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# ODS Report Writing Interface Makes Our Reporting Simple and Better

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#### **ABSTRACT**

When we feel that a complex report cannot be generated directly from SAS®, we usually get the data or some report components prepared in SAS, and then use other software, such as MS Word or Excel, to finish the reporting job. This situation has been changed since SAS 9.2. Taking one of our routine reports as an example, this paper will illustrate some useful features that the ODS report writing interface has, how syntaxes are applied, and how a complicated report can be done with simple code. With this new tool, our complex reports can be generated by just running the SAS program, which is much smoother and more efficient.

#### **KEYWORDS**

Complex reports, ODS report writing interface, inline formatting.

#### **BACKGROND**

INTERMACS (Interagency Registry for Mechanically Assisted Circulatory Support) is a national registry for patients who receive mechanical circulatory support device therapy to treat advanced heart failure. All the data is collected online through the United Network for Organ Sharing (UNOS) in Richmond, Virginia; and all the analyses and reports are processed in the INTERMACS at the University of Alabama at Birmingham. We receive 36 SAS datasets from UNOS periodically, which include all kinds of information regarding mechanical heart transplantation.

The example used in this paper is the adverse event review report, which is sent to the doctors periodically for a review to verify if the stated events or causes are valid. The report is composed of two parts, on the top is the Patient Information Overview, and then followed by the Event Worksheets that correspond to the high-lighted events listed in the Patient Information Overview.

In a brief view of a sample report (see Appendix 1), you can see that it is not simple, not something which can be easily generated by SAS before versions 9.1. Besides the fancy layout of the report, some specifications make the programming interesting, such as:

- 1) The horizontal and vertical spaces of some items can be dynamically adjusted according to the different lengths of the values.
- 2) For certain character strings, special font formats (styles) are assigned according to variable value. And different font formats can be displayed in one table cell.

Before the ODS report writing interface is available in SAS, for situation like this, we use SAS to prepare the report data and generate some report components, and then outsource the display jobs to MS Word, or ACCESS by which the report is generated.

#### INTRODUCTION

Before showing how the report is generated, let's have a brief look at the two report writing tools, the ODS report writing interface ('the Interface' in the following text) and the inline formatting.

#### **ODS Report Writing Interface**

Every time the Interface is run, you will see a warning message in the log window (Figure 1). Since the Interface is in the phase of "preproduction" in SAS 9.2, you cannot find relevant documentations in the SAS Help window. But you can still find a lot of information online. The references of this paper will give you a good starting point.

WARNING: Data step interface is preproduction in this release.

Figure 1

DATA \_NULL\_ has been used for report writing in SAS for a long time. The ODS report writing interface is a great leap further. Its power comes from the combination of DATA \_NULL\_ and ODS. It fully applies ODS features such as proportional fonts, colors, images, and so on; while at the same time it provides very flexible placement capabilities, and takes great advantage of the rich programming features that the data step offers, such as conditional logic, formatting capabilities, by-group processing, arrays, etc. The Interface is object-oriented, which provides you with many useful methods to control how you want to display your information so that even the most rigid reporting requirements can be met easily. In this paper, only the programming points used in the application SAS code are discussed in detail.

Here is how the basic programming structure of the Interface is used.

```
ods listing close;
ods pdf notoc startpage=no style=printer_adj file="...\ReportName.pdf";
data _null_;
   set AE Info;
   declare odsout adj();
                                0
   adj.table_start();
                                0
      adj.row start();
         adj.format_cell(data: " Patient and Device Information",
         overrides: "just=1 font_size=14pt backgroundcolor=cxccffff font_weight=bold");
      adj.row_end();
   adj.table end();
                                0
run;
ods pdf close;
Declare an ODS object:
       Two ways:
```

- i) declare odsout object; object = \_new\_ object ( );
- ii) declare odsout object ():

Here, "declare" (short form: dcl) is the key word for declaring an object; "odsout" is the key word (class name) for creating a class instance of ODS output object; and "object" is placeholder for any object variable name. The above two methods have the same effect. In the code above, "adj" is the object variable name. (The adverse event review process was called "adjudication" initially.)

2 and 3 Object methods used to set up a table:

The syntax for an object to use methods: object.method (<optional argument>, ···, <optional argument>);

In the above code, method table\_start() starts a table. It is always coupled with method table\_end (), which ends the table; the methods row\_start() and row\_end() work in the same way; and the method format\_cell() works alone to define a cell.

Method arguments:

They define what contents and styles are used to display by a method.

Here, the argument "data:" is to show the text " Patient and Device Information" in the cell; and the argument "override" indicates that 4 default style values will be reset in this cell.

## Inline Formatting

The inline formatting syntax: escape character {function-name <argument-1 <argument-2 ... <argument-n>>>}

The inline formatting is a very useful ODS tool that applies formatting functions to define how the contents are displayed rather than using global or default styles. This tool is experimental in SAS 8.2, and is in production for all destinations in SAS 9.2. Here is an example in the report.

ods escapechar='^';

title "^{style [just=left preimage='...\INTERMACS\_logo\_.bmp']}"

"^{nbspace 35} ^{style [font\_size=19pt font\_weight=bold font\_style=italic] Medical Event Review Worksheet}"

"^{newline} ^{style [just=right font\_face=arial font\_size=10pt] Event Date: before 4/1/2010}";

1 To specify an escape character:

The syntax: ods escapechar='escape-character';

An escape character should not occur for any other uses in the code. For the inline formatting, it indicates that an inline formatting function follows. The functions and the specified contents are wrapped in curly brackets. Here, '^' is specified as the escape character.

2 Inline formatting functions in the above statement:

Style: Modifies the style of the current contents. "preimage=" argument imports an

image at the beginning of the title.

Nbspace: Insert blank spaces. Newline: Start a new line.

Here is how the title is displayed in the report by running the above title statement:



#### Figure 2

You can apply the inline formatting to any contents (inserted text or variable value) that you want to display in a report. The coding is simple, and it will make your report look great.

#### **APPLICATION IMPLEMENTATION**

The code to generate the report can be grouped into two parts: data preparation and report writing. The focus in this paper is the second part. However, to better understand the report writing, a brief description of the first part is helpful.

## Data Preparation

After the data extraction and manipulation from raw datasets, two sets of data are generated: patient overall data and the adverse event data. Within each folder (see Figure 3 and 4), the small datasets are generated from two large datasets by Event\_ID, which is postfix of each subset dataset name.

For example, the dataset "pt\_12.sas7bdat" lists all relevant patient clinical events after the operation with Event\_ID=12, ordered by the event date; while "ae\_12.sas7bdat" holds the information of all adverse events sorted by event date after that operation, which are selected for the doctors to review.

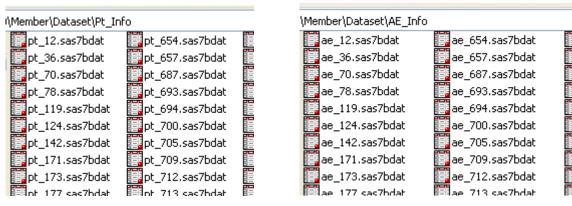


Figure 3

# Figure 4

## Report Writing

In the report writing code, DATA \_NULL\_ is the only SAS step repeatedly used to generate all the pieces of the report. Instead of going through the statements line by line, several helpful programming points are illustrated in this section. If you want to find a specific syntax in detail, please view the references.

#### 1. Dynamic Spacing

If a reporting program uses the fixed display setting, sometimes it is not easy to set the right cell sizes or the right spaces between cells on a report sheet. The trouble is how to display all the values, and in the meantime to have a fine layout of the report contents if there exit a few extreme long strings for certain variable fields. If you want the report to look good, you may have to truncate those long values or rephrase them. Using the Interface, given the report setting and the length of variable value, if it is necessary, a new row will be inserted in the cell automatically until the entire value is displayed; or the horizontal spaces will be adjusted automatically in an optimal way.

Comparing the following two figures (Figure 5 and 6), you will see the effect in horizontal and vertical dimensions.

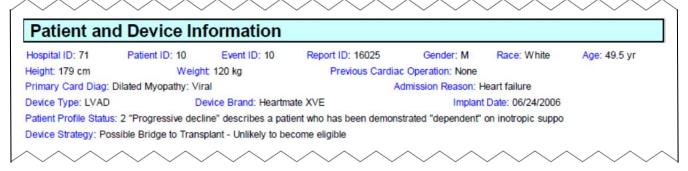


Figure 5



Figure 6

In Figure 6, the spaces between items in the first row are adjusted automatically due to the long Race value; and a new row is added due to the long Patient Profile Status value. The following is the corresponding code.

```
%macro insert1(label,var);
adj.format_cell(data: "^{style [foreground=cx0000ff]&label: }"||strip(&var), overrides: "just=1");
%mend insert1;
%macro insert2(label,var,unit);
adj.format cell(data: "^{style [foreground=cx0000ff]&label: }"||strip(&var)||" &unit", overrides:
"just=1");
%mend insert2;
%macro blkrow(height=1);
                                           €
adj.row start();
   adj.format_cell(overrides: "cellheight=&height.mm");
adj.row_end();
%mend blkrow;
data _null_;
adj.table_start(overrides: "width=100pct borderwidth=0");
   %blkrow();
   adj.row_start();
      %insert1(Hospital ID, Hospital ID);
      % insert1(Patient ID, Patient ID);
      %insert1(Event ID, Event ID);
      %insert1(Report ID, Patient Report ID);
      %insert1(Gender, Gender);
      % insert1(Race, Race);
      %insert2(Age,Age,yr);
   adj.row end();
adj.table_end();
run:
```

- 1 A macro to insert the label in blue and variable value in black into a cell.
- A macro to insert the label in blue and variable value in black plus a unit name into a cell.
- 8 A macro to insert a blank row with default height = 1mm.
- O Putting all the cell into one row without setting "cellwidth" argument. By default, SAS will adjust them automatically. If you want to put them in fixed positions, you can do it by setting "cellwidth" values.

You do not see the specific coding for the adjusting effect, which is all done by SAS default. These little things may turn out to be a big programming deal in other software packages, while SAS automatically does these for you. What a relief!

#### 2. Generating Headers in DATA \_NULL\_

In SAS, if a procedure generates the resulting tables or lists longer than one page, the column headers will be automatically added on the top of every new page, but this will not happen in DATA \_NULL\_ by default. However, we can still do it in the following code, which inserts the headers as in Figure 7 on the top of every new page.

Event	E	vent Date	Submission Status	Last Saved
Demographics	10/12/2006	(Data entry start)	Complete	03/28/2007

Figure 7

```
%macro Packet(Event_ID,N,pageLines);
%macro Pt_Info;
data _null_;
   set Pt_Info end=eof;
   if _n_=1 then declare odsout adj();
   if n =1 | mod( n ,&pageLines)=&pageLines-1 then do;
   adj.table start(overrides: "borderwidth=2");
      adj.row start();
         adj.format_cell(data: "Event", inhibit: "LR",
         overrides: "font_weight=bold vjust=m cellwidth=11.2cm");
         adj.format_cell(data: "Event Date", inhibit: "LR",
         overrides: "font_weight=bold vjust=m cellwidth=3.7cm");
         adj.format_cell(data: "Submission|Status", split: "|", inhibit: "LR",
                                                                                        0
         overrides: "font weight=bold cellwidth=1.8cm");
         adj.format_cell(data: "Last|Saved", split: "|", inhibit: "LR",
         overrides: "font_weight=bold cellwidth=1.7cm");
      adj.row_end();
   adj.table_end();
   end;
run;
%mend Pt_Info;
%mend Packet;
```

- 1 The trick here to put the column headers on the top of each page is the MOD() function on \_N\_ in the IF statement. First, I counted the number of rows in one page in a testing run, then set the macro variable &pageLines to that the number+1. So, if it is the top row of a page, the column headers will be inserted.
- 2 The argument "split" specifies the symbol to break the data argument contents into two rows; the argument "inhibit" suppresses the border lines of a cell, for example, <u>inhibit: "LR"</u> means that the left and right border lines of the cell are suppressed.

#### 3. Special Symbols

Special symbols are often appeared in reports. In our reports, we used some square check boxes, such as in Figure 8.

# Based on the provided information: I. Occurence of bleeding: I find no reason to question the existence of this bleeding episode as stated above. I do find reason to question the existence of this bleeding episode as stated above becuase:

## Figure 8

Here is the code to use special symbols:

```
adj.row_start();
   adj.format_cell(data: "^{style [font_size=13pt] ^{unicode 2610}} ^{style }
   [font_size=10pt]I find no reason to question the existence of this bleeding ....}",
   overrides: "just=1 cellheight=0.78cm");
adj.row_end();

adj.row_start();
   adj.format_cell(data: "^{style [font_size=13pt] ^{unicode 2610}} ^{style }
```

```
[font_size=10pt]I ^{style [font_size=9pt font_weight=bold
foreground=maroon] do} find reason to question the existence of this bleeding ...:}",
  overrides: "just=1 cellheight=0.78cm");
adj.row_end();
```

1 and 2 We can use inline formatting UNICODE function to insert whatever special symbols available in Unicode list which has various symbols. Here, the Unicode 2610 stands for the square check box.

#### 4. Conditional Formatting

You may have noticed that in the "Event" column of the patient overall information sheet, some events stand out in a different format (blue and bold). It means that these events are selected for review.

AE Bleeding (Report ID: 18618)	12/17/2009	01/27/201
Rehospitalization - Admission	12/17/2009	01/27/2010
Rehospitalization - Discharge	12/22/2009	01/27/2010
AE Neuro Dysfunction (Report ID: 18619)	12/25/2009	01/27/2010
Rehospitalization - Admission	12/25/2009	01/27/2010
AE Bleeding (Report ID: 18619)	12/29/2009	01/27/2010

#### Figure 9

Here is the code:

```
%macro Pt_Info;
data _null_;
...
    if fmt=1 then do;
        adj.format_cell(data: "^{style [font_weight=bold]"||strip(Event)||"}"||
            ' (Report ID: '||strip(patient_report_id)||')', inhibit: "LTR",
            overrides: "just=1 vjust=t foreground=blue font_weight=light
            cellwidth=11.2cm cellpadding=0 url="||strip(LinkTo));
    end;
...
run;
%mend Pt_Info;
```

- 1 The variable fmt is in the Pt\_Event\_ID datasets (see Figure 3), which indicates whether an event is going to be reviewed (fmt = 1: to be reviewed).
- 2 By taking the advantage of data step, IF statement is used here to conditionally set the format for only the events to be reviewed. The style parameters in "data" and "overrides" arguments define the new format.

#### **CONCLUSION**

The ODS report writing interface is an excellent tool to handle the complex reports. Comparing with other approaches, the Interface makes the report generation process smoother and more efficient. It gets all the programming jobs done in SAS, a one-stop solution. Based on my experiences, the Interface programming is easy to learn and very productive. The coding process might be tedious sometimes, and proper use of macros can reduce the repetitions.

I agree with what Daniel O'Connor stated in his paper, "DATA \_NULL\_ report writing has long been an integral part of the custom report writing offered by SAS<sup>sm</sup>, but with this newly updated ODS Report Writing technology in SAS<sup>sm</sup> 9.2, you will have the ability to produce reports that you have only dreamed about."[2]

#### **REFERENCES**

- 1. Appendix 2: Method Documentation (a list of object method syntaxes with brief examples), support.sas.com/rnd/base/datastep/dsobject/Power to show documentation.pdf
- 2. Daniel O'Connor, The Power to Show: Ad Hoc Reporting, Custom Invoices, and Form Letters, Paper 313-2009, SAS Global Forum 2009, support.sas.com/resources/papers/proceedings09/313-2009.pdf
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# Appendix 1.



# Patient Information Overview (Event ID: 865)

Event	Event Date	Submission Status	Last Saved
Demographics	03/05/2008 (Data entry start)	Complete	12/31/2008
Pre-Implant	11/28/2007 (Decision Date)	Complete	01/22/2009
Quality of Life (Pre-Implant) - Not completed	18	11.5	01/22/2009
Trailmaking (Pre-implant) - Not attempted			01/22/2009
Implant	11/30/2007	Complete	08/01/2008
1 Week Post-Implant	12/07/2007	Complete	08/01/2008
Implant Discharge	12/17/2007	Complete	08/04/2008
1 Month Post-Implant	12/30/2007 (Expected date)	Complete	08/01/2008
3 Month Follow-Up	02/12/2008	Complete	08/01/2008
Quality of Life (3-Month) - Not completed		- 33	08/01/2008
Trailmaking (3-Month) - Not attempted			08/01/2008
6 Month Follow-Up	05/06/2008	Complete	08/04/2008
Quality of Life (6-Month) - Completed			08/04/2008
Trailmaking (6-Month) - Not attempted			08/04/2008
AE Infection	06/23/2008	-	08/04/2008
Rehospitalization - Admission	06/23/2008		08/04/2008
Rehospitalization - Discharge	06/27/2008		08/04/2008
AE Bleeding	11/08/2008		04/07/2009
1 Year Follow-Up	11/25/2008	Complete	04/07/2009
Quality of Life (12-Month) - Not completed			04/07/2009
Trailmaking (12-Month) - Not attempted	200		04/07/2009
1.5 Year Follow-Up	05/28/2009	Complete	06/12/2009
Quality of Life (18-Month) - Not completed	0.000 0.00 0.00 0.00	- They have	06/12/2009
Trailmaking (18-Month) - Not attempted			06/12/2009
2 Year Follow-Up	12/17/2009	Complete	01/27/2010
Quality of Life (24-Month) - Not completed	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1111111	01/27/2010
Trailmaking (24-Month) - Not attempted			01/27/2010
AE Bleeding (Report ID: 18618)	12/17/2009		01/27/2010
Rehospitalization - Admission	12/17/2009		01/27/2010
Rehospitalization - Discharge	12/22/2009		01/27/2010
AE Neuro Dysfunction (Report ID: 18619)	12/25/2009		01/27/2010
Rehospitalization - Admission	12/25/2009		01/27/2010
AE Bleeding (Report ID: 18619)	12/29/2009		01/27/2010
Rehospitalization - Discharge	12/31/2009		01/27/2010
Psychiatric Episode	01/27/2010 (Report Dale)		
2.5 Year Follow-Up	05/30/2010 (Expected date)	Incomplete	

Generated on: 05/07/2010 -- 1 --



Patient and Device	e Information				
Hospital ID: 81 Patient ID:		Report ID: 18618	Gender: M	Race: White	Age: 68 yr
Height: 175 cm	Weight 92 kg	Previous Cardiac O			
Primary Card Diag: Dilated Myopa Device Type: LVAD	nny: Isonemic Device Brand: Heartmal	to VVE	Admission Reason: I	Heart failure ate: 11/27/2007	
Patient Profile Status: 3 "Stable but			CONTRACTOR OF THE PARTY OF THE PARTY		
Device Strategy: Destination Thera			ary outer on the tree	acidic door	
Event Report: Ble	eding	CONTRACTOR OF WARRANT		E111	
Date of Event: 12/17/2009	Months Post-Imp	plant: 24.5755	Patient Lo	ocation: In hospital	
Conditions Resulting from Bleeding	Episode resulted in transfu Transfusion Date: 12/19/20				
Bleeding Units:	2-3 units	7000			
Bleeding Source/Cause/Location:					
Drug Intervention:	N Completition of Madient Ma	107.151000			
Causative Factors: Bleeding Factor Conditions:	Complexities of Medical Ma	anagement			
Lab Tests:	INR: 1.3 Test Date: 12/	24/2009			
	PTT: 28 Test Date: 12/	24/2009			
Anti-coagulation Therapy:	PH: Test Date: None				
Anti-coagulation Therapy - Other:	Note				
- CO					
Adjudication Resu	ults				
Adjudication Resu					
Adjudication Results Based on the provided					
Adjudication Results Based on the provided					
Adjudication Results Based on the provided	information:	this bleeding episod	e as stated above	<b>e</b> .	
Adjudication Results Based on the provided L Occurence of bleeding:	information:	CONTRACTOR TO STATE OF STATE O			
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Adjudication Results Based on the provided Cocurence of bleeding: I find no reason to quest I do find reason to quest It. Causative or contributing I find no reason to quest I do find reason to quest I do find reason to quest	information: stion the existence of t stion the existence of t factors to bleeding epi stion the factors relater factor(s) above, please se fing anticoagulation therapy	this bleeding episode: d to this bleeding ep d to this bleeding ep elect causative or con	e as stated above isode as stated a isode as stated a Inbuting factors to to other of Medical Mana	above. above becuase:	ck all that apply
Adjudication Results Based on the provided Cocurence of bleeding: I find no reason to quest I do find reason to quest I find no reason to quest I find no reason to quest I find no reason to quest I do find reason to quest	information:  stion the existence of the factors to bleeding epistion the factors related stion the factors related factor(s) above, please sting anticoagulation therapy or condition in the organiste.	this bleeding episode: d to this bleeding ep d to this bleeding ep elect causative or con Complete	e as stated above isode as stated a isode as stated a tributing factors to to totles of Medical Mana ural related to Implant p	above. above becuase: this bleeding (checuse)	ok all that apply
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Adjudication Results Based on the provided L Occurence of bleeding: I find no reason to quest I do find reason to quest I find no reason to quest I find no reason to quest I find no reason to quest I do find reason to quest I do find reason to quest Documented history of lesion of bleeding that could potents Name of condition:	information:  stion the existence of the stion the existence of the factors to bleeding epistion the factors related factor(s) above, please setting anticoagulation therapy or condition in the organistical eableeding episode	this bleeding episode: d to this bleeding ep d to this bleeding ep elect causative or con Comple Procedi	e as stated above isode as stated a isode as stated a tributing factors to to dies of Medical Mana ural related to implant p ural related to any re- ural related to any diag sacopy, endoscoopy,	above. above becuase: this bleeding (checuse) procedure procedure procedure (e.	g.



# Medical Event Review Worksheet Event Date: before 4/1/2010

Neurological Category - Other: Causative Factor: Causative Factor: CNS Event Collect: CNS Event - Other: CNS Event Location - Other: CNS Diagnosis Method:	CABG	attent ID: 912 Event ID: 865 Re	Hospital ID: 81 Patient ID:
Device Type: LVAD Device Brand: Heartmate XVE Implant Date: 11/27/2007 Patient Profile Status: 3 "Stable but Inotrope dependent defentible describes a patient who is clinically stable on mid-moderate dose Device Strategy: Destination Therapy (patient definitely not eligible for transpant)  EVENT REPORT: Neurological Dysfunction Date of Event: 12/25/2009 Months Poet-Implant: 24,8383 Patient Location: Out of hospital Neurological Category: Neurological Dysfunction - < 24 hours Neurological Category - Other: Causative Factor: Complexities of Medical Management Infraorantal Bleed CNS Event: Location - Other: CNS Event: Stroke Clinical Event: - Stroke: Clinical Event: - Stroke: Clinical Event: - Stroke: Contributions to Death: N Drug Infervention: Y Drug Treatment: Thrombodytics  Adjudication Results  Based on the provided information: L Cocurrence of neurological dysfunction: I find no reason to question the existence of this neurological episode as stated above becuase:  L Causative or contributing factors to neurological dysfunction: I find no reason to question the factors related to this neurological episode as stated above becuase:  If you do not agree with the factor(s) above, please select causative or contributing factors to this neurological episode (check all that apply):    Patient not taking anticoagulation medication property   If patient receiving heparin then, evidence of PTT below targe		NAME AND ADDRESS OF THE PARTY O	The state of the s
Device Strategy: Destination Therapy (patient definitely not eligible for transplant)  Event Report: Neurological Dysfunction  Date of Event 12/25/2009			
Event Report: Neurological Dysfunction			
Event Report: Neurological Dysfunction  Date of Event 12/25/2009	on mild-moderate dose		
Date of Event: 12/25/2009		Ion Therapy (patient definitely not eligible for tra	Device Strategy: Destination Then
Neurological Category: Neurological Dysfunction - < 24 hours Neurological Category - Other: Causative Factor: Complexities of Medical Management CNS Event - Other: Infracranial Bised CNS Event - Other: Left hemisphere CNS Event Location: Left hemisphere CNS Diagnosis Method: CT CNS Diagnosis Method: CT CNS Diagnosis Method: Other: CNS Diagnosis Method: Stroke Clinical Event - Stroke - Other: Contributes to Death: N  Drug Infervention: Y  Adjudication Results  Based on the provided information: Cocurrence of neurological dysfunction:  I find no reason to question the existence of this neurological episode as stated above becuase:  I. Causative or contributing factors to neurological dysfunction:  I find no reason to question the factors related to this neurological episode as stated above.  I do find reason to question the factors related to this neurological episode as stated above becuase:  If you do not agree with the factor(s) above, please select causative or contributing factors to this neurological episode (check all that apply):  Patient not taking anticoagulation medication propery  I final patient receiving heparin then, evidence of PTT below targes.		: Neurological Dysfuncti	<b>Event Report: Ne</b>
Neurological Category - Other: Causative Factor: Ching Event - Other: Ch	tient Location: Out of hospital	9 Months Post-Implant: 24.83	Date of Event 12/25/2009
Complexities of Medical Management Chas Event: Other: Chas Event: Other: Chas Event Location: Left hemisphere Chas Event Location: Left hemisphere Chas Diagnosis Method: CT C			Neurological Category: Neurological Category - Other:
CNS Event Coatlon: CNS Event Location: CNS Event Location: CNS Diagnosis Method: CT CNS Diagnosis Method: CNS CNS Diagnosis Method: CT CNS Diagnosis Method: CNS			
CNS Event Location: Left hemisphere  CNS Event Location - Other:  CNS Diagnosis Method: CT  CNS Diagnosis Method: CNS  CNS Diagnosis M		Intracranial Bleed	CNS Event:
CT SNS Diagnosis Method: CT Sincial Event: Stroke Sincial Event - Stroke: Stroke Sincial Event: Stroke - Other: Surgical Intervention: N Drug Intervention: Y Drug Treatment Thrombolytics Contributes to Death: N  Adjudication Results  Based on the provided information:  Cocurrence of neurological dysfunction:  I find no reason to question the existence of this neurological episode as stated above.  I do find reason to question the existence of this neurological episode as stated above becuase:  I. Causative or contributing factors to neurological dysfunction:  I find no reason to question the factors related to this neurological episode as stated above.  I do find reason to question the factors related to this neurological episode as stated above.  I do find reason to question the factors related to this neurological episode as stated above becuase:  If you do not agree with the factor(s) above, please select causative or contributing factors to this neurological episode (check all that apply):  Patient not taking anticoagulation medication propery  If patient receiving heparin then, evidence of PTT below targes.			The state of the s
CNS Diagnosis Method - Other: Clinical Event - Stroke: Clinical Event - Stroke: Clinical Event - Stroke: Clinical Event - Stroke: Clinical Event - Stroke - Other: Surgical Intervention: N Drug Intervention: Y Drug Treatment: Thrombolytics Contributies to Death: N  Adjudication Results  Based on the provided information: L Occurence of neurological dysfunction: I find no reason to question the existence of this neurological episode as stated above. I do find reason to question the existence of this neurological episode as stated above becuase: IL Causative or contributing factors to neurological dysfunction: I find no reason to question the factors related to this neurological episode as stated above. I do find reason to question the factors related to this neurological episode as stated above. I do find reason to question the factors related to this neurological episode as stated above becuase:  If you do not agree with the factor(s) above, please select causative or contributing factors to this neurological episode (check all that apply):    Patient not taking anticoagulation medication property   If patient receiving heparin then, evidence of PTT below targes.		ner:	CNS Event Location - Other:
Clinical Event - Stroke - Allered mental status Clinical Event - Stroke - Other: Surgical Intervention: N Drug Intervention: Y Drug Treatment: Thrombolytics Contributes to Death: N  Adjudication Results  Based on the provided information:  I. Occurence of neurological dysfunction:  I find no reason to question the existence of this neurological episode as stated above.  I do find reason to question the existence of this neurological episode as stated above becuase:  II. Causative or contributing factors to neurological dysfunction:  I find no reason to question the factors related to this neurological episode as stated above.  I do find reason to question the factors related to this neurological episode as stated above.  I do find reason to question the factors related to this neurological episode as stated above becuase:  If you do not agree with the factor(s) above, please select causative or contributing factors to this neurological episode (check all that apply):  I patient not taking anticoagulation medication properly  I patient receiving heparin then, evidence of PTT below targes.			CNS Diagnosis Method:
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(check all that apply):  □ Patient not taking anticoagulation medication properly  □ If patient receiving heparin then, evidence of PTT below targe	e as stated above becuase:	to question the factors related to this	☐ I do find reason to que
□ Patient not taking anticoagulation medication properly □ If patient receiving heparin then, evidence of PTT below target	actors to this neurological episode		
☐ If patient receiving warfarin then, evidence of INR above target range ☐ Complexities of Medical Management			
	heparin then, evidence of PTT below target ran	arfarin then, evidence of INR above target rang	☐ If patient receiving warfarin to
☐ If patient receiving warfarin then, evidence of INR below target range ☐ Device Related		arfarin then, evidence of INR below target range	- Markant mark to a contrata to
□ If patient receiving heparin then, evidence of PTT above target range □ Unknown		and an	in patient receiving warrann to
Signation of Committee Member: Date:			



# Medical Event Review Worksheet

Primary Card Diag: Dilated Myopathy Device Type: LVAD Pattent Profile Status: 3 "Stable but in Device Strategy: Destination Therapy  Event Report: Bleec Date of Event: 12/29/2009 Conditions Resulting from Bleeding: 8 Bleeding Units: Bleeding Units: Bleeding Units: Bleeding Units: Bleeding Units: Bleeding Source/Cause/Location: 1 Drug Intervention: (Causative Factors: 1 Bleeding Factor Conditions: Lab Tests: 1 Anti-coagulation Therapy: Anti-coagulation Therapy - Other:  Adjudication Result Based on the provided in L Occurrence of bleeding:	: Ischemic  Device Brand: Hearlmate XVE  oftope dependent" describes a p  (patient definitely not eligible for  ding  Months Post-Implant: 2  Episode resulted in transfusion  Transfusion Date: 12/29/2009 2-3 units  Lower gastrointestinal  Y Complexities of Medical Managen  INFC 1.3 Test Date: 12/29/200  PH: Test Date: 12/29/200  PH: Test Date: Warfarin; Aspirin	In alternt who is clinically stable on transplant)  4.9697 F	Reason: Heart fallure nplant Date: 11/27/2007
Device Type: LVAD Patient Profile Status: 3 "Stable but In Device Strategy: Destination Therapy  Event Report: Bleect Date of Event: 12/29/2009 Conditions Resulting from Bleeding: 12 Bleeding Units: Bleeding Units: 12 Bleeding Units: 12 Bleeding Source/Cause/Location: 12 Drug Intervention: 12 Causative Factors: 13 Bleeding Factor Conditions: 13 Lab Tests: 14 Anti-coagulation Therapy: 15 Anti-coagulation Therapy - Other:  Adjudication Resulti Based on the provided in 1. Occurrence of bleeding:	Device Brand: Heartmale XVE ofrope dependent" describes a p (patient definitely not eligible for  Months Post-Implant: 2  Episode resulted in transfusion Transfusion Date: 12/29/2009 2-3 units Lower gastrointestinal Y Complexities of Medical Managen INR: 1.3 Test Date: 12/29/200 PH: Test Date: 12/29/200 PH: Test Date: Warfarin; Aspirin	In alternt who is clinically stable on transplant)  4.9697 F	mplant Date: 11/27/2007 mild-moderate dose
Patient Profile Status: 3 "Stable but In Device Strategy: Destination Therapy  Event Report: Bleece Dale of Event: 12/29/2009 Conditions Resulting from Bleeding: 8 Bleeding Units: 2 Bleeding Source/Cause/Location: 1 Drug Intervention: 2 Causative Factors: 6 Bleeding Factor Conditions: 1 Lab Tests: 1 Anti-coagulation Therapy: 1 Anti-coagulation Therapy - Other:  Adjudication Result  Based on the provided in 1. Occurrence of bleeding:	ofrope dependent" describes a p (patient definitely not eligible for ding  Months Post-Impiant: 2 Episode resulted in transfusion Transfusion Date: 12/29/2009 2-3 units Lower gastrointestinal Y Complexities of Medical Manager INR: 1.3 Test Date: 12/29/200 PTT: 40 Test Date: 12/29/200 PH: Test Date: Warfarin; Aspirin	attent who is clinically stable on transplant)  4.9697 Finent	mild-moderate dose
Device Strategy: Destination Therapy  Event Report: Bleed  Date of Event: 12/29/2009  Conditions Resulting from Bleeding: E  Bleeding Units:  Bleeding Units:  Bleeding Source/Cause/Location:  Causative Factors:  Bleeding Factors:  Bleeding Factors:  Causative Factors:  Anti-coagulation Therapy:  Anti-coagulation Therapy - Other:  Adjudication Result  Based on the provided in  L. Occurrence of bleeding:	(patient definitely not eligible for ding Months Post-Implant: 2 Episode resulted in transfusion Transfusion Date: 12/29/2009 2-3 units Lower gastrointestinal Y Complexities of Medical Manager INR: 1.3 Test Date: 12/29/200 PTT: 40 Test Date: 12/29/200 PTT: 40 Test Date: 12/29/200 Warfarin; Aspirin	transplant) 4.9697 F	
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Dale of Event: 12/29/2009 Conditions Resulting from Bleeding: E Bleeding Units: Bleeding Source/Cause/Location: Drug Intervention: Causative Factors: Bleeding Factor Conditions: Lab Tests: Anti-coagulation Therapy: Anti-coagulation Therapy - Other:  Adjudication Result Based on the provided in L. Occurence of bleeding:	Months Post-Implant: 2 Episode resulted in transfusion Transfusion Date: 12/29/2009 2-3 units Lower gastrointestinal Y Complexities of Medical Manager INR: 1.3 Test Date: 12/29/200 PTT: 40 Test Date: 12/29/200 Ptt: Test Date: Warfarin; Aspirin	nent 9	Patient Location: In hospital
Conditions Resulting from Bleeding: E Bleeding Units: Bleeding Source/Cause/Location: Bleeding Source/Cause/Location: Bleeding Source/Cause/Location: Bleeding Factor Conditions: Lab Tests: Anti-coagulation Therapy: Anti-coagulation Therapy - Other:  Adjudication Result Based on the provided in L. Occurence of bleeding:	Episode resulted in transfusion Transfusion Date: 12/29/2009 2-3 units Lower gastrointestinal Y Complexities of Medical Manager INR: 1.3 Test Date: 12/29/200 PTT: 40 Test Date: 12/29/200 Ptt: Test Date: Warfarin; Aspirin	nent 9	Patient Location: In hospital
Bleeding Units:  Bleeding Source/Cause/Location: Drug Intervention: Causative Factors: Bleeding Factor Conditions: Lab Tests: Anti-coagulation Therapy: Anti-coagulation Therapy - Other:  Adjudication Result  Based on the provided in L Occurence of bleeding:	Transfusion Date: 12/29/2009 2-3 units Lower gastrointestinal Y Complexities of Medical Manager INR: 1.3 Test Date: 12/29/200 PTT: 40 Test Date: 12/29/200 Ptt: Test Date: Warfarin; Aspirin	9	
Bleeding Units: Bleeding Source/Cause/Location: Drug Intervention: Causative Factors: Gleeding Factor Conditions: Lab Tests: Anti-coagulation Therapy: Anti-coagulation Therapy - Other:  Adjudication Result Based on the provided in L Occurence of bleeding:	2-3 units Lower gastrointestinal Y Complexities of Medical Managen INR: 1.3 Test Date: 12/29/200 PTT: 40 Test Date: 12/29/200 PH: Test Date: Warfarin; Aspirin	9	
Drug Intervention: Causative Factors: Guestive Factors: Guestive Factors: Guestive Factors: Guestive Factors: Guestive Factor Conditions: Lab Tests: Anti-coagulaton Therapy: Anti-coagulaton Therapy - Other:  Adjudication Result  Based on the provided in L Occurence of bleeding:	Y Complexities of Medical Manager INR: 1.3 Test Date: 12/29/200 PTT: 40 Test Date: 12/29/200 Ptt: Test Date: Warfarin; Aspirin	9	
Causative Factors: Bleeding Factor Conditions: Lab Tests: Anti-coagulation Therapy: Anti-coagulation Therapy - Other:  Adjudication Result Based on the provided in L Occurence of bleeding:	Complexities of Medical Manager INR: 1.3 Test Date: 12/29/200 PTT: 40 Test Date: 12/29/200 PH: Test Date: Warfarin; Aspirin	9	
Bleeding Factor Conditions: Lab Tests:  Anti-coagulation Therapy: Anti-coagulation Therapy - Other:  Adjudication Result Based on the provided in L Occurence of bleeding:	INR: 1.3 Test Dale: 12/29/2000 PTT: 40 Test Dale: 12/29/2000 PH: Test Dale: Warfarin; Aspirin	9	
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Anti-coagulaton Therapy: Anti-coagulaton Therapy - Other:  Adjudication Result  Based on the provided in  L Occurence of bleeding:	PH: Test Dale: Warfarin; Aspirin	9	
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Based on the provided in I. Occurence of bleeding:	A CONTRACTOR OF THE CONTRACTOR		
Based on the provided in I. Occurence of bleeding:	A CONTRACTOR OF THE CONTRACTOR		
I. Occurence of bleeding:	normation.		
☐ I find no reason to question			
	on the existence of this bl	eeding episode as stated	dabove.
☐ I do find reason to question	on the existence of this bl	eeding enisode as stated	ahove becusse:
L 140 ma reason to questi	on the existence of this bi	eeding episode as stated	above because.
II. Causative or contributing fa	octors to bleeding episode		
☐ I find no reason to question	on the factors related to the	nis bleeding episode as s	stated above.
☐ I do find reason to question	on the factors related to the	nis bleeding episode as s	stated above becuase:
If you do not agree with the fac	tor(s) above, please select o	ausative or contributing fact	tors to this bleeding (check all that app
Poor compliance with monitoring	g anticoagulation therapy	□ Complexities of Medic	cal Management
☐ Documented history of lesion or	condition in the organ site	Procedural related to	implant procedure
of bleeding that could potentiate	a bleeding episode	Procedural related to	any re-operative procedure
Name of condition:	and the second	□ Procedural related to	any diagnostic procedure (e.g.
☐ Elevated preoperative INR or pla	telet count less than 60,000	bronchoscopy, endos	scoopy, or transesophageal echo)
☐ Management: Over anticoaguiation	on	□ Unknown	

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