Prevention of tea and coffee burns in hospitals and nursing homes

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INTRODUCTION

The well-publicised development of a 'cafe culture' in Australia reflects the increasing popularity of both tea and coffee, with 16.3 million coffees consumed per day (ABS, 2012).

Evidence suggests that the optimal temperature range for tea and coffee service is approximately 54.4 to 60 degrees Celsius, with this range representing an acceptable compromise between reducing scald risk and maintaining product taste (Brown, 2007). Despite this, tea and coffee are commonly served at above 75 degrees by commercial vendors and inpatient facilities (NCA, 2017). This represents a significant burns risk, particularly within the high risk elderly population groups present in care facilities such as hospitals and nursing homes - full thickness burns occur within 0.5 seconds of exposure at 75 degrees Celsius, compared to 5 seconds at 60 degrees (Moritz, 1947).

It is therefore possible that introducing a delay between the pouring of coffee or tea and its dispensing has the potential to decrease the incidence of scalds, particularly within vulnerable population groups.

OBJECTIVES

Although a large body of literature exists on household scalds, little research has been carried out into inpatient scalds. This study was therefore established with two primary objectives:

Part one: To identify the mechanism and incidence of burns related to tea and coffee that occur in care facilities
Part two: To investigate means of optimising tea and coffee service temperature in hospitals in order to reduce burn incidence

Table 1: Preferred coffee drinking temperature and the decrease in temperature following a delay of 10 minutes before serving (Brown, 2007 and Jahmnadas-Khoda, 2009)

Beverage	Preferred temp. (C)	Mean starting temp (C)	Temp. at 10min (C)
Black coffee	59.3	87.3	64.7
Coffee with milk	59.8	77.7	60.2

PART ONE - QUANTIFYING INPATIENT SCALDS

Methods

The NSW Statewide Burns Injury Service Burns Database was used to identify all burns between 2005 and 2016 related to the service of tea and coffee requiring attendance at a tertiary burns centre (either as an inpatient or outpatient) that occurred whilst in a care facility (acute care hospital or residential nursing home). Data on age, sex, % TBSA, mechanism, length of stay, wound infections, and requirements for grafting or re-grafting were included.

Results

15,387 scald burns requiring attendance at a tertiary burns unit were identified, with 5058 (32.8%) related to tea and coffee. 2124 of these involved beverage preparation (predominantly related to hot taps, boiling water urns, and teapots), and 2934 occurred through direct spillage of the tea or coffee cup.

44 (1.5%) of the cup spillage burns occurred in inpatient facilities after the beverage had been prepared for the inpatient by food service staff, with an average age of 50. 22 of these patients required inpatient stays at the burns units, and 15 required skin grafts at a grafted TBSA of 2.73%. 2 wound infections were recorded, and 2 burns required re-grafting after poor graft take.

Conclusion

A significant number of scald burns occur due to spillage from tea or coffee cups. The proportion of these that occur in inpatient facilities is low (1.5%), but may be more easily preventable. Facilities such as hospitals represent comparatively controlled environments with regulated service protocols, so interventions such as delaying service by a period of time may reduce the incidence of scalds in vulnerable population groups.

PART TWO - REDUCING INPATIENT SCALDS

The protocol for the second part of the study is currently in the final stages of review, andx is outlined below.

Design

The study will be conducted at a single centre (RNSH), in accordance with existing service protocols and Food Standards Code requirements. Food and drink products are delivered to the ward on Automated Guided Vehicles (AGVs), and then dispensed to individual patient beds by food service staff. The temperature of the beverage will be measured upon leaving the kitchen, arrival on the ward, and delivery to each patient (after the addition of extras such as milk and sugar). The beverage temperature on delivery to the patient will then again be measured after implementing 4, 6, 8, and 10 minute delays between the arrival of the AGVs on the ward and the commencement of dispensing to patient beds by food service staff. Patient satisfaction with beverage temperature will be measured using the current validated feedback form.

Outcomes

The primary outcome will be the proportion of coffees and teas delivered to patients within the optimal temperature range of 54.4 and 60 degrees using current service protocols, and following delays in the commencement of service. Secondary outcomes will be the proportion of patients receiving beverages above the upper temperature limit (implying an increased burn risk) and the rate of patient satisfaction with beverage temperature. It is hoped that it will also be possible to identify factors contributing to service time and temperature (such as distance from the kitchen) in order to identify at-risk patient groups.

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