DATA STANDARD	Standard Weekly Urea Kt/V for Hemodialysis
DESCRIPTION	The standard weekly urea Kt/V for hemodialysis is a dimensionless measure of the adequacy of small molecule removal provided one week of dialysis treatments which takes into account both the clearance provided by individual treatments and the total number of treatments in the week.
RATIONALE	Std Kt/V may also be used to compare the adequacy of different treatment regimens (e.g., varying treatment time and dialysis frequency**).**
DATA SOURCE(S)	• Hemodialysis treatment-level data • Laboratory results
REQUIRED DATA ELEMENTS	• Equilibrated Kt/V (eKt/V) • Urea distribution volume V (liters) • Delivered treatment time (minutes). The delivered treatment time reflects the total time of administered dialysis (i.e., excludes time for intermittent dialysis discontinuation if blood returned by setting the machine in bypass mode). It should also exclude any time during the procedure when the patient is not connected to the machine and receiving dialysis. For example, the treatment time should be adjusted if dialysis is temporarily interrupted (e.g., to allow the patient to use bathroom facilities). • Number of hemodialysis treatments in week (N) • Weekly ultrafiltration volume Uf (liters) • Residual kidney function Kr (ml/min)

The Kidney Health Initiative is a public-private partnership between the American Society of Nephrology, US Food and Drug Administration and over 100 companies and organizations in the kidney community. KHI leadership acknowledges and thanks the workgroup that developed these data standards to support research and development in kidney disease. To learn more about KHI or this project, please visit www.kidneyhealthinitiative.org.

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CALCULATION METHOD	As of 2015, the state-of-the-art equation for calculating the standard weekly Kt/V for hemodialysis is as follows[1]: $$stdKt/V = \dfrac{10,080\,\dfrac{1-e^{-eKt/V}}{t}}{\dfrac{\dfrac{1-e^{-eKt/V}}{eKt/V}+\dfrac{10,080}{Nt}-1}{1-\dfrac{0.74}{F}\left[\dfrac{U_f}{V}\right]}} + K_r\dfrac{10,080}{V}$$ Where: stdKt/V = standard Kt/V eKt/V = equilibrated Kt/V V = body water volume (liters) F = N = number of treatments per week 10,080 = number of minutes in a week t = treatment duration (minutes) Uf = weekly ultrafiltration volume (liters) Kr = residual renal function (ml/min)
EXCLUSIONS	• Hemodialysis treatments without the required data elements • Pediatric patients (Age <18 years)
ADDITIONAL DESIRABLE DATA ELEMENTS FOR COLLECTION	• Specific hemodialysis modality: in-center hemodialysis, home hemodialysis, home nocturnal hemodialysis, or in-center nocturnal hemodialysis (i.e., >6-hour treatment time in-center).
NOTES	• If a researcher chooses to aggregate and calculate the average Std Kt/V for any time period (e.g., 3 months), first calculate the weekly Std Kt/V for each set of labs.
EXAMPLE MEASURE CALCULATION	The following is an example of how to calculate Std Kt/V for HD using the above equation: eKt/V = 0.6 N = 5 treatments per week V = 40 L t = 150 minutes Uf = 1.5 x 5 = 7.5 L Kr = 0.4 ml/min stdKt/V = [10,080 *(1-e$^{-0.6}$)/t] / [(1-e$^{-0.6}$)/0.6 + 10,080/(5*150) – 1]/[1-(0.74*7.5)/(5*40)] + 0.4 * 10,080/(40) = 2.42 + 0.10 = 2.52, which rounds to 2.5

Standard Weekly Urea Kt/V for Hemodialysis

ACRONYMS	Std Kt/V: Standard weekly Kt/V
REFERENCE	1. National Kidney Foundation, KDOQI Clinical Practice Guideline for Hemodialysis Adequacy:2015 update. Am J Kidney Dis 2015. 66:884-930.