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# Exploring single-use hospital clothing

– What are the pros and cons?



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Reusable cotton has been the preferred fabric for hospital clothing for decades. Soft, recognizable, breathable and affordable – cotton is difficult to beat when it comes to comfortable clothing for patients and staff. In this document, we describe the alternatives that are emerging as possible alternatives to the widely used cotton products in the health care sector.

# Exploring single-use hospital clothing – What are the pros and cons?

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This whitepaper is for informational purposes only and serves as inspiration to hospital clothing. The know-how and practices presented in this paper are not exhaustive and can never substitute medical advice. Each user is responsible for independently evaluating his or her particular use of the know-how and practices provided in this paper.

Reusable cotton has been the preferred fabric for hospital clothing for decades. Soft, recognizable, breathable and affordable – cotton is difficult to beat when it comes to comfortable clothing for patients and staff. In recent years, however, new ways of working, e.g. shorter hospital stays, innovative textiles and single-use clothing are emerging as possible alternatives to the widely used cotton products in the health care sector.

## Trend: Shorter hospital stays

Across Europe, the number of days spent in hospital shows a steady decline. 20 out of 27 countries report shorter hospital stays over a period of ten years. The trend is expected to continue for several reasons, among others to reduce the risk of infection and to promote the healing and rehabilitation process. Also, an unrelenting focus on productivity at hospitals support the trend of fewer hospital days.

## Development in number of hospital days per patient 2004-2014 (%)

Bulgaria	-38 %
Holland	-25 %
Denmark	-23 %
Switzerland	-21 %
Great Britain	-21 %
Lithuania	-15 %
Sweden	-15 %
Belgium	-14 %
Latvia	-14 %
Austria	-13 %

Source: Eurostat

Single-use clothing offers several advantages to patients and staff in the health care sector, especially for short stays. The daily consumption of clean clothes is large, and requirements to hygiene are extremely high. This means that significant resources must be allocated to secure availability of clean clothes at all times when using reusable cotton clothing. On the other hand, single-use clothing shows promising potential to reduce the number of work processes and thereby costs related to having clothes available when needed.

This article sheds light on topics related to hospital clothing today and tomorrow. What are the benefits of single-use textiles? What are the challenges and concerns emerging with the new fabrics? And what are the future perspectives in clothing for hospital patients and staff?

## Hygiene comes first

Single-use, or disposable, textiles are becoming more and more popular for different purposes. Today, you will find single-use textiles in the daily work at hospitals, hotels and restaurants, where they are appreciated for their high hygienic standard and for the easy disposal after use.

Single-use textiles are made from non-woven fibers, typically synthetic, that make the garments durable, lightweight and inexpensive. Non-woven textiles are especially suited for hospital environments requiring superior hygiene. This is due to the anti-bacteria properties of the fabric and to the fact that single-use garments are disposed of immediately after use.

Compared to traditional clothing made of cotton or terry cloth that is washed time and time again, lie unprotected in cupboards for weeks and is handled



by several people, single-use clothing represents a unique opportunity for raising the hygienic standard and reducing the risk of hospital infections such as Clostridium Difficile (CD) and Norovirus.

With today's multi-drug resistant bacteria and viruses, single-use fabrics can help control cross-contamination and the spread of infections at hospitals and other health care institutions. Because single-use items are used only once and incinerated after use, the need for handling is avoided and the spread of contaminants can be minimized.

**DID YOU KNOW**  
that bacteria like staphylococcus can survive in weeks and months when they dry out on for instance hospital clothing?

Source: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4261405/>

The single-use garments are packed in individual plastic wrappers that remain clean and untouched until the patient or care-giver opens the wrapper and

puts on the clothes. The single-use garments are not stained by previous use and give the patients a feeling of being clean and tidy.

At the same time, single use clothing is a cheap and simple solution for visitors that can put on the clothing upon arrival and dispose of them when leaving the hospital as part of the hygienic measures.

*“Our patients are positively surprised when they receive the patient kit. They can see that the clothes are clean, and we can offer our patients to wear the clothes back home, for example when they have undergone a knee procedure.”*

*Functional Manager at a one-day clinic*

### Focus on patient and staff comfort

Patient and staff comfort is very important when it comes to hospital clothing. For the patient, the clothing must be soft and flexible, it must be clean and hygienic, providing adequate heat without over-heating, protect intimate body parts, provide comfort and preserve dignity.

For the staff, the clothing has to be flexible and allow free movement, it must accommodate all the functional needs that support efficient work processes and it has to be hygienic and comfortable, providing the right level of thermal comfort and breathability.

The non-woven fabrics used for single-use clothing is constantly developed to provide maximum comfort and freedom of movement to match the qualities of traditional cotton clothing. Daily use of single-use clothing by one-day patients at a Danish hospital revealed high patient satisfaction with the comfort and flexibility presented by the disposable garments. The patients also appreciated that they could wear the clothing when they left to go home, which was especially convenient for the patients who had undergone surgery that made it difficult to change clothes.

For patients that are bedbound for longer periods of time, the current non-woven textiles tend to become too warm. With the extensive materials development within non-woven technology, however, it is only a question of time before the single-use clothing can also be used for bedbound patients. The non-woven fabrics are constantly developed to become softer, more breathable and ever more flexible when it comes to design and functionality.

#### Hospital infections affect 14 out of every 100 patients admitted

Simple and low-cost infection prevention and control measures, such as appropriate hand hygiene and use of disposable items can reduce the frequency of health care associated infections by more than 50%.

Source: WHO, [http://www.who.int/features/factfiles/patient\\_safety/patient\\_safety\\_facts/en/index3.html](http://www.who.int/features/factfiles/patient_safety/patient_safety_facts/en/index3.html)

### Save washing, handling and space

Hundreds of million euros are spent on washing, handling and storing of hospital clothing every year. To cut down on these expenses is of course one of the major benefits when talking about single-use clothing for patients and staff.

Customers states that single-use clothing eliminates washing costs and significantly reduces cost of daily

handling, filling, and emptying washing bins, repairs on reusable garments, etc.

The single-use garments also take up less space in the cupboards. Compared to a traditional cotton top, the single-use version saves 50% when stacked in the cupboard. Clearly marked sizes and type on the packaging allow easy selection of right size and type of garment for the individual patient.

### What about the environmental considerations?

When talking about single-use clothing, one of the primary concerns is the environmental impact from cradle to grave as regards energy consumption and waste generation. Complete life cycle analyses of cotton and non-woven textiles respectively have not yet been undertaken, but several studies have established environmental pros and cons of different materials.

The primary environmental impact of reusable cotton clothing stems from the use phase, where tons of water and detergents are used for washing of the clothes. However, there are also impacts from raw material sourcing and production of the clothing, since cotton is grown in different climate zones and often requires comprehensive use of fertilizers, water and pesticides. Cotton can be reused for new products or incinerated with limited emissions of CO<sub>2</sub> as cotton is a bio-material.

The primary environmental impact of single-use non-woven textiles comes from the production phase. Single-use textiles are typically made from polypropylene (PP) fiber. The material is considered one of the most environmentally friendly plastic materials with insignificant environmental impact during production, use and disposal. Single-use textiles made of polypropylene-based (PP) fibers can be disposed of as ordinary waste, and can be incinerated with little CO<sub>2</sub> emissions. It is important that the PP-based textiles are not washed, since PP fibers contaminate the natural environment.

**DID YOU KNOW**  
that polypropylene (PP) is a strong, synthetic fiber produced from a residual product of oil production?

For both reusable cotton textiles and single-use clothing, use of chemicals and chemical residues in the final products are strictly regulated.

### What's next?

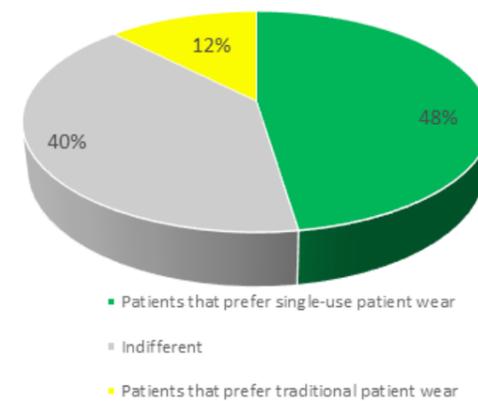
The force of habit can be strong when it comes to choice of hospital textiles. The emergence of a wide range of innovative fabrics, however, offers practical, hygienic and affordable alternatives to cotton. In order



to challenge the habits, it may be a good idea to test the new textiles on patients and staff to determine whether the time has come to try out alternative textiles. User tests can reveal the user-friendliness and comfort of different fabrics and designs, while weighing this against environmental and financial implications of different solutions.

That is what the one-day clinic at Danish Kolding Hospital did some years ago, when they decided to experiment with new clothing concepts. As part of the test, the clinic made a survey asking patients what they thought of the single-use textiles. 48% of the patients preferred the single-use non-woven clothing, while 40% of the patients asked were pleased with both solutions. Only 12% preferred the traditional clothes made of cotton.

Patient survey from Kolding Hospital



The development and testing process at Kolding Hospital ran for a period of three years, where staff members also visited other hospitals to learn about their experience with single-use clothing. The final

evaluation resulted in a continued use of single-use clothing for both patients and staff at the one-day clinic.

Leaving the old cotton garments behind and trying out new, innovative fabrics and designs may seem like a big step. It is only by venturing into tests of the new clothing types that you can discover the pros and cons for yourself.

### Abena – Your specialist in single-use hospital clothing for patients and staff

Abena's concept for single use clothing has been developed in close collaboration with end-users, hospital staff and our own health care specialists. Our aim is to provide the users with clothing that is comfortable, functional and offer optimum protection. We already offer a wide selection of products and we take lead in developing new solutions for the future.

We support the users of our products in finding the right solution fitting individual needs, while ensuring best Total Cost of Ownership.

Our product range covers everything from head to toe.

Our team of trained and experienced hygiene nurses and other specialists advises on choice and use of products. In close collaboration with practitioners in the field, they ensure a holistic approach to product development and subsequent procurement and use of the products.



