

## VITAL STATISTICS

## Mortality due to kidney diseases in children under 15 years of age (México 1998-2009)

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In Mexico, one of the main causes of deaths nationwide is renal failure (ICD-10: N00-N19), which is understood as a complex clinical syndrome resulting from several conditions with the consequence of progressive deterioration of the renal anatomic structure. Renal failure occupies tenth place in Mexico for the total population, with >13,000 deaths in 2009 (latest available data of total deaths). This trend has been slight, but has clearly been increasing since 1998, with a rate of ~12 deaths per 100,000 persons nationwide.

As expected, most deaths occurred in the adult population, but because of its relevance, we present the impact that it has on the population <15 years of age. According to official figures, during the past 10 years the number of deaths has remained relatively stable (~395 per year) despite the fact that within different age groups there are different tendencies that neutralize one another. The population group between 1 and 9 years of age showed a downward trend (from 209 deaths in 1998 to 94 deaths in 2009), whereas in the 10- to 14-year-old group it showed a slight increase (from 95 to 128 deaths during the same period). The trend in those subjects <1 year of age remained relatively stable (Table 1).

**Table 1.** Mortality due to renal insufficiency in children <15 years of age México, 1998-2009

Year registered	Number of deaths due to renal insufficiency				
	Age group				
	< 1 year	1 - 4 years	5 - 9 years	10 - 14 years	< 15 years
1998	161	111	98	95	465
1999	138	81	93	124	436
2000	113	72	87	122	394
2001	121	71	88	113	393
2002	125	76	80	128	409
2003	101	62	75	148	386
2004	88	67	78	152	385
2005	120	65	55	114	354
2006	94	57	67	134	352
2007	134	55	64	125	378
2008	161	54	52	118	385
2009	177	47	47	128	399
General total	1,533	818	884	1,501	4,736

Source: Dynamic Information System in Health Systems (Data cubes) <http://dgis.salud.gob.mx/cubos>

During the period analyzed (12 years), total deaths from renal insufficiency (including nephrotic syndrome) increased to 4,736 deaths and the percentage distribution of deaths according to age groups is quite consistent: one third corresponds to deaths in children <1 year of age, a second third to the group of 1 to 9 years of age and the last third to children between 10 and 14 years of age (Figure 1).

Specific rates during this period are as follows: for children <15 years of age are reported at 1.3 deaths per 100,000 population (13 deaths per one million children),

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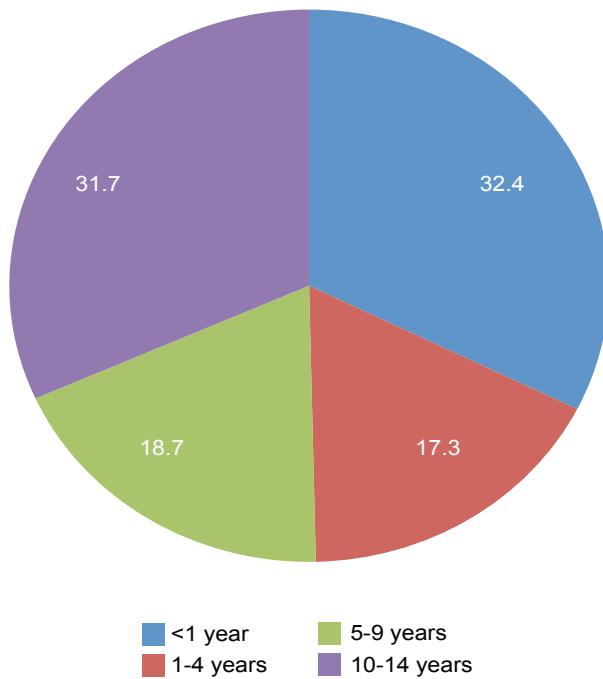
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**Figure 1.** Distribution of deaths due to renal insufficiency according to age groups. México, 1998-2009.

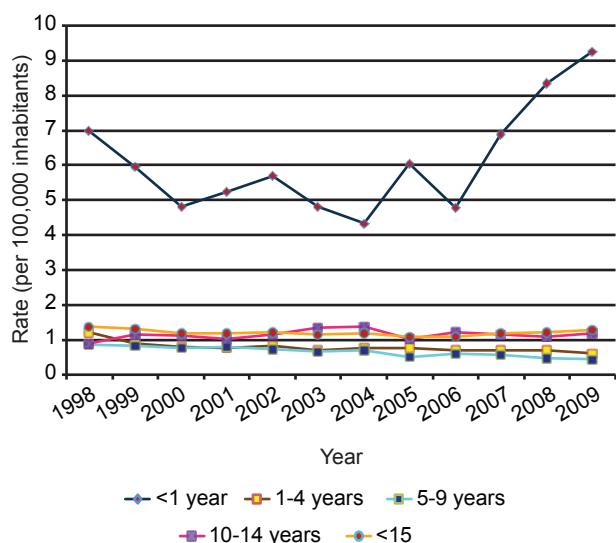
reaching its lowest level (1.09) in the years 2005 and 2006. Within the group are included children <1 year of age, with rates per 100,000 inhabitants ranging from 4.34 (in 2004) to 9.26 (in 2009), with an average of 6.05 for the period analyzed (Table 2, Figure 2).

It is important to note that the panorama changes when the deaths attributed to this cause are analyzed according to their relative weight, regarding the total deaths per age group because the relevance for those children <1 year of age decreases and the relevance for the group of 10- to 14-year-olds remains (Figure 3). It is also important to determine the causes that most often result directly in death due to kidney disease. In 2009 these causes varied by age group (Table 3). Overall, it was observed that 42% of the deaths occurred due to acute renal failure (which mainly affects children <1 year of age), whereas 35% of deaths were caused by chronic renal failure (more common in the group 10 to 14 years of age). Less than 10% of deaths were caused by nephrotic syndrome.

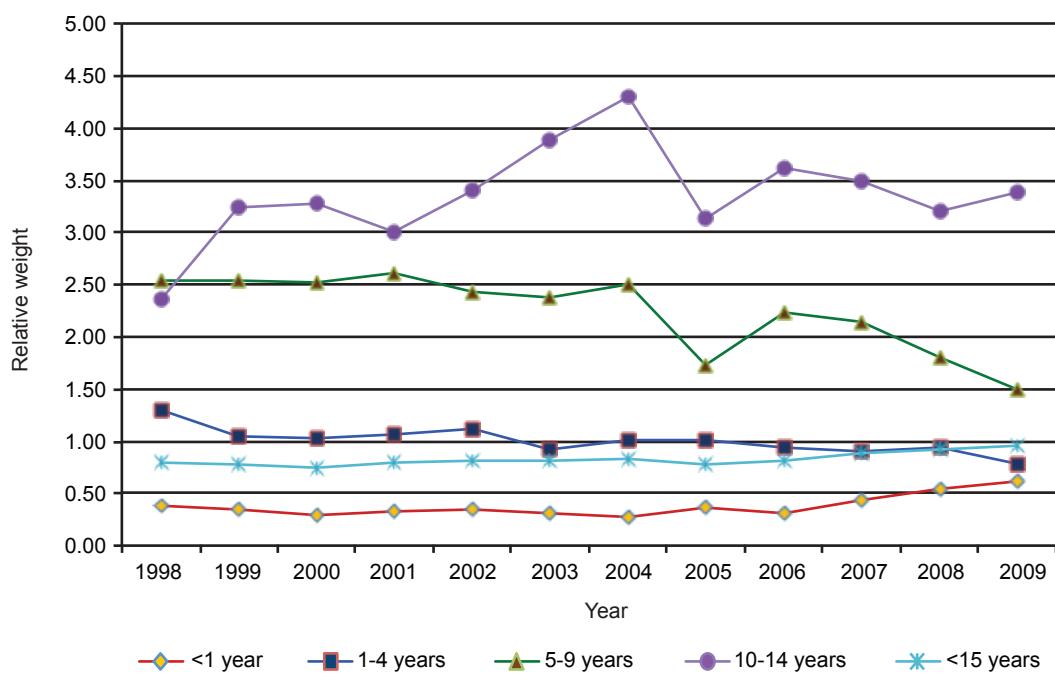
**Table 2.** Mortality rate due to renal insufficiency according to age groups México 1998 -2009

Year	Age groups				
	< 1 year	1 - 4 years	5 - 9 years	10 - 14 years	< 15 years
1998	7.00	1.21	0.87	0.88	1.39
1999	5.95	0.89	0.82	1.14	1.30
2000	4.81	0.79	0.77	1.12	1.17
2001	5.25	0.78	0.78	1.03	1.17
2002	5.70	0.84	0.72	1.17	1.22
2003	4.81	0.69	0.67	1.35	1.16
2004	4.34	0.76	0.70	1.38	1.17
2005	6.04	0.77	0.49	1.04	1.09
2006	4.79	0.70	0.60	1.23	1.09
2007	6.90	0.69	0.58	1.15	1.19
2008	8.36	0.70	0.48	1.09	1.23
2009	9.26	0.61	0.45	1.18	1.29
Total	6.05	0.79	0.66	1.15	1.31

Rate per 100,000 inhabitants from each age group  
Source: Dynamic Information System in Health Systems  
(Data cubes) <http://dgis.salud.gob.mx/cubos>



**Figure 2.** Mortality rate due to renal insufficiency according to age groups. México, 1998-2009.



**Figure 3.** Relative weight of mortality due to renal insufficiency in relation to total deaths. México, 1998-2009.

**Table 3.** Deaths due to renal insufficiency separated into age groups México, 2009

Deaths	Cause and IDC code CIE 10	5-Year Age Group				Total
		<1 year	1-4 years	5-9 years	10-14 years	
						<15
N00	Acute nephrotic syndrome	1				1
N03	Chronic nephrotic syndrome				2	2
N04	Nephrotic syndrome	8	11	10	6	35
N05	Nonspecific nephrotic syndrome	1	3		2	6
N10X	Acute tubulointerstitial nephritis	1				1
N12X	Tubulointerstitial disease (not specified as acute or chronic)	1	1	2	1	5
N13	Reflux and obstructive uropathy	5	1		1	7
N15	Other tubulointerstitial renal diseases	2	1			3
N17	Acute renal insufficiency	143	8	4	14	169
N18	Chronic renal insufficiency	7	14	24	95	140
N19X	Unspecified renal insufficiency	8	8	7	7	30
General total		177	47	47	128	399

Source: Dynamic Information System in Health Systems (Data cubes) <http://dgis.salud.gob.mx/cubos>