23 Recommendations

Linkage between ICD and terminologies, e.g. SNOMED will allow taking advantage of the internal and external linkages of such terminologies, and allowing the terminologies to feed information into established national and international health information systems, as for decision support, or public health. SNOMED CT is a terminology with ontological relationships starting from pathology. It is pooling different terminologies that are maintained by specialists in the relevant fields. SNOMED is the biggest clinical terminology in the field of health. Linkages between ICD and SNOMED should be part of the revision process. Established linkages to ICD-10 can be a starting point.

Differing information models for "disease" exist. A sett of tools that are relevant to the revision is in use or under development. An additional advisory group for informatics and modelling will align disease models, assess, design, and produce the tooling environment necessary to the revision that is in line with the current technical environment.

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[i] WHO Nomenclature Regulations, 1967; ICD-10, 1st edition Volume 1 ; p.1241ff
[ii] WHOSIS Health expenditures 2008, data year 2005, ICD implementation in reimbursement and resource allocation, WHO Implementation database
[iii] MDGs

腎臓ワーキンググループ　資料

World Health Organization

Nephrology Working Group

Internal Medicine Topic Advisory Group

Tasks

The Nephrology Working Group within the Internal Medicine TAG is contributing to the revision of categories in the ICD relating to kidney diseases. Diseases of the kidney are found throughout the ICD-10, principally found within Chapter 14. The Working Group also formulates definitions and diagnostic criteria for the relevant categories, and suggests changes to the classification structure.

Members

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** Lesley Stevens	Tufts Medical Center	USA	lstevens1@tuftsmedicalcenter.org
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C. White	B.C. Children's Hospital	Canada	
E. Burdmann	Sao Jose do Rio Preto	Brazil	
G. Becker	Royal Melbourne Hospital	Australia	
K. Simpson	Scottish Renal Registry	Scotland	
Trevor Gerntholtz	African Institute of Kidney Diseases	South Africa	
M. Zhao	Peking University First Hospital	China	

**Co-Chairs

Progress

Organization:

The Nephrology Working Group was formed under consultation by WHO and the TAG Internal Medicine. The Working Group has identified a managing two co-chairs for the alpha drafting of the ICD-11.

Discussions regarding changes to the linearization have started.

Last Updated:
2010-03-02

Original ICD-10 Codes related to Renal Transplant

T86 Failure and rejection of transplanted organs and tissues
- T86.1 Kidney transplant failure and rejection

Z52 Donors of organs and tissues ***Excludes:*** examination of potential donor (Z00.5)
- Z52.4 Kidney donor

Z49 Care involving dialysis ***Includes:*** dialysis preparation and treatment
Excludes: renal dialysis status (Z99.2)
- Z49.0 Preparatory care for dialysis
- Z49.1 Extracorporeal dialysis Dialysis (renal) NOS
- Z49.2 Other dialysis Peritoneal dialysis

Z94 Transplanted organ and tissue status ***Includes:*** organ or tissue replaced by heterogenous or homogenous transplant
Excludes: complications of transplanted organ or tissue - see Alphabetical Index
presence of:
· vascular graft (Z95.-)
· xenogenic heart valve (Z95.3)
- Z94.0 Kidney transplant status

Z99 Dependence on enabling machines and devices, not elsewhere classified
- Z99.2 Dependence on renal dialysis Presence of arteriovenous shunt for dialysis
Renal dialysis status
Excludes: dialysis preparation, treatment or session (Z49.-)

Proposal for Revisions to Renal Transplant for ICD-11

Revisions	LAS comments
Renal transplant recipient Graft from living donor Graft from deceased donor	See below in donor row for suggestions for additional ways to describe graft source
Recipient of simultaneous pancreas and kidney transplant	Additional code for pancreas transplant already present in classification system
Abnormalities related to graft function (Add CKD staging as per the KDIGO classification)	
Primary graft nonfunction	In US, definition is requirement for dialysis. Is this a country specific definition
Acute graft dysfunction Acute rejection Antibody mediated Cellular Acute tubular necrosis Other causes Acute CNI toxicity	Need biopsy to distinguish between these codes, so would suggest adding "not specified" as well What level of detail for biopsy findings should be coded – eg Banff criteria?
Chronic graft dysfunction	
Chronic rejection including transplant glomerulopathy	We should speak with pathologists re distinction between chronic rejections vs Tx glomerulopathy
Chronic CNI toxicity	
Other causes	
Interstitial fibrosis/tubular atrophy (including chronic allograft nephropathy)	
Recurrent disease in the allograft (need to be harmonized with original disease classification)	
De novo disease in the allograft (need to be harmonized with original disease classification)	
Non-infectious complications	
Obstruction	Should confer with transplant surgeons if helpful to have more specific information as to cause of obstruction
Transplant renal artery stenosis	
New onset diabetes after transplantation	Will need to overlap w endocrine section
Post-transplant malignancy	Post transplant malignancy often cannot be determined if related or not related to the transplant. We should consider adding here only specific malignancies secondary to transplant (as per next item). For the remainder, the malignancy as well as the transplant status would be coded for an individual patient to indicate that this is a post-transplant malignancy
Post-transplant lymphoproliferative disorder Polyclonal hyperplasia Monoclonal proliferation (lymphoma) (?Classification of subtypes, e.g. CD20+ or negative) Others (e.g. myeloma)	
Post-transplant infections	We should consider whether better to be specific for type of infection vs differentiating opportunistic vs other, which cannot always be determined. For eg, BK virus – should we distinguish between viruria vs viremia vs nephropathy?
Opportunistic infection	
Other infections	
Donors Living donor status Deceased donor Heart-beating donor Donation after cardiac death Marginal donor	Donor information is relevant for recipient as well as for living donors. For recipient, we could consider adding an additional digit to the renal transplant status to indicate donor source. For the living donors, should be a code to indicate post donation status

E87 **Other disorders of fluid, electrolyte and**

E87.0 **Hyperosmolality and hypernatraemia**
Sodium [Na] excess
Sodium [Na] overload

E87.1 **Hypo-osmolality and hyponatraemia**
Sodium [Na] deficiency
Excludes Syndrome of inappropriate secretion

E87.2 **Acidosis**
Acidosis:

· NOS
· lactic
· metabolic
· respiratory
Excludes diabetic acidosis (E10-E14 with common fourth character .1)
:

E87.3 **Alkalosis**
Alkalosis:
· NOS
· metabolic
· respiratory

E87.4 **Mixed disorder of acid-base balance**

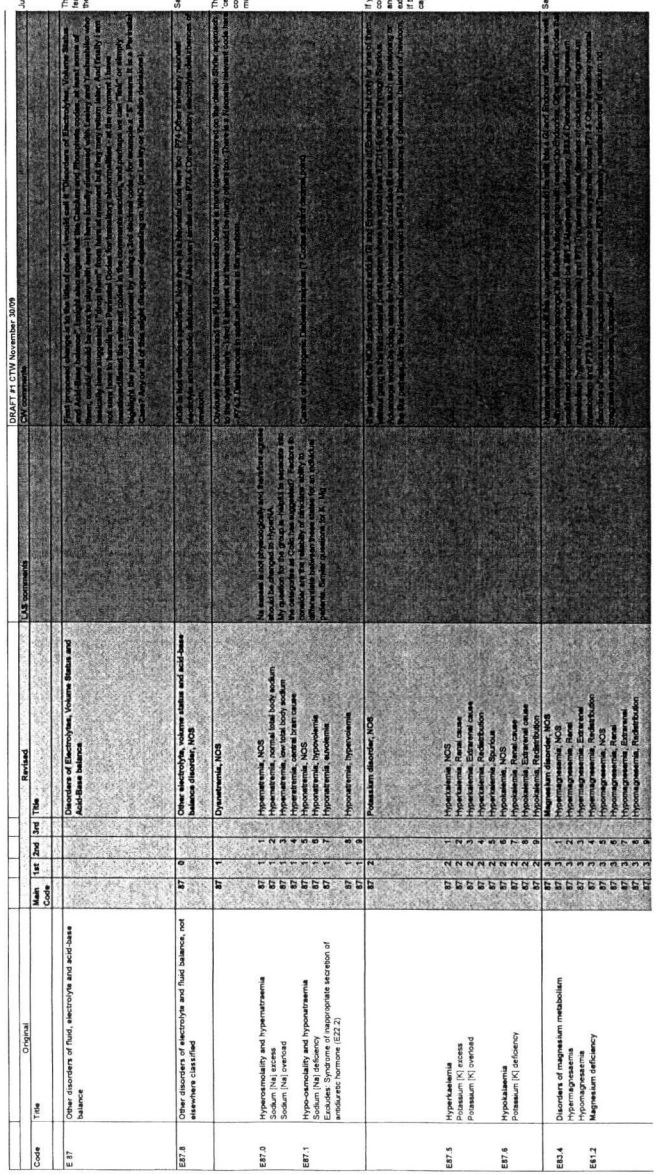
E87.5 **Hyperkalaemia**
Potassium [K] excess
Potassium [K] overload

E87.6 **Hypokalaemia**
Potassium [K] deficiency

E87.7 **Fluid overload**
Excludes oedema (R60.-)

E87.8 **Other disorders of electrolyte and fluid**
Electrolyte imbalance NOS
Hyperchloraemia

Hypochloraemia



								DRAFT #1 CTW November 30/09	
Original						Revised	LAS comments	CTW comments	Julie Rust - classification comments
		87	4			Disorder of Fluid Status, NOS	Question for the group: Utility of adding albumin status to the categorization. Also, the original code for hypervolumia/adema was separate and now integrated	Note that I think this represents opportunity to reattach the correct definition to the words we use incorrectly, namely Dehydration = Hypernatremia and ICF volume loss; it does NOT mean Hypovolemia; isolated edema is usually not a renal cause. There is a neonatal code for dehydration - ? definition they used for it? P74.1 Dehydration of Newborn. Can debate if we need this/ exactly what final definition would be, certainly seems to apply in some nephrotic syndrome patients.	As with some of the categories above, the level of clinical detail is fine to add at this stage, but just keep in mind as
E87.7	Fluid overload *Excludes: Oedema, not elsewhere classified (R60)*	87	4	1		Hypervolemia			
		87	4	2		Hypovolemia, normal albumin			
		87	4	3		Hypovolemia, low albumin			
E86	Volume depletion Dehydration Depletion of volume of plasma or extracellular fluid Hypovolaemia Excludes: dehydration of newborn (P74.1) and hypovolaemic shock (NOS (R57.1); postoperative (T81.1); traumatic (T79.4))	87	4	4		General oedema, normal albumin			
		87	4	5		General oedema, low albumin			
		87	4	6		Anasarca			
		87	4	7		Dehydration, must be hypernatremic			
		87	4	8					
		87	4	9					
		87	5			Disorder of Osmolality, NOS	Question for the group - how is this different from HypoNa?	Hyponatremic states #1 is Pseudohyponatremia, hyperlipidemia depending on analytic method or Multiple myeloma all of which cause excess non-water solution and hence decrease plasma water content but no change in ICF or ECF volume. #2 is addition of a non-sodium containing exogenous solute such as isotonic mannitol or the surgical irrigant solutions, here have increased non-sodium content in solution but no change in ICF volume; increased glucose, mannitol or IVIG if using maltose version; see initial rise in ECF volume then shift of water from ICF to ECF with dilution of Sodium. Alcohol Poisoning I believe Hypernatremic states	
		87	5	1		Hypoosmolar Hyponatremia			
		87	5	2		Normoosmolar Hyponatremia			
		87	5	3		Hyperosmolar Hyponatremia			
		87	5	4					
		87	5	5					
		87	5	6					
		87	5	7					
		87	5	8		Hyperosmolar Normonatremia			
		87	5	9		Hyperosmolar Hypernatremia			
		87	6			Acid Base Disorder, NOS		Could delete 3rd decimal if removed AG vs NAG or Cl responsive/nonresponsive OR if we removed the NOS categories. There is one relevant Neonatal code - P74.0 Late metabolic acidosis of newborn. Of interest I do not believe you can be coded as having Metabolic Alkalosis or wwith any of the respiratory derangements IF you are a neonate/newborn.	May need to consider NOS codes for respiratory acidosis, or at least a default for when not documented. There is no separate code in ICD-10 for metabolic alkalosis of newborn, however there are separate codes for many of the respiratory problems.
E87.2	Acidosis	87	6	1	0	Metabolic Acidosis, NOS			
		87	6	1	1	Metabolic Acidosis, anion gap			
		87	6	1	2	Metabolic acidosis, non anion gap			
E87.3	Alkalosis	87	6	2	0	Metabolic Alkalosis, NOS			
		87	6	2	1	Metabolic Alkalosis, chloride responsive			
		87	6	2	2	Metabolic Alkalosis, chloride non-responsive			
E87.2	Acidosis	87	6	3	1	Respiratory Acidosis, acute			
		87	6	3	2	Respiratory Acidosis, chronic			
E87.3	Alkalosis	87	6	4	1	Respiratory Alkalosis, acute			
		87	6	4	2	Respiratory Alkalosis, chronic			
E87.4	Mixed disorder of acid-base balance	87	6	5	0	Mixed Acid Base Abnormality			

ICD-11 Proposal for Code 87 Other disorders of fluid, electrolyte and acid-base bala

Main Code				Condition	DRAFT #1 CTW November 30/09 **Comments or points to consider in coding or inclusion**
87	**0**			**Other electrolyte, volume status and acid-base balance disorder, NOS**	**NOS is Not otherwise specified.** Note there is a Neonatal code here too - **P74** Other transitory neonatal electrolyte and metabolic disturbances. Also a very similar code **P74.4** Other transitory electrolyte disturbances of newborn.
87	**1**			**Dysnatremia, NOS**	Obviously this section and the Fluid Status section below is more closely mirrored on the classic Shrier approach to the dysnatremia's - I find it simplest but there could be many others too. There is a Neonatal relevant code here - **P74.2** Disturbances in sodium balance in the newborn.
87	1	1		Hypernatremia, NOS	
87	1	2		Hypernatremia, normal total body sodium	Central or Nephrogenic Diabetes insipidus (? Codes at third decimal point)
87	1	3		Hypernatremia, low total body sodium	
87	1	4		Hyperatremia, central brain cause	
87	1	5		Hyponatremia, NOS	
87	1	6		Hyponatremia, hypovolemia	
87	1	7		Hyponatremia, euvolemia	
87	1	8		Hyponatremia, hypervolemia	
87	1	9			
87	**2**			**Potassium disorder, NOS**	If we deleted the NOS options we could add in GI and Endocrine in place of Extrarenal but only for one of them without going to the third decimal point system where we would have 87.211-5 for NOS through Spurious. Advantage would be doing same for Hypokalemia and could also fit in some other issues such as poisoning or the like perhaps. Also the Neonatal codes here would be P74.3 Disturbances of potassium balance of newborn.
87	2	1		Hyperkalemia, NOS	
87	2	2		Hyperkalemia, Renal cause	
87	2	3		Hyperkalemia, Extrarenal cause	
87	2	4		Hyperkalemia, Redistribution	
87	2	5		Hyperkalemia, Spurious	
87	2	6		Hypokalemia, NOS	
87	2	7		Hypokalemia, Renal cause	
87	2	8		Hypokalemia, Extrarenal cause	
87	2	9		Hypokalemia, Redistribution	
87	**3**			**Magnesium disorder, NOS**	Numerous ways we could split this up - certainly extrarenal could be split into a GI and Endocrine division as well - with some overlap perhaps amongst the Redistribution group with respect to Endocrine. Other relevant codes that would need appropriation perhaps would be **E61.2** Magnesium deficiency, **E83.4** Disorders of magnesium metabolism (hyper or hypomagnesemia) and **P71** Transient neonatal disorders of calcium and magnesium metabolism and **P71.2** Neonatal hypomagnesemia or two very similar codes **P71.8** Other transitory neonatal disorders of calcium and magnesium metabolism and **P71.9** Transitory neonatal disorder of calcium nd magnesium metabolism, unspecified.
87	3	1		Hypermagnesemia, NOS	
87	3	2		Hypermagnesemia, Renal	
87	3	3		Hypermagnesemia, Extrarenal	
87	3	4		Hypermagnesemia, Redistribution	
87	3	5		Hypomagnesemia, NOS	
87	3	6		Hypomagnesemia, Renal	
87	3	7		Hypomagnesemia, Extrarenal	
87	3	8		Hypomagnesemia, Redistribution	
87	3	9			

ICD-11 Proposal for Code 87 Other disorders of fluid, electrolyte and acid-base bala				DRAFT #1 CTW November 30/09	
Main Code				**Condition**	**Comments or points to consider in coding or inclusion**
87	**4**			**Disorder of Fluid Status, NOS**	Note that I think this represents oppportunity to reattach the correct definition to the words we use incorrectly, namely Dehydration = Hypernatremia and ICF volume loss; it does NOT mean Hypovolemia. Isolated edema is usually not a renal cause. There is a neonatal code for dehydration - ? definition they used for it? **P74.1** Dehydration of Newborn.
87	4	1		Hypervolemia	
87	4	2		Hypovolemia, normal albumin	
87	4	3		Hypovolemia, low albumin	
87	4	4		General oedema, normal albumin	
87	4	5		General oedema, low albumin	
87	4	6		Anasarca	Can debate if we need this/ exactly what final definition would be, certainly seems to apply in some nephrotic syndrome patients.
87	4	7		Dehydration, must be hypernatremic	
87	4	8			
87	4	9			
87	**5**			**Disorder of Osmolality, NOS**	
87	5	1		Hypoosmolar Hyponatremia	Hyponatremic states
87	5	2		Normoosmolar Hyponatremia	#1 is Pseudohyponatremia, hyperlipidemia depending on analytic method or Multiple myeloma all of which cause excess non-water solution and hence decrease plasma water content but no change in ICF or ECF volume. #2 is addition of a non-sodium containing exogenous solute such as isotonic mannitol or the surgical irrigant solutions, here have increased non-sodium content in solution but no change in ICF volume.
87	5	3		Hyperosmolar Hyponatremia	Increased glucose, mannitol or IVIG if using maltose version, see initial rise in ECF volume then shift of water from ICF to ECF with dilution of Sodium.
87	5	4		Hyperosmolar Normonatremia	Alcohol Poisoning I believe
87	5	5		Hyperosmolar Hypernatremia	Hypernatremic states
87	5	6			
87	5	7			
87	5	8			
87	5	9			
87	**6**			**Acid Base Disorder, NOS**	Could delete 3rd decimal if removed AG vs NAG or Cl responsive/nonresponsive OR if we removed the NOS categories. There is one relevant Neonatal code - **P74.0** Late metabolic acidosis of newborn. Of interest I do not believe you can be coded as having Metabolic Alkalosis or wwith any of the respiratory derangements IF you are a neonate/newborn.
87	6	1	0	Metabolic Acidosis, NOS	
87	6	1	1	Metabolic Acidosis, anion gap	
87	6	1	2	Metabolic acidosis, non anion gap	
87	6	2	0	Metabolic Alkalosis, NOS	
87	6	2	1	Metabolic Alkalosis, chloride responsive	
87	6	2	2	Metabolic Alkalosis, chloride non-responsive	
87	6	3	1	Respiratory Acidosis, acute	
87	6	3	2	Respiratory Acidosis, chronic	
87	6	4	1	Respiratory Alkalosis, acute	
87	6	4	2	Respiratory Alkalosis, chronic	
87	6	5	0	Mixed Acid Base Abnormality	

ICD-11 Revision
Renal Workgroup

Conference call
March 15th
Additional Materials

Chapter/section in ICD-10	Topic Area	Comments	Assignment primary	Assignment secondary
N00-N08	Glomerular diseases	Keep category: subcategories to change	MZ	GB
N10-N16	Renal tubulo-interstitial diseases	Keep category: subcategories to change	TG	MZ
Q61	Cystic disease	part of congenital malformations previously	CW	YI
N28 and others	Vascular disease		YI	EB
N17-N19	Renal failure	AKD and CKD codes to be updates to be consistent w KDIGO	ARF-AK CKD-LAS	MZ
N20-N23	Urolithiasis	This has not been assigned to us but we will review	YI	LAS
N25	Laboratory manifestations of kidney disease and its complications (N25)	To include bone and mineral metabolism	EB	CW
E83		anemia	KS	EB
E87		abn of Na, K, HC03	CW	AK
N6, N39, O10-14		urine (protein and blood)	LAS	CW
Z49, Z99	Complications of treatments	Treatments in prior ICD have	GB	TG
T86, Z 52.4, Z94	for kidney failure Dialysis Transplant	been designated using special V codes,	VJ	KS

Chapter/section	Topic Area	Comments	Primary	Secondary
I10-I15	Hypertension		AK	TG
E10-E14	Diabetes		GB	KS
C64-C68, C79	Malignancy		EB	VJ
O 08.4, 10.2-3 26.8, 90.4	Pregnancy		VJ	AK
O23, Chap 1	Infections	Includes review of overlap areas in the ID chapter and codes in N00-N16.	TG	VJ
M30-M36	Systemic connective tissue disorders		KS	GB
I20-I25	Ischemic heart disease		AK	YI
	Liver diseases		MZ	LAS

Process for Renal WG

Renal Primary Assignments

1. Change to structure
2. Add in data to content model
   1. Where evidence and consensus in community exists
   2. Highlight areas where definition possible but may need more consensus

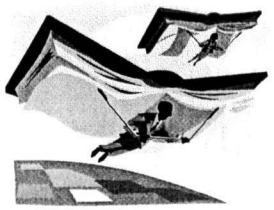
Renal Secondary Assignments

1. Suggest changes to structure and work with other WG's with the primary assignment. TAG-IM to facilitate communication
2. WG with primary assignment is responsible for filling in content model. We may help, particularly if areas where consensus for definition etc does not exist

Tentative Timeline

- **2010**: **Alpha version** (ICD 11 alpha draft)
  - **+1 YR : Commentaries and consultations**
- **2011: Beta version** & Field Trials Version
  - **+2 YR : Field trials**
- 2013: **Final version** for public viewing

  –2014 : WHA Approval
- **2015+ implementation**



Suggested Work Flow and Timeline: Renal Primary Assignments

- Primary reviewer Dec 2009
  - Agree with current structural outline or suggest changes.
  - Document or reference reasons for changes
- Secondary reviewer Dec-Jan 2009
  - If agree, then send to chairs.
  - If disagree, discuss with primary reviewer reasons for change. Document the reasons for disagreement, including references. Try to reach consensus but if not, send to chairs, with documentation of process of discussion
- Send to chairs with suggestions for additional experts to review *if thought to be required* Jan 10, 2010→

April 15 2010

Suggested Work Flow and Timeline: Renal Primary Assignments (con't)

- Chairs review structural model Jan-Feb 2010 **Apr 2010**
- Conference call to review with WG Feb 2010 **May 2010**
- Send structural changes to WHO and TAG-IM Feb 2010 **May 2010**
- Primary reviewers fill in content model (goal 20% completion), secondary reviewers comment on the content model, and send to Chairs with documentation and references for all items. March 2010 **May 2010** *(This could be done simultaneously with changes to structural model)*
- Experts review Feb-May 2010, *depending on nature of review*
- Send to TAG-IM Managing Editor May-Jun **July 2010**

Content Model

- Computerized tool (ICAT) is to be used by the WHO for the revisions (ICAT can be seen at http://icatdemo.stanford.edu/ , (login and password user1)
- However, still in development process and may add more work for us
- Therefore, we will use template (attachment) . Expectation is that we will not fill this out for all diseases

	Data	Comments/References
ICD Concept Title		
Textual Definition		
Synonyms		
Inclusion terms		
Exclusion terms		
Body Systems (Physiology)		
Anatomical site I		
Signs and Symptoms		
S everity and/or extent		
Temporal properties		
investigations		
Diagnostic criteria		
Causal properties		
Risk factors		
Genomic linkages		
Functional properties		
D iagnostic rules		

THE CONTENT MODEL

Any Category in ICD is represented by:

TITLE of ENTITY: Name of disease, disorder, or syndrome...

1. **Textual definition**
2. **Synonyms - Inclusion – Exclusion - Index terms**

Descriptive characteristics

1. **Type**
   Disease, disorder, syndrome, injury, sign/symptom, external cause, reason for encounter;
2. **Body System(s)** *(pathophysiology)*
3. **Body Part(s)** *(anatomical site)*
4. **Manifestation Attributes**
   a. **Signs & Symptoms**
   b. **Diagnostic Findings**
5. **Causal Properties** *(etiology)*
   a. **Causal Mechanisms /Agents**
   b. **Genomic characteristics**
6. **Temporal Properties**
7. **Severity and/or Extent**
8. **Functional Impact**
9. **Treatment**

Maintenance attributes

A. **Unique identifier**

B. **Subset, adaptation, and special view flag**
   1. Primary Care
   2. Clinical Care
   3. Research
   4. Special indices (e.g. Public Health Indices or Resource Groupings)

C. **Hierarchical relationships**
   parents and children in ICD structure

D. **Mapping relationships**
   Linkages to other systems like SNOMED etc.

E. **Other rules**

Work flow for Secondary Assignments

- Chairs have informed IM-TAG of overlap areas Nov 2009
- IM-TAG to inform other TAG or IM of these overlap areas and to develop process for collaboration Dec 2009
- Primary reviewer Jan 2010
  - Agree with current structural outline or suggest changes.
  - Document or reference reasons for changes
- Secondary reviewer Jan 2010
  - If agree, then send to chairs.
  - If disagree, discuss with primary reviewer reasons for change. Document the reasons for disagreement, including references. Try to reach consensus but if not, send to chairs, with documentation of process of discussion
- Send to chairs by Feb, 2010
- Send to relevant TAG's or WG for discussion Feb-Mar 2010

Collaborations with Other Organizations

- International Pediatric Association (IPA) /International Pediatric Nephrology Association (IPNA). (Jie Ding; Franz Schaefer M.D.)
- ERA-EDTA (Keith Simpson)
- Proposal from Kitty Jager (ERA-EDTA Registry) for meeting to discuss joint effort