



## **Increase in efficacy of the treatment of UTI (urinary tract infection) with none or minor use of antibiotics among the users of uridomes (sheaths).**

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### **Background:**

The aim of this paper is to explain a *possible* way of conservative treatment of UTI with none or minor use of antibiotics in male patient using uridomes (condom sheaths).

Urinary tract infection (UTI) probably affects about one-half of all people during their lifetimes. UTI accounts for more than 10 million office visits and 1 million hospitalizations each year in the United States (9). The figures for the Europe are probably of the same size. Every reduction in these amounts would be a great benefit for both the patients and the national economies.

Successful curing of UTI is depending of the effectiveness of the treatment. UTI caused by different pathological bacteria, needs in most cases, a long period of treatment, 2-3 weeks or longer. So far, in modern times, great amount of antibiotic are used. This unwanted situation has resulted in antimicrobial resistance (AMR).

Healthcare Associated Infections (HAI) and AMR are two of the greatest challenges of our time. (4). The WHO, in its 2014 report on antimicrobial resistance, refers to AMR as an increasingly serious threat to global public health. In their report, they state that the problem is so serious that it threatens the achievements of modern medicine and that a post-antibiotic era in which common infections and minor injuries can kill, is a real possibility for the 21<sup>st</sup> century.

HAI is the 3<sup>rd</sup> largest cause of death in developed countries, after cancer and cardiovascular diseases, and an increasing problem in developing countries.

The average prevalence of HAI in the EU is 7 percent, 4 percent in US and 15 percent in developing countries. In the US and EU, about 6 million patients are affected by HAI every year, causing to more than 150000 deaths.

The corresponding cost to healthcare is estimated USD 35-45 billion in the US alone. More alarming is the fact that 70 percent of the bacteria that caused HAI are resistant to at least one relevant antibiotic.

The overuse of antibiotics results in growing problems with AMR. Therefore, the importance of infection control is increasing. Medical devices, for example catheters and indwelling catheters, are accountable for over 50 percent of all HAI cases. Approximately two thirds of all HAI occur in three main areas in the body: the urinary tract, the respiratory tract and the blood stream, and medical devices cause an overwhelming majority of these infections.

In the Norwegian newspaper, Dagens Næringsliv (DN), is on the 27th October 2014, published an article (8) «Bredspektret innsats mot resistens», which deals with the overuse of antibiotics as a known global problem. The 12th November 2014, Bent Høie (Health minister in Norway) was a host for the WHO “AMR” meeting in Oslo. Norway participates a coalition of “special concerned countries”.

There are high proportions of antibiotic resistance (ABR) in bacteria that cause common infections (e.g. urinary tract infections in all regions of the world (10).

Patients with infections caused by drug-resistant bacteria are generally at increased risk of worse clinical outcomes and death, and consume more healthcare resources, than patients infected with the same bacteria that are not resistant.

WHO inspires Policymakers, scientist and industry that can help tackle resistance by:

- fostering innovation and research and development of new vaccines, diagnostics, *infection treatment options and other tools*.

### Treatment option:

The conservative treatment of UTI was (is) to give the patient plenty to drink causing often drainage of the urine bladder. This would continuously “wash” out bacteria and restore the clean condition in the urinary tract. (This could be highly actual again resulting in none or minor use of antibiotics).

This may not be without problems for those using pads and condom sheaths (uridomes). For patient using pads, the situation would be constant “wet abdomen” with recurrent UTI. The frequently change of pads is an absolute must for a successful treatment.

When using uridomes the urine can by *wrong application and insufficient* care, also be in constant contact with the urinary tract opening (urethra) (2). By coupling uridome/drainage bag with the *manual traditional method*, there is an obvious possibility for bacterial contamination. (7) In the book «Mikrober, helse og sykdom» of Merete Steen and Miklos Degré, attention is drawn to the application point between the urine drainage bag and the uridome as an open door for bacterial contamination. See the report “Air in the urine drainage bag” (2) and “Observed “under-pressure” in the urine drainage bag” (3). Sufficient emptying of the urine drainage bag is here important. If not, gas from gasproducing bacteria can be produced in the urine drainage bag, which can result in high pressure, backpressure, reflux and urine leakage. Bacteria will then be in contact with the urine tract opening.

### What is new?

Ecinput (Fig.1), a new medical device (tool) [green part on fig.1] for coupling of the urine drainage bag tube (white part on fig 1) to the uridome (orange part on fig 1), *without bacterial contamination from hands and gloves*.



This medical instrument is a single use plastic packed device (fig 2), which ease the application of uridome to urine drainage bag.

Ecinput, is developed for all type of uridome users, whether they are incontinent, young, old, handicapped, postoperative, dysfunctional or of other reasons. The method for the application, the videos and the links to the specialist literature are on [www.ecinput.no](http://www.ecinput.no) or [www.ecinput.com](http://www.ecinput.com).



Fig.2: The ecinput in the plastic bag

The innovation of ecinput cover at least two of the invitations inspired of the WHO (see top of page 2).

## **Observed:**

Among patients, one patient followed daily for more than a year, is now reported that he is cured from UTI after routinely use of the ecinput medical application instrument. Before, the patient had up to 6-7 UTI per year. The ecinput applies the urine drainage bag to the uridome tube (fig. 1) without bacterial contamination from manual handling and preventing further bacterial contamination.

## **Explanation:**

The explanation of how ecinput can be an effective help in treatment of UTI is:

- Increased efficiency of conservative treatment of UTI by application of the drainage bag tube to the uridome tube (plenty drinking and washing out).
- When coupling using ecinput, no “new” bacterial contamination from hands and gloves will occur, and the present bacteria will not manually, be rubbed towards the urine tract opening from hands and gloves.
- By no manual rubbing, there will not be any friction and thereby no temperature increase. The start and increase of bacterial growth is significant reduced (6).  
[www.ecinput.no](http://www.ecinput.no). «Undersøkelse av forskjell i temperaturøkning ved montering av urinposenippel til uridom uten hjelpemiddel kontra montering ved hjelp av ecinput».
- As soon as the urine flow of 37°C, has entered the drainage bag, the decrease in temperature will immediately start. The pressure will then decrease and a certain constriction (“vacuum”) will occur between the penis and the urine drainage bag. The uridome will be flat and the lowered pressure will effectively empty the uridome for bacterial contaminated urine (3). See fig. 3.



*It is during the treatment highly important to empty the urine drainage bag often to wash out bacteria from the urinary tract. With no further bacterial contamination (when using ecinput for applying the coupling of drainage bag to the uridome) together with the washout, the UTI could be cured without use of antibiotics. Another benefit is that when penis is dry outside, there will be fewer damages on the skin when changing the uridomes.*

Fig.3 Significant constriction of the uridome between penis and drainage bag tube.

The mucous membrane of the bladder inner wall consists of epithelial cells, which are likely to play a major role. The glycosaminoglycan (GAG) layer, lining the transitional epithelium of the human bladder, is participating in that process. A damaged GAG layer may lead to direct exposure of epithelial cells to urine components, which increase the possibility of bacterial adherence and infections (9). Reflux of bacterial contaminated urine may lead to UTI.

The male local defense against the UTI, is the length of the urinary tract. This length acts as a barrier against bacterial colonization in the urinary tract. “Long way to go”.

For the uridome users with recurrent UTI, the use of ecinput, when applying the urine drainage bag tube to the uridome, will lead to a “washout” of those bacteria causing the infection and prevent new bacterial contaminations. The low pressure (slight vacuum) in the drainage bag will keep the urinary tract opening free of bacteria infected urine. This is one clue of the treatment.

For male patients, when possible, it could be an advantage to change from indwelling catheter to the use of uridome, where the latter is coupled using ecinput. The low pressure (vacuum) will keep the urinary tract opening free from bacteria (as long as the drainage bag is sufficient emptied).

As mentioned above, the HAI is a real threat for the patients. By disconnecting the catheter from the urine drainage bag, the use of ecinput could ease the process. Aseptic wiping would be necessary. See video on [www.ecinput.no](http://www.ecinput.no).

### **Conclusion:**

The new developed medical tool, ecinput, cover at least *two of the invitations* from the WHO (page 2) [**WHO inspires Policymakers, scientist and industry that can help tackle resistance by:** fostering innovation and research and development of new vaccines, diagnostics, *infection treatment options and other tools.*]

1. Increase the treatment of UTI with no use of antibiotics
2. Prevent bacterial contamination during the coupling of urine drainage bag

In addition, the new invention will result in lower costs for the national economies by

- Less “nursing”
- Lower use of uridomes (and pads)

And finally

- Improved health for the patient
- Higher dignity for the patient
- Higher possibility for “home” staying people

## Literature:

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