Protocols
IV Therapy for Chronic Disease/Oncology Applications

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Immune I.V. push

Nutrient	mg/mL	mL	mOsm/mL	mOsm*vol
1. Magnesium chloride, 20%	200	6	2.95	17.70
2. Calcium chloride, 10%	100	1	2..04	2.04
3. Selenium	200 mcg	2	0.0014	0.0028
4. Pyridoxine	100	1	1.46	1.46
5. Dexpanthenol	250	1	1.22	1.22
6. Hydroxycobalamin	1	1	0.31	0.31
7. B-Complex 100	*	1	2.04	2.04
8. Ascorbic acid	500	4	5.94	23.76
9. SWI USP		43	0	0
Totals:		**60**		**48.25**

Use 60 mL syringe

***B-Complex 100:**Thiamine HCl 100 mg/ml, Riboflavin-5-PO_4 2 mg/ml, Pyridoxine HCl 2 mg/ml, Dexpanthenol 2 mg/ml, Niacinamide100 mg/ml

Est. Treatment time: 20-30 minutes **Desired push rate: 1 ml every 20-30 seconds**
Final osmolarity: 804 mOsm/L **Administer with 23g Butterfly set**

Multivitamin and Mineral

Nutrient	mg/mL	mL	mOsm/mL	mOsm*vol
1. Calcium chloride, 10%	100	4	2.04	8.08
2. Magnesium chloride, 20%	200	6	2.95	17.7
3.Potassium Chloride	2 mEq	10	4.0	40.0
4. Selenium	200 mcg	1	0.0014	0.0014
5. MTE-4	*	2	0.13	0.26
6. Molybdenum	25 mcg	5	0.80	4.0
7. Germanium sesquioxide	100	4	1.29	5.16
8. Dexpanthenol	250	1	1.22	1.22
9. Pyridoxine	100	1	1.46	1.46
10. Hydroxocobalamin	1	2	0.31	0.62
11. B-complex 100	**	2	2.04	4.08
12. Folinic Acid	10	1	0.33	0.33
13. 0.45% Saline		300	0.155	46.5
Totals:		**345**		**130**

***B-Complex 100:**Thiamine HCl 100 mg/ml, Riboflavin-5-PO_4 2 mg/ml, Pyridoxine HCl 2 mg/ml, Dexpanthenol 2 mg/ml, Niacinamide100 mg/ml

Est. Treatment time: 2 hours **Desired drip rate: 4 mL/min**

Final osmolarity: 377 mOsm/L

Tissue and Wound Healing

Nutrient	mg/mL	mL	mOsm/mL	mOsm*vol
1. Selenium	200 mcg	2	0.0014	0.0028
2. Zinc concentrate	5	2	0.18	0.36
3. Magnesium chloride	200	6	2.04	12.24
4. Dexpanthenol	250	2	1.22	2.44
5. Pyridoxine	100	2	1.46	2.92
6. B-complex 100		2	1.44	2.88
7. Ascorbic acid	500	10	5.94	59.4
8. Proline	50	5	0.43	2.15
9. Glutathione	200	3	2.06	6.18
10. Taurine	50	5	0.53	2.65
11. 0.45% Saline		250	0.16	40.0
Totals:		**287**		**135**

***B-Complex 100:**Thiamine HCl 100 mg/ml, Riboflavin-5-PO_4 2 mg/ml, Pyridoxine HCl 2 mg/ml, Dexpanthenol 2 mg/ml, Niacinamide100 mg/ml

Est. Treatment time: 1-1.5 hours **Desired drip rate: 4-5 mL/min**
Final osmolarity: 470 mOsm/L

Vitamin A – 1 mL vitamin A, 50K IU/mL may be given deep i.m. or p.o. to improve the healing rate

Cachexia-Malnutrition

Nutrient	mg/mL	mL	mOsm/mL	mOsm*vol
1. Calcium chloride, 10%	100	13	2.04	26.52
2. Magnesium chloride, 20%	200	6	2.95	17.70
3. Selenium	200 mcg	2	0.0014	0.0028
4. Potassium chloride	2 mEq	10	4.0	40
5. Zinc sulfate	5	1	0.18	0.18
6. Manganese	0.1	5	0.01	0.05
7. Molybdenum	25 mcg	4	0.8	3.2
8. Pyridoxine	100	3	1.46	4.38
9. Dexpanthenol	250	2	1.22	2.44
10. Hydroxocobalamin	1	3	0.31	0.93
11. B-complex 100	*	3	2.04	6.12
12. FreAmine III **	10%	100	0.95	95.0
13. Sterile Water for injection		400	0	0
Totals:		**552**		**196.48**

***B-Complex 100:**Thiamine HCl 100 mg/ml, Riboflavin-5-PO_4 2 mg/ml, Pyridoxine HCl 2 mg/ml, Dexpanthenol 2 mg/ml, Niacinamide100 mg/ml

Est. Treatment time: 1.5-2.5 hours
Final osmolarity: 356 mOsm/L

Desired drip rate: 4-6 mL/min

Radiation Recovery Formula

	500 mL	Sterile Water for Infusion			
	50 mL	C-500 (25 Gram)			
	10	Calcium Gluconate (1 gram)			(May sub 3mL CaCl)
	4	Magnesium Sulfate (2 gram)			(May sub 10mL MgCl)
	5	Zinc Chloride (25 mg)			
	2	Selenium (400 mcg)			[OPTIONAL:]
	3	B-100		1 mL	Methyl B-12 (5 mg)
	2	B-5 (500mg)		1 mL	5-Methylfolate (5 mg) or Folinic Acid
	2	B-6 (100mg)			
	25	8.4% Bicarbonate Na			(Omit in central line)
	4	L- Carnitine (500 mg/ml)		Optional	Taurine 400-500 mg

****FOLLOW WITH 2 - 4 GRAMS GSH IN 30 - 100 ML NS**

Total Volume: 630 Ml - Osmolarity: 611 mOsm/L

Est. Treatment time: 2-3 hours

Custom Rehydration Solutions with Nutrients

- The following slides show examples from our experience employing customized solutions in dehydrated patients.

- As long as the rule of hypotonic or isotonic solution for rehydration is followed, one may compound any number of appropriate solutions using a hypotonic base solution and nutrients.

Rx: Rehydration 500 mL

Total Volume: 552 mL **Osmolarity: 271 mOsm/L**

	500 mL	**Sterile Water**		**1 mL**	**Pyridoxine / B-6 (100mg)**
	10 mL	**C-500 (5 grams)**		**3 mL**	**B-100 Complex**
	5 mL	**Calcium Chloride (6.8 mEq)**		**2 mL**	**Dexpanthenol / B-5 (500mg)**
	10 mL	**Magnesium Chloride (19.7 mEq)**		**0.5 mL**	**5MTHF (2.5 mg) or Folinic Acid**
	3 mL	**Potassium Chloride (6 mEq)**		**2 mL**	**Methyl-B12 (10 mg)**
	15 mL	**8.4% Sodium Bicarbonate**			

Est. Treatment time: 1.5-2.5 hours

Rx: Rehydration 500 mL in 0.45% NS

Total Volume: 535 mL **Osmolarity: 325 mOsm/L**

	500 mL	0.45% (Half) Normal Saline		1 mL	Pyridoxine / B-6 (100mg)
	5 mL	C-500 (2.5 grams)		2 mL	B-100 Complex
	4 mL	Calcium Chloride (5.44 mEq)		2 mL	Dexpanthenol / B-5 (500mg)
	6 mL	Magnesium Chloride (11.82 mEq)		0.5 mL	5MTHF (2.5 mg) or Folinic Acid
	3 mL	Potassium Chloride (6 mEq)		1 mL	Methyl-B12 (5 mg)
	10 mL	8.4% Sodium Bicarbonate			

Est. Treatment time: 1.5-2.5 hours

Rx: Rehydration 500 mL plus Amino Acids

Total Volume: 598 mL **Osmolarity: 285 mOsm/L**

	500 mL	**Sterile Water**		**1 mL**	**Pyridoxine / B-6 (100mg)**
	5 mL	**C-500 (2.5 grams)**		**3 mL**	**B-100 Complex**
	6 mL	**Calcium Chloride (8.16 mEq)**		**2 mL**	**Dexpanthenol / B-5 (500mg)**
	10 mL	**Magnesium Chloride (19.7 mEq)**		**0.5 mL**	**5MTHF (2.5 mg) or Folinic Acid**
	4 mL	**Potassium Chloride (8 mEq)**		**2 mL**	**Methyl-B12 (10 mg)**
	15 mL	**8.4% Sodium Bicarbonate**		**50 mL**	**FreeAmine 10% Solution**

Est. Treatment time: 2-3 hours

Rx: Rehydration 1000 mL

Total Volume: 1101 mL **Osmolarity: 290 mOsm/L**

	1000 mL	**Sterile Water**		**1 mL**	**Pyridoxine / B-6 (100mg)**
	25 mL	**C-500 (12.5 grams)**		**4 mL**	**B-100 Complex**
	10 mL	**Calcium Chloride (13.60 mEq)**		**4 mL**	**Dexpanthenol / B-5 (1000mg)**
	20 mL	**Magnesium Chloride (39.4 mEq)**		**0.5 mL**	**5MTHF (2.5 mg) or Folinic Acid**
	8 mL	**Potassium Chloride (16 mEq)**		**2 mL**	**Methyl-B12 (10 mg)**
	25 mL	**8.4% Sodium Bicarbonate**			

Est. Treatment time: 2.5-4 hours

Rx: Rehydration 1000 mL plus Amino Acids

Total Volume: 1186 mL **Osmolarity: 271 mOsm/L**

	1000 mL	**Sterile Water**		**1 mL**	**Pyridoxine / B-6 (100mg)**
	10 mL	**C-500 (5 grams)**		**4 mL**	**B-100 Complex**
	10 mL	**Calcium Chloride (13.60 mEq)**		**4 mL**	**Dexpanthenol / B-5 (1000mg)**
	20 mL	**Magnesium Chloride (39.4 mEq)**		**0.5 mL**	**5MTHF (2.5 mg) or Folinic Acid**
	8 mL	**Potassium Chloride (16 mEq)**		**2 mL**	**Methyl-B12 (10 mg)**
	25 mL	**8.4% Sodium Bicarbonate**		**100 mL**	**10% FreeAmine**

Est. Treatment time: 2.5-4 hours

Regarding IV Vitamin C:

- The Vitamin C IV's are in two major categories:
  - Those for general immune and antioxidant support
    - These IV's contain support nutrients, and occasionally are given with Glutathione
  - Those for purely oxidative purposes
    - These generally only have minerals to balance blood electrolytes, and are generally not given with glutathione or other nutrients on the same day.

Vitamin C 15 grams

Nutrient	mg/mL	mL	mOsm/mL	mOsm*vol
1. Magnesium chloride	200	6	2.95	17.70
2. Calcium chloride	100	10	2.04	20.4
3. Selenium	40 mcg	10	0	0
4. Zinc Concentrate	5	2	0.18	0.36
5. Sodium Bicarbonate	8.4%	15	2.0	30
6. L-Ascorbic Acid	500	30	5.94	178.2
7. 0.45% Saline		300	0.16	48
Totals:		**371**		**292**

Est. Treatment time: 1-1.5 hours
Final osmolarity: 787 mOsm/L

Desired drip rate: 4-6 mL/min

Vitamin C 25 grams with vitamin/mineral

Nutrient	mg/mL	mL	mOsm/mL	mOsm*vol
1. Magnesium chloride	200	6	2.95	17.70
2. Calcium chloride	100	2	2.04	4.08
3. Potassium chloride	2 meq	4	4.0	20
3. Zinc concentrate	5	1	0.18	0.18
4. Selenium	200 mcg	2	0.0014	0.0028
5. Pyridoxine	100	2	1.46	2.92
6. Dexpanthenol	250	2	1.22	2.44
7. Hydroxocobalamin	1	2	0.31	0.62
8. B-Complex	**	2	2.04	4.08
9. L-Ascorbic Acid	500	50	5.94	297
10. SWI USP		425	0	0
Totals:		**474**		**349**

Est. Treatment time: 2 hours **Desired drip rate: 4 mL/min**

Final osmolarity: 699 mOsm/L

Mega C Antiviral – Vitamin C 50 grams

Nutrient	mg/mL	mL	mOsm/mL	mOsm*vol
1. Calcium chloride, 10%	100	2	0.68	1.36
2. Magnesium chloride, 20%	200	6	2.95	17.7
3. Selenium	200 mcg	2	0.0014	0.0028
4. Germanium sesquioxide	100	2	1.29	2.58
5 Zinc sulfate	5	1	0.18	0.18
6 Pyridoxine	100	2	1.46	2.92
7 Dexpanthenol	250	1	1.22	1.22
8 Hydroxocobalamin	1	2	0.31	0.62
9 B-complex 100	*	2	2.04	4.08
10. Sodium bicarbonate	8.5%	5	2.0	10.0
11. Ascorbic Acid	500	100	5.94	594
12. SWI USP		400	0	0
Totals:		**525**		**634.7**

Est. Treatment time: 3 hours **Desired drip rate: 4 mL/min**

Final osmolarity: 1015 mOsm/L

Technical Notes:

1. **Ascorbic acid dose may be started at 25 grams and increased as the patient tolerates to the full 50 grams.**
2. **High doses of vitamin C may be soporific to some patients and may cause hypoglycemia! Encourage patients to drink water and have protein snacks during treatment.**
3. **Infections may benefit from 100mg of L-Threonine, 2ml, essential for thymus function. 5-10 ml thymus extract is useful for viral infections.**

Dosing of IVC:

- "Low Dose" IVC
  - **<u>0.07 to 0.14 Grams per kilogram of body weight</u>**
  - Quality of Life in cancer and other illnesses
  - General immune and antioxidant support
    - These IV's contain support nutrients, and occasionally are given with Glutathione

- "High Dose – Oxidative" IVC
  - **<u>0.4 to 1.4 Grams per kilogram of body weight</u>**
  - Those for purely oxidative purposes
    - These generally only have minerals to balance blood electrolytes, and are generally not given with glutathione or other nutrients on the same day.

Note:

- The following four IV Vitamin C formulas are used for oxidative therapies.

- The additional minerals have been adjusted and calculated to decrease any blood chemistry changes inherent in high dose IVC therapies and were derived through pre and post IVC blood chemistry analysis.

- The chloride form of the mineral additives is critical to this balance.

Rx: 25 Gram IVC

	500 mL	**SWI**	
	50 mL	**C-500 (25 grams)**	
	1	**Calcium Chloride (1.36 mEq)**	
	2	**Magnesium Chloride (3.94 mEq)**	
	1	**Potassium Chloride (2 mEq)**	

Total Volume: 554 mL **Osmolarity: 545 mOsm/L**

Est. Treatment time: 1.5-2.5 hours

Rx: 50 Gram IVC

500 mL	SWI
100 mL	C-500 (50 Grams)
3	Calcium Chloride (4.08 mEq)
5	Magnesium Chloride (9.85 mEq)
4	Potassium Chloride (8 mEq)

Total Volume: 612 mL Osmolarity: 1001 mOsm/L

Est. Treatment time: 2-3 hours

Rx: 75 Gram IVC

750 mL	SWI
150 mL	C-500 (75 grams)
4	Calcium Chloride (5.44 mEq)
7	Magnesium Chloride (13.79 mEq)
6	Potassium Chloride (12 mEq)

Total Volume: 917 mL Osmolarity: 1006 mOsm/L

Est. Treatment time: 3-4 hours

Rx: 100 Gram IVC

1000 mL	SWI
200 mL	C-500 (100 Grams)
5	Calcium Chloride (6.8 mEq)
10	Magnesium Chloride (19.7 mEq)
8	Potassium Chloride (16 mEq)

Total Volume: 1223 mL Osmolarity: 1007 mOsm/L

Est. Treatment time: 3-4 hours

Technical notes: Apply to all HDIVC protocols

1. Calcium gluconate or chloride (1 Gram) may be given by IV push if patient shows signs of hypocalcemia.

2. Cancer patients: Give volume over next one to three hours. Generally not infused faster than ½ to 1 gram per minute.

3. HDIVC causes dehydration!

4. Encourage patients to drink water and have protein snacks during treatment.

5. Hydration IV may be required in some patients before and/or after HDIVC.

Artesunate with IVC

CIRCLE:
ARTESUNATE DOSE: 60MG / 120MG / 180MG / 240MG
CARRIER: _____ ML NS D5W
INFUSION TIME: 10 15 20 30 MIN

Rx: 50 Gram IVC

	500 mL	SWI			
	100 mL	C-500 (50 Grams)			
	3	Calcium Chloride (4.08 mEq)			
	5	Magnesium Chloride (9.85 mEq)			
	4	Potassium Chloride (8 mEq)			

General dosing protocol is a test dose of 60 mg ART directly prior to 50-75 grams IVC (providing all IVC safety screening is met. Then the ART dose is escalated to 120 mg or more. For maximum ROS generation and support of the IVC the ART needs to be given prior to the IVC.

Protocol for Curcumin

- **Please see your IV Curcumin slides as well as the printed handout in your notes for details on IV administration if Curcumin.**

Quercetin:

Dose: [1-4]

- Test dose at 1 mg/kg IV on the first day
- Subsequent doses could increase to 140 mg/kg if tolerated two times weekly in Normal Saline

Administration:

- Intravenous dosing via either a central or peripheral line.
  - Use a filtered line or add on filter set
- Carrier solutions:
  - Per compounding pharmacy instructions
- Rate of administration: 60 to 240 minutes as tolerated by the patient
  - Monitor for signs of nausea which can be the first sign of a non-tolerated dose [3]
  - For allergic / anaphylactic reaction treat per standard protocol.
- Other IV compatibility:
  - Generally incompatible with other IV solutions in the same IV container

Glycyrrhizin: INTRAVENOUS USE GUIDELINES

Dose:

- Test dose at 40-60 mg IV on the first day
- Subsequent doses could increase to 240 mg if tolerated two times weekly

Administration:

- Intravenous dosing via either a central or peripheral line.
- Carrier solutions:
  - Dextrose 5% in Water (D5W) 100 to 1000 mL carrier solution
  - 0.9% normal saline (NS) or 0.45% (1/2NS) 100 to 1000 mL carrier solution
- Rate of administration: 60 to 180 minutes as tolerated by the patient
  - Monitor for signs of blood pressure elevation and electrolyte shifts which can be the first sign of a non-tolerated dose [3,4]
    - Dosing once to twice per week at the higher range avoids these concerns in most cases.
  - For allergic / anaphylactic reaction treat per standard protocol.
- Other IV compatibility:
  - May be mixed with any water soluble vitamin / mineral IV solution

Calcitriol

- Available as Calcitriol for injection, 1mcg (500 IU) single dose vials.
  - All other parenteral Vitamin D (in the US) is for IM use only.
- Dose recommended is 1 to 4 mcg (500 to 2000 IU) on the first dose, and 4 mcg or higher on successive doses.
  - Often dosed weekly. Check serum Ca, Vit. D and PTH if using long term.
  - Following the first dose, dose recommendations are 4 to 10 mcg weekly if needed for non cancer cases.

Alpha Lipoic Acid (ALA)

Nutrient	mg/ml	mL	mOsm/ml	mOsm*vol
1. Lipoic Acid	100 mg	**		
2. D5W or 0.9% Saline		250		
Totals:		**270**		**104**

Est. Treatment time: 1.5-2 hours **Desired drip rate: 3-4 mL/min**
Final osmolarity: Approx. Iso-osmolar

Technical notes:
1.DO NOT add any other nutrients or injectables to this solution.
2.Cover the bottle/bag (B-Braun bag only) with foil during infusion. Lipoic acid photo-degrades.
3.The first treatment dose should be 40-100 mg
4.Lipoic acid may be increased to 300 mg with second treatment if the first IV is well tolerated.

Lipoic-Mineral Complex (Poly-MVA)

Nutrient	mg/ml	mL	mOsm/ml	mOsm*vol
1. LAMC – Poly MVA		5 - 40		
2. D5W or 0.9% Saline		100 - 250		

Est. Treatment time: 0.5 – 1.5 hours **Desired drip rate: 3-4 mL/min**
Final osmolarity: Approx. Iso-osmolar

Technical notes:
1.DO NOT add any other nutrients or injectables to this solution.
2.Can be used in series with other nutrients
3.The first treatment dose should be 5 – 10 mL
4.LAMC may be increased to 40 mL with second treatment if the first IV is well tolerated.

IV Silver

- Infusion:
- Empty bag / bottle
  - Empty a bag of sterile water
- 5000 mcg (5 mgs) of methylcobalamin
- Per 5-15 ml of Ag Hydrosol
  - 200 ppm
- Per100 ml of Ag Hydrosol
  - 10-25ppm hydrosol
  - Maximum 10 grams

- Use MSM (Sodium Chloride free) or D5W as your carrier solution

IV SILVER

- Use filtered needle to draw
- Use filtered tubing
- Access largest vein
- Slow infusion: 1-2 mL / minute

Hydrogen Peroxide

Nutrient	mg/mL	mL	mOsm/mL	mOsm*vol
1. Magnesium chloride	200 mg	3-6	2.95	17.70
2. Manganese sulfate	0.1 mg	5-10	0.87	3.48
3. Hydrogen peroxide 3%		0.5-3	0	0
4. 0.9% Normal Saline		250	0.31	77.5
Opt: DMSO 50%	500	15	0.01	0.15
Totals:		**268**		**114**

Est. Treatment time: 1.5-2 hours **Desired drip rate: 2-3 mL/min**

Final osmolarity: 425 mOsm/L

Technical notes:

5 mL or 10 mL 1:500 HCl pushed through IV set "Y" port (circle volume) : Stop drip during push and push at a rate not to exceed 2 mL/minute

Hydrogen Peroxide

Technical notes:

1.Start patient on hydrogen peroxide dose of 0.5-1 ml initially. Increase volume by 0.5-1 ml per treatment until the full dose of 3 ml is obtained. Increase dose only if patient tolerates well with no adverse effects.

2.Do not administer this protocol at a rate that is faster than recommended as adverse effects may occur.

3.Do not add ascorbic acid to this formula, it is not compatible.

4.Optional : DMSO can increase efficacy of this treatment in pulmonary conditions.

Pediatric Dose Calculation Information for IV Therapy

Dose Adjustments for Pediatrics:

Clark's Rule is a medical term referring to a procedure used to calculate the amount of medicine to give to a child aged 2-17. The procedure is to take the child's weight in pounds, divide by 150lbs, and multiply the fractional result by the adult dose to find the equivalent child dosage.

Pediatric dose = [child's weight (lb) / 150 (lb)] x Adult dose

For example: If an adult dose of medication calls for 30mg and the child weighs 30lbs. Divide the weight by 150 (30/150) to get 1/5. Multiply 1/5 times 30mg to get 6mg. (Or convert the fraction to a decimal and multiply – 0.20 in this case).

Common IV example:

Adult goal dose is 40 mL of drug

Child weighs 25 pounds

[25 lb / 150 lb] x 40 mL

1/6 x 40 mL [convert to a decimal]

0.167 x 40 mL = 6.7 (7) mL dose

IVC Scaling for a 10 Kg Child @ 1.25 G / Kg

Dose Escalation IV #-1 to 4 (Max Dose)

	5 Gm	7.5 Gm	10 Gm	12.5 Gm
D5W	100	100	100	200
C-500	10	15	20	25
CaCl	0.5	1	1	1
MgCl	0.5	1	2	2
KCl	-0-	-0-	-0-	0.5
DMSO	0.5	0.5	0.5	1.0

Nutrient Scaling for Pediatrics:

- The calculation on the prior slide can be used for all additives in an IV, provided that the additive is acceptable for pediatric infusion.

- Such calculations are a guideline and not a hard and fast rule. They will however generally help create an appropriately scaled infusion Rx that is safe for a pediatric patient.

Volume Adjustments:

- In Rehydration a common calculation is 20 mL / Kg body weight.
  - http://emedicine.medscape.com/article/801012-treatment
- In Therapeutic / Hypertonic IV's the volume for a pediatric patient can be calculated based on the following considerations:
  - How close to the 20 mL/Kg is the total volume?
  - Is the solution hypertonic and should the solution volume be increased?
  - Just as in an adult, if headache or other signs of dehydration develop then a following infusion of an isotonic solution may be made at the 20 mL/Kg dose.

  This chart is an estimate by weight for isotonic solutions / hydration in a pediatric patient. Therapeutic IV solutions should generally not exceed these volumes.

Kg-Weight	5	10	15	20	25
mL Isotonic Solution	100	200	300	400	500

Thank you !