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Converting the Administration of Health Measures and Bio Specimen Collection from Paper to CAI

**Karl Dinkelmann, Rebecca Gatward, Ian Ogden,
Piotr Dworak, & Heidi Guyer**
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Overview

- Background
- Goals and objectives
- Flow
- Solution
- Demo
- Hand Strength & Electronic Consent Code example
- Interview feedback
- Future



Background (1)

- The Health and Retirement Study (HRS) is a longitudinal panel study that surveys a representative sample of more than 26,000 Americans 50 and over every two years and is supported by the National Institute on Aging (NIA) and the Social Security Administration.
- HRS explores the changes in labor force participation and the health transitions that individuals undergo toward the end of their work lives and in the years that follow.
- The inclusion of Physical Measures and Biomarker (PMB) samples in HRS began with feasibility tests in 1992 and were introduced fully in 2006 data collection effort using PAPI.
- PMB measures are collected of half the sample every wave.



Background (2)

- In 2014 HRS converted administration of physical measures, bio sample collection and consent procedures from paper to Blaise. Measures collected:
 - **Physiological or performance assessments**
 - Blood pressure
 - Lung strength
 - Grip strength
 - Balance
 - Walking speed
 - **Anthropometric measurements**
 - Height, Weight, Waist circumference
 - **Biomarkers samples**
 - Saliva
 - Blood (dried blood spots)



Background (3)

- PMB collection occurs about two-thirds of the way though the Blaise interview.
- Between 2006 and 2012 the PMB paper booklet, has undergone revisions making it more efficient.
- PMB paper booklet consisted of 36 pages, including three consent forms.
 - 36 (8"x11" Paper) X 13,000 (1/2 Sample) = 468,000
- Data entry of PMB data in Blaise after the interview; booklets and consent forms are mail back to Ann Arbor.

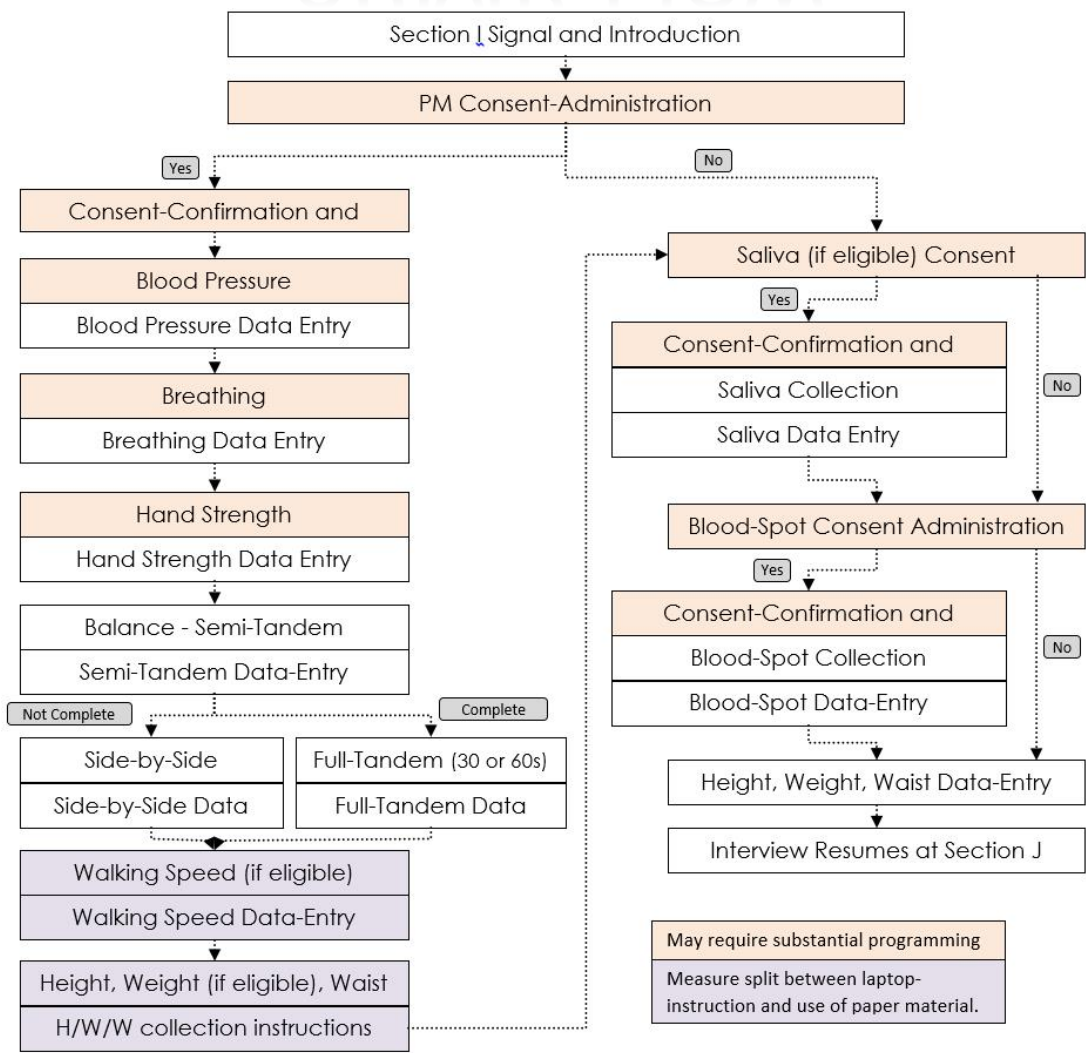


CAI Conversion Goals and Objectives

- Minimize Respondent burden
- Maintain data continuity
- Single mode for in-person data collection
- Minimize reliance on interviewer decision making
- Direct data entry
- Electronic consent administration



ePMB Flow





ePMB Section Flow

- Each measures structure was similar to the of the paper booklet; having a section flow:
 - Starts with reminder of equipment needed
 - Introduction or description of the measure
 - Demonstration
 - Safety/eligibility questions
 - Setup checklist
 - measurement questions
 - Post measurement observations



ePMP Solution

- Use of multimedia:
 - Images, used for:
 - Measurement demonstrations
 - Reminders
 - Videos, used for:
 - Measurement demonstrations
 - Timers between measures
- Reduction of fields requiring entry.
- Allows mid-production revisions.
- Out of sequence completion.



ePMB Demo





Hand Strength Routing Example (1)

Progression #	Order/Routing	Variable Asked	Hand tested	Notes
1	(1) R practices with RIGHT;	I613_HS_Instrct_Adjust	R	Practice/Adjustment hand = R
	(2) LEFT measurement 1;	I816_LeftFirst	L	
	(3) RIGHT measurement 1;	I851_RightFirst	R	
	(4) LEFT measurement 2;	I852_LeftSecond	L	
	(5) RIGHT measurement 2.	I853_RightSecond	R	
2	(1) R practices with LEFT;	I613_HS_Instrct_Adjust	L	Practice/Adjustment hand = L
	(2) RIGHT measurement 1;	I851_RightFirst	R	
	(3) LEFT measurement 1;	I816_LeftFirst	L	
	(4) RIGHT measurement 2;	I853_RightSecond	R	
	(5) LEFT measurement 2.	I852_LeftSecond	L	
3	(1) R practices with RIGHT;	I613_HS_Instrct_Adjust	R	Practice/Adjustment hand = R
	(2) 30-second timer;	<i>Break for Timer Question</i>	NA	<i>I816_LeftFirst = 993</i>
	(3) RIGHT measurement 1;	I851_RightFirst	R	
	(4) 30-second timer;	<i>Break for Timer Question</i>	NA	<i>I852_LeftSecond = 993</i>
	(5) RIGHT measurement 2	I853_RightSecond	R	
4	(1) R practices with LEFT;	I613_HS_Instrct_Adjust	L	Practice/Adjustment hand = L
	(2) 30-second timer;	<i>Break for Timer Question</i>	NA	<i>I851_RightFirst = 993</i>
	(3) LEFT measurement 1;	I816_LeftFirst	L	
	(4) 30-second timer;	<i>Break for Timer Question</i>	NA	<i>I853_RightSecond = 993</i>
	(5) LEFT measurement 2	I852_LeftSecond	L	



Hand Strength Routing Example (2)

```
PROCEDURE Ask_HS_Order_1 (/Hand Strength-Ask_HS_Order_1)
PARAMETERS
  IMPORT  piLeftFirst,piRightFirst,piLeftSecond,piRightSecond : THandScale
  EXPORT  peLeftFirst,peRightFirst,peLeftSecond,peRightSecond : THandScale
  EXPORT  pexHSValidData                                     : INTEGER
AUXFIELDS
  I816_LeftFirst / "left first (kg)" : THandScale
  I851_RightFirst / "right first (kg)" : THandScale
  I852_LeftSecond / "left second (kg)" : THandScale
  I853_RightSecond / "right second (kg)" : THandScale
  SetLeftFirst : 0..1
  SetRightFirst : 0..1
  SetLeftSecond : 0..1
  SetRightSecond : 0..1
RULES
  SetLeftFirst.KEEP
  SetRightFirst.KEEP
  SetLeftSecond.KEEP
  SetRightSecond.KEEP
  IF piLeftFirst <> EMPTY AND SetLeftFirst = EMPTY THEN
    I816_LeftFirst := piLeftFirst      SetLeftFirst := 1
  ENDIF
  IF piRightFirst <> EMPTY AND SetRightFirst = EMPTY THEN
    I851_RightFirst := piRightFirst    SetRightFirst := 1
  ENDIF
  IF piLeftSecond <> EMPTY AND SetLeftSecond = EMPTY THEN
    I852_LeftSecond := piLeftSecond    SetLeftSecond := 1
  ENDIF
  IF piRightSecond <> EMPTY AND SetRightSecond = EMPTY THEN
    I853_RightSecond := piRightSecond  SetRightSecond := 1
  ENDIF
  I816_LeftFirst  proc_HS_Check(I816_LeftFirst)
  I851_RightFirst  proc_HS_Check(I851_RightFirst)
  I852_LeftSecond  proc_HS_Check(I852_LeftSecond)
  I853_RightSecond  proc_HS_Check(I853_RightSecond)
  IF I853_RightSecond <> EMPTY THEN
    IF (I816_LeftFirst <> NONRESPONSE I816_LeftFirst < 993) OR (I851_RightFirst <> NONRESPONSE I851_RightFirst < 993) OR
      (I852_LeftSecond <> NONRESPONSE I852_LeftSecond < 993) OR (I853_RightSecond <> NONRESPONSE I853_RightSecond < 993) THEN
      pexHSValidData := 1
    ELSE
      pexHSValidData := 2
    ENDIF
  ENDIF
  peLeftFirst := I816_LeftFirst
  peRightFirst := I851_RightFirst
  peLeftSecond := I852_LeftSecond
  peRightSecond := I853_RightSecond
ENDIF
ENDPROCEDURE (/Hand Strength-Ask_HS_Order_1)
```



Electronic Consent Procedure (1)

```
PROCEDURE CallConsentApp
  PARAMETERS
    IMPORT piConsent_Type           : STRING
    IMPORT piSaveAsName             : STRING
    IMPORT piConsentText            : STRING
    IMPORT piSaveToFolder           : STRING
    {External Manipula call to "Consent.MSU" & the procedure GetConsentForm}
    ALIEN('Consent.MSU /KConsentAppMeta=$dictionaryname', 'GetConsentForm')
  ENDPROCEDURE{/CallConsentApp}
```

```
IF I638_Salcsnt = Continue THEN {I638_Salcsnt = Continue}
IF ActiveLanguage = CORENG THEN
  Consent_Saliva           := 'CeSaliva'
  SaveAsName_Saliva       := piSampID + '_eSaliva'
ELSE
  Consent_Saliva           := 'CsSaliva'
  SaveAsName_Saliva       := piSampID + '_sSaliva'
ENDIF
I693_AskSalivaConsent.KEEP
I694_SalivaConsentComplete.KEEP
I695_SalivaConsentFormName.KEEP
IF I693_AskSalivaConsent = EMPTY THEN
  CallConsentApp(Consent_Saliva, SaveAsName_Saliva, piConsentText, piSaveToFolder)
  I693_AskSalivaConsent := 1
ENDIF
IF (I693_AskSalivaConsent = 1 AND I694_SalivaConsentComplete = EMPTY) OR
(I693_AskSalivaConsent = 1 AND Recall_Saliva_MSU = 1) THEN
IF ActiveLanguage = CORENG THEN
  CallFileName_Saliva := piSampID + '_eSaliva.txt'
ELSE
  CallFileName_Saliva := piSampID + '_sSaliva.txt'
ENDIF
{Procedure writes back data to the following field: I694_SalivaConsentComplete}
GetConsentStatus(CallFileName_Saliva, 'SecI.Saliva.I694_SalivaConsentComplete')
IF I694_SalivaConsentComplete = 1 THEN
IF ActiveLanguage = CORENG THEN
  I695_SalivaConsentFormName := piSampID + '_eSaliva.pdf'
ELSE {Note: do not translate the fill below!}
  I695_SalivaConsentFormName := piSampID + '_sSaliva.pdf'
ENDIF
ENDIF
Recall_Saliva_MSU := EMPTY
ENDIF
ENDIF{/I638_Salcsnt = Continue}
IF I694_SalivaConsentComplete = 1 THEN
I913_SalivaConsent := Yes
I913_SalivaConsent.SHOW
ELSE
I913_SalivaConsent
{The following signal has been added for situations when the Consent form was exited before it
was completed and allows the IWER a chance to return and capture the consent again}
SIGNAL SalivaConsent_Result | I913_SalivaConsent = NO
  "You cannot proceed until the Saliva Consent Form is complete.
  @/8/@ Suppress this signal and return to complete a new consent form.
  @/8/@ Otherwise, return and answer "No" to this question."
IF SalivaConsent_Result = Suppressed THEN
I693_AskSalivaConsent := EMPTY
I694_SalivaConsentComplete := EMPTY
I638_Salcsnt := EMPTY
I913_SalivaConsent := EMPTY
Recall_Saliva_MSU := 1
SalivaConsent_Result := EMPTY
ENDIF
ENDIF
```




Future

- Use feedback from interviewers to further improve the design of the ePMB section as we prepare for the next wave of data collection which will begin in 2016.
- Eliminate need for an administration booklet for the four measures which remain on paper. Perhaps using touchscreen elements to aid the administration.
- Touchscreen approach could potentially allow the interviewers to do the entire section on the computer.
- Exploration of barcode scanning using the native camera.



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Thank you!

For more information please contact
Rebecca Gatward gatwar@umich.edu
Karl Dinkelmann karldi@umich.edu