

# Calculating comorbidities from medical codes

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## AHRQ comorbidity classification

The AHRQ keeps an updated version of the Elixhauser classification of ICD-9-CM and ICD-10-CM codes into comorbidities. They provide the data in the form of SAS code. The names of the comorbidities derived from ICD-9 and ICD-10 codes are the same. Maps contain the ICD code to comorbidity mappings; the functions that apply those mappings are called things like `icd10_comorbid_ahrq`.

```
#icd9_map_ahrq <- icd:::sas_parse_ahrq() # user doesn't need to do this
names(icd9_map_ahrq)
#> [1] "CHF"           "Valvular"      "PHTN"          "PVD"
#> [5] "HTN"           "HTNcx"         "Paralysis"     "NeuroOther"
#> [9] "Pulmonary"    "DM"            "DMcx"          "Hypothyroid"
#> [13] "Renal"         "Liver"         "PUD"           "HIV"
#> [17] "Lymphoma"     "Mets"          "Tumor"         "Rheumatic"
#> [21] "Coagulopathy" "Obesity"       "WeightLoss"   "FluidsLytes"
#> [25] "BloodLoss"    "Anemia"        "Alcohol"       "Drugs"
#> [29] "Psychoses"    "Depression"
icd9_map_ahrq$CHF[1:5]
#> [1] "39891" "40201" "40211" "40291" "40401"
#> attr(,"icd_short_diag")
#> [1] TRUE
#> attr("class")
#> [1] "icd9"      "character"
icd10_map_ahrq$CHF[1:5]
#> [1] "I0981" "I501" "I5020" "I5021" "I5022"
#> attr(,"icd_short_diag")
#> [1] TRUE
#> attr("class")
#> [1] "icd10"    "character"
```

## Quan

Quan's paper looked at indices using both ICD-10 and ICD-9-CM. Quan generated updated ICD-9-CM codes for all 30 of Elixhauser and all 17 of Charlson/Deyo's comorbidities. Thus there are two 'Quan' comorbidity mappings.

```
names(icd10_map_quan_deyo)
#> [1] "MI"           "CHF"           "PVD"           "Stroke"        "Dementia"
#> [6] "Pulmonary"    "Rheumatic"     "PUD"           "LiverMild"     "DM"
#> [11] "DMcx"         "Paralysis"     "Renal"         "Cancer"        "LiverSevere"
#> [16] "Mets"         "HIV"
names(icd10_map_quan_elix)
#> [1] "CHF"           "Arrhythmia"    "Valvular"      "PHTN"
#> [5] "PVD"           "HTN"           "HTNcx"         "Paralysis"
#> [9] "NeuroOther"    "Pulmonary"     "DM"            "DMcx"
#> [13] "Hypothyroid"  "Renal"         "Liver"         "PUD"
#> [17] "HIV"          "Lymphoma"      "Mets"          "Tumor"
```

```
#> [21] "Rheumatic"      "Coagulopathy"  "Obesity"       "WeightLoss"  
#> [25] "FluidsLytes"   "BloodLoss"     "Anemia"        "Alcohol"  
#> [29] "Drugs"         "Psychoses"     "Depression"
```