

Supplemental Table S1

Posology from the summary of product characteristics for “Vancomycin 500 mg Powder for Solution for Infusion” available from www.medicines.org.uk (consulted on May 23rd 2018).

Patient subgroups according to SmPC	Renal function adjustments	Dose (mg kg ⁻¹)	Dosing interval (h)
Neonates < 29 wks PMA	-	15	24
Neonates < 35 wks PMA	-	15	12
Neonates < 1 month PNA	-	15	8
1 month PNA > children > 12 yr	eGFR _{peds} ≤ 29 mL min ⁻¹	15	24
	eGFR _{peds} ≤ 50 mL min ⁻¹	15	12
	eGFR _{peds} > 50 mL min ⁻¹	10	6
Adults	eGFR _{adult} < 50 mL min ⁻¹	15	24
	eGFR _{adult} ≥ 50 mL min ⁻¹	10	6

eGFR_{peds}: estimated glomerular filtration rate in pediatric patients according to equations 1 and 2,
eGFR_{adults}: estimated glomerular filtration rate in adults according to equation 3

$$eGFR_{peds} (mL \min^{-1} 1.73m^{-2}) = \frac{Height (cm) \cdot 0.413}{serum \ creatinine (mg \ dL^{-1})} \quad \text{Equation 1}$$

$$eGFR_{peds} (mL \min^{-1} 1.73m^{-2}) = \frac{Height (cm) \cdot 36.2}{serum \ creatinine (\mu mol \ L^{-1})} \quad \text{Equation 2}$$

$$eGFR_{adult} (mL \ min^{-1}) = \frac{Weight (kg) \cdot (140 - age (yr))}{72 \cdot serum \ creatinine (mg \ dL^{-1})} \cdot 0.85 (if \ female) \quad \text{Equation 3}$$

Supplemental Table S2

Posology from the label for “Vancomycin Hydrochloride for Injection USP” from the FDA website (www.fda.gov; consulted on May 23rd 2018).

Patient subgroups according to label	Renal function adjustments	Dose	Dosing interval (h)
Neonates < 1 week PNA	-	10 mg kg ⁻¹	12
Neonates < 1 month PNA	-	10 mg kg ⁻¹	8
1 month PNA > children > 18 yr	-	10 mg kg ⁻¹	6
Adults	-	500 mg	6
Adults with impaired renal function	eGFR < 100 ml min ⁻¹	1,545 mg	24
	eGFR < 90 ml min ⁻¹	1,390 mg	24
	eGFR < 80 ml min ⁻¹	1,235 mg	24
	eGFR < 70 ml min ⁻¹	1,080 mg	24
	eGFR < 60 ml min ⁻¹	925 mg	24
	eGFR < 50 ml min ⁻¹	770 mg	24
	eGFR < 40 ml min ⁻¹	620 mg	24
	eGFR < 30 ml min ⁻¹	465 mg	24
	eGFR < 20 ml min ⁻¹	310 mg	24
	eGFR < 10 ml min ⁻¹	155 mg	24

eGFR: estimated glomerular filtration rate according to: $eGFR (mL \min^{-1}) = \frac{Weight (kg) \cdot (140 - age (yr))}{72 \cdot serum \ creatinine (mg \ dL^{-1})} \cdot 0.85$ (if female) or

$$eGFR (mL \min^{-1}) = \frac{Weight (kg) \cdot (140 - age (yr))}{serum \ creatinine (\mu mol \ L^{-1})} \cdot 1.04 \text{ (if female)} \cdot 1.23 \text{ (if male)}$$

Supplemental Table S3

The proportion of patients achieving an AUC_{24h} below 400 mg L⁻¹ h ($f_{AUC<400}$), between 400 and 700 mg L⁻¹ h (f_{Target}) and above 700 mg L⁻¹ h ($f_{AUC>700}$) according to the original and optimized doses from the EMA-approved SmPC

Population	SmPC Vancomycin 500 mg powder for concentrate solution for infusion (EMA)					
	<i>Original dosing regimen</i>			<i>Optimized dosing regimen</i>		
	$f_{AUC<400}$	f_{Target}	$f_{AUC>700}$	$f_{AUC<400}$	f_{Target}	$f_{AUC>700}$
Newborns (n=559)	0.43	0.46	0.11	0.17	0.58	0.25
Children & adolescents (n=124)	0.65	0.29	0.06	0.30	0.51	0.19
Adults (n=732)	0.11	0.45	0.44	0.28	0.49	0.23
Elderly (n=500)	0.06	0.18	0.76	0.13	0.41	0.46
Very elderly (n=200)	0.09	0.21	0.70	0.20	0.27	0.53
Underweight adults (157)	0.25	0.50	0.25	0.46	0.41	0.13
Obese adults (n=272)	0.00	0.19	0.81	0.05	0.37	0.58
Total population (n=2544)	0.19	0.35	0.46	0.21	0.46	0.33

Supplemental Table S4

The proportion of patients achieving an AUC_{24h} below $400 \text{ mg L}^{-1} \text{ h}$ ($f_{AUC<400}$), between 400 and $700 \text{ mg L}^{-1} \text{ h}$ (f_{Target}) and above $700 \text{ mg L}^{-1} \text{ h}$ ($f_{AUC>700}$) according to the original and optimized doses from the FDA-approved label.

Population	Label Vancocin® HCL (FDA)					
	Original dosing regimen			Optimized dosing regimen		
	$f_{AUC<400}$	f_{Target}	$f_{AUC>700}$	$f_{AUC<400}$	f_{Target}	$f_{AUC>700}$
Newborns (n=559)	0.32	0.54	0.14	0.17	0.59	0.24
Children & adolescents (n=124)	0.70	0.25	0.05	0.24	0.57	0.19
Adults (n=732)	0.69	0.28	0.03	0.29	0.59	0.15
Elderly (n=500)	0.58	0.37	0.05	0.15	0.64	0.21
Very elderly (n=200)	0.52	0.40	0.08	0.13	0.64	0.23
Underweight adults (157)	0.62	0.34	0.04	0.23	0.58	0.19
Obese adults (n=272)	0.56	0.37	0.07	0.16	0.59	0.25
Total population (n=2544)	0.56	0.37	0.07	0.20	0.60	0.20