

QUANTIFICATION OF PHARMACEUTICAL WASTE, ENVIRONMENTAL AND ECONOMIC BURDEN IN FINLAND

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Background

Finnish municipalities have legal responsibility to manage household originated pharmaceutical waste. Community pharmacies serve as disposal points (Fig 1). The amount of waste is high and more information is needed on why medicines are not used as planned but returned either partially or totally unused.

Purpose

The purpose was to determine the quantity and quality of pharmaceutical waste returned to pharmacies and to find out the underlying reasons for disposal. Reducing pharmaceutical waste would decrease both the environmental burden and the financial burden to the patients and the society.

Methods

Community pharmacies were asked to voluntarily participate to the survey and list all medicines returned in their original packages for two weeks in February 2016. Citizens who returned medicines were asked to fill in a questionnaire, where their motives for disposing of medicines were asked.

20 out of the 815 pharmacies and branch pharmacies in Finland took part in the survey. They got the survey results from 248 members of the public who returned medicines during those two weeks (Fig 2).

Results

The 20 pharmacies received 2621 disposed medicines (in total 2696 partially used or unused packages) worth 29 405 €. The main reasons for returning medicines were less than prescribed usage, medication changes and adverse effects.

Approximately 50 % of the prescription medicines were returned in their original packages, so the estimated disposed value was 60 000 € in 20 pharmacies in two weeks, annual estimate 1.56 million €. From this figure the total value of pharmaceutical waste was extrapolated by using the number of prescriptions dispensed of the participating pharmacies adjusted to the total value of prescriptions in Finland.



Fig 1: Disposal point in a Finnish pharmacy

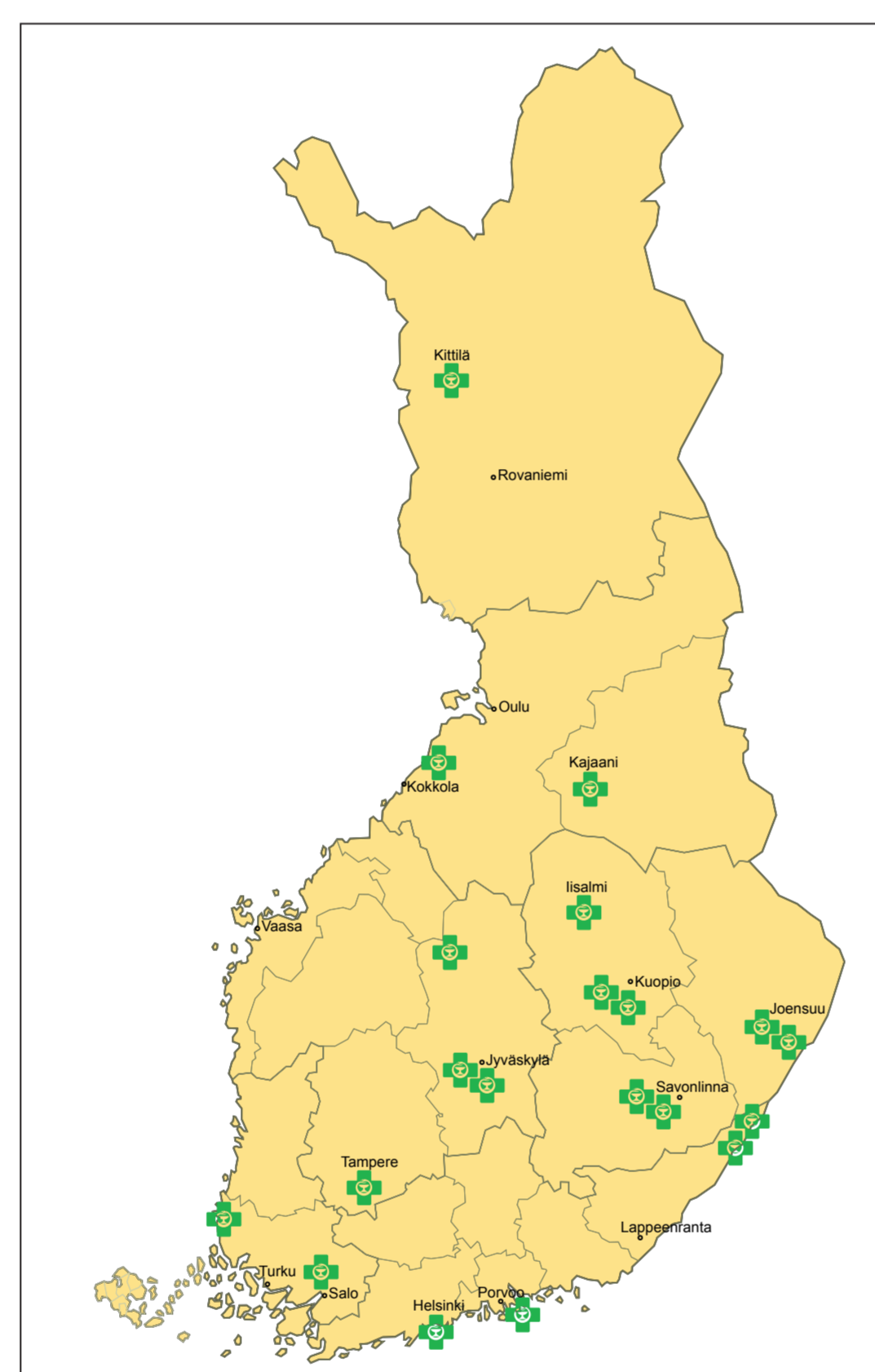
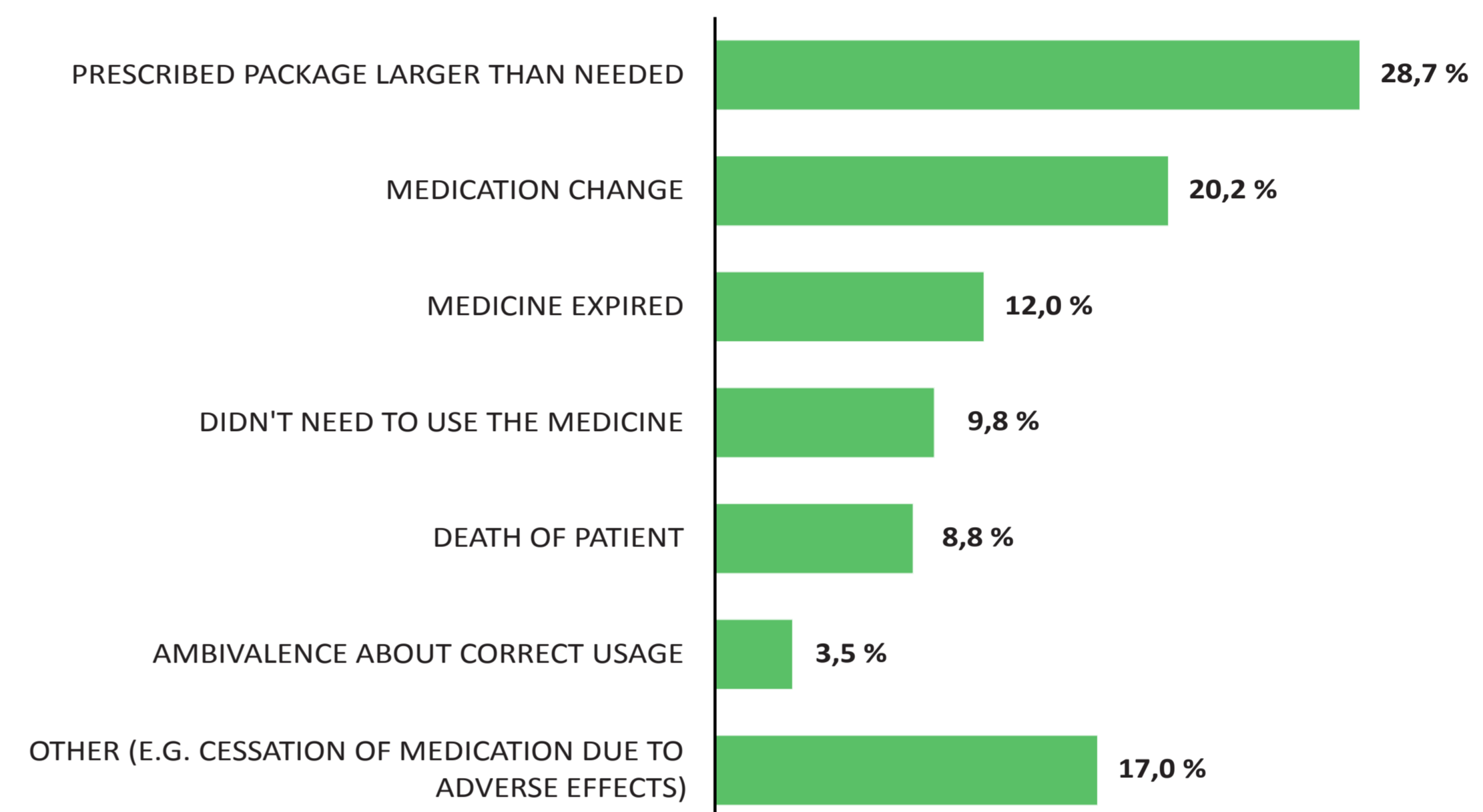


Fig 2: 20 pharmacies that attended the survey around Finland

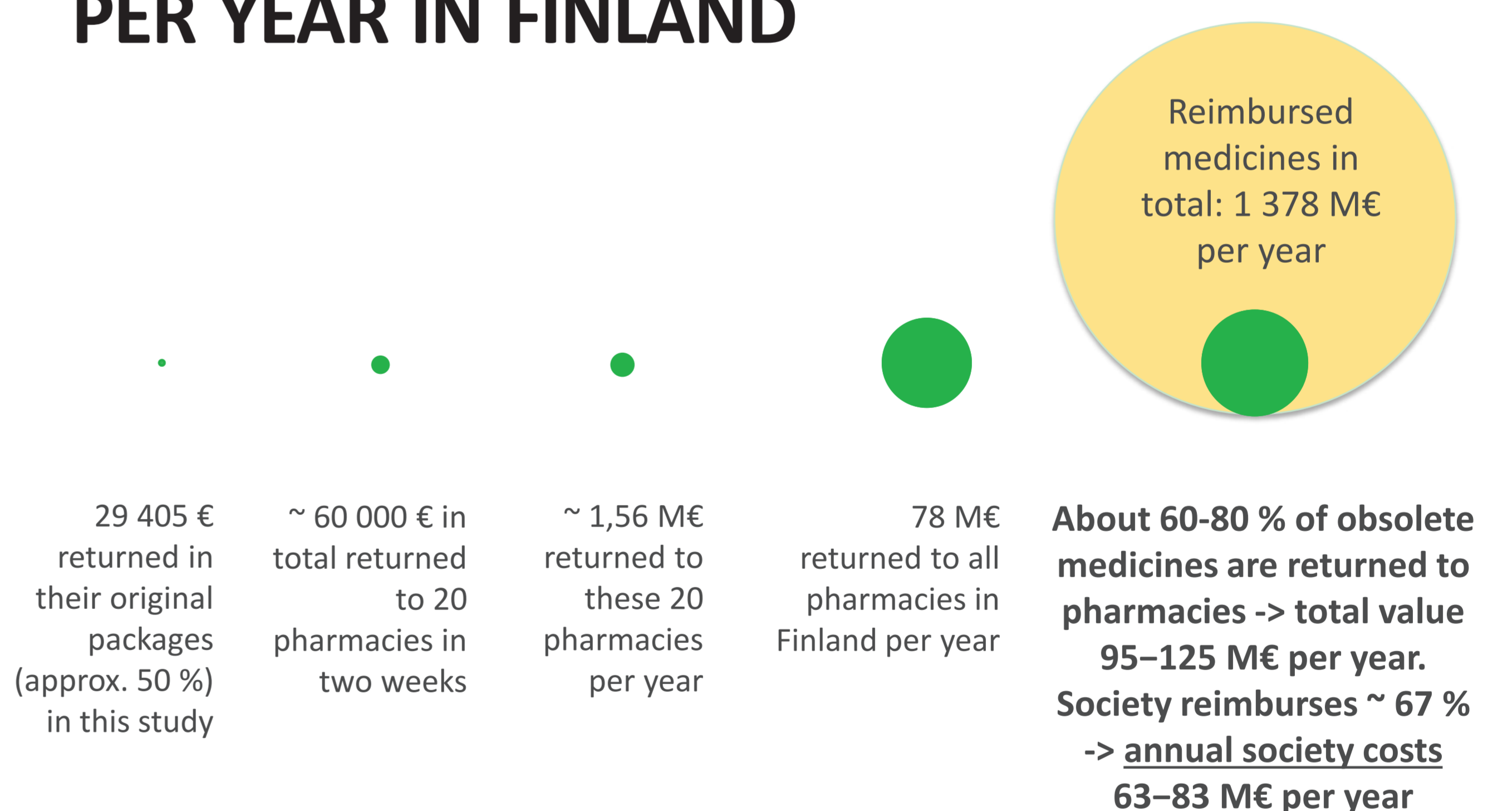
The study sample pharmacies represented 2 % of the total prescriptions in Finland so scaling to represent the whole country yields to annual returned waste of approx. 78 million €. From other surveys we know that about 60 – 80% of obsolete medicines are returned to pharmacies overall.

This will result in the total value in Finland being about 95–125 million € per year. Society reimbursement covers on average 67 % of the total amount so the annual society costs are estimated to be 63–83 million €.

REASONS FOR RETURNING PRESCRIPTION MEDICINES



EXTRAPOLATION OF TOTAL VALUE OF DISPOSED PRESCRIPTION MEDICINES PER YEAR IN FINLAND



Conclusions and potential solutions

Considerable amounts of unused prescription medicines are returned to pharmacies as pharmaceutical waste. Patients report a variety of reasons for returning medicines. Most of the reasons are related to rational prescribing and dispensing. Both citizens and the society would greatly benefit from reduction of pharmaceutical waste. Potential solutions:

1. Initiation of medication with a smaller package – less waste if medication change is needed
2. Limiting the reimbursement of the most expensive medicines to e.g. 1 months' dose per dispensation instead of standard 3 months
3. Utilizing the resources provided by the Finnish national digital Patient Data Repository (Kanta): reimbursement of the next batch of medicines only when the previous batch would be nearly finished if used according to the doctor's instructions on the prescription
4. Extension of automated dose dispensing services, where medicines are dispensed in unit-dose bags every two weeks (medication review is conducted upon initiation of the service)