

Chapter 10 Medications

Antihypertensives – Prevalence of Hypertension

Diabetic Status, Medications & Insulin

Cardiac Medications- Prevalence of Cardiac Disease

Other Medications

Anemia medications: Erythropoiesis stimulating agents (ESA) and iron were covered in chapter 7.

Mineral balance medications: phosphate binders & vitamin D supplements were covered in chapter 8.

Most HD patients receive eight or more different types of medications. The primary disease causing ESRD generally requires lifetime medication(s). Over 2/3 of HD patients are hypertensive, more than half are diabetic and also more than half suffer cardiovascular disease which could be congestive, obstructive, muscle failure or a combination. The loss of activity of some hormones, mineral balancing and pH buffering capability also has to be replaced, supplemented or adjusted. Finally, a number of pre-existing or emergent comorbidities need to be addressed by medications in most cases. Many of these clinical irregularities can be co-managed by dietary regulation; however, this option is practically limited in Lebanon. Dietitians in most hospitals care for HD patients as part of broad responsibilities that generally encompass all patient categories plus food safety, thus limiting their involvement in the HD unit to less than 10% of their overall time commitment. Additionally, most licensed dietitians in Lebanon lack proper training to provide expert nutritional care to HD patients.

Anti-Hypertensives (Ref table 10.1)

At least 71.6% of HD patients in Lebanon receive one or more antihypertensive medications(s). There was some differential between regions in the overall use and in the type preference. The lowest utilization was in Beirut where they were used in 64.2% of patients and highest in Beqaa where they were used in 83.6% of patients. One type of Antihypertensives was used in 24.1%, two types were used in 19.9% and 3 or more types were used concurrently in 12.3% of HD patients. The type used was not specified in 15.3% of patients.

Beta blockers were the most common antihypertensive type used in 49% of patients, followed by calcium channel blockers used in 39.8%, diuretics used in 23.7%, ACE-inhibitors used in 19.7%, angiotensin receptor blocker (ARB) used in 15.1% and alpha blockers used in 10.7% of patients. Some regional differences were apparent in the preference of antihypertensive types. While the use of Beta blockers was in over 40% (range 41.2 – 51.5%) of patients in all regions, the range of use was wide for diuretics (6-63.6%), calcium channel blockers (12.6-62.3%), ACE-I (10.5-35%), ARBs (3.7-21.8%) and alpha blockers (1.5-22%).

Prevalence of Hypertension in HD Patients: Patients reported at baseline (dialysis initiation) as having hypertension as primary cause of ESRD (19.5%) or as comorbidity (57.8%), were triaged with patients reported in the monthly updates as receiving antihypertensive medications (**table 10.2**). There were 1626 unique patients who were reported in one or more of these reporting sources, which corresponds to a prevalence of 81.5 % of HD patients who are hypertensive.

Table 10.2 Distribution of Hypertensive HD patients by reporting source

Hypertension Medication → Hypertension Determined By	Yes # (%)	No # (%)	Missing # (%)	Total / (%) of HD Population
Comorbidity Only	640 (45.7)	177 (37.0)	23 (21.1)	840 (42.2)
Primary Cause of ESRD	37 (2.6)	8 (1.7)	12 (11)	57 (2.9)
Primary Cause + Comorbidity	269 (19.2)	40 (8.4)	9 (8.3)	318 (16)
Neither	455 (32.5)	254 (53)	65 (59.6)	774 (38.9)
Total	1401 (100)	479 (100)	109 (100)	1989 (100%)

Diabetic Status, Medications & Insulin (Ref table 10.1)

At baseline (dialysis initiation), 29.2% of patients were reported as having diabetes as primary cause of ESRD, and separately 29.2% were reported as having diabetic comorbidity. Mutually exclusive unique patient ID's in those two categories procured a 35.6% of patients who were reported as diabetic in either category or both. Also, in the medication records of monthly updates, there were an additional 10.3% of patients who were reported as receiving diabetes medication (hypoglycemic drug, DPP4 inhibitor or Insulin). Hence, among prevalent HD patients in Lebanon, 45.9% of patients were identified as diabetic (52.4% of whom were insulin-dependent) either from baseline clinical profile or by virtue of receiving diabetes medications.

Insulin dependency was much higher among patients reported as diabetic at baseline (58.4%), compared to only 28% of patients identified as diabetic during maintenance HD through medication use (**table 10.3**). Of the insulin-dependent patients, 26.3% were reported as also using oral hypoglycemic. Interestingly, 34.4% of patients reported as diabetic at baseline were not reported as receiving diabetes medication. While it is possible that some patients were able to control their diabetic status through dietary regulation, this will be an area of careful observation by the registry to verify reporting accuracy or completeness.

Table 10.3 Distribution of diabetic HD patients by insulin dependency & reporting source

Received Insulin → Diabetes Determined By	Yes # (%)	No # (%)	Total / (%) of Overall Population
Comorbidity Only	48 (38.4%)	77 (61.6%)	125 (6.4%)
Primary Cause of ESRD	60 (48.4%)	64 (51.6%)	124 (6.4%)
Primary Cause + Comorbidity	296 (66.8%)	147 (33.2%)	443 (22.9%)
Diabetes Medication Use	63 (46%)	137 (54%)	200 (10.3%)
Total	467 (52.4%)	425 (47.6%)	892 (45.9%)

The proportion of HD patients reported as diabetic at baseline was 31.8% among males of whom 59.9% were Insulin dependent, compared to 25.2% among females of whom 51% were insulin dependent. There were differences between recent and earlier starters and by region as shown in **table 10.4**.

Table 10.4 Proportion of diabetic patients and their insulin dependency at baseline

		All Patients	Patient Type		Region				
			Incident	Prevalent	Beirut	Bekaa	Mount Lebanon	North	South
Males	Diab	31.8%	42.0%	28.2%	29.3%	34.4%	31.6%	26.0%	39.9%
	Taking Ins	59.9%	54.9%	62.6%	77.3%	66.7%	57.7%	56.8%	58.2%
Females	Diab	25.2%	32.9%	22.0%	32.7%	18.2%	32.3%	18.5%	24.6%
	Taking Ins	51.0%	58.7%	46.3%	44.4%	12.5%	46.7%	56.5%	61.2%

Diabetic status was also reflected in mortality among this patient population. While 45.9% of the prevalent HD population in Lebanon was diabetic, 91 of the 154 patients (59.1%) who died during the reporting period were diabetic, making the odds of death among diabetic HD patients in Lebanon 1.44 times higher than non-diabetics.

Cardiac Medications

Some antihypertensive medications also double up as cardiac medications. If other cardiac-specific medications were used in addition to antihypertensives, this parameter was marked as a “Yes”. Of all patients included in this report, 47% received such medications (**table 10.5**). However, among the subset of patients (35.9%) reported as having cardiac comorbidity at dialysis initiation, only 66.7% received such cardiac medications. There were regional differences in the use of cardiac medications with a low of 30.9% of patients in Beqaa (55.9% of patients with baseline cardiac comorbidity) and a high of 62% of patients in South (88.9% of patients with baseline cardiac comorbidity).

Prevalence of Cardiac Disease in HD Patients: Patients reported at dialysis initiation as having a cardiac comorbidity, were triaged with patients who were reported in the monthly updates as having an emergent cardiac event or as receiving cardiac medications (**table 10.5**). There were 1187 unique patients who were reported in one or more of these 3 reporting sources, which corresponded to a prevalence of 59.7% of HD patients who had cardiac disease.

Table 10.5 Distribution of HD patients with cardiac disease by reporting source

Cardiac Medication →	Yes # (%)	No # (%)	Total / (%) of HD Population
Cardiac Disease Determined by			
Cardiac Comorbidity at Initiation	400 (42.8%)	212 (20.3%)	612 (30.8%)
Comorbidity at Initiation and Emergent Cardiac Event	81 (8.7%)	16 (1.5%)	97 (4.9%)
Emergent Cardiac Event Only	36 (3.8%)	14 (1.3%)	50 (2.5%)
Neither	428 (45.8%)	802 (76.8%)	1230 (61.8%)
Total	935 (47%)	1044 (53%)	1989

Other Medications (Ref table 10.1)

In addition to medications used in this patient population to treat the primary cause of ESRD, anemia, mineral and molecular balance or cardiac disease; there were a number of other medications used in many or some HD patients.

Multivitamins were used in a majority of HD patients to compensate for diminished absorption of dietary vitamins and minerals in the intestinal mucosa. In Lebanon, 75.7% of patients on maintenance HD receive either full spectrum or B-complex multivitamins. There were regional differences with a low of 60% of patients receiving multivitamins in Beqaa and a high of 82% in Mount Lebanon.

Anti-Depressants: These medications were used in 11.7% of all patients in this report. There were regional differences in the use of these medications with a low of 6.2% of patients in Beirut and a high of 15.2% of patients in Mount Lebanon.

Anxiolytics: These medications were used in 14.5% of all patients in this report. Their use also varied by region with lows of 7.5% and 8.1% of patients in North and Beirut respectively, and highs of 21.4% and 21.8% of patients in Beqaa and South respectively.

The American Dietetic Association recommends an average of two hours per patient / month (30 minutes per week) for an effective dietitian to patient interaction. This requires a dedicated dietitian for every 60 HD patients.

Read about the study addressing this issue on pages 82 – 86 of this report and on the registry website at the address below

<https://www.kidneyregistrylb.com/pages/research-program/research-projects/bone-mineral-disease-study/>