

# DOSING LOW MOLECULAR WEIGHT HEPARINS IN RENAL IMPAIRMENT: A NATIONWIDE SURVEY

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## BACKGROUND AND IMPORTANCE

- The **effectiveness and safety** of therapeutically dosed Low Molecular Weight Heparins (LMWH) in renally impaired patients **has not been established** in prospective randomized studies.
- Due to a lack of evidence, there is no consensus on **dosing strategies** and the **usefulness of anti-Xa monitoring** in international guidelines.

## AIM AND OBJECTIVES

**Aim:** to study the treatment policies of therapeutically dosed LMWHs in renal impairment in Dutch hospitals.

- Primary outcome:** the different dosing regimens of therapeutically dosed LMWHs in renally impaired patients.
- Secondary outcome:** the proportion of Dutch hospitals that applied anti-Xa monitoring.

## MATERIALS AND METHODS

**Design:** A cross-sectional study was conducted by distributing a survey among Dutch hospital pharmacists between June 2020 and March 2021.

**Setting:** The Netherlands has **69 hospital organisations**, covering 114 different inpatient hospital locations [1].

**Data collection:** the survey was distributed by the Dutch Association of Hospital Pharmacists (NVZA) webpage, which is only accessible to NVZA members. Hospital pharmacists with a focus on anticoagulation in their hospital were requested to complete the survey. In case of non-response, the hospital pharmacy was contacted by phone or e-mail.

## RESULTS

### Response rate and responder characteristics

- Response rate 56/69 (**81%**)
- Two or more LMWHs were used in 18 hospitals.
- In total, 77 LMWH regimens were in use.**

### Dosing regimens

Table 1: Dosing regimens. eGFR: estimated Glomerular Filtration Rate.

Fixed dose reduction	Hospital regimens, n
Yes, in eGFR < 50ml/min	55 (71%)
Yes, in eGFR < 30ml/min	17 (22%)
Yes, in other eGFR cutoff	4 (5%)
No fixed dose reduction	1 (1%)

### Anti-Xa monitoring

Table 2: Anti-Xa monitoring. eGFR: estimated Glomerular Filtration Rate.

Anti-Xa monitoring	Hospital regimens, n
No	31 (40%)
Yes, in eGFR <30ml/min	21 (27%)
Yes, in eGFR <50ml/min	17 (22%)
Yes, in other/unknown eGFR cutoff	8 (10%)

### Overview of Dutch treatment regimens for LMWHs in renal impairment

Table 3: An overview of the most common applied treatment regimens per LMWH is shown. DR: dose reduction.

TREATMENT REGIMEN	LMWH REGIMEN, N				
	Total, 77	Nadroparin, 32	Dalteparin, 21	Enoxaparin, 10	Tinzaparin, 14
DR <50 ml/min + no anti-Xa	26 (34%)	11 (34%)	5 (24%)	5 (50%)	5 (36%)
DR <50 ml/min + anti-Xa <50 ml/min	14 (18%)	7 (22%)	5 (24%)	1 (10%)	1 (7%)
DR <50 ml/min + anti-Xa <30 ml/min	11 (14%)	8 (25%)	0 (0%)	2 (20%)	1 (7%)
DR <30 ml/min + anti-Xa <30 ml/min	10 (13%)	3 (9%)	5 (24%)	1 (10%)	1 (7%)
DR <30 ml/min + no anti-Xa	4 (5%)	2 (6%)	2 (10%)	0 (0%)	0 (0%)
DR <50 ml/min + anti-Xa <60 ml/min	4 (5%)	0 (0%)	0 (0%)	1 (10%)	3 (21%)
Other	8 (10%)	1 (3%)	4 (19%)	0 (0%)	3 (21%)

## REFERENCES

- [1] National Institute for Public Health and the Environment (RIVM). Algemene en academische ziekenhuizen. In: Locaties. In: Regionaal & Internationaal. In: Ziekenhuiszorg [Database on the Internet]. RIVM. 2021 [cited 2021-06-28]. Available from: <https://www.volksgezondheidenzorg.info/onderwerp/ziekenhuiszorg/regionaal-internationaal/locaties#node-algemene-en-academische-ziekenhuizen>.