

Protocol for the administration of Digifab[®] for digitalis intoxication

Indications:

Digifab[®] is indicated for the treatment of patients with life-threatening or potentially life-threatening digoxin toxicity or overdose, where measures beyond the withdrawal of the digitalis glycoside and correction of any serum abnormality are felt necessary.

Background:

Digoxin immune Fab is a sterile lyophilised powder of antigen binding fragments (Fab) derived from specific digoxin antibodies raised in sheep. It binds to molecules of digoxin reducing free digoxin levels, which results in a shift in the equilibrium away from binding to the receptors, thereby reducing cardio-toxic effects. Following administration of digoxin immune Fab, improvement in signs and symptoms of toxicity occurs within 30 to 60 minutes.

Dosage & administration: (For intravenous use only)

Note: Doses should ordinarily be rounded up to the next whole vial.

A) Calculation based on steady-state serum digoxin concentration:

$$\text{Dose (\# of vials)} = \frac{\text{serum digoxin concentration (ng/ml)} \times \text{weight (kg)}}{100}$$

NB The biochemistry results in CUH report digoxin levels in nanomoles per litre. These must be converted to nanograms per ml to calculate the dose of Digifab[®] required.

Conversion Factor:

$$\text{Serum Digoxin Concentration (SDC) nmol/L} \times 0.78 = \text{SDC (ng/ml)}$$

Patient wt (kg)	Serum digoxin concentration (ng/ml)						
	1	2	4	8	12	16	20
40	0.5v	1v	2v	3v	5v	7v	8v
60	0.5v	1v	3v	5v	7v	10v	12v
70	1v	2v	3v	6v	9v	11v	14v
80	1v	2v	3v	7v	10v	13v	16v
100	1v	2v	4v	8v	12v	16v	20v

V = no. of vials

B) Dosage for acute ingestion of known amount:

Each vial of Digifab[®] (40mg of purified digoxin-specific Fab) binds approx 0.5mg of digoxin.

$$\text{Dose (\# of vials)} = \frac{\text{total digitalis body load (mg)}}{0.5\text{mg of digitalis bound/vial}}$$

IMPORTANT: Multiply amount ingested in mg by 0.80 if digoxin tablets involved to account for incomplete absorption – as opposed to the injection.

C) Dosage for acute ingestion of unknown amount:

(In absence of a serum digitalis concentration or estimated ingestion amount.)

Up to 20 vials of Digifab[®] can be administered.

Consider giving 10 vials, which is usually adequate to treat most life threatening ingestions and observe the patient's response. If needed an additional 10 vials may be administered, to avoid a febrile reaction.

Monitor for volume overload in small (<20kg) children.

D) Dosage for toxicity during chronic therapy:

If clinical instability mandates immediate treatment before availability of serum levels:

Adults & children \geq 20kg administer 6 vials

Infants & children < 20kg administer 1 vial

Monitoring:

- Digifab[®] may interfere with digitalis immunoassay measurements. Thus, standard serum digoxin concentration measurements may be clinically misleading until the Fab fragments are eliminated from the body.
- Monitor temperature and blood pressure. Continuous ECG monitoring is required for at least 24 hours after administration.
- It is also important to monitor the serum potassium concentration as Digifab[®] may result in significant hypokalaemia.
- Use of Digifab[®] may worsen congestive heart failure & atrial fibrillation

Instructions for use:

*Reconstitute each vial with 4ml water for injection to give a solution of approximately 10mg/ml of digoxin immune fab protein.

*Visually inspect reconstituted vials for particulate matter or discolouration prior to administration.

*Each vial can be further diluted to any convenient volume with 0.9% sodium chloride.

*The final solution should be infused intravenously over at least 30 minutes.

*Use a 0.22 micron membrane filter to remove any incompletely dissolved aggregates of Digifab[®].

*If cardiac arrest seems imminent Digifab[®] can be given as a bolus intravenous injection.

References:

Digifab[®] Full Prescribing Information, January 2012. Protherics UK Ltd.