**SUPPLEMENTAL INFORMATION**

For:

**Financial toxicity and its impact on health outcomes and caregiver burden among adult cancer survivors in United States**

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**eTable 1. Items used to define financial toxicity using Medical Expenditure Panel Survey (MEPS), 2016-2017**

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| --- |
| 1. *If the ratio of CS out-of-pocket expenses to their total family income was greater than or equal to 0.2*
2. *Had to change from working full-time to working part-time or to less demanding job*
3. *Decided not to pursue promotion because of cancer*
4. *Retired earlier than planned because of cancer*
5. *Ever felt that you were less productive at work because of cancer*
6. *Ever worried that because of cancer you might be forced to retire*
7. *You or anyone in family had to borrow money or go into debt*
8. *You or anyone in family had to make financial sacrifices on vacation or leisure activities*
9. *You or anyone in family had to make financial sacrifices on delaying large purchases*
10. *You or anyone in family had to make financial sacrifices on basic spending*
11. *You or anyone in family had to make financial sacrifices on savings set aside for other purposes*
12. *You or anyone in family had to make financial sacrifices on living situation*
13. *You or anyone in family had to make financial sacrifices on other categories*
14. *Unable to cover cost of medical care visits*
15. *You or family member ever filed for bankruptcy*
16. *Ever worried about paying large medical bills*
17. *Ever worried about financial stability*
18. *Ever concerned about keeping you job and income or that earnings will be limited*
19. *Ever delay, forego or make changes to prescription medicine because of cost*
20. *Ever delay, forego or make changes to treatment because of cost*
 |

**eTable 2. Alignment of items in the MEPS Cancer Self-Administered Questionnaire (CSAQ) used to define financial toxicity with domains of financial toxicity**

|  |  |  |
| --- | --- | --- |
| Item in the MEPS CSAQ | Underlying construct | Financial toxicity domain |
| *If the ratio of CS out-of-pocket expenses to their total family income was greater than or equal to 0.2* | Out-of-pocket expenditures | Material condition |
| *Unable to cover cost of medical care visits*  |
| *Had to change from working full-time to working part-time or to less demanding job* | Reduced/lost earnings |
| *Decided not to pursue promotion because of cancer* |
| *Retired earlier than planned because of cancer*  |
| *Ever felt that you were less productive at work because of cancer* | Indirect cost /productivity loss |
| *You or anyone in family had to borrow money or go into debt* | Medical debt/bankruptcy |
| *You or family member ever filed for bankruptcy* |
| *Ever worried that because of cancer you might be forced to retire* | Concern about income/earnings | Psychological Response |
| *Ever concerned about keeping you job and income or that earnings will be limited* |
| *Ever worried about paying large medical bills* | Stress/worry regarding cancer care costs |
| *Ever worried about financial stability* |
| *Ever delay, forego or make changes to prescription medicine because of cost* | Cost-related care non-adherence | Coping Behaviors |
| *Ever delay, forego or make changes to treatment because of cost* |
| *You or anyone in family had to make financial sacrifices on living situation* | Cost-related financial sacrifices |
| *You or anyone in family had to make financial sacrifices on basic spending* |
| *You or anyone in family had to make financial sacrifices on vacation or leisure activities* |
| *You or anyone in family had to make financial sacrifices on savings set aside for other purposes* |
| *You or anyone in family had to make financial sacrifices on delaying large purchases* |
| *You or anyone in family had to make financial sacrifices on other categories* |

**eTable 3.1 Parameter estimates for all predictors (including covariates) of pain in the adjusted multiple linear regression model**

|  |  |  |  |
| --- | --- | --- | --- |
| Parameter | Estimate | Standard Error | P value |
| Intercept | 1.96 | 0.31 | <0.001 |
| Financial toxicity vs no financial toxicity | 0.25 | 0.06 | <0.001 |
| Age | -0.01 | <0.01 | <0.001 |
| Female vs male | 0.11 | 0.05 | 0.019 |
| Region: Midwest vs Northeast | -0.23 | 0.08 | 0.005 |
| Region: South vs Northeast | -0.27 | 0.07 | <0.001 |
| Region: West vs Northeast | -0.27 | 0.09 | 0.002 |
| Race: non-Hispanic White vs Hispanic | -0.02 | 0.07 | 0.783 |
| Race: non-Hispanic Black vs Hispanic | 0.61 | 0.09 | <0.001 |
| Race: other vs Hispanic | -0.03 | 0.10 | 0.754 |
| Insurance: any private vs uninsured | 0.04 | 0.07 | 0.554 |
| Insurance: public only vs uninsured | 0.68 | 0.08 | <0.001 |
| Education: GED/HS graduate vs less than high school  | -0.10 | 0.06 | 0.12 |
| Education: college educated vs less than high school | -0.49 | 0.06 | <0.001 |
| Education: post-graduate or professional degree vs less than high school | -0.23 | 0.06 | <0.001 |
| Marital status: widowed/divorced/separated vs married  | 0.25 | 0.05 | <0.001 |
| Marital status: never married vs married | -0.03 | 0.10 | 0.776 |
| Cancer treatment: past treatment vs no treatment | -0.02 | 0.09 | 0.835 |
| Cancer treatment: current treatment vs no treatment  | 0.28 | 0.12 | 0.019 |
| Chronic comorbidities: three or more vs two | 0.43 | 0.07 | <0.001 |
| Chronic comorbidities: none vs two | -0.43 | 0.09 | <0.001 |
| Chronic comorbidities: one vs two | -0.55 | 0.06 | <0.001 |
| Psychological distress (K6) | 0.17 | 0.01 | <0.001 |

**eTable 3.2 Parameter estimates for all predictors (including covariates) of everyday physical activity limitation in the multivariable logistic regression model**

|  |  |  |
| --- | --- | --- |
| Parameter | Odds Ratio | 95% Confidence Interval |
| Financial toxicity vs no financial toxicity | 1.38 | 1.01-1.89 |
| Age | 1.02 | 1.01-1.03 |
| Female vs Male | 0.79 | 0.58-1.07 |
| Region: Midwest vs Northeast | 0.83 | 0.50- 1.39 |
| Region: South vs Northeast | 1.08 | 0.69 – 1.68 |
| Region: West vs Northeast | 0.70 | 0.42-1.17 |
| Race: non-Hispanic Black vs non-Hispanic White | 2.36 | 1.51-3.69 |
| Race: Other vs non-Hispanic White | 2.26 | 1.09-4.65 |
| Race: Hispanic vs non-Hispanic White | 2.48 | 1.6-3.84 |
| Insurance: Any Private vs Uninsured | 2.22 | 0.36-13.65 |
| Insurance: Public Only vs Uninsured | 3.98 | 0.66-24.09 |
| Education: GED/HS graduate vs less than high school  | 0.86 | 0.59-1.27 |
| Education: college educated vs less than high school | 0.36 | 0.23-0.56 |
| Education: post-graduate or professional degree vs less than high school | 0.53 | 0.35-0.8 |
| Marital status: widowed/divorced/separated vs married  | 1.25 | 0.92-1.69 |
| Marital status: never married vs married | 1.12 | 0.61-2.06 |
| Cancer treatment: past treatment vs no treatment | 0.51 | 0.29-0.88 |
| Cancer treatment: current treatment vs no treatment  | 0.91 | 0.47-1.76 |
| Chronic comorbidities: three or more vs none | 3.00 | 1.43-6.31 |
| Chronic comorbidities: one vs none | 1.07 | 0.48-2.37 |
| Chronic comorbidities: two vs none | 1.44 | 0.67-3.09 |
| Psychological distress (K6) | 1.17 | 1.13-1.22 |

**eTable 3.3 Parameter estimates for all predictors (including covariates) of cancer-related activity limitation outside of work in the multivariable logistic regression model**

|  |  |  |
| --- | --- | --- |
| Parameter | Odds Ratio | 95% Confidence Interval |
| Financial toxicity vs no financial toxicity | 3.86 | 2.69-5.52 |
| Age | 0.98 | 0.96-0.99 |
| Female vs Male | 1.37 | 1.03-1.82 |
| Region: Midwest vs Northeast | 1.42 | 0.88-2.30 |
| Region: South vs Northeast | 0.95 | 0.61-1.49 |
| Region: West vs Northeast | 0.77 | 0.48-1.24 |
| Race: non-Hispanic Black vs non-Hispanic White | 1.20 | 0.68-2.11 |
| Race: Other vs non-Hispanic White | 1.61 | 0.81-3.19 |
| Race: Hispanic vs non-Hispanic White | 1.66 | 0.98-2.83 |
| Insurance: Any Private vs Uninsured | 0.51 | 0.16-1.61 |
| Insurance: Public Only vs Uninsured | 0.47 | 0.15-1.52 |
| Education: GED/HS graduate vs less than high school  | 1.18 | 0.76-1.83 |
| Education: college educated vs less than high school | 1.02 | 0.66-1.58 |
| Education: post-graduate or professional degree vs less than high school | 1.02 | 0.67-1.56 |
| Marital status: widowed/divorced/separated vs married  | 1.23 | 0.87-1.73 |
| Marital status: never married vs married | 1.38 | 0.85-2.25 |
| Cancer treatment: past treatment vs no treatment | 2.12 | 1.06-4.26 |
| Cancer treatment: current treatment vs no treatment  | 4.64 | 2.03-10.61 |
| Chronic comorbidities: three or more vs none | 0.74 | 0.45-1.22 |
| Chronic comorbidities: one vs none | 0.93 | 0.56-1.53 |
| Chronic comorbidities: two vs none | 0.81 | 0.47-1.38 |
| Psychological distress (K6) | 1.08 | 1.04-1.13 |

**eTable 3.4 Parameter estimates for all predictors (including covariates) of long-term activity limitation in the multivariable logistic regression model**

|  |  |  |
| --- | --- | --- |
| Parameter | Odds Ratio | 95% Confidence Interval |
| Financial toxicity vs no financial toxicity | 1.44 | 0.94-2.22 |
| Age | 1.01 | 0.99-1.03 |
| Female vs Male | 0.75 | 0.52-1.09 |
| Region: Midwest vs Northeast | 0.82 | 0.40-1.69 |
| Region: South vs Northeast | 0.84 | 0.45-1.58 |
| Region: West vs Northeast | 0.47 | 0.24-0.91 |
| Race: non-Hispanic Black vs non-Hispanic White | 0.72 | 0.42-1.25 |
| Race: Other vs non-Hispanic White | 0.78 | 0.36-1.69 |
| Race: Hispanic vs non-Hispanic White | 1.12 | 0.52-2.43 |
| Insurance: Any Private vs Uninsured | 0.76 | 0.29-2.00 |
| Insurance: Public Only vs Uninsured | 1.03 | 0.43-2.51 |
| Education: GED/HS graduate vs less than high school  | 2.12 | 1.15-3.91 |
| Education: college educated vs less than high school | 0.94 | 0.52-1.67 |
| Education: post-graduate or professional degree vs less than high school | 1.51 | 1.01-2.26 |
| Marital status: widowed/divorced/separated vs married  | 0.82 | 0.47-1.44 |
| Marital status: never married vs married | 1.50 | 0.78-2.86 |
| Cancer treatment: past treatment vs no treatment | 2.84 | 0.84-9.62 |
| Cancer treatment: current treatment vs no treatment  | 1.93 | 0.52-7.14 |
| Chronic comorbidities: three or more vs none | 1.37 | 0.68-2.79 |
| Chronic comorbidities: one vs none | 2.16 | 1.04-4.49 |
| Chronic comorbidities: two vs none | 1.27 | 0.64-2.52 |
| Psychological distress (K6) | 1.10 | 1.05-1.15 |

**eTable 3.5 Parameter estimates for all predictors (including covariates) of fatigue in the multivariable logistic regression model**

|  |  |  |
| --- | --- | --- |
| Parameter | Odds Ratio | 95% Confidence Interval |
| Financial toxicity vs no financial toxicity | 1.82 | 1.33-2.49 |
| Age | 0.99 | 0.98-1.01 |
| Female vs Male | 0.99 | 0.75-1.32 |
| Region: Midwest vs Northeast | 1.51 | 0.94-2.44 |
| Region: South vs Northeast | 1.55 | 1.01-2.36 |
| Region: West vs Northeast | 1.55 | 0.97-2.46 |
| Race: non-Hispanic Black vs non-Hispanic White | 1.51 | 0.95-2.41 |
| Race: Other vs non-Hispanic White | 1.08 | 0.54-2.14 |
| Race: Hispanic vs non-Hispanic White | 0.78 | 0.46-1.34 |
| Insurance: Any Private vs Uninsured | 1.44 | 0.44-4.71 |
| Insurance: Public Only vs Uninsured | 2.15 | 0.65-7.14 |
| Education: GED/HS graduate vs less than high school  | 0.89 | 0.59-1.34 |
| Education: college educated vs less than high school | 0.88 | 0.58-1.34 |
| Education: post-graduate or professional degree vs less than high school | 0.68 | 0.48-0.96 |
| Marital status: widowed/divorced/separated vs married  | 1.25 | 0.90-1.74 |
| Marital status: never married vs married | 0.43 | 0.24-0.78 |
| Cancer treatment: past treatment vs no treatment | 1.30 | 0.79-2.14 |
| Cancer treatment: current treatment vs no treatment  | 2.68 | 1.44-4.98 |
| Chronic comorbidities: three or more vs none | 2.26 | 1.28-3.98 |
| Chronic comorbidities: one vs none | 0.98 | 0.52-1.82 |
| Chronic comorbidities: two vs none | 1.27 | 0.72-2.24 |
| Psychological distress (K6) | 1.19 | 1.14-1.25 |

**eTable 3.6 Parameter estimates for all predictors (including covariates) of cancer-related mental task limitation in the multivariable logistic regression model**

|  |  |  |
| --- | --- | --- |
| Parameter | Odds Ratio | 95% Confidence Interval |
| Financial toxicity vs no financial toxicity | 5.27 | 2.85-9.76 |
| Age | 0.98 | 0.96-0.99 |
| Female vs Male | 1.53 | 1.01-2.30 |
| Region: Midwest vs Northeast | 0.97 | 0.46-2.03 |
| Region: South vs Northeast | 0.78 | 0.41-1.48 |
| Region: West vs Northeast | 0.84 | 0.40-1.73 |
| Race: non-Hispanic Black vs non-Hispanic White | 1.38 | 0.66-2.86 |
| Race: Other vs non-Hispanic White | 0.50 | 0.15-1.71 |
| Race: Hispanic vs non-Hispanic White | 1.39 | 0.70-2.78 |
| Insurance: Any Private vs Uninsured | 0.63 | 0.23-1.69 |
| Insurance: Public Only vs Uninsured | 0.63 | 0.22-1.80 |
| Education: GED/HS graduate vs less than high school  | 1.68 | 0.89-3.18 |
| Education: college educated vs less than high school | 1.43 | 0.81-2.53 |
| Education: post-graduate or professional degree vs less than high school | 1.25 | 0.71-2.21 |
| Marital status: widowed/divorced/separated vs married  | 0.99 | 0.63-1.58 |
| Marital status: never married vs married | 1.31 | 0.61-2.79 |
| Cancer treatment: past treatment vs no treatment | 2.45 | 0.69-8.64 |
| Cancer treatment: current treatment vs no treatment  | 5.89 | 1.39-24.87 |
| Chronic comorbidities: three or more vs none | 0.99 | 0.45-2.21 |
| Chronic comorbidities: one vs none | 0.96 | 0.42-2.22 |
| Chronic comorbidities: two vs none | 0.91 | 0.42-1.98 |
| Psychological distress (K6) | 1.12 | 1.08-1.17 |

**eTable 3.7 Parameter estimates for all predictors (including covariates) of social satisfaction in the multivariable logistic regression model**

|  |  |  |
| --- | --- | --- |
| Parameter | Odds Ratio | 95% Confidence Interval |
| Financial toxicity vs no financial toxicity | 1.25 | 0.80-1.95 |
| Age | 0.97 | 0.96-0.99 |
| Female vs Male | 0.54 | 0.36-0.83 |
| Region: Midwest vs Northeast | 1.74 | 0.96-3.17 |
| Region: South vs Northeast | 1.67 | 1.03-2.71 |
| Region: West vs Northeast | 1.34 | 0.74-2.43 |
| Race: non-Hispanic Black vs non-Hispanic White | 2.12 | 1.17-3.86 |
| Race: Other vs non-Hispanic White | 1.50 | 0.63-3.57 |
| Race: Hispanic vs non-Hispanic White | 1.49 | 0.81-2.74 |
| Insurance: Any Private vs Uninsured | 1.03 | 0.18-5.85 |
| Insurance: Public Only vs Uninsured | 2.29 | 0.41-12.78 |
| Education: GED/HS graduate vs less than high school  | 0.40 | 0.22-0.72 |
| Education: college educated vs less than high school | 0.51 | 0.28-0.93 |
| Education: post-graduate or professional degree vs less than high school | 0.69 | 0.44-1.07 |
| Marital status: widowed/divorced/separated vs married  | 1.91 | 1.28-2.84 |
| Marital status: never married vs married | 1.74 | 0.87-3.48 |
| Cancer treatment: past treatment vs no treatment | 0.61 | 0.32-1.14 |
| Cancer treatment: current treatment vs no treatment  | 1.01 | 0.51-1.98 |
| Chronic comorbidities: three or more vs none | 4.44 | 1.87-10.53 |
| Chronic comorbidities: one vs none | 1.74 | 0.66-4.55 |
| Chronic comorbidities: two vs none | 3.46 | 1.43-8.36 |
| Psychological distress (K6) | 1.20 | 1.13-1.27 |

**eTable 3.8 Parameter estimates for all predictors (including covariates) of emotional problems in the multivariable logistic regression model**

|  |  |  |
| --- | --- | --- |
| Parameter | Odds Ratio | 95% Confidence Interval |
| Financial toxicity vs no financial toxicity | 1.94 | 1.42-2.63 |
| Age | 0.98 | 0.97-0.99 |
| Female vs Male | 1.25 | 0.90-1.74 |
| Region: Midwest vs Northeast | 0.80 | 0.51-1.26 |
| Region: South vs Northeast | 0.72 | 0.49-1.05 |
| Region: West vs Northeast | 0.95 | 0.58-1.58 |
| Race: non-Hispanic Black vs non-Hispanic White | 1.49 | 0.89-2.49 |
| Race: Other vs non-Hispanic White | 1.05 | 0.49-2.24 |
| Race: Hispanic vs non-Hispanic White | 0.94 | 0.48-1.83 |
| Insurance: Any Private vs Uninsured | 0.49 | 0.20-1.23 |
| Insurance: Public Only vs Uninsured | 0.53 | 0.21-1.34 |
| Education: GED/HS graduate vs less than high school  | 0.96 | 0.60-1.54 |
| Education: college educated vs less than high school | 0.77 | 0.49-1.22 |
| Education: post-graduate or professional degree vs less than high school | 1.05 | 0.70-1.57 |
| Marital status: widowed/divorced/separated vs married  | 1.28 | 0.87-1.87 |
| Marital status: never married vs married | 1.12 | 0.68-1.86 |
| Cancer treatment: past treatment vs no treatment | 1.76 | 1.05-2.94 |
| Cancer treatment: current treatment vs no treatment  | 3.02 | 1.60-5.70 |
| Chronic comorbidities: three or more vs none | 1.47 | 0.76-2.87 |
| Chronic comorbidities: one vs none | 1.11 | 0.59-2.10 |
| Chronic comorbidities: two vs none | 1.64 | 0.86-3.14 |
| Psychological distress (K6) | 1.41 | 1.35-1.48 |

**eTable 3.9 Parameter estimates for all predictors (including covariates) of caregiver burden in the multivariable logistic regression model**

|  |  |  |
| --- | --- | --- |
| Parameter | Odds Ratio | 95% Confidence Interval |
| Financial toxicity vs no financial toxicity | 3.06 | 1.80-5.21 |
| Age | 0.98 | 0.96-1.01 |
| Female vs Male | 0.60 | 0.39-0.91 |
| Region: Midwest vs Northeast | 0.72 | 0.34-1.50 |
| Region: South vs Northeast | 0.89 | 0.45-1.77 |
| Region: West vs Northeast | 1.07 | 0.50-2.28 |
| Race: non-Hispanic Black vs non-Hispanic White | 1.17 | 0.71-1.92 |
| Race: Other vs non-Hispanic White | 1.81 | 0.92-3.53 |
| Race: Hispanic vs non-Hispanic White | 0.74 | 0.36-1.54 |
| Insurance: Any Private vs Uninsured | 2.19 | 0.46-10.37 |
| Insurance: Public Only vs Uninsured | 1.45 | 0.29-7.30 |
| Education: GED/HS graduate vs less than high school  | 1.03 | 0.57-1.88 |
| Education: college educated vs less than high school | 1.24 | 0.68-2.29 |
| Education: post-graduate or professional degree vs less than high school | 1.35 | 0.82-2.24 |
| Marital status: widowed/divorced/separated vs married  | 0.96 | 0.63-1.46 |
| Marital status: never married vs married | 0.47 | 0.25-0.86 |
| Cancer treatment: past treatment vs no treatment | 2.16 | 0.63-7.49 |
| Cancer treatment: current treatment vs no treatment  | 2.87 | 0.83-9.97 |
| Chronic comorbidities: three or more vs none | 1.31 | 0.72-2.38 |
| Chronic comorbidities: one vs none | 0.78 | 0.41-1.48 |
| Chronic comorbidities: two vs none | 1.12 | 0.52-2.42 |
| Psychological distress (K6) | 1.01 | 0.97-1.05 |