

Understanding Mortality Risk in Order to Prevent it



DBHDD

**CATHERINE IVY
DIRECTOR, COMMUNITY SERVICES
DIVISION OF INTELLECTUAL & DEVELOPMENTAL DISABILITIES**

**GWENDELL W. GRAVITT, JR.
DIRECTOR, OFFICE OF PERFORMANCE ANALYSIS
DIVISION OF PERFORMANCE MANAGEMENT & QUALITY IMPROVEMENT**

**NATIONAL HOME AND COMMUNITY BASED SERVICES (HCBS)
CONFERENCE
BALTIMORE, MD
AUGUST 30, 2017**

Georgia Intellectual and Developmental Disability Mortality Analysis (2013-2015)

2015: The Georgia Department of Behavioral Health and Developmental Disabilities (DBHDD) initiated inferential statistical analysis to understand better the risks associated with mortality for people with intellectual and developmental disabilities

- Goal: Make system improvements to quality of care
- Based on published research and other states' mortality reports, DBHDD identified for analysis the following variables:
 - Age
 - Residential service setting
 - Gender
 - Geographic region within Georgia
 - Mortality rate comparisons
 - Severity of condition or health risk/status measure

Health Risk and Health Status Data

- ICD and medical diagnostic codes
 - Complex results; difficult to implement statewide health improvement initiatives based on this alone
 - Multiple, conflicting diagnoses
 - No clear way to group or categorize numerous medical codes for implementation of statewide health improvement initiatives
 - Unreliable statistical models
- What was needed: a straight-forward, interpretable measure of health status and health risk
 - Health Risk Screening Tool (HRST): used by DBHDD since 2009
 - DBHDD decided to attempt to use HRST data as a measure of health risk to model mortality

HRST: a *Screening* Instrument

- A web-based health risk screening instrument common to vulnerable populations
- Used for early detection of health risks and signs of destabilization
- Used to identify the need for a more in-depth assessment
- Developed for use by non-licensed staff, such as case managers, program staff, and direct care staff
- Those who serve the person most directly often have little or no training on identifying the emergence of health-related risk or destabilization
- The HRST seeks to capitalize on supporter's knowledge and experience with the person, yet help compensate for their lack of clinical knowledge or awareness of health-related dynamics common to people with intellectual and developmental disabilities
- Nursing oversight is triggered when necessary

HRST Categories and Items

- The HRST is a simple, 22-item scale designed to find out which individuals are most at risk of illness and health destabilization
- A dynamic tool
 - HRST assessments are updated at a minimum annually and also as the person experiences changes throughout the year in any of the 22 rating items, for example:
 - ❖ ER visits, hospitalizations, new diagnoses or medications, injuries
- Once the 22 items have been scored, the tool then responds by producing action steps that empower support staff with information to respond and take action

HRST Uses

- Coordinates communication with other health care providers
- Points to other assessments and professional interventions
- Organizes thought process for developing a support plan influenced by and based upon data
- Provides baseline of person's health status
- Provides measurable data on health status change over time
- Provides a platform for training paraprofessional staff on the significant health risks of a person
- Most importantly, helps mitigate the risk of death

HRST Categories and Items

I. Functional Status

- A. Eating
- B. Ambulation
- C. Transfer
- D. Toileting
- E. Clinical Issues

II. Behaviors

- F. Self-Abuse
- G. Aggression
- H. Physical Restraint
- I. Chemical Restraint
- J. Psychotropic Meds

III. Physiological

- K. Gastrointestinal
- L. Seizures
- M. Anti-Epileptic Meds
- N. Skin Integrity
- O. Bowel Function
- P. Nutrition
- Q. Treatments

IV. Safety

- R. Injury
- S. Falls

V. Frequency of Service

- T. Professional Health Care Svcs
- U. ER Visits
- V. Hospitalizations

HRST Health Care Level (HCL)

Level 1: 0 - 12 points

Level 2: 13 - 25 points

Low Risk

Level 3: 26 - 38 points

Level 4: 39 - 53 points

Moderate/High Risk

Level 5: 54 - 68 points

Level 6: 69+ points

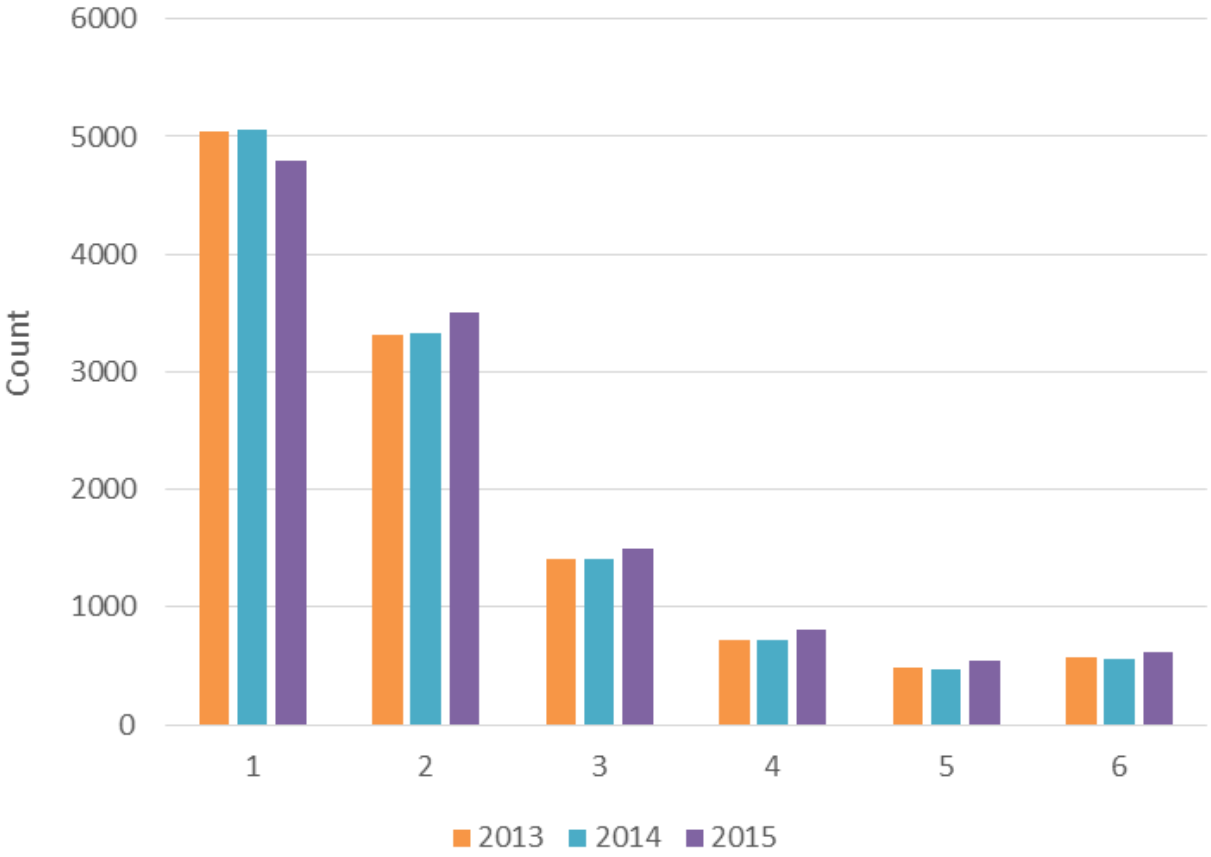
High/Highest Risk

Inferential Statistical Analysis of Risk Factors

- Recall: Based on published research and other states' mortality reports, DBHDD identified for analysis the following variables:
 - Age*—significantly associated with mortality
 - Intensity of residential setting—not associated with mortality
 - Gender—not associated with mortality
 - Geographic region within Georgia—not associated with mortality
 - Health Care Level*/HRST scores—significantly associated with mortality

*Age and HCL scores were not meaningfully associated

Distribution of HCL Scores for Adults with IDD



Distribution of HCL Scores for Adults with IDD

HRST	2013		2014		2015		Significance of 2014-2015 Change
	Count	% of population	Count	% of population	Count	% of population	
1	5,039	43.7%	5,053	43.8%	4,799	40.8%	$z = -4.6039, p < .01$
2	3,313	28.7%	3,332	28.9%	3,500	29.8%	NS
3	1,411	12.2%	1,405	12.2%	1,497	12.7%	NS
4	725	6.3%	719	6.2%	802	6.8%	NS
5	490	4.2%	476	4.1%	545	4.6%	NS
6	566	4.9%	557	4.8%	617	5.2%	NS
Total	11,544	100.0%	11,542	100.0%	11,760	100.0%	

DBHDD IDD Mortality Statistics

2013: 11.3 deaths per 1,000

2014: 11.1 deaths per 1,000

2015: 12.5 deaths per 1,000

- Statistically even mortality rates across years for Georgia.

2014: average age of death: 51.66 years

2015: average age of death: 53.69 years

- The average age of death increased by 2.03 years in 2015 over 2014, which was statistically significant.

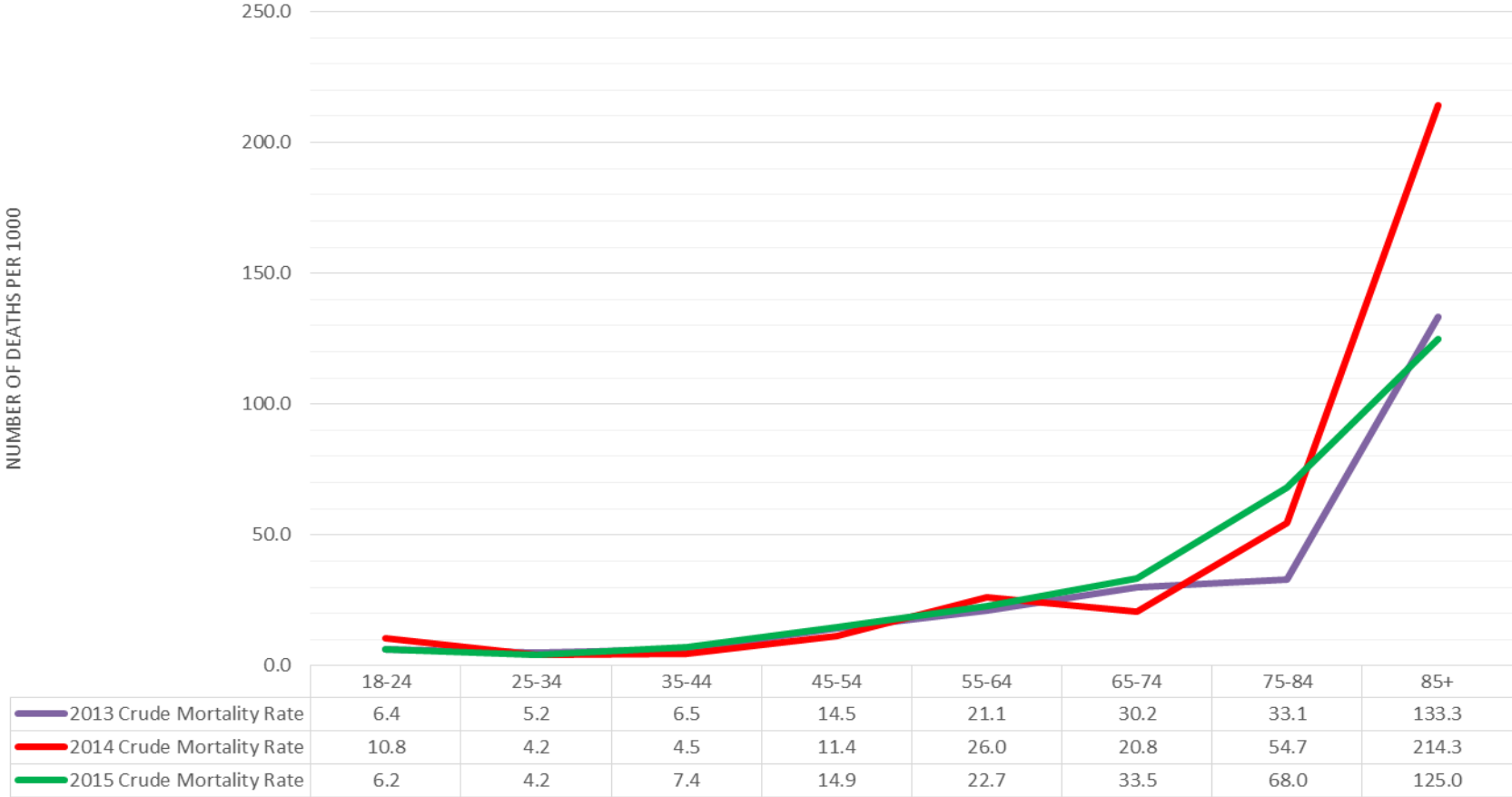
2009-to-2011 range for Connecticut, Louisiana, Ohio, and New York (combined):

- 50.4 to 58.7 years
- Georgia falls within this range

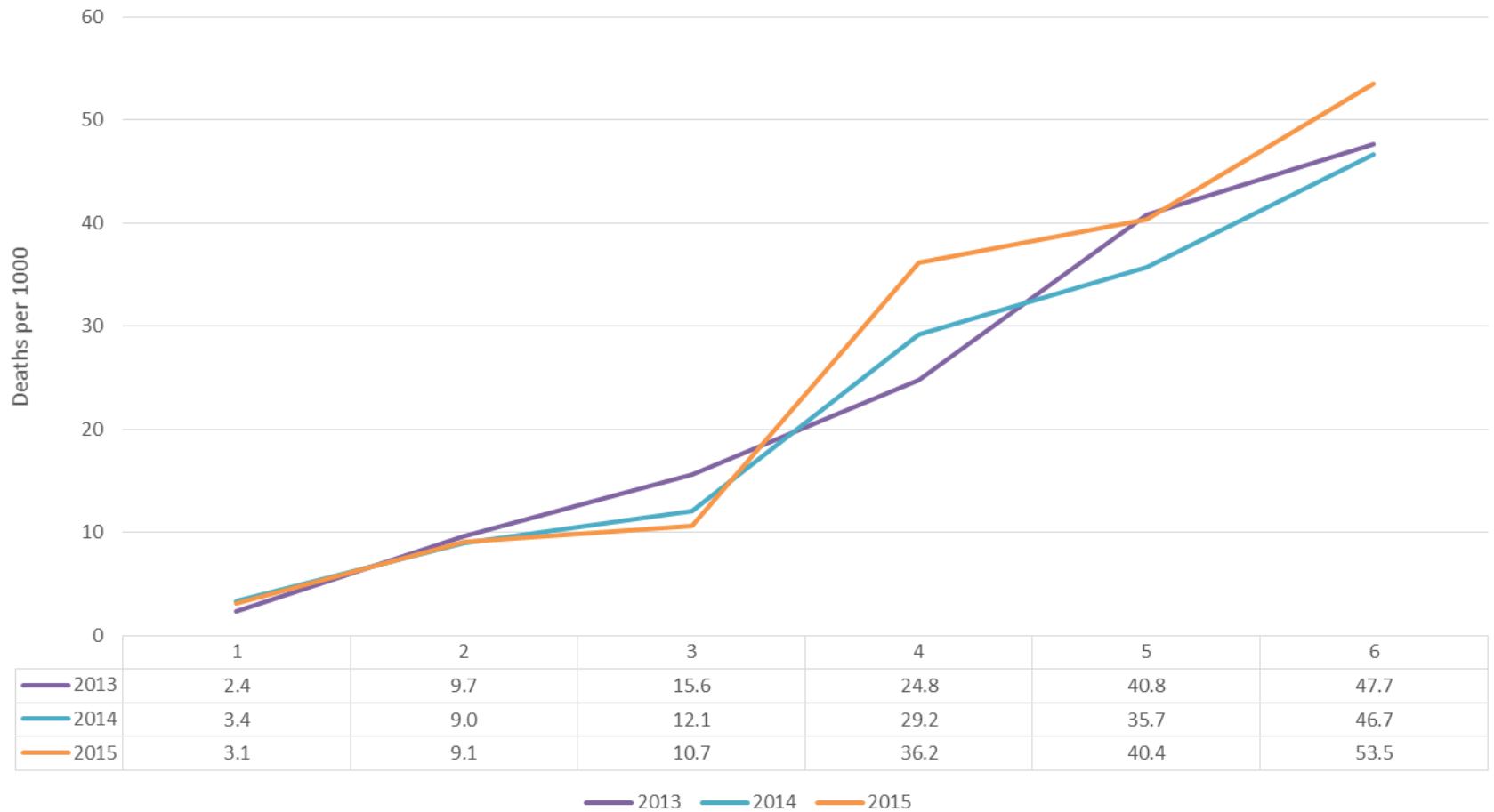
Comparison with National Mortality Statistics

- Connecticut, Louisiana, Ohio, and New York: combined crude mortality rate was 14.96 deaths per 1,000 individuals in 2009—not significantly different from the 2015 IDD mortality rate for DBHDD
- Mortality rate for these states combined in 2011 was 9.37—significantly lower than the DBHDD 2015 IDD mortality rate
- Tennessee and Massachusetts had significantly higher mortality rates than Georgia

Age and Mortality



GA: Health Risk and Mortality



Importance of 1-Point Change in HCL Score

HRST Score	2015				
	Adult Waiver Population	No. Deaths	Percent of deaths	Crude Mortality Rate	Statistical significance between HRST Scores
1	4,799	15	10.2%	3.1	
2	3,500	32	21.8%	9.1	$z = 3.61, p=.0003$
3	1,497	16	10.9%	10.7	ns
4	802	29	19.7%	36.2	$z = 4.20, p=.01$
5	545	22	15.0%	40.4	ns
6	617	33	22.4%	53.5	ns
Grand Total	11,760	147	100.0%	12.5	

Logistic Regression Model

Table 15: Final Logistic Regression Model with Death as Outcome, 2015

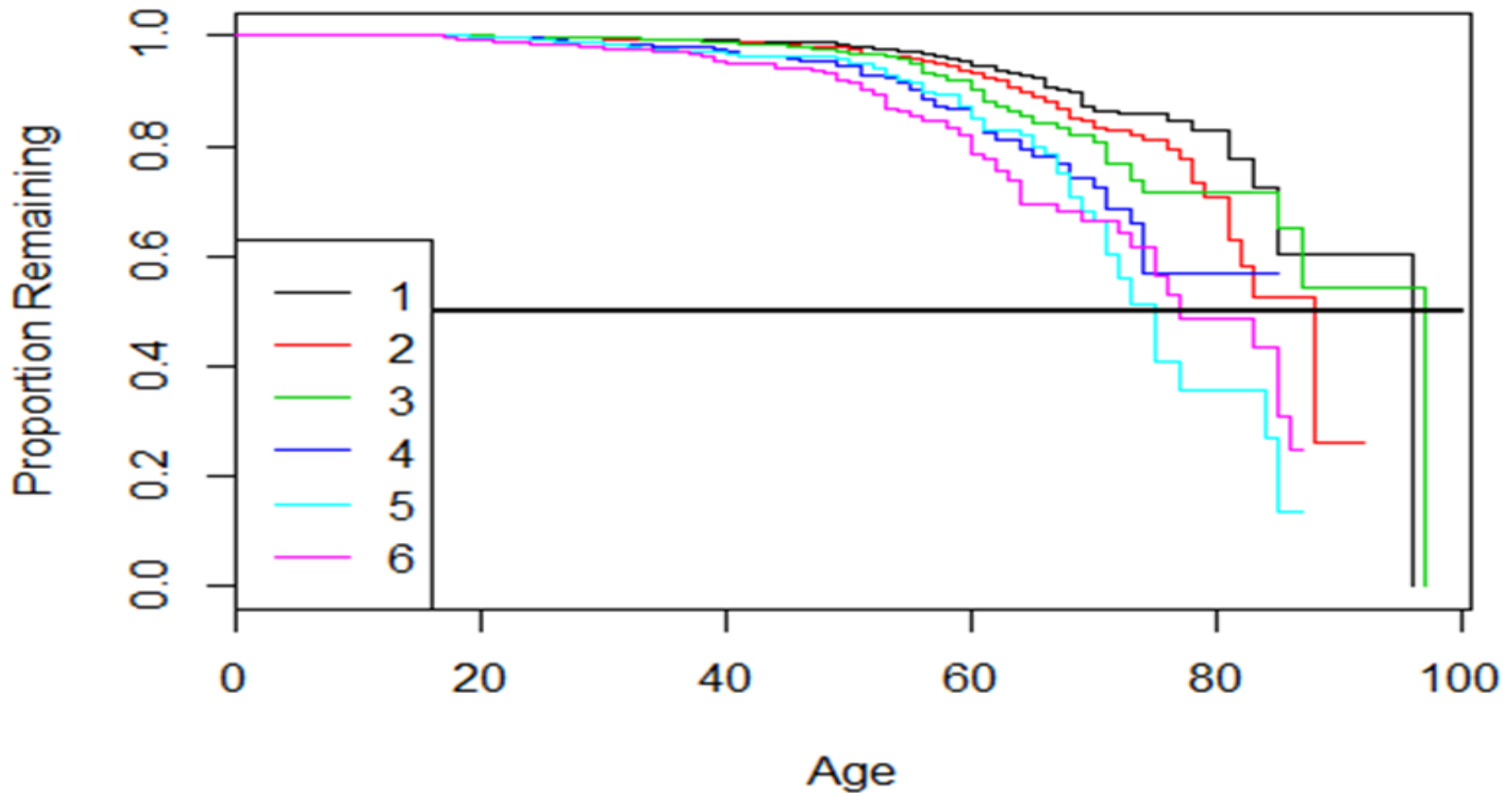
Variable	B	S.E.	Wald	df	Sig.	Exp(B)
Age	.045	.006	65.793	1	.000	1.046
HRST	.511	.047	116.733	1	.000	1.667
Constant	-8.006	.338	559.876	1	.000	.000

HRST	OR 2013	OR 2014	OR 2015
1	1.65	1.61	1.67
2	2.72	2.60	2.78
3	4.48	4.20	4.63
4	7.39	6.77	7.72
5	12.18	10.91	12.87
6	20.09	17.60	21.45

Age	OR 2013	OR 2014	OR 2015
20	1.07	1.08	1.09
30	1.52	1.61	1.71
40	2.16	2.41	2.69
50	3.06	3.60	4.22
60	4.35	5.37	6.62
70	6.17	8.00	10.38

Kaplan Meier Plots

Kaplan-Meier Plot of Mortality Over Lifespan



Cox Proportional Hazard Model

HCL	HR	Lower .95	Upper .95	Pr(> z)	Significance Level
1	-	-	-	-	
2	1.416	1.109	1.808	0.00533	**
3	1.696	1.276	2.254	0.00027	***
4	3.039	2.276	4.06	<.0001	***
5	3.481	2.593	4.674	<.0001	***
6	4.211	3.21	5.524	<.0001	***

Next Steps: Methods and Statistics

- HCL is a summary score reflecting 22 items within 5 areas
 - Additional analyses underway to investigate if/how items/areas are associated with mortality
- Continue analyzing outcomes of program changes to determine effects and improvement initiatives
- Continue expanding sources of mortality data to understand mortality better and inform improvement initiatives

Implications of Findings: System Improvements

- System improvement activities target critical variables, such as age and health risk
- Increasing age is significantly associated with mortality
 - DBHDD is focusing on population-based health improvement activities, such as age-based screenings, exams
 - People with IDD are at risk of mortality similar to general population but about 10 years earlier; can use same population-based health initiatives
- Increasing health risk (HCL) is significantly associated with mortality
 - DBHDD implemented surveillance activities to identify those at risk for adverse health events and mortality based on one-point increase in health risk score (HCL)

Implications of Findings: System Improvements

- System improvement activities target critical variables, such as age and health risk
- Increasing age is significantly associated with mortality.
 - DBHDD focusing on population-based health improvement activities, such as age-based screenings, exams.
 - IDD are at risk of mortality as general population but about 10 years earlier; can use same population-based health initiatives
- Increasing health risk (HCL) is significantly associated with mortality
 - DBHDD implemented surveillance activities to identify those at risk for adverse health events and mortality based on one-point increase in health risk score (HCL)

Response to Findings: Program Development

- **Service Improvements through Medicaid Waiver Changes**
 - Developed clinical case management service: intensive support coordination
 - Expanded therapy services
 - Improved nursing services availability and quality through service redesigns
 - Added nutrition services
- **Enhanced Clinical Oversight and Intervention**
 - Redesigned role of support coordination
 - expectation of health risk oversight
 - Expanded outreach efforts and enrollment of providers offering professional services, recruiting from other Georgia programs that offer similar services
 - Developed clinical training opportunities for professional/licensed staff of provider agencies, community physicians, nurses

Redesign of Case Management Electronic Record

Updates to the Individual Service Plan

Last Name:	First Name:	DOB:	Age:	Race/Sex:	CID#	Region:	Fund:	SCA/Provider	Dx	Legal Status:	ADA Status:
DOE	JANE	2-1-76	39	White/Female	100000000	3	NOW	MY HOUSE	Intellectual Disability- Severe	Adjudicated Incompetent	YES

Search	Case Notes	Demographics	Discharge	Eligibility	Evaluations	Health Services	ISP's	Legal	Monitoring	Person Ctr	Reports	Services	Upload Docs/Foms
Current Needs	Evaluation Recommendations	SIS & Behavior Needs	Goals	Service Summary	Signature/Agreements	View ISP	ISP Changes	ISP History					
Return to Main Menu													

**Click on the evaluation Date to view details*

HRST Date 11/2/2015	
HRST Level	Level-6

HRST Level Indicators

Level 1 to 2	Level 3 to 4	Level 5 to 6
--------------	--------------	--------------

SIS Date 11/16/2015						
The SIS Domains are displayed by Domain area and percentile. Highest percentile, higher the need.						
SIS Domains	A. Home Living Percentile-84% Raw Score-73	B. Community Living Percentile-75% Raw Score-72	F. Social Percentile-73% Raw Score-64	C. Life Long Learning Percentile-65% Raw Score-59	E. Health/Safety Percentile-65% Raw Score-59	D. Employment Percentile-63% Raw Score-53

Section 3 Exceptional Medical Supports			Section 3 Exceptional Behavioral Supports		
Total Points	Total Points>5	Any Item>2	Total Points	Total Points>5	Any Item>2
4	No	Yes	6	Yes	Yes

**Hover over the SIS Domain names to see details*

Migrate Actions Triggered by the HRST

Current Needs	Evaluation Recommendations	SIS & Behavior Needs	Service Summary	Goals	View ISP	Signature/Agreements	ISP Changes	ISP History
Return to Main Menu								
Behavioral Recommendations		View Behavioral Evaluation-11/12/15	Entered by/ Date Identified	Service Type	Follow-up by	Target Close Date	Date Closed	Status
1.	John to receive evaluation for a medication review from a psychiatrist.		Bill Smith 11/12/15	Multiples	Add Follow-up	MM/DD/YYYY	MM/DD/YYYY	OPEN
2.	John to receive Quarterly Psychiatric exams with biannual AIMS		Bill Smith 11/12/15	Multiples	Add Follow-up	MM/DD/YYYY	MM/DD/YYYY	OPEN
Nursing Recommendations		View Nursing Evaluation-11/11/15	Entered by/ Date Identified	Service Type	Follow-up by	Target Close Date	Date Closed	Status
1.	John to receive a yearly physical exam including bloodwork.		Jan Smith 11/11/15	Multiples	Add Follow-up	MM/DD/YYYY	MM/DD/YYYY	OPEN
2.	John needs to have immunizations updated in next 6 months		Jan Smith 11/11/15	Multiples	Add Follow-up	MM/DD/YYYY	MM/DD/YYYY	OPEN
Social Work Recommendations		View Social Work Evaluation-11/13/15	Entered by/ Date Identified	Service Type	Follow-up by	Target Close Date	Date Closed	Status
1.	John to receive Community Living Support		Chris Brown 11/13/15	Multiples	Add Follow-up	MM/DD/YYYY	MM/DD/YYYY	OPEN
2.	John to receive Community Service Access-Individual		Chris Brown 11/13/15	Multiples	Add Follow-up	MM/DD/YYYY	MM/DD/YYYY	OPEN

Contact and Reference Information

Gwendell.Gravitt@dbhdd.ga.gov (“J.R.”)

Catherine.Ivy@dbhdd.ga.gov

<https://dbhdd.georgia.gov/documents/mortality-reports>

Heath Risk Screening Tool: <http://hrstonline.com/>