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Version: Supplemental Material

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Supplementary material

MEDLINE search strategy

1. exp Arthritis, Rheumatoid/
2. HAQ.mp.
3. health assessment questionnaire.mp.
4. EQ-5D.mp.
5. EQ5D.mp.
6. euroqol.mp.
7. utilit\$.mp.
8. 2 or 3
9. 4 or 5 or 6 or 7
10. 1 and 8 and 9

Table of QALYs compared to DMARDs

| Mapping algorithm | DMARDs | Adalimumab | Etanercept | Infliximab | Rituximab | Abatacept |
|-------------------|--------|------------|------------|------------|-----------|-----------|
| 1 | 2.13 | 2.87 | 2.82 | 2.74 | 3.11 | 3.28 |
| 2 | 3.17 | 3.97 | 3.92 | 3.83 | 4.23 | 4.42 |
| 3 | 3.82 | 4.50 | 4.47 | 4.38 | 4.74 | 4.92 |
| 4 | 2.27 | 2.86 | 2.83 | 2.76 | 3.07 | 3.22 |
| 5 | 5.40 | 6.05 | 6.02 | 5.92 | 6.27 | 6.45 |
| 6 | 3.73 | 4.43 | 4.40 | 4.30 | 4.68 | 4.87 |
| 7 | 3.91 | 4.65 | 4.61 | 4.51 | 4.90 | 5.10 |
| 8 | 4.87 | 5.53 | 5.50 | 5.40 | 5.76 | 5.94 |
| 9 | 4.70 | 5.25 | 5.23 | 5.15 | 5.45 | 5.60 |
| 10 | 2.35 | 3.02 | 2.98 | 2.90 | 3.25 | 3.42 |
| 11 | 3.60 | 4.20 | 4.17 | 4.09 | 4.41 | 4.57 |
| 12 | 5.65 | 6.31 | 6.28 | 6.18 | 6.50 | 6.71 |
| 13 | 4.53 | 5.12 | 5.08 | 4.99 | 5.31 | 5.48 |
| 14 | 4.55 | 5.17 | 5.13 | 5.04 | 5.37 | 5.54 |
| 15 | 4.61 | 5.21 | 5.18 | 5.08 | 5.41 | 5.58 |
| 16 | 4.48 | 5.08 | 5.04 | 4.95 | 5.28 | 5.45 |
| 17 | 4.48 | 5.04 | 5.00 | 4.92 | 5.22 | 5.39 |
| 18 | 3.89 | 4.63 | 4.59 | 4.49 | 4.89 | 5.08 |
| 19 | 3.87 | 4.62 | 4.58 | 4.48 | 4.88 | 5.07 |
| 20 | 3.84 | 4.36 | 4.33 | 4.25 | 4.55 | 4.71 |
| 21 | 3.58 | 4.52 | 4.215 | 4.214 | 4.75 | 5.01 |
| 22 | 4.05 | 5.04 | 4.718 | 4.716 | 5.28 | 5.55 |
| 23 | 3.99 | 4.97 | 4.652 | 4.649 | 5.20 | 5.47 |
| 24 | 2.69 | 3.51 | 3.269 | 3.281 | 3.74 | 3.97 |

Source code from Simul8 model

VL SECTION: Work Entry Point 1 Entry Logic

'Once the correct number of patients have arrived, the interarrival time is set to be very large, so that no more patients arrive.

IF Work Entry Point 1.Arrived Count = NumPats

SET Work Entry Point 1.Interarrival Time = LargeNumber

VL SECTION: End Run Logic

IF PSA_switch = 1

'If the PSA is running, the answers are stored in the PSA output spreadsheet.

SET Total Cost = Total Cost/NumPats

SET Total QALYs = Total QALYs/NumPats

SET Total Discounted Cost = Total Discounted Cost/NumPats

SET Total Discounted QALYs = Total Discounted QALYs/NumPats

SET PSA Answers[2+[5*Scenario],SOUR] = Total Discounted QALYs

SET PSA Answers[3+[5*Scenario],SOUR] = Total Cost

SET PSA Answers[4+[5*Scenario],SOUR] = Total QALYs

SET PSA Answers[1+[5*Scenario],SOUR] = Total Discounted Cost

IF REALMOD[SOUR\50] = 0

Save Simulation ""

IF SOUR < 2001

SET SOUR = SOUR+1

Run Simulation 100

'Comment

ELSE IF PSA_switch = 2

'If the PSA is running, the answers are stored in the PSA output spreadsheet.

SET Total Cost = Total Cost/NumPats

SET Total QALYs = Total QALYs/NumPats

SET Total Discounted Cost = Total Discounted Cost/NumPats

SET Total Discounted QALYs = Total Discounted QALYs/NumPats

SET scenario_output[+[2*Scenario],HAQ_utility_algorithm] = Total Discounted QALYs

(Disabled) SET PSA Answers[3+[5*Scenario],SOUR] = Total Cost

(Disabled) SET PSA Answers[4+[5*Scenario],SOUR] = Total QALYs

(Disabled) SET PSA Answers[1+[5*Scenario],SOUR] = Total Discounted Cost

(Disabled) IF REALMOD[SOUR\50] = 0

(Disabled) Save Simulation ""

IF HAQ_utility_algorithm < 23

SET HAQ_utility_algorithm = HAQ_utility_algorithm+1

Run Simulation 100

'Comment

ELSE IF PSA_switch = 3

'If the PSA is running, the answers are stored in the PSA output spreadsheet.

SET Total Cost = Total Cost/NumPats

SET Total QALYs = Total QALYs/NumPats

SET Total Discounted Cost = Total Discounted Cost/NumPats

SET Total Discounted QALYs = Total Discounted QALYs/NumPats

SET vas_sa_output[+[Scenario],vas_sa_row] = Total Discounted QALYs

IF vas_sa_row < 32

SET vas_sa_row = vas_sa_row+1

Run Simulation 100

'Comment

SET Work Entry Point 1.Interarrival Time = 0.001

'This sets the arrival time of the next patient.

SET Total LY = Total LY/NumPats

SET Total QALYs = Total QALYs/NumPats

SET Total Discounted QALYs = Total Discounted QALYs/NumPats

SET Total Cost = Total Cost/NumPats

SET Total Discounted Cost = Total Discounted Cost/NumPats

'This calculates the average costs, QALYs, discounted costs, discounted QALYs and LY.

(Disabled) IF Scenario = 1

(Disabled) IF lbl_treatment = 5

(Disabled) SET Results[1,Scenario] = Total Cost

(Disabled) SET Results[2,Scenario] = Total QALYs

(Disabled) SET Results[3,Scenario] = Total Discounted Cost

(Disabled) SET Results[4,Scenario] = Total Discounted QALYs

(Disabled) SET Scenario = Scenario+1

(Disabled) SET lbl_treatment = 0

(Disabled) ELSE

(Disabled) Insert logic here to use if NONE of the conditions in this "IF block" are true.

(Disabled) ELSE

(Disabled) IF lbl_treatment = 6

(Disabled) SET Results[1,Scenario] = Total Cost

(Disabled) SET Results[2,Scenario] = Total QALYs

(Disabled) SET Results[3,Scenario] = Total Discounted Cost

(Disabled) SET Results[4,Scenario] = Total Discounted QALYs

(Disabled) SET Scenario = Scenario+1

(Disabled) SET lbl_treatment = 0

VL SECTION: Calculate_disc_treat

'This discounts the cost of each 3 month prescription at the time it was given.

VL SECTION: Set labels for LEF

SET lbl_annual_cost = c_lef_annual

SET lbl_startup_cost = c_lef_startup

SET lbl_haq_mult_dist = ???

SET lbl_early_quit_week = v_lef_quit_week

SET lbl_u2_critical_lower = p_lef_w6

SET lbl_quit_a = v_lef_quit_a

SET lbl_quit_b = v_lef_quit_b

SET lbl_u1_critical = p_lef_w24*p_lef_tox

SET lbl_u2_critical_higher = [p_lef_w24*[1-p_lef_tox]]+p_lef_w6

SET haq_multvar = 7

SET lbl_time_to_haq_inc = v_time_to_haq_inc_dmards

IF HAQ_utility_algorithm >= 20

SET lbl_vas_improv = vas_improv_lef

VL SECTION: Set labels for GST

SET lbl_annual_cost = c_gst_annual

SET lbl_startup_cost = c_gst_startup

SET lbl_haq_mult_dist = ???

SET lbl_early_quit_week = v_gst_quit_week

SET lbl_u2_critical_lower = p_gst_w6

SET lbl_quit_a = v_gst_quit_a

SET lbl_quit_b = v_gst_quit_b

SET lbl_u1_critical = p_gst_w24*p_gst_tox

SET lbl_u2_critical_higher = [p_gst_w24*[1-p_gst_tox]]+p_gst_w6

SET haq_multvar = 8

SET lbl_time_to_haq_inc = v_time_to_haq_inc_dmards

IF HAQ_utility_algorithm >= 20

SET lbl_vas_improv = vas_improv_gst

VL SECTION: Set labels for CyA

SET lbl_annual_cost = c_cya_annua;

SET lbl_startup_cost = c_cya_startup

SET lbl_haq_mult_dist = ???

SET lbl_early_quit_week = v_cya_quit_week

SET lbl_u2_critical_lower = p_cya_w6

SET lbl_quit_a = v_cya_quit_a

SET lbl_quit_b = v_cya_quit_b

SET lbl_u1_critical = p_cya_w24*p_cya_tox

SET lbl_u2_critical_higher = [p_cya_w24*[1-p_cya_tox]]+p_cya_w6

SET haq_multvar = 9

SET lbl_time_to_haq_inc = v_time_to_haq_inc_dmards

IF HAQ_utility_algorithm >= 20

SET lbl_vas_improv = vas_improv_cya

```
VL SECTION: Set labels for Pall
SET lbl_time_to_haq_inc = v_time_to_haq_inc_pall
SET lbl_annual_cost = c_pall_annual
SET v_pall = lbl_annual_cost
SET lbl_startup_cost = c_pall_startup
SET lbl_haq_mult_dist = 0
SET lbl_early_quit_week = 0
SET lbl_u2_critical_lower = 0
SET lbl_quit_a = 1
SET lbl_quit_b = 999999999
SET lbl_u1_critical = 0
SET lbl_u2_critical_higher = 0
SET haq_multvar = 11
IF HAQ_utility_algorithm >= 20
  SET lbl_vas_improv = 0
```

VL SECTION: Set labels for ADA

SET lbl_annual_cost = c_ada_annual

SET lbl_startup_cost = c_ada_startup

SET lbl_haq_mult_dist = ???

SET lbl_early_quit_week = v_ada_quit_week

SET lbl_u2_critical_lower = 0

SET lbl_quit_a = v_tnf_quit_a

SET lbl_quit_b = v_tnf_quit_b

SET lbl_u1_critical = p_ada_w12*p_ada_tox

SET lbl_u2_critical_higher = p_ada_w12*[1-p_ada_tox]

SET haq_multvar = 2

SET lbl_time_to_haq_inc = v_time_to_haq_inc_biologics

IF HAQ_utility_algorithm >= 20

 SET lbl_vas_improv = vas_improvement_ada

VL SECTION: Set labels for AZA

SET lbl_annual_cost = c_aza_annual

SET lbl_startup_cost = c_aza_startup

SET lbl_haq_mult_dist = ???

SET lbl_early_quit_week = v_aza_quit_week

SET lbl_u2_critical_lower = p_aza_w6

SET lbl_quit_a = v_aza_quit_a

SET lbl_quit_b = v_aza_quit_b

SET lbl_u1_critical = p_aza_w24*p_aza_tox

SET lbl_u2_critical_higher = [p_aza_w24*[1-p_aza_tox]]+p_aza_w6

SET haq_multvar = 10

SET lbl_time_to_haq_inc = v_time_to_haq_inc_dmards

IF HAQ_utility_algorithm >= 20

SET lbl_vas_improv = vas_improv_aza

VL SECTION: Set labels for ETN

SET lbl_annual_cost = c_etn_annual

SET lbl_startup_cost = c_etn_startup

SET lbl_haq_mult_dist = ???

SET lbl_early_quit_week = v_etn_quit_week

SET lbl_u2_critical_lower = 0

SET lbl_quit_a = v_tnf_quit_a

SET lbl_quit_b = v_tnf_quit_b

SET lbl_u1_critical = p_etn_w13*p_etn_tox

SET lbl_u2_critical_higher = p_etn_w13*[1-p_etn_tox]

SET haq_multvar = 3

SET lbl_time_to_haq_inc = v_time_to_haq_inc_biologics

IF HAQ_utility_algorithm >= 20

SET lbl_vas_improv = vas_improv_etn

VL SECTION: Set labels for IFX

SET lbl_annual_cost = c_ifx_annual

SET lbl_startup_cost = c_ifx_startup

SET lbl_haq_mult_dist = ???

SET lbl_early_quit_week = v_ifx_quit_week

SET lbl_u2_critical_lower = 0

SET lbl_quit_a = v_tnf_quit_a

SET lbl_quit_b = v_tnf_quit_b

SET lbl_u1_critical = p_ifx_w16*p_ifx_tox

SET lbl_u2_critical_higher = p_ifx_w16*[1-p_ifx_tox]

SET haq_multvar = 4

SET lbl_time_to_haq_inc = v_time_to_haq_inc_biologics

IF HAQ_utility_algorithm >= 20

SET lbl_vas_improv = vas_improv_ifx

```
VL SECTION: Set labels for RTX
SET lbl_annual_cost = c_rtx_annual
SET lbl_startup_cost = c_rtx_startup
SET lbl_haq_mult_dist = ???
SET lbl_early_quit_week = v_rtx_quit_week
SET lbl_u2_critical_lower = 0
SET lbl_quit_a = v_rtx_quit_a
SET lbl_quit_b = v_rtx_quit_b
SET lbl_u1_critical = 0
SET lbl_u2_critical_higher = 0
SET haq_multvar = 5
SET lbl_time_to_haq_inc = v_time_to_haq_inc_biologics
IF HAQ_utility_algorithm >= 20
  SET lbl_vas_improv = vas_improv_rtx
```

```
VL SECTION: Set labels for ABT
SET lbl_annual_cost = c_abt_annual
SET lbl_startup_cost = c_abt_startup
SET lbl_haq_mult_dist = ???
SET lbl_early_quit_week = v_abt_quit_week
SET lbl_u2_critical_lower = 0
SET lbl_quit_a = v_abt_quit_a
SET lbl_quit_b = v_abt_quit_b
SET lbl_u1_critical = p_abt_w24*p_abt_tox
SET lbl_u2_critical_higher = p_abt_w24*[1-p_abt_tox]
SET haq_multvar = 6
SET lbl_time_to_haq_inc = v_time_to_haq_inc_biologics
IF HAQ_utility_algorithm >= 20
  SET lbl_vas_improv = vas_improv_abt
```



```
VL SECTION: Initial Characteristics
SET initial_haq_random = RANDOM[0]
SET mf_age_random = RANDOM[0]
SET exact_age_random = RANDOM[0]
SET patient_male = d_sex
SET death_random = RANDOM[0]
IF patient_male = 1
  SET patient_age = d_age_male
ELSE
  SET patient_age = d_age_female
SET patient_haq = d_HAQ_score
IF HAQ_utility_algorithm >= 20
  SET patient_vas = d_baseline_VAS
```

```
VL SECTION: Set survival prob female
IF patient_age < age_death[1,1]
  SET survival_prob = age_death[3,1]
ELSE IF patient_age < age_death[1,2]
  SET survival_prob = age_death[3,2]
ELSE IF patient_age < age_death[1,3]
  SET survival_prob = age_death[3,3]
ELSE IF patient_age < age_death[1,4]
  SET survival_prob = age_death[3,4]
ELSE IF patient_age < age_death[1,5]
  SET survival_prob = age_death[3,5]
ELSE IF patient_age < age_death[1,6]
  SET survival_prob = age_death[3,6]
ELSE IF patient_age < age_death[1,7]
  SET survival_prob = age_death[3,7]
ELSE IF patient_age < age_death[1,8]
  SET survival_prob = age_death[3,8]
ELSE IF patient_age < age_death[1,9]
  SET survival_prob = age_death[3,9]
ELSE IF patient_age < age_death[1,10]
  SET survival_prob = age_death[3,10]
ELSE IF patient_age < age_death[1,11]
  SET survival_prob = age_death[3,11]
ELSE IF patient_age < age_death[1,12]
  SET survival_prob = age_death[3,12]
ELSE IF patient_age < age_death[1,13]
  SET survival_prob = age_death[3,13]
ELSE IF patient_age < age_death[1,14]
  SET survival_prob = age_death[3,14]
ELSE IF patient_age < age_death[1,15]
  SET survival_prob = age_death[3,15]
ELSE IF patient_age < age_death[1,16]
  SET survival_prob = age_death[3,16]
ELSE IF patient_age < age_death[1,17]
  SET survival_prob = age_death[3,17]
ELSE IF patient_age < age_death[1,18]
  SET survival_prob = age_death[3,18]
ELSE IF patient_age < age_death[1,19]
  SET survival_prob = age_death[3,19]
ELSE IF patient_age < age_death[1,20]
  SET survival_prob = age_death[3,20]
ELSE IF patient_age < age_death[1,21]
  SET survival_prob = age_death[3,21]
ELSE IF patient_age < age_death[1,22]
  SET survival_prob = age_death[3,22]
ELSE IF patient_age < age_death[1,23]
  SET survival_prob = age_death[3,23]
ELSE IF patient_age < age_death[1,24]
  SET survival_prob = age_death[3,24]
ELSE IF patient_age < age_death[1,25]
  SET survival_prob = age_death[3,25]
```

ELSE IF patient_age < age_death[1,26]
SET survival_prob = age_death[3,26]
ELSE IF patient_age < age_death[1,27]
SET survival_prob = age_death[3,27]
ELSE IF patient_age < age_death[1,28]
SET survival_prob = age_death[3,28]
ELSE IF patient_age < age_death[1,29]
SET survival_prob = age_death[3,29]
ELSE IF patient_age < age_death[1,30]
SET survival_prob = age_death[3,30]
ELSE IF patient_age < age_death[1,31]
SET survival_prob = age_death[3,31]
ELSE IF patient_age < age_death[1,32]
SET survival_prob = age_death[3,32]
ELSE IF patient_age < age_death[1,33]
SET survival_prob = age_death[3,33]
ELSE IF patient_age < age_death[1,34]
SET survival_prob = age_death[3,34]
ELSE IF patient_age < age_death[1,35]
SET survival_prob = age_death[3,35]
ELSE IF patient_age < age_death[1,36]
SET survival_prob = age_death[3,36]
ELSE IF patient_age < age_death[1,37]
SET survival_prob = age_death[3,37]
ELSE IF patient_age < age_death[1,38]
SET survival_prob = age_death[3,38]
ELSE IF patient_age < age_death[1,39]
SET survival_prob = age_death[3,39]
ELSE IF patient_age < age_death[1,40]
SET survival_prob = age_death[3,40]
ELSE IF patient_age < age_death[1,41]
SET survival_prob = age_death[3,41]
ELSE IF patient_age < age_death[1,42]
SET survival_prob = age_death[3,42]
ELSE IF patient_age < age_death[1,43]
SET survival_prob = age_death[3,43]
ELSE IF patient_age < age_death[1,44]
SET survival_prob = age_death[3,44]
ELSE IF patient_age < age_death[1,45]
SET survival_prob = age_death[3,45]
ELSE IF patient_age < age_death[1,46]
SET survival_prob = age_death[3,46]
ELSE IF patient_age < age_death[1,47]
SET survival_prob = age_death[3,47]
ELSE IF patient_age < age_death[1,48]
SET survival_prob = age_death[3,48]
ELSE IF patient_age < age_death[1,49]
SET survival_prob = age_death[3,49]
ELSE IF patient_age < age_death[1,50]
SET survival_prob = age_death[3,50]
ELSE IF patient_age < age_death[1,51]

```
SET survival_prob = age_death[3,51]
ELSE IF patient_age < age_death[1,52]
  SET survival_prob = age_death[3,52]
ELSE IF patient_age < age_death[1,53]
  SET survival_prob = age_death[3,53]
ELSE IF patient_age < age_death[1,54]
  SET survival_prob = age_death[3,54]
ELSE IF patient_age < age_death[1,55]
  SET survival_prob = age_death[3,55]
ELSE IF patient_age < age_death[1,56]
  SET survival_prob = age_death[3,56]
ELSE IF patient_age < age_death[1,57]
  SET survival_prob = age_death[3,57]
ELSE IF patient_age < age_death[1,58]
  SET survival_prob = age_death[3,58]
ELSE IF patient_age < age_death[1,59]
  SET survival_prob = age_death[3,59]
ELSE IF patient_age < age_death[1,60]
  SET survival_prob = age_death[3,60]
ELSE IF patient_age < age_death[1,61]
  SET survival_prob = age_death[3,61]
ELSE IF patient_age < age_death[1,62]
  SET survival_prob = age_death[3,62]
ELSE IF patient_age < age_death[1,63]
  SET survival_prob = age_death[3,63]
ELSE IF patient_age < age_death[1,64]
  SET survival_prob = age_death[3,64]
ELSE IF patient_age < age_death[1,65]
  SET survival_prob = age_death[3,65]
ELSE IF patient_age < age_death[1,66]
  SET survival_prob = age_death[3,66]
ELSE IF patient_age < age_death[1,67]
  SET survival_prob = age_death[3,67]
ELSE IF patient_age < age_death[1,68]
  SET survival_prob = age_death[3,68]
ELSE IF patient_age < age_death[1,69]
  SET survival_prob = age_death[3,69]
ELSE IF patient_age < age_death[1,70]
  SET survival_prob = age_death[3,70]
ELSE IF patient_age < age_death[1,71]
  SET survival_prob = age_death[3,71]
ELSE IF patient_age < age_death[1,72]
  SET survival_prob = age_death[3,72]
ELSE IF patient_age < age_death[1,73]
  SET survival_prob = age_death[3,73]
ELSE IF patient_age < age_death[1,74]
  SET survival_prob = age_death[3,74]
ELSE IF patient_age < age_death[1,75]
  SET survival_prob = age_death[3,75]
ELSE IF patient_age < age_death[1,76]
  SET survival_prob = age_death[3,76]
```

```
ELSE IF patient_age < age_death[1,77]
  SET survival_prob = age_death[3,77]
ELSE IF patient_age < age_death[1,78]
  SET survival_prob = age_death[3,78]
ELSE IF patient_age < age_death[1,79]
  SET survival_prob = age_death[3,79]
ELSE IF patient_age < age_death[1,80]
  SET survival_prob = age_death[3,80]
ELSE IF patient_age < age_death[1,81]
  SET survival_prob = age_death[3,81]
ELSE IF patient_age < age_death[1,82]
  SET survival_prob = age_death[3,82]
ELSE IF patient_age < age_death[1,83]
  SET survival_prob = age_death[3,83]
ELSE IF patient_age < age_death[1,84]
  SET survival_prob = age_death[3,84]
ELSE IF patient_age < age_death[1,85]
  SET survival_prob = age_death[3,85]
ELSE IF patient_age < age_death[1,86]
  SET survival_prob = age_death[3,86]
ELSE IF patient_age < age_death[1,87]
  SET survival_prob = age_death[3,87]
ELSE IF patient_age < age_death[1,88]
  SET survival_prob = age_death[3,88]
ELSE IF patient_age < age_death[1,89]
  SET survival_prob = age_death[3,89]
ELSE IF patient_age < age_death[1,90]
  SET survival_prob = age_death[3,90]
ELSE IF patient_age < age_death[1,91]
  SET survival_prob = age_death[3,91]
ELSE IF patient_age < age_death[1,92]
  SET survival_prob = age_death[3,92]
ELSE IF patient_age < age_death[1,93]
  SET survival_prob = age_death[3,93]
ELSE IF patient_age < age_death[1,94]
  SET survival_prob = age_death[3,94]
ELSE IF patient_age < age_death[1,95]
  SET survival_prob = age_death[3,95]
ELSE IF patient_age < age_death[1,96]
  SET survival_prob = age_death[3,96]
ELSE IF patient_age < age_death[1,97]
  SET survival_prob = age_death[3,97]
ELSE IF patient_age < age_death[1,98]
  SET survival_prob = age_death[3,98]
ELSE IF patient_age < age_death[1,99]
  SET survival_prob = age_death[3,99]
ELSE IF patient_age < age_death[1,100]
  SET survival_prob = age_death[3,100]
ELSE
  SET survival_prob = age_death[3,101]
```



```
VL SECTION: Set survival prob male
IF patient_age < age_death[1,1]
  SET survival_prob = age_death[2,1]
ELSE IF patient_age < age_death[1,2]
  SET survival_prob = age_death[2,2]
ELSE IF patient_age < age_death[1,3]
  SET survival_prob = age_death[2,3]
ELSE IF patient_age < age_death[1,4]
  SET survival_prob = age_death[2,4]
ELSE IF patient_age < age_death[1,5]
  SET survival_prob = age_death[2,5]
ELSE IF patient_age < age_death[1,6]
  SET survival_prob = age_death[2,6]
ELSE IF patient_age < age_death[1,7]
  SET survival_prob = age_death[2,7]
ELSE IF patient_age < age_death[1,8]
  SET survival_prob = age_death[2,8]
ELSE IF patient_age < age_death[1,9]
  SET survival_prob = age_death[2,9]
ELSE IF patient_age < age_death[1,10]
  SET survival_prob = age_death[2,10]
ELSE IF patient_age < age_death[1,11]
  SET survival_prob = age_death[2,11]
ELSE IF patient_age < age_death[1,12]
  SET survival_prob = age_death[2,12]
ELSE IF patient_age < age_death[1,13]
  SET survival_prob = age_death[2,13]
ELSE IF patient_age < age_death[1,14]
  SET survival_prob = age_death[2,14]
ELSE IF patient_age < age_death[1,15]
  SET survival_prob = age_death[2,15]
ELSE IF patient_age < age_death[1,16]
  SET survival_prob = age_death[2,16]
ELSE IF patient_age < age_death[1,17]
  SET survival_prob = age_death[2,17]
ELSE IF patient_age < age_death[1,18]
  SET survival_prob = age_death[2,18]
ELSE IF patient_age < age_death[1,19]
  SET survival_prob = age_death[2,19]
ELSE IF patient_age < age_death[1,20]
  SET survival_prob = age_death[2,20]
ELSE IF patient_age < age_death[1,21]
  SET survival_prob = age_death[2,21]
ELSE IF patient_age < age_death[1,22]
  SET survival_prob = age_death[2,22]
ELSE IF patient_age < age_death[1,23]
  SET survival_prob = age_death[2,23]
ELSE IF patient_age < age_death[1,24]
  SET survival_prob = age_death[2,24]
ELSE IF patient_age < age_death[1,25]
  SET survival_prob = age_death[2,25]
```

```
ELSE IF patient_age < age_death[1,26]
  SET survival_prob = age_death[2,26]
ELSE IF patient_age < age_death[1,27]
  SET survival_prob = age_death[2,27]
ELSE IF patient_age < age_death[1,28]
  SET survival_prob = age_death[2,28]
ELSE IF patient_age < age_death[1,29]
  SET survival_prob = age_death[2,29]
ELSE IF patient_age < age_death[1,30]
  SET survival_prob = age_death[2,30]
ELSE IF patient_age < age_death[1,31]
  SET survival_prob = age_death[2,31]
ELSE IF patient_age < age_death[1,32]
  SET survival_prob = age_death[2,32]
ELSE IF patient_age < age_death[1,33]
  SET survival_prob = age_death[2,33]
ELSE IF patient_age < age_death[1,34]
  SET survival_prob = age_death[2,34]
ELSE IF patient_age < age_death[1,35]
  SET survival_prob = age_death[2,35]
ELSE IF patient_age < age_death[1,36]
  SET survival_prob = age_death[2,36]
ELSE IF patient_age < age_death[1,37]
  SET survival_prob = age_death[2,37]
ELSE IF patient_age < age_death[1,38]
  SET survival_prob = age_death[2,38]
ELSE IF patient_age < age_death[1,39]
  SET survival_prob = age_death[2,39]
ELSE IF patient_age < age_death[1,40]
  SET survival_prob = age_death[2,40]
ELSE IF patient_age < age_death[1,41]
  SET survival_prob = age_death[2,41]
ELSE IF patient_age < age_death[1,42]
  SET survival_prob = age_death[2,42]
ELSE IF patient_age < age_death[1,43]
  SET survival_prob = age_death[2,43]
ELSE IF patient_age < age_death[1,44]
  SET survival_prob = age_death[2,44]
ELSE IF patient_age < age_death[1,45]
  SET survival_prob = age_death[2,45]
ELSE IF patient_age < age_death[1,46]
  SET survival_prob = age_death[2,46]
ELSE IF patient_age < age_death[1,47]
  SET survival_prob = age_death[2,47]
ELSE IF patient_age < age_death[1,48]
  SET survival_prob = age_death[2,48]
ELSE IF patient_age < age_death[1,49]
  SET survival_prob = age_death[2,49]
ELSE IF patient_age < age_death[1,50]
  SET survival_prob = age_death[2,50]
ELSE IF patient_age < age_death[1,51]
```



```
SET survival_prob = age_death[2,51]
ELSE IF patient_age < age_death[1,52]
  SET survival_prob = age_death[2,52]
ELSE IF patient_age < age_death[1,53]
  SET survival_prob = age_death[2,53]
ELSE IF patient_age < age_death[1,54]
  SET survival_prob = age_death[2,54]
ELSE IF patient_age < age_death[1,55]
  SET survival_prob = age_death[2,55]
ELSE IF patient_age < age_death[1,56]
  SET survival_prob = age_death[2,56]
ELSE IF patient_age < age_death[1,57]
  SET survival_prob = age_death[2,57]
ELSE IF patient_age < age_death[1,58]
  SET survival_prob = age_death[2,58]
ELSE IF patient_age < age_death[1,59]
  SET survival_prob = age_death[2,59]
ELSE IF patient_age < age_death[1,60]
  SET survival_prob = age_death[2,60]
ELSE IF patient_age < age_death[1,61]
  SET survival_prob = age_death[2,61]
ELSE IF patient_age < age_death[1,62]
  SET survival_prob = age_death[2,62]
ELSE IF patient_age < age_death[1,63]
  SET survival_prob = age_death[2,63]
ELSE IF patient_age < age_death[1,64]
  SET survival_prob = age_death[2,64]
ELSE IF patient_age < age_death[1,65]
  SET survival_prob = age_death[2,65]
ELSE IF patient_age < age_death[1,66]
  SET survival_prob = age_death[2,66]
ELSE IF patient_age < age_death[1,67]
  SET survival_prob = age_death[2,67]
ELSE IF patient_age < age_death[1,68]
  SET survival_prob = age_death[2,68]
ELSE IF patient_age < age_death[1,69]
  SET survival_prob = age_death[2,69]
ELSE IF patient_age < age_death[1,70]
  SET survival_prob = age_death[2,70]
ELSE IF patient_age < age_death[1,71]
  SET survival_prob = age_death[2,71]
ELSE IF patient_age < age_death[1,72]
  SET survival_prob = age_death[2,72]
ELSE IF patient_age < age_death[1,73]
  SET survival_prob = age_death[2,73]
ELSE IF patient_age < age_death[1,74]
  SET survival_prob = age_death[2,74]
ELSE IF patient_age < age_death[1,75]
  SET survival_prob = age_death[2,75]
ELSE IF patient_age < age_death[1,76]
  SET survival_prob = age_death[2,76]
```

```
ELSE IF patient_age < age_death[1,77]
  SET survival_prob = age_death[2,77]
ELSE IF patient_age < age_death[1,78]
  SET survival_prob = age_death[2,78]
ELSE IF patient_age < age_death[1,79]
  SET survival_prob = age_death[2,79]
ELSE IF patient_age < age_death[1,80]
  SET survival_prob = age_death[2,80]
ELSE IF patient_age < age_death[1,81]
  SET survival_prob = age_death[2,81]
ELSE IF patient_age < age_death[1,82]
  SET survival_prob = age_death[2,82]
ELSE IF patient_age < age_death[1,83]
  SET survival_prob = age_death[2,83]
ELSE IF patient_age < age_death[1,84]
  SET survival_prob = age_death[2,84]
ELSE IF patient_age < age_death[1,85]
  SET survival_prob = age_death[2,85]
ELSE IF patient_age < age_death[1,86]
  SET survival_prob = age_death[2,86]
ELSE IF patient_age < age_death[1,87]
  SET survival_prob = age_death[2,87]
ELSE IF patient_age < age_death[1,88]
  SET survival_prob = age_death[2,88]
ELSE IF patient_age < age_death[1,89]
  SET survival_prob = age_death[2,89]
ELSE IF patient_age < age_death[1,90]
  SET survival_prob = age_death[2,90]
ELSE IF patient_age < age_death[1,91]
  SET survival_prob = age_death[2,91]
ELSE IF patient_age < age_death[1,92]
  SET survival_prob = age_death[2,92]
ELSE IF patient_age < age_death[1,93]
  SET survival_prob = age_death[2,93]
ELSE IF patient_age < age_death[1,94]
  SET survival_prob = age_death[2,94]
ELSE IF patient_age < age_death[1,95]
  SET survival_prob = age_death[2,95]
ELSE IF patient_age < age_death[1,96]
  SET survival_prob = age_death[2,96]
ELSE IF patient_age < age_death[1,97]
  SET survival_prob = age_death[2,97]
ELSE IF patient_age < age_death[1,98]
  SET survival_prob = age_death[2,98]
ELSE IF patient_age < age_death[1,99]
  SET survival_prob = age_death[2,99]
ELSE IF patient_age < age_death[1,100]
  SET survival_prob = age_death[2,100]
ELSE
  SET survival_prob = age_death[2,101]
```



```
VL SECTION: Set age at death
IF patient_male = 0
  CALL Set survival prob female
ELSE
  CALL Set survival prob male
SET deathage_survprob = survival_prob*[death_random^[1/[haq_mortality_ratio^patient_haq]]]
IF patient_male = 0
  CALL Set death age female
ELSE
  CALL Set death age male
```

VL SECTION: Set death age female

```
IF deathage_survprob > age_death[3,1]
  SET age_at_death = age_death[1,1]
ELSE IF deathage_survprob > age_death[3,2]
  SET age_at_death = age_death[1,2]
ELSE IF deathage_survprob > age_death[3,3]
  SET age_at_death = age_death[1,3]
ELSE IF deathage_survprob > age_death[3,4]
  SET age_at_death = age_death[1,4]
ELSE IF deathage_survprob > age_death[3,5]
  SET age_at_death = age_death[1,5]
ELSE IF deathage_survprob > age_death[3,6]
  SET age_at_death = age_death[1,6]
ELSE IF deathage_survprob > age_death[3,7]
  SET age_at_death = age_death[1,7]
ELSE IF deathage_survprob > age_death[3,8]
  SET age_at_death = age_death[1,8]
ELSE IF deathage_survprob > age_death[3,9]
  SET age_at_death = age_death[1,9]
ELSE IF deathage_survprob > age_death[3,10]
  SET age_at_death = age_death[1,10]
ELSE IF deathage_survprob > age_death[3,11]
  SET age_at_death = age_death[1,11]
ELSE IF deathage_survprob > age_death[3,12]
  SET age_at_death = age_death[1,12]
ELSE IF deathage_survprob > age_death[3,13]
  SET age_at_death = age_death[1,13]
ELSE IF deathage_survprob > age_death[3,14]
  SET age_at_death = age_death[1,14]
ELSE IF deathage_survprob > age_death[3,15]
  SET age_at_death = age_death[1,15]
ELSE IF deathage_survprob > age_death[3,16]
  SET age_at_death = age_death[1,16]
ELSE IF deathage_survprob > age_death[3,17]
  SET age_at_death = age_death[1,17]
ELSE IF deathage_survprob > age_death[3,18]
  SET age_at_death = age_death[1,18]
ELSE IF deathage_survprob > age_death[3,19]
  SET age_at_death = age_death[1,19]
ELSE IF deathage_survprob > age_death[3,20]
  SET age_at_death = age_death[1,20]
ELSE IF deathage_survprob > age_death[3,21]
  SET age_at_death = age_death[1,21]
ELSE IF deathage_survprob > age_death[3,22]
  SET age_at_death = age_death[1,22]
ELSE IF deathage_survprob > age_death[3,23]
  SET age_at_death = age_death[1,23]
ELSE IF deathage_survprob > age_death[3,24]
  SET age_at_death = age_death[1,24]
ELSE IF deathage_survprob > age_death[3,25]
  SET age_at_death = age_death[1,25]
```

```
ELSE IF deathage_survprob > age_death[3,26]
  SET age_at_death = age_death[1,26]
ELSE IF deathage_survprob > age_death[3,27]
  SET age_at_death = age_death[1,27]
ELSE IF deathage_survprob > age_death[3,28]
  SET age_at_death = age_death[1,28]
ELSE IF deathage_survprob > age_death[3,29]
  SET age_at_death = age_death[1,29]
ELSE IF deathage_survprob > age_death[3,30]
  SET age_at_death = age_death[1,30]
ELSE IF deathage_survprob > age_death[3,31]
  SET age_at_death = age_death[1,31]
ELSE IF deathage_survprob > age_death[3,32]
  SET age_at_death = age_death[1,32]
ELSE IF deathage_survprob > age_death[3,33]
  SET age_at_death = age_death[1,33]
ELSE IF deathage_survprob > age_death[3,34]
  SET age_at_death = age_death[1,34]
ELSE IF deathage_survprob > age_death[3,35]
  SET age_at_death = age_death[1,35]
ELSE IF deathage_survprob > age_death[3,36]
  SET age_at_death = age_death[1,36]
ELSE IF deathage_survprob > age_death[3,37]
  SET age_at_death = age_death[1,37]
ELSE IF deathage_survprob > age_death[3,38]
  SET age_at_death = age_death[1,38]
ELSE IF deathage_survprob > age_death[3,39]
  SET age_at_death = age_death[1,39]
ELSE IF deathage_survprob > age_death[3,40]
  SET age_at_death = age_death[1,40]
ELSE IF deathage_survprob > age_death[3,41]
  SET age_at_death = age_death[1,41]
ELSE IF deathage_survprob > age_death[3,42]
  SET age_at_death = age_death[1,42]
ELSE IF deathage_survprob > age_death[3,43]
  SET age_at_death = age_death[1,43]
ELSE IF deathage_survprob > age_death[3,44]
  SET age_at_death = age_death[1,44]
ELSE IF deathage_survprob > age_death[3,45]
  SET age_at_death = age_death[1,45]
ELSE IF deathage_survprob > age_death[3,46]
  SET age_at_death = age_death[1,46]
ELSE IF deathage_survprob > age_death[3,47]
  SET age_at_death = age_death[1,47]
ELSE IF deathage_survprob > age_death[3,48]
  SET age_at_death = age_death[1,48]
ELSE IF deathage_survprob > age_death[3,49]
  SET age_at_death = age_death[1,49]
ELSE IF deathage_survprob > age_death[3,50]
  SET age_at_death = age_death[1,50]
ELSE IF deathage_survprob > age_death[3,51]
```

```
SET age_at_death = age_death[1,51]
ELSE IF deathage_survprob > age_death[3,52]
  SET age_at_death = age_death[1,52]
ELSE IF deathage_survprob > age_death[3,53]
  SET age_at_death = age_death[1,53]
ELSE IF deathage_survprob > age_death[3,54]
  SET age_at_death = age_death[1,54]
ELSE IF deathage_survprob > age_death[3,55]
  SET age_at_death = age_death[1,55]
ELSE IF deathage_survprob > age_death[3,56]
  SET age_at_death = age_death[1,56]
ELSE IF deathage_survprob > age_death[3,57]
  SET age_at_death = age_death[1,57]
ELSE IF deathage_survprob > age_death[3,58]
  SET age_at_death = age_death[1,58]
ELSE IF deathage_survprob > age_death[3,59]
  SET age_at_death = age_death[1,59]
ELSE IF deathage_survprob > age_death[3,60]
  SET age_at_death = age_death[1,60]
ELSE IF deathage_survprob > age_death[3,61]
  SET age_at_death = age_death[1,61]
ELSE IF deathage_survprob > age_death[3,62]
  SET age_at_death = age_death[1,62]
ELSE IF deathage_survprob > age_death[3,63]
  SET age_at_death = age_death[1,63]
ELSE IF deathage_survprob > age_death[3,64]
  SET age_at_death = age_death[1,64]
ELSE IF deathage_survprob > age_death[3,65]
  SET age_at_death = age_death[1,65]
ELSE IF deathage_survprob > age_death[3,66]
  SET age_at_death = age_death[1,66]
ELSE IF deathage_survprob > age_death[3,67]
  SET age_at_death = age_death[1,67]
ELSE IF deathage_survprob > age_death[3,68]
  SET age_at_death = age_death[1,68]
ELSE IF deathage_survprob > age_death[3,69]
  SET age_at_death = age_death[1,69]
ELSE IF deathage_survprob > age_death[3,70]
  SET age_at_death = age_death[1,70]
ELSE IF deathage_survprob > age_death[3,71]
  SET age_at_death = age_death[1,71]
ELSE IF deathage_survprob > age_death[3,72]
  SET age_at_death = age_death[1,72]
ELSE IF deathage_survprob > age_death[3,73]
  SET age_at_death = age_death[1,73]
ELSE IF deathage_survprob > age_death[3,74]
  SET age_at_death = age_death[1,74]
ELSE IF deathage_survprob > age_death[3,75]
  SET age_at_death = age_death[1,75]
ELSE IF deathage_survprob > age_death[3,76]
  SET age_at_death = age_death[1,76]
```

```
ELSE IF deathage_survprob > age_death[3,77]
  SET age_at_death = age_death[1,77]
ELSE IF deathage_survprob > age_death[3,78]
  SET age_at_death = age_death[1,78]
ELSE IF deathage_survprob > age_death[3,79]
  SET age_at_death = age_death[1,79]
ELSE IF deathage_survprob > age_death[3,80]
  SET age_at_death = age_death[1,80]
ELSE IF deathage_survprob > age_death[3,81]
  SET age_at_death = age_death[1,81]
ELSE IF deathage_survprob > age_death[3,82]
  SET age_at_death = age_death[1,82]
ELSE IF deathage_survprob > age_death[3,83]
  SET age_at_death = age_death[1,83]
ELSE IF deathage_survprob > age_death[3,84]
  SET age_at_death = age_death[1,84]
ELSE IF deathage_survprob > age_death[3,85]
  SET age_at_death = age_death[1,85]
ELSE IF deathage_survprob > age_death[3,86]
  SET age_at_death = age_death[1,86]
ELSE IF deathage_survprob > age_death[3,87]
  SET age_at_death = age_death[1,87]
ELSE IF deathage_survprob > age_death[3,88]
  SET age_at_death = age_death[1,88]
ELSE IF deathage_survprob > age_death[3,89]
  SET age_at_death = age_death[1,89]
ELSE IF deathage_survprob > age_death[3,90]
  SET age_at_death = age_death[1,90]
ELSE IF deathage_survprob > age_death[3,91]
  SET age_at_death = age_death[1,91]
ELSE IF deathage_survprob > age_death[3,92]
  SET age_at_death = age_death[1,92]
ELSE IF deathage_survprob > age_death[3,93]
  SET age_at_death = age_death[1,93]
ELSE IF deathage_survprob > age_death[3,94]
  SET age_at_death = age_death[1,94]
ELSE IF deathage_survprob > age_death[3,95]
  SET age_at_death = age_death[1,95]
ELSE IF deathage_survprob > age_death[3,96]
  SET age_at_death = age_death[1,96]
ELSE IF deathage_survprob > age_death[3,97]
  SET age_at_death = age_death[1,97]
ELSE IF deathage_survprob > age_death[3,98]
  SET age_at_death = age_death[1,98]
ELSE IF deathage_survprob > age_death[3,99]
  SET age_at_death = age_death[1,99]
ELSE IF deathage_survprob > age_death[3,100]
  SET age_at_death = age_death[1,100]
ELSE
  SET age_at_death = age_death[1,101]
```


VL SECTION: Set death age male

```
IF deathage_survprob > age_death[2,1]
  SET age_at_death = age_death[1,1]
ELSE IF deathage_survprob > age_death[2,2]
  SET age_at_death = age_death[1,2]
ELSE IF deathage_survprob > age_death[2,3]
  SET age_at_death = age_death[1,3]
ELSE IF deathage_survprob > age_death[2,4]
  SET age_at_death = age_death[1,4]
ELSE IF deathage_survprob > age_death[2,5]
  SET age_at_death = age_death[1,5]
ELSE IF deathage_survprob > age_death[2,6]
  SET age_at_death = age_death[1,6]
ELSE IF deathage_survprob > age_death[2,7]
  SET age_at_death = age_death[1,7]
ELSE IF deathage_survprob > age_death[2,8]
  SET age_at_death = age_death[1,8]
ELSE IF deathage_survprob > age_death[2,9]
  SET age_at_death = age_death[1,9]
ELSE IF deathage_survprob > age_death[2,10]
  SET age_at_death = age_death[1,10]
ELSE IF deathage_survprob > age_death[2,11]
  SET age_at_death = age_death[1,11]
ELSE IF deathage_survprob > age_death[2,12]
  SET age_at_death = age_death[1,12]
ELSE IF deathage_survprob > age_death[2,13]
  SET age_at_death = age_death[1,13]
ELSE IF deathage_survprob > age_death[2,14]
  SET age_at_death = age_death[1,14]
ELSE IF deathage_survprob > age_death[2,15]
  SET age_at_death = age_death[1,15]
ELSE IF deathage_survprob > age_death[2,16]
  SET age_at_death = age_death[1,16]
ELSE IF deathage_survprob > age_death[2,17]
  SET age_at_death = age_death[1,17]
ELSE IF deathage_survprob > age_death[2,18]
  SET age_at_death = age_death[1,18]
ELSE IF deathage_survprob > age_death[2,19]
  SET age_at_death = age_death[1,19]
ELSE IF deathage_survprob > age_death[2,20]
  SET age_at_death = age_death[1,20]
ELSE IF deathage_survprob > age_death[2,21]
  SET age_at_death = age_death[1,21]
ELSE IF deathage_survprob > age_death[2,22]
  SET age_at_death = age_death[1,22]
ELSE IF deathage_survprob > age_death[2,23]
  SET age_at_death = age_death[1,23]
ELSE IF deathage_survprob > age_death[2,24]
  SET age_at_death = age_death[1,24]
ELSE IF deathage_survprob > age_death[2,25]
  SET age_at_death = age_death[1,25]
```

```
ELSE IF deathage_survprob > age_death[2,26]
  SET age_at_death = age_death[1,26]
ELSE IF deathage_survprob > age_death[2,27]
  SET age_at_death = age_death[1,27]
ELSE IF deathage_survprob > age_death[2,28]
  SET age_at_death = age_death[1,28]
ELSE IF deathage_survprob > age_death[2,29]
  SET age_at_death = age_death[1,29]
ELSE IF deathage_survprob > age_death[2,30]
  SET age_at_death = age_death[1,30]
ELSE IF deathage_survprob > age_death[2,31]
  SET age_at_death = age_death[1,31]
ELSE IF deathage_survprob > age_death[2,32]
  SET age_at_death = age_death[1,32]
ELSE IF deathage_survprob > age_death[2,33]
  SET age_at_death = age_death[1,33]
ELSE IF deathage_survprob > age_death[2,34]
  SET age_at_death = age_death[1,34]
ELSE IF deathage_survprob > age_death[2,35]
  SET age_at_death = age_death[1,35]
ELSE IF deathage_survprob > age_death[2,36]
  SET age_at_death = age_death[1,36]
ELSE IF deathage_survprob > age_death[2,37]
  SET age_at_death = age_death[1,37]
ELSE IF deathage_survprob > age_death[2,38]
  SET age_at_death = age_death[1,38]
ELSE IF deathage_survprob > age_death[2,39]
  SET age_at_death = age_death[1,39]
ELSE IF deathage_survprob > age_death[2,40]
  SET age_at_death = age_death[1,40]
ELSE IF deathage_survprob > age_death[2,41]
  SET age_at_death = age_death[1,41]
ELSE IF deathage_survprob > age_death[2,42]
  SET age_at_death = age_death[1,42]
ELSE IF deathage_survprob > age_death[2,43]
  SET age_at_death = age_death[1,43]
ELSE IF deathage_survprob > age_death[2,44]
  SET age_at_death = age_death[1,44]
ELSE IF deathage_survprob > age_death[2,45]
  SET age_at_death = age_death[1,45]
ELSE IF deathage_survprob > age_death[2,46]
  SET age_at_death = age_death[1,46]
ELSE IF deathage_survprob > age_death[2,47]
  SET age_at_death = age_death[1,47]
ELSE IF deathage_survprob > age_death[2,48]
  SET age_at_death = age_death[1,48]
ELSE IF deathage_survprob > age_death[2,49]
  SET age_at_death = age_death[1,49]
ELSE IF deathage_survprob > age_death[2,50]
  SET age_at_death = age_death[1,50]
ELSE IF deathage_survprob > age_death[2,51]
```

```
SET age_at_death = age_death[1,51]
ELSE IF deathage_survprob > age_death[2,52]
  SET age_at_death = age_death[1,52]
ELSE IF deathage_survprob > age_death[2,53]
  SET age_at_death = age_death[1,53]
ELSE IF deathage_survprob > age_death[2,54]
  SET age_at_death = age_death[1,54]
ELSE IF deathage_survprob > age_death[2,55]
  SET age_at_death = age_death[1,55]
ELSE IF deathage_survprob > age_death[2,56]
  SET age_at_death = age_death[1,56]
ELSE IF deathage_survprob > age_death[2,57]
  SET age_at_death = age_death[1,57]
ELSE IF deathage_survprob > age_death[2,58]
  SET age_at_death = age_death[1,58]
ELSE IF deathage_survprob > age_death[2,59]
  SET age_at_death = age_death[1,59]
ELSE IF deathage_survprob > age_death[2,60]
  SET age_at_death = age_death[1,60]
ELSE IF deathage_survprob > age_death[2,61]
  SET age_at_death = age_death[1,61]
ELSE IF deathage_survprob > age_death[2,62]
  SET age_at_death = age_death[1,62]
ELSE IF deathage_survprob > age_death[2,63]
  SET age_at_death = age_death[1,63]
ELSE IF deathage_survprob > age_death[2,64]
  SET age_at_death = age_death[1,64]
ELSE IF deathage_survprob > age_death[2,65]
  SET age_at_death = age_death[1,65]
ELSE IF deathage_survprob > age_death[2,66]
  SET age_at_death = age_death[1,66]
ELSE IF deathage_survprob > age_death[2,67]
  SET age_at_death = age_death[1,67]
ELSE IF deathage_survprob > age_death[2,68]
  SET age_at_death = age_death[1,68]
ELSE IF deathage_survprob > age_death[2,69]
  SET age_at_death = age_death[1,69]
ELSE IF deathage_survprob > age_death[2,70]
  SET age_at_death = age_death[1,70]
ELSE IF deathage_survprob > age_death[2,71]
  SET age_at_death = age_death[1,71]
ELSE IF deathage_survprob > age_death[2,72]
  SET age_at_death = age_death[1,72]
ELSE IF deathage_survprob > age_death[2,73]
  SET age_at_death = age_death[1,73]
ELSE IF deathage_survprob > age_death[2,74]
  SET age_at_death = age_death[1,74]
ELSE IF deathage_survprob > age_death[2,75]
  SET age_at_death = age_death[1,75]
ELSE IF deathage_survprob > age_death[2,76]
  SET age_at_death = age_death[1,76]
```

```
ELSE IF deathage_survprob > age_death[2,77]
  SET age_at_death = age_death[1,77]
ELSE IF deathage_survprob > age_death[2,78]
  SET age_at_death = age_death[1,78]
ELSE IF deathage_survprob > age_death[2,79]
  SET age_at_death = age_death[1,79]
ELSE IF deathage_survprob > age_death[2,80]
  SET age_at_death = age_death[1,80]
ELSE IF deathage_survprob > age_death[2,81]
  SET age_at_death = age_death[1,81]
ELSE IF deathage_survprob > age_death[2,82]
  SET age_at_death = age_death[1,82]
ELSE IF deathage_survprob > age_death[2,83]
  SET age_at_death = age_death[1,83]
ELSE IF deathage_survprob > age_death[2,84]
  SET age_at_death = age_death[1,84]
ELSE IF deathage_survprob > age_death[2,85]
  SET age_at_death = age_death[1,85]
ELSE IF deathage_survprob > age_death[2,86]
  SET age_at_death = age_death[1,86]
ELSE IF deathage_survprob > age_death[2,87]
  SET age_at_death = age_death[1,87]
ELSE IF deathage_survprob > age_death[2,88]
  SET age_at_death = age_death[1,88]
ELSE IF deathage_survprob > age_death[2,89]
  SET age_at_death = age_death[1,89]
ELSE IF deathage_survprob > age_death[2,90]
  SET age_at_death = age_death[1,90]
ELSE IF deathage_survprob > age_death[2,91]
  SET age_at_death = age_death[1,91]
ELSE IF deathage_survprob > age_death[2,92]
  SET age_at_death = age_death[1,92]
ELSE IF deathage_survprob > age_death[2,93]
  SET age_at_death = age_death[1,93]
ELSE IF deathage_survprob > age_death[2,94]
  SET age_at_death = age_death[1,94]
ELSE IF deathage_survprob > age_death[2,95]
  SET age_at_death = age_death[1,95]
ELSE IF deathage_survprob > age_death[2,96]
  SET age_at_death = age_death[1,96]
ELSE IF deathage_survprob > age_death[2,97]
  SET age_at_death = age_death[1,97]
ELSE IF deathage_survprob > age_death[2,98]
  SET age_at_death = age_death[1,98]
ELSE IF deathage_survprob > age_death[2,99]
  SET age_at_death = age_death[1,99]
ELSE IF deathage_survprob > age_death[2,100]
  SET age_at_death = age_death[1,100]
ELSE
  SET age_at_death = age_death[1,101]
```


VL SECTION: HAQ multiplier 100

```
IF u1 < HAQ_mult100[1,1]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,1]
ELSE IF u1 < HAQ_mult100[1,2]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,2]
ELSE IF u1 < HAQ_mult100[1,3]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,3]
ELSE IF u1 < HAQ_mult100[1,4]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,4]
ELSE IF u1 < HAQ_mult100[1,5]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,5]
ELSE IF u1 < HAQ_mult100[1,6]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,6]
ELSE IF u1 < HAQ_mult100[1,7]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,7]
ELSE IF u1 < HAQ_mult100[1,8]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,8]
ELSE IF u1 < HAQ_mult100[1,9]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,9]
ELSE IF u1 < HAQ_mult100[1,10]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,10]
ELSE IF u1 < HAQ_mult100[1,11]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,11]
ELSE IF u1 < HAQ_mult100[1,12]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,12]
ELSE IF u1 < HAQ_mult100[1,13]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,13]
ELSE IF u1 < HAQ_mult100[1,14]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,14]
ELSE IF u1 < HAQ_mult100[1,15]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,15]
ELSE IF u1 < HAQ_mult100[1,16]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,16]
ELSE IF u1 < HAQ_mult100[1,17]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,17]
ELSE IF u1 < HAQ_mult100[1,18]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,18]
ELSE IF u1 < HAQ_mult100[1,19]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,19]
ELSE IF u1 < HAQ_mult100[1,20]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,20]
ELSE IF u1 < HAQ_mult100[1,21]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,21]
ELSE IF u1 < HAQ_mult100[1,22]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,22]
ELSE IF u1 < HAQ_mult100[1,23]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,23]
ELSE IF u1 < HAQ_mult100[1,24]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,24]
ELSE IF u1 < HAQ_mult100[1,25]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,25]
```

```
ELSE IF u1 < HAQ_mult100[1,26]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,26]
ELSE IF u1 < HAQ_mult100[1,27]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,27]
ELSE IF u1 < HAQ_mult100[1,28]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,28]
ELSE IF u1 < HAQ_mult100[1,29]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,29]
ELSE IF u1 < HAQ_mult100[1,30]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,30]
ELSE IF u1 < HAQ_mult100[1,31]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,31]
ELSE IF u1 < HAQ_mult100[1,32]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,32]
ELSE IF u1 < HAQ_mult100[1,33]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,33]
ELSE IF u1 < HAQ_mult100[1,34]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,34]
ELSE IF u1 < HAQ_mult100[1,35]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,35]
ELSE IF u1 < HAQ_mult100[1,36]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,36]
ELSE IF u1 < HAQ_mult100[1,37]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,37]
ELSE IF u1 < HAQ_mult100[1,38]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,38]
ELSE IF u1 < HAQ_mult100[1,39]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,39]
ELSE IF u1 < HAQ_mult100[1,40]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,40]
ELSE IF u1 < HAQ_mult100[1,41]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,41]
ELSE IF u1 < HAQ_mult100[1,42]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,42]
ELSE IF u1 < HAQ_mult100[1,43]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,43]
ELSE IF u1 < HAQ_mult100[1,44]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,44]
ELSE IF u1 < HAQ_mult100[1,45]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,45]
ELSE IF u1 < HAQ_mult100[1,46]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,46]
ELSE IF u1 < HAQ_mult100[1,47]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,47]
ELSE IF u1 < HAQ_mult100[1,48]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,48]
ELSE IF u1 < HAQ_mult100[1,49]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,49]
ELSE IF u1 < HAQ_mult100[1,50]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,50]
ELSE IF u1 < HAQ_mult100[1,51]
```



```
SET lbl_haq_mult = HAQ_mult100[haq_multvar,51]
ELSE IF u1 < HAQ_mult100[1,52]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,52]
ELSE IF u1 < HAQ_mult100[1,53]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,53]
ELSE IF u1 < HAQ_mult100[1,54]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,54]
ELSE IF u1 < HAQ_mult100[1,55]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,55]
ELSE IF u1 < HAQ_mult100[1,56]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,56]
ELSE IF u1 < HAQ_mult100[1,57]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,57]
ELSE IF u1 < HAQ_mult100[1,58]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,58]
ELSE IF u1 < HAQ_mult100[1,59]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,59]
ELSE IF u1 < HAQ_mult100[1,60]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,60]
ELSE IF u1 < HAQ_mult100[1,61]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,61]
ELSE IF u1 < HAQ_mult100[1,62]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,62]
ELSE IF u1 < HAQ_mult100[1,63]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,63]
ELSE IF u1 < HAQ_mult100[1,64]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,64]
ELSE IF u1 < HAQ_mult100[1,65]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,65]
ELSE IF u1 < HAQ_mult100[1,66]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,66]
ELSE IF u1 < HAQ_mult100[1,67]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,67]
ELSE IF u1 < HAQ_mult100[1,68]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,68]
ELSE IF u1 < HAQ_mult100[1,69]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,69]
ELSE IF u1 < HAQ_mult100[1,70]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,70]
ELSE IF u1 < HAQ_mult100[1,71]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,71]
ELSE IF u1 < HAQ_mult100[1,72]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,72]
ELSE IF u1 < HAQ_mult100[1,73]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,73]
ELSE IF u1 < HAQ_mult100[1,74]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,74]
ELSE IF u1 < HAQ_mult100[1,75]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,75]
ELSE IF u1 < HAQ_mult100[1,76]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,76]
```

```
ELSE IF u1 < HAQ_mult100[1,77]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,77]
ELSE IF u1 < HAQ_mult100[1,78]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,78]
ELSE IF u1 < HAQ_mult100[1,79]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,79]
ELSE IF u1 < HAQ_mult100[1,80]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,80]
ELSE IF u1 < HAQ_mult100[1,81]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,81]
ELSE IF u1 < HAQ_mult100[1,82]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,82]
ELSE IF u1 < HAQ_mult100[1,83]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,83]
ELSE IF u1 < HAQ_mult100[1,84]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,84]
ELSE IF u1 < HAQ_mult100[1,85]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,85]
ELSE IF u1 < HAQ_mult100[1,86]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,86]
ELSE IF u1 < HAQ_mult100[1,87]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,87]
ELSE IF u1 < HAQ_mult100[1,88]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,88]
ELSE IF u1 < HAQ_mult100[1,89]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,89]
ELSE IF u1 < HAQ_mult100[1,90]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,90]
ELSE IF u1 < HAQ_mult100[1,91]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,91]
ELSE IF u1 < HAQ_mult100[1,92]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,92]
ELSE IF u1 < HAQ_mult100[1,93]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,93]
ELSE IF u1 < HAQ_mult100[1,94]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,94]
ELSE IF u1 < HAQ_mult100[1,95]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,95]
ELSE IF u1 < HAQ_mult100[1,96]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,96]
ELSE IF u1 < HAQ_mult100[1,97]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,97]
ELSE IF u1 < HAQ_mult100[1,98]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,98]
ELSE IF u1 < HAQ_mult100[1,99]
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,99]
ELSE
  SET lbl_haq_mult = HAQ_mult100[haq_multvar,100]
```

VL SECTION: HAQ multiplier 1000

```
IF u1 < HAQ_mult[1,1]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,1]
ELSE IF u1 < HAQ_mult[1,2]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,2]
ELSE IF u1 < HAQ_mult[1,3]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,3]
ELSE IF u1 < HAQ_mult[1,4]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,4]
ELSE IF u1 < HAQ_mult[1,5]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,5]
ELSE IF u1 < HAQ_mult[1,6]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,6]
ELSE IF u1 < HAQ_mult[1,7]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,7]
ELSE IF u1 < HAQ_mult[1,8]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,8]
ELSE IF u1 < HAQ_mult[1,9]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,9]
ELSE IF u1 < HAQ_mult[1,10]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,10]
ELSE IF u1 < HAQ_mult[1,11]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,11]
ELSE IF u1 < HAQ_mult[1,12]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,12]
ELSE IF u1 < HAQ_mult[1,13]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,13]
ELSE IF u1 < HAQ_mult[1,14]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,14]
ELSE IF u1 < HAQ_mult[1,15]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,15]
ELSE IF u1 < HAQ_mult[1,16]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,16]
ELSE IF u1 < HAQ_mult[1,17]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,17]
ELSE IF u1 < HAQ_mult[1,18]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,18]
ELSE IF u1 < HAQ_mult[1,19]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,19]
ELSE IF u1 < HAQ_mult[1,20]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,20]
ELSE IF u1 < HAQ_mult[1,21]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,21]
ELSE IF u1 < HAQ_mult[1,22]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,22]
ELSE IF u1 < HAQ_mult[1,23]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,23]
ELSE IF u1 < HAQ_mult[1,24]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,24]
ELSE IF u1 < HAQ_mult[1,25]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,25]
```

```
ELSE IF u1 < HAQ_mult[1,26]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,26]
ELSE IF u1 < HAQ_mult[1,27]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,27]
ELSE IF u1 < HAQ_mult[1,28]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,28]
ELSE IF u1 < HAQ_mult[1,29]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,29]
ELSE IF u1 < HAQ_mult[1,30]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,30]
ELSE IF u1 < HAQ_mult[1,31]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,31]
ELSE IF u1 < HAQ_mult[1,32]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,32]
ELSE IF u1 < HAQ_mult[1,33]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,33]
ELSE IF u1 < HAQ_mult[1,34]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,34]
ELSE IF u1 < HAQ_mult[1,35]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,35]
ELSE IF u1 < HAQ_mult[1,36]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,36]
ELSE IF u1 < HAQ_mult[1,37]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,37]
ELSE IF u1 < HAQ_mult[1,38]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,38]
ELSE IF u1 < HAQ_mult[1,39]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,39]
ELSE IF u1 < HAQ_mult[1,40]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,40]
ELSE IF u1 < HAQ_mult[1,41]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,41]
ELSE IF u1 < HAQ_mult[1,42]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,42]
ELSE IF u1 < HAQ_mult[1,43]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,43]
ELSE IF u1 < HAQ_mult[1,44]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,44]
ELSE IF u1 < HAQ_mult[1,45]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,45]
ELSE IF u1 < HAQ_mult[1,46]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,46]
ELSE IF u1 < HAQ_mult[1,47]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,47]
ELSE IF u1 < HAQ_mult[1,48]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,48]
ELSE IF u1 < HAQ_mult[1,49]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,49]
ELSE IF u1 < HAQ_mult[1,50]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,50]
ELSE IF u1 < HAQ_mult[1,51]
```

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    SET lbl_haq_mult = HAQ_mult[haq_multvar,51]
ELSE IF u1 < HAQ_mult[1,52]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,52]
ELSE IF u1 < HAQ_mult[1,53]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,53]
ELSE IF u1 < HAQ_mult[1,54]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,54]
ELSE IF u1 < HAQ_mult[1,55]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,55]
ELSE IF u1 < HAQ_mult[1,56]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,56]
ELSE IF u1 < HAQ_mult[1,57]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,57]
ELSE IF u1 < HAQ_mult[1,58]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,58]
ELSE IF u1 < HAQ_mult[1,59]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,59]
ELSE IF u1 < HAQ_mult[1,60]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,60]
ELSE IF u1 < HAQ_mult[1,61]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,61]
ELSE IF u1 < HAQ_mult[1,62]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,62]
ELSE IF u1 < HAQ_mult[1,63]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,63]
ELSE IF u1 < HAQ_mult[1,64]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,64]
ELSE IF u1 < HAQ_mult[1,65]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,65]
ELSE IF u1 < HAQ_mult[1,66]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,66]
ELSE IF u1 < HAQ_mult[1,67]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,67]
ELSE IF u1 < HAQ_mult[1,68]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,68]
ELSE IF u1 < HAQ_mult[1,69]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,69]
ELSE IF u1 < HAQ_mult[1,70]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,70]
ELSE IF u1 < HAQ_mult[1,71]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,71]
ELSE IF u1 < HAQ_mult[1,72]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,72]
ELSE IF u1 < HAQ_mult[1,73]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,73]
ELSE IF u1 < HAQ_mult[1,74]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,74]
ELSE IF u1 < HAQ_mult[1,75]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,75]
ELSE IF u1 < HAQ_mult[1,76]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,76]
```

```
ELSE IF u1 < HAQ_mult[1,77]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,77]
ELSE IF u1 < HAQ_mult[1,78]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,78]
ELSE IF u1 < HAQ_mult[1,79]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,79]
ELSE IF u1 < HAQ_mult[1,80]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,80]
ELSE IF u1 < HAQ_mult[1,81]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,81]
ELSE IF u1 < HAQ_mult[1,82]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,82]
ELSE IF u1 < HAQ_mult[1,83]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,83]
ELSE IF u1 < HAQ_mult[1,84]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,84]
ELSE IF u1 < HAQ_mult[1,85]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,85]
ELSE IF u1 < HAQ_mult[1,86]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,86]
ELSE IF u1 < HAQ_mult[1,87]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,87]
ELSE IF u1 < HAQ_mult[1,88]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,88]
ELSE IF u1 < HAQ_mult[1,89]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,89]
ELSE IF u1 < HAQ_mult[1,90]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,90]
ELSE IF u1 < HAQ_mult[1,91]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,91]
ELSE IF u1 < HAQ_mult[1,92]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,92]
ELSE IF u1 < HAQ_mult[1,93]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,93]
ELSE IF u1 < HAQ_mult[1,94]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,94]
ELSE IF u1 < HAQ_mult[1,95]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,95]
ELSE IF u1 < HAQ_mult[1,96]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,96]
ELSE IF u1 < HAQ_mult[1,97]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,97]
ELSE IF u1 < HAQ_mult[1,98]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,98]
ELSE IF u1 < HAQ_mult[1,99]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,99]
ELSE IF u1 < HAQ_mult[1,100]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,100]
ELSE IF u1 < HAQ_mult[1,101]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,101]
ELSE IF u1 < HAQ_mult[1,102]
```

```
SET lbl_haq_mult = HAQ_mult[haq_multvar,102]
ELSE IF u1 < HAQ_mult[1,103]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,103]
ELSE IF u1 < HAQ_mult[1,104]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,104]
ELSE IF u1 < HAQ_mult[1,105]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,105]
ELSE IF u1 < HAQ_mult[1,106]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,106]
ELSE IF u1 < HAQ_mult[1,107]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,107]
ELSE IF u1 < HAQ_mult[1,108]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,108]
ELSE IF u1 < HAQ_mult[1,109]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,109]
ELSE IF u1 < HAQ_mult[1,110]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,110]
ELSE IF u1 < HAQ_mult[1,111]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,111]
ELSE IF u1 < HAQ_mult[1,112]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,112]
ELSE IF u1 < HAQ_mult[1,113]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,113]
ELSE IF u1 < HAQ_mult[1,114]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,114]
ELSE IF u1 < HAQ_mult[1,115]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,115]
ELSE IF u1 < HAQ_mult[1,116]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,116]
ELSE IF u1 < HAQ_mult[1,117]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,117]
ELSE IF u1 < HAQ_mult[1,118]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,118]
ELSE IF u1 < HAQ_mult[1,119]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,119]
ELSE IF u1 < HAQ_mult[1,120]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,120]
ELSE IF u1 < HAQ_mult[1,121]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,121]
ELSE IF u1 < HAQ_mult[1,122]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,122]
ELSE IF u1 < HAQ_mult[1,123]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,123]
ELSE IF u1 < HAQ_mult[1,124]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,124]
ELSE IF u1 < HAQ_mult[1,125]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,125]
ELSE IF u1 < HAQ_mult[1,126]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,126]
ELSE IF u1 < HAQ_mult[1,127]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,127]
```

```
ELSE IF u1 < HAQ_mult[1,128]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,128]
ELSE IF u1 < HAQ_mult[1,129]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,129]
ELSE IF u1 < HAQ_mult[1,130]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,130]
ELSE IF u1 < HAQ_mult[1,131]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,131]
ELSE IF u1 < HAQ_mult[1,132]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,132]
ELSE IF u1 < HAQ_mult[1,133]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,133]
ELSE IF u1 < HAQ_mult[1,134]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,134]
ELSE IF u1 < HAQ_mult[1,135]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,135]
ELSE IF u1 < HAQ_mult[1,136]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,136]
ELSE IF u1 < HAQ_mult[1,137]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,137]
ELSE IF u1 < HAQ_mult[1,138]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,138]
ELSE IF u1 < HAQ_mult[1,139]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,139]
ELSE IF u1 < HAQ_mult[1,140]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,140]
ELSE IF u1 < HAQ_mult[1,141]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,141]
ELSE IF u1 < HAQ_mult[1,142]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,142]
ELSE IF u1 < HAQ_mult[1,143]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,143]
ELSE IF u1 < HAQ_mult[1,144]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,144]
ELSE IF u1 < HAQ_mult[1,145]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,145]
ELSE IF u1 < HAQ_mult[1,146]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,146]
ELSE IF u1 < HAQ_mult[1,147]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,147]
ELSE IF u1 < HAQ_mult[1,148]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,148]
ELSE IF u1 < HAQ_mult[1,149]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,149]
ELSE IF u1 < HAQ_mult[1,150]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,150]
ELSE IF u1 < HAQ_mult[1,151]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,151]
ELSE IF u1 < HAQ_mult[1,152]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,152]
ELSE IF u1 < HAQ_mult[1,153]
```



```
SET lbl_haq_mult = HAQ_mult[haq_multvar,153]
ELSE IF u1 < HAQ_mult[1,154]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,154]
ELSE IF u1 < HAQ_mult[1,155]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,155]
ELSE IF u1 < HAQ_mult[1,156]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,156]
ELSE IF u1 < HAQ_mult[1,157]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,157]
ELSE IF u1 < HAQ_mult[1,158]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,158]
ELSE IF u1 < HAQ_mult[1,159]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,159]
ELSE IF u1 < HAQ_mult[1,160]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,160]
ELSE IF u1 < HAQ_mult[1,161]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,161]
ELSE IF u1 < HAQ_mult[1,162]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,162]
ELSE IF u1 < HAQ_mult[1,163]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,163]
ELSE IF u1 < HAQ_mult[1,164]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,164]
ELSE IF u1 < HAQ_mult[1,165]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,165]
ELSE IF u1 < HAQ_mult[1,166]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,166]
ELSE IF u1 < HAQ_mult[1,167]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,167]
ELSE IF u1 < HAQ_mult[1,168]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,168]
ELSE IF u1 < HAQ_mult[1,169]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,169]
ELSE IF u1 < HAQ_mult[1,170]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,170]
ELSE IF u1 < HAQ_mult[1,171]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,171]
ELSE IF u1 < HAQ_mult[1,172]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,172]
ELSE IF u1 < HAQ_mult[1,173]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,173]
ELSE IF u1 < HAQ_mult[1,174]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,174]
ELSE IF u1 < HAQ_mult[1,175]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,175]
ELSE IF u1 < HAQ_mult[1,176]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,176]
ELSE IF u1 < HAQ_mult[1,177]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,177]
ELSE IF u1 < HAQ_mult[1,178]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,178]
```

```
ELSE IF u1 < HAQ_mult[1,179]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,179]
ELSE IF u1 < HAQ_mult[1,180]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,180]
ELSE IF u1 < HAQ_mult[1,181]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,181]
ELSE IF u1 < HAQ_mult[1,182]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,182]
ELSE IF u1 < HAQ_mult[1,183]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,183]
ELSE IF u1 < HAQ_mult[1,184]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,184]
ELSE IF u1 < HAQ_mult[1,185]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,185]
ELSE IF u1 < HAQ_mult[1,186]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,186]
ELSE IF u1 < HAQ_mult[1,187]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,187]
ELSE IF u1 < HAQ_mult[1,188]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,188]
ELSE IF u1 < HAQ_mult[1,189]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,189]
ELSE IF u1 < HAQ_mult[1,190]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,190]
ELSE IF u1 < HAQ_mult[1,191]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,191]
ELSE IF u1 < HAQ_mult[1,192]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,192]
ELSE IF u1 < HAQ_mult[1,193]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,193]
ELSE IF u1 < HAQ_mult[1,194]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,194]
ELSE IF u1 < HAQ_mult[1,195]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,195]
ELSE IF u1 < HAQ_mult[1,196]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,196]
ELSE IF u1 < HAQ_mult[1,197]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,197]
ELSE IF u1 < HAQ_mult[1,198]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,198]
ELSE IF u1 < HAQ_mult[1,199]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,199]
ELSE IF u1 < HAQ_mult[1,200]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,200]
ELSE IF u1 < HAQ_mult[1,201]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,201]
ELSE IF u1 < HAQ_mult[1,202]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,202]
ELSE IF u1 < HAQ_mult[1,203]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,203]
ELSE IF u1 < HAQ_mult[1,204]
```

```
SET lbl_haq_mult = HAQ_mult[haq_multvar,204]
ELSE IF u1 < HAQ_mult[1,205]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,205]
ELSE IF u1 < HAQ_mult[1,206]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,206]
ELSE IF u1 < HAQ_mult[1,207]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,207]
ELSE IF u1 < HAQ_mult[1,208]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,208]
ELSE IF u1 < HAQ_mult[1,209]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,209]
ELSE IF u1 < HAQ_mult[1,210]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,210]
ELSE IF u1 < HAQ_mult[1,211]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,211]
ELSE IF u1 < HAQ_mult[1,212]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,212]
ELSE IF u1 < HAQ_mult[1,213]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,213]
ELSE IF u1 < HAQ_mult[1,214]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,214]
ELSE IF u1 < HAQ_mult[1,215]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,215]
ELSE IF u1 < HAQ_mult[1,216]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,216]
ELSE IF u1 < HAQ_mult[1,217]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,217]
ELSE IF u1 < HAQ_mult[1,218]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,218]
ELSE IF u1 < HAQ_mult[1,219]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,219]
ELSE IF u1 < HAQ_mult[1,220]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,220]
ELSE IF u1 < HAQ_mult[1,221]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,221]
ELSE IF u1 < HAQ_mult[1,222]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,222]
ELSE IF u1 < HAQ_mult[1,223]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,223]
ELSE IF u1 < HAQ_mult[1,224]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,224]
ELSE IF u1 < HAQ_mult[1,225]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,225]
ELSE IF u1 < HAQ_mult[1,226]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,226]
ELSE IF u1 < HAQ_mult[1,227]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,227]
ELSE IF u1 < HAQ_mult[1,228]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,228]
ELSE IF u1 < HAQ_mult[1,229]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,229]
```

```
ELSE IF u1 < HAQ_mult[1,230]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,230]
ELSE IF u1 < HAQ_mult[1,231]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,231]
ELSE IF u1 < HAQ_mult[1,232]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,232]
ELSE IF u1 < HAQ_mult[1,233]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,233]
ELSE IF u1 < HAQ_mult[1,234]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,234]
ELSE IF u1 < HAQ_mult[1,235]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,235]
ELSE IF u1 < HAQ_mult[1,236]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,236]
ELSE IF u1 < HAQ_mult[1,237]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,237]
ELSE IF u1 < HAQ_mult[1,238]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,238]
ELSE IF u1 < HAQ_mult[1,239]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,239]
ELSE IF u1 < HAQ_mult[1,240]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,240]
ELSE IF u1 < HAQ_mult[1,241]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,241]
ELSE IF u1 < HAQ_mult[1,242]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,242]
ELSE IF u1 < HAQ_mult[1,243]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,243]
ELSE IF u1 < HAQ_mult[1,244]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,244]
ELSE IF u1 < HAQ_mult[1,245]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,245]
ELSE IF u1 < HAQ_mult[1,246]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,246]
ELSE IF u1 < HAQ_mult[1,247]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,247]
ELSE IF u1 < HAQ_mult[1,248]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,248]
ELSE IF u1 < HAQ_mult[1,249]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,249]
ELSE IF u1 < HAQ_mult[1,250]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,250]
ELSE IF u1 < HAQ_mult[1,251]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,251]
ELSE IF u1 < HAQ_mult[1,252]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,252]
ELSE IF u1 < HAQ_mult[1,253]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,253]
ELSE IF u1 < HAQ_mult[1,254]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,254]
ELSE IF u1 < HAQ_mult[1,255]
```

```
SET lbl_haq_mult = HAQ_mult[haq_multvar,255]
ELSE IF u1 < HAQ_mult[1,256]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,256]
ELSE IF u1 < HAQ_mult[1,257]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,257]
ELSE IF u1 < HAQ_mult[1,258]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,258]
ELSE IF u1 < HAQ_mult[1,259]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,259]
ELSE IF u1 < HAQ_mult[1,260]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,260]
ELSE IF u1 < HAQ_mult[1,261]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,261]
ELSE IF u1 < HAQ_mult[1,262]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,262]
ELSE IF u1 < HAQ_mult[1,263]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,263]
ELSE IF u1 < HAQ_mult[1,264]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,264]
ELSE IF u1 < HAQ_mult[1,265]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,265]
ELSE IF u1 < HAQ_mult[1,266]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,266]
ELSE IF u1 < HAQ_mult[1,267]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,267]
ELSE IF u1 < HAQ_mult[1,268]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,268]
ELSE IF u1 < HAQ_mult[1,269]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,269]
ELSE IF u1 < HAQ_mult[1,270]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,270]
ELSE IF u1 < HAQ_mult[1,271]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,271]
ELSE IF u1 < HAQ_mult[1,272]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,272]
ELSE IF u1 < HAQ_mult[1,273]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,273]
ELSE IF u1 < HAQ_mult[1,274]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,274]
ELSE IF u1 < HAQ_mult[1,275]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,275]
ELSE IF u1 < HAQ_mult[1,276]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,276]
ELSE IF u1 < HAQ_mult[1,277]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,277]
ELSE IF u1 < HAQ_mult[1,278]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,278]
ELSE IF u1 < HAQ_mult[1,279]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,279]
ELSE IF u1 < HAQ_mult[1,280]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,280]
```

```
ELSE IF u1 < HAQ_mult[1,281]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,281]
ELSE IF u1 < HAQ_mult[1,282]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,282]
ELSE IF u1 < HAQ_mult[1,283]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,283]
ELSE IF u1 < HAQ_mult[1,284]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,284]
ELSE IF u1 < HAQ_mult[1,285]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,285]
ELSE IF u1 < HAQ_mult[1,286]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,286]
ELSE IF u1 < HAQ_mult[1,287]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,287]
ELSE IF u1 < HAQ_mult[1,288]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,288]
ELSE IF u1 < HAQ_mult[1,289]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,289]
ELSE IF u1 < HAQ_mult[1,290]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,290]
ELSE IF u1 < HAQ_mult[1,291]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,291]
ELSE IF u1 < HAQ_mult[1,292]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,292]
ELSE IF u1 < HAQ_mult[1,293]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,293]
ELSE IF u1 < HAQ_mult[1,294]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,294]
ELSE IF u1 < HAQ_mult[1,295]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,295]
ELSE IF u1 < HAQ_mult[1,296]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,296]
ELSE IF u1 < HAQ_mult[1,297]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,297]
ELSE IF u1 < HAQ_mult[1,298]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,298]
ELSE IF u1 < HAQ_mult[1,299]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,299]
ELSE IF u1 < HAQ_mult[1,300]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,300]
ELSE IF u1 < HAQ_mult[1,301]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,301]
ELSE IF u1 < HAQ_mult[1,302]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,302]
ELSE IF u1 < HAQ_mult[1,303]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,303]
ELSE IF u1 < HAQ_mult[1,304]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,304]
ELSE IF u1 < HAQ_mult[1,305]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,305]
ELSE IF u1 < HAQ_mult[1,306]
```

```
SET lbl_haq_mult = HAQ_mult[haq_multvar,306]
ELSE IF u1 < HAQ_mult[1,307]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,307]
ELSE IF u1 < HAQ_mult[1,308]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,308]
ELSE IF u1 < HAQ_mult[1,309]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,309]
ELSE IF u1 < HAQ_mult[1,310]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,310]
ELSE IF u1 < HAQ_mult[1,311]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,311]
ELSE IF u1 < HAQ_mult[1,312]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,312]
ELSE IF u1 < HAQ_mult[1,313]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,313]
ELSE IF u1 < HAQ_mult[1,314]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,314]
ELSE IF u1 < HAQ_mult[1,315]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,315]
ELSE IF u1 < HAQ_mult[1,316]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,316]
ELSE IF u1 < HAQ_mult[1,317]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,317]
ELSE IF u1 < HAQ_mult[1,318]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,318]
ELSE IF u1 < HAQ_mult[1,319]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,319]
ELSE IF u1 < HAQ_mult[1,320]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,320]
ELSE IF u1 < HAQ_mult[1,321]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,321]
ELSE IF u1 < HAQ_mult[1,322]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,322]
ELSE IF u1 < HAQ_mult[1,323]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,323]
ELSE IF u1 < HAQ_mult[1,324]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,324]
ELSE IF u1 < HAQ_mult[1,325]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,325]
ELSE IF u1 < HAQ_mult[1,326]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,326]
ELSE IF u1 < HAQ_mult[1,327]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,327]
ELSE IF u1 < HAQ_mult[1,328]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,328]
ELSE IF u1 < HAQ_mult[1,329]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,329]
ELSE IF u1 < HAQ_mult[1,330]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,330]
ELSE IF u1 < HAQ_mult[1,331]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,331]
```

```
ELSE IF u1 < HAQ_mult[1,332]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,332]
ELSE IF u1 < HAQ_mult[1,333]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,333]
ELSE IF u1 < HAQ_mult[1,334]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,334]
ELSE IF u1 < HAQ_mult[1,335]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,335]
ELSE IF u1 < HAQ_mult[1,336]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,336]
ELSE IF u1 < HAQ_mult[1,337]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,337]
ELSE IF u1 < HAQ_mult[1,338]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,338]
ELSE IF u1 < HAQ_mult[1,339]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,339]
ELSE IF u1 < HAQ_mult[1,340]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,340]
ELSE IF u1 < HAQ_mult[1,341]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,341]
ELSE IF u1 < HAQ_mult[1,342]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,342]
ELSE IF u1 < HAQ_mult[1,343]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,343]
ELSE IF u1 < HAQ_mult[1,344]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,344]
ELSE IF u1 < HAQ_mult[1,345]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,345]
ELSE IF u1 < HAQ_mult[1,346]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,346]
ELSE IF u1 < HAQ_mult[1,347]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,347]
ELSE IF u1 < HAQ_mult[1,348]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,348]
ELSE IF u1 < HAQ_mult[1,349]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,349]
ELSE IF u1 < HAQ_mult[1,350]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,350]
ELSE IF u1 < HAQ_mult[1,351]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,351]
ELSE IF u1 < HAQ_mult[1,352]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,352]
ELSE IF u1 < HAQ_mult[1,353]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,353]
ELSE IF u1 < HAQ_mult[1,354]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,354]
ELSE IF u1 < HAQ_mult[1,355]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,355]
ELSE IF u1 < HAQ_mult[1,356]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,356]
ELSE IF u1 < HAQ_mult[1,357]
```



```
SET lbl_haq_mult = HAQ_mult[haq_multvar,357]
ELSE IF u1 < HAQ_mult[1,358]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,358]
ELSE IF u1 < HAQ_mult[1,359]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,359]
ELSE IF u1 < HAQ_mult[1,360]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,360]
ELSE IF u1 < HAQ_mult[1,361]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,361]
ELSE IF u1 < HAQ_mult[1,362]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,362]
ELSE IF u1 < HAQ_mult[1,363]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,363]
ELSE IF u1 < HAQ_mult[1,364]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,364]
ELSE IF u1 < HAQ_mult[1,365]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,365]
ELSE IF u1 < HAQ_mult[1,366]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,366]
ELSE IF u1 < HAQ_mult[1,367]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,367]
ELSE IF u1 < HAQ_mult[1,368]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,368]
ELSE IF u1 < HAQ_mult[1,369]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,369]
ELSE IF u1 < HAQ_mult[1,370]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,370]
ELSE IF u1 < HAQ_mult[1,371]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,371]
ELSE IF u1 < HAQ_mult[1,372]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,372]
ELSE IF u1 < HAQ_mult[1,373]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,373]
ELSE IF u1 < HAQ_mult[1,374]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,374]
ELSE IF u1 < HAQ_mult[1,375]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,375]
ELSE IF u1 < HAQ_mult[1,376]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,376]
ELSE IF u1 < HAQ_mult[1,377]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,377]
ELSE IF u1 < HAQ_mult[1,378]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,378]
ELSE IF u1 < HAQ_mult[1,379]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,379]
ELSE IF u1 < HAQ_mult[1,380]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,380]
ELSE IF u1 < HAQ_mult[1,381]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,381]
ELSE IF u1 < HAQ_mult[1,382]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,382]
```

```
ELSE IF u1 < HAQ_mult[1,383]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,383]
ELSE IF u1 < HAQ_mult[1,384]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,384]
ELSE IF u1 < HAQ_mult[1,385]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,385]
ELSE IF u1 < HAQ_mult[1,386]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,386]
ELSE IF u1 < HAQ_mult[1,387]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,387]
ELSE IF u1 < HAQ_mult[1,388]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,388]
ELSE IF u1 < HAQ_mult[1,389]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,389]
ELSE IF u1 < HAQ_mult[1,390]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,390]
ELSE IF u1 < HAQ_mult[1,391]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,391]
ELSE IF u1 < HAQ_mult[1,392]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,392]
ELSE IF u1 < HAQ_mult[1,393]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,393]
ELSE IF u1 < HAQ_mult[1,394]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,394]
ELSE IF u1 < HAQ_mult[1,395]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,395]
ELSE IF u1 < HAQ_mult[1,396]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,396]
ELSE IF u1 < HAQ_mult[1,397]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,397]
ELSE IF u1 < HAQ_mult[1,398]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,398]
ELSE IF u1 < HAQ_mult[1,399]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,399]
ELSE IF u1 < HAQ_mult[1,400]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,400]
ELSE IF u1 < HAQ_mult[1,401]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,401]
ELSE IF u1 < HAQ_mult[1,402]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,402]
ELSE IF u1 < HAQ_mult[1,403]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,403]
ELSE IF u1 < HAQ_mult[1,404]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,404]
ELSE IF u1 < HAQ_mult[1,405]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,405]
ELSE IF u1 < HAQ_mult[1,406]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,406]
ELSE IF u1 < HAQ_mult[1,407]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,407]
ELSE IF u1 < HAQ_mult[1,408]
```

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    SET lbl_haq_mult = HAQ_mult[haq_multvar,408]
ELSE IF u1 < HAQ_mult[1,409]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,409]
ELSE IF u1 < HAQ_mult[1,410]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,410]
ELSE IF u1 < HAQ_mult[1,411]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,411]
ELSE IF u1 < HAQ_mult[1,412]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,412]
ELSE IF u1 < HAQ_mult[1,413]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,413]
ELSE IF u1 < HAQ_mult[1,414]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,414]
ELSE IF u1 < HAQ_mult[1,415]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,415]
ELSE IF u1 < HAQ_mult[1,416]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,416]
ELSE IF u1 < HAQ_mult[1,417]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,417]
ELSE IF u1 < HAQ_mult[1,418]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,418]
ELSE IF u1 < HAQ_mult[1,419]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,419]
ELSE IF u1 < HAQ_mult[1,420]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,420]
ELSE IF u1 < HAQ_mult[1,421]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,421]
ELSE IF u1 < HAQ_mult[1,422]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,422]
ELSE IF u1 < HAQ_mult[1,423]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,423]
ELSE IF u1 < HAQ_mult[1,424]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,424]
ELSE IF u1 < HAQ_mult[1,425]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,425]
ELSE IF u1 < HAQ_mult[1,426]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,426]
ELSE IF u1 < HAQ_mult[1,427]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,427]
ELSE IF u1 < HAQ_mult[1,428]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,428]
ELSE IF u1 < HAQ_mult[1,429]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,429]
ELSE IF u1 < HAQ_mult[1,430]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,430]
ELSE IF u1 < HAQ_mult[1,431]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,431]
ELSE IF u1 < HAQ_mult[1,432]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,432]
ELSE IF u1 < HAQ_mult[1,433]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,433]
```

```
ELSE IF u1 < HAQ_mult[1,434]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,434]
ELSE IF u1 < HAQ_mult[1,435]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,435]
ELSE IF u1 < HAQ_mult[1,436]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,436]
ELSE IF u1 < HAQ_mult[1,437]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,437]
ELSE IF u1 < HAQ_mult[1,438]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,438]
ELSE IF u1 < HAQ_mult[1,439]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,439]
ELSE IF u1 < HAQ_mult[1,440]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,440]
ELSE IF u1 < HAQ_mult[1,441]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,441]
ELSE IF u1 < HAQ_mult[1,442]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,442]
ELSE IF u1 < HAQ_mult[1,443]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,443]
ELSE IF u1 < HAQ_mult[1,444]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,444]
ELSE IF u1 < HAQ_mult[1,445]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,445]
ELSE IF u1 < HAQ_mult[1,446]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,446]
ELSE IF u1 < HAQ_mult[1,447]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,447]
ELSE IF u1 < HAQ_mult[1,448]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,448]
ELSE IF u1 < HAQ_mult[1,449]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,449]
ELSE IF u1 < HAQ_mult[1,450]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,450]
ELSE IF u1 < HAQ_mult[1,451]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,451]
ELSE IF u1 < HAQ_mult[1,452]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,452]
ELSE IF u1 < HAQ_mult[1,453]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,453]
ELSE IF u1 < HAQ_mult[1,454]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,454]
ELSE IF u1 < HAQ_mult[1,455]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,455]
ELSE IF u1 < HAQ_mult[1,456]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,456]
ELSE IF u1 < HAQ_mult[1,457]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,457]
ELSE IF u1 < HAQ_mult[1,458]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,458]
ELSE IF u1 < HAQ_mult[1,459]
```

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SET lbl_haq_mult = HAQ_mult[haq_multvar,459]
ELSE IF u1 < HAQ_mult[1,460]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,460]
ELSE IF u1 < HAQ_mult[1,461]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,461]
ELSE IF u1 < HAQ_mult[1,462]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,462]
ELSE IF u1 < HAQ_mult[1,463]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,463]
ELSE IF u1 < HAQ_mult[1,464]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,464]
ELSE IF u1 < HAQ_mult[1,465]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,465]
ELSE IF u1 < HAQ_mult[1,466]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,466]
ELSE IF u1 < HAQ_mult[1,467]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,467]
ELSE IF u1 < HAQ_mult[1,468]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,468]
ELSE IF u1 < HAQ_mult[1,469]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,469]
ELSE IF u1 < HAQ_mult[1,470]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,470]
ELSE IF u1 < HAQ_mult[1,471]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,471]
ELSE IF u1 < HAQ_mult[1,472]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,472]
ELSE IF u1 < HAQ_mult[1,473]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,473]
ELSE IF u1 < HAQ_mult[1,474]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,474]
ELSE IF u1 < HAQ_mult[1,475]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,475]
ELSE IF u1 < HAQ_mult[1,476]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,476]
ELSE IF u1 < HAQ_mult[1,477]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,477]
ELSE IF u1 < HAQ_mult[1,478]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,478]
ELSE IF u1 < HAQ_mult[1,479]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,479]
ELSE IF u1 < HAQ_mult[1,480]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,480]
ELSE IF u1 < HAQ_mult[1,481]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,481]
ELSE IF u1 < HAQ_mult[1,482]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,482]
ELSE IF u1 < HAQ_mult[1,483]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,483]
ELSE IF u1 < HAQ_mult[1,484]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,484]
```

```
ELSE IF u1 < HAQ_mult[1,485]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,485]
ELSE IF u1 < HAQ_mult[1,486]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,486]
ELSE IF u1 < HAQ_mult[1,487]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,487]
ELSE IF u1 < HAQ_mult[1,488]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,488]
ELSE IF u1 < HAQ_mult[1,489]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,489]
ELSE IF u1 < HAQ_mult[1,490]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,490]
ELSE IF u1 < HAQ_mult[1,491]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,491]
ELSE IF u1 < HAQ_mult[1,492]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,492]
ELSE IF u1 < HAQ_mult[1,493]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,493]
ELSE IF u1 < HAQ_mult[1,494]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,494]
ELSE IF u1 < HAQ_mult[1,495]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,495]
ELSE IF u1 < HAQ_mult[1,496]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,496]
ELSE IF u1 < HAQ_mult[1,497]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,497]
ELSE IF u1 < HAQ_mult[1,498]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,498]
ELSE IF u1 < HAQ_mult[1,499]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,499]
ELSE IF u1 < HAQ_mult[1,500]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,500]
ELSE IF u1 < HAQ_mult[1,501]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,501]
ELSE IF u1 < HAQ_mult[1,502]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,502]
ELSE IF u1 < HAQ_mult[1,503]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,503]
ELSE IF u1 < HAQ_mult[1,504]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,504]
ELSE IF u1 < HAQ_mult[1,505]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,505]
ELSE IF u1 < HAQ_mult[1,506]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,506]
ELSE IF u1 < HAQ_mult[1,507]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,507]
ELSE IF u1 < HAQ_mult[1,508]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,508]
ELSE IF u1 < HAQ_mult[1,509]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,509]
ELSE IF u1 < HAQ_mult[1,510]
```

```
SET lbl_haq_mult = HAQ_mult[haq_multvar,510]
ELSE IF u1 < HAQ_mult[1,511]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,511]
ELSE IF u1 < HAQ_mult[1,512]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,512]
ELSE IF u1 < HAQ_mult[1,513]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,513]
ELSE IF u1 < HAQ_mult[1,514]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,514]
ELSE IF u1 < HAQ_mult[1,515]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,515]
ELSE IF u1 < HAQ_mult[1,516]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,516]
ELSE IF u1 < HAQ_mult[1,517]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,517]
ELSE IF u1 < HAQ_mult[1,518]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,518]
ELSE IF u1 < HAQ_mult[1,519]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,519]
ELSE IF u1 < HAQ_mult[1,520]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,520]
ELSE IF u1 < HAQ_mult[1,521]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,521]
ELSE IF u1 < HAQ_mult[1,522]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,522]
ELSE IF u1 < HAQ_mult[1,523]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,523]
ELSE IF u1 < HAQ_mult[1,524]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,524]
ELSE IF u1 < HAQ_mult[1,525]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,525]
ELSE IF u1 < HAQ_mult[1,526]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,526]
ELSE IF u1 < HAQ_mult[1,527]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,527]
ELSE IF u1 < HAQ_mult[1,528]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,528]
ELSE IF u1 < HAQ_mult[1,529]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,529]
ELSE IF u1 < HAQ_mult[1,530]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,530]
ELSE IF u1 < HAQ_mult[1,531]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,531]
ELSE IF u1 < HAQ_mult[1,532]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,532]
ELSE IF u1 < HAQ_mult[1,533]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,533]
ELSE IF u1 < HAQ_mult[1,534]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,534]
ELSE IF u1 < HAQ_mult[1,535]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,535]
```

```
ELSE IF u1 < HAQ_mult[1,536]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,536]
ELSE IF u1 < HAQ_mult[1,537]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,537]
ELSE IF u1 < HAQ_mult[1,538]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,538]
ELSE IF u1 < HAQ_mult[1,539]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,539]
ELSE IF u1 < HAQ_mult[1,540]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,540]
ELSE IF u1 < HAQ_mult[1,541]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,541]
ELSE IF u1 < HAQ_mult[1,542]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,542]
ELSE IF u1 < HAQ_mult[1,543]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,543]
ELSE IF u1 < HAQ_mult[1,544]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,544]
ELSE IF u1 < HAQ_mult[1,545]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,545]
ELSE IF u1 < HAQ_mult[1,546]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,546]
ELSE IF u1 < HAQ_mult[1,547]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,547]
ELSE IF u1 < HAQ_mult[1,548]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,548]
ELSE IF u1 < HAQ_mult[1,549]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,549]
ELSE IF u1 < HAQ_mult[1,550]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,550]
ELSE IF u1 < HAQ_mult[1,551]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,551]
ELSE IF u1 < HAQ_mult[1,552]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,552]
ELSE IF u1 < HAQ_mult[1,553]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,553]
ELSE IF u1 < HAQ_mult[1,554]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,554]
ELSE IF u1 < HAQ_mult[1,555]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,555]
ELSE IF u1 < HAQ_mult[1,556]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,556]
ELSE IF u1 < HAQ_mult[1,557]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,557]
ELSE IF u1 < HAQ_mult[1,558]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,558]
ELSE IF u1 < HAQ_mult[1,559]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,559]
ELSE IF u1 < HAQ_mult[1,560]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,560]
ELSE IF u1 < HAQ_mult[1,561]
```



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    SET lbl_haq_mult = HAQ_mult[haq_multvar,561]
ELSE IF u1 < HAQ_mult[1,562]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,562]
ELSE IF u1 < HAQ_mult[1,563]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,563]
ELSE IF u1 < HAQ_mult[1,564]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,564]
ELSE IF u1 < HAQ_mult[1,565]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,565]
ELSE IF u1 < HAQ_mult[1,566]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,566]
ELSE IF u1 < HAQ_mult[1,567]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,567]
ELSE IF u1 < HAQ_mult[1,568]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,568]
ELSE IF u1 < HAQ_mult[1,569]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,569]
ELSE IF u1 < HAQ_mult[1,570]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,570]
ELSE IF u1 < HAQ_mult[1,571]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,571]
ELSE IF u1 < HAQ_mult[1,572]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,572]
ELSE IF u1 < HAQ_mult[1,573]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,573]
ELSE IF u1 < HAQ_mult[1,574]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,574]
ELSE IF u1 < HAQ_mult[1,575]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,575]
ELSE IF u1 < HAQ_mult[1,576]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,576]
ELSE IF u1 < HAQ_mult[1,577]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,577]
ELSE IF u1 < HAQ_mult[1,578]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,578]
ELSE IF u1 < HAQ_mult[1,579]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,579]
ELSE IF u1 < HAQ_mult[1,580]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,580]
ELSE IF u1 < HAQ_mult[1,581]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,581]
ELSE IF u1 < HAQ_mult[1,582]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,582]
ELSE IF u1 < HAQ_mult[1,583]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,583]
ELSE IF u1 < HAQ_mult[1,584]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,584]
ELSE IF u1 < HAQ_mult[1,585]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,585]
ELSE IF u1 < HAQ_mult[1,586]
    SET lbl_haq_mult = HAQ_mult[haq_multvar,586]
```

```
ELSE IF u1 < HAQ_mult[1,587]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,587]
ELSE IF u1 < HAQ_mult[1,588]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,588]
ELSE IF u1 < HAQ_mult[1,589]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,589]
ELSE IF u1 < HAQ_mult[1,590]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,590]
ELSE IF u1 < HAQ_mult[1,591]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,591]
ELSE IF u1 < HAQ_mult[1,592]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,592]
ELSE IF u1 < HAQ_mult[1,593]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,593]
ELSE IF u1 < HAQ_mult[1,594]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,594]
ELSE IF u1 < HAQ_mult[1,595]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,595]
ELSE IF u1 < HAQ_mult[1,596]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,596]
ELSE IF u1 < HAQ_mult[1,597]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,597]
ELSE IF u1 < HAQ_mult[1,598]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,598]
ELSE IF u1 < HAQ_mult[1,599]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,599]
ELSE IF u1 < HAQ_mult[1,600]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,600]
ELSE IF u1 < HAQ_mult[1,601]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,601]
ELSE IF u1 < HAQ_mult[1,602]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,602]
ELSE IF u1 < HAQ_mult[1,603]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,603]
ELSE IF u1 < HAQ_mult[1,604]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,604]
ELSE IF u1 < HAQ_mult[1,605]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,605]
ELSE IF u1 < HAQ_mult[1,606]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,606]
ELSE IF u1 < HAQ_mult[1,607]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,607]
ELSE IF u1 < HAQ_mult[1,608]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,608]
ELSE IF u1 < HAQ_mult[1,609]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,609]
ELSE IF u1 < HAQ_mult[1,610]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,610]
ELSE IF u1 < HAQ_mult[1,611]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,611]
ELSE IF u1 < HAQ_mult[1,612]
```

```
SET lbl_haq_mult = HAQ_mult[haq_multvar,612]
ELSE IF u1 < HAQ_mult[1,613]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,613]
ELSE IF u1 < HAQ_mult[1,614]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,614]
ELSE IF u1 < HAQ_mult[1,615]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,615]
ELSE IF u1 < HAQ_mult[1,616]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,616]
ELSE IF u1 < HAQ_mult[1,617]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,617]
ELSE IF u1 < HAQ_mult[1,618]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,618]
ELSE IF u1 < HAQ_mult[1,619]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,619]
ELSE IF u1 < HAQ_mult[1,620]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,620]
ELSE IF u1 < HAQ_mult[1,621]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,621]
ELSE IF u1 < HAQ_mult[1,622]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,622]
ELSE IF u1 < HAQ_mult[1,623]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,623]
ELSE IF u1 < HAQ_mult[1,624]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,624]
ELSE IF u1 < HAQ_mult[1,625]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,625]
ELSE IF u1 < HAQ_mult[1,626]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,626]
ELSE IF u1 < HAQ_mult[1,627]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,627]
ELSE IF u1 < HAQ_mult[1,628]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,628]
ELSE IF u1 < HAQ_mult[1,629]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,629]
ELSE IF u1 < HAQ_mult[1,630]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,630]
ELSE IF u1 < HAQ_mult[1,631]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,631]
ELSE IF u1 < HAQ_mult[1,632]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,632]
ELSE IF u1 < HAQ_mult[1,633]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,633]
ELSE IF u1 < HAQ_mult[1,634]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,634]
ELSE IF u1 < HAQ_mult[1,635]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,635]
ELSE IF u1 < HAQ_mult[1,636]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,636]
ELSE IF u1 < HAQ_mult[1,637]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,637]
```

```
ELSE IF u1 < HAQ_mult[1,638]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,638]
ELSE IF u1 < HAQ_mult[1,639]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,639]
ELSE IF u1 < HAQ_mult[1,640]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,640]
ELSE IF u1 < HAQ_mult[1,641]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,641]
ELSE IF u1 < HAQ_mult[1,642]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,642]
ELSE IF u1 < HAQ_mult[1,643]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,643]
ELSE IF u1 < HAQ_mult[1,644]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,644]
ELSE IF u1 < HAQ_mult[1,645]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,645]
ELSE IF u1 < HAQ_mult[1,646]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,646]
ELSE IF u1 < HAQ_mult[1,647]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,647]
ELSE IF u1 < HAQ_mult[1,648]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,648]
ELSE IF u1 < HAQ_mult[1,649]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,649]
ELSE IF u1 < HAQ_mult[1,650]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,650]
ELSE IF u1 < HAQ_mult[1,651]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,651]
ELSE IF u1 < HAQ_mult[1,652]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,652]
ELSE IF u1 < HAQ_mult[1,653]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,653]
ELSE IF u1 < HAQ_mult[1,654]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,654]
ELSE IF u1 < HAQ_mult[1,655]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,655]
ELSE IF u1 < HAQ_mult[1,656]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,656]
ELSE IF u1 < HAQ_mult[1,657]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,657]
ELSE IF u1 < HAQ_mult[1,658]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,658]
ELSE IF u1 < HAQ_mult[1,659]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,659]
ELSE IF u1 < HAQ_mult[1,660]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,660]
ELSE IF u1 < HAQ_mult[1,661]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,661]
ELSE IF u1 < HAQ_mult[1,662]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,662]
ELSE IF u1 < HAQ_mult[1,663]
```

```
SET lbl_haq_mult = HAQ_mult[haq_multvar,663]
ELSE IF u1 < HAQ_mult[1,664]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,664]
ELSE IF u1 < HAQ_mult[1,665]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,665]
ELSE IF u1 < HAQ_mult[1,666]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,666]
ELSE IF u1 < HAQ_mult[1,667]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,667]
ELSE IF u1 < HAQ_mult[1,668]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,668]
ELSE IF u1 < HAQ_mult[1,669]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,669]
ELSE IF u1 < HAQ_mult[1,670]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,670]
ELSE IF u1 < HAQ_mult[1,671]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,671]
ELSE IF u1 < HAQ_mult[1,672]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,672]
ELSE IF u1 < HAQ_mult[1,673]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,673]
ELSE IF u1 < HAQ_mult[1,674]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,674]
ELSE IF u1 < HAQ_mult[1,675]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,675]
ELSE IF u1 < HAQ_mult[1,676]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,676]
ELSE IF u1 < HAQ_mult[1,677]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,677]
ELSE IF u1 < HAQ_mult[1,678]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,678]
ELSE IF u1 < HAQ_mult[1,679]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,679]
ELSE IF u1 < HAQ_mult[1,680]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,680]
ELSE IF u1 < HAQ_mult[1,681]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,681]
ELSE IF u1 < HAQ_mult[1,682]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,682]
ELSE IF u1 < HAQ_mult[1,683]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,683]
ELSE IF u1 < HAQ_mult[1,684]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,684]
ELSE IF u1 < HAQ_mult[1,685]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,685]
ELSE IF u1 < HAQ_mult[1,686]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,686]
ELSE IF u1 < HAQ_mult[1,687]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,687]
ELSE IF u1 < HAQ_mult[1,688]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,688]
```

```
ELSE IF u1 < HAQ_mult[1,689]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,689]
ELSE IF u1 < HAQ_mult[1,690]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,690]
ELSE IF u1 < HAQ_mult[1,691]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,691]
ELSE IF u1 < HAQ_mult[1,692]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,692]
ELSE IF u1 < HAQ_mult[1,693]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,693]
ELSE IF u1 < HAQ_mult[1,694]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,694]
ELSE IF u1 < HAQ_mult[1,695]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,695]
ELSE IF u1 < HAQ_mult[1,696]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,696]
ELSE IF u1 < HAQ_mult[1,697]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,697]
ELSE IF u1 < HAQ_mult[1,698]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,698]
ELSE IF u1 < HAQ_mult[1,699]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,699]
ELSE IF u1 < HAQ_mult[1,700]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,700]
ELSE IF u1 < HAQ_mult[1,701]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,701]
ELSE IF u1 < HAQ_mult[1,702]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,702]
ELSE IF u1 < HAQ_mult[1,703]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,703]
ELSE IF u1 < HAQ_mult[1,704]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,704]
ELSE IF u1 < HAQ_mult[1,705]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,705]
ELSE IF u1 < HAQ_mult[1,706]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,706]
ELSE IF u1 < HAQ_mult[1,707]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,707]
ELSE IF u1 < HAQ_mult[1,708]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,708]
ELSE IF u1 < HAQ_mult[1,709]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,709]
ELSE IF u1 < HAQ_mult[1,710]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,710]
ELSE IF u1 < HAQ_mult[1,711]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,711]
ELSE IF u1 < HAQ_mult[1,712]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,712]
ELSE IF u1 < HAQ_mult[1,713]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,713]
ELSE IF u1 < HAQ_mult[1,714]
```

```
SET lbl_haq_mult = HAQ_mult[haq_multvar,714]
ELSE IF u1 < HAQ_mult[1,715]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,715]
ELSE IF u1 < HAQ_mult[1,716]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,716]
ELSE IF u1 < HAQ_mult[1,717]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,717]
ELSE IF u1 < HAQ_mult[1,718]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,718]
ELSE IF u1 < HAQ_mult[1,719]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,719]
ELSE IF u1 < HAQ_mult[1,720]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,720]
ELSE IF u1 < HAQ_mult[1,721]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,721]
ELSE IF u1 < HAQ_mult[1,722]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,722]
ELSE IF u1 < HAQ_mult[1,723]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,723]
ELSE IF u1 < HAQ_mult[1,724]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,724]
ELSE IF u1 < HAQ_mult[1,725]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,725]
ELSE IF u1 < HAQ_mult[1,726]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,726]
ELSE IF u1 < HAQ_mult[1,727]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,727]
ELSE IF u1 < HAQ_mult[1,728]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,728]
ELSE IF u1 < HAQ_mult[1,729]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,729]
ELSE IF u1 < HAQ_mult[1,730]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,730]
ELSE IF u1 < HAQ_mult[1,731]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,731]
ELSE IF u1 < HAQ_mult[1,732]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,732]
ELSE IF u1 < HAQ_mult[1,733]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,733]
ELSE IF u1 < HAQ_mult[1,734]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,734]
ELSE IF u1 < HAQ_mult[1,735]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,735]
ELSE IF u1 < HAQ_mult[1,736]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,736]
ELSE IF u1 < HAQ_mult[1,737]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,737]
ELSE IF u1 < HAQ_mult[1,738]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,738]
ELSE IF u1 < HAQ_mult[1,739]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,739]
```

```
ELSE IF u1 < HAQ_mult[1,740]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,740]
ELSE IF u1 < HAQ_mult[1,741]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,741]
ELSE IF u1 < HAQ_mult[1,742]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,742]
ELSE IF u1 < HAQ_mult[1,743]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,743]
ELSE IF u1 < HAQ_mult[1,744]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,744]
ELSE IF u1 < HAQ_mult[1,745]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,745]
ELSE IF u1 < HAQ_mult[1,746]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,746]
ELSE IF u1 < HAQ_mult[1,747]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,747]
ELSE IF u1 < HAQ_mult[1,748]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,748]
ELSE IF u1 < HAQ_mult[1,749]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,749]
ELSE IF u1 < HAQ_mult[1,750]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,750]
ELSE IF u1 < HAQ_mult[1,751]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,751]
ELSE IF u1 < HAQ_mult[1,752]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,752]
ELSE IF u1 < HAQ_mult[1,753]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,753]
ELSE IF u1 < HAQ_mult[1,754]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,754]
ELSE IF u1 < HAQ_mult[1,755]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,755]
ELSE IF u1 < HAQ_mult[1,756]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,756]
ELSE IF u1 < HAQ_mult[1,757]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,757]
ELSE IF u1 < HAQ_mult[1,758]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,758]
ELSE IF u1 < HAQ_mult[1,759]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,759]
ELSE IF u1 < HAQ_mult[1,760]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,760]
ELSE IF u1 < HAQ_mult[1,761]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,761]
ELSE IF u1 < HAQ_mult[1,762]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,762]
ELSE IF u1 < HAQ_mult[1,763]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,763]
ELSE IF u1 < HAQ_mult[1,764]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,764]
ELSE IF u1 < HAQ_mult[1,765]
```



```
SET lbl_haq_mult = HAQ_mult[haq_multvar,765]
ELSE IF u1 < HAQ_mult[1,766]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,766]
ELSE IF u1 < HAQ_mult[1,767]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,767]
ELSE IF u1 < HAQ_mult[1,768]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,768]
ELSE IF u1 < HAQ_mult[1,769]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,769]
ELSE IF u1 < HAQ_mult[1,770]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,770]
ELSE IF u1 < HAQ_mult[1,771]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,771]
ELSE IF u1 < HAQ_mult[1,772]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,772]
ELSE IF u1 < HAQ_mult[1,773]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,773]
ELSE IF u1 < HAQ_mult[1,774]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,774]
ELSE IF u1 < HAQ_mult[1,775]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,775]
ELSE IF u1 < HAQ_mult[1,776]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,776]
ELSE IF u1 < HAQ_mult[1,777]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,777]
ELSE IF u1 < HAQ_mult[1,778]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,778]
ELSE IF u1 < HAQ_mult[1,779]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,779]
ELSE IF u1 < HAQ_mult[1,780]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,780]
ELSE IF u1 < HAQ_mult[1,781]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,781]
ELSE IF u1 < HAQ_mult[1,782]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,782]
ELSE IF u1 < HAQ_mult[1,783]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,783]
ELSE IF u1 < HAQ_mult[1,784]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,784]
ELSE IF u1 < HAQ_mult[1,785]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,785]
ELSE IF u1 < HAQ_mult[1,786]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,786]
ELSE IF u1 < HAQ_mult[1,787]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,787]
ELSE IF u1 < HAQ_mult[1,788]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,788]
ELSE IF u1 < HAQ_mult[1,789]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,789]
ELSE IF u1 < HAQ_mult[1,790]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,790]
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ELSE IF u1 < HAQ_mult[1,791]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,791]
ELSE IF u1 < HAQ_mult[1,792]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,792]
ELSE IF u1 < HAQ_mult[1,793]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,793]
ELSE IF u1 < HAQ_mult[1,794]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,794]
ELSE IF u1 < HAQ_mult[1,795]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,795]
ELSE IF u1 < HAQ_mult[1,796]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,796]
ELSE IF u1 < HAQ_mult[1,797]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,797]
ELSE IF u1 < HAQ_mult[1,798]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,798]
ELSE IF u1 < HAQ_mult[1,799]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,799]
ELSE IF u1 < HAQ_mult[1,800]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,800]
ELSE IF u1 < HAQ_mult[1,801]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,801]
ELSE IF u1 < HAQ_mult[1,802]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,802]
ELSE IF u1 < HAQ_mult[1,803]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,803]
ELSE IF u1 < HAQ_mult[1,804]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,804]
ELSE IF u1 < HAQ_mult[1,805]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,805]
ELSE IF u1 < HAQ_mult[1,806]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,806]
ELSE IF u1 < HAQ_mult[1,807]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,807]
ELSE IF u1 < HAQ_mult[1,808]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,808]
ELSE IF u1 < HAQ_mult[1,809]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,809]
ELSE IF u1 < HAQ_mult[1,810]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,810]
ELSE IF u1 < HAQ_mult[1,811]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,811]
ELSE IF u1 < HAQ_mult[1,812]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,812]
ELSE IF u1 < HAQ_mult[1,813]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,813]
ELSE IF u1 < HAQ_mult[1,814]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,814]
ELSE IF u1 < HAQ_mult[1,815]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,815]
ELSE IF u1 < HAQ_mult[1,816]
```

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SET lbl_haq_mult = HAQ_mult[haq_multvar,816]
ELSE IF u1 < HAQ_mult[1,817]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,817]
ELSE IF u1 < HAQ_mult[1,818]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,818]
ELSE IF u1 < HAQ_mult[1,819]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,819]
ELSE IF u1 < HAQ_mult[1,820]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,820]
ELSE IF u1 < HAQ_mult[1,821]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,821]
ELSE IF u1 < HAQ_mult[1,822]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,822]
ELSE IF u1 < HAQ_mult[1,823]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,823]
ELSE IF u1 < HAQ_mult[1,824]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,824]
ELSE IF u1 < HAQ_mult[1,825]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,825]
ELSE IF u1 < HAQ_mult[1,826]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,826]
ELSE IF u1 < HAQ_mult[1,827]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,827]
ELSE IF u1 < HAQ_mult[1,828]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,828]
ELSE IF u1 < HAQ_mult[1,829]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,829]
ELSE IF u1 < HAQ_mult[1,830]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,830]
ELSE IF u1 < HAQ_mult[1,831]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,831]
ELSE IF u1 < HAQ_mult[1,832]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,832]
ELSE IF u1 < HAQ_mult[1,833]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,833]
ELSE IF u1 < HAQ_mult[1,834]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,834]
ELSE IF u1 < HAQ_mult[1,835]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,835]
ELSE IF u1 < HAQ_mult[1,836]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,836]
ELSE IF u1 < HAQ_mult[1,837]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,837]
ELSE IF u1 < HAQ_mult[1,838]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,838]
ELSE IF u1 < HAQ_mult[1,839]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,839]
ELSE IF u1 < HAQ_mult[1,840]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,840]
ELSE IF u1 < HAQ_mult[1,841]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,841]
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ELSE IF u1 < HAQ_mult[1,842]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,842]
ELSE IF u1 < HAQ_mult[1,843]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,843]
ELSE IF u1 < HAQ_mult[1,844]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,844]
ELSE IF u1 < HAQ_mult[1,845]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,845]
ELSE IF u1 < HAQ_mult[1,846]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,846]
ELSE IF u1 < HAQ_mult[1,847]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,847]
ELSE IF u1 < HAQ_mult[1,848]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,848]
ELSE IF u1 < HAQ_mult[1,849]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,849]
ELSE IF u1 < HAQ_mult[1,850]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,850]
ELSE IF u1 < HAQ_mult[1,851]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,851]
ELSE IF u1 < HAQ_mult[1,852]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,852]
ELSE IF u1 < HAQ_mult[1,853]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,853]
ELSE IF u1 < HAQ_mult[1,854]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,854]
ELSE IF u1 < HAQ_mult[1,855]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,855]
ELSE IF u1 < HAQ_mult[1,856]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,856]
ELSE IF u1 < HAQ_mult[1,857]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,857]
ELSE IF u1 < HAQ_mult[1,858]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,858]
ELSE IF u1 < HAQ_mult[1,859]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,859]
ELSE IF u1 < HAQ_mult[1,860]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,860]
ELSE IF u1 < HAQ_mult[1,861]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,861]
ELSE IF u1 < HAQ_mult[1,862]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,862]
ELSE IF u1 < HAQ_mult[1,863]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,863]
ELSE IF u1 < HAQ_mult[1,864]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,864]
ELSE IF u1 < HAQ_mult[1,865]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,865]
ELSE IF u1 < HAQ_mult[1,866]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,866]
ELSE IF u1 < HAQ_mult[1,867]
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SET lbl_haq_mult = HAQ_mult[haq_multvar,867]
ELSE IF u1 < HAQ_mult[1,868]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,868]
ELSE IF u1 < HAQ_mult[1,869]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,869]
ELSE IF u1 < HAQ_mult[1,870]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,870]
ELSE IF u1 < HAQ_mult[1,871]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,871]
ELSE IF u1 < HAQ_mult[1,872]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,872]
ELSE IF u1 < HAQ_mult[1,873]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,873]
ELSE IF u1 < HAQ_mult[1,874]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,874]
ELSE IF u1 < HAQ_mult[1,875]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,875]
ELSE IF u1 < HAQ_mult[1,876]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,876]
ELSE IF u1 < HAQ_mult[1,877]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,877]
ELSE IF u1 < HAQ_mult[1,878]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,878]
ELSE IF u1 < HAQ_mult[1,879]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,879]
ELSE IF u1 < HAQ_mult[1,880]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,880]
ELSE IF u1 < HAQ_mult[1,881]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,881]
ELSE IF u1 < HAQ_mult[1,882]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,882]
ELSE IF u1 < HAQ_mult[1,883]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,883]
ELSE IF u1 < HAQ_mult[1,884]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,884]
ELSE IF u1 < HAQ_mult[1,885]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,885]
ELSE IF u1 < HAQ_mult[1,886]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,886]
ELSE IF u1 < HAQ_mult[1,887]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,887]
ELSE IF u1 < HAQ_mult[1,888]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,888]
ELSE IF u1 < HAQ_mult[1,889]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,889]
ELSE IF u1 < HAQ_mult[1,890]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,890]
ELSE IF u1 < HAQ_mult[1,891]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,891]
ELSE IF u1 < HAQ_mult[1,892]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,892]
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ELSE IF u1 < HAQ_mult[1,893]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,893]
ELSE IF u1 < HAQ_mult[1,894]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,894]
ELSE IF u1 < HAQ_mult[1,895]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,895]
ELSE IF u1 < HAQ_mult[1,896]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,896]
ELSE IF u1 < HAQ_mult[1,897]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,897]
ELSE IF u1 < HAQ_mult[1,898]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,898]
ELSE IF u1 < HAQ_mult[1,899]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,899]
ELSE IF u1 < HAQ_mult[1,900]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,900]
ELSE IF u1 < HAQ_mult[1,901]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,901]
ELSE IF u1 < HAQ_mult[1,902]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,902]
ELSE IF u1 < HAQ_mult[1,903]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,903]
ELSE IF u1 < HAQ_mult[1,904]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,904]
ELSE IF u1 < HAQ_mult[1,905]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,905]
ELSE IF u1 < HAQ_mult[1,906]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,906]
ELSE IF u1 < HAQ_mult[1,907]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,907]
ELSE IF u1 < HAQ_mult[1,908]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,908]
ELSE IF u1 < HAQ_mult[1,909]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,909]
ELSE IF u1 < HAQ_mult[1,910]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,910]
ELSE IF u1 < HAQ_mult[1,911]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,911]
ELSE IF u1 < HAQ_mult[1,912]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,912]
ELSE IF u1 < HAQ_mult[1,913]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,913]
ELSE IF u1 < HAQ_mult[1,914]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,914]
ELSE IF u1 < HAQ_mult[1,915]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,915]
ELSE IF u1 < HAQ_mult[1,916]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,916]
ELSE IF u1 < HAQ_mult[1,917]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,917]
ELSE IF u1 < HAQ_mult[1,918]
```

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SET lbl_haq_mult = HAQ_mult[haq_multvar,918]
ELSE IF u1 < HAQ_mult[1,919]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,919]
ELSE IF u1 < HAQ_mult[1,920]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,920]
ELSE IF u1 < HAQ_mult[1,921]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,921]
ELSE IF u1 < HAQ_mult[1,922]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,922]
ELSE IF u1 < HAQ_mult[1,923]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,923]
ELSE IF u1 < HAQ_mult[1,924]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,924]
ELSE IF u1 < HAQ_mult[1,925]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,925]
ELSE IF u1 < HAQ_mult[1,926]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,926]
ELSE IF u1 < HAQ_mult[1,927]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,927]
ELSE IF u1 < HAQ_mult[1,928]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,928]
ELSE IF u1 < HAQ_mult[1,929]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,929]
ELSE IF u1 < HAQ_mult[1,930]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,930]
ELSE IF u1 < HAQ_mult[1,931]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,931]
ELSE IF u1 < HAQ_mult[1,932]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,932]
ELSE IF u1 < HAQ_mult[1,933]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,933]
ELSE IF u1 < HAQ_mult[1,934]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,934]
ELSE IF u1 < HAQ_mult[1,935]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,935]
ELSE IF u1 < HAQ_mult[1,936]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,936]
ELSE IF u1 < HAQ_mult[1,937]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,937]
ELSE IF u1 < HAQ_mult[1,938]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,938]
ELSE IF u1 < HAQ_mult[1,939]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,939]
ELSE IF u1 < HAQ_mult[1,940]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,940]
ELSE IF u1 < HAQ_mult[1,941]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,941]
ELSE IF u1 < HAQ_mult[1,942]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,942]
ELSE IF u1 < HAQ_mult[1,943]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,943]
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```
ELSE IF u1 < HAQ_mult[1,944]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,944]
ELSE IF u1 < HAQ_mult[1,945]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,945]
ELSE IF u1 < HAQ_mult[1,946]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,946]
ELSE IF u1 < HAQ_mult[1,947]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,947]
ELSE IF u1 < HAQ_mult[1,948]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,948]
ELSE IF u1 < HAQ_mult[1,949]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,949]
ELSE IF u1 < HAQ_mult[1,950]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,950]
ELSE IF u1 < HAQ_mult[1,951]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,951]
ELSE IF u1 < HAQ_mult[1,952]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,952]
ELSE IF u1 < HAQ_mult[1,953]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,953]
ELSE IF u1 < HAQ_mult[1,954]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,954]
ELSE IF u1 < HAQ_mult[1,955]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,955]
ELSE IF u1 < HAQ_mult[1,956]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,956]
ELSE IF u1 < HAQ_mult[1,957]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,957]
ELSE IF u1 < HAQ_mult[1,958]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,958]
ELSE IF u1 < HAQ_mult[1,959]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,959]
ELSE IF u1 < HAQ_mult[1,960]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,960]
ELSE IF u1 < HAQ_mult[1,961]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,961]
ELSE IF u1 < HAQ_mult[1,962]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,962]
ELSE IF u1 < HAQ_mult[1,963]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,963]
ELSE IF u1 < HAQ_mult[1,964]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,964]
ELSE IF u1 < HAQ_mult[1,965]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,965]
ELSE IF u1 < HAQ_mult[1,966]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,966]
ELSE IF u1 < HAQ_mult[1,967]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,967]
ELSE IF u1 < HAQ_mult[1,968]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,968]
ELSE IF u1 < HAQ_mult[1,969]
```



```
SET lbl_haq_mult = HAQ_mult[haq_multvar,969]
ELSE IF u1 < HAQ_mult[1,970]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,970]
ELSE IF u1 < HAQ_mult[1,971]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,971]
ELSE IF u1 < HAQ_mult[1,972]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,972]
ELSE IF u1 < HAQ_mult[1,973]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,973]
ELSE IF u1 < HAQ_mult[1,974]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,974]
ELSE IF u1 < HAQ_mult[1,975]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,975]
ELSE IF u1 < HAQ_mult[1,976]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,976]
ELSE IF u1 < HAQ_mult[1,977]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,977]
ELSE IF u1 < HAQ_mult[1,978]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,978]
ELSE IF u1 < HAQ_mult[1,979]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,979]
ELSE IF u1 < HAQ_mult[1,980]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,980]
ELSE IF u1 < HAQ_mult[1,981]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,981]
ELSE IF u1 < HAQ_mult[1,982]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,982]
ELSE IF u1 < HAQ_mult[1,983]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,983]
ELSE IF u1 < HAQ_mult[1,984]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,984]
ELSE IF u1 < HAQ_mult[1,985]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,985]
ELSE IF u1 < HAQ_mult[1,986]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,986]
ELSE IF u1 < HAQ_mult[1,987]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,987]
ELSE IF u1 < HAQ_mult[1,988]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,988]
ELSE IF u1 < HAQ_mult[1,989]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,989]
ELSE IF u1 < HAQ_mult[1,990]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,990]
ELSE IF u1 < HAQ_mult[1,991]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,991]
ELSE IF u1 < HAQ_mult[1,992]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,992]
ELSE IF u1 < HAQ_mult[1,993]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,993]
ELSE IF u1 < HAQ_mult[1,994]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,994]
```

```
ELSE IF u1 < HAQ_mult[1,995]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,995]
ELSE IF u1 < HAQ_mult[1,996]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,996]
ELSE IF u1 < HAQ_mult[1,997]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,997]
ELSE IF u1 < HAQ_mult[1,998]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,998]
ELSE IF u1 < HAQ_mult[1,999]
  SET lbl_haq_mult = HAQ_mult[haq_multvar,999]
ELSE
  SET lbl_haq_mult = HAQ_mult[haq_multvar,1000]
```

VL SECTION: New Code

```
SET Total QALYs = Total QALYs-start_effect
SET Total Discounted QALYs = Total Discounted QALYs-[[1/[1+DRB]^lbl_time_last]]*start_effect]
IF lbl_time_on_treatment > lbl_time_to_haq_inc
  SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
  SET haq_inc_time = lbl_time_to_haq_inc
  SET current = lbl_time_current
  SET last = lbl_time_last
  SET current = last+haq_inc_time
  SET patient_haq = patient_haq+v_haq_inc
  CALL Costs and QALYs
  SET Total Cost = Total Cost+lbl_startup_cost
  SET Total Discounted Cost = Total Discounted Cost+[[1/[1+DRC]^lbl_time_last]]*lbl_startup_cost]
  SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
  SET time_treat = lbl_time_on_treatment
  SET lbl_time_last = lbl_time_current
  SET last = lbl_time_last
  SET old_death_age = age_at_death
  CALL Set age at death
  SET age_at_death = patient_age+[[age_at_death*(old_death_age-patient_age)]]/old_death_age]
  IF age_at_death-patient_age < lbl_time_on_treatment
    SET lbl_time_on_treatment = age_at_death-patient_age
  ELSE
    Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
  SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
  SET current = lbl_time_current
  SET current = last+time_treat
  SET lbl_time_on_treatment = 0
  SET time_treat = lbl_time_on_treatment
  CALL Costs and QALYs
  SET Total Cost = Total Cost+lbl_startup_cost
  SET Total Discounted Cost = Total Discounted Cost+[[1/[1+DRC]^lbl_time_last]]*lbl_startup_cost]
  SET lbl_time_last = lbl_time_current
  SET last = lbl_time_last
  SET old_death_age = age_at_death
  CALL Set age at death
  SET age_at_death = patient_age+[[age_at_death*(old_death_age-patient_age)]]/old_death_age]
  IF age_at_death-patient_age < lbl_time_on_treatment
    SET lbl_time_on_treatment = age_at_death-patient_age
  ELSE
IF lbl_time_on_treatment > lbl_time_to_haq_inc
  SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
  SET haq_inc_time = lbl_time_to_haq_inc
  SET current = lbl_time_current
  SET last = lbl_time_last
  SET current = last+haq_inc_time
  SET patient_haq = patient_haq+v_haq_inc
  CALL Costs and QALYs
  SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
  SET time_treat = lbl_time_on_treatment
```

```

SET lbl_time_last = lbl_time_current
SET patient_age = patient_age+lbl_time_to_haq_inc
SET last = lbl_time_last
SET old_death_age = age_at_death
CALL Set age at death
SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
SET current = lbl_time_current
SET current = last+time_treat
SET lbl_time_on_treatment = 0
SET time_treat = lbl_time_on_treatment
CALL Costs and QALYs
SET lbl_time_last = lbl_time_current
SET last = lbl_time_last
SET patient_age = patient_age+lbl_time_on_treatment
SET old_death_age = age_at_death
CALL Set age at death
SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
IF lbl_time_on_treatment > lbl_time_to_haq_inc
SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
SET haq_inc_time = lbl_time_to_haq_inc
SET current = lbl_time_current
SET last = lbl_time_last
SET current = last+haq_inc_time
SET patient_haq = patient_haq+v_haq_inc
CALL Costs and QALYs
SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
SET time_treat = lbl_time_on_treatment
SET lbl_time_last = lbl_time_current
SET patient_age = patient_age+lbl_time_to_haq_inc
SET last = lbl_time_last
SET old_death_age = age_at_death
CALL Set age at death
SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
SET current = lbl_time_current
SET current = last+time_treat

```

```

SET lbl_time_on_treatment = 0
SET time_treat = lbl_time_on_treatment
CALL Costs and QALYs
SET lbl_time_last = lbl_time_current
SET last = lbl_time_last
SET patient_age = patient_age+lbl_time_on_treatment
SET old_death_age = age_at_death
CALL Set age at death
SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
IF lbl_time_on_treatment > lbl_time_to_haq_inc
  SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
  SET haq_inc_time = lbl_time_to_haq_inc
  SET current = lbl_time_current
  SET last = lbl_time_last
  SET current = last+haq_inc_time
  SET patient_haq = patient_haq+v_haq_inc
  CALL Costs and QALYs
  SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
  SET time_treat = lbl_time_on_treatment
  SET lbl_time_last = lbl_time_current
  SET patient_age = patient_age+lbl_time_to_haq_inc
  SET last = lbl_time_last
  SET old_death_age = age_at_death
  CALL Set age at death
  SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
  IF age_at_death-patient_age < lbl_time_on_treatment
    SET lbl_time_on_treatment = age_at_death-patient_age
  ELSE
    Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
  SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
  SET current = lbl_time_current
  SET current = last+time_treat
  SET lbl_time_on_treatment = 0
  SET time_treat = lbl_time_on_treatment
  CALL Costs and QALYs
  SET lbl_time_last = lbl_time_current
  SET last = lbl_time_last
  SET patient_age = patient_age+lbl_time_on_treatment
  SET old_death_age = age_at_death
  CALL Set age at death
  SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
  IF age_at_death-patient_age < lbl_time_on_treatment
    SET lbl_time_on_treatment = age_at_death-patient_age
  ELSE
    Insert logic here to use if NONE of the conditions in this "IF block" are true.
IF lbl_time_on_treatment > lbl_time_to_haq_inc

```

```

SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
SET haq_inc_time = lbl_time_to_haq_inc
SET current = lbl_time_current
SET last = lbl_time_last
SET current = last+haq_inc_time
SET patient_haq = patient_haq+v_haq_inc
CALL Costs and QALYs
SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
SET time_treat = lbl_time_on_treatment
SET lbl_time_last = lbl_time_current
SET patient_age = patient_age+lbl_time_to_haq_inc
SET last = lbl_time_last
SET old_death_age = age_at_death
CALL Set age at death
SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
  SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
  SET current = lbl_time_current
  SET current = last+time_treat
  SET lbl_time_on_treatment = 0
  SET time_treat = lbl_time_on_treatment
  CALL Costs and QALYs
  SET lbl_time_last = lbl_time_current
  SET last = lbl_time_last
  SET patient_age = patient_age+lbl_time_on_treatment
  SET old_death_age = age_at_death
  CALL Set age at death
  SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
  IF age_at_death-patient_age < lbl_time_on_treatment
    SET lbl_time_on_treatment = age_at_death-patient_age
  ELSE
    Insert logic here to use if NONE of the conditions in this "IF block" are true.
IF lbl_time_on_treatment > lbl_time_to_haq_inc
  SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
  SET haq_inc_time = lbl_time_to_haq_inc
  SET current = lbl_time_current
  SET last = lbl_time_last
  SET current = last+haq_inc_time
  SET patient_haq = patient_haq+v_haq_inc
  CALL Costs and QALYs
  SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
  SET time_treat = lbl_time_on_treatment
  SET lbl_time_last = lbl_time_current
  SET patient_age = patient_age+lbl_time_to_haq_inc
  SET last = lbl_time_last
  SET old_death_age = age_at_death
  CALL Set age at death

```

```

SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
  SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
  SET current = lbl_time_current
  SET current = last+time_treat
  SET lbl_time_on_treatment = 0
  SET time_treat = lbl_time_on_treatment
  CALL Costs and QALYs
  SET lbl_time_last = lbl_time_current
  SET last = lbl_time_last
  SET patient_age = patient_age+lbl_time_on_treatment
  SET old_death_age = age_at_death
  CALL Set age at death
  SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
  IF age_at_death-patient_age < lbl_time_on_treatment
    SET lbl_time_on_treatment = age_at_death-patient_age
  ELSE
    Insert logic here to use if NONE of the conditions in this "IF block" are true.
IF lbl_time_on_treatment > lbl_time_to_haq_inc
  SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
  SET haq_inc_time = lbl_time_to_haq_inc
  SET current = lbl_time_current
  SET last = lbl_time_last
  SET current = last+haq_inc_time
  SET patient_haq = patient_haq+v_haq_inc
  IF patient_haq-lbl_haq_improvement < 0
    SET patient_haq = 0
  ELSE IF patient_haq-lbl_haq_improvement > 3
    SET patient_haq = 3
  ELSE
    SET patient_haq = patient_haq
  CALL Costs and QALYs
  SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
  SET time_treat = lbl_time_on_treatment
  SET lbl_time_last = lbl_time_current
  SET patient_age = patient_age+lbl_time_to_haq_inc
  SET last = lbl_time_last
  SET old_death_age = age_at_death
  CALL Set age at death
  SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
  IF age_at_death-patient_age < lbl_time_on_treatment
    SET lbl_time_on_treatment = age_at_death-patient_age
  ELSE
    Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
  SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
  SET current = lbl_time_current

```

```

SET current = last+time_treat
SET lbl_time_on_treatment = 0
SET time_treat = lbl_time_on_treatment
CALL Costs and QALYs
SET lbl_time_last = lbl_time_current
SET last = lbl_time_last
SET patient_age = patient_age+lbl_time_on_treatment
SET old_death_age = age_at_death
CALL Set age at death
SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
IF lbl_time_on_treatment > lbl_time_to_haq_inc
  SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
  SET haq_inc_time = lbl_time_to_haq_inc
  SET current = lbl_time_current
  SET last = lbl_time_last
  SET current = last+haq_inc_time
  SET patient_haq = patient_haq+v_haq_inc
  IF patient_haq-lbl_haq_improvement < 0
    SET patient_haq = 0
  ELSE IF patient_haq-lbl_haq_improvement > 3
    SET patient_haq = 3
  ELSE
    SET patient_haq = patient_haq
  CALL Costs and QALYs
  SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
  SET time_treat = lbl_time_on_treatment
  SET lbl_time_last = lbl_time_current
  SET patient_age = patient_age+lbl_time_to_haq_inc
  SET last = lbl_time_last
  SET old_death_age = age_at_death
  CALL Set age at death
  SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
  IF age_at_death-patient_age < lbl_time_on_treatment
    SET lbl_time_on_treatment = age_at_death-patient_age
  ELSE
    Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
  SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
  SET current = lbl_time_current
  SET current = last+time_treat
  SET lbl_time_on_treatment = 0
  SET time_treat = lbl_time_on_treatment
  CALL Costs and QALYs
  SET lbl_time_last = lbl_time_current
  SET last = lbl_time_last
  SET patient_age = patient_age+lbl_time_on_treatment
  SET old_death_age = age_at_death

```



```

CALL Set age at death
SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
IF lbl_time_on_treatment > lbl_time_to_haq_inc
  SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
  SET haq_inc_time = lbl_time_to_haq_inc
  SET current = lbl_time_current
  SET last = lbl_time_last
  SET current = last+haq_inc_time
  SET patient_haq = patient_haq+v_haq_inc
  IF patient_haq-lbl_haq_improvement < 0
    SET patient_haq = 0
  ELSE IF patient_haq-lbl_haq_improvement > 3
    SET patient_haq = 3
  ELSE
    SET patient_haq = patient_haq
CALL Costs and QALYs
SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
SET time_treat = lbl_time_on_treatment
SET lbl_time_last = lbl_time_current
SET patient_age = patient_age+lbl_time_to_haq_inc
SET last = lbl_time_last
SET old_death_age = age_at_death
CALL Set age at death
SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
  SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
  SET current = lbl_time_current
  SET current = last+time_treat
  SET lbl_time_on_treatment = 0
  SET time_treat = lbl_time_on_treatment
CALL Costs and QALYs
SET lbl_time_last = lbl_time_current
SET last = lbl_time_last
SET patient_age = patient_age+lbl_time_on_treatment
SET old_death_age = age_at_death
CALL Set age at death
SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
IF lbl_time_on_treatment > lbl_time_to_haq_inc
  SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc

```

```

SET haq_inc_time = lbl_time_to_haq_inc
SET current = lbl_time_current
SET last = lbl_time_last
SET current = last+haq_inc_time
SET patient_haq = patient_haq+v_haq_inc
IF patient_haq-lbl_haq_improvement < 0
  SET patient_haq = 0
ELSE IF patient_haq-lbl_haq_improvement > 3
  SET patient_haq = 3
ELSE
  SET patient_haq = patient_haq
CALL Costs and QALYs
SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
SET time_treat = lbl_time_on_treatment
SET lbl_time_last = lbl_time_current
SET patient_age = patient_age+lbl_time_to_haq_inc
SET last = lbl_time_last
SET old_death_age = age_at_death
CALL Set age at death
SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
SET current = lbl_time_current
SET current = last+time_treat
SET lbl_time_on_treatment = 0
SET time_treat = lbl_time_on_treatment
CALL Costs and QALYs
SET lbl_time_last = lbl_time_current
SET last = lbl_time_last
SET patient_age = patient_age+lbl_time_on_treatment
SET old_death_age = age_at_death
CALL Set age at death
SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
IF lbl_time_on_treatment > lbl_time_to_haq_inc
SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
SET haq_inc_time = lbl_time_to_haq_inc
SET current = lbl_time_current
SET last = lbl_time_last
SET current = last+haq_inc_time
SET patient_haq = patient_haq+v_haq_inc
CALL Costs and QALYs
SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
SET time_treat = lbl_time_on_treatment

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SET lbl_time_last = lbl_time_current
SET patient_age = patient_age+lbl_time_to_haq_inc
SET last = lbl_time_last
SET old_death_age = age_at_death
CALL Set age at death
SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
SET current = lbl_time_current
SET current = last+time_treat
SET lbl_time_on_treatment = 0
SET time_treat = lbl_time_on_treatment
CALL Costs and QALYs
SET lbl_time_last = lbl_time_current
SET last = lbl_time_last
SET patient_age = patient_age+lbl_time_on_treatment
SET old_death_age = age_at_death
CALL Set age at death
SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
IF lbl_time_on_treatment > lbl_time_to_haq_inc
SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
SET haq_inc_time = lbl_time_to_haq_inc
SET current = lbl_time_current
SET last = lbl_time_last
SET current = last+haq_inc_time
SET patient_haq = patient_haq+v_haq_inc
CALL Costs and QALYs
SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
SET time_treat = lbl_time_on_treatment
SET lbl_time_last = lbl_time_current
SET patient_age = patient_age+lbl_time_to_haq_inc
SET last = lbl_time_last
SET old_death_age = age_at_death
CALL Set age at death
SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
SET current = lbl_time_current
SET current = last+time_treat

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SET lbl_time_on_treatment = 0
SET time_treat = lbl_time_on_treatment
CALL Costs and QALYs
SET lbl_time_last = lbl_time_current
SET last = lbl_time_last
SET patient_age = patient_age+lbl_time_on_treatment
SET old_death_age = age_at_death
CALL Set age at death
SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
IF lbl_time_on_treatment > lbl_time_to_haq_inc
  SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
  SET haq_inc_time = lbl_time_to_haq_inc
  SET current = lbl_time_current
  SET last = lbl_time_last
  SET current = last+haq_inc_time
  SET patient_haq = patient_haq+v_haq_inc
  CALL Costs and QALYs
  SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
  SET time_treat = lbl_time_on_treatment
  SET lbl_time_last = lbl_time_current
  SET patient_age = patient_age+lbl_time_to_haq_inc
  SET last = lbl_time_last
  SET old_death_age = age_at_death
  CALL Set age at death
  SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
  IF age_at_death-patient_age < lbl_time_on_treatment
    SET lbl_time_on_treatment = age_at_death-patient_age
  ELSE
    Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
  SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
  SET current = lbl_time_current
  SET current = last+time_treat
  SET lbl_time_on_treatment = 0
  SET time_treat = lbl_time_on_treatment
  CALL Costs and QALYs
  SET lbl_time_last = lbl_time_current
  SET last = lbl_time_last
  SET patient_age = patient_age+lbl_time_on_treatment
  SET old_death_age = age_at_death
  CALL Set age at death
  SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
  IF age_at_death-patient_age < lbl_time_on_treatment
    SET lbl_time_on_treatment = age_at_death-patient_age
  ELSE
    Insert logic here to use if NONE of the conditions in this "IF block" are true.
IF lbl_time_on_treatment > lbl_time_to_haq_inc

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SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
SET haq_inc_time = lbl_time_to_haq_inc
SET current = lbl_time_current
SET last = lbl_time_last
SET current = last+haq_inc_time
SET patient_haq = patient_haq+v_haq_inc
CALL Costs and QALYs
SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
SET time_treat = lbl_time_on_treatment
SET lbl_time_last = lbl_time_current
SET patient_age = patient_age+lbl_time_to_haq_inc
SET last = lbl_time_last
SET old_death_age = age_at_death
CALL Set age at death
SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
  SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
  SET current = lbl_time_current
  SET current = last+time_treat
  SET lbl_time_on_treatment = 0
  SET time_treat = lbl_time_on_treatment
  CALL Costs and QALYs
  SET lbl_time_last = lbl_time_current
  SET last = lbl_time_last
  SET patient_age = patient_age+lbl_time_on_treatment
  SET old_death_age = age_at_death
  CALL Set age at death
  SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
  IF age_at_death-patient_age < lbl_time_on_treatment
    SET lbl_time_on_treatment = age_at_death-patient_age
  ELSE
    Insert logic here to use if NONE of the conditions in this "IF block" are true.
IF lbl_time_on_treatment > lbl_time_to_haq_inc
  SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
  SET haq_inc_time = lbl_time_to_haq_inc
  SET current = lbl_time_current
  SET last = lbl_time_last
  SET current = last+haq_inc_time
  SET patient_haq = patient_haq+v_haq_inc
  CALL Costs and QALYs
  SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
  SET time_treat = lbl_time_on_treatment
  SET lbl_time_last = lbl_time_current
  SET patient_age = patient_age+lbl_time_to_haq_inc
  SET last = lbl_time_last
  SET old_death_age = age_at_death
  CALL Set age at death

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```

SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
  SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
  SET current = lbl_time_current
  SET current = last+time_treat
  SET lbl_time_on_treatment = 0
  SET time_treat = lbl_time_on_treatment
  CALL Costs and QALYs
  SET lbl_time_last = lbl_time_current
  SET last = lbl_time_last
  SET patient_age = patient_age+lbl_time_on_treatment
  SET old_death_age = age_at_death
  CALL Set age at death
  SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
  IF age_at_death-patient_age < lbl_time_on_treatment
    SET lbl_time_on_treatment = age_at_death-patient_age
  ELSE
    Insert logic here to use if NONE of the conditions in this "IF block" are true.
IF lbl_time_on_treatment > lbl_time_to_haq_inc
  SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
  SET haq_inc_time = lbl_time_to_haq_inc
  SET current = lbl_time_current
  SET last = lbl_time_last
  SET current = last+haq_inc_time
  SET patient_haq = patient_haq+v_haq_inc
  CALL Costs and QALYs
  SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
  SET time_treat = lbl_time_on_treatment
  SET lbl_time_last = lbl_time_current
  SET patient_age = patient_age+lbl_time_to_haq_inc
  SET last = lbl_time_last
  SET old_death_age = age_at_death
  CALL Set age at death
  SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
  IF age_at_death-patient_age < lbl_time_on_treatment
    SET lbl_time_on_treatment = age_at_death-patient_age
  ELSE
    Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
  SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
  SET current = lbl_time_current
  SET current = last+time_treat
  SET lbl_time_on_treatment = 0
  SET time_treat = lbl_time_on_treatment
  CALL Costs and QALYs
  SET lbl_time_last = lbl_time_current
  SET last = lbl_time_last

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SET patient_age = patient_age+lbl_time_on_treatment
SET old_death_age = age_at_death
CALL Set age at death
SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
IF lbl_time_on_treatment > lbl_time_to_haq_inc
  SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
  SET haq_inc_time = lbl_time_to_haq_inc
  SET current = lbl_time_current
  SET last = lbl_time_last
  SET current = last+haq_inc_time
  SET patient_haq = patient_haq+v_haq_inc
  CALL Costs and QALYs
  SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
  SET time_treat = lbl_time_on_treatment
  SET lbl_time_last = lbl_time_current
  SET patient_age = patient_age+lbl_time_to_haq_inc
  SET last = lbl_time_last
  SET old_death_age = age_at_death
  CALL Set age at death
  SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
  IF age_at_death-patient_age < lbl_time_on_treatment
    SET lbl_time_on_treatment = age_at_death-patient_age
  ELSE
    Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
  SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
  SET current = lbl_time_current
  SET current = last+time_treat
  SET lbl_time_on_treatment = 0
  SET time_treat = lbl_time_on_treatment
  CALL Costs and QALYs
  SET lbl_time_last = lbl_time_current
  SET last = lbl_time_last
  SET patient_age = patient_age+lbl_time_on_treatment
  SET old_death_age = age_at_death
  CALL Set age at death
  SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
  IF age_at_death-patient_age < lbl_time_on_treatment
    SET lbl_time_on_treatment = age_at_death-patient_age
  ELSE
    Insert logic here to use if NONE of the conditions in this "IF block" are true.
IF lbl_time_on_treatment > lbl_time_to_haq_inc
  SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
  SET haq_inc_time = lbl_time_to_haq_inc
  SET current = lbl_time_current
  SET last = lbl_time_last
  SET current = last+haq_inc_time

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SET patient_haq = patient_haq+v_haq_inc
CALL Costs and QALYs
SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
SET time_treat = lbl_time_on_treatment
SET lbl_time_last = lbl_time_current
SET patient_age = patient_age+lbl_time_to_haq_inc
SET last = lbl_time_last
SET old_death_age = age_at_death
CALL Set age at death
SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
  SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
  SET current = lbl_time_current
  SET current = last+time_treat
  SET lbl_time_on_treatment = 0
  SET time_treat = lbl_time_on_treatment
  CALL Costs and QALYs
  SET lbl_time_last = lbl_time_current
  SET last = lbl_time_last
  SET patient_age = patient_age+lbl_time_on_treatment
  SET old_death_age = age_at_death
  CALL Set age at death
  SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
  IF age_at_death-patient_age < lbl_time_on_treatment
    SET lbl_time_on_treatment = age_at_death-patient_age
  ELSE
    Insert logic here to use if NONE of the conditions in this "IF block" are true.
IF lbl_time_on_treatment > lbl_time_to_haq_inc
  SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
  SET haq_inc_time = lbl_time_to_haq_inc
  SET current = lbl_time_current
  SET last = lbl_time_last
  SET current = last+haq_inc_time
  SET patient_haq = patient_haq+v_haq_inc
  CALL Costs and QALYs
  SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
  SET time_treat = lbl_time_on_treatment
  SET lbl_time_last = lbl_time_current
  SET patient_age = patient_age+lbl_time_to_haq_inc
  SET last = lbl_time_last
  SET old_death_age = age_at_death
  CALL Set age at death
  SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
  IF age_at_death-patient_age < lbl_time_on_treatment
    SET lbl_time_on_treatment = age_at_death-patient_age
  ELSE
    Insert logic here to use if NONE of the conditions in this "IF block" are true.

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ELSE
  SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
  SET current = lbl_time_current
  SET current = last+time_treat
  SET lbl_time_on_treatment = 0
  SET time_treat = lbl_time_on_treatment
  CALL Costs and QALYs
  SET lbl_time_last = lbl_time_current
  SET last = lbl_time_last
  SET patient_age = patient_age+lbl_time_on_treatment
  SET old_death_age = age_at_death
  CALL Set age at death
  SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
  IF age_at_death-patient_age < lbl_time_on_treatment
    SET lbl_time_on_treatment = age_at_death-patient_age
  ELSE
    Insert logic here to use if NONE of the conditions in this "IF block" are true.
IF lbl_time_on_treatment > lbl_time_to_haq_inc
  SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
  SET haq_inc_time = lbl_time_to_haq_inc
  SET current = lbl_time_current
  SET last = lbl_time_last
  SET current = last+haq_inc_time
  SET patient_haq = patient_haq+v_haq_inc
  CALL Costs and QALYs
  SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
  SET time_treat = lbl_time_on_treatment
  SET lbl_time_last = lbl_time_current
  SET patient_age = patient_age+lbl_time_to_haq_inc
  SET last = lbl_time_last
  SET old_death_age = age_at_death
  CALL Set age at death
  SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
  IF age_at_death-patient_age < lbl_time_on_treatment
    SET lbl_time_on_treatment = age_at_death-patient_age
  ELSE
    Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
  SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
  SET current = lbl_time_current
  SET current = last+time_treat
  SET lbl_time_on_treatment = 0
  SET time_treat = lbl_time_on_treatment
  CALL Costs and QALYs
  SET lbl_time_last = lbl_time_current
  SET last = lbl_time_last
  SET patient_age = patient_age+lbl_time_on_treatment
  SET old_death_age = age_at_death
  CALL Set age at death
  SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
  IF age_at_death-patient_age < lbl_time_on_treatment

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    SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
    Insert logic here to use if NONE of the conditions in this "IF block" are true.
IF lbl_time_on_treatment > lbl_time_to_haq_inc
    SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
    SET haq_inc_time = lbl_time_to_haq_inc
    SET current = lbl_time_current
    SET last = lbl_time_last
    SET current = last+haq_inc_time
    SET patient_haq = patient_haq+v_haq_inc
    CALL Costs and QALYs
    SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
    SET time_treat = lbl_time_on_treatment
    SET lbl_time_last = lbl_time_current
    SET patient_age = patient_age+lbl_time_to_haq_inc
    SET last = lbl_time_last
    SET old_death_age = age_at_death
    CALL Set age at death
    SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
    IF age_at_death-patient_age < lbl_time_on_treatment
        SET lbl_time_on_treatment = age_at_death-patient_age
    ELSE
        Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
    SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
    SET current = lbl_time_current
    SET current = last+time_treat
    SET lbl_time_on_treatment = 0
    SET time_treat = lbl_time_on_treatment
    CALL Costs and QALYs
    SET lbl_time_last = lbl_time_current
    SET last = lbl_time_last
    SET patient_age = patient_age+lbl_time_on_treatment
    SET old_death_age = age_at_death
    CALL Set age at death
    SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
    IF age_at_death-patient_age < lbl_time_on_treatment
        SET lbl_time_on_treatment = age_at_death-patient_age
    ELSE
        Insert logic here to use if NONE of the conditions in this "IF block" are true.
IF lbl_time_on_treatment > lbl_time_to_haq_inc
    SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
    SET haq_inc_time = lbl_time_to_haq_inc
    SET current = lbl_time_current
    SET last = lbl_time_last
    SET current = last+haq_inc_time
    SET patient_haq = patient_haq+v_haq_inc
    CALL Costs and QALYs
    SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
    SET time_treat = lbl_time_on_treatment
    SET lbl_time_last = lbl_time_current

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SET patient_age = patient_age+lbl_time_to_haq_inc
SET last = lbl_time_last
SET old_death_age = age_at_death
CALL Set age at death
SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
SET current = lbl_time_current
SET current = last+time_treat
SET lbl_time_on_treatment = 0
SET time_treat = lbl_time_on_treatment
CALL Costs and QALYs
SET lbl_time_last = lbl_time_current
SET last = lbl_time_last
SET patient_age = patient_age+lbl_time_on_treatment
SET old_death_age = age_at_death
CALL Set age at death
SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
IF lbl_time_on_treatment > lbl_time_to_haq_inc
SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
SET haq_inc_time = lbl_time_to_haq_inc
SET current = lbl_time_current
SET last = lbl_time_last
SET current = last+haq_inc_time
SET patient_haq = patient_haq+v_haq_inc
CALL Costs and QALYs
SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
SET time_treat = lbl_time_on_treatment
SET lbl_time_last = lbl_time_current
SET patient_age = patient_age+lbl_time_to_haq_inc
SET last = lbl_time_last
SET old_death_age = age_at_death
CALL Set age at death
SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
SET current = lbl_time_current
SET current = last+time_treat
SET lbl_time_on_treatment = 0

```

```

SET time_treat = lbl_time_on_treatment
CALL Costs and QALYs
SET lbl_time_last = lbl_time_current
SET last = lbl_time_last
SET patient_age = patient_age+lbl_time_on_treatment
SET old_death_age = age_at_death
CALL Set age at death
SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
ELSE
  Insert logic here to use if NONE of the conditions in this "IF block" are true.
IF lbl_time_on_treatment > lbl_time_to_haq_inc
  SET lbl_time_current = lbl_time_last+lbl_time_to_haq_inc
  SET haq_inc_time = lbl_time_to_haq_inc
  SET current = lbl_time_current
  SET last = lbl_time_last
  SET current = last+haq_inc_time
  SET patient_haq = patient_haq+v_haq_inc
  CALL Costs and QALYs
  SET lbl_time_on_treatment = lbl_time_on_treatment-lbl_time_to_haq_inc
  SET time_treat = lbl_time_on_treatment
  SET lbl_time_last = lbl_time_current
  SET patient_age = patient_age+lbl_time_to_haq_inc
  SET last = lbl_time_last
  SET old_death_age = age_at_death
  CALL Set age at death
  SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
  IF age_at_death-patient_age < lbl_time_on_treatment
    SET lbl_time_on_treatment = age_at_death-patient_age
  ELSE
    Insert logic here to use if NONE of the conditions in this "IF block" are true.
ELSE
  SET lbl_time_current = lbl_time_last+lbl_time_on_treatment
  SET current = lbl_time_current
  SET current = last+time_treat
  SET lbl_time_on_treatment = 0
  SET time_treat = lbl_time_on_treatment
  CALL Costs and QALYs
  SET lbl_time_last = lbl_time_current
  SET last = lbl_time_last
  SET patient_age = patient_age+lbl_time_on_treatment
  SET old_death_age = age_at_death
  CALL Set age at death
  SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
  IF age_at_death-patient_age < lbl_time_on_treatment
    SET lbl_time_on_treatment = age_at_death-patient_age
  ELSE
    Insert logic here to use if NONE of the conditions in this "IF block" are true.
SET Total QALYs = Total QALYs-end_effect
SET Total Discounted QALYs = Total Discounted QALYs-[[1/[1+DRB]]^lbl_time_last]*end_effect]

```


VL SECTION: set age at death working

IF patient_male = 0

 CALL Set survival prob female

ELSE

 CALL Set survival prob male

SET deathage_survprob = survival_prob*[death_random^{1/[haq_mortality_ratio^patient_haq]}]

IF patient_male = 0

 CALL Set death age female

ELSE

 CALL Set death age male

VL SECTION: Costs and QALYs

```
IF patient_haq < 0
  SET patient_haq = 0
ELSE IF patient_haq > 3
  SET patient_haq = 3
ELSE
  SET patient_haq = patient_haq
(Disabled) SET utility = [[v_haq_utility_a]-v_haq_utility_b1*patient_haq]]-
[v_haq_utility_b2*[patient_haq^2]]
CALL Utility Mappings
(Disabled) IF utility < 0
  (Disabled) SET utility = 0
(Disabled) ELSE
  (Disabled) SET utility = utility
SET Total QALYs = Total QALYs+[[lbl_time_current-lbl_time_last]*utility]
SET Temp = EXP[lbl_time_current*[0-DRBi]]
SET Temp = Temp-EXP[[lbl_time_last]*[0-DRBi]]
SET Temp = Temp/[0-DRBi]
SET Total Discounted QALYs = [Total Discounted QALYs+[utility*Temp]]
SET Total LY = Total LY+[lbl_time_current-lbl_time_last]
SET Total Cost = Total Cost+[[lbl_time_current-
lbl_time_last]*[lbl_annual_cost+[[patient_haq]*c_HAQ_unit]]]
SET Temp = EXP[lbl_time_current*[0-DRCi]]
SET Temp = Temp-EXP[[lbl_time_last]*[0-DRCi]]
SET Temp = Temp/[0-DRCi]
SET Total Discounted Cost = Total Discounted
Cost+[[Temp]*[lbl_annual_cost+[[patient_haq]*c_HAQ_unit]]]
SET patient_age = patient_age+[lbl_time_current-lbl_time_last]
SET old_death_age = age_at_death
```

VL SECTION: Reset Logic

IF PSA_switch = 1

'get inputs from psa sheet

```
SET p_ada_w12 = PSA_inputs[1,SOUR+1]
SET p_ada_tox = PSA_inputs[2,SOUR+1]
SET p_etn_w13 = PSA_inputs[3,SOUR+1]
SET p_etn_tox = PSA_inputs[4,SOUR+1]
SET p_ifx_w16 = PSA_inputs[5,SOUR+1]
SET p_ifx_tox = PSA_inputs[6,SOUR+1]
SET p_abt_w24 = PSA_inputs[7,SOUR+1]
SET p_abt_tox = PSA_inputs[8,SOUR+1]
SET p_lef_w6 = PSA_inputs[9,SOUR+1]
SET p_lef_w24 = PSA_inputs[10,SOUR+1]
SET p_lef_tox = PSA_inputs[11,SOUR+1]
SET p_gst_w6 = PSA_inputs[12,SOUR+1]
SET p_gst_w24 = PSA_inputs[13,SOUR+1]
SET p_gst_tox = PSA_inputs[14,SOUR+1]
SET p_cya_w6 = PSA_inputs[15,SOUR+1]
SET p_cya_w24 = PSA_inputs[16,SOUR+1]
SET p_cya_tox = PSA_inputs[17,SOUR+1]
SET p_aza_w6 = PSA_inputs[18,SOUR+1]
SET p_aza_w24 = PSA_inputs[19,SOUR+1]
SET p_aza_tox = PSA_inputs[20,SOUR+1]
SET v_tnf_quit_a = PSA_inputs[22,SOUR+1]
SET v_tnf_quit_b = PSA_inputs[23,SOUR+1]
SET v_rtx_quit_a = PSA_inputs[24,SOUR+1]
SET v_rtx_quit_b = PSA_inputs[25,SOUR+1]
SET v_abt_quit_a = PSA_inputs[26,SOUR+1]
SET v_abt_quit_b = PSA_inputs[27,SOUR+1]
SET v_lef_quit_a = PSA_inputs[28,SOUR+1]
SET v_lef_quit_b = PSA_inputs[29,SOUR+1]
SET v_gst_quit_a = PSA_inputs[30,SOUR+1]
SET v_gst_quit_b = PSA_inputs[31,SOUR+1]
SET v_cya_quit_a = PSA_inputs[32,SOUR+1]
SET v_cya_quit_b = PSA_inputs[33,SOUR+1]
SET v_aza_quit_a = PSA_inputs[34,SOUR+1]
SET v_aza_quit_b = PSA_inputs[35,SOUR+1]
SET haq_mortality_ratio = PSA_inputs[37,SOUR+1]
SET v_time_to_haq_inc_dmards = PSA_inputs[39,SOUR+1]
SET v_time_to_haq_inc_pall = PSA_inputs[40,SOUR+1]
SET v_start_effect = PSA_inputs[42,SOUR+1]
SET v_end_effect = PSA_inputs[43,SOUR+1]
SET v_haq_utility_a = PSA_inputs[45,SOUR+1]
SET v_haq_utility_b1 = PSA_inputs[46,SOUR+1]
SET v_haq_utility_b2 = PSA_inputs[47,SOUR+1]
'This gets the parameters from the PSA input sheet.
```

ELSE IF PSA_switch = 3

```
SET vas_improvement_ada = vas_sa[5,vas_sa_row+1]
SET vas_improv_etn = vas_sa[5,vas_sa_row+1]
SET vas_improv_ifx = vas_sa[5,vas_sa_row+1]
SET vas_improv_rtx = vas_sa[5,vas_sa_row+1]
```



```
SET vas_improv_abt = vas_sa[5,vas_sa_row+1]
SET vas_improv_lef = vas_sa[1,vas_sa_row+1]
SET vas_improv_gst = vas_sa[2,vas_sa_row+1]
SET vas_improv_cya = vas_sa[3,vas_sa_row+1]
SET vas_improv_aza = vas_sa[4,vas_sa_row+1]
```

ELSE

Insert logic here to use if NONE of the conditions in this "IF block" are true.

'If PSA is not running, the proportions of patients responding and having SAEs is calculated.

VL SECTION: On treatment Work Complete Logic

SET lbl_disc_treat_cost = 0

SET lbl_treatment = lbl_treatment+1

(Disabled) SET patient_haq = patient_haq+lbl_haq_improvement

(Disabled) IF patient_haq-lbl_haq_improvement < 0

(Disabled) SET patient_haq = 0

(Disabled) ELSE IF patient_haq-lbl_haq_improvement > 3

(Disabled) SET patient_haq = 3

(Disabled) ELSE

(Disabled) SET patient_haq = patient_haq

'This assigns the patient to the next treatment in the sequence.

IF Scenario = 1

IF lbl_treatment = 1

CALL Set labels for LEF

CALL Initial Characteristics

ELSE IF lbl_treatment = 2

CALL Set labels for GST

ELSE IF lbl_treatment = 3

CALL Set labels for CyA

ELSE IF lbl_treatment = 4

CALL Set labels for AZA

ELSE

CALL Set labels for Pall

'DMARDs

IF Scenario = 2

IF lbl_treatment = 1

CALL Set labels for ADA

CALL Initial Characteristics

ELSE IF lbl_treatment = 2

CALL Set labels for LEF

ELSE IF lbl_treatment = 3

CALL Set labels for GST

ELSE IF lbl_treatment = 4

CALL Set labels for CyA

ELSE IF lbl_treatment = 5

CALL Set labels for AZA

ELSE

CALL Set labels for Pall

'Adalimumab

IF Scenario = 3

IF lbl_treatment = 1

CALL Set labels for ETN

CALL Initial Characteristics

ELSE IF lbl_treatment = 2

CALL Set labels for LEF

ELSE IF lbl_treatment = 3

CALL Set labels for GST

ELSE IF lbl_treatment = 4

CALL Set labels for CyA

ELSE IF lbl_treatment = 5

CALL Set labels for AZA

```
ELSE
  CALL Set labels for Pall
'Etanercept
IF Scenario = 4
  IF lbl_treatment = 1
    CALL Set labels for IFX
    CALL Initial Characteristics
  ELSE IF lbl_treatment = 2
    CALL Set labels for LEF
  ELSE IF lbl_treatment = 3
    CALL Set labels for GST
  ELSE IF lbl_treatment = 4
    CALL Set labels for CyA
  ELSE IF lbl_treatment = 5
    CALL Set labels for AZA
  ELSE
    CALL Set labels for Pall
'Infliximab
IF Scenario = 5
  IF lbl_treatment = 1
    CALL Set labels for RTX
    CALL Initial Characteristics
  ELSE IF lbl_treatment = 2
    CALL Set labels for LEF
  ELSE IF lbl_treatment = 3
    CALL Set labels for GST
  ELSE IF lbl_treatment = 4
    CALL Set labels for CyA
  ELSE IF lbl_treatment = 5
    CALL Set labels for AZA
  ELSE
    CALL Set labels for Pall
'Rituximab
IF Scenario = 6
  IF lbl_treatment = 1
    CALL Set labels for ABT
    CALL Initial Characteristics
  ELSE IF lbl_treatment = 2
    CALL Set labels for LEF
  ELSE IF lbl_treatment = 3
    CALL Set labels for GST
  ELSE IF lbl_treatment = 4
    CALL Set labels for CyA
  ELSE IF lbl_treatment = 5
    CALL Set labels for AZA
  ELSE
    CALL Set labels for Pall
'Abatacept
SET u1 = RANDOM[0]
SET u2 = RANDOM[0]
IF lbl_treatment = 5
```

```

SET lbl_time_on_treatment = 1
IF u2 < lbl_u2_critical_lower
  SET lbl_time_on_treatment = [6*7]/365.25
ELSE
  IF u1 < lbl_u1_critical
    SET lbl_time_on_treatment = [lbl_early_quit_week*7]/365.25
  ELSE
    IF u2 < lbl_u2_critical_higher
      SET lbl_time_on_treatment = [lbl_early_quit_week*7]/365.25
    ELSE
      SET lbl_time_on_treatment = lbl_quit_b*EXP[[LOG[0-[1*LOG[1-u2]]]]/lbl_quit_a]
(Disabled) CALL HAQ multiplier 100
IF PSA_switch = 1
  LOOP 1 >>> haq_mult_row >>> u1*1000
    SET lbl_haq_mult = HAQ_mult_PSA_mean[haq_multvar,haq_mult_row]
    IF RANDOM[0] < 0.5
      SET lbl_haq_mult =
lbl_haq_mult+[[RANDOM[0]^2]*HAQ_mult_PSA_range[haq_multvar,haq_mult_row]]
    ELSE
      SET lbl_haq_mult = lbl_haq_mult-
[[RANDOM[0]^2]*HAQ_mult_PSA_range[haq_multvar,haq_mult_row]]
  LOOP 1 >>> haq_mult_row >>> u1*1000
    SET lbl_haq_mult = HAQ_mult[haq_multvar,haq_mult_row]
  SET lbl_haq_improvement = ROUND[[patient_haq*lbl_haq_mult]/0.125]*0.125
  SET haq_improv = lbl_haq_improvement
  CALL Utility Mappings
  SET old_qol = utility
  (Disabled) SET old_qol = [v_haq_utility_a-[v_haq_utility_b1*patient_haq]]-
[v_haq_utility_b2*[patient_haq^2]]
  (Disabled) IF old_qol < 0
    (Disabled) SET old_qol = 0
    (Disabled) ELSE (else not valid here)
    (Disabled) SET old_qol = old_qol
  (Disabled) SET patient_haq = patient_haq-lbl_haq_improvement
  IF patient_vas-lbl_vas_improv < 0
    SET patient_vas = 0
  ELSE IF patient_vas-lbl_vas_improv > 100
    SET patient_vas = 100
  ELSE
    SET patient_vas = patient_vas-lbl_vas_improv
  IF patient_haq-lbl_haq_improvement < 0
    SET patient_haq = 0
  ELSE IF patient_haq-lbl_haq_improvement > 3
    SET patient_haq = 3
  ELSE
    SET patient_haq = patient_haq-lbl_haq_improvement
  CALL Utility Mappings
  SET new_qol = utility
  (Disabled) IF new_qol < 0
    (Disabled) SET new_qol = 0

```

```

(Disabled) SET new_qol = [v_haq_utility_a-[v_haq_utility_b1*patient_haq]]-
[v_haq_utility_b2*[patient_haq^2]]
(Disabled) ELSE (else not valid here)
  (Disabled) SET new_qol = new_qol
SET lbl_change_in_score = new_qol-old_qol
SET score_change = lbl_change_in_score
SET start_end_effect = 0.2*lbl_change_in_score
SET see = start_end_effect
SET start_effect = v_start_effect*lbl_change_in_score
SET end_effect = v_end_effect*lbl_change_in_score
CALL set age at death working
IF lbl_treatment = 1
  CALL set age at death working
ELSE
  SET old_death_age = age_at_death
  CALL set age at death working
  SET age_at_death = patient_age+[[[age_at_death*[old_death_age-patient_age]]]/old_death_age]
IF age_at_death-patient_age < lbl_time_on_treatment
  SET lbl_time_on_treatment = age_at_death-patient_age
  SET lbl_death = 1
ELSE
  SET lbl_death = 2
SET time_treat = lbl_time_on_treatment
CALL New Code
SET patient_age = patient_age+lbl_time_on_treatment
(Disabled) SET patient_haq = patient_haq+lbl_haq_improvement
IF patient_haq+lbl_haq_improvement < 0
  SET patient_haq = 0
ELSE IF patient_haq+lbl_haq_improvement > 3
  SET patient_haq = 3
ELSE
  SET patient_haq = patient_haq+lbl_haq_improvement
IF patient_vas+lbl_vas_improv < 0
  SET patient_vas = 0
ELSE IF patient_vas+lbl_vas_improv > 100
  SET patient_vas = 100
ELSE
  SET patient_vas = patient_vas+lbl_vas_improv
SET time_track = time_track+lbl_time_on_treatment
SET lbl_time_track = lbl_time_track+lbl_time_on_treatment

```

VL SECTION: Utility Mappings

```
IF HAQ_utility_algorithm = 1
  SET utility = [[v_haq_utility_a]-[v_haq_utility_b1*patient_haq]]-[v_haq_utility_b2*[patient_haq^2]]
  '0.804 - 0.203*HAQ=Q - 0.045*HAQ^2
ELSE IF HAQ_utility_algorithm = 2
  SET utility = [0.82-[0.11*patient_haq]]-[0.07*[patient_haq^2]]
  '0.82 - 0.11*HAQ=Q - 0.07*HAQ^2
ELSE IF HAQ_utility_algorithm = 3
  SET utility = 0.89-[0.28*patient_haq]
  '0.89-0.28*HAQ
ELSE IF HAQ_utility_algorithm = 4
  SET utility = 0.76-[0.28*patient_haq]
  '0.76-0.28*HAQ
ELSE IF HAQ_utility_algorithm = 5
  SET utility = 0.86-[0.2*patient_haq]
  '0.86-0.20*HAQ
ELSE IF HAQ_utility_algorithm = 6
  SET utility = 0.915-[0.296*patient_haq]
  '0.915-0.296*HAQ
ELSE IF HAQ_utility_algorithm = 7
  SET utility = 0.9567-[0.309*patient_haq]
  '0.9567-0.309*HAQ
ELSE IF HAQ_utility_algorithm = 8
  SET utility = 0.8711-[0.2275*patient_haq]
  '0.8711-0.2275*HAQ
ELSE IF HAQ_utility_algorithm = 9
  SET utility = 0.74-[0.17*patient_haq]
  '0.74-0.17*HAQ
ELSE IF HAQ_utility_algorithm = 10
  SET utility = 0.862-[0.327*patient_haq]
  '0.862-0.327*HAQ
ELSE IF HAQ_utility_algorithm = 11
  SET utility = 0.79-[0.24*patient_haq]
  '0.79-0.24*HAQ
ELSE IF HAQ_utility_algorithm = 12
  SET utility = [0.72-[0.2*patient_haq]]+[0.25*[patient_age/100]]
  '0.72-0.2*HAQ+0.25*(age/100)
ELSE IF HAQ_utility_algorithm = 13
  IF patient_haq < 0.5
    SET utility = 0.768
  ELSE IF patient_haq < 1
    SET utility = 0.645
  ELSE IF patient_haq < 1.5
    SET utility = 0.539
  ELSE IF patient_haq < 2.1
    SET utility = 0.488
  ELSE
    SET utility = 0.239
IF HAQ_utility_algorithm = 14
  IF patient_haq < 0.6
    SET utility = 0.77
```

```
ELSE IF patient_haq < 1.1
  SET utility = 0.651
ELSE IF patient_haq < 1.6
  SET utility = 0.539
ELSE IF patient_haq < 2.1
  SET utility = 0.489
ELSE
  SET utility = 0.229
ELSE IF HAQ_utility_algorithm = 15
  IF patient_haq < 0.6
    SET utility = 0.768
  ELSE IF patient_haq < 1.1
    SET utility = 0.645
  ELSE IF patient_haq < 1.6
    SET utility = 0.539
  ELSE IF patient_haq < 2.1
    SET utility = 0.488
  ELSE
    SET utility = 0.239
ELSE IF HAQ_utility_algorithm = 16
  IF patient_haq < 0.6
    SET utility = 0.7274
  ELSE IF patient_haq < 1.1
    SET utility = 0.6358
  ELSE IF patient_haq < 1.6
    SET utility = 0.6111
  ELSE IF patient_haq < 2.1
    SET utility = 0.4223
  ELSE IF patient_haq < 2.6
    SET utility = 0.237
  ELSE
    SET utility = 0.2245
ELSE IF HAQ_utility_algorithm = 17
  IF patient_haq < 0.6
    SET utility = 0.7459
  ELSE IF patient_haq < 1.1
    SET utility = 0.6491
  ELSE IF patient_haq < 1.6
    SET utility = 0.4692
  ELSE IF patient_haq < 2.1
    SET utility = 0.4419
  ELSE IF patient_haq < 2.6
    SET utility = 0.2556
  ELSE
    SET utility = 0.2538
ELSE IF HAQ_utility_algorithm = 18
  IF patient_haq < 0.25
    SET utility = 0.857
  ELSE IF patient_haq < 0.5
    SET utility = 0.803
  ELSE IF patient_haq < 0.75
```

```
    SET utility = 0.762
ELSE IF patient_haq < 1
    SET utility = 0.713
ELSE IF patient_haq < 1.25
    SET utility = 0.657
ELSE IF patient_haq < 1.5
    SET utility = 0.59
ELSE IF patient_haq < 1.75
    SET utility = 0.511
ELSE IF patient_haq < 2
    SET utility = 0.427
ELSE IF patient_haq < 2.25
    SET utility = 0.333
ELSE IF patient_haq < 2.5
    SET utility = 0.229
ELSE IF patient_haq < 2.75
    SET utility = 0.12
ELSE
    SET utility = 0.034
ELSE IF HAQ_utility_algorithm = 19
    IF patient_haq < 0.25
        SET utility = 0.86
    ELSE IF patient_haq < 0.5
        SET utility = 0.8
    ELSE IF patient_haq < 0.75
        SET utility = 0.76
    ELSE IF patient_haq < 1
        SET utility = 0.71
    ELSE IF patient_haq < 1.25
        SET utility = 0.66
    ELSE IF patient_haq < 1.5
        SET utility = 0.59
    ELSE IF patient_haq < 1.75
        SET utility = 0.51
    ELSE IF patient_haq < 2
        SET utility = 0.43
    ELSE IF patient_haq < 2.25
        SET utility = 0.33
    ELSE IF patient_haq < 2.5
        SET utility = 0.23
    ELSE IF patient_haq < 2.75
        SET utility = 0.12
    ELSE
        SET utility = 0.03
ELSE IF HAQ_utility_algorithm = 20
    IF patient_haq < 0.1
        SET utility = 0.819
    ELSE IF patient_haq < 1
        SET utility = 0.6682
    ELSE IF patient_haq < 2
        SET utility = 0.454
```



```

ELSE
  SET utility = 0.192
ELSE IF HAQ_utility_algorithm = 21
  SET utility = 0.914
  SET utility = utility-[0.084*patient_haq]
  SET utility = utility-[0.045*[patient_haq^2]]
  SET utility = utility-[0.478*[patient_vas/100]]
  SET utility = utility+[0.019*[[patient_age-54.32]/10]]
  SET utility = utility+[0.005*[[[patient_age-54.32]/10]^2]]
  SET utility = utility-[0.046*patient_male]
  SET utility = utility+[0.028+0.01]
ELSE IF HAQ_utility_algorithm = 22
  SET utility = 1.013
  SET utility = utility-[0.165*patient_haq]
  SET utility = utility-[0.022*[patient_haq^2]]
  SET utility = utility-[0.499*[patient_vas/100]]
  SET utility = utility+[0.018*[[patient_age-54.32]/10]]
  SET utility = utility+[0.007*[[[patient_age-54.32]/10]^2]]
  SET utility = utility-[0.047*patient_male]
  SET utility = utility+[0.032+0.012]
  IF utility > 1
    SET utility = 1
  ELSE
    SET utility = utility
ELSE IF HAQ_utility_algorithm = 23
  SET utility = 0.967
  SET utility = utility-[0.115*patient_haq]
  SET utility = utility-[0.036*[patient_haq^2]]
  SET utility = utility-[0.484*[patient_vas/100]]
  SET utility = utility+[0.019*[[patient_age-54.32]/10]]
  SET utility = utility+[0.006*[[[patient_age-54.32]/10]^2]]
  SET utility = utility-[0.047*patient_male]
  SET utility = utility+[0.03+0.011]
  IF utility > 0.883
    SET utility = 1
  ELSE
    SET utility = utility
ELSE IF HAQ_utility_algorithm = 24
  'a
  SET utility_a = 0.343
  SET utility_a = utility_a-[0.062*patient_haq]
  SET utility_a = utility_a-[0.295*[patient_vas/100]]
  SET utility_a = utility_a+[0.007*[[patient_age-54.32]/10]]
  SET utility_a = utility_a+[0.004*[[[patient_age-54.32]/10]^2]]
  SET utility_a = utility_a-[0.012*patient_male]
  SET utility_a = utility_a+[0.015+0.002]
  'b
  SET utility_b = 0.99
  SET utility_b = utility_b-[0.245*patient_haq]
  SET utility_b = utility_b-[0.068*[patient_haq^2]]
  SET utility_b = utility_b-[0.105*[patient_vas/100]]

```

```

SET utility_b = utility_b+[0.007*[[patient_age-54.32]/10]]
SET utility_b = utility_b+[0.004*[[[patient_age-54.32]/10]^2]]
SET utility_b = utility_b-[0.012*patient_male]
SET utility_b = utility_b+[0.006+0.002]
'c
SET utility_c = 0.806
SET utility_c = utility_c-[0.16*patient_haq]
SET utility_c = utility_c-[0.025*[patient_haq^2]]
SET utility_c = utility_c-[0.056*[patient_vas/100]]
SET utility_c = utility_c+[0.007*[[patient_age-54.32]/10]]
SET utility_c = utility_c+[0.004*[[[patient_age-54.32]/10]^2]]
SET utility_c = utility_c-[0.012*patient_male]
SET utility_c = utility_c+[0.003+0.002]
'j
SET prob_j = EXP[[[0-5.201]+[2.868*patient_haq]]+[5.179*[patient_vas/100]]]
'k
SET prob_k = EXP[[2.203+[0.485*patient_haq]]-[11.366*[patient_vas/100]]]
'l
SET prob_l = EXP[[1+[1*patient_haq]]+[1*[patient_vas/100]]]
SET prob_sum = [prob_j+prob_k]+prob_l
SET prob_j = prob_j/prob_sum
SET prob_k = prob_k/prob_sum
SET prob_l = prob_l/prob_sum
SET utility = [[utility_a*prob_j]+[utility_b*prob_k]]+[utility_c*prob_l]
IF utility > 0.883
  SET utility = 1
ELSE
  SET utility = utility
ELSE IF HAQ_utility_algorithm = 25
'a
SET utility_a = 0.8141
SET utility_a = utility_a-[0.0898*patient_haq]
SET utility_a = utility_a+[0.0005*[patient_haq^2]]
SET utility_a = utility_a-[0.058*[patient_vas/100]]
SET utility_a = utility_a+[0.0049*[[patient_age-62.82]/10]]
SET utility_a = utility_a+[0.0003*[[[patient_age-62.82]/10]^2]]
SET utility_a = utility_a-[0.0265*patient_male]
SET utility_a = utility_a+[0.0025+0.0026]
'b
SET utility_b = 0.4266
SET utility_b = utility_b+[0.0544*patient_haq]
SET utility_b = utility_b-[0.0509*[patient_haq^2]]
SET utility_b = utility_b-[0.3841*[patient_vas/100]]
SET utility_b = utility_b+[0.0291*[[patient_age-62.82]/10]]
SET utility_b = utility_b+[0.0023*[[[patient_age-62.82]/10]^2]]
SET utility_b = utility_b-[0.0265*patient_male]
SET utility_b = utility_b+[0.024+0.0026]
'c
SET utility_c = 0.3297
SET utility_c = utility_c-[0.1415*patient_haq]
SET utility_c = utility_c+[0.0155*[patient_haq^2]]

```

```

SET utility_c = utility_c-[0.0839*[patient_vas/100]]
SET utility_c = utility_c+[0.0037*[[patient_age-62.82]/10]]
SET utility_c = utility_c+[0.0007*[[[patient_age-62.82]/10]^2]]
SET utility_c = utility_c-[0.0265*patient_male]
SET utility_c = utility_c+[0.0022+0.0026]
'd
SET utility_d = 1.022
SET utility_d = utility_d-[0.1958*patient_haq]
SET utility_d = utility_d+[0.0347*[patient_haq^2]]
SET utility_d = utility_d-[0.0127*[patient_vas/100]]
SET utility_d = utility_d-[0.0043*[[patient_age]/10]]
SET utility_d = utility_d+[0.0002*[[[patient_age]/10]^2]]
SET utility_d = utility_d-[0.0265*patient_male]
SET utility_d = utility_d+[0.0044+0.0026]
'j
SET prob_j = EXP[[[0-1.2746]+[0.242*patient_haq]]+[23.4673*[patient_vas/100]]]-
[21.5513*[[patient_vas/100]^2]]]
'k
SET prob_k = EXP[[[0-6.631]+[2.1936*patient_haq]]+[18.3719*[patient_vas/100]]]-
[13.8001*[[patient_vas/100]^2]]]
'l
SET prob_l = EXP[[[0-7.4768]+[1.0517*patient_haq]]+[25.3396*[patient_vas/100]]]-
[16.9622*[[patient_vas/100]^2]]]
'm
SET prob_m = 1
SET prob_sum = [[prob_j+prob_k]+prob_l]+prob_m
SET prob_j = prob_j/prob_sum
SET prob_k = prob_k/prob_sum
SET prob_l = prob_l/prob_sum
SET prob_m = prob_m/prob_sum
SET utility = [[utility_a*prob_j]+[utility_b*prob_k]]+[utility_c*prob_l]]+[utility_d*prob_m]

```

