SINGLE-USE MEDICAL DEVICES IN THE TREATMENT OF CHRONIC DISEASES: WHAT IS THE ENVIRONMENTAL IMPACT?

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INTRODUCTION

Single-use medical devices are a common practice in biologic drugs administration, potentially improving compliance, reducing the risk of contamination and eliminating the need to recharge and sterilize used devices.
The rising prevalence of autoimmune diseases and therapeutic innovation enhance their utilization. However, there is limited literature on the environmental impact resulting from the increased plastic consumption, a component of these devices.

KEYWORDS: Single-use Devices | Biologic Medication | Environmental Sustainability

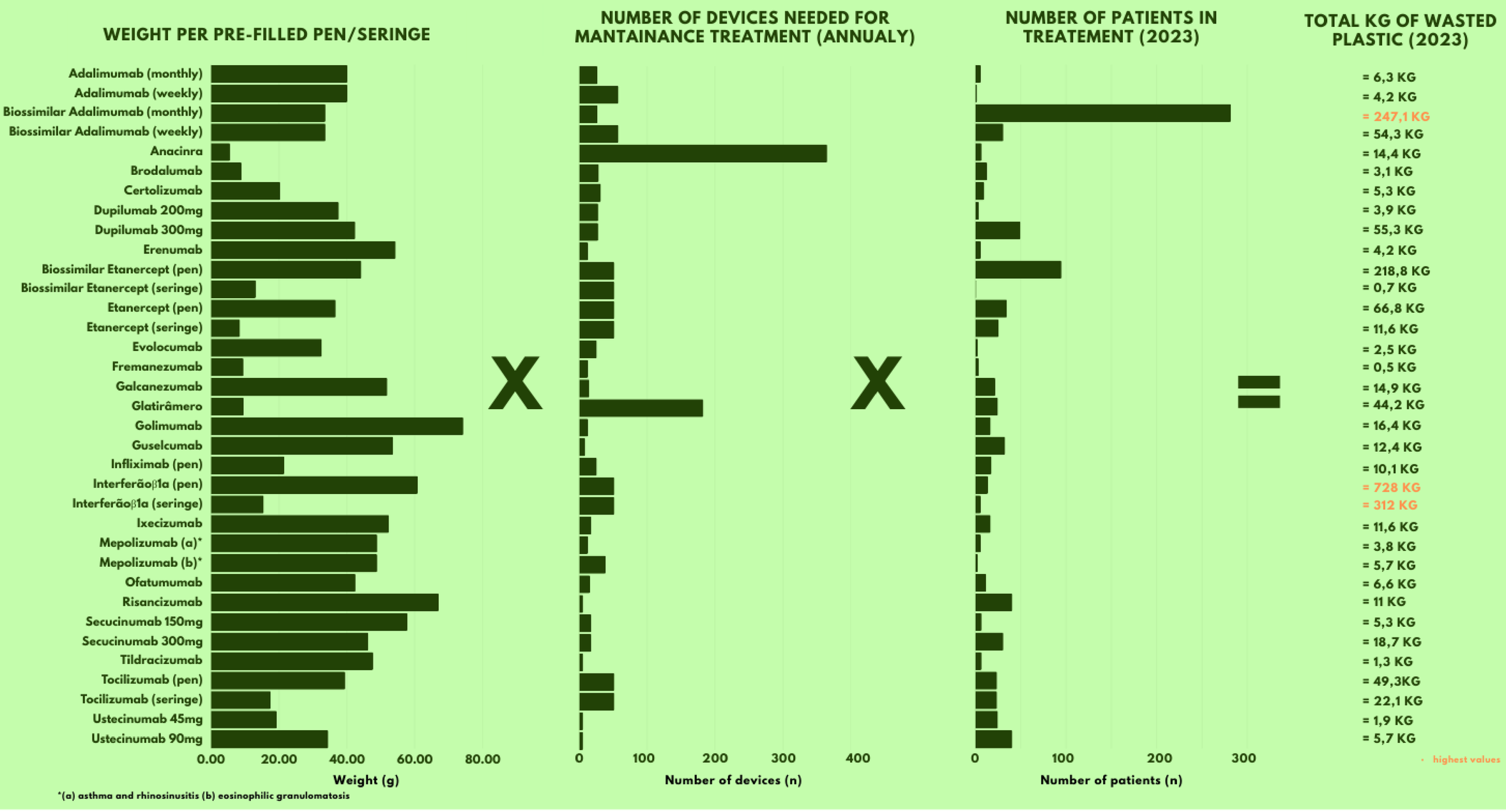
OBJECTIVE

To assess the amount of plastic used in biologic treatments with pre-filled pen/syringe single-dose format.

METHODS

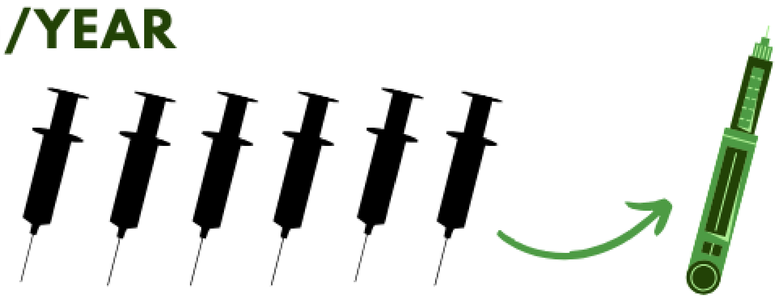
Descriptive study. Weighing devices for ambulatory dispensing, followed by the calculation of the expected annual plastic consumption, per drug and respective dosage.
Extrapolation of results considering the total number of patients in the institution undergoing treatment with these drugs as of September, 2023.
Comparison of annual plastic consumption for these patients, assuming an alternative of only one reusable device annually.

RESULTS



= 1980,1KG (32972 DEVICES)/YEAR

Assuming the hypothesis of using only **one device per year**, we obtained a value of **345.4kg/year**, leading to **ANNUAL REDUCTION OF ~1,6 TONS OF PLASTIC.**



DISCUSSION & CONCLUSIONS

Despite the aforementioned advantages, the significant amount of wasted plastic is clear. The use of existing technology, such as **refillable cartridges**, could address this issue. These systems, maintaining safety, efficacy, and therapeutic adherence, would represent **significant savings** in environmental impact and production costs.
The estimated saving of non-recyclable plastic material in an institution with a relative weight of about 2.5% in the national drug consumption may indicate that national consumption could amount to about 64 tons.
An environmental impact of this magnitude should prompt a reflection on the alternatives that can be employed.

REF *Rasheed FN, Walraven G, Cleaning up plastics in healthcare waste: the transformative potential of leadership, BMJ Innovations 2023;9:103-108.*

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