

# Retrospective analysis of serum digoxin concentrations at Mater Dei Hospital

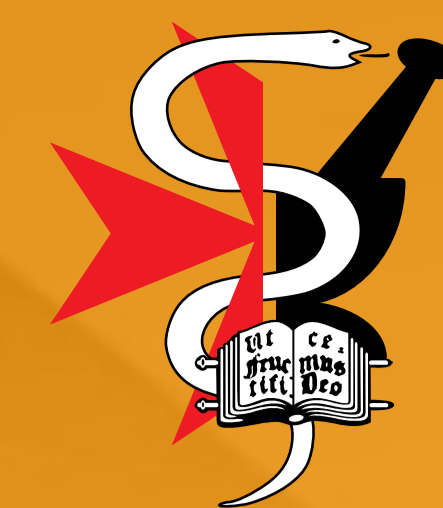
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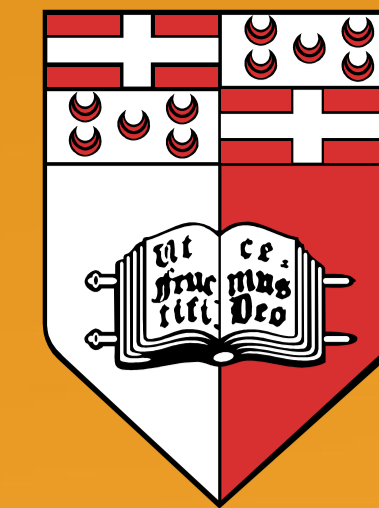
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## INTRODUCTION

Digoxin as a therapeutic option in cardiology is limited by its narrow therapeutic index.<sup>1</sup>

Current evidence indicates that digoxin can exert its beneficial neurohormonal effects at significantly lower serum levels (<1.0ng/ml) than those previously considered optimal.<sup>1,2</sup>

## AIMS

- To analyse serum digoxin concentrations (SDCs) at Mater Dei Hospital (MDH).
- To assess compliance to the clinically recommended SDC target (0.5-1.0ng/ml).
- To assess queries concerning digoxin processed by the Drug Information Unit (DIU) at MDH.

## METHOD

- All SDCs recorded at the Pathology Laboratory at MDH from January 2008 to February 2016 were collected.
- Variables selected for inclusion in the analysis were gender, age, reason for testing, origin of request, referring physician and number of tests requested.

- The data were analysed using the JASP (Version 0.7.5.6) statistical package. Descriptive statistics and a comparison of means via the Student's t-test were carried out.

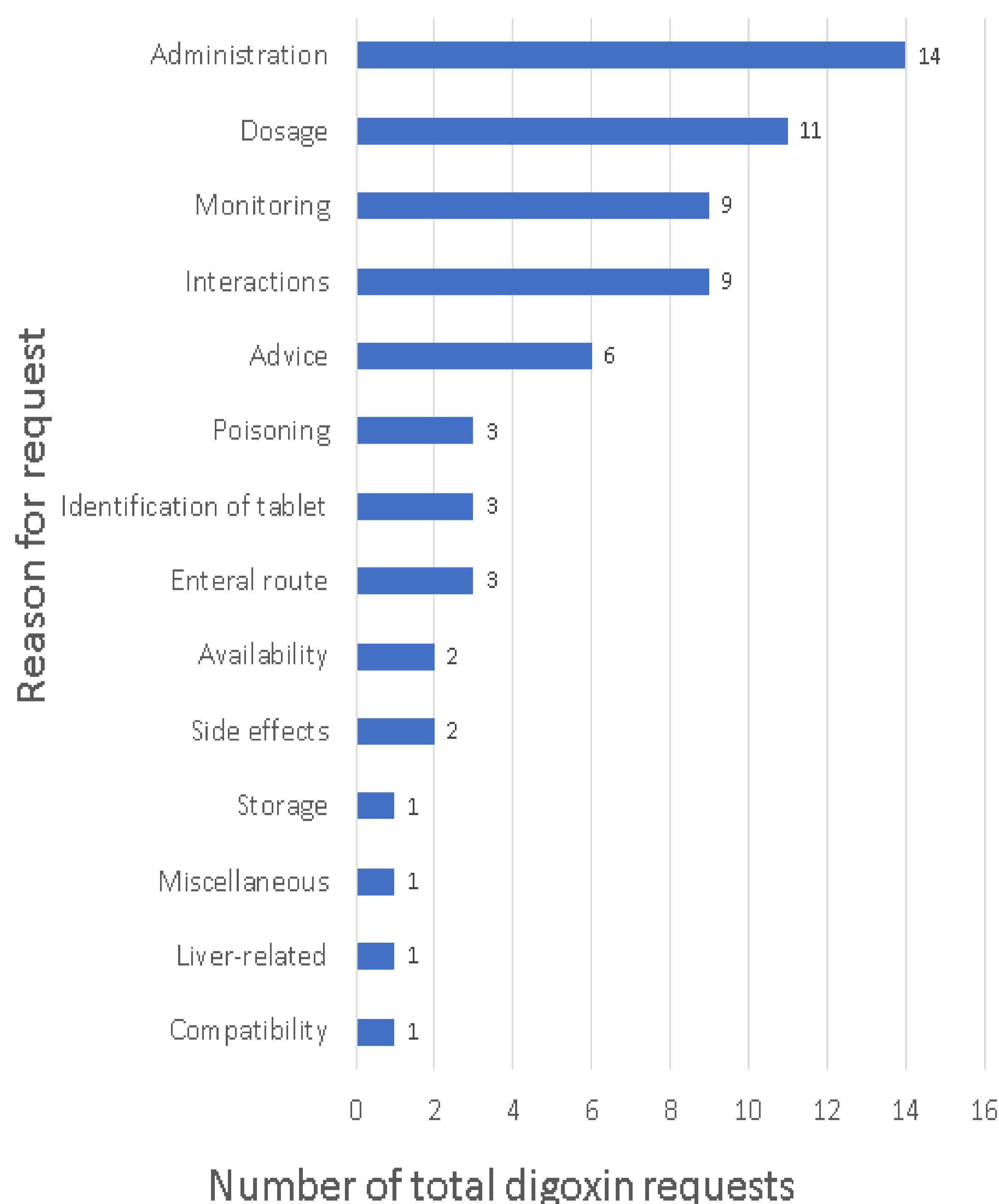
- The DIU at MDH was requested to provide information on all queries handled on record; data for the years 2009 to 2014 were forwarded. All incidences concerning digoxin were extracted and classified.

## RESULTS

- 16,908 SDCs were processed between January 2008 and February 2016; 575 tests were considered to be invalid and excluded from the study.
- The 16,333 valid SDCs originated from 5,549 individual patients (60% female, 40% male; mean age 78 years, range 1-111 years). The mean number of SDCs per patient was 3 (mode 1, range 1-47).
- Mean SDC was 1.28ng/ml (range <0.1-20ng/ml), with 31% of SDCs categorised within, 19% below and 50% above the clinically recommended target (0.5-1.0ng/ml); 15% of SDCs >2.0ng/ml.
- 38% of requests originated from the A&E Department (mean 1.14ng/ml; range <0.1-11ng/ml).
- The DIU processed 66 requests concerning digoxin from 2009 to 2014, with administration (14) and dosing (11) queries being the most frequent. (Figure 1).

Figure 1 - DIU Queries for digoxin

(MDH 2009-2014)(N=66)



## CONCLUSION

The mean SDC of 1.28 ng/ml is higher than the current clinically recommended target SDC<sup>3</sup>; SDCs above 1.0ng/ml are not beneficial and associated with an increase in adverse effects and all-cause mortality.<sup>4,5</sup>

### Acknowledgement

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### References

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<sup>4</sup>Rathore SS, Curtis JP, Wang Y, Al E. Association of Serum Digoxin Concentration and Outcomes in Patients With Heart Failure. *JAMA.* 2003;289(7):871–8.

<sup>5</sup>Pastori D, Farcomeni A, Bucci T, Cangemi R, Ciacci P, Vicario T, et al. Digoxin treatment is associated with increased total and cardiovascular mortality in anticoagulated patients with atrial fibrillation. *Int J Cardiol.* 2015;180:1–5.