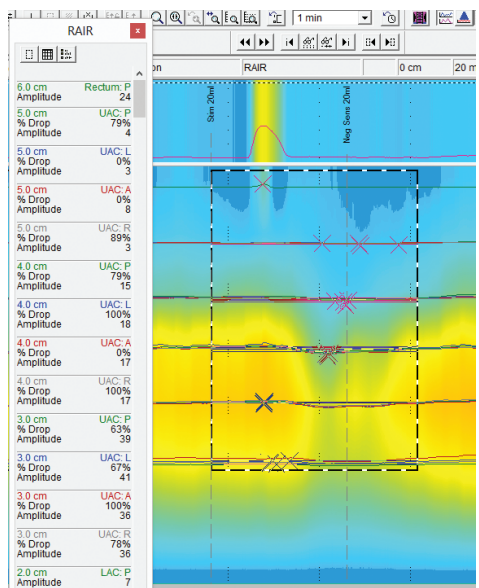
## RAIR: Recto-Anal Inhibitory Reflex

Press 'Tab' to advance to the first RAIR measurement. The 3 proximal channel positions calculate the smooth muscle response (relaxation). The distal 2 channel positions calculate the striated muscle response (contraction). The 'X' in the proximal 3 channels should be positioned at the point of lowest pressure after the balloon inflation as indicated by a cooler color. The 'X' in the distal 2 channel positions should be positioned at the point of highest pressure at the onset of the balloon inflation.

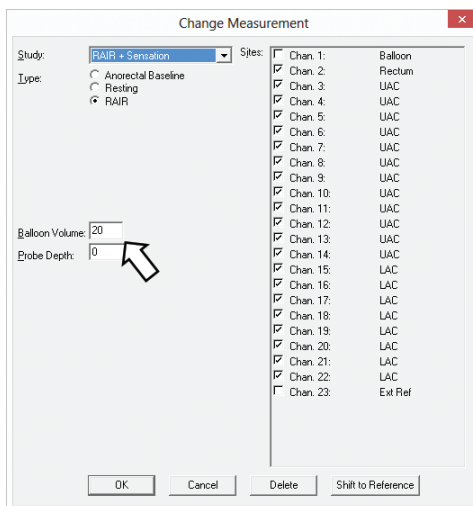


Tab through each RAIR measurement, observing for accuracy:

1. The analysis marks (X) are positioned correctly
2. The Stim event marker displays the correct balloon volume
3. The Sensation event marker is correctly annotated



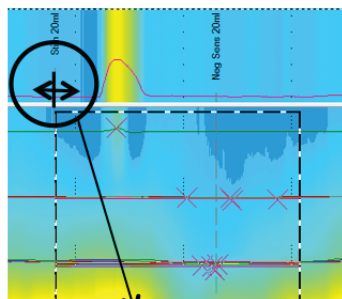
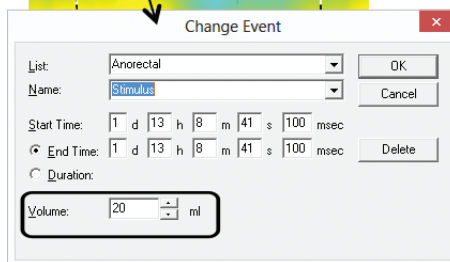
The Stim event marker annotates the measurement type. To correct the actual measurement, double click inside the measurement box to activate the 'Change Measurement' dialog box. Correct the balloon volume. Click OK. This will change the actual measurement.



The 'Change Measurement' dialog box is shown. It has a 'Study' dropdown set to 'RAIR + Sensation'. Under 'Type', 'RAIR' is selected with a radio button. There are input fields for 'Balloon Volume' (set to 20) and 'Probe Depth' (set to 0). An arrow points to the 'Balloon Volume' field. On the right, there is a list of 'Sites' with checkboxes for each channel (Chan. 1 to Chan. 23) and 'Ext Ref'. The 'OK' button is highlighted.

Tab through each RAIR measurement, observing for accuracy:

1. The analysis marks (X) are positioned correctly
2. The Stim event marker displays the correct balloon volume
3. The Sensation event marker is correctly annotated

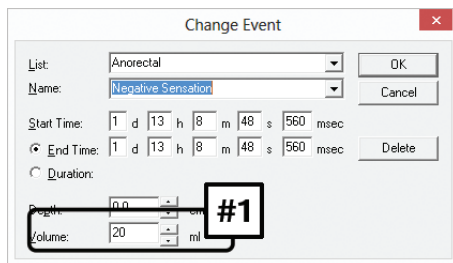



The 'Change Event' dialog box is shown. It has a 'List' dropdown set to 'Anorectal' and a 'Name' dropdown set to 'Stimulus'. There are input fields for 'Start Time' (1 d 13 h 8 m 41 s 100 msec) and 'End Time' (1 d 13 h 8 m 41 s 100 msec). The 'Duration' radio button is selected. There is a 'Volume' input field set to 20 ml. The 'OK' button is highlighted.



To correct the Sensation event marker, double click on the event marker to activate the Change Event dialog box.

1. Correct the Volume.
2. Click on the 'Name' drop box and select the correct Sensation.
3. Click OK.



Change Event

List: Anorectal

Name: Negative Sensation

Start Time: 1 d 13 h 8 m 48 s 560 msec

End Time: 1 d 13 h 8 m 48 s 560 msec

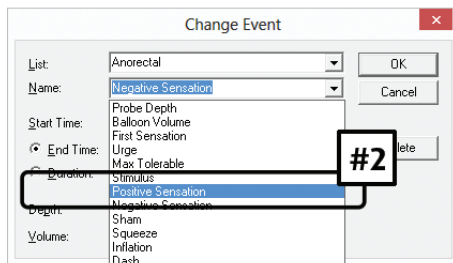
Duration: ☐

Depth: 0.0 cm

Volume: 20 ml

#1

OK Cancel Delete



Change Event

List: Anorectal

Name: Negative Sensation

Start Time: Probe Depth  
Balloon Volume  
First Sensation  
Urge  
Max Tolerable

End Time: ☒

Duration: ☐

Depth: Stimulus

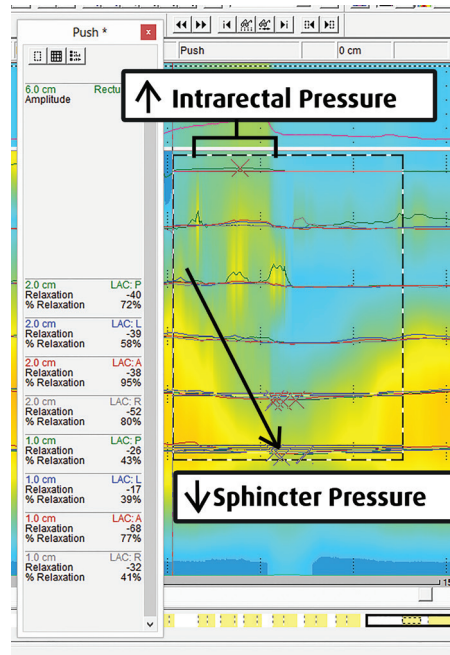
Volume: Positive Sensation  
Negative Sensation  
Sham  
Squeeze  
Inflation  
Dash

#2

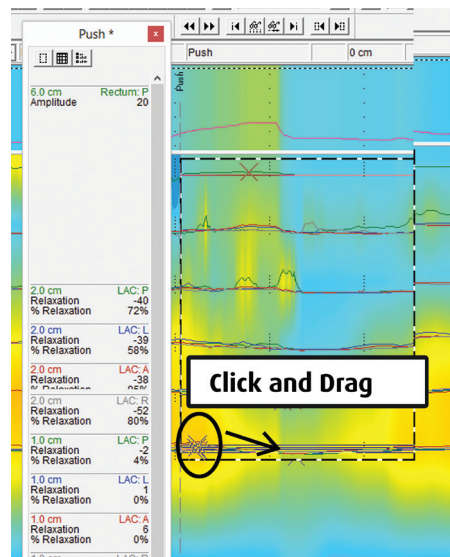
OK Cancel Delete

## Push Measurement

Press 'Tab' to advance to the next measurement. The Push measurement evaluates the striated muscle response as the patient is asked to 'bear down' or push. The Push measurement calculates the data at the distal 2 positions as well as the intrarectal channel. The desired response during a Push maneuver is an increase in pressure in the intrarectal channel and a decrease in pressure in the sphincter channels. The values in the sphincter channels will reflect a negative value if the Push is being done correctly. Edit each Push measurement.

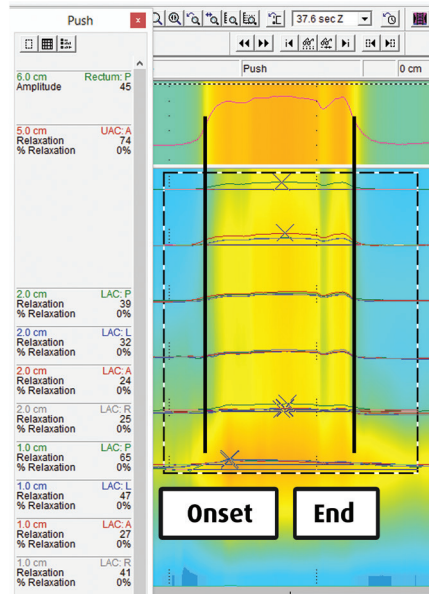


In this example the most distal position is reflecting a positive value and the 'X's are positioned in an area of pressure. The software is programmed to mark the pressure which shows the greatest change from baseline, either positive or negative. Many times a patient will squeeze before the push. In this instance, the 'X's are incorrectly positioned. Click and drag each 'X' to the correct position.



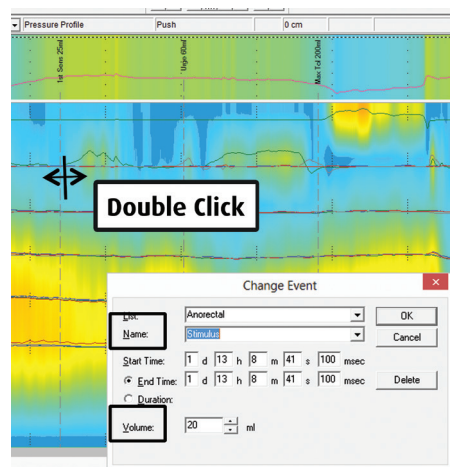
## Push Measurement

If no decrease in pressure is observed from the onset of increased intrarectal pressure to the end of maneuver, no correction is required.



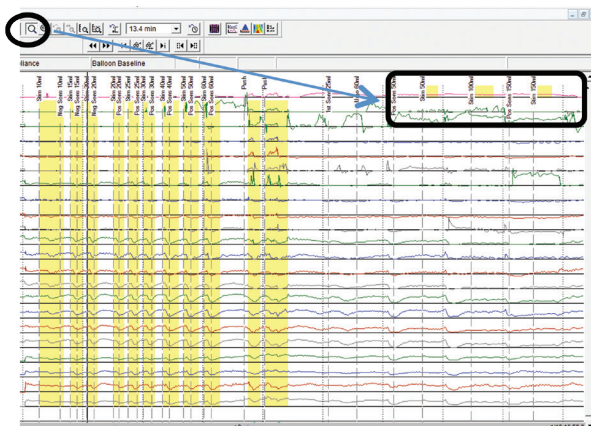
## Slow Sensation

Scroll forward in the study using the gray scroll bar just below the study to the Slow Sensation annotations. Correct Slow Sensation event marks as needed to reflect Correct annotations and volumes for First Sensation, Urge and Max Tolerable. Double click on the event mark. The 'Change Event' Dialog box will open. Make necessary corrections under Name and Volume. Click OK.

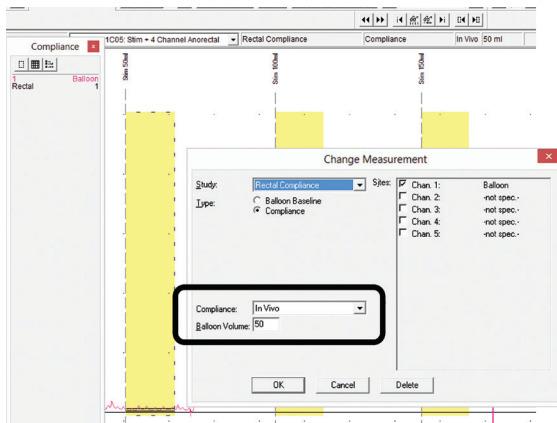


## Rectal Compliance

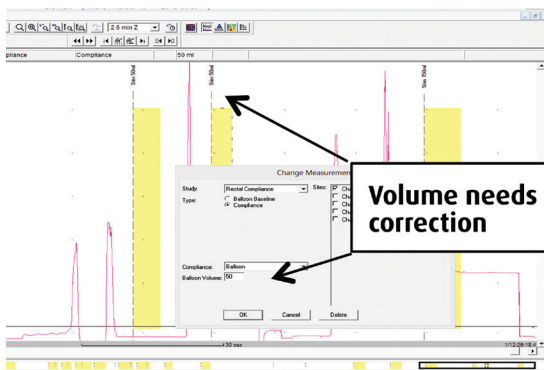
Magnify the area of the compliance measurements using the Magnify Tool. Click and release the magnify tool to activate. Click and drag a box around the compliance boxes to magnify both x and y axes.



Double click on each measurement taken in the rectum and verify Balloon Volume. Click on the drop menu for Compliance and label measurements taken in the patient as 'In Vivo'.

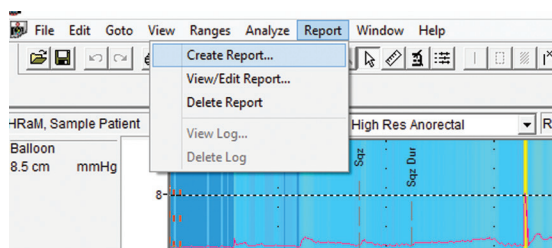


Double click on each measurement taken at atmosphere after the probe has been removed from the rectum. Verify Balloon Volume. Click on the drop menu for Compliance and label measurements taken in atmosphere as 'Balloon'.

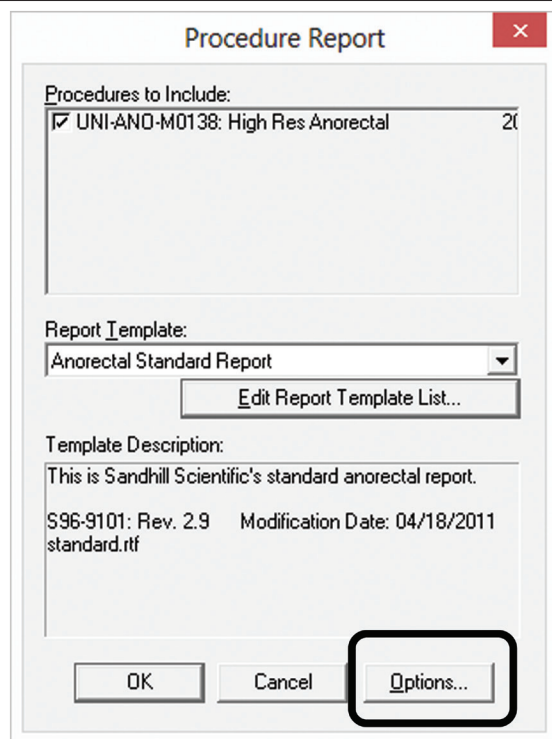


## Procedure Report

Once ALL measurements are edited, Create the Report: Click 'Report' in the Toolbar. Click 'Create Report'.



Click 'Options' to customize data to be included on the report.



## Procedure Report

Select your desired selections for each section. Click OK.

Note: These selections will be saved from study to study until you change your options. It is not necessary to choose your options with each patient study.

**Report Options**

Pressure Profile | **RAIR + Sensation** | Compliance

**Tables**

- ☒ Enable
  - ☒ Resting
  - ☒ Max Voluntary Contraction
  - ☒ Squeeze
  - ☐ Duration
  - ☒ Push
  - ☐ Show Compressed

**Profile**

- ☒ Enable
  - ☒ Sphincter Length
  - ☒ Avg Squeeze Duration
  - ☐ Avg Squeeze Area
  - ☒ Show Normals

**Linear Plots**

- ☐ Enable
  - ☒ Resting
  - ☐ Max Voluntary Contraction
  - ☒ Rest + Max Vol. Cont.
  - ☒ Squeeze
  - ☐ Push

**Vector Plots**

- ☒ Enable
  - ☒ Resting
  - ☒ Max Voluntary Contraction
  - ☐ Squeeze
  - ☐ Push

OK Cancel Apply

Review the Report data. Print.

**Anorectal Manometry Report**

**Patient Data**

Patient Name: HRAH, Sample Patient  
 Patient ID: [blank]  
 Patient Sex: [blank]  
 Date of Admission: 2011-01-24  
 Visit ID: [blank]

**Clinician Data**

Physician: DR. [blank]  
 Referring Physician: DR. [blank]  
 Performance: [blank]

**Patient History**

Symptoms: [blank]  
 Medications: [blank]

**Impressions**

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**[INI-ANO-M0135: High Anorectal Procedure]**  
 2011-01-24

**Pressure Profile Study**

Resting 1 sec

State	cm	cm	cm	cm	cm	cm
UAC	3.0	25	15	-2	8	11
UAC	4.0	40	20	1	20	22
UAC	3.0	65	60	42	51	58
UAC	2.0	75	65	66	82	73
UAC	1.0	32	35	27	49	38

Squeeze 1 sec

State	cm	cm	cm	cm	cm	cm
UAC	3.0	102	62	2	62	48
UAC	4.0	101	62	40	116	100
UAC	3.0	161	128	93	170	138
UAC	2.0	220	229	240	246	224
UAC	1.0	209	222	192	220	214

Squeeze 1 sec

State	cm	cm	cm	cm	cm	cm
UAC	3.0	95	17	11	37	44
UAC	4.0	142	38	31	95	79
UAC	3.0	113	80	68	135	96
UAC	2.0	161	177	192	185	179
UAC	1.0	170	179	130	177	165

Duration

State	cm	cm	cm	cm	cm	cm
UAC	3.0	95	17	11	37	44
UAC	4.0	142	38	31	95	79
UAC	3.0	113	80	68	135	96
UAC	2.0	161	177	192	185	179
UAC	1.0	170	179	130	177	165





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