

Milrinone

PRESENTATION	Ampoules containing 10mg in 10ml, 1mg/ml of milrinone
INDICATION	<p>Inotropic support in severe cardiogenic shock unresponsive to catecholamines</p> <p>ONLY TO BE STARTED ON ADVICE OF ICU CONSULTANT</p>
MECHANISM OF ACTION	A selective phosphodiesterase type 3 inhibitor. As an 'inodilator', it leads to inotropy due to increased myocardial cAMP but also reduced SVR and PVR due to vascular smooth muscle relaxation.
FORMULATION	<p>Standard infusion is 200mcg/ml in 5% dextrose</p> <p>Remove 50ml from 250ml bag of 5% dextrose and insert 50ml of milrinone 1mg/ml to create solution of 200mcg/ml milrinone</p>
DOSE & ADMINISTRATION: NORMAL RENAL FUNCTION	<p>STANDARD MAINTENANCE INFUSION 0.375-0.75mcg/kg/min, see attached administration guideline below. Titrated to clinical response and onset of side effects</p> <p>LOW DOSE MAINTENANCE INFUSION 0.125-0.25mcg/kg/min - used at discretion of ICU consultant</p> <p>LOADING DOSE</p> <ul style="list-style-type: none"> - SHOULD ONLY BE GIVEN BY EXPERIENCED CLINICIAN - Usually excluded in haemodynamically unstable patients - 50mcg/kg (0.25ml/kg of the 200mcg/ml standard infusion) given over 10 minutes
DOSE & ADMINISTRATION: IMPAIRED RENAL FUNCTION	<p>MAINTENANCE INFUSION Single set infusion rate dependent upon patient's creatinine clearance administration guideline below.</p> <p>LOADING DOSE</p> <ul style="list-style-type: none"> - SHOULD ONLY BE GIVEN BY EXPERIENCED CLINICIAN - Usually excluded in haemodynamically unstable patients
CONCENTRATION	200 micrograms/ml
STABILITY	Physically and chemically stable for 24 hours at room temperature
ADDITIONAL INFORMATION	<p>Do not exceed the maximum recommended daily dose of 1.13mg/kg</p> <ul style="list-style-type: none"> - Equivalent of 50mcg/kg loading dose and 24 hours of 0.75mcg/kg/min <p>More concentrated dilutions may be used in fluid restricted patients</p> <ul style="list-style-type: none"> - Discuss with pharmacist if required

**Critical Care Guidelines
FOR CRITICAL CARE USE ONLY**

Milrinone maintenance infusion in patients with normal renal function:

Based on 200mcg/ml standard infusion. Infusion rates in ml/hr for doses ranging between 0.375 and 0.75 mcg/kg/min.

Milrinone dose (mcg/kg/min) → Body weight (kg) ↓	0.375	0.400	0.425	0.450	0.475	0.500	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750
50	5.63	6.00	6.38	6.75	7.13	7.50	7.88	8.25	8.63	9.00	9.38	9.75	10.13	10.50	10.88	11.25
55	6.19	6.60	7.01	7.43	7.84	8.25	8.66	9.08	9.49	9.90	10.31	10.73	11.14	11.55	11.96	12.38
60	6.75	7.20	7.65	8.10	8.55	9.00	9.45	9.90	10.35	10.80	11.25	11.70	12.15	12.60	13.05	13.50
65	7.31	7.80	8.29	8.78	9.26	9.75	10.24	10.73	11.21	11.70	12.19	12.68	13.16	13.65	14.14	14.63
70	7.88	8.40	8.93	9.45	9.98	10.50	11.03	11.55	12.08	12.60	13.13	13.65	14.18	14.70	15.23	15.75
75	8.44	9.00	9.56	10.13	10.69	11.25	11.81	12.38	12.94	13.50	14.06	14.63	15.19	15.75	16.31	16.88
80	9.00	9.60	10.20	10.80	11.40	12.00	12.60	13.20	13.80	14.40	15.00	15.60	16.20	16.80	17.40	18.00
85	9.56	10.20	10.84	11.48	12.11	12.75	13.39	14.03	14.66	15.30	15.94	16.58	17.21	17.85	18.49	19.13
90	10.13	10.80	11.48	12.15	12.83	13.50	14.18	14.85	15.53	16.20	16.88	17.55	18.23	18.90	19.58	20.25
95	10.69	11.40	12.11	12.83	13.54	14.25	14.96	15.68	16.39	17.10	17.81	18.53	19.24	19.95	20.66	21.38
100	11.25	12.00	12.75	13.50	14.25	15.00	15.75	16.50	17.25	18.00	18.75	19.50	20.25	21.00	21.75	22.50

Maintenance infusion in patients with impaired renal function: Based on 200mcg/ml standard infusion

Creatinine Clearance (ml/min)	Dose (micrograms/kg/min)	Infusion rate (ml/kg/hr)
5	0.20	0.06
10	0.23	0.07
20	0.28	0.08
30	0.33	0.10
40	0.38	0.11
50	0.43	0.13

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References:

1. Primacor Summary of Product Characteristics, Last updated 23 Oct 2019. Accessed 06/08/21.
Available at: <https://www.medicines.org.uk/emc/product/1460/smpc>
2. Milrinone, British National Formulary, Last Updated 27/01/21. Accessed 06/08/21.
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