

Preliminary Analysis of ANZDATA - Experiment Report

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1 Introduction

For the past 31 years, the Australia and New Zealand governments have funded a registry that records the incidence, prevalence and outcome of dialysis and transplant treatment for patients with end stage renal failure: the ANZDATA registry (Australia and New Zealand Dialysis and Transplant Registry). The ANZDATA registry contains a wealth of information on kidney disease treatment and progression in Australia and New Zealand renal disease patients. Appendix A introduces the dataset of ANZDATA used in this report. Interested readers may find how ANZDATA has been used by others (McDonald et al., 2002; Lim et al., 2005)

This report comprises a collection of experiments of applying data mining to ANZDATA. In Section 2 presents the result of applying decision tree, emerging patterns (EP) and temporal ARs mining, and Section 3 reports the result of association rules mining on ANZDATA.

2 Experiment I - Cardiovascular Death

The task of this experiment is to find the risk factors of cardiovascular death. At the beginning, two mining algorithms – REP Tree (Quinlan, 1992) and emergent pattern (EP) Miner (Ramamohanarao and Bailey, 2003; Ramamohanarao et al., 2005) – were used to have a quick analyze. All the different records of each patient are aggregated into one record regardless the temporal information. Variables are selected and expanded with little domain knowledge. As long as the variable is not totally irrelevant to cardiovascular death, it is kept in the transformed data otherwise it is removed. For example, the variable ‘total’ which means the total records of a patient is removed because it is only a redundant tag.

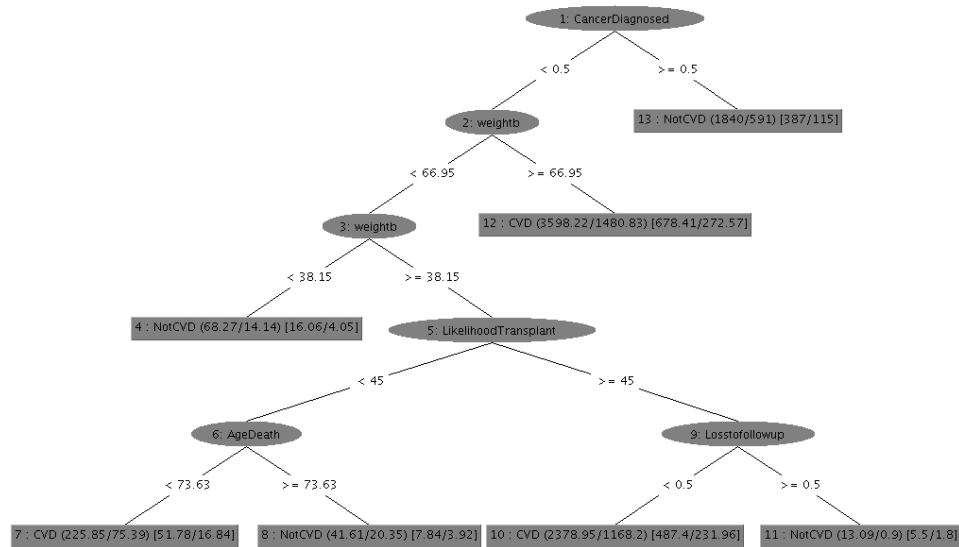


Figure 1: The result of REP Tree classifies cardiovascular death in ANZ-DATA.

The result of REP decision tree is shown in Fig. 1. There is a strong predictor showing that when patients ever have cancer diagnosed, they are less likely to die of cardiovascular disease (CVD). When the weight is less than 38.15kg, they are less likely to die of CVD. On the other hand, if weight is more than 66.95kg, they are more likely to die of CVD. When the weight is between 38.15kg to 66.95kg, the likelihood of transplant becomes an influential predictor. This result should be analyzed more deeply before becoming more meaningful. For example, ‘are patients children or underweight when they weight less than 38.15kg?’

Secondly, we applied EP Miner to the CardiovascularDeath class and two rules were mined:

- no CancerEverDiagnosed AND no RefluxNephropathy AND no AnalgesicNephropathy AND no LungDisease AND no Graft AND no LossFollowUp AND Height \geq 1.512. 58% correct.
- no CancerEverDiagnosed AND no RefluxNephropathy AND no AnalgesicNephropathy AND no Transplant AND no LungDisease AND no LossFollowUp AND Height \geq 1.512. 58% correct.

It shares the variable: CancerEverDiagnosed with the result of REP Tree.

Thirdly, in addressing the temporal aspect of data, we tried a temporal association miner. We implemented the algorithm of Winarko and Roddick (2005), applied it to the ANZDATA, and the result is shown below. The threshold of support and confidence is set to 30% and 70% respectively.

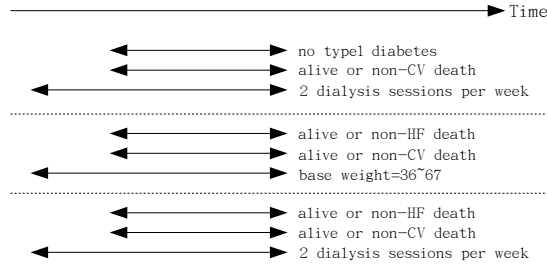


Figure 2: Result of temporal association rules

1. IF [no type1 diabetes] is finished by [2 dialysis sessions per week], THEN it is highly likely that [no type1 diabetes] equals [Alive or non-CV death] will also occur.
2. IF [Alive or Non-HF death] is finished by [Base weight=36 67], THEN it is highly likely that [Alive or Non-HF death] equals [Alive or non-CV death] will also occur.
3. IF [Alive or Non-HF death] is finished by [2 dialysis sessions per week], THEN it is highly likely that [Alive or Non-HF death] equals [Alive or non-CV death] will also occur.

An illustration of this result is shown if Fig. 2. However this result is meaningless due to the overlapping meaning of variables. For example [Alive or Non-HF death] is similar to [Alive or non-CV death]. This experiment indicates that either the temporal association miner by Winarko and Roddick (2005) is improper for ANZDATA or the data has to be preprocessed and transformed into proper format. Furthermore, there are many concepts could not be represented by this algorithm such as the change of status in time. For example, the concept of ‘becoming obese in aging’ could not be represented.

2.1 Discussion

This experiment reveals the insufficiency of DM without temporal concepts, for example there is an association in the DM result: ‘*patients who do not receive renal transplant are highly likely to die of cardiovascular disease (CVD).*’ However, this association overlook the temporal concepts which are necessary for making more correct judgement such as *diagnosed, before, after* and so on. For example this association would be more precise and interesting like this: ‘*patients who are diagnosed with cardiovascular disease are highly likely to die of cardiovascular disease without receiving renal transplant.*’ or ‘*patients who are not diagnosed with cardiovascular disease are highly likely to die of cardiovascular disease after receiving renal transplant.*’

Feedback from a nephrologist

The nephrologist, Dr. Paizis, commented on the results of REP decision tree and EP Miner and some of it is listed below.

- NoCancer→CardiovascularDeath
According to the expert, people who have cancer usually die of cancer.
- NoTransplant→CardiovascularDeath
For patients who do not receive transplant, they usually are very sick and some of them may have cardiovascular disease.
- NoRefluxNephropathy→CardiovascularDeath
For patients who have RefluxNephropathy they are usually younger and have less cardiovascular disease.
- NoAnalgesicNephropathy→CardiovascularDeath
This violates the normal knowledge because analgesic nephropathy is a risk factor of cardiovascular disease.
- (BodyMassIndex=18~37)→CardiovascularDeath
BMI=18~37 is meaningless because most people fall within this range.

3 Experiment II - Association Rules

First, we briefly introduce association rules. In earlier research, association rules are defined over binary attributes mainly from databases of customer transactions (basket data), e.g. in (Agrawal et al., 1993). Later, association rules are also generalised to categorical attributes where the basic unit, an item, is defined as an attribute-value pair.

Let $\{A, v\}$ be an attribute-value pair of attribute= A and value= v ; and an item \mathbf{I} is an attribute-value pair: $\mathbf{I} = \{A, v\}$. A set of items, e.g. $\{\mathbf{I}_1, \mathbf{I}_2, \dots, \mathbf{I}_k\}$, is called an itemset. Then the frequent itemset is defined as:

Definition 1 (Frequent Itemset). We say an itemset $\mathcal{I} = \{\mathbf{I}_1, \mathbf{I}_2, \dots, \mathbf{I}_k\}$ is a frequent itemset if the joint probability of the items \mathbf{I}_1 to \mathbf{I}_k is greater or equal than a threshold:

$$P(\mathbf{I}_1, \mathbf{I}_2, \dots, \mathbf{I}_k) \geq \text{minsupp}.$$

We call the joint probability $P(\mathcal{I})$ of the itemset as **support**.

For example, $\mathcal{I} = \{Diabetes = Type1, Cancer = NO\}$ is an itemset, and if the support of \mathcal{I} is greater than the adjustable threshold minsupp , then \mathcal{I} is a frequent itemset. Based on itemsets, association rules are defined as:

Definition 2 (Association Rules). An association rule is composed of an itemset on the left-hand-side and another item on the right-hand-side; let \mathcal{A} and \mathbf{B} be two distinct itemsets/item, its rule is written in the format $\mathcal{A} \longrightarrow \mathbf{B}$ which satisfies:

$$P(\mathbf{B}|\mathcal{A}) \geq \text{minconf};$$

$$P(\mathbf{B}, \mathcal{A}) \geq \text{minsupp}.$$

We call the conditional probability $P(\mathbf{B}|\mathcal{A})$ of the rule as **confidence**.

For example,

$$\{\text{Diabetes} = \text{Type1}, \text{Cancer} = \text{NO}\} \longrightarrow \text{Smoke} = \text{Never}$$

is a rule where $\mathcal{A} = \{\text{Diabetes} = \text{Type1}, \text{Cancer} = \text{NO}\}$ and $\mathbf{B} = \{\text{Smoke} = \text{Never}\}$.

We implemented codes for association rule mining and applied it to the ANZDATA. There are 27,520 rules mined under minimum *support* = 0.1 and *confidence* = 0.6; some of the rules are listed in Appendix B. Unsurprisingly, the enormous number of rules is too large to be completely inspected by the expert. Therefore, it has little value from the user's perspective.

References

- R. Agrawal, T. Imielinski, and A. Swami. Mining association rules between sets of items in large databases. In *19 ACM SIGMOD Conference on the Management of Data*, 1993.
- L. Haysom, R. Williams, E. Hodson, P. Lopez-Vargas, L. P. Roy, D. Lyle, and J. C. Craig. Diagnostic accuracy of urine dipsticks for detecting albuminuria in indigenous and non-indigenous children in a community setting. *Pediatric Nephrology*, 24(2):323–331, 2009.
- W. H. Lim, D. W. Johnson, and S. P. McDonald. Higher rate and earlier peritonitis in aboriginal patients compared to non-aboriginal patients with end-stage renal failure maintained on peritoneal dialysis in australia: Analysis of anzdata. *Nephrology*, 10(2):192–197, 2005.
- S. McDonald, G. Russ, P. Kerr, and J. Collins. Esrd in australia and new zealand at the end of the millennium: a report from the anzdata registry. *American Journal of Kidney Disease*, 40(6):1121–1131, 2002.
- J. R. Quinlan. Learning with continuous classes. In *5th Australian Joint Conference on Artificial Intelligence*, pages 343–348, 1992.

- K. Ramamohanarao and J. Bailey. Discovery of emerging patterns and their use in classification. In T. D. Gedeon and L. C. C. Fung, editors, *Australian Conference on Artificial Intelligence*, volume 2903 of *Lecture Notes in Computer Science*, pages 1–12. Springer, 2003.
- K. Ramamohanarao, J. Bailey, and H. Fan. Efficient mining of contrast patterns and their applications to classification. In *Intelligent Sensing and Information Processing, ICISIP*, 2005.
- E. Winarko and J. F. Roddick. Discovering richer temporal association rules from interval-based data. In A. M. Tjoa and J. Trujillo, editors, *DaWaK*, volume 3589 of *Lecture Notes in Computer Science*, pages 315–325. Springer, 2005.

A Dataset

The dataset, a snapshot from the database, records some 96 attributes on each patient, including demographic, clinical and physiological data, on a yearly basis; 19,219 patients are represented for a total of 217,803 records. The 96 variables can be categorized into 7 types: record tags, clinical attributes, clinical findings, procedure, disease/syndrome, behavior, or health care activity (as listed in Tables 1 and 2). In the data, the median age at commencement of dialysis and transplant treatment was 58.12 years, and the age range 0 to 97 years; 57% patients were male and the other 43% were female. 23.7% of patients had diabetic nephropathy attributed as their cause of end stage renal failure, 31.2% had glomerulonephritis, 11.5% renovascular disease, and 6.5% polycystic kidney disease. Additionally, as each patient is likely to have multiple entries, further information is implicitly encoded in the progression of time variant attributes. The dataset also contains a large percentage of missing values. Among all the 217,803 records of 19,219 patient, 44% entries are either missing or ‘not available’ and 13.6% entries are time varying.

The attributes in the dataset are either categorical or numerical, and some of the categorical attributes encode rich terminologies, and potentially knowledge, in their values: for example, the allowable values of the `TreatmentModality` attribute are: [1=Haemodialysis; 2=Peritoneal dialysis; 3=Transplant(Graft); 4=Return of native function; 5=Loss to follow up]. A fragment of the values in ANZDATA is shown in Table 3.

Table 1: Variables of ANZDATA (Part I).

Class	Attribute(s)	Definition
Record Tag	roberts.id	Individual identification number.
	merge	Results of latest merge.
	sequence	Sequence of entries.
	surveydate	Date of entry of information.
	total	Total number of entries.
Clinical Attribute	agedeath,ageabsdeath	Age at death (2 variables).
	agequart	Quartiles of age for patients.
	agestart	Age at first dialysis.
	bmib	Body mass index.
	dryweight,weightb	Weight in kg. (2 variables).
	esrdstart	Date of commencement of renal replacement therapy.
	height	Height at entry in meters.
	race,raceb,raceothr	Race origin (3 variables).
	referral,referralb	Late referral (2 variables)
sex	Gender.	
Finding	allddeath	All-cause mortality.
	cancdiag,cancdiagb	Cancer ever diagnosed (2 variables).
	carddeath	Cardiac death.
	causdeth,caudethb,dethothr	Cause of death (3 variables).
	circdeath	Circulatory death.
	cvdeath	Cardiovascular death.
	disease,diseaseb,disothr	Cause of ESRD (3 variables).
	graftsus,graftsusb	Graft function at time of death (2 variables).
	failcard	Death from cardiac causes.
	failcirc	Death from circulatory causes.
	failcvd	Death from CVD causes.
	failhf	Death from heart failure.
	failmi	Death from myocardial infarction.
	ureat	Urea reduction ratio at time of survey.
	datbirth	Date of birth.
	dod	Date of death

Table 2: Variables of ANZDATA (Part II).

Class	Attribute(s)	Definition
Procedure	biopsy,biopsyb	Renal biopsy (2 variables).
	firstaccess,firstaccessb	Dialysis access used at first haemodialysis (2 variables).
	flowrate,flowratet	Dialysis pump speed in ml/min at time of survey.
	frequencyt	Dialysis sessions per week.
	hourspwt,hourst	Dialysis hours per week at time of survey.
	ktvhdt	Dialysis Kt/V at time of survey.
	ktvpdt	Peritoneal dialysis Kt/V at time of survey.
	present,presentt	Current dialysis access.
	pett	PET test at time of survey.
Disease or Syndrome	cadb,cadsb,coronary	Coronary artery disease (3 variables).
	cvd,cvdb,cvdsb	Cerebrovascular disease (3 variables).
	diabetes,diabetesb	Diabetes (2 variables including type I and II).
	diabetes1	Type I diabetes.
	diabetes2	Type II diabetes.
	diabetesi	Diabetes, insulin requiring
	ht,hypertension	Hypertension requiring treatment (2 variables).
	lung,lungb,lungsb	Chronic lung disease (3 variables).
	pvd,pvdb,pvdsb	Peripheral vascular disease (3 variables).
vascdsb,vascdsb	Any vascular disease (2 variables).	
Behavior	cig,ciga,cigc	Smoking (3 variables).
Activity	modality	Treatment modality.
	likelihood	Likelihood of transplant.
	txwlcat,waiting	Transplant waiting list status (2 variables).

roberts.id	merge	sequence	surveydate	total	agedeath
117217 to 917227	only in master data, ...	1,2,3, ...	11566 to 15429	2 to 45	0.49 to 96.66
agequart	agestart	bmib	dryweight	esrdstart	height
0,1,2,3	0.01 to 97.03	1.85 to 76.38	5 to 198.16	11566 to 15429	0.47 to 2.03
raceb	referralb	sex	allddeath	cancdiag	cardeath
Caucasoid, Asian, ...	Not..., Lat- eReferral	Female, Male	Alive, De- ceased	N,Y	AliveorNo, Yes
causdethb	circdeath	cvdeath	diseaseb	graftsus	failcard
Cardio- vascular, Malign- ancy, ..., Other	AliveorNo, Yes	AliveorNo, Yes	Diabetes, Polyc- sticKD, GN, ..., Other	Y,N	0 to 6 (fail-circ, -cvd, -hf, -mi have the same values)
ureat	datbirth	dod	biopsy	firstaccess	flowrate
15 to 99	-20080 to 15250	11584 to 16161	NoBiopsy, Under- went Renal Biopsy	1,2,3,4	95 to 500

Table 3: Fragment of the values of part of ANZDATA.

B Excerpt of Mined Association Rules

There are 27,520 rules mined given minimum *support* = 0.1 and *confidence* = 0.6. Part of the rules, which have at least *support* = 0.6 and *confidence* = 0.8, are listed below.

cancer=N → cerebrovascular=No, supp=0.79, conf=0.90
cancer=N → ESRD-Analgesicnephropathy=No, supp=0.79, conf=0.95
cancer=N → ESRD-PolycsticKD=No, supp=0.79, conf=0.94
cancer=N → ESRD-RefluxNephropathy=No, supp=0.79, conf=0.95
cancer=N → ESRD-Renovascular=No, supp=0.79, conf=0.88
cancer=N → hypertension=Yes, supp=0.79, conf=0.80
cancer=N → lungDisease=No, supp=0.79, conf=0.89
cancer=N → pvDisease=No, supp=0.79, conf=0.81
cerebrovascular=No → ESRD-Analgesicnephropathy=No, supp=0.90, conf=0.95
cerebrovascular=No → ESRD-PolycsticKD=No, supp=0.90, conf=0.93
cerebrovascular=No → ESRD-RefluxNephropathy=No, supp=0.90, conf=0.95
cerebrovascular=No → ESRD-Renovascular=No, supp=0.90, conf=0.90
cerebrovascular=No → lungDisease=No, supp=0.90, conf=0.90
cerebrovascular=No → pvDisease=No, supp=0.90, conf=0.85
diabetes=No → cerebrovascular=No, supp=0.69, conf=0.92
diabetes=No → ESRD-Analgesicnephropathy=No, supp=0.69, conf=0.93
diabetes=No → ESRD-Diabetes=No, supp=0.69, conf=1.00
diabetes=No → ESRD-PolycsticKD=No, supp=0.69, conf=0.91
diabetes=No → ESRD-RefluxNephropathy=No, supp=0.69, conf=0.93
diabetes=No → ESRD-Renovascular=No, supp=0.69, conf=0.86
diabetes=No → lungDisease=No, supp=0.69, conf=0.89
diabetes=No → pvDisease=No, supp=0.69, conf=0.88
diabetes=No → race=Caucasoid, supp=0.69, conf=0.85
ESRD-Analgesicnephropathy=No → cancer=N, supp=0.95, conf=0.80
ESRD-Analgesicnephropathy=No → cerebrovascular=No, supp=0.95, conf=0.91
ESRD-Analgesicnephropathy=No → ESRD-PolycsticKD=No, supp=0.95, conf=0.93
ESRD-Analgesicnephropathy=No → ESRD-RefluxNephropathy=No, supp=0.95, conf=0.95
ESRD-Analgesicnephropathy=No → ESRD-Renovascular=No, supp=0.95, conf=0.88
ESRD-Analgesicnephropathy=No → lungDisease=No, supp=0.95, conf=0.90
ESRD-Analgesicnephropathy=No → pvDisease=No, supp=0.95, conf=0.82
ESRD-Diabetes=No → cerebrovascular=No, supp=0.76, conf=0.91
ESRD-Diabetes=No → diabetes=No, supp=0.76, conf=0.90
ESRD-Diabetes=No → ESRD-Analgesicnephropathy=No, supp=0.76, conf=0.93
ESRD-Diabetes=No → ESRD-PolycsticKD=No, supp=0.76, conf=0.91
ESRD-Diabetes=No → ESRD-RefluxNephropathy=No, supp=0.76, conf=0.94
ESRD-Diabetes=No → ESRD-Renovascular=No, supp=0.76, conf=0.85
ESRD-Diabetes=No → lungDisease=No, supp=0.76, conf=0.89
ESRD-Diabetes=No → pvDisease=No, supp=0.76, conf=0.87
ESRD-Diabetes=No → race=Caucasoid, supp=0.76, conf=0.83

ESRD-GN=No → cerebrovascular=No, supp=0.69, conf=0.88
 ESRD-GN=No → ESRD-Analgesicnephropathy=No, supp=0.69, conf=0.92
 ESRD-GN=No → ESRD-PolycsticKD=No, supp=0.69, conf=0.91
 ESRD-GN=No → ESRD-RefluxNephropathy=No, supp=0.69, conf=0.93
 ESRD-GN=No → ESRD-Renovascular=No, supp=0.69, conf=0.83
 ESRD-GN=No → lungDisease=No, supp=0.69, conf=0.88
 ESRD-PolycsticKD=No → cerebrovascular=No, supp=0.93, conf=0.90
 ESRD-PolycsticKD=No → ESRD-Analgesicnephropathy=No, supp=0.93, conf=0.94
 ESRD-PolycsticKD=No → ESRD-RefluxNephropathy=No, supp=0.93, conf=0.95
 ESRD-PolycsticKD=No → ESRD-Renovascular=No, supp=0.93, conf=0.88
 ESRD-PolycsticKD=No → lungDisease=No, supp=0.93, conf=0.89
 ESRD-PolycsticKD=No → pvDisease=No, supp=0.93, conf=0.80
 ESRD-RefluxNephropathy=No → cerebrovascular=No, supp=0.95, conf=0.90
 ESRD-RefluxNephropathy=No → ESRD-Analgesicnephropathy=No, supp=0.95, conf=0.94
 ESRD-RefluxNephropathy=No → ESRD-PolycsticKD=No, supp=0.95, conf=0.93
 ESRD-RefluxNephropathy=No → ESRD-Renovascular=No, supp=0.95, conf=0.88
 ESRD-RefluxNephropathy=No → hypertension=Yes, supp=0.95, conf=0.80
 ESRD-RefluxNephropathy=No → lungDisease=No, supp=0.95, conf=0.89
 ESRD-RefluxNephropathy=No → pvDisease=No, supp=0.95, conf=0.81
 ESRD-Renovascular=No → cerebrovascular=No, supp=0.88, conf=0.92
 ESRD-Renovascular=No → ESRD-Analgesicnephropathy=No, supp=0.88, conf=0.94
 ESRD-Renovascular=No → ESRD-PolycsticKD=No, supp=0.88, conf=0.93
 ESRD-Renovascular=No → ESRD-RefluxNephropathy=No, supp=0.88, conf=0.95
 ESRD-Renovascular=No → lungDisease=No, supp=0.88, conf=0.90
 ESRD-Renovascular=No → pvDisease=No, supp=0.88, conf=0.84
 frequency=3 → cerebrovascular=No, supp=0.64, conf=0.91
 frequency=3 → ESRD-Analgesicnephropathy=No, supp=0.64, conf=0.95
 frequency=3 → ESRD-PolycsticKD=No, supp=0.64, conf=0.93
 frequency=3 → ESRD-RefluxNephropathy=No, supp=0.64, conf=0.95
 frequency=3 → ESRD-Renovascular=No, supp=0.64, conf=0.89
 frequency=3 → hypertension=Yes, supp=0.64, conf=0.81
 frequency=3 → lungDisease=No, supp=0.64, conf=0.89
 frequency=3 → pvDisease=No, supp=0.64, conf=0.83
 hypertension=Yes → cancer=N, supp=0.80, conf=0.80
 hypertension=Yes → cerebrovascular=No, supp=0.80, conf=0.90
 hypertension=Yes → ESRD-Analgesicnephropathy=No, supp=0.80, conf=0.95
 hypertension=Yes → ESRD-PolycsticKD=No, supp=0.80, conf=0.93
 hypertension=Yes → ESRD-RefluxNephropathy=No, supp=0.80, conf=0.96
 hypertension=Yes → ESRD-Renovascular=No, supp=0.80, conf=0.87
 hypertension=Yes → lungDisease=No, supp=0.80, conf=0.89
 hypertension=Yes → pvDisease=No, supp=0.80, conf=0.81
 lungDisease=No → cerebrovascular=No, supp=0.89, conf=0.91
 lungDisease=No → ESRD-Analgesicnephropathy=No, supp=0.89, conf=0.95

lungDisease=No → ESRD-PolycsticKD=No, supp=0.89, conf=0.93
 lungDisease=No → ESRD-RefluxNephropathy=No, supp=0.89, conf=0.95
 lungDisease=No → ESRD-Renovascular=No, supp=0.89, conf=0.89
 lungDisease=No → pvDisease=No, supp=0.89, conf=0.83
 pvDisease=No → cerebrovascular=No, supp=0.81, conf=0.94
 pvDisease=No → ESRD-Analgesicnephropathy=No, supp=0.81, conf=0.95
 pvDisease=No → ESRD-Diabetes=No, supp=0.81, conf=0.81
 pvDisease=No → ESRD-PolycsticKD=No, supp=0.81, conf=0.92
 pvDisease=No → ESRD-RefluxNephropathy=No, supp=0.81, conf=0.94
 pvDisease=No → ESRD-Renovascular=No, supp=0.81, conf=0.91
 pvDisease=No → lungDisease=No, supp=0.81, conf=0.91
 race=Caucasoid → cerebrovascular=No, supp=0.76, conf=0.90
 race=Caucasoid → ESRD-Analgesicnephropathy=No, supp=0.76, conf=0.93
 race=Caucasoid → ESRD-Diabetes=No, supp=0.76, conf=0.84
 race=Caucasoid → ESRD-PolycsticKD=No, supp=0.76, conf=0.92
 race=Caucasoid → ESRD-RefluxNephropathy=No, supp=0.76, conf=0.94
 race=Caucasoid → ESRD-Renovascular=No, supp=0.76, conf=0.87
 race=Caucasoid → lungDisease=No, supp=0.76, conf=0.89
 race=Caucasoid → pvDisease=No, supp=0.76, conf=0.81
 cancer=N, cerebrovascular=No → ESRD-Analgesicnephropathy=No, supp=0.72, conf=0.96
 cancer=N, cerebrovascular=No → ESRD-PolycsticKD=No, supp=0.72, conf=0.94
 cancer=N, cerebrovascular=No → ESRD-RefluxNephropathy=No, supp=0.72, conf=0.95
 cancer=N, cerebrovascular=No → ESRD-Renovascular=No, supp=0.72, conf=0.90
 cancer=N, cerebrovascular=No → hypertension=Yes, supp=0.72, conf=0.80
 cancer=N, cerebrovascular=No → lungDisease=No, supp=0.72, conf=0.91
 cancer=N, cerebrovascular=No → pvDisease=No, supp=0.72, conf=0.84
 cancer=N, ESRD-Analgesicnephropathy=No → cerebrovascular=No, supp=0.76, conf=0.90
 cancer=N, ESRD-Analgesicnephropathy=No → ESRD-PolycsticKD=No, supp=0.76, conf=0.94
 cancer=N, ESRD-Analgesicnephropathy=No → ESRD-RefluxNephropathy=No, supp=0.76, conf=0.95
 cancer=N, ESRD-Analgesicnephropathy=No → ESRD-Renovascular=No, supp=0.76, conf=0.88
 cancer=N, ESRD-Analgesicnephropathy=No → hypertension=Yes, supp=0.76, conf=0.80
 cancer=N, ESRD-Analgesicnephropathy=No → lungDisease=No, supp=0.76, conf=0.90
 cancer=N, ESRD-Analgesicnephropathy=No → pvDisease=No, supp=0.76, conf=0.81
 cancer=N, ESRD-PolycsticKD=No → cerebrovascular=No, supp=0.75, conf=0.90
 cancer=N, ESRD-PolycsticKD=No → ESRD-Analgesicnephropathy=No, supp=0.75, conf=0.95
 cancer=N, ESRD-PolycsticKD=No → ESRD-RefluxNephropathy=No, supp=0.75, conf=0.95
 cancer=N, ESRD-PolycsticKD=No → ESRD-Renovascular=No, supp=0.75, conf=0.88

cancer=N, ESRD-PolycsticKD=No → hypertension=Yes, supp=0.75, conf=0.80
cancer=N, ESRD-PolycsticKD=No → lungDisease=No, supp=0.75, conf=0.89
cancer=N, ESRD-RefluxNephropathy=No → cerebrovascular=No, supp=0.76, conf=0.90
cancer=N, ESRD-RefluxNephropathy=No → ESRD-Analgesicnephropathy=No, supp=0.76, conf=0.95
cancer=N, ESRD-RefluxNephropathy=No → ESRD-PolycsticKD=No, supp=0.76, conf=0.94
cancer=N, ESRD-RefluxNephropathy=No → ESRD-Renovascular=No, supp=0.76, conf=0.88
cancer=N, ESRD-RefluxNephropathy=No → hypertension=Yes, supp=0.76, conf=0.81
cancer=N, ESRD-RefluxNephropathy=No → lungDisease=No, supp=0.76, conf=0.89
cancer=N, ESRD-Renovascular=No → cerebrovascular=No, supp=0.70, conf=0.92
cancer=N, ESRD-Renovascular=No → ESRD-Analgesicnephropathy=No, supp=0.70, conf=0.95
cancer=N, ESRD-Renovascular=No → ESRD-PolycsticKD=No, supp=0.70, conf=0.93
cancer=N, ESRD-Renovascular=No → ESRD-RefluxNephropathy=No, supp=0.70, conf=0.94
cancer=N, ESRD-Renovascular=No → lungDisease=No, supp=0.70, conf=0.90
cancer=N, ESRD-Renovascular=No → pvDisease=No, supp=0.70, conf=0.83
cancer=N, hypertension=Yes → cerebrovascular=No, supp=0.64, conf=0.90
cancer=N, hypertension=Yes → ESRD-Analgesicnephropathy=No, supp=0.64, conf=0.95
cancer=N, hypertension=Yes → ESRD-PolycsticKD=No, supp=0.64, conf=0.94
cancer=N, hypertension=Yes → ESRD-RefluxNephropathy=No, supp=0.64, conf=0.96
cancer=N, hypertension=Yes → ESRD-Renovascular=No, supp=0.64, conf=0.87
cancer=N, hypertension=Yes → lungDisease=No, supp=0.64, conf=0.90
cancer=N, hypertension=Yes → pvDisease=No, supp=0.64, conf=0.80
cancer=N, lungDisease=No → cerebrovascular=No, supp=0.71, conf=0.91
cancer=N, lungDisease=No → ESRD-Analgesicnephropathy=No, supp=0.71, conf=0.96
cancer=N, lungDisease=No → ESRD-PolycsticKD=No, supp=0.71, conf=0.94
cancer=N, lungDisease=No → ESRD-RefluxNephropathy=No, supp=0.71, conf=0.95
cancer=N, lungDisease=No → ESRD-Renovascular=No, supp=0.71, conf=0.89
cancer=N, lungDisease=No → hypertension=Yes, supp=0.71, conf=0.81
cancer=N, lungDisease=No → pvDisease=No, supp=0.71, conf=0.83
cancer=N, pvDisease=No → cerebrovascular=No, supp=0.64, conf=0.94
cancer=N, pvDisease=No → ESRD-Analgesicnephropathy=No, supp=0.64, conf=0.95
cancer=N, pvDisease=No → ESRD-PolycsticKD=No, supp=0.64, conf=0.93
cancer=N, pvDisease=No → ESRD-RefluxNephropathy=No, supp=0.64, conf=0.94
cancer=N, pvDisease=No → ESRD-Renovascular=No, supp=0.64, conf=0.91
cancer=N, pvDisease=No → lungDisease=No, supp=0.64, conf=0.92
cerebrovascular=No, diabetes=No → ESRD-Analgesicnephropathy=No, supp=0.63, conf=0.93
cerebrovascular=No, diabetes=No → ESRD-Diabetes=No, supp=0.63, conf=1.00
cerebrovascular=No, diabetes=No → ESRD-PolycsticKD=No, supp=0.63, conf=0.91
cerebrovascular=No, diabetes=No → ESRD-RefluxNephropathy=No, supp=0.63,

conf=0.93
 cerebrovascular=No, diabetes=No → ESRD-Renovascular=No, supp=0.63, conf=0.87
 cerebrovascular=No, diabetes=No → lungDisease=No, supp=0.63, conf=0.90
 cerebrovascular=No, diabetes=No → pvDisease=No, supp=0.63, conf=0.91
 cerebrovascular=No, diabetes=No → race=Caucasoid, supp=0.63, conf=0.84
 cerebrovascular=No, ESRD-Analgesicnephropathy=No → ESRD-PolycsticKD=No,
 supp=0.86, conf=0.93
 cerebrovascular=No, ESRD-Analgesicnephropathy=No → ESRD-RefluxNephropathy=No,
 supp=0.86, conf=0.95
 cerebrovascular=No, ESRD-Analgesicnephropathy=No → ESRD-Renovascular=No,
 supp=0.86, conf=0.89
 cerebrovascular=No, ESRD-Analgesicnephropathy=No → lungDisease=No, supp=0.86,
 conf=0.91
 cerebrovascular=No, ESRD-Analgesicnephropathy=No → pvDisease=No, supp=0.86,
 conf=0.85
 cerebrovascular=No, ESRD-Diabetes=No → diabetes=No, supp=0.70, conf=0.91
 cerebrovascular=No, ESRD-Diabetes=No → ESRD-Analgesicnephropathy=No, supp=0.70,
 conf=0.93
 cerebrovascular=No, ESRD-Diabetes=No → ESRD-PolycsticKD=No, supp=0.70,
 conf=0.91
 cerebrovascular=No, ESRD-Diabetes=No → ESRD-RefluxNephropathy=No, supp=0.70,
 conf=0.93
 cerebrovascular=No, ESRD-Diabetes=No → ESRD-Renovascular=No, supp=0.70,
 conf=0.87
 cerebrovascular=No, ESRD-Diabetes=No → lungDisease=No, supp=0.70, conf=0.90
 cerebrovascular=No, ESRD-Diabetes=No → pvDisease=No, supp=0.70, conf=0.90
 cerebrovascular=No, ESRD-Diabetes=No → race=Caucasoid, supp=0.70, conf=0.83
 cerebrovascular=No, ESRD-GN=No → ESRD-Analgesicnephropathy=No, supp=0.61,
 conf=0.92
 cerebrovascular=No, ESRD-GN=No → ESRD-PolycsticKD=No, supp=0.61, conf=0.90
 cerebrovascular=No, ESRD-GN=No → ESRD-RefluxNephropathy=No, supp=0.61,
 conf=0.92
 cerebrovascular=No, ESRD-GN=No → ESRD-Renovascular=No, supp=0.61, conf=0.85
 cerebrovascular=No, ESRD-GN=No → lungDisease=No, supp=0.61, conf=0.90
 cerebrovascular=No, ESRD-GN=No → pvDisease=No, supp=0.61, conf=0.80
 cerebrovascular=No, ESRD-PolycsticKD=No → ESRD-Analgesicnephropathy=No,
 supp=0.84, conf=0.94
 cerebrovascular=No, ESRD-PolycsticKD=No → ESRD-RefluxNephropathy=No,
 supp=0.84, conf=0.94
 cerebrovascular=No, ESRD-PolycsticKD=No → ESRD-Renovascular=No, supp=0.84,
 conf=0.89
 cerebrovascular=No, ESRD-PolycsticKD=No → lungDisease=No, supp=0.84, conf=0.90
 cerebrovascular=No, ESRD-PolycsticKD=No → pvDisease=No, supp=0.84, conf=0.84
 cerebrovascular=No, ESRD-RefluxNephropathy=No → ESRD-Analgesicnephropathy=No,

supp=0.86, conf=0.95
 cerebrovascular=No, ESRD-RefluxNephropathy=No → ESRD-PolycsticKD=No, supp=0.86, conf=0.93
 cerebrovascular=No, ESRD-RefluxNephropathy=No → ESRD-Renovascular=No, supp=0.86, conf=0.89
 cerebrovascular=No, ESRD-RefluxNephropathy=No → lungDisease=No, supp=0.86, conf=0.90
 cerebrovascular=No, ESRD-RefluxNephropathy=No → pvDisease=No, supp=0.86, conf=0.84
 cerebrovascular=No, ESRD-Renovascular=No → ESRD-Analgesicnephropathy=No, supp=0.81, conf=0.94
 cerebrovascular=No, ESRD-Renovascular=No → ESRD-PolycsticKD=No, supp=0.81, conf=0.93
 cerebrovascular=No, ESRD-Renovascular=No → ESRD-RefluxNephropathy=No, supp=0.81, conf=0.94
 cerebrovascular=No, ESRD-Renovascular=No → lungDisease=No, supp=0.81, conf=0.91
 cerebrovascular=No, ESRD-Renovascular=No → pvDisease=No, supp=0.81, conf=0.86
 cerebrovascular=No, hypertension=Yes → cancer=N, supp=0.72, conf=0.80
 cerebrovascular=No, hypertension=Yes → ESRD-Analgesicnephropathy=No, supp=0.72, conf=0.95
 cerebrovascular=No, hypertension=Yes → ESRD-PolycsticKD=No, supp=0.72, conf=0.93
 cerebrovascular=No, hypertension=Yes → ESRD-RefluxNephropathy=No, supp=0.72, conf=0.95
 cerebrovascular=No, hypertension=Yes → ESRD-Renovascular=No, supp=0.72, conf=0.89
 cerebrovascular=No, hypertension=Yes → lungDisease=No, supp=0.72, conf=0.90
 cerebrovascular=No, hypertension=Yes → pvDisease=No, supp=0.72, conf=0.84
 cerebrovascular=No, lungDisease=No → ESRD-Analgesicnephropathy=No, supp=0.81, conf=0.95
 cerebrovascular=No, lungDisease=No → ESRD-PolycsticKD=No, supp=0.81, conf=0.93
 cerebrovascular=No, lungDisease=No → ESRD-RefluxNephropathy=No, supp=0.81, conf=0.94
 cerebrovascular=No, lungDisease=No → ESRD-Renovascular=No, supp=0.81, conf=0.90
 cerebrovascular=No, lungDisease=No → pvDisease=No, supp=0.81, conf=0.86
 cerebrovascular=No, pvDisease=No → ESRD-Analgesicnephropathy=No, supp=0.76, conf=0.95
 cerebrovascular=No, pvDisease=No → ESRD-Diabetes=No, supp=0.76, conf=0.82
 cerebrovascular=No, pvDisease=No → ESRD-PolycsticKD=No, supp=0.76, conf=0.92
 cerebrovascular=No, pvDisease=No → ESRD-RefluxNephropathy=No, supp=0.76, conf=0.94
 cerebrovascular=No, pvDisease=No → ESRD-Renovascular=No, supp=0.76, conf=0.92
 cerebrovascular=No, pvDisease=No → lungDisease=No, supp=0.76, conf=0.92
 cerebrovascular=No, race=Caucasoid → ESRD-Analgesicnephropathy=No, supp=0.68, conf=0.93

cerebrovascular=No, race=Caucasoid → ESRD-Diabetes=No, supp=0.68, conf=0.85
cerebrovascular=No, race=Caucasoid → ESRD-PolycsticKD=No, supp=0.68, conf=0.92
cerebrovascular=No, race=Caucasoid → ESRD-RefluxNephropathy=No, supp=0.68, conf=0.94
cerebrovascular=No, race=Caucasoid → ESRD-Renovascular=No, supp=0.68, conf=0.89
cerebrovascular=No, race=Caucasoid → lungDisease=No, supp=0.68, conf=0.90
cerebrovascular=No, race=Caucasoid → pvDisease=No, supp=0.68, conf=0.85
diabetes=No, ESRD-Analgesicnephropathy=No → cerebrovascular=No, supp=0.64, conf=0.92
diabetes=No, ESRD-Analgesicnephropathy=No → ESRD-Diabetes=No, supp=0.64, conf=1.00
diabetes=No, ESRD-Analgesicnephropathy=No → ESRD-PolycsticKD=No, supp=0.64, conf=0.90
diabetes=No, ESRD-Analgesicnephropathy=No → ESRD-RefluxNephropathy=No, supp=0.64, conf=0.93
diabetes=No, ESRD-Analgesicnephropathy=No → ESRD-Renovascular=No, supp=0.64, conf=0.84
diabetes=No, ESRD-Analgesicnephropathy=No → lungDisease=No, supp=0.64, conf=0.90
diabetes=No, ESRD-Analgesicnephropathy=No → pvDisease=No, supp=0.64, conf=0.89
diabetes=No, ESRD-Analgesicnephropathy=No → race=Caucasoid, supp=0.64, conf=0.84
diabetes=No, ESRD-Diabetes=No → cerebrovascular=No, supp=0.69, conf=0.92
diabetes=No, ESRD-Diabetes=No → ESRD-Analgesicnephropathy=No, supp=0.69, conf=0.93
diabetes=No, ESRD-Diabetes=No → ESRD-PolycsticKD=No, supp=0.69, conf=0.91
diabetes=No, ESRD-Diabetes=No → ESRD-RefluxNephropathy=No, supp=0.69, conf=0.93
diabetes=No, ESRD-Diabetes=No → ESRD-Renovascular=No, supp=0.69, conf=0.86
diabetes=No, ESRD-Diabetes=No → lungDisease=No, supp=0.69, conf=0.89
diabetes=No, ESRD-Diabetes=No → pvDisease=No, supp=0.69, conf=0.88
diabetes=No, ESRD-Diabetes=No → race=Caucasoid, supp=0.69, conf=0.85
diabetes=No, ESRD-PolycsticKD=No → cerebrovascular=No, supp=0.63, conf=0.92
diabetes=No, ESRD-PolycsticKD=No → ESRD-Analgesicnephropathy=No, supp=0.63, conf=0.92
diabetes=No, ESRD-PolycsticKD=No → ESRD-Diabetes=No, supp=0.63, conf=1.00
diabetes=No, ESRD-PolycsticKD=No → ESRD-RefluxNephropathy=No, supp=0.63, conf=0.93
diabetes=No, ESRD-PolycsticKD=No → ESRD-Renovascular=No, supp=0.63, conf=0.84
diabetes=No, ESRD-PolycsticKD=No → lungDisease=No, supp=0.63, conf=0.89
diabetes=No, ESRD-PolycsticKD=No → pvDisease=No, supp=0.63, conf=0.88
diabetes=No, ESRD-PolycsticKD=No → race=Caucasoid, supp=0.63, conf=0.84
diabetes=No, ESRD-RefluxNephropathy=No → cerebrovascular=No, supp=0.64, conf=0.91

diabetes=No, ESRD-RefluxNephropathy=No → ESRD-Analgesicnephropathy=No, supp=0.64, conf=0.92
 diabetes=No, ESRD-RefluxNephropathy=No → ESRD-Diabetes=No, supp=0.64, conf=1.00
 diabetes=No, ESRD-RefluxNephropathy=No → ESRD-PolycsticKD=No, supp=0.64, conf=0.90
 diabetes=No, ESRD-RefluxNephropathy=No → ESRD-Renovascular=No, supp=0.64, conf=0.85
 diabetes=No, ESRD-RefluxNephropathy=No → lungDisease=No, supp=0.64, conf=0.89
 diabetes=No, ESRD-RefluxNephropathy=No → pvDisease=No, supp=0.64, conf=0.88
 diabetes=No, ESRD-RefluxNephropathy=No → race=Caucasoid, supp=0.64, conf=0.84
 diabetes=No, lungDisease=No → cerebrovascular=No, supp=0.61, conf=0.93
 diabetes=No, lungDisease=No → ESRD-Analgesicnephropathy=No, supp=0.61, conf=0.94
 diabetes=No, lungDisease=No → ESRD-Diabetes=No, supp=0.61, conf=1.00
 diabetes=No, lungDisease=No → ESRD-PolycsticKD=No, supp=0.61, conf=0.90
 diabetes=No, lungDisease=No → ESRD-RefluxNephropathy=No, supp=0.61, conf=0.93
 diabetes=No, lungDisease=No → ESRD-Renovascular=No, supp=0.61, conf=0.86
 diabetes=No, lungDisease=No → pvDisease=No, supp=0.61, conf=0.90
 diabetes=No, lungDisease=No → race=Caucasoid, supp=0.61, conf=0.84
 diabetes=No, pvDisease=No → cerebrovascular=No, supp=0.61, conf=0.95
 diabetes=No, pvDisease=No → ESRD-Analgesicnephropathy=No, supp=0.61, conf=0.94
 diabetes=No, pvDisease=No → ESRD-Diabetes=No, supp=0.61, conf=1.00
 diabetes=No, pvDisease=No → ESRD-PolycsticKD=No, supp=0.61, conf=0.90
 diabetes=No, pvDisease=No → ESRD-RefluxNephropathy=No, supp=0.61, conf=0.93
 diabetes=No, pvDisease=No → ESRD-Renovascular=No, supp=0.61, conf=0.89
 diabetes=No, pvDisease=No → lungDisease=No, supp=0.61, conf=0.91
 diabetes=No, pvDisease=No → race=Caucasoid, supp=0.61, conf=0.84
 ESRD-Analgesicnephropathy=No, ESRD-Diabetes=No → cerebrovascular=No, supp=0.71, conf=0.92
 ESRD-Analgesicnephropathy=No, ESRD-Diabetes=No → diabetes=No, supp=0.71, conf=0.90
 ESRD-Analgesicnephropathy=No, ESRD-Diabetes=No → ESRD-PolycsticKD=No, supp=0.71, conf=0.91
 ESRD-Analgesicnephropathy=No, ESRD-Diabetes=No → ESRD-RefluxNephropathy=No, supp=0.71, conf=0.93
 ESRD-Analgesicnephropathy=No, ESRD-Diabetes=No → ESRD-Renovascular=No, supp=0.71, conf=0.84
 ESRD-Analgesicnephropathy=No, ESRD-Diabetes=No → lungDisease=No, supp=0.71, conf=0.89
 ESRD-Analgesicnephropathy=No, ESRD-Diabetes=No → pvDisease=No, supp=0.71, conf=0.87
 ESRD-Analgesicnephropathy=No, ESRD-Diabetes=No → race=Caucasoid, supp=0.71, conf=0.82

ESRD-Analgesicnephropathy=No, ESRD-GN=No → cancer=N, supp=0.63, conf=0.80
 ESRD-Analgesicnephropathy=No, ESRD-GN=No → cerebrovascular=No, supp=0.63, conf=0.89
 ESRD-Analgesicnephropathy=No, ESRD-GN=No → ESRD-PolycsticKD=No, supp=0.63, conf=0.90
 ESRD-Analgesicnephropathy=No, ESRD-GN=No → ESRD-RefluxNephropathy=No, supp=0.63, conf=0.92
 ESRD-Analgesicnephropathy=No, ESRD-GN=No → ESRD-Renovascular=No, supp=0.63, conf=0.82
 ESRD-Analgesicnephropathy=No, ESRD-GN=No → lungDisease=No, supp=0.63, conf=0.89
 ESRD-Analgesicnephropathy=No, ESRD-PolycsticKD=No → cancer=N, supp=0.88, conf=0.81
 ESRD-Analgesicnephropathy=No, ESRD-PolycsticKD=No → cerebrovascular=No, supp=0.88, conf=0.90
 ESRD-Analgesicnephropathy=No, ESRD-PolycsticKD=No → ESRD-RefluxNephropathy=No, supp=0.88, conf=0.95
 ESRD-Analgesicnephropathy=No, ESRD-PolycsticKD=No → ESRD-Renovascular=No, supp=0.88, conf=0.87
 ESRD-Analgesicnephropathy=No, ESRD-PolycsticKD=No → lungDisease=No, supp=0.88, conf=0.89
 ESRD-Analgesicnephropathy=No, ESRD-PolycsticKD=No → pvDisease=No, supp=0.88, conf=0.81
 ESRD-Analgesicnephropathy=No, ESRD-RefluxNephropathy=No → cerebrovascular=No, supp=0.90, conf=0.90
 ESRD-Analgesicnephropathy=No, ESRD-RefluxNephropathy=No → ESRD-PolycsticKD=No, supp=0.90, conf=0.93
 ESRD-Analgesicnephropathy=No, ESRD-RefluxNephropathy=No → ESRD-Renovascular=No, supp=0.90, conf=0.87
 ESRD-Analgesicnephropathy=No, ESRD-RefluxNephropathy=No → hypertension=Yes, supp=0.90, conf=0.80
 ESRD-Analgesicnephropathy=No, ESRD-RefluxNephropathy=No → lungDisease=No, supp=0.90, conf=0.89
 ESRD-Analgesicnephropathy=No, ESRD-RefluxNephropathy=No → pvDisease=No, supp=0.90, conf=0.81
 ESRD-Analgesicnephropathy=No, ESRD-Renovascular=No → cancer=N, supp=0.83, conf=0.80
 ESRD-Analgesicnephropathy=No, ESRD-Renovascular=No → cerebrovascular=No, supp=0.83, conf=0.92
 ESRD-Analgesicnephropathy=No, ESRD-Renovascular=No → ESRD-PolycsticKD=No, supp=0.83, conf=0.92
 ESRD-Analgesicnephropathy=No, ESRD-Renovascular=No → ESRD-RefluxNephropathy=No, supp=0.83, conf=0.94
 ESRD-Analgesicnephropathy=No, ESRD-Renovascular=No → lungDisease=No, supp=0.83,

conf=0.91
 ESRD-Analgesicnephropathy=No, ESRD-Renovascular=No → pvDisease=No, supp=0.83,
 conf=0.84
 ESRD-Analgesicnephropathy=No, frequency=3 → cerebrovascular=No, supp=0.60,
 conf=0.91
 ESRD-Analgesicnephropathy=No, frequency=3 → ESRD-PolycsticKD=No, supp=0.60,
 conf=0.92
 ESRD-Analgesicnephropathy=No, frequency=3 → ESRD-RefluxNephropathy=No,
 supp=0.60, conf=0.95
 ESRD-Analgesicnephropathy=No, frequency=3 → ESRD-Renovascular=No, supp=0.60,
 conf=0.88
 ESRD-Analgesicnephropathy=No, frequency=3 → hypertension=Yes, supp=0.60,
 conf=0.81
 ESRD-Analgesicnephropathy=No, frequency=3 → lungDisease=No, supp=0.60,
 conf=0.90
 ESRD-Analgesicnephropathy=No, frequency=3 → pvDisease=No, supp=0.60, conf=0.83
 ESRD-Analgesicnephropathy=No, hypertension=Yes → cancer=N, supp=0.75, conf=0.81
 ESRD-Analgesicnephropathy=No, hypertension=Yes → cerebrovascular=No, supp=0.75,
 conf=0.90
 ESRD-Analgesicnephropathy=No, hypertension=Yes → ESRD-PolycsticKD=No,
 supp=0.75, conf=0.93
 ESRD-Analgesicnephropathy=No, hypertension=Yes → ESRD-RefluxNephropathy=No,
 supp=0.75, conf=0.95
 ESRD-Analgesicnephropathy=No, hypertension=Yes → ESRD-Renovascular=No,
 supp=0.75, conf=0.87
 ESRD-Analgesicnephropathy=No, hypertension=Yes → lungDisease=No, supp=0.75,
 conf=0.90
 ESRD-Analgesicnephropathy=No, hypertension=Yes → pvDisease=No, supp=0.75,
 conf=0.81
 ESRD-Analgesicnephropathy=No, lungDisease=No → cancer=N, supp=0.85, conf=0.80
 ESRD-Analgesicnephropathy=No, lungDisease=No → cerebrovascular=No, supp=0.85,
 conf=0.92
 ESRD-Analgesicnephropathy=No, lungDisease=No → ESRD-PolycsticKD=No, supp=0.85,
 conf=0.93
 ESRD-Analgesicnephropathy=No, lungDisease=No → ESRD-RefluxNephropathy=No,
 supp=0.85, conf=0.95
 ESRD-Analgesicnephropathy=No, lungDisease=No → ESRD-Renovascular=No, supp=0.85,
 conf=0.89
 ESRD-Analgesicnephropathy=No, lungDisease=No → pvDisease=No, supp=0.85,
 conf=0.84
 ESRD-Analgesicnephropathy=No, pvDisease=No → cerebrovascular=No, supp=0.77,
 conf=0.94
 ESRD-Analgesicnephropathy=No, pvDisease=No → ESRD-Diabetes=No, supp=0.77,
 conf=0.80

ESRD-Analgesicnephropathy=No, pvDisease=No → ESRD-PolycsticKD=No, supp=0.77, conf=0.92
 ESRD-Analgesicnephropathy=No, pvDisease=No → ESRD-RefluxNephropathy=No, supp=0.77, conf=0.94
 ESRD-Analgesicnephropathy=No, pvDisease=No → ESRD-Renovascular=No, supp=0.77, conf=0.91
 ESRD-Analgesicnephropathy=No, pvDisease=No → lungDisease=No, supp=0.77, conf=0.92
 ESRD-Analgesicnephropathy=No, race=Caucasoid → cerebrovascular=No, supp=0.71, conf=0.90
 ESRD-Analgesicnephropathy=No, race=Caucasoid → ESRD-Diabetes=No, supp=0.71, conf=0.83
 ESRD-Analgesicnephropathy=No, race=Caucasoid → ESRD-PolycsticKD=No, supp=0.71, conf=0.91
 ESRD-Analgesicnephropathy=No, race=Caucasoid → ESRD-RefluxNephropathy=No, supp=0.71, conf=0.94
 ESRD-Analgesicnephropathy=No, race=Caucasoid → ESRD-Renovascular=No, supp=0.71, conf=0.86
 ESRD-Analgesicnephropathy=No, race=Caucasoid → lungDisease=No, supp=0.71, conf=0.89
 ESRD-Analgesicnephropathy=No, race=Caucasoid → pvDisease=No, supp=0.71, conf=0.81
 ESRD-Diabetes=No, ESRD-PolycsticKD=No → cerebrovascular=No, supp=0.70, conf=0.91
 ESRD-Diabetes=No, ESRD-PolycsticKD=No → diabetes=No, supp=0.70, conf=0.90
 ESRD-Diabetes=No, ESRD-PolycsticKD=No → ESRD-Analgesicnephropathy=No, supp=0.70, conf=0.92
 ESRD-Diabetes=No, ESRD-PolycsticKD=No → ESRD-RefluxNephropathy=No, supp=0.70, conf=0.93
 ESRD-Diabetes=No, ESRD-PolycsticKD=No → ESRD-Renovascular=No, supp=0.70, conf=0.83
 ESRD-Diabetes=No, ESRD-PolycsticKD=No → lungDisease=No, supp=0.70, conf=0.88
 ESRD-Diabetes=No, ESRD-PolycsticKD=No → pvDisease=No, supp=0.70, conf=0.86
 ESRD-Diabetes=No, ESRD-PolycsticKD=No → race=Caucasoid, supp=0.70, conf=0.82
 ESRD-Diabetes=No, ESRD-RefluxNephropathy=No → cerebrovascular=No, supp=0.72, conf=0.91
 ESRD-Diabetes=No, ESRD-RefluxNephropathy=No → diabetes=No, supp=0.72, conf=0.90
 ESRD-Diabetes=No, ESRD-RefluxNephropathy=No → ESRD-Analgesicnephropathy=No, supp=0.72, conf=0.92
 ESRD-Diabetes=No, ESRD-RefluxNephropathy=No → ESRD-PolycsticKD=No, supp=0.72, conf=0.91
 ESRD-Diabetes=No, ESRD-RefluxNephropathy=No → ESRD-Renovascular=No, supp=0.72, conf=0.84

ESRD-Diabetes=No, ESRD-RefluxNephropathy=No → lungDisease=No, supp=0.72, conf=0.88
 ESRD-Diabetes=No, ESRD-RefluxNephropathy=No → pvDisease=No, supp=0.72, conf=0.86
 ESRD-Diabetes=No, ESRD-RefluxNephropathy=No → race=Caucasoid, supp=0.72, conf=0.83
 ESRD-Diabetes=No, ESRD-Renovascular=No → cerebrovascular=No, supp=0.65, conf=0.93
 ESRD-Diabetes=No, ESRD-Renovascular=No → diabetes=No, supp=0.65, conf=0.91
 ESRD-Diabetes=No, ESRD-Renovascular=No → ESRD-Analgesicnephropathy=No, supp=0.65, conf=0.92
 ESRD-Diabetes=No, ESRD-Renovascular=No → ESRD-PolycsticKD=No, supp=0.65, conf=0.90
 ESRD-Diabetes=No, ESRD-Renovascular=No → ESRD-RefluxNephropathy=No, supp=0.65, conf=0.93
 ESRD-Diabetes=No, ESRD-Renovascular=No → lungDisease=No, supp=0.65, conf=0.90
 ESRD-Diabetes=No, ESRD-Renovascular=No → pvDisease=No, supp=0.65, conf=0.91
 ESRD-Diabetes=No, ESRD-Renovascular=No → race=Caucasoid, supp=0.65, conf=0.83
 ESRD-Diabetes=No, lungDisease=No → cerebrovascular=No, supp=0.68, conf=0.92
 ESRD-Diabetes=No, lungDisease=No → diabetes=No, supp=0.68, conf=0.91
 ESRD-Diabetes=No, lungDisease=No → ESRD-Analgesicnephropathy=No, supp=0.68, conf=0.94
 ESRD-Diabetes=No, lungDisease=No → ESRD-PolycsticKD=No, supp=0.68, conf=0.91
 ESRD-Diabetes=No, lungDisease=No → ESRD-RefluxNephropathy=No, supp=0.68, conf=0.93
 ESRD-Diabetes=No, lungDisease=No → ESRD-Renovascular=No, supp=0.68, conf=0.86
 ESRD-Diabetes=No, lungDisease=No → pvDisease=No, supp=0.68, conf=0.89
 ESRD-Diabetes=No, lungDisease=No → race=Caucasoid, supp=0.68, conf=0.83
 ESRD-Diabetes=No, pvDisease=No → cerebrovascular=No, supp=0.66, conf=0.94
 ESRD-Diabetes=No, pvDisease=No → diabetes=No, supp=0.66, conf=0.92
 ESRD-Diabetes=No, pvDisease=No → ESRD-Analgesicnephropathy=No, supp=0.66, conf=0.94
 ESRD-Diabetes=No, pvDisease=No → ESRD-PolycsticKD=No, supp=0.66, conf=0.91
 ESRD-Diabetes=No, pvDisease=No → ESRD-RefluxNephropathy=No, supp=0.66, conf=0.93
 ESRD-Diabetes=No, pvDisease=No → ESRD-Renovascular=No, supp=0.66, conf=0.89
 ESRD-Diabetes=No, pvDisease=No → lungDisease=No, supp=0.66, conf=0.91
 ESRD-Diabetes=No, pvDisease=No → race=Caucasoid, supp=0.66, conf=0.82
 ESRD-Diabetes=No, race=Caucasoid → cerebrovascular=No, supp=0.64, conf=0.91
 ESRD-Diabetes=No, race=Caucasoid → diabetes=No, supp=0.64, conf=0.92
 ESRD-Diabetes=No, race=Caucasoid → ESRD-Analgesicnephropathy=No, supp=0.64, conf=0.92
 ESRD-Diabetes=No, race=Caucasoid → ESRD-PolycsticKD=No, supp=0.64, conf=0.90
 ESRD-Diabetes=No, race=Caucasoid → ESRD-RefluxNephropathy=No, supp=0.64,

conf=0.93
 ESRD-Diabetes=No, race=Caucasoid → ESRD-Renovascular=No, supp=0.64, conf=0.84
 ESRD-Diabetes=No, race=Caucasoid → lungDisease=No, supp=0.64, conf=0.88
 ESRD-Diabetes=No, race=Caucasoid → pvDisease=No, supp=0.64, conf=0.86
 ESRD-GN=No, ESRD-PolycsticKD=No → cancer=N, supp=0.62, conf=0.80
 ESRD-GN=No, ESRD-PolycsticKD=No → cerebrovascular=No, supp=0.62, conf=0.88
 ESRD-GN=No, ESRD-PolycsticKD=No → ESRD-Analgesicnephropathy=No, supp=0.62, conf=0.91
 ESRD-GN=No, ESRD-PolycsticKD=No → ESRD-RefluxNephropathy=No, supp=0.62, conf=0.92
 ESRD-GN=No, ESRD-PolycsticKD=No → ESRD-Renovascular=No, supp=0.62, conf=0.81
 ESRD-GN=No, ESRD-PolycsticKD=No → lungDisease=No, supp=0.62, conf=0.88
 ESRD-GN=No, ESRD-RefluxNephropathy=No → cerebrovascular=No, supp=0.64, conf=0.88
 ESRD-GN=No, ESRD-RefluxNephropathy=No → ESRD-Analgesicnephropathy=No, supp=0.64, conf=0.92
 ESRD-GN=No, ESRD-RefluxNephropathy=No → ESRD-PolycsticKD=No, supp=0.64, conf=0.90
 ESRD-GN=No, ESRD-RefluxNephropathy=No → ESRD-Renovascular=No, supp=0.64, conf=0.82
 ESRD-GN=No, ESRD-RefluxNephropathy=No → lungDisease=No, supp=0.64, conf=0.88
 ESRD-GN=No, lungDisease=No → cerebrovascular=No, supp=0.61, conf=0.90
 ESRD-GN=No, lungDisease=No → ESRD-Analgesicnephropathy=No, supp=0.61, conf=0.93
 ESRD-GN=No, lungDisease=No → ESRD-PolycsticKD=No, supp=0.61, conf=0.90
 ESRD-GN=No, lungDisease=No → ESRD-RefluxNephropathy=No, supp=0.61, conf=0.92
 ESRD-GN=No, lungDisease=No → ESRD-Renovascular=No, supp=0.61, conf=0.84
 ESRD-PolycsticKD=No, ESRD-RefluxNephropathy=No → cerebrovascular=No, supp=0.89, conf=0.90
 ESRD-PolycsticKD=No, ESRD-RefluxNephropathy=No → ESRD-Analgesicnephropathy=No, supp=0.89, conf=0.94
 ESRD-PolycsticKD=No, ESRD-RefluxNephropathy=No → ESRD-Renovascular=No, supp=0.89, conf=0.87
 ESRD-PolycsticKD=No, ESRD-RefluxNephropathy=No → lungDisease=No, supp=0.89, conf=0.88
 ESRD-PolycsticKD=No, ESRD-Renovascular=No → cancer=N, supp=0.82, conf=0.80
 ESRD-PolycsticKD=No, ESRD-Renovascular=No → cerebrovascular=No, supp=0.82, conf=0.92
 ESRD-PolycsticKD=No, ESRD-Renovascular=No → ESRD-Analgesicnephropathy=No, supp=0.82, conf=0.93
 ESRD-PolycsticKD=No, ESRD-Renovascular=No → ESRD-RefluxNephropathy=No,

supp=0.82, conf=0.94
 ESRD-PolycsticKD=No, ESRD-Renovascular=No → lungDisease=No, supp=0.82, conf=0.90
 ESRD-PolycsticKD=No, ESRD-Renovascular=No → pvDisease=No, supp=0.82, conf=0.83
 ESRD-PolycsticKD=No, hypertension=Yes → cancer=N, supp=0.74, conf=0.81
 ESRD-PolycsticKD=No, hypertension=Yes → cerebrovascular=No, supp=0.74, conf=0.90
 ESRD-PolycsticKD=No, hypertension=Yes → ESRD-Analgesicnephropathy=No, supp=0.74, conf=0.94
 ESRD-PolycsticKD=No, hypertension=Yes → ESRD-RefluxNephropathy=No, supp=0.74, conf=0.95
 ESRD-PolycsticKD=No, hypertension=Yes → ESRD-Renovascular=No, supp=0.74, conf=0.86
 ESRD-PolycsticKD=No, hypertension=Yes → lungDisease=No, supp=0.74, conf=0.89
 ESRD-PolycsticKD=No, lungDisease=No → cancer=N, supp=0.83, conf=0.80
 ESRD-PolycsticKD=No, lungDisease=No → cerebrovascular=No, supp=0.83, conf=0.91
 ESRD-PolycsticKD=No, lungDisease=No → ESRD-Analgesicnephropathy=No, supp=0.83, conf=0.95
 ESRD-PolycsticKD=No, lungDisease=No → ESRD-RefluxNephropathy=No, supp=0.83, conf=0.94
 ESRD-PolycsticKD=No, lungDisease=No → ESRD-Renovascular=No, supp=0.83, conf=0.88
 ESRD-PolycsticKD=No, lungDisease=No → pvDisease=No, supp=0.83, conf=0.83
 ESRD-PolycsticKD=No, pvDisease=No → cerebrovascular=No, supp=0.75, conf=0.94
 ESRD-PolycsticKD=No, pvDisease=No → ESRD-Analgesicnephropathy=No, supp=0.75, conf=0.94
 ESRD-PolycsticKD=No, pvDisease=No → ESRD-RefluxNephropathy=No, supp=0.75, conf=0.94
 ESRD-PolycsticKD=No, pvDisease=No → ESRD-Renovascular=No, supp=0.75, conf=0.90
 ESRD-PolycsticKD=No, pvDisease=No → lungDisease=No, supp=0.75, conf=0.91
 ESRD-PolycsticKD=No, race=Caucasoid → cerebrovascular=No, supp=0.70, conf=0.89
 ESRD-PolycsticKD=No, race=Caucasoid → ESRD-Analgesicnephropathy=No, supp=0.70, conf=0.92
 ESRD-PolycsticKD=No, race=Caucasoid → ESRD-Diabetes=No, supp=0.70, conf=0.82
 ESRD-PolycsticKD=No, race=Caucasoid → ESRD-RefluxNephropathy=No, supp=0.70, conf=0.94
 ESRD-PolycsticKD=No, race=Caucasoid → ESRD-Renovascular=No, supp=0.70, conf=0.86
 ESRD-PolycsticKD=No, race=Caucasoid → lungDisease=No, supp=0.70, conf=0.88
 ESRD-RefluxNephropathy=No, ESRD-Renovascular=No → cerebrovascular=No, supp=0.84, conf=0.91
 ESRD-RefluxNephropathy=No, ESRD-Renovascular=No → ESRD-Analgesicnephropathy=No, supp=0.84, conf=0.94

ESRD-RefluxNephropathy=No, ESRD-Renovascular=No \rightarrow ESRD-PolycsticKD=No, supp=0.84, conf=0.92
 ESRD-RefluxNephropathy=No, ESRD-Renovascular=No \rightarrow lungDisease=No, supp=0.84, conf=0.90
 ESRD-RefluxNephropathy=No, ESRD-Renovascular=No \rightarrow pvDisease=No, supp=0.84, conf=0.83
 ESRD-RefluxNephropathy=No, frequency=3 \rightarrow cerebrovascular=No, supp=0.61, conf=0.91
 ESRD-RefluxNephropathy=No, frequency=3 \rightarrow ESRD-Analgesicnephropathy=No, supp=0.61, conf=0.94
 ESRD-RefluxNephropathy=No, frequency=3 \rightarrow ESRD-PolycsticKD=No, supp=0.61, conf=0.92
 ESRD-RefluxNephropathy=No, frequency=3 \rightarrow ESRD-Renovascular=No, supp=0.61, conf=0.88
 ESRD-RefluxNephropathy=No, frequency=3 \rightarrow hypertension=Yes, supp=0.61, conf=0.81
 ESRD-RefluxNephropathy=No, frequency=3 \rightarrow lungDisease=No, supp=0.61, conf=0.89
 ESRD-RefluxNephropathy=No, frequency=3 \rightarrow pvDisease=No, supp=0.61, conf=0.82
 ESRD-RefluxNephropathy=No, hypertension=Yes \rightarrow cancer=N, supp=0.76, conf=0.80
 ESRD-RefluxNephropathy=No, hypertension=Yes \rightarrow cerebrovascular=No, supp=0.76, conf=0.89
 ESRD-RefluxNephropathy=No, hypertension=Yes \rightarrow ESRD-Analgesicnephropathy=No, supp=0.76, conf=0.94
 ESRD-RefluxNephropathy=No, hypertension=Yes \rightarrow ESRD-PolycsticKD=No, supp=0.76, conf=0.93
 ESRD-RefluxNephropathy=No, hypertension=Yes \rightarrow ESRD-Renovascular=No, supp=0.76, conf=0.87
 ESRD-RefluxNephropathy=No, hypertension=Yes \rightarrow lungDisease=No, supp=0.76, conf=0.89
 ESRD-RefluxNephropathy=No, lungDisease=No \rightarrow cerebrovascular=No, supp=0.84, conf=0.91
 ESRD-RefluxNephropathy=No, lungDisease=No \rightarrow ESRD-Analgesicnephropathy=No, supp=0.84, conf=0.95
 ESRD-RefluxNephropathy=No, lungDisease=No \rightarrow ESRD-PolycsticKD=No, supp=0.84, conf=0.93
 ESRD-RefluxNephropathy=No, lungDisease=No \rightarrow ESRD-Renovascular=No, supp=0.84, conf=0.89
 ESRD-RefluxNephropathy=No, lungDisease=No \rightarrow hypertension=Yes, supp=0.84, conf=0.80
 ESRD-RefluxNephropathy=No, lungDisease=No \rightarrow pvDisease=No, supp=0.84, conf=0.83
 ESRD-RefluxNephropathy=No, pvDisease=No \rightarrow cerebrovascular=No, supp=0.77, conf=0.94
 ESRD-RefluxNephropathy=No, pvDisease=No \rightarrow ESRD-Analgesicnephropathy=No, supp=0.77, conf=0.95
 ESRD-RefluxNephropathy=No, pvDisease=No \rightarrow ESRD-Diabetes=No, supp=0.77,

conf=0.80
 ESRD-RefluxNephropathy=No, pvDisease=No → ESRD-PolycsticKD=No, supp=0.77, conf=0.92
 ESRD-RefluxNephropathy=No, pvDisease=No → ESRD-Renovascular=No, supp=0.77, conf=0.91
 ESRD-RefluxNephropathy=No, pvDisease=No → lungDisease=No, supp=0.77, conf=0.91
 ESRD-RefluxNephropathy=No, race=Caucasoid → cerebrovascular=No, supp=0.72, conf=0.89
 ESRD-RefluxNephropathy=No, race=Caucasoid → ESRD-Analgesicnephropathy=No, supp=0.72, conf=0.93
 ESRD-RefluxNephropathy=No, race=Caucasoid → ESRD-Diabetes=No, supp=0.72, conf=0.83
 ESRD-RefluxNephropathy=No, race=Caucasoid → ESRD-PolycsticKD=No, supp=0.72, conf=0.91
 ESRD-RefluxNephropathy=No, race=Caucasoid → ESRD-Renovascular=No, supp=0.72, conf=0.86
 ESRD-RefluxNephropathy=No, race=Caucasoid → lungDisease=No, supp=0.72, conf=0.88
 ESRD-RefluxNephropathy=No, race=Caucasoid → pvDisease=No, supp=0.72, conf=0.80
 ESRD-Renovascular=No, hypertension=Yes → cancer=N, supp=0.70, conf=0.80
 ESRD-Renovascular=No, hypertension=Yes → cerebrovascular=No, supp=0.70, conf=0.91
 ESRD-Renovascular=No, hypertension=Yes → ESRD-Analgesicnephropathy=No, supp=0.70, conf=0.94
 ESRD-Renovascular=No, hypertension=Yes → ESRD-PolycsticKD=No, supp=0.70, conf=0.92
 ESRD-Renovascular=No, hypertension=Yes → ESRD-RefluxNephropathy=No, supp=0.70, conf=0.95
 ESRD-Renovascular=No, hypertension=Yes → lungDisease=No, supp=0.70, conf=0.90
 ESRD-Renovascular=No, hypertension=Yes → pvDisease=No, supp=0.70, conf=0.83
 ESRD-Renovascular=No, lungDisease=No → cerebrovascular=No, supp=0.79, conf=0.92
 ESRD-Renovascular=No, lungDisease=No → ESRD-Analgesicnephropathy=No, supp=0.79, conf=0.95
 ESRD-Renovascular=No, lungDisease=No → ESRD-PolycsticKD=No, supp=0.79, conf=0.92
 ESRD-Renovascular=No, lungDisease=No → ESRD-RefluxNephropathy=No, supp=0.79, conf=0.94
 ESRD-Renovascular=No, lungDisease=No → pvDisease=No, supp=0.79, conf=0.85
 ESRD-Renovascular=No, pvDisease=No → cerebrovascular=No, supp=0.74, conf=0.95
 ESRD-Renovascular=No, pvDisease=No → ESRD-Analgesicnephropathy=No, supp=0.74, conf=0.94
 ESRD-Renovascular=No, pvDisease=No → ESRD-PolycsticKD=No, supp=0.74, conf=0.92
 ESRD-Renovascular=No, pvDisease=No → ESRD-RefluxNephropathy=No, supp=0.74,

conf=0.94
 ESRD-Renovascular=No, pvDisease=No → lungDisease=No, supp=0.74, conf=0.92
 ESRD-Renovascular=No, race=Caucasoid → cerebrovascular=No, supp=0.66, conf=0.91
 ESRD-Renovascular=No, race=Caucasoid → ESRD-Analgesicnephropathy=No, supp=0.66, conf=0.92
 ESRD-Renovascular=No, race=Caucasoid → ESRD-Diabetes=No, supp=0.66, conf=0.81
 ESRD-Renovascular=No, race=Caucasoid → ESRD-PolycsticKD=No, supp=0.66, conf=0.91
 ESRD-Renovascular=No, race=Caucasoid → ESRD-RefluxNephropathy=No, supp=0.66, conf=0.94
 ESRD-Renovascular=No, race=Caucasoid → lungDisease=No, supp=0.66, conf=0.90
 ESRD-Renovascular=No, race=Caucasoid → pvDisease=No, supp=0.66, conf=0.84
 hypertension=Yes, lungDisease=No → cancer=N, supp=0.71, conf=0.80
 hypertension=Yes, lungDisease=No → cerebrovascular=No, supp=0.71, conf=0.91
 hypertension=Yes, lungDisease=No → ESRD-Analgesicnephropathy=No, supp=0.71, conf=0.95
 hypertension=Yes, lungDisease=No → ESRD-PolycsticKD=No, supp=0.71, conf=0.93
 hypertension=Yes, lungDisease=No → ESRD-RefluxNephropathy=No, supp=0.71, conf=0.95
 hypertension=Yes, lungDisease=No → ESRD-Renovascular=No, supp=0.71, conf=0.88
 hypertension=Yes, lungDisease=No → pvDisease=No, supp=0.71, conf=0.83
 hypertension=Yes, pvDisease=No → cerebrovascular=No, supp=0.64, conf=0.94
 hypertension=Yes, pvDisease=No → ESRD-Analgesicnephropathy=No, supp=0.64, conf=0.95
 hypertension=Yes, pvDisease=No → ESRD-PolycsticKD=No, supp=0.64, conf=0.92
 hypertension=Yes, pvDisease=No → ESRD-RefluxNephropathy=No, supp=0.64, conf=0.95
 hypertension=Yes, pvDisease=No → ESRD-Renovascular=No, supp=0.64, conf=0.90
 hypertension=Yes, pvDisease=No → lungDisease=No, supp=0.64, conf=0.92
 hypertension=Yes, race=Caucasoid → cerebrovascular=No, supp=0.60, conf=0.89
 hypertension=Yes, race=Caucasoid → ESRD-Analgesicnephropathy=No, supp=0.60, conf=0.93
 hypertension=Yes, race=Caucasoid → ESRD-Diabetes=No, supp=0.60, conf=0.82
 hypertension=Yes, race=Caucasoid → ESRD-PolycsticKD=No, supp=0.60, conf=0.92
 hypertension=Yes, race=Caucasoid → ESRD-RefluxNephropathy=No, supp=0.60, conf=0.95
 hypertension=Yes, race=Caucasoid → ESRD-Renovascular=No, supp=0.60, conf=0.85
 hypertension=Yes, race=Caucasoid → lungDisease=No, supp=0.60, conf=0.89
 hypertension=Yes, race=Caucasoid → pvDisease=No, supp=0.60, conf=0.80
 lungDisease=No, pvDisease=No → cerebrovascular=No, supp=0.74, conf=0.94
 lungDisease=No, pvDisease=No → ESRD-Analgesicnephropathy=No, supp=0.74, conf=0.95
 lungDisease=No, pvDisease=No → ESRD-Diabetes=No, supp=0.74, conf=0.81
 lungDisease=No, pvDisease=No → ESRD-PolycsticKD=No, supp=0.74, conf=0.92

lungDisease=No, pvDisease=No → ESRD-RefluxNephropathy=No, supp=0.74, conf=0.94
lungDisease=No, pvDisease=No → ESRD-Renovascular=No, supp=0.74, conf=0.91
lungDisease=No, race=Caucasoid → cerebrovascular=No, supp=0.67, conf=0.91
lungDisease=No, race=Caucasoid → ESRD-Analgesicnephropathy=No, supp=0.67,
conf=0.94
lungDisease=No, race=Caucasoid → ESRD-Diabetes=No, supp=0.67, conf=0.83
lungDisease=No, race=Caucasoid → ESRD-PolycsticKD=No, supp=0.67, conf=0.91
lungDisease=No, race=Caucasoid → ESRD-RefluxNephropathy=No, supp=0.67,
conf=0.94
lungDisease=No, race=Caucasoid → ESRD-Renovascular=No, supp=0.67, conf=0.88
lungDisease=No, race=Caucasoid → pvDisease=No, supp=0.67, conf=0.83
pvDisease=No, race=Caucasoid → cerebrovascular=No, supp=0.62, conf=0.94
pvDisease=No, race=Caucasoid → diabetes=No, supp=0.62, conf=0.83
pvDisease=No, race=Caucasoid → ESRD-Analgesicnephropathy=No, supp=0.62,
conf=0.93
pvDisease=No, race=Caucasoid → ESRD-Diabetes=No, supp=0.62, conf=0.88
pvDisease=No, race=Caucasoid → ESRD-PolycsticKD=No, supp=0.62, conf=0.91
pvDisease=No, race=Caucasoid → ESRD-RefluxNephropathy=No, supp=0.62, conf=0.93
pvDisease=No, race=Caucasoid → ESRD-Renovascular=No, supp=0.62, conf=0.90
pvDisease=No, race=Caucasoid → lungDisease=No, supp=0.62, conf=0.91



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