



Science For A Better Life



Interactive Visualization of Clinical Laboratory Parameters with SAS Stored Processes and jQuery AJAX

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Agenda

- Introduction
- Reporting Clinical Laboratory Parameter
 - The data
 - The visualization
- Enhancements with jQuery AJAX

Clinical Laboratory Parameter Data

Individual measurements

- For each treatment
 - For each parameter
 - For each subject
 - For each visit

Summary data over subjects

- For each treatment
 - For each parameter
 - For each visit



Visualization of Individual Measurements

Laboratory Parameters Report

Select Treatment:

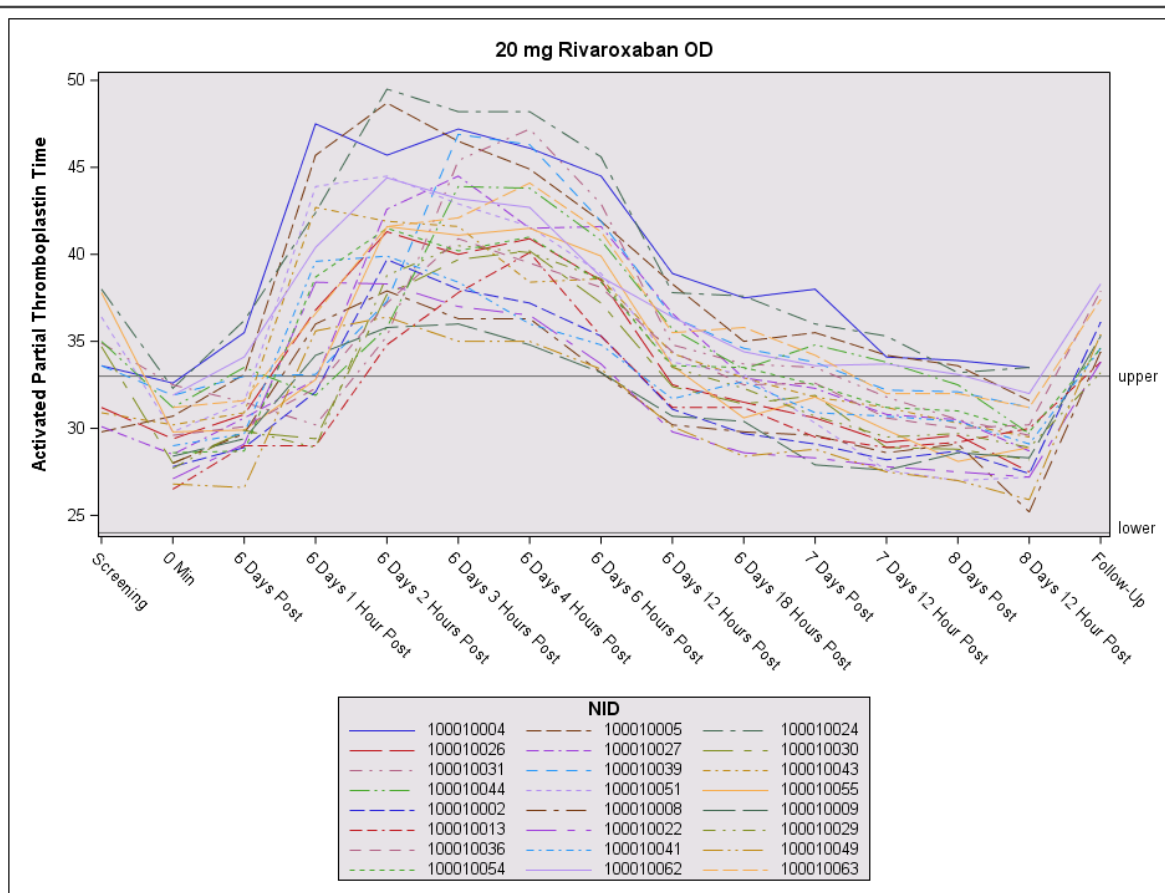
20 mg Rivaroxaban OD

Select Parameter: APTT

100010002
100010004
100010005
100010008
100010009
100010013
100010022
100010024
100010026
100010027
100010029
100010030
100010031
100010036
100010039
100010041
100010043
100010044
100010049
100010051
100010054
100010055
100010062
100010063

Select Subjects:

Submit



Creation of selections with SAS

```
* get distinct treatments from datasets;
proc sort data = org.Labvalues out = Treatments nodupkey;
  by mOrder;
run;

* write html tags;
data _null_;
  set Treatments end = alldone;
  file _webout;

  if _n_ = 1 then do;
    put '<b>Select Treatment: </b>';
    put '<select name = "treatment" onChange = "UpdateChart();">';
  end;

  if mOrder ne " " then do;
    put '<OPTION VALUE="' cTreatment '">' cTreatment;
  end;

  if alldone then do;
    put '</select>';
    put '<br><br>';
  end;
run;
```

```
<b>Select Treatment: </b>
<select name = "treatment" onChange = "UpdateChart();">
  <OPTION VALUE="20 mg Rivaroxaban OD ">20 mg Rivaroxaban OD
  <OPTION VALUE="5 mg Apixaban BID ">5 mg Apixaban BID
</select>
<br><br>
```

Select Treatment:

20 mg Rivaroxaban OD	▼
20 mg Rivaroxaban OD	
5 mg Apixaban BID	

Display of individual measurements

```
%macro plotLabValues (cLBParameterShort =, cTreatment =, SubjectList =);

data GraphData;
  %if &SubjectList. ne %then %do;
    set org.LabValues (where = (cLBParameterShort = "&cLBParameterShort."
      and cTreatment = "&cTreatment." and nid in (&SubjectList.)));
  %end;
  %else %do;
    set org.LabValues (where = (cLBParameterShort = "&cLBParameterShort."
      and cTreatment = "&cTreatment."));
  %end;

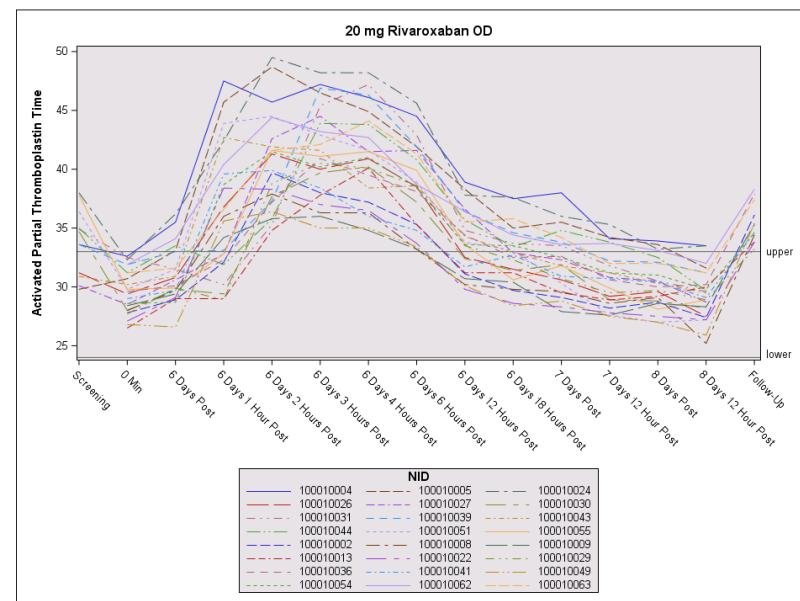
  if _n_ = 1 then do;
    call symputx ('cLBParameter', cLBParameter);
    call symputx ('cTreatment', cTreatment);
    call symputx ('nLBLN', nLBLN);
    call symputx ('nLBULN', nLBULN);
  end;

  SubjectID = put (RandomID, best.);
  url = 'http://www.sas.com/technologies/analytics/index.html';
run;

proc sort data = GraphData;
  by nlbri nid;
run;

proc sgplot data = GraphData;
  title "&cTreatment.";
  xaxis type = discrete discreteorder = data display = (nolabel);
  yaxis label = "&cLBParameter.";
  refline &nLBLN. /label = ('lower') labelloc = outside noclip;
  refline &nLBULN. /label = ('upper') labelloc = outside noclip;
  series x = cLBRT y = nlbvalue /**datalabel = nid*/
  group = nid tip = (nid cLBRT nlbvalue) url = url;
run;

%mend;
```





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Thank you!