

Bolus over – Super Stuff®

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The Townsville Cancer Centre currently treats a number of patients that require bolus in and around irregular areas, such as inside/behind ears, noses and to fill deficits. Currently the department uses a number of different bolus materials to bolus these areas. This investigative study was used to determine whether Super Stuff® was a viable replacement for the current bolusing materials. It was concluded that Super Stuff® is a viable replacement, with similar density and improved cost effectiveness in relation to the bolusing materials used by The Townsville Cancer Centre.

Townsville Cancer Centre treats a number of patients that require bolus in and around irregular areas such as inside/behind ears, noses, hands. The department uses four types of bolus materials; jelly, wax, vazgauze and wet combine.

From discussions among staff members who had previously worked in other Australian departments there was positive feedback in relation to other bolus materials such as the commercially available and approved Super Stuff® by CMS Alphatech.

Super Stuff® is a pink powder with a density of 1.02 g/cm³. When mixed with cold water it forms a jelly-like consistency.

Aims

This investigative study was used to determine whether Super Stuff® was a viable replacement of our current bolusing materials. To investigate this we looked at the following aspects: density changes over time and a cost analysis.

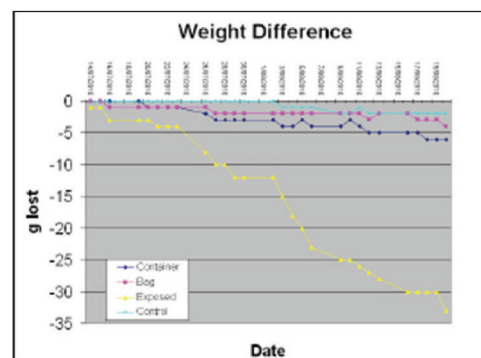
Methods and materials

Other Australian centres that use Super Stuff® were contacted with enquiries as to how and what they were using it for. Common uses included:

- As a replacement for vazgauze and wet gauze/combine,
 - Packing noses, ears and deficits,
 - Packing around large fungating tumours and
 - Compensating for extra/missing tissue.
- Four bags of Super Stuff® were made and

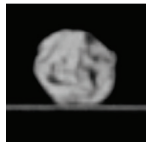
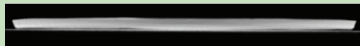

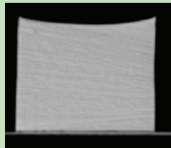


Figure 1: Four bags of Super Stuff®



Graph (1): The grams lost in each bag over a period of six weeks

Table 1: Densities of bolus used at The Townsville Cancer Centre

Different bolus scanned		Density g/cm ³
Ball of vazgauze		0.6–0.9
Jelly bolus		0.8–1.0
Super Stuff® bolus		1.02
Wax block		0.9

stored in different ways; 1) a control, sealed and left in its original bag, 2) an exposed bag that was left open to the air in the original bag, 3) a tied bag in its original bag and 4) a sealed plastic container (Figure 1). All except the control bag were opened daily to simulate treatment conditions.

These four bags were weighed daily and a CT scan was taken at the start of the study, then after six weeks to determine if the density of the bolus had changed over time.

A CT scan was also taken of the different forms of bolus that are used in the department and the different densities of these materials were compared against Super Stuff®.

A cost analysis was performed to determine if it was financially beneficial for The Townsville Cancer Centre to change their practices and implement Super Stuff®. This was done by comparing the number of vazgauze packets used over a course of treatment with the equivalent number of bags of Super Stuff® needed.

Table 2: Bolus price comparison

Bolus Type	Cost per unit	No. of units	Total cost
Vazgauze	\$1.40	15–25	\$21–\$35
Super Stuff®	\$5.80	1	\$5.80

Results and discussion

The initial CT scan of the four bags of Super Stuff® showed all to have a density of 1.02 g/cm³. Over the six week period of the study, the bag that was left open to the air had a reduction of 13% in weight, whereas the bags that were opened daily had a reduction of approximately 2% in weight. This was consistent with the control bag that had a weight reduction of 1% (Graph 1). Despite these reductions, all four bags of Super Stuff® remained at a density of 1.02 gcm³ on the final CT scan.

The results of the densities of the bolusing materials used at The Townsville Cancer Centre are outlined in Table 1.

The cost analysis of implementing Super Stuff® was considered. A bag of Super Stuff® costs \$5.80 which, initial testing showed, can last the entirety of a patient's treatment. A packet of vaz-gauze, on the other hand, costs \$1.40 and typically 3 to 5 of these are used each week per patient. An example of the cost analysis is outlined in Table 2 using a five week treatment course.

The advantages and disadvantages of Super Stuff® (see below) were considered and were used to help make a final decision regarding the implementation of Super Stuff® into the department.

Advantages:

- Quick and easy to mix (2–3 mins)
- Excellent for tissue replacement and cavity filling (see Figure 2)
- Highly malleable
- A single bag can last the entirety of a treatment course
- Easy to store

Disadvantages:

- Forms a lumpy and inconsistent texture when not mixed correctly
- Prolonged exposure to air results in shrinkage (Figure 3)
- Can become mouldy and hard
- Difficult to get a consistent thickness over a large area.

Conclusion

The consistent density of Super Stuff® of 1.02 gcm³ and the fact that this does not change over a long period of time, meant that the Townsville Cancer Centre have changed their practises and replaced vaz-gauze with Super Stuff® for packing ear cavities.

Super Stuff® is also being used as a tissue substitute to fill deficits. It is being stored in its original bag, tied after each treatment as this along with being stored in a sealed container, resulted in the least amount of weight loss. Super Stuff® is also much more cost effective with it reducing costs by over two-thirds.

Further reading

CMS Alphatech. Australian Technology Park International Business Centre. Sydney NSW Australia.

Foo K, Turnbull S. Large Fungating Primary Skin Lesions and Bolus Approaches – Extreme Makeover. Illawarra Cancer Care Centre, Wollongong Hospital, Wollongong, NSW, Australia.

Humphries M, Boyd K, Cornish P, Newman F. Comparison of super stuff and paraffin wax bolus in radiation therapy of irregular surfaces. *Med Dosim* 1996; 21: 155–57.



Figure 2: Super Stuff® packed in an ear



Figure 3: Super Stuff® exposed to air

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