Our Lady of the Lake Regional Medical Center			
Policy Manual:	**Pharmacy**	**Section:**	Medication Use
Medications: Zoledronic Acid		**Policy Reference #:**	PH-
		Supersedes#:	NA
		Review Date:	
Date of Origination:	January 2020		
Revision Date:			

Purpose:

To allow pharmacists to provide for zoledronic acid renal dosing when used for oncology-related indications in both the inpatient and outpatient settings.

Definitions:

1. Creatinine: A breakdown product of the important nitrogenous metabolic substance creatinine. Creatinine is a normal metabolic waste substance and is found in muscle and blood and excreted in the urine.
2. Serum Creatinine (SCr): Creatinine found in the serum
3. Creatinine Clearance (CrCl): The ratio of the rate of creatinine excretion in urine to its concentration in serum, a value that reflects the body's ability to excrete creatinine; it is used to diagnose and monitor renal function

   Cockcroft and Gault equation:
   CrCl = [(140 - age) x weight] / (Scr x 72) (x 0.85 for females)

Prescribing:

1. A serum creatinine measurement should be obtained within 7–10 days before the first infusion of zoledronic acid.
2. A serum creatinine measurement should be obtained prior to each subsequent dose of Zoledronic Acid.
3. Creatinine clearance should be estimated using the Cockcroft and Gault formula.
   The appropriate zoledronic acid dose is recommended below.
   The dosing interval is not affected by renal function.

Baseline CrCl (ml/min)	Dose of Zoledronic Acid
> 60	4mg
50 – 60	3.5mg
40 – 49	3.3mg
30 - 39	3.0mg
< 30	Not recommended

Dispensing:

1. If no serum creatinine has been ordered within 7 days prior, pharmacy may order a one-time serum creatinine. This applies for all oncology-related zoledronic acid orders.

2. Pharmacy will verify the appropriateness and dosing of zoledronic acid for patient's renal function based on table below for the following oncology-related indications:

    1. Bone metastases from solid tumors
    2. Multiple myeloma
    3. Prostate cancer - Prevention of bone loss associated with androgen deprivation therapy
    4. Breast cancer
        - Prevention of bone loss associated with aromatase inhibitor therapy
        - Adjuvant therapy

3. If the the dose of zolendronic acid should be modified based on the CrCl chart below, pharmacy may adjust dose per protocol in Epic and document the change. This applies only to the indications listed above.

Baseline CrCl (ml/min)	Dose of Zoledronic Acid
> 60	4mg
50 – 60	3.5mg
40 – 49	3.3mg
30 - 39	3.0mg
< 30	Not recommended – contact prescriber

4. Zoledronic acid use for hypercalcemia
    a. May obtain a serum creatinine if one has not been ordered within 7 days prior
    b. Will NOT be adjusted per this protocol (see Lexi-Comp for recommendations)
    c. If the patient has one of the indications above but is receiving zoledronic acid for hypercalcemia, do not adjust per this policy and see Lexi-Comp for dosing adjustment in hypercalcemia recommendations

References:

1. Lexicomp: www.lexi.com
2. Collins Dictionary of Medicine. Robert M. Youngson 2004, 2005
3. Berenson J. Recommendaions for zoledronic acid treatment of patients with bone metastases. *The Oncologist.* 2005:10:52-62.
4. Cavallo J. New Guidelines Issued in the Treatment of Multiple Myeloma-Related Bone Disease. *ASCO Post* July 25, 2013.
5. Anderson K., Ismaila N., Kyle R.A. Role of Bone-Modifying Agents in Multiple Myeloma: American Society of Clinical Oncology Clinical Practice Guideline Update Summary *Journal of Oncology Practice.* 2018*;* 14(4):266-269.