

## **BAB 5**

### **KESIMPULAN dan SARAN**

#### 5.1 Kesimpulan

1. Berdasarkan hasil penelitian yang berjudul Studi Penggunaan Asam Folat pada Pasien Gagal Ginjal Kronik-Anemia Rawat Inap di RSUD Kabupaten Sidoarjo periode Januari 2015 sampai Juni 2015 di peroleh kesimpulan sebagai berikut :
  - a. Penggunaan asam folat tunggal sebanyak 22 pasien (79%), dengan jenis, dosis, frekuensi dan rute paling banyak adalah asam folat (3x1mg) per oral sebanyak 21 pasien (95%) dan asam folat (2x1mg) per oral sebanyak 1 pasien (5%)
  - b. Penggunaan asam folat kombinasi dengan obat anemia lain sebanyak 6 pasien (21%) dengan kombinasi, dosis, frekuensi, dan rute paling banyak adalah asam folat 3x1 mg dan besi 1x1 kapsul secara per oral sebanyak 3 pasien (60%)
2. Penggunaan obat asam folat yang diberikan pada pasien gagal ginjal kronik anemia rawat inap di RSUD Kabupaten Sidoarjo, terkait dosis, rute, frekuensi, interval, dan lama pemberian sudah sesuai dengan *guidelines* yang ada.

#### 5.2 Saran

Diperlukan penelitian lebih lanjut dengan menggunakan metode prospektif agar peneliti dapat mengamati kondisi pasien dan permasalahan terkait terapi obat secara langsung, dapat berinteraksi dengan pasien, dokter dan para klinisi serta dihasilkan profil penggunaan obat yang lebih representatif.

## DAFTAR PUSTAKA

- Almatsier, S, 2001. *Prinsip Dasar Ilmu Gizi*. Gramedia Pustaka Utama. Jakarta
- Ayu, N., Suega, K., dan Widiana, G., 2010, *Hubungan Antara Beberapa Parameter Anemia dan Laju Filtrasi Glomerulus pada Penyakit Ginjal Kronik Pradialisis*.
- Baugh, C.M., and Krumdieck, C.L. Naturally occuring folates. *Ann. N.Y. Acad. Sci.*, **1969**, 186: 7-28.
- Bothwell, T.H., and Finch, C.A. *Iron Metabolism in Man*. Little, Brown & Co., Boston, **1962**.
- Brise, H., and Hallberg, L. Absorbability of different iron compound. *Acta Med. Scand.*, **1962**, 171(suppl. 376):23-38.
- Callender, S.T. Treatment of iron deficiency. In, *Iron in Biochemistry and Medicine*. (Jacobs, A., And Worwood, M., eds) Academic Press, Inc., New York, **1974**, pp. 529-542.
- Chanarin, L, Deacon, R., Lumb, M., Muir, M., and Perry, J. Cobalamin-folate interrelationships: a critical review. *Blood*, **1985**, 66: 479-489
- Chen, S.C., et al., 2009, *Comparison of Ankle-Brachial Index and Brachial-Ankle Pulse Wave Velocity between Patients with Chronic Kidney Disease and Hemodialysis*. *Am J Nephrol*, **29**: 374–380.
- Chobanian A.V., Bakris, G.L., Black, H.R., Chrushman, W.C., Green, L.A., Izzo, J.L., Jones, D.W., Materson, B.J., Oparil, S., Wright, J.T., and Rocella, E.J., 2003. The Seventh Report of Joint National Committee on Detection, Evaluation and Treatment of High Blood Pressure (JNC VII). *J. Am. Med. Association*, Vol 289 No.19, pp 2566, 2568.
- Cipolle, R.J., Strand, L. M., and Morley, P.C., 1998, *Pharmaceutical Care Practice*, the 78-83, Mc Graw Hill Companies.

- Costa, E., Rocha, S., Pereira, P.R., Castro, E., Reis, F., Teixeira, F., Miranda, V., Faria, M.D.S., Loureiro, A., Quintanilha, A., Belo, L. And Silva, A.S. 2008. Cross-talk Between Inflammation, Coagulation/Fibrinolysis and Vascular Access in Hemodialysis Patients. *The Journal of Vascular Access*, **9**: 248-253.
- Desi, I.R., Aprilita R.Y.E., and Diana L.R. 2014, Drug Related Problem In Therapy Chronic Kidney Disease (Ckd) In Internal Medicine Ward Dr. Mintohardjo Navy Hospital, *International Journal of Pharmacy Teaching & Practices*, **5(1)**: 1020-1552.
- Dorsey, R., 2007. **Prevalence of Chronic Kidney Disease and Associated Risk Factors-United States**, 1999-2004, [www.cdc.gov](http://www.cdc.gov), diakses tanggal 16 Desember 2008, p.2
- Dowling, T.C., 2008. Quantification of Renal Function. In: DiPiro, T.J., Talbert, R.L., Yee, G.C., Matzke, G.R., Wells, B.G. and Posey, L.M., **Pharmacotherapy: A Pathophysiologic Approach**, 7<sup>th</sup> edition, New York: McGraw-Hill Companies, Inc., p.706.
- Eichner, E.R., and Hillman, R.S. The evolution of anemia in alcoholic patients. *Am. J. Med.*, **1971**, 50:218-232.
- Eichner, E.R., Pierce, H.I., and Hillman, R.S. Folate balance in dietary and megaloblastic anemia. *N. Engl. J. Med.*, **1971**, 284:933-938.
- Eichner, E.R., Pierce, H.I., and Hillman, R.S. Effect of alcohol on serum folate level. *J. Clin. Invest.*, **1973**, 52:584-591.
- Escbach, J.W., Egrie, J.C., Downing, M.R., Browne, J.K. and Adamson, J.W. Correction of the anemia of end-stage renal disease with recombinant human erythropoietin. Results of a combined phase I and II clinical trial. *N. Engl. J. Med.*, **1987**, 316:73-78.
- Foundation, Inc., pp. 29.Bakri, S. 2005. **Deteksi Dini dan Upaya-Upaya Pencegahan Progresifitas Penyakit Ginjal Kronik**, Suplemen vol. 26 No.3 Juli-September 2005, hal 2.
- Ganong, W.F., 2008. **Buku Ajar Fisiologi Kedokteran**, 22th edition, Jakarta : EGC.

- Ganong, W.F., 2001. **Buku Ajar Fisiologi Kedokteran**, Ed 20<sup>th</sup>, New York: McGraw-Hill Companies. Hal 677, 696.
- Ganong, William F., 2005. **Review of Medical Physiology**, Ed 27<sup>th</sup>, New York: Mc Graw Hill Companies Inc.
- Goodman and Gilman, 2012, Dasar Farmakologi Terapi, Penerbit Buku Kedokteran EGC, Jakarta.
- Green, R., and Miller, J.W. Folate deficiency beyond megaloblastic anemia: hyperhomocysteinemia and other manifestations of dysfunctional folate status. *Semin. Hematol.*, **1999**, 36:47-64.
- Greene, Russel J and Harris, Norman D. 2008. *Pathology and Therapeutics for Pharmacist A Basic for Clinical Pharmacy Practice 3<sup>th</sup> ed.* London : Pharmaceutical Press. P 869-942.
- Guyton, A.C and Hall, J.E., 2006. Glomerular Filtration, Renal Blood Flow, and Their Control. In: Guyton, A.C and Hall, J.E. **Textbook of Medical Physiology**, Ed 11<sup>th</sup>, Philadelphia : Elsevier Saunders Inc., pp. 307-311.
- Herbert, V., and Zalusky, R.. Interrelations of vitamin B<sub>12</sub> and folic acid metabolism: folic acid clearance studies. *J. Clin.. Invest.*, **1962**, 41:1263-1276.
- Herbert, V., Tisman, G., Le-Teng-Go, and Brenner, L. The dU suppression test using <sup>125</sup>I-UdR to define biochemical megaloblastosis. *Br. J. Haematol.*, **1973**, 24:713-723.
- Hillman, R.S., and Henderson, P.A. Control of marrow production by the level of iron supply. *J. Clin.. Invest.*, **1969**, 48:454-460.
- Hillman, R.S., and Finch, C.A. *Red Cell Manual*, 7<sup>th</sup> ed. F. A. Davis CO., Philadelphia, **1977**.
- Hoffbrand AV, Pettit JE, 1993. Essential Haematology, 3 rd Edition, Carlton Blackwell Scienfcific Publications, 13-51.

- Hogg RJ et al. 2003, National Kidney Foundation's Kidney Disease Outcomes Quality Initiative Clinical Practice Guidelines for Chronic Kidney Disease in Children and Adolescents: Evaluation, Classification, and Stratification. *Pediatrics*; **111**:1416-1421.
- Ix, J.H., 2006. Renal Disease. In: McPhee, S.J., **Pathophysiology of Disease: An Introduction to Clinical Medicine**, 5<sup>th</sup> edition, New York: McGraw-Hill Companies, Inc.
- Jacobs, K., Shoemaker, C., Rudersdorf, Neill, S.D., Kaufman, R.J., Mufson, A., Seehra, J., Jones, S.S., Hewick, R., Fritsch, E.F., Kawakita, M., Shimizu, T., and Miyake, T. Isolation and characterization of genomic and cDNA clones of human erythropoietin. *Nature*, **1985**, 313:806-810.
- Joy, M.S., Kshirsagar, A., and Franceschini, N., 2008. Chronic Kidney Disease : Progression-Modifying Therapies. In: DiPiro, T.J., Talbert, R.L., Yee, G.C., Matzke, G.R., Wells, B.G. and Posey, L.M., **Pharmacotherapy: A Pathophysiologic Approach**, 7th edition, New York: McGraw-Hill Companies, Inc., pp.745.
- Kazama, J.J., Kazama, S., Koda, R., Yamamoto, S., Narita, I. and Gejyo, F. 2009. " e Risk of Gallbladder Stone Formation Is Increased in Patients with Predialysis Chronic Kidney Disease but Not " ose Undergoing Chronic Hemodialysis " erapy. *Nephron Clin Pract*, 111: c167-c172.
- Krauss, A.G., and Hak, L.J., 2000. Chronic Renal Disease. In: Herfindal, E.T., and Gourlay, D.R., (Eds), **Textbook of Therapeutics Drugs and Diseases Management**, 7<sup>th</sup> edition, Philadelphia : Lippincott William and Wilkins, hal 194.
- Lankhorst, CE dan Wish, JB. 2010. Anemia in Renal Disease: Diagnosis and Management, *Blood Reviews.*, 24, 39-47.
- Lin, F.K., Suggs, S., Lin, C.H., Browne, J.K., Smalling, R., Egrie, J. C., Chen, K.K., Fox, G.M., Martin, F., Stanbinsky, Z., Badrawi, S.M., Lai, P.-H., and Goldwasser, E. Cloning and expression of the human erythropoietin gene. *Proc. Natl. Acad. Sci. U.S.A.*, **1985**, 82:7580-7584.

- Linnel, J.C., Hoffbrand, A.V, Petters, T.J., and Matthews, D.M. Chromatographic and bioautographic estimation of plasma cobalamins in various disturbances of vitamin B<sub>12</sub> metabolism. *Clinn.. Sci.*, **1971**, 40: 1-16.
- Ma'shumah, N., Bintanah, S., dan Erma H. 2014, Hubungan Asupan Protein Dengan Kadar Ureum, Kreatinin, dan Kadar Hemoglobin Darah pada Penderita Gagal Ginjal Kronik Hemodialisis Rawat Jalan di RS Tugurejo Semarang, Program Studi Gizi Ilmu Keperawatan dan Kesehatan Universitas Muhammadiyah Semarang.
- Magriatin, Diana L.R., and Aprilita R.E. 2014, A Case Chronic Kidney Disease Stage V On Hemodialysis, *International Journal of Pharmacy Teaching & Practices*,**5(1)**: 1020-1552.
- Markum, 2006. Hiperurisemia, In: Sudoyo, Aru, W., Setiyohadi, B., Alwi, L., Simadribata, M., Setiati, S., **Buku Ajar Ilmu Penyakit Dalam**, jilid I, edisi ke empat, Departemen Ilmu Penyakit Dalam Fakultas Kedokteran Universitas Indonesia, p.586-589.
- McPhee, S.J and Ganong, W.F., 2006. Renal Disease. In: McPhee, S.J and Ganong, W.F. **Pathophysiology of Disease: An Introduction to Clinical Medicine**, Ed 5<sup>th</sup>, New York : Mc Graw Hill Companies Inc.
- Moranne, O., Froissart, M., Rossert, J., Gauci, C., Boffa, J.J., Hayman, J.P., M'rad, M.B., Jacquot, C., Houillier, P., Stenngel, B., and Fooqueray, B., 2009. Timming of Onset of CKD-Related Metabolic Complications, **J. Am. Soc Nephrol.** No.20, pp.164-171.
- MRC Vitamin Study Research Group. Prevention of neural tube defects: results of the Medical Research Council Vitamin Study. *Lancet*, **1991**, 338:131-137.
- NKF, 2002. Chronic Kidney Disease as a Public Health Problem. In: NKF, **K/DOQI Clinical Practice Guidelines for Chronic Kidney Disease : Evaluation, Classification and Stratification**, New York: National Kidney.

- Nolin, T.D., Himmelfarb, J., and Matzke, G.R., 2005. Drug Induced Kidney Disease. In: Dipiro, J.T., Talbert, R.I., Yee, G.C., Matzke G.R., Wells, B.G., and Posey, L.M. **Pharmacotherapy A Pathophysiology Approach**, Ed 6<sup>th</sup>, New York: McGraw Hill Medical Publishing Division, p. 910.
- Pagana K.D and Pagana, T.J., 2002. Manual of Diagnostic and Laboratory Test, Missouri: Mosby Inc, Hal 195, 197, 272, 276, 372, 423, 467.
- Pearce. 1995. Anatomi dan Fisiologi untuk Paramedis. PT Gramedia Pustaka Uta.ma. Jakarta.
- Pebrianti, Aprilita R.Y.E., and Diana L.R. 2014, Evaluation Of *Drug Related Problems* (Drps) Associated With The Treatment For Pulmonary Tuberculosis With Hypoalbuminemia And Cirrhosis In Gatot Subroto Hospital, *International Journal of Pharmacy Teaching & Practices*, **5(1)**: 1020-1552.
- Price, S.A and Wilson, L.M. 2006, *Patofisiologi : Konsep Klinis Proses-proses Penyakit*, Edisis 4, Jakarta, EGC.
- Pritchard, J.A. Hemoglobin regeneration in severe iron deficiency anemia. Response to orally and parenterally administered iron preparations. *JAMA*, **1966**, 195:717-720.
- Ramakrishnan,U. 2001. *Nutritional Anemias*. CRC Press, Boca London, New York Washington,DC.
- Rasjidi, Imam. 2008, Panduan Pelayanan Medik Model Inter disiplin Penatalaksanaan. EGC. Jakarta.
- Reynolds, E.H. Mental effect of anticonvulsants and folic acid metabolism. *Brain*, **1968**, 91:197-214.
- Rosalind SG. Assessment of the status of folate and vitamin B-12. Dalam: Principles of nutritional assessment, New York, Oxford university press, 1990. h. 46-56.
- Rosenberg, I.H. Absorption and malabsorption of folates. *Clin. Haemotol.*, **1976**, 5: 589-618.

- Russell, M.R., Gómez, L.L.T., Domínguez, R.L.P., Santiago, R.E. and Cervantes, M.L. 2011. Work Climate in Mexican Hemodialysis Units: A Cross-Sectional Study. *Nefrologia*, **31** (1): 76-83.
- Schmidt, Rebecca J. And Dalto, Cheryl L. 2007. Treating anemia of chronic kidney disease in the primary care setting cardiovascular outcomes and management recommendations. *Osteopathic Medicine and Primary Care*. Morgantown: Licensee BioMed Central Ltd.
- Sidabutar, R.P. 1992, Gizi pada GGK: Beberapa Aspek Penatalaksanaan. Jakarta: Perhimpunan Nefrologi Indonesia.
- Smeltzer, S.C., Bare B.G., Hinkle, J.L., and Cheever. K.H. 2008, *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*, 11th , Edition. Philadelphia : Lippincott William & Wilkins.
- Stebbins, R., Scott, J., and Herbert, V. Drug-Induced megaloblastic anemias. *Semin. Hematol.*, **1973**, 10:235-251.
- Stebbins, R., and Bertino, J.R. Megaloblastic anemia produced by drugs. *Clin. Haemotol.*, **1976**, 5:619-630.
- Steinberg, S.E., Campbell, C.L., and Hillman, R.S. Kinetics of the normal folate enterohepatic cycle. *J. Clin. Invest.*, **1979**, 64: 83-88.
- Tamura, T., and Stokstad, E.L. The availability of food folate in man. *Br. J Haemotol.*, **1973**, 10:235-251.
- Tangkilisan, H.A dan Rumbajan D., 2002. Defisiensi Asam Folat, *Sari Pediatri*,**4** (1):21-25.
- The united states renal data system, 2013, Incidence, prevalence, patient characteristics and treatment modality. available from: <http://wwwUSRDS.org/>
- Warady, BA., and Chadha V. 2007, Chronic kidney disease in children: the global perspective. *Pediatr Nephrol*;**22**:1999–2009.
- Weissbach, H., and Taylor, R.T. Metabolic role of vitamin B<sub>12</sub>, *Vitam. Horm.*, **1968**, 26:395-412.

- Weir, D.G., and Sicott, J.M. Interrelationships of folates and cobalamins. In, *Contemporary Issues in Clinical Nutrition*, Vol.5. *Nutrition in Hematology*. (Lindenbaum, J., ed.) Churchill Livingstone, New York, **1983**, pp. 121-142.
- Wilson, L.M., 2005. Patofisiologi Ginjal In: Price, A. Sylvia., Lorraine, M. Wilson. **Patofisiologi Konsep Klinik Proses-Proses Penyakit**. Ed. 6 Volume 2. Jakarta: ECG, p.769-885.
- Wilson, L.M., 2006, Gagal Ginjal Kronik, In: Price, Sylvia A., and Lorrain M, Wilson, **Patofisiologi Konsep Klinik Proses-Proses Penyakit**, Edisi 6, Jakarta : ECG, hal 912-924.
- Wilson, L.M. and Price, S.A., 1995, Patofisiologi: Konsep Klinis Proses-Proses Penyakit, Penerbit Buku Kedokteran EGC, Jakarta.
- Yeger MC. 2008, Overview of stem cell biology.in : Hoffman R, Jr EJB, Shattil SJ et al. *Hematology Basic Principles and Practice*<sup>5th</sup> ed.
- Zuyana, L., dan Adriani, M. 2013, Perbedaan Asupan Makan Dan Status Gizi Antara Pasien Hemodialisis Adekuat Dan Inadekuat Penyakit Ginjal Kronik. *Media Gizi Indonesia*, **9(1)**;13-19.

## LAMPIRAN A

**PEMERINTAH KABUPATEN SIDOARJO**  
**RUMAH SAKIT UMUM DAERAH**  
Jl. Mojopahit No. 667 Telepon (031) 8961649. Fax. 8943237  
**SIDOARJO Kode Pos 61215**



Nomor	:	070/ C893 /404.6.8/2016	Sidoarjo, 15 Maret 2016
Sifat	:	Penting	Kepada
Lampiran	:	-	Yth. Dekan Fakultas Farmasi
Perihal	:	Jawaban Permohonan Ijin Penelitian	UNIKA Widya Mandala Surabaya Kampus Pakuwon, Lt 6 Tower Timur Di S U R A B A Y A

Menindak lanjuti surat Saudara tanggal 9 Februari 2016 nomor : 0248/WM03/R/2016 perihal : Permohonan Ijin Penelitian, bersama ini disampaikan bahwa pada prinsipnya kami tidak keberatan dan dapat menyetujui permohonan ijin Saudara.

Sebagai tindak lanjut tentang tarif pelayanan kesehatan Rumah Sakit Umum Daerah Kabupaten Sidoarjo yang menerapkan pola pengelolaan keuangan badan layanan umum daerah, untuk biaya pemanfaatan Rumah Sakit Umum Daerah Kabupaten Sidoarjo sebagai tempat pelatihan, PKL, Penelitian dan lain-lain, maka setiap mahasiswa Kesehatan yang melaksanakan Penelitian dikenakan biaya sebesar Rp. 150.000,- (Seratus Lima Puluh Ribu Rupiah) per bulan atas nama:

- |                        |                  |
|------------------------|------------------|
| 1. MARIA ELVINA LEKI   | NIM : 2443012250 |
| 2. HILARIUS SATU SENGA | NIM : 2443012138 |
| 3. YULITA S NGARUNG    | NIM : 2443012190 |
| 4. YOSEFINA S DARUNG   | NIM : 2443012196 |

Demikian atas perhatiannya kami ucapan terima kasih.

an. DIREKTUR RUMAH SAKIT UMUM DAERAH  
KABUPATEN SIDOARJO

Wadir Perencanaan dan Pendidikan



dr. SYAF Satriawarmen, Sp. Pros  
Pembina Tk. I  
NIP. 19630718 199103 1 004

## **LAMPIRAN B**

### **Daftar Nilai Normal Data Klinik dan Data Laboratorium**

#### **Data Klinik :**

TD : 120/80 mmHg  
Nadi : 80 – 100 x/menit  
RR : 18 – 22 x/menit  
Suhu :  $37 \pm 0,5^{\circ}\text{C}$   
GCS : 456

#### **Data Laboratorium :**

BUN : 6 – 23 mg/dL  
Kreatinin : < 1,2 mg/dL  
Na<sup>+</sup> : 136 – 145 mEq/L  
K<sup>+</sup> : 3,5 – 5,0 mEq/L  
Cl<sup>-</sup> : 98 – 106 mEq/L  
WBC :  $4,7 - 11,3 \cdot 10^3/\mu\text{L}$   
RBC :  $4,0 - 5,0 \cdot 10^6/\mu\text{L}$   
HGB : 11,4 – 15,1 g/dl  
HCT : 38 – 42 %  
PLT :  $142 - 424 \cdot 10^3/\mu\text{L}$   
PCT : 0,150 – 0,400%  
MCV : 80,0 – 93,0 FL  
MCH : 27,0 – 31,0 PG  
MCHC : 32,0 – 36,0 g%  
RDW-SD : 35 – 47 fl

RDW-CV : 11,5 – 14,5 %  
PDW : 9 – 17 fl  
MPV : 9 – 13 fl  
P-LCR : 13-43 %  
Eosinofil : 0 – 4%  
Basofil : 0 – 1%  
Neutrofil : 51 – 67%  
Limfosit : 25 – 33%  
Monosit : 2 – 5%  
GDP : 60 – 100 mg/dl  
GD2PP : < 130 mg/dl  
GDA : < 200 mg/dl

**Pem. Urin Lengkap :**

BJ : 1,001 – 1,035  
PH : 5,0 – 8,5  
Glukosa : -/+  
Protein : -/+  
Keton : -/+  
Bilirubin : -/+  
Urobilirubin : -/+  
Nitrit : -/+  
Leukosit: -/+  
Hb : -/+  
Eritrosit : -/+