Investigators Brochure

X-FLOW® Prostatectomy short catheter straight tip 3-way 30-50 ml silicone CH FR 22

OPTION – OutPatienT InductiON

Sponsor:
Sahlgrenska University Hospital, Gothenburg, Sweden

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REFERENCES TO THE DEVICE IN ITS EC-MARKED INDICATION ARE DISPLAYED IN BLACK FONT
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1. Investigational device information

1.1. Rationale for the design

To evaluate if induction of labour in an outpatient setting is non-inferior to induction in hospital in a low-risk pregnant population regarding safety for the child as well as regarding efficacy, defined as proportion of women with vaginal delivery. Further pregnancy outcomes, the acceptability and experience of the woman, her partner and the staff, as well as future pregnancy outcome and health economic consequences will also be studied.

The hypothesis is that outpatient induction regardless of method (balloon catheter or oral misoprostol) is non-inferior to inpatient induction in low-risk women regarding the primary outcomes neonatal safety and efficacy.

The balloon catheter to be used as technical means for labor induction will be a silicone balloon catheter from Coloplast, Coloplast X-FLOW® Prostatectomy short catheter straight tip 3-way 30-50 ml silicone CH FR 22 **REF. AB6H22**, hereafter called Coloplast catheter (Silicone prostatic catheter).

This device is a biocompatible material (silicone) balloon catheter, whose current indication is:

- to serve as a short-term catheter to drain urine, post-surgical blood clots and debris through the urethra after a prostate or a bladder surgery

- and, thanks to its inflatable balloon, to compress the surgical prostatic fossa area for hemostasis.

These catheters have been extensively used for years in their current indication with a positive benefit/risk profile.

Moreover, balloon catheters have been largely used for years in several countries to induct labor, with good results. One double-balloon silicone catheter (Cook Cervical Ripening Balloon) is EC-marked with intended use of mechanical cervical dilation prior to induction, whereas others are not yet registered in this intended purpose. The Coloplast REF. AB6H22 device was chosen by the investigators' team among others due to its design and materials, and due to the safe past experience in this use. See below paragraphs.

Inclusion and exclusion criteria for participation in the OPTION study.

Inclusion criteria	Exclusion criteria
Based on medical history	
• women 18-45 years old • able to communicate with the hospital • uncomplicated live singleton pregnancy • pregnancy week ≥37+0 to 41+6 according to crown rump length (CRL) or biparietal diameter (BPD<55 mm) at first or second trimester ultrasound • *engaged and stable* cephalic presentation	• previous uterine surgery with uterine scar, e.g. caesarean section or myomectomy • pregestational or medically treated gestational diabetes (insulin or metformin) • dietary treated gestational diabetes with large for gestational age foetus • preeclampsia or instable hypertensive disease • multiple pregnancy • intrauterine foetal death (IUFD) in current or previous pregnancy • known foetal malformations or other foetal condition affecting the delivery or immediate care of the new-born • congenital uterine malformation which may affect safety • other condition requiring inpatient care, e.g. delivery within 60 min from arriving at the hospital in previous pregnancy • not able to reach the hospital in a reasonable time, at the discretion of the investigator with a maximum of 60 min as a benchmark (1) • known allergy to any component in the balloon catheter (for balloon catheter method)
Based on clinical examination before start of induction including Leopold´s manoeuvres, digital cervical exam, abdominal ultrasound, temperature, blood pressure and CTG scan	
• *engaged and stable* cephalic presentation with • Bishop score <6 (<5 in parous women) • CTG classified as normal according to the antepartal Swedish Society of Obstetrics and Gynaecology (Svensk Förening för Obstetrik och Gynekologi, SFOG) criteria (www.ctgutbildning.se)	• Small for gestational age (SGA/IUGR/FGA) Screened for as follows depending on the indication for induction: 1. late term ≥41+0 to 41+6 weeks: abdominal ultrasound will be performed and mean abdominal diameter (MAD) needs to be ≥110 mm In case MAD <110 mm, the foetal weight will be estimated to exclude SGA foetus defined as <2 standard deviation according to Marsal et al (2) 2. dietary treated gestational diabetes or stable hypertension: foetal weight estimated by abdominal ultrasound within the last two weeks before induction and showing no SGA defined as <2 standard deviation according to Marsal et al (2) 3. prolonged latent phase, maternal age, mild intrahepatic cholestasis, pelvic girdle pain, PROM, psychosocial: Normal fundal height measurement according to the Swedish reference curves is needed In case of not-normal fundal height measurement: foetal weight estimation must be performed and showing no SGA defined as <2 standard deviation according to Marsal et al (2) 4. Other indications: at the discretion of the investigator • Oligohydramniosis: deepest vertical pocket <20 mm or amniotic fluid index <50 mm • polyhydramniosis: if head not engaged or amniotic fluid index >300 mm • maternal pyrexia ≥38°C • known low-lying placenta (less than 20 mm from internal os measured by vaginal ultrasound in week 36) • high head (≥4/5 palpable abdominally) • premature rupture of membranes (PROM)
Based on observation the first 45 min after start of induction	

• in case of induction with balloon method: CTG classified as normal according to the antepartal Swedish Society of Obstetrics and Gynaecology (Svensk Förening för Obstetrik och Gynekologi, SFOG) criteria (www.ctgutbildning.se)	• any adverse events within the first 45 min after start of induction, e.g. heavy bleeding, pain, PROM • start of contractions

1.2. Classification of the investigational device

Product codes	DHF	Product Name	Way	Clinical Family	Class	1rst CE marked
AB6H22	**Silicone Prostatic Catheters**	X-FLOW® Prostatectomy short catheter straight tip 3-way 30-50 ml silicone CH FR 22	3	Prostatic catheter-Silicone	**IIa**	20/12/2000

1.3. Investigational device description

❖ Prostatic catheters

According to the current registration, the prostatic catheters are intended to be inserted through natural body orifice (urethral meatus) and placed in the urethra natural tract in contact with urethral mucosa. Their balloon is further inflated (via a lumen equipped with a non-return valve) in the post-surgical prostatic cavity and/or the bladder, for compressing local tissues and stop bleedings at the end of the surgical operation.

There is a wide range of prostatic catheters, equipped with different balloon sizes and number of channels (1 to 3 channels). Health practitioners should be aware of their different properties and are responsible to choose the adequate catheter for their patients.

	Current registration	Investigation use
Insertion orifice	Natural: urethral meatus	Natural: vaginal orifice
Site in the body	Urethra	Vagina/cervix/uterus
Duration of contact	7 days	24 hours
Tissues in contact - Biocompatibility	Mucosa + damaged tissues	Mucosa – potential damaged tissues

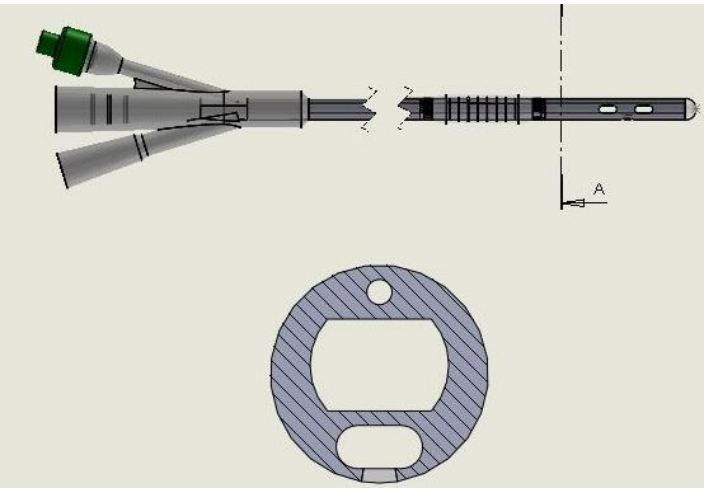
❖ ***Shape***

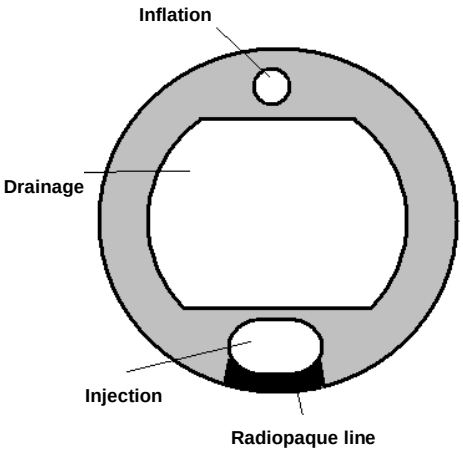
- The AB6H22 catheter is a 3-way catheter:

  3-way catheters are used primarily after bladder, prostate cancer or prostate surgery.

  They are equipped with 3 channels:

  - 1 for balloon inflation
  - 1 for urine drainage
  - 1 for allowing irrigation to wash away blood and small clots. This prevents larger clots, which might plug the catheter, from forming.





Cross section of the shaft

3-way prostatic catheter

❖ Composition

AB6H22 catheter is made of Silicone:

Component	Generic Chemical Name	Conc. w/w % If Hazardous Substances	Function
Tube	Silicone Barium sulfate Titane oxide	NA	Drainage
Balloon	Silicone peroxide	NA	Keep catheter position
Funnel	Silicone	NA	Connexion
Valve	Acrylonitrile butadiène styrene Silicone Black Ink	NA	Keep balloon volume
Glue	Silicone Glue	NA	Assembling component (assembling balloon/shaft and closed irrigation way product tips)
First pouch of packaging	Polyethylene terephthalate peel and green tinted Polypropylene / Ethylene Propylene Copolymer Blend / Polyethylene	NA	Property packaging
Primary packaging	Paper print lacquer Polypropylene	NA	Sterile packaging

The catheter is composed of a silicone body including 3 channels, an external tip made of 3 silicone funnels and an internal tip equipped with an inflating silicone balloon and ended by a straight short tip also made of silicone. The catheter transparency provides direct visualization of the content.

Silicone biomaterials are known for their tolerance and stability and thus have found use in extensive clinical application since the 1960s. Silicone is a common constituent of prostatic catheters and other medical devices from almost every fields of medicine, used in many different types of therapeutic applications and esthetic reconstructions.

Here are some of the applications of silicone devices that have been reported:

- Implants retained prostheses, maxillofacial prostheses, facial implants, implants for small joint arthroplasty, penile prosthesis for erectile dysfunction and urinary stress incontinence, endoscopic dacro-cysto-rhinostomy in lachrymal canalicular trauma, silicone stenting, facial prosthesis like nasal augmentation;

- Topical silicone therapy (silicone elastomer sheeting for hypertrophic and keloid scar treatment, bandages, silicone rubber protective splints for stable orthopedic hand and wrist injuries, contact lenses;
- Molding behind-the-ear style hearing aids, silicone elastomer sheet in cranioplasty, silicone orthodontic rubber bands, reservoir-type intravaginal ring, airway stabilization with silicone stents for treating adult tracheo-bronchomalacia, silicone Foley catheters , extracorporeal equipment in cardiovascular, clip reinforcement (by circumferential wrapping with a transparent silicone sheet) of aneurysms of internal carotid artery, silicone double loop ureteral stents.

More specifically for the purpose of the study, silicone material has been used for long and evaluated as safe to use for contact with vaginal, cervical and uterine mucosa, for various medical devices like silicone condoms, menstrual cups, pessary devices, vaginal rings for drugs delivery, labour induction or treatment of postpartum bleeding intended to be maintained in place for long term for most of them.

❖ ***Tube dimension***

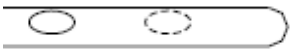
The external diameter of the catheter shaft is measured in Charrière (Ch) or French gauge (Fr) unit. Though named differently, these are the same measurements; 1 unit Ch or Fr being 1/3 mm. The **AB6H22 catheter is 22 Fr diameter.** The catheter is 42 cm long, adapted to male anatomy.

Mean vaginal length from cervix to introitus was evaluated in an anatomical study at 62.7 mm. Vaginal width was largest in the proximal vagina (32.5 mm), decreased as it passed through the pelvic diaphragm (27.8 mm) and smallest at the introitus (26.2 mm) (32)

In the proposed use to be studied, the 42 cm length of the catheter remains largely compatible with the vaginal size, allowing a sufficient and safe external tube length for fixation onto the patient's thigh. Moreover, the external diameter of the catheter (around 7 mm) is also compatible with vaginal smallest diameter.

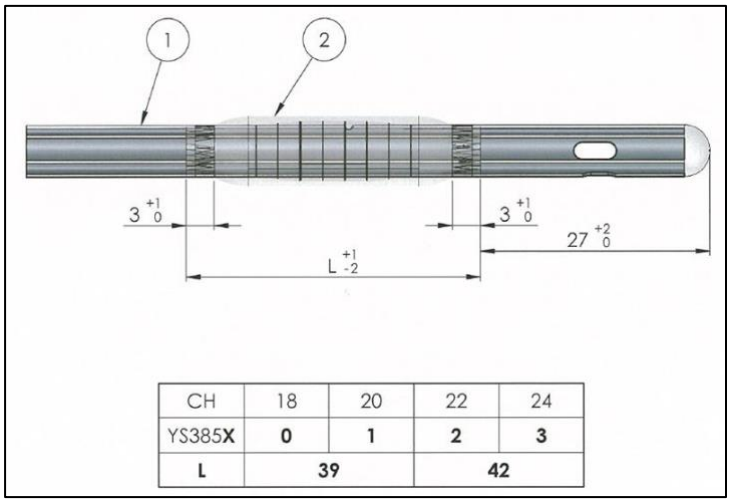
❖ ***Tube tip***

Prostatic catheters come in several sub-types depending on the shapes of the distal tip of the catheter. The prostatic catheter REF. AB6H22 has a straight and a shortest tip compared to other prostatic catheters:

Tip name	Shape of the distal tip
straight short tip	

Once equipped with a stylet during insertion, the tip is purported to direct insertion of the catheter. Once in place, the 27 mm short length tip is soft and presents with a rounded end, to prevent tissue injury.

The short, soft and rounded tip is one of the reasons for choosing the AB6H22 for the purpose of the OPTION study where the tip will be placed in the uterus in close connection to the foetal membranes where a harder tip might increase the risk of inadvertent breaking of the membranes while inserting the catheter.



CH	18	20	22	24
YS385X	0	1	2	3
L	39		42	

❖ ***Balloon***

The balloon which is inflated with sterile water is meant to compress the prostate emptied area. Balloon size is related to the volume of sterile water required to inflate them. X-flow with short tip Coloplast catheter (Silicone prostatic catheter) has a 50mL balloon (balloon length is 42mm), to be inflated from 30 to 50 mL of sterile water.

Once inflated with 50 ml water as expected, the external diameter of the balloon will reach around 45 mm.

The possibility to inflate the balloon with 50 ml is one of the reasons for choosing the AB6H22 for the purpose of the OPTION study as according to previous experiences, the slightly larger filling volume compared to the 30ml balloons seem beneficial in the process of labour induction where the aim is to dilate, soften and shorten the cervix.

1.4. Manufacturing process and validation process

The prostatic catheter REF. AB6H22 is developed and manufactured in accordance with EN ISO 13485 “Medical devices - Quality management systems - Requirements for regulatory purposes”.

Table A	No.	Requirements	Specifications	Product codes	Validation results	Validation procedure	Validation Ref.	Pass/ Fail
User needs	1.1	**All Silicone, to avoid any risk of allergy or toxicity** **Not manufactured with Natural Rubber Latex**		All codes	Conform	Product Description and Composition Instruction for writing a clinical evaluation report SBA00087	Product Description and Composition Clinical Evaluation report	Pass
	1.2	Wide irrigation and drainage channels to prevent blocking or clotting		All codes	Conform	Product Description and Composition Instruction for writing a clinical evaluation report SBA00087	Product Description and Composition Clinical Evaluation report	Pass
	1.3	**Clear catheter body to monitor the drainage quality and visualize urine**		All codes	Conform	Product Description and Composition Instruction for writing a clinical evaluation report SBA00087	Product Description and Composition Clinical Evaluation report	Pass
	1.4	Big bevel and eyes to ensure excellent drainage capacity		All codes	Conform	Product Description and Composition	Product Description and Composition	Pass
	1.5	**Closed round tip for ease of placement of an introducer when needed**		All codes	Conform	Product Description and Composition	Product Description and Composition	Pass
	1.6	Stiff walls to facilitate clots evacuation		All codes	Conform	Product Description and Composition	Product Description and Composition	Pass
	1.7	A latex catheter becomes obstructed faster than a silicone catheter. The lumen of a silicone catheter is larger than of latex catheter with the same diameter		All codes	Conform	Instruction for writing a clinical evaluation report SBA00087 Technical drawings (compared to Coloplast latex catheters: REF. AB6xxx Vs AB3xxx)	Clinical Evaluation report	Pass
	1.8	**Many scientific data confirm the benefit of silicone**		All codes	Conform	Instruction for writing a clinical evaluation report SBA00087	Clinical Evaluation report	Pass
	1.9	**Silicone is a biocompatible material that is used and has been validated for the long term implantation of a large number of different types of prostheses (cardiac stimulation catheters, artificial sphincters, long term ureteral stents, etc)**		All codes	Conform	Instruction for writing a clinical evaluation report SBA00087	Clinical Evaluation report	Pass
Intended use	2.1	- Short-term drainage of bladder urine - Postoperative bladder irrigation-lavage - After prostate surgery: haemostasis of the prostatic fossa		All codes	Conform	Instruction for writing a clinical evaluation report SBA00087	Clinical Evaluation report	Pass
Usability	3.1	Information in IFU is sufficient and adequate in order to use/operate the device	Users shall be able to use the device correctly based on the information in the IFU.	All codes	Conform	Procedure for risk Management SBA06023 Usability engineering Instruction SBA00080 Instruction for writing a clinical evaluation report SBA00087	Risk Management Files Clinical Evaluation report Usability Assessment	Pass
	3.2	**Simple and safe user interface**	Users shall be able to use the device correctly.	All codes	Conform	Procedure for risk Management SBA06023 Usability engineering Instruction SBA00080 Instruction for writing a clinical evaluation report SBA00087	Risk Management Files Clinical Evaluation report Usability Assessment	Pass

1.5. Mechanism of action of the investigational device

- In their current indication, Prostatic catheters are used primarily after bladder, prostate cancer or prostate surgery. Their main modes of actions are:
  - Haemostatic by physical compression of surgical field by the balloon, when balloon applied in empty prostatic fossa,
  - Post-surgical bladder irrigation and drainage of blood containing urines through the catheter and
- For the purpose of the study, the catheter is inserted through the vaginal orifice up to the internal orifice of the cervix, where the balloon is inflated for local physical compression to induce dilation.

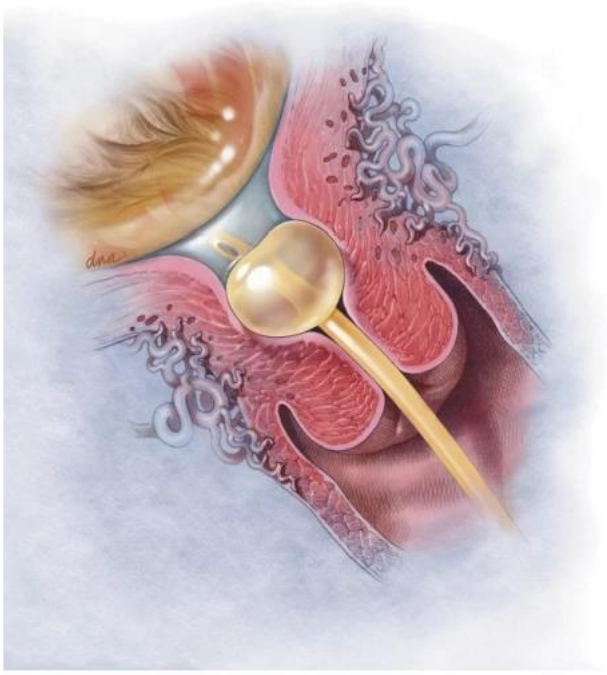


Illustration by Alex Baker, DNA Illustrations, Inc.

The transcervical Foley balloon Contemporary OB GYN.pdf

1.6. Instructions for use and labelling

The investigational devices will be labeled as shown below:

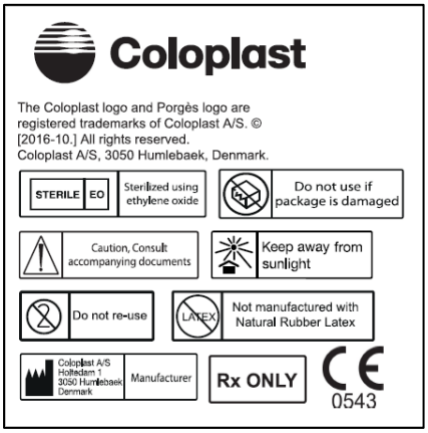


Figure 1: Label part 1

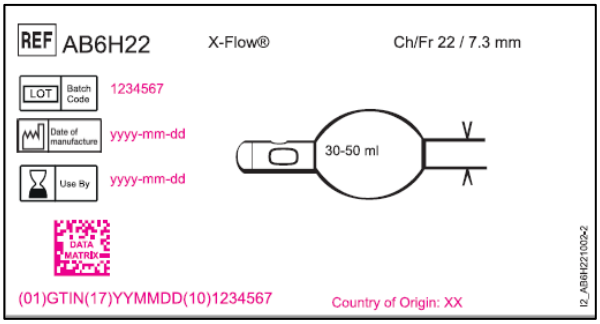


Figure 2: Label part 2

GB- Prostatectomy catheter short tip/3-way/silicone
FR- Sonde prostatique pointe courte/3 voies/silicone
DE- Tamponade-Katheter mit kurzer Spitze/3-Wege/Silikon
IT- Catetere per prostatectomia punta corta/3 vie/silicone
ES- Sonda prostática punta corta/3 vías/silicona
PT- Sonda prostática de ponta curta/3 vias/silicone
NL- Prostatectomiekatheter korte tip/3-wegs/silicone
GR- καθετήρας προστατεκτομής κοντού άκρου/τρίδρομος/σιλικόνης
RU- Катетер простатэктомический с коротким наконечником/трехходовой/силикон
PL- Cewnik do prostatektomii, krótka końcówka/trójdrożny/silikonowy
CZ- Prostatektomický katétr s krátkou špičkou/3cestný/silikonový
TR- Prostatektomi kateteri kısa uç/ 3-yollu/silikon
FI- Prostatektomiakatetri, lyhyt kärki/3-tie/silikoni
SE- Kateter för prostatektomi, kort spets/3-vägs/silikon
DK- Kort prostatektomikateter spids/3-vejs/silikone
NO- Prostatektomikateter, kort tupp/3-veis/silikon
CN- 前列腺切除术导管，短头/三向/硅胶
BG- Катетър за простатектомия с къс връх/тритъген/силиконов
HU- Prosztatektómiás rövid végű katéter/háromutas/szilikon
LT- Prostatektomijos kateteris trumpu galiuku /trišakis / silikoninis
RO- Cateter prostatectomie scurt peste firul de ghidaj/ 3 direcţii/ silicon
RS- Kateter za prostatektomiju sa kratkim vrhom/trokraki/silikonski
قسطرة استئصال البروستاتاذات طرف قصير/ثلاثية الشعبة/من السيليكون

Figure 3: Label part 3

Figure 4: Box label

The Instructions for Use from manufacturer are given in Appendix 1.

The Instructions for Use for OPTION study provided by the Department of Obstetrics and Gynecology of Sahlgrenska University Hospital are given in Appendix 2.

A specific label mentioning that the device is dedicated to clinical investigation will be stuck on the device box/pouch:

Exclusively for clinical investigation
EudraCT number: 2020-000233-41
Ethical number: Dnr 2020-02675
Sponsor name:

1.7. Intended clinical performance

Current Performance claims for Coloplast Prostatic Catheters devices are summarized in the following table.

Topic	Product	Claims
■		
Indication	Prostatic catheters: **Silicone**	Short-term drainage of bladder urine
		Postoperative bladder irrigation lavage
		After prostate surgery : haemostasis of the prostatic fossa
Product	**Silicone**	Clear catheter body to monitor the drainage quality and visualize urine
Material	**Silicone**	A latex catheter becomes obstructed easier than a silicone catheter. The drainage lumen of a silicone catheter is larger than of latex catheter with same diameter.
		Many clinical studies comparing latex to silicone catheters confirm the benefits of silicone, with a reduction in allergies, urethral inflammation, encrustations and urethral strictures
Biocompatibility	**Silicone**	Silicone is a biocompatible material that is used and has been validated for the long-term implantation of a large number of different types of prostheses (cardiac stimulation catheters, artificial sphincters, long term ureteral stents etc)

Intended performance in the study

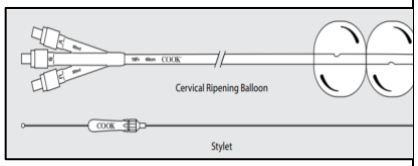
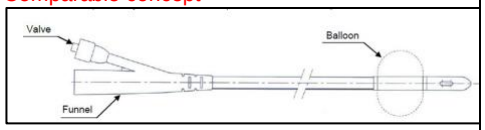
Topic	Product	Claims
■		
Indication	catheters: **Silicone**	Mechanical dilation of the cervical canal prior to induction of labor in case of an unripe cervix
		Trigger the maturation process of the cervix during the process of labour induction.
Biocompatibility	**Silicone**	Silicone is a biocompatible material that is used and has been validated for the long-term implantation of a large number of different types of prostheses (cardiac stimulation catheters, artificial sphincters, long term ureteral stents, vaginal cups,labour induction, postpartum bleeding...)

1.8. Medical devices currently used for the labour induction and comparability assessment

Several balloon catheters are used for labour induction:

- Cook® Cervical Ripening Balloon: (double balloon) currently the only EC-marked medical device for labour induction Foley catheter 30-50 mL: commonly used as mechanical labour induction but this indication is not EC-marked for these devices.
- Coloplast AB65xx X-Flow Prostatic catheters have been used for labour induction by Swedish delivery units, e.g. at Sahlgrenska University Hospital, Ystad hospital and Helsingborg hospital.

Characteristics	Device EC-marked for tested indication: Cooks® Cervical Ripening Balloon (3) Reference device	Device used in published clinical studies: Foley catheter (see 3.2) Similarity compared to reference	Device used in published clinical study (see 3.2) and already used by team: X-FLOW® catheter 2-way 30-50 ml AB6522/AB65xx Similarity compared to reference	Device to be tested: Coloplast AB6H22 Similarity compared to reference
Description	Silicone double balloon catheter with an adjustable-length malleable stylet.	Soft and flexible silicone, sterile balloon catheters delivered. May be inserted with stylet Same balloon catheter concept- Only 1 balloon	Soft and flexible silicone, sterile balloon catheters. May be inserted with stylet Same balloon catheter concept- Only 1 balloon	Soft and flexible silicone, sterile balloon catheters. May be inserted with stylet Same balloon catheter concept- Only 1 balloon
Intended contact tissues	Vaginal and cervical canal mucosa	Urethral and bladder mucosa Percutaneous access Comparable: mucosa	Urethral and bladder mucosa Damaged tissues (post-surgery prostatic fossa) Comparable: mucosa	Urethral and bladder mucosa Damaged tissues (post-surgery prostatic fossa) Comparable: mucosa Biocompatibility tests applicable to study
Dimension	Fr 18 Length 40cm	Type of Foley catheter used for labour induction is usually: Fr 18 Length 40cm Same as reference	**AB6520:** - Fr20 - Length 42cm **AB6522:** - Fr 22 - Length 42cm Comparable to reference as catheter diameter is much thinner than vaginal diameter – no clinical impact	Fr-22 Length 42cm Comparable to reference as catheter diameter is much thinner than vaginal diameter – no clinical impact
Balloon volume	Maximum balloon inflation is 80 mL/balloon	Usually 30 -50 ML for labour induction -Same dilation mechanism through cervix compression, inducing dilation -Smaller diameter balloon compared to reference – see clinical studies for performance	Maximum balloon size: 50 mL -Same dilation mechanism through cervix compression, inducing dilation -Smaller diameter balloon compared to reference – see center clinical experience for performance	Maximum balloon size: 50 mL -Same dilation mechanism through cervix compression, inducing dilation -Smaller diameter balloon compared to reference – performance expected to be comparable: to be confirmed through the study

Characteristics	Device EC-marked for tested indication: Cooks® Cervical Ripening Balloon (3) Reference device	Device used in published clinical studies: Foley catheter (see 3.2) Similarity compared to reference	Device used in published clinical study (see 3.2) and already used by team: X-FLOW® catheter 2-way 30-50 ml AB6522/AB65xx Similarity compared to reference	Device to be tested: Coloplast AB6H22 Similarity compared to reference
Device shape		Comparable concept 	Comparable concept 	 Comparable concept
Materials/Composition	Silicone	For labour induction, both latex and silicone catheters, but mainly silicone catheters Same .	Silicone Same	Silicone Same
Indwelling time	No longer than 12 hours According to investigators: often used for 24 hours due to better compatibility with hospital routines	Maximum duration in urinary tract or percutaneous: 7 to 30 days Complies with needs (24h)	Maximum duration in urinary tract: 7 days Complies with needs (24h)	Maximum duration in urinary tract: 7 days Complies with study needs (24h)
Shelf life	Unknown	2-5 years	5 years	5 years
Biocompatibility	Unknown but fair as device registered	For duration of implantation	Duration of implantation over mucosa tissues	Duration of implantation over mucosa /damaged mucosa tissues Biocompatibility tests applicable to study
Intended use	Mechanical dilation of the cervical canal prior to labor induction at term when the cervix is unfavorable for induction.	Urethral urinary catheterization Suprapubic bladder drainage Post-operative bladder irrigation-lavage Successfully used for Mechanical dilation of the cervical canal prior to labor induction at term in studies, recommended by the World Health Organization and different Cochrane reviews(6)(35)	Short-term drainage of bladder urine Postoperative bladder irrigation-lavage Haemostasis of the prostatic fossa Successfully used for Mechanical dilation of the cervical canal for cervical ripening prior to labor induction at term in investigators' experience and clinical study (34)	Short-term drainage of bladder urine Postoperative bladder irrigation-lavage Haemostasis of the prostatic fossa To be tested in the study for Mechanical dilation of the cervical canal prior to labor induction at term
Population	Women with labor induction at term when the cervix is unfavorable for induction	Patients requiring bladder drainage. Successfully used in women for labor induction, in studies, recommended by various Societies of Obstetrics and Gynecology throughout the world and thus used daily in clinical routine(36)(37)	Adults patients: - Men requiring hemostasis after prostatectomy; - Men and women requiring short term drainage or post-operative bladder irrigation lavage Successfully used in women for labor induction in investigators' experience and in 99 women in published clinical study in UK (34)	Adults patients: - Men requiring hemostasis after prostatectomy; - Men and women requiring short term drainage or post-operative bladder irrigation lavage.

Characteristics	Device EC-marked for tested indication: Cooks® Cervical Ripening Balloon (3) Reference device	Device used in published clinical studies: Foley catheter (see 3.2) Similarity compared to reference	Device used in published clinical study (see 3.2) and already used by team: X-FLOW® catheter 2-way 30-50 ml AB6522/AB65xx Similarity compared to reference	Device to be tested: Coloplast AB6H22 Similarity compared to reference
				To be tested in the study for women for labor induction
Insertion technique	Using The Moldable Stylet 1. Loosen the fitting on the proximal hub of the stylet and adjust the wire so that the distal tip of the stylet is even with the distal tip of the Cervical Ripening Balloon. 2. Tighten the fitting so that the wire does not move during manipulation and seat the adjustable handle firmly into the blue port labled "S." 3. Use the Cervical Ripening Balloon with stylet to traverse the cervix if necessary. *NOTE*: Once the cervix has been traversed and the uterine balloon is above the level of the internal uterine opening (internal os), remove the stylet before further advancing the catheter.	Insertion through urethra or suprapubic Insertion per vaginal meatus to cervix performed in clinical studies	Insertion through urethra Catheters can be maintained in traction to reduce post-operative bleeding in the prostatic lodge Insertion per vaginal meatus to cervix performed in team's experience	Insertion through urethra Catheters can be maintained in traction to reduce post-operative bleeding in the prostatic lodge Insertion to be performed as per study protocol recommendation (comparable to reference)

For OPTION study, the Department of Obstetrics and Gynecology of Sahlgrenska University Hospital chooses a Coloplast catheter (Silicone prostatic catheter), REF. **AB6H22**. One of the reasons of this choice is that the Cook balloon is much more expensive, and did not show more efficacy or better safety in clinical studies, as reported by a large metaanalysis (refer to 31) comparing double balloon catheter to Foley single balloon. Moreover, it has been reported that some hospitals experienced problems such as urine retention due to the lower balloon blocking the urethra by compression and the baby turning to breech. Hence many hospitals that use the Cook Balloon only fill one of the balloons anyway and hence use it as a Foley catheter. The balloon is also used off-label since it is used mainly for 24 hours and not 12 and in the setting of outpatient induction a 12 hour period would not work well with clinical routines as the patients would have to be re-admitted at night shift.

According to the investigator's experience, Foley catheters do not migrate as they are placed when the head is engaged so that there is quite a lot of pressure from the baby's head on the balloon. They are also taped to the woman's thigh as described in the IB from Sahlgrenska University Hospital. Moreover, migration is not reported in studies.

Previous experience with Coloplast silicone Prostatic catheters AB65xxx, either in a clinical study performed in UK or in Sahlgrenska Hospital, Ystad hospital and Helsingborg hospital has shown to be effective and safe. The sponsor decided to use the same catheter with a shorter soft tip: AB6H22

2. Preclinical testing

For the current registered intended use, all pre-clinical tests have been performed on final products and all results met the requirements for pre-clinical tests and the products are deemed safe for use in humans.

2.1. Performance testing

To answer the requested clinical performances/safety, several technical specificities were considered in the manufacturing process. Performance tests are detailed in the *Design Verification Report* under corresponding DHFs.

Most clinical performance and safety parameters are common to current registered intended use and tested intended use. Thus, current technical parameters of the device, duly supported by validated tests, also support clinical needs of the tested indication.

- to ensure resistance of the device components to strengths (tube resistance, funnels assembling resistance, connection security),
- proper insertion of the device (hydrophilic coating, compatibility with stylet),
- proper use of the balloon (valve security, valve compatibility),
- balloon performance (balloon integrity for use duration, balloon shape after use).

DHF, product	Technical requirements / Preclinical tests	Related clinical consequences
All	Biocompatibility	Duration of use
AB6H22	Shelf-life: 5 years	No loss of performances during shelf life

■ ***Prostatic catheters***

Silicone Prostatic Catheters	Drainage channel flow Irrigation channel flow	Efficient flow drainage Efficient flow irrigation
	Tube resistance Catheter strength resistance	Resistant catheter
	Tube/funnel assembling resistance Catheter drainage channel connection security	Secure and resistant catheter drainage channel connection
	Valve/funnel assembling resistance	Resistant valve/funnel connection
	Funnel connexion security Security of the connector/funnel	Secure funnel connection
	Balloon integrity during - whole surgery - 14 days	
	Shape of the balloon after deflation	
	Identification of the size of the catheter by the colour of the valve	Easy use
	Hydrophilic coating for easy insertion and withdrawal	Low coefficient of friction Presence of uniform hydrophilic coating
	Compatibility catheter with accessories	Catheter compatible with accessories
	Valve of catheter compatibility with Luer tip of syringe Compatibility catheter with syringe	Luer cone conform to standard; Catheter compatible with syringe
	Catheter compatible with stylet/guidewire 0.038	Compatibility

2.2. Biosafety

Silicone Prostatic Catheters are balloon catheters intended to be used for:

- Short-term drainage of bladder urine
- Postoperative bladder irrigation-lavage
- After prostate surgery: haemostasis of the prostatic fossa

The product REF. AB6H22 is silicone catheter composed of a 3-way funnel, a 3-way shaft, a balloon bound over the shaft, a straight distal tip (distal part of the shaft) with eyelets.

The device is a sterile, class IIa device. The typical duration of contact for one product is up to 7 days. The product is single use device.

These State-of-the-Art Silicone catheters have been EC marked since 1997.

All raw materials used in the production of these **Silicone prostatic Catheters** with direct or indirect end user contact have been evaluated for short term effects.

The evaluation has been carried out in accordance with the internal COLOPLAST MANUFACTURING FRANCE procedure for Biological Evaluation, no. SUA06002 and the requirements in applicable ISO 10993.

In accordance with ISO 10993-1, the silicone catheter REF. AB6H22 is categorized as surface contacting device coming in contact with breached mucosa for prolonged (< 30 days) duration time. The time of contact is assessed based on the accumulated wear-time, when the device is used as intended.

Based on the facts that:

- The conclusions of toxicological assessments of all raw materials in the **Silicone Prostatic Catheters**, implying a risk of direct or indirect contact to the patient/ end user by the intended use, is that the materials are biocompatible or are associated with an acceptable risk of unwanted health effects taking benefits of the device into consideration.
- The conclusion of toxicological assessments of known residuals, contaminants and degradation products in the **Silicone Prostatic Catheters** are that the substances are biocompatible or are associated with an acceptable risk of unwanted health effects taking benefits of the device into consideration.
- There are no indications that unintended residuals, contaminants or degradation products will occur during manufacture and storage of the product.
- Review of post marketing data including adverse events for the device indicates that no vigilance report of toxicological significance (e.g. irritation and sensitization) was identified for the State-of-the-Art Silicone Prostatic Catheters.

- It is concluded that the **Silicone Prostatic Catheters** are biocompatible, when used as intended and restrictions for use.

The device biocompatibility has been confirmed for mucosa and breached mucosa, for a duration of up to 30 days. Provided the expected use of the device in its tested indication is also in mucosa tissues, for a shorter duration (24-48 hours), the above results are applicable to the device when used for labor induction.

3. Existing clinical data

3.1. Relevance and Assessment of Literature published on Device and devices comparable to test device used in current EC-marked indication

Refer to Appendix 3

3.2. Relevance and Assessment of Literature published on existing products indicated and/or used in labour induction

Study	Design	Outcome	Relevance of data	Comparability criteria: devices, context of use
4)Gommers JSM, Diederen M, Wilkinson C, Turnbull D, Mol BWJ. **Risk of maternal, fetal and neonatal complications associated with the use of the transcervical balloon catheter in induction of labour: A systematic review**. Eur J Obstet Gynecol Reprod Biol. 2017 Nov;218:73-84	**Literature review** 84 articles reporting on 13791 women	The overall risk of developing intrapartum maternal infection was 11.3% (912 of 8079 women), 3.3% (151 of 4538 women) for postpartum maternal infection and 4.6% (203 of 4460 women) for neonatal infection. Uterine hypercontractility occurred in 2.7% (148 of 5439) of the women. Uterine rupture after previous caesarean section occurred in 1.9% of women (26 of 1373), while other major maternal complications had an occurrence rate of <1%. The risk for developing minor maternal complications was <2%. The risk of developing a non-reassuring fetal heart rate was 10.8% (793 of 7336 women),10.1% (507 of 5008 women) for fetal distress and 14.0% (460 of 3295 women) for meconium stained liquor. Neonatal death occurred in 0.29% (6 of 2058) of the deliveries and NICU admission in 7.2% (650 of 9065 deliveries). This review shows that labour induction with a balloon catheter is a safe intervention, with intrapartum maternal infection being the only reasonable risk above 10%.	Literature review with pooled risk assessments of the maternal, fetal and neonatal morbidity	Keywords: 'induction of labour', 'cervical ripening', 'transcervical balloon', 'balloon catheter' and 'Foley balloon'. Studies were excluded if the balloon catheter was used concurrently with oxytocin and concurrently or consecutively with misoprostol, dinoprostone or extra-amniotic saline infusion. Study selection and quality assessment was performed by two authors independently using a standardized critical appraisal instrument.
5)Gu N, Ru T, Wang Z, Dai Y, Zheng M, Xu B, Hu Y. **Foley Catheter for Induction of Labor at Term: An Open-Label, Randomized Controlled Trial**. PLoS One. 2015 Aug 31;10(8):e0136856	**Open-Label, Randomized Controlled Trial** (1) 30-mL balloon for a maximum of 12 hours, (2) 30-mL balloon for a maximum of 24 hours, (3) 80-mL balloon for a maximum of 12 hours, and (4) 80-mL balloon for a maximum of 24 hours	The primary outcome was vaginal delivery within 24 hours. Secondary outcomes included cesarean section rate and maternal/neonatal morbidity. 504 women were recruited and randomized (126 women in each group); nine women did not receive the assigned intervention. More women achieved vaginal delivery within 24 hours in 12-hour Foley catheter groups than in the 24-hour Foley catheter groups (30-mL/12 hours: 54.5%, 30-mL/24 hours: 33.1%, 80-mL/12 hours: 46.4%, 80-mL/24 hours: 24.0%, $p < 0.001$). Cesarean section rates and the incidence of chorioaminonitis were comparable among four groups. After adjustment for confounding factors, both ripening time and balloon size did not affect the proportion of women delivered vaginally within 24 hours of induction.	Data on cesarean section rates and the incidence of chorioaminonitis were comparable among four groups	To determine the optimal Foley catheter balloon volume (30-mL vs. 80-mL) and the maximum time for cervical ripening (12 hours vs. 24 hours) to improve vaginal delivery rate within 24 hours of induction.
6)de Vaan MD, Ten Eikelder ML, Jozwiak M, et al. **Mechanical methods for induction of labour** [published online ahead of print, 2019 Oct 18]. Cochrane Database Syst Rev. 2019;10(10):CD001233.	**Review update** of Clinical trials comparing mechanical methods used for third trimester cervical ripening or labour induction with pharmacological methods.	This review update includes a total of 113 trials (22,373 women) contributing data to 21 comparisons. Risk of bias of trials varied. Low- to moderate-quality evidence shows mechanical induction with a balloon is probably as effective as induction of labour with vaginal PGE2. However, a balloon seems to have a more favourable safety profile. More research on this comparison does not seem warranted.	Data on vaginal deliveries not achieved within 24 hours, caesarean sections, hyperstimulation with fetal heart rate changes, serious neonatal morbidity or perinatal	Balloon versus vaginal PGE2 Balloon versus low-dose vaginal misoprostol Balloon versus low-dose oral misoprostol

Study	Design	Outcome	Relevance of data	Comparability criteria: devices, context of use
		Moderate-quality evidence shows a balloon catheter may be slightly less effective as oral misoprostol, but it remains unclear if there is a difference in safety outcomes for the neonate. When compared to low-dose vaginal misoprostol, low-quality evidence shows a balloon may be less effective, but probably has a better safety profile.	death, neonatal intensive care unit admission, serious maternal morbidity or death, ive-minute Apgar score < 7	
7)Ten Eikelder ML, et al. **Women's Experiences with and Preference for Induction of Labor with Oral Misoprostol or Foley Catheter at Term**. American journal of perinatology. 2017;34(2):138-46.	**Questionnaire to women from PROBAAT-II trial** (multicentre randomised controlled non-inferiority trial)	Questionnaire was completed by 502 (72%) of 695 eligible women; 273 (54%) had been randomly allocated to oral misoprostol and 229 (46%) to Foley catheter. Experience of the duration of labor, pain during labor, general satisfaction with labor and feelings of control and fear related to their expectation were comparable between both the groups. In the oral misoprostol group, 6% of the women would prefer the other method if induction is necessary in future pregnancy, versus 12% in the Foley catheter group (risk ratio: 0.70; 95% confidence interval: 0.55–0.90; p ¼ 0.02). Women's experiences of labor after induction with oral misoprostol or Foley catheter are comparable. However, women in the Foley catheter group prefer more often to choose a different method for future inductions.	Data on patient experience with Foley catheter for labour induction (pain, general satisfaction…)	Foley catheter vs Oral misoprostol
8) Cromi A, Ghezzi F, Uccella S, et al. **A randomized trial of preinduction cervical ripening: dinoprostone vaginal insert versus double-balloon catheter**. Am J Obstet Gynecol. 2012:207(2):125.e1-e7	**Randomized trial** - Double balloon catheter: n=105 - PGE2 vaginal insert: n = 103	The proportion of women who achieved vaginal delivery in 24 hours was higher in the double-balloon group than in the PGE2 group (68.6% vs 49.5%; odds ratio, 2.22; 95% confidence interval, 1.26–3.91). There was no difference in cesarean delivery rates (23.8% vs 26.2%; odds ratio, 0.88; 95% confidence interval, 0.47–1.65). Oxytocin and epidural analgesia were administered more frequently when a double-balloon device was used. Uterine tachysystole or hypertonus occurred more frequently in the PGE2 arm (9.7% vs 0%, P = .0007). →The use of a double-balloon catheter for cervical ripening is associated with a higher rate of vaginal birth within 24 hours compared with a PGE2 vaginal insert.	Data on vaginal delivery with double balloon catheter compared to medicated labour induction	Comparing vaginal PGE2 preparation with double-balloon device (Cooks® Cervical Ripening Balloon)
9) Hoppe KK, Schiff MA, Peterson SE, et al. **30mL single- versus 80mL double-balloon catheter for pre-induction cervical ripening: a randomized controlled trial** [published online ahead of print August 25, 2015]. J Matern Fetal Neonatal Med.	**Randomized controlled trial**	A total of 98 women were included in the analysis (50 in the 80 mL double and 48 in the 30 mL single-balloon catheter groups). Among nulliparous women, a greater proportion of those randomized to the 80 mL double achieved a Bishop score ≥6 at time of catheter removal (88.0% versus 28.0%; p ≤ 0.001) and delivered vaginally (60.0% versus 32.0%; p = 0.047) compared to those with the 30 mL single-balloon catheter. We found no difference by catheter type in achieving a Bishop score ≥6 or vaginal delivery among multiparous women. → These findings suggest the 80 mL double-balloon catheter is more effective than the 30 mL single-balloon catheter for pre-induction cervical ripening and achieving a vaginal delivery in nulliparous women.	Data on mechanical labour induction via double balloon catheter or Foley catheter	Comparing 80mL double balloon catheter (Cooks® Cervical Ripening Balloon) VS 30 mL single balloon catheter (Bardex® All-Silicone 18 French Foley, Bard, Covington, GA) for preinduction cervical ripening
34) Elizabeth Stephenson, Aditya Borakati, Ian Simpson & Padma Eedarapalli (2019): Foley catheter for induction of labour: a UK observational study, Journal of Obstetrics and Gynaecology,	Prospective observational study 99 women included	Median induction to delivery time was 28.3 h (IQR 19.7–34 h), 20 (20.2%) women required Caesarean section. No relevant complications were recorded. Patients and staff were satisfied with the technique overall.	Data on mechanical labour induction via Coloplast Foley catheter	Straight catheter, two-way, silicone, 18 F, single 50 mL balloon, 42-cm long, spiggoted; XFlow, Coloplast(refAB6522)

Study	Design	Outcome	Relevance of data	Comparability criteria: devices, context of use
		Induction of labour with Foley catheter was a safe and effective procedure and acceptable to both women and staff. In particular, there were no significant differences in the majority of clinically important outcomes in outpatient and previous caesarean section groups.		
33) Kemper JI, Li W, Goni S, Flanagan M, Weeks A, Alfirevic Z, Bracken H, Mundle S, Goonewardene M, Ten Eikelder M, Bloemenkamp K, Rengerink KO, Kruit H, Mol BW, Palmer KR. **Foley catheter vs oral misoprostol for induction of labor: individual participant data meta-analysis**. Ultrasound Obstet Gynecol. 2021 Feb;57(2):215-223.	**Review** of randomized controlled trials and individual participant data meta analysis	Of seven eligible trials, four provided individual participant data for a total of 2815 participants undergoing IOL, of whom 1399 were assigned to Foley catheter and 1416 to oral misoprostol. All four trials provided data for each of the primary outcomes in all 2815 women. Compared with those receiving oral misoprostol, Foley catheter recipients had a slightly decreased chance of vaginal birth (risk ratio (RR), 0.95 (95%CI, 0.91–0.99); I2, 2.0%; moderate-certainty evidence). A trend towards a lower rate of composite adverse perinatal outcome was found in women undergoing IOL using a Foley catheter compared with oral misoprostol (RR, 0.71 (95% CI, 0.48–1.05); I2, 14.9%; low-certainty evidence). → For women undergoing IOL, Foley catheter is less effective than oral misoprostol, as it was associated with fewer vaginal births. However, while we found no significant difference in maternal safety, Foley catheter induction may reduce adverse perinatal outcomes.	Data on labour induction of viable singleton gestations via Foley catheter versus oral misoprostol	Foley catheter vs Oral misoprostol

The use of Coloplast prostatic catheters in their current registered indication was evidenced, either through data from comparable devices of the market or through own data (1 in-vitro study with X-Flow silicone catheter, and 1 clinical study published in the literature with good level of evidence that involved 40 patients).

All the mentioned data show:

- Coloplast prostatic catheters efficacy with:

✓ time saving on haemostasis time and

✓ good irrigation and drainage flows, greater than comparable devices with larger diameters.

- Coloplast prostatic catheters safety with:

✓ effective bleeding management through balloon tamponade,

✓ significantly less postoperative blood loss with the use of a prostatic catheter,

✓ reduced haemostasis time, and consequently,

✓ duration of use shorter than with Foley catheter.

In all these results whose quality has been evaluated, Coloplast prostatic catheters appear to perform as expected, with no new reported concern related to the performance and safety.

The performances evaluated in studies are related to the use of the device in its current indication for urinary drainage and prostatic fossa haemostasis. However, the proved efficacy of haemostasis and less bleeding time show the good compression level of the balloon, which is one of the performance characteristics to be used for effective dilation of the cervix.

3.3. Summary of retrospective data available on Coloplast Prostatic catheters AB65xx for induction labour in Sweden

Two Swedish hospitals used Coloplast balloon catheters in clinical routine for labour induction

City of Ystad	City of Helsingborg
Coloplast 20/6,7 mm Réf. AB6520	Coloplast Foley Silikon Couvelair kateter 22 Ch cuff 30-50 ml Réf. AB6522

Characteristics of Coloplast Prostatic catheters already used in Sweden for labour induction (AB65xx) :

DHF	Product reference	Product name	Duration of use	IFU Ref and title	CE Class
Silicone Prostatic Catheters*	AB65xx	X-FLOW® Prostatectomy catheter Couvelaire tip 2-way 30-50 ml silicone	< 7 days	SH2115 – Balloon Urinary Catheter	IIa

Silicone prostatic catheters of Coloplast are referred to as "Coloplast Foley catheters" in the below descriptions

The standard at these hospitals is to start the induction with a prostaglandin (at least in case the woman did not have a previous c-section) and to apply a Foley catheter day 2 in case the woman is not in active labour yet.

NB: Foley catheters (initially balloon urinary catheters) are used in women with longer inductions who did not get into labour after the first day with prostaglandins which of course increases the risk for infection itself not depending on the catheter.

Data below regarding these Coloplast catheters have been retrieved through a retrospective data collection from the Swedish Pregnancy Register, a certified National Quality Registry initiated by the Swedish Healthcare and combining prospectively collected data from the Swedish Maternal Health Care Register, the Swedish National Quality Register for Prenatal Diagnosis and data from electronic standardized prenatal, delivery and neonatal records.

The register includes more than 95% of all deliveries taking place in Sweden and covers the whole pregnancy from the first antenatal care visit until follow-up visit 8-12 weeks postpartum collecting information on maternal characteristics, medical and reproductive history, pregnancy examinations, delivery outcomes and follow-up until 12 weeks postpartum. (29)

An approval has been received from the Pregnancy Register to extract all data from the 2 hospitals (Helsingborg and Ystad) that used the Coloplast catheter during the last years.

The table below describes the repartition of patients where labour has been induced:

- "Only with Coloplast catheter" meaning that no prostaglandins have been used. Exact indications are not available, however, the main reason for using the Coloplast catheter is a previous c-section in a patient that needs to be induced by cervical ripening.
- "Only prostaglandins" meaning that no balloon catheters have been used.
- "With Coloplast, only or in combination with prostaglandins": These patients mainly started with prostaglandins but did not enter active labour so that a Coloplast catheter was placed as a second step or the patient was delivered by c-section in a previous delivery.

However, these routines differ throughout the country: At Sahlgrenska University Hospital, the biggest Swedish delivery unit, the Foley catheter is the first choice in all patients planned for induction with unfavorable cervix and 80% of all inductions are started with a Foley catheter. At this hospital, the Foley catheter of another provider was used during recent years.

In the OPTION study, women with previous c-section are not eligible to participate in the study. **Number of inductions at Ystad and Helsingborg hospital 2015-2020**

Induction method		Number	N (%) nulliparae	N (%) previous c-section
With prostaglandins and Coloplast Foley catheter		349	205 (59)	48 (14)
With Coloplast Foley catheter (only or in combination with prostaglandins)	**Spontaneous vaginal**	271 (61%)	219 (50)	108 (24)
	Vaginal, instrumental	32 (7%)		
	C-section	139 (31%)		
	All	442		
Only Coloplast Foley catheter (no prostaglandins)	**Spontaneous vaginal**	60 (65%)	14 (15)	61 (66)
	Vaginal, instrumental	9 (10%)		
	C-section	24 (26%)		
	All	93		
With prostaglandins (only or in combination with Coloplast Foley catheter)		2638	1435 (54)	159 (6)
Only prostaglandins (no Coloplast Foley catheter)	**Spontaneous vaginal**	1789 (78%)	1230 (54)	111 (5)
	Vaginal, instrumental	159 (7%)		

	C-section	341 (15%)		
	All	2289		
All inductions staring with unfavourable cervix		2896	1511 (52)	239 (8)

A total of 442 cases of Coloplast balloon catheter use leading to labor induction is registered in the database.

4. Adverse device effects

4.1. From manufacturer in current EC-marked intended use

Several adverse events have been described with the use of balloon catheters. Some are related to the patient's conditions, the others to the procedure or the device:

- ***Related to the patient***: bladder irritation symptoms, pain, urinary tract infection, incrustation and stone formation;
- ***Related to the procedure***: urinary tract trauma;
- ***Related to the device***: leakage, balloon burst or deflation.

Post marketing surveillance (PMS) set up **since 1994** (period corresponding to launch and pre-CE-marking of some Prostatic Catheters & Accessories family devices), until end of 2018 through management reviews shows the following **cumulative data**:

- **1061 complaints** associated with Coloplast Silicone Prostatic Catheters devices.

  Among these 1061 complaints:

  - 152 complaints were registered during the last update period, between 2016 and 2018;
  - Compared to the global sales for these devices, 7 462 557 devices sold since 2008 (sales data availability), resulting in an average complaint incidence of 51 ppm, this amount appears very low.
  - **22 vigilances** were registered which did not show serious clinical severity in patients **and 1 Corrective and Preventive Actions** (CAPA) was necessary for balloon bursting trending (2018, investigation date: 12/2020; DHF "Silicone Prostatic Catheters")

4.2. From literature on existing products indicated and/or used in labour induction

A summary of published adverse events related to the period from insertion to expulsion of a balloon catheter in the process of labour induction, found that the prevalence of adverse events was between 0.0 and 0.26%, with "pain/discomfort" having the highest prevalence (30).

The following adverse effects have been described during the period from insertion to expulsion of a balloon catheter in the process of labour induction:

- The process of inserting the balloon may cause some discomfort but is normally not considered painful.
- Unintended amniotomy may occur.
- Scant vaginal bleeding might occur during the observation period of one hour after insertion. However, heavy vaginal bleeding which is extremely unusual is an indication for removal of the device.
- Balloon displacement, where the balloon is placed in the vagina instead of in the uterus. The correct position of the balloon should be controlled routinely after insertion and the balloon should be deflated and then replaced in case of displacement.

- Non reassuring fetal heart rate. If fetal well-being cannot be established, the device will be removed and further monitoring and obstetric care will be given according to clinical routine.
- Allergic reaction. Women with known silicone allergy should not receive the device. If an allergic reaction occurs the device should be removed immediately and indicated treatment and monitoring until well-being should be undertaken until well-being is restored.
- Voiding problems. If the woman experiences voiding problems the device should be removed.
- Balloon rupture. The device should be removed immediately.
- Uterine hypertonicity, uterine hyperstimulation or uterine tachysystole. Women will be closely monitored for at least 45 min after insertion. In case of continued hypertonus or non-reassuring fetal heart rate the device should be removed.
- Uterine rupture. Careful anamnesis and examination before labour induction should be performed to identify women at increased risk for uterine rupture, e.g. women with any previous uterine surgery such as previous Cesarean birth. These women are not eligible for participation in this study and labour induction with the Coloplast catheter.
- Decreased fetal movements. Fetal well-being needs to be established by CTG. Otherwise the device will be removed. In any case of suspected abnormality in fetal movement or non-reassuring CTG the device should be removed.
- Malpresentation. The device should be removed.
- In extremely rare cases, a vasovagal reaction or decelerated pulse rate in the pregnant women may occur during insertion of the Foley catheter.

The following adverse events have also been investigated but did not occur during the period from insertion to expulsion of a balloon catheter in the process of labour induction:

- Intrapartum infection. During labour induction – irrespective of the method used - some women develop infectious symptoms such as fever, abdominal pain or vaginal discharge. Adequate monitoring and treatment shall be offered.
- Placental abruption. A causal association between application of a Foley catheter and placental abruption has not been established. However, before placing The Coloplast catheter in the OPTION study an ultrasound scan is performed to exclude a low placenta.
- Cord prolapse. Only women with intact membranes and an engaged fetal head should be induced with the Coloplast catheter in the OPTION study minimizing the risk for cord prolapse.
- Fetal death. A causal association between application of a Foley catheter and fetal death has not been established. Only low-risk women should be induced with a Coloplast catheter in the OPTION study.
- Maternal death. A causal association between application of a Foley catheter and maternal death has not been established. Only low-risk women should be induced with a Coloplast catheter in the OPTION study.
- Genital laceration. A causal association between application of a Foley catheter and maternal death has not been established. Only low-risk women should be induced with a Coloplast catheter in the OPTION study.

4.3. From retrospective data in Swedish hospitals

The hospitals using different types of Coloplast Foley catheters used the catheter in:

- Women who did not go into labour after one day with prostaglandins
- Women who had a previous c-section which have lower chances of being delivered vaginally

The reason for choosing the Coloplast catheter in women with previous C-section is because the method is considered safer than prostaglandins.(6)(33)

Safety data available are described in the tables below:

➔ **Apgar 5min < 4 by type of induction**

	Apgar 5min < 4 (only including children that were alive when the delivery started)	
	Yes	Missing
Inductions with Coloplast (n=442)	3 (0,7%)	1
Inductions with only Coloplast (n=93)	0	0
Inductions with only prostaglandins (n=2289)	12 (0,5%)	10

➔ **Adverse events of bleeding and endometritis by type of induction**

	Bleeding > 1000 mL	Endometritis (ICD-10 O85, O86)
Inductions with Coloplast (n=442)	48 (11%)	29 (7%)
Inductions with only Coloplast (n=93)	9 (10%)	6 (6%)
Inductions with only prostaglandins (n=2289)	244 (11%)	69 (3%)

Bleeding>1000mL occurs in connection or after delivery – so often a long time after the induction period and are mainly related to what happened during the active part of delivery and during delivery (how many hours of labour, size of the baby, perineal tears) etc. These bleedings are nothing that is related to the induction situation itself. Mainly uterotonica is used and the cause for the bleeding is corrected (suturing tears, removing placenta tissues, correcting atonia with uterotonic).

There is no data available on local infection or in case a woman searched somewhere else than at the delivery department with any kind of infection. The ICD-10 codes for **endometritis**, thus infection in the uterus in the postpartum period, are taken from the Pregnancy Register.

As a conclusion on the available data, the number of uses of Coloplast balloon catheters is already significant in Sweden (N=442), providing some preliminary information on safety. From this experience, the number of analysed events remains low, and in line with prostaglandins induction. Moreover, available results about same or other balloon catheters used in labour induction in several thousand women in the literature, showed an acceptable efficacy/safety profile when compared to medical labour induction means. Based on the similarity (technical, biological and clinical) between these balloon catheters and the investigational device, the expected safety profile of the investigational device in the study project is assumed to be acceptable.

5. Risk management

5.1. Risk analysis of AB6H22 in current CE-marked indication

All clinical identified risks relating to method of operation of the Prostatic Catheters & Accessories family devices or risks relating to usability have been minimized. The residual risks identified in the risk management documentation have been adequately addressed in IFU.

The following table presents specific situation that require attention:

Situations		Potential risks with Coloplast devices
Design related features/recent changes	No	No

Usability issues not addressed in harmonized standards	No	No
Specific groups of patients	No mention of any specific population has been found during thorough literature search	- Pediatric patients: No, since prostatic catheters are used in adult patients. - Renal transplant patients: There are no available data on the use of prostatic catheters in renal transplant patients. The benefits and the risks of using these devices in renal transplant patients should be carefully weighed by the healthcare professionals. - Pregnant women: There are no available data except one case report of an off-label use of a prostatectomy catheter for the management of vaginal bleeding (65).The benefits and the risks of using these devices in pregnant women should be carefully weighed by the healthcare professionals.
Specific clinical situations	No	No
Necessity of user training	Yes (resolved)	These devices must only be used by trained and experienced professionals (68, 73). This potential risk is taken into account in the Risk Management documents.
Clinical concerns that have newly emerged	No	This potential risk is taken into account in the Risk Management documents.
Any other new information incompletely evaluated	No	No

There are no residual risks found during the risk analysis process, in which all identified risks have been assessed and mitigated. Based on this and on the results of safety assessment, together with the good performance level of the products, the risks associated with the use of the Coloplast Prostatic Catheters & Accessories are considered acceptable when weighed against the benefits to the patient/user.

Refer to Appendix 4 for full Risk analysis and mitigations of the AB6H22 device used in its current CE-marked indication.

Anticipated risks, contra-indications and warnings for the device in its current EC-marked indication

A summary of the identified risks and mitigations are given in section 5.1. Refer to appendix 4 for details. Contra-indications and warnings are stated in the Instructions for Use, see appendix 1.

5.2. Risk analysis of AB6H22 in investigated intended use

A risk analysis has been performed based on the knowledge of the AB6H22 device when used in its CE-marked indication and on the knowledge from clinical studies and Swedish investigators' experience of Coloplast balloon catheters used for labour induction.

Refer to Appendix 4. Most items are common for both indications. However, any item presenting with a different outcome or analysis when considering the labor induction use has been documented in blue font in the document, and related risk re-evaluated.

Some risks appear as unacceptable after re-evaluation, like materno-foetal infection or foetal distress, mainly in relation with traumatic situations or infection. These risks are mitigated by various means (security process of manufacturing) already documented, to which were added the specific conditions of the study which assure:

- a fair management of tested devices in terms of storage, inventory tracking, labelling with information to use (mention of need to check the device packaging before use for its integrity or any sterility breach, to check the device integrity before insertion, namely regarding its distal tip, check proper balloon functioning, do not use with a metallic introducer, check integrity after removal),
- and a materno-foetal follow-up, with a cardiotocography and patient surveillance in the first 45 minutes following insertion of the device.
- Moreover, all expected and non-expected adverse events will be thoroughly tracked per the study protocol.

The adverse events identified in previous studies are considered in the risk analysis:

Identified AE risks	Risk management line	Comments
Pain, discomfort	11200, 201, 208, 217, 506, 546, 547, 548	Undesirable effects
Unintended amniotomy	11212, 11533, 11534,	Undesirable effect
Vaginal bleeding	11529, 530, 531, 532, 544, 545,	**Warning**: heavy vaginal bleeding which is extremely unusual is an indication for removal of the device and appropriate surveillance of the foetus and woman..
Balloon displacement,	11516	**Warning**: The correct position of the balloon should be controlled routinely after insertion and the balloon should be deflated and then replaced in case of displacement.
Non reassuring foetal heart rate Decreased foetal movements	11533, 11534 + RMF table 2 with any packaging defect, sterility breach associated infection risk	**Warning**: If foetal well-being cannot be established, the device will be removed and further monitoring and obstetric care will be given according to clinical routine.
Allergic reaction	11102	**Warning**: Women with known silicone allergy should not receive the device. If an allergic reaction occurs the device should be removed immediately and indicated treatment and monitoring until well-being should be undertaken until well-being is restored.

Voiding concerns	11520	**Warning:** If the woman experiences voiding problems the device should be removed
Balloon rupture	11500 to 11508, 11545	**Warning:** The device should be removed immediately in case of balloon rupture
Infection	11538, 11539, 11548 10207 to 10219, 10302 to 10306, 403a/B, 10500 to 10505, 10513, 10601, 10602, 10700	**Undesirable effect**: Infection is a frequent event, despite most often not directly related to the device. However, precautions should be taken to minimize infection risk related to the device (device sterile, no re-use, aseptic insertion condition…)
Uterine hypertonicity	11520	**Warning**: Women will be closely monitored for at least 45 min after insertion including a CTG scan. In case of continued hypertonus or non-reassuring fetal heart rate the device should be removed.
Uterine rupture	Risk covered in the study through contra-indication	**Exclusion criteria in the study**: Women with history of Caesarian section, uterine malformation or other risk factor for uterine rupture are not included in the study
Vaso-vagal reaction (extremely rare)	11101	**Warning:** Monitoring of patient during first 45 minutes after insertion
Malpresentation	not related to device	Warning: The device should be removed
Placental abruption	No causal association between application of a Foley catheter and placental abruption has been established	Warning: before placing a Foley catheter an ultrasound scan is performed to exclude a low placenta.
Cord prolapse	Risk covered in the study protocol with exclusion criteria	Exclusion criteria: Only women with intact membranes and an engaged foetal head should be induced with the Foley catheter minimizing the risk for cord prolapse.

Foetal death	No causal association between application of a Foley catheter and fetal death has been established. Covered by study protocol	Exclusion criteria: Only low-risk women should be induced with a Foley catheter.
Maternal death	No causal association between application of a Foley catheter and maternal death has been established. Covered by study protocol	Exclusion criteria: Only low-risk women should be induced with a Foley catheter.
Genital laceration.	No causal association with a Foley catheter	Exclusion criteria: Only low-risk women should be induced with a Foley catheter.

6. Conclusion

Based on the general knowledge of the device: technical features, pre-clinical data, performances, and post-market surveillance data of the device in its current EC-marked indication, whose benefit/risk profile has been maintained over time,

based on the numerous previous experiences with similar/comparable devices, used in same indication as that of the study, and on experiences of use from both a UK team who published data over 99 women, and from the investigators' team of another Coloplast device, similar to AB6H22 (AB6520 and AB6522 with same material, same balloon diameter, similar tube diameter - and 2 ways instead of 3 for drainage capacity, which has no impact in this indication),

based on the study protocol, to be performed at a national-wide scale in numerous Swedish centers, over a large sample size of randomized women, and to be conducted in accordance with international and local regulations, including Good Clinical Practice – ICH, Ethics committee approval, Swedish Medical Agency, under the sponsorship and responsibility of a highly trained investigators team,

and based on the thorough definition of patients and follow-up of safety data as planned in the Clinical Investigation Plan, for both peri-natal and maternal outcomes, with:

- The precise mention of inclusion and non-inclusion criteria related to the study and to the studied device,
- The precise follow-up plan of included patients,
- The focus on identified/expected safety data, and the systematic tracking and record of any safety data (AE, SAE), and any device effect (SADE, USADE), well defined in the clinical plan, to be evaluated and further reported as needed according to regulation,
- The independent monitoring of the study process,
- The details of planned interim analysis and publications,

anticipated risks related to the use of AB6H22 in the studied indication have been identified and assessed, and it is assumed that the studied device will be used in acceptable conditions as regards patients' safety.

7. Change log

VERSION NUMBER	ISSUED BY ISSUE DATE	COMMENTS (MAJOR CHANGES SINCE LAST REVISION)
1.0	FRHKS Nov-2020	Document established in template version 2.0

8. References

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INSTRUCTIONS FOR USE SH2115

BALLOON URINARY CATHETERS

DESCRIPTION

Silicone, latex, PVC or NEOPLEX® balloon urinary catheter (with or without hydrophilic coating: see label).

See the pack label for the length, diameter, balloon volume, material, method of sterilization and other specific characteristics.

The choice of the size, balloon volume and material of catheter is under the responsibility of the healthcare professional based on the patient status and planned indwelling time.

INDICATIONS

- Foley catheters: urethral urinary catheterization.
- Only straight 2-way Foley catheters with a maximum balloon volume of 15 ml may be used for the supra-pubic approach (except for ribbed catheters).
- 3-way Foley catheters: urethral urinary catheterization and postoperative bladder irrigation-lavage.
- Prostate catheters:
  - short-term drainage of bladder urine,
  - postoperative bladder irrigation-lavage,
  - after prostate surgery: haemostasis of the prostatic fossa.

CONTRAINDICATIONS

Same as for urethral urinary catheterization and supra-pubic bladder drainage, and generally, known allergic reactions due to the device material (e.g. latex).

Where indicated, some products contain latex: ***Caution:*** *these products contain natural latex, which may cause allergic reactions.*

The evaluation of the allergic background of a patient is the health care professional's responsibility.

INSTRUCTIONS FOR USE

1) Urethral Insertion

- Choose a catheter of the appropriate size.
- Lubricate the catheter using a water-based gel and insert it according to the normal urethral catheterization technique, observing the usual procedures of asepsis.

N.B: for catheters with a hydrophilic coating: just before insertion, moisten the catheter for 15 seconds with sterile water or physiological saline solution to activate the lubrication properties of the hydrophilic coating. Ensure that this coating is kept moist during insertion. Do not use additional lubricants.

N.B: Prior to catheterization, it is usual practice to check that the valve and balloon are functioning properly by inflating and then deflating the balloon.

- Some catheters have an open end, which enables them to be inserted with a guidewire.
- Insert the catheter according to the usual procedure, by advancing it on the guidewire.
- After checking that the catheter is positioned properly, remove the guidewire.

Warning: *paediatric catheters of diameter 06, 08 and 10 FR/CH may include a stylet that facilitates their insertion. They therefore have a closed end.*

Before insertion: Make sure that the stylet can move in the catheter and examine the end of the catheter to ensure that the stylet is positioned perfectly inside the catheter and does not come out of an eye.

Paediatric catheters with guidewire:

- For catheters diameter 06 FR/CH, a diameter of 0.025 inch
- For catheters diameter 08 FR/CH, a diameter of 0.032 inch
- For catheters diameter 10 FR/CH, a diameter of 0.038 inch

- Make sure the catheter is positioned correctly by checking that there is urine at the external connector.

Warning: *after insertion of the paediatric catheters, withdraw the stylet using the orange grip, if necessary.*

2) Supra-pubic insertion

- Follow the usual procedure for supra-pubic catheter insertion.
- Supra-pubic drainage must only be implemented when the bladder is full.
- Respect the rules of surgical asepsis.

3) Inflating the balloon

- Inflate the balloon with sterile water to the volume indicated on the package label. Connect a syringe without a needle to the anti-reflux valve and inject a volume of solution adapted to the volume of the balloon. Quickly disconnect the syringe once the balloon has been inflated and the catheter immobilized. Check that the balloon is inflated by pulling the catheter body gently - the catheter should offer some resistance.
- Connect the catheter to a urine bag.
- Check there are no leaks at the connection point, and that the urine flows freely in the tube.

WARNINGS/PRECAUTIONS:

- This type of device must only be used by trained and experienced professionals.
- Any use other than stated indications is under the responsibility of the physician.
- If the catheter needs to be secured, the adhesive must be applied to the connector.
- To lubricate catheters without a coating, a water-based lubricant is recommended.
- Do not use petroleum-based lubricants with latex catheters.
- Do not use silicone oil with silicone catheters.
- Using an iodine-based irrigation-lavage solution may damage some silicone catheters.
- Do not inflate the balloon beyond the maximum value indicated.
- Do not clamp the catheter. Use a plug if necessary.
- Reuse of this single use product may create a potential risk to the user. Reprocessing, cleaning, disinfection and sterilization may compromise product characteristics which in turn create an additional risk of physical harm to or infection of the patient.

PRECAUTIONS FOR THE PAEDIATRIC CATHETERS DIAMETER 06, 08 AND 10 FR/CH.

Catheters diameter 06 FR/CH: Do not inflate the balloon to more than 1.5 ml.

Catheters diameter 08 and 10 FR/CH: Do not inflate the balloon to more than 3 ml.

Withdraw the stylet carefully so as not to move the catheter.

ADVERSE EVENTS

Several adverse events have been described with the use of balloon catheters.

Some are related to the patient's conditions, the others to the procedure or the device:

- Related to the patient: bladder irritation symptoms, pain, urinary tract infection, incrustation and stone formation.
- Related to the procedure: urinary tract trauma.
- Related to the device: leakage, balloon burst or deflation.

Adverse events specifically related to the use of supra-pubic catheters have been described.

- Related to the patient: same as above and hematuria, any type of skin irritation.
- Related to the procedure: the potential adverse events are those observed with supra-pubic drainage, particularly if one forgets to check whether the bladder is full before puncturing it, among which peritoneal perforation with or without bowel perforation, misplacement/displacement.
- Related to the device: same as above and migration of the catheter, catheter knotting.

FOLLOW-UP

Regular monitoring should be implemented to ensure that no side effect occurs, that the catheter is working properly and in particular that it is draining properly.

Monitoring should also check that the balloon is still inflated and the catheter correctly placed.

ADVICE TO THE PATIENT

- Patients should be educated on their indwelling catheter and the need for a regular monitoring.
- They should be advised to inform the attending physician immediately if any anomaly or dysfunction is noted.
- Ensure scrupulous local hygiene, cleaning the genital and anal areas every morning and evening with soap and water.

REMOVAL

This is carried out by simple traction after deflating the balloon using a syringe connected to the valve of the inflation lumen.

Especially for silicone catheters, balloon folds can be prevented by deflating gently and progressively the balloon. If the patient feels pain when the catheter is removed, the balloon can be slightly re-inflated (make sure the balloon is correctly placed inside the bladder before re-inflating it) and deflated gently once again to remove the folds.

Warning: *in exceptional circumstances, it can be difficult or even impossible to deflate the balloon. In the event of this please refer to your local policies to resolve the situation.*

The physician is sole judge of the duration of placement of a catheter depending of the type of catheter, its indication and the patient's medical condition.

FOLYSIL® silicone catheters must not be left in place for more than 30 days.

Foley NEOPLEX® and PVC catheters must not be left in place for more than 2 weeks.

Foley latex catheters must not be left in place for more than 7 days.

Prostatic catheters must not be left in place for more than 7 days.

STORE AWAY FROM LIGHT IN A COOL AND DRY PLACE.

DO NOT USE IF PACKAGE IS DAMAGED.

DO NOT RESTERILIZE.

DISCARD PRODUCT AFTER USE.

Appendix 2: Instructions for use provided by the Department of Obstetrics and Gynecology of Sahlgrenska University Hospital

Please see the Swedish version of the Instruction for use that will be distributed to participating hospitals added after the English version.

The device should only be placed by adequately trained board-certified physicians working in a delivery unit.

Before inserting the device

- Establish that the woman meets inclusion and exclusion criteria.
- Perform a clinical examination including Leopold´s manoeuvres, digital cervical exam, abdominal ultrasound (to ensure cephalic presentation and exclude placenta praevia), temperature, blood pressure and CTG scan

- Check the device packaging before use for its integrity or any sterility breach
- Check the device integrity before insertion, namely regarding its distal tip
- Check proper balloon functioning

Inserting the device

- Do not use a stylet or a metallic introducer to insert the catheter
- Place the patient in lithotomy position.
- Digital exam of the cervix.
- If needed insert a vaginal speculum or amnioscope to get access to the outer cervical os.
- Advance the Foley catheter using fingers until the balloon has entered the cervical canal and the tip of the catheter has passed the inner cervical os. If necessary, use forceps to advance the catheter through the cervix.
- Inflate the uterine balloon with 30-50 ml of sterile water, sterile saline solution or lactated ringers using a standard syringe.
- Once the balloon is inflated, pull back the device until the balloon is against the internal cervical os.
- The proximal end of the catheter shall be taped to the patient's thigh.

After inserting the device

- A CTG shall be performed to establish fetal well-being.
- The woman is offered pain relief in form of oral paracetamol or paracetamol in combination with a morphine analogue (no codeine) if needed.
- The woman is instructed when to contact health care staff:
  - If anything feels different from when the woman was sent home
  - Start of contractions
  - Rupture of the membranes
  - In case the balloon catheter is expelled
  - Sudden change/decrease in foetal movements
  - Vaginal bleeding or bleeding through the catheter
  - Continuous abdominal pain
  - Fever
  - The woman feels unsure about something or has further questions

Removal

The Foley catheter should be removed within 24 hours of insertion. Check integrity of the device after removal.

Contraindications

The Foley catheter should not be inserted if any of the above-named exclusion criteria are noticed. If exclusion criteria are noted after insertion, the catheter should be removed immediately.

Warnings

- The patient should be monitored during the first 45 minutes after the device insertion, including a CTG-scan. In case of continued uterine hypertonus or non-reassuring fetal heart rate, the device should be removed
- Precautions should be taken to minimize infection risk related to the device (device sterile, no re-use, aseptic insertion condition…)
- The device should be removed immediately in case of balloon rupture
- If the woman experiences voiding problems the device should be removed
- If an allergic reaction occurs, the device should be removed immediately and indicated treatment and monitoring until well-being should be undertaken until well-being is restored
- If foetal well-being cannot be established, the device will be removed and further monitoring and obstetric care will be given according to clinical routine
- Heavy vaginal bleeding, which is extremely unusual, is an indication for removal of the device and appropriate surveillance of the foetus and woman
- The correct position of the balloon should be controlled routinely after insertion and the balloon should be deflated and then replaced in case of displacement
- In case of foetal malpresentation, the device should be removed

Adverse effects

The following adverse effects have been described during the period from insertion to expulsion of a balloon catheter in the process of labour induction:

- Pain, discomfort
- Uterine hypertonicity (refer to Warnings)
- Non reassuring foetal heart rate or decreased foetal movements
- Vaginal bleeding
- Unintended amniotomy
- Balloon displacement
- In very rare cases: vaso-vagal reaction

The following adverse events have been investigated but did not occur during the period from insertion to expulsion of a balloon catheter in the process of labour induction:

- Infection: frequent event, despite most often not directly related to the device
- Placental abruption: no causal association established. Women presenting a low placenta should not be induced with a balloon catheter
- Cord prolapse : only women with intact membranes and an engaged fetal head should be induced with the balloon catheter for minimizing the risk for cord prolapse
- Fetal death: no causal association established. Only low-risk women should be induced with a balloon catheter.
- Maternal death: no causal association established. Only low-risk women should be induced with a balloon catheter.
- Genital laceration: no causal association established. Only low-risk women should be induced with a balloon catheter.

Bruksanvisning för X-FLOW® Prostatektomikateter, kort med rak spets 3-vägs 30-50 ml silikon CH FR 22 för induktion av förlossning i ”OPTION – OutPatienT InductiON” studien

BESKRIVNING:

Ballongkateter av silikon.

ANVÄNDNINGSOMRÅDE:

Transcervikal applicering i samband med induktion av förlossning i ”OPTION – OutPatienT InductiON” studien

KONTRAINDIKATIONER:

Inom ramen för OPTION studien får kvinnan uppfyller inklusionskriterierna och inga av exklusionskriterierna för OPTION studien. Om exklusionskriterier noteras efter införande, bör katetern tas bort omedelbart.

Katetern bör inte sättas in om något av nedan nämnda exklusionskriterier föreligger.:

• Vattenavgång

• Kända allergiska reaktioner mot materialen i produkten

FÖRSIKTIGHET/VARNING!

• Denna typ av produkt får endast användas såsom beskrivet nedan av adekvat utbildade legitimerade läkare, som arbetar på en förlossningsenhet.

• All annan användning än den som beskrivs i denna bruksanvisning sker på läkarens ansvar.

• Fyll inte ballongen över det angivna maxvärdet.

• Kläm inte åt katetern, utan använd en propp om nödvändigt.

• Denna produkt är avsedd för engångsbruk. Återanvändning innebär en risk för användaren.

• Ombearbetning, rengöring, desinficering och sterilisering äventyrar produktens egenskaper, vilket i sin tur utsätter patienten för en ökad risk för fysiska skador eller infektion.

BRUKSANVISNING:

1. Innan du sätter in katetern

• Bekräfta att kvinnan uppfyller inklusionskriterierna och inga av exklusionskriterierna för OPTION studien.

• Utför en klinisk undersökning inklusive Leopolds manövrar, vaginal undersökning av livmodertappen, abdominellt ultraljud (för att säkerställa foster i huvudändläge och utesluta placenta previa), utför temperaturkontroll, blodtryckskontroll och CTG.

• Kontrollera förpackningen före användning för att säkerställa att förpackningen är obruten och katetern steril.

• Kontrollera kateterns distala spets före insättning.

• OBS! Före införande är det praxis att kontrollera att ventilen och ballongen fungerar ordentligt genom att fylla och sedan tömma ballongen.

2. Placera katetern transcervikalt (genom livmoderhalskanalen)

• Följ sedvanliga rutiner för aseptik.

• Införare av metall skall inte användas när katetern förs in.

• Placera patienten i gynläge i benstöd eller motsvarande läge liggandes i sängen.

• Palpera livmodertappen.

• Använd vid behov ett vaginalt spekulum eller amnioskop för att visualisera den yttre delen av livmodermunnen.

• För in katetern tills ballongen har kommit in i livmoderhalskanalen och spetsen på katetern passerat den inre livmodermunnen. Använd vid behov en ögletång för att föra in katetern genom livmoderhalsen.

3. Fylla ballongen

• Fyll ballongen med 30-50 ml sterilt vatten eller steril saltlösning. Använd en injektionsspruta utan nål och fyll den till erforderlig volym på anti-refluxventilen och injicera.

• Avlägsna sprutan snabbt när ballongen har fyllts och katetern immobiliserats. Kontrollera att ballongen är fylld genom att försiktigt dra i katetern – katetern bör ge en del motstånd.

• När ballongen är fylld drar du tillbaka den tills ballongen ligger an mot den inre livmodermunnen.

• Den proximala änden av katetern ska tejpas på patientens lår med hudvänlig, kirurgisk tejp.

4. Efter applicering av katetern

• CTG utförs för att säkerställa fostrets välbefinnande.

• Kvinnan erbjuds smärtlindring i form av paracetamol eller paracetamol i kombination med en morfinanalog (ej kodein) per os vid behov.

• Kvinnan informeras om att hon ska kontakta vårdpersonalen:

- • Om något känns annorlunda än när hon skickades hem
- • När sammandragningarna startar
- • Vid vattenavgång
- • Om ballongkatetern ramlar ut
- • Om det sker en plötslig förändring eller minskning av fosterrörelserna
- • Vid vaginal blödning eller blödning genom katetern
- • Vid kontinuerlig buksmärta
- • Vid feber
- • Om kvinnan känner sig osäker på något eller har ytterligare frågor

5. Avlägsnande

Foley-katetern ska tas bort på sjukhus, senast 24 timmar efter införandet. Katetern avlägsnas genom att den försiktigt dras ut efter att ballongen tömts med hjälp av en spruta ansluten till ventilen på fyllningslumen. Kontrollera att katetern är hel när den tagits ut.

Varning! I ovanliga fall kan det vara svårt eller omöjligt att tömma ballongen. I så fall följer du

sjukhusets riktlinjer för att lösa problemet.

VARNINGAR:

• Patienten ska övervakas under de första 45 minuterna efter att katetern har satts in. CTG utförs för att säkerställa fostrets välbefinnande

• Vid överstimulering eller påverkad hjärtfrekvens hos fostret bör katetern tas bort.

• Försiktighetsåtgärder bör vidtas för att minimera infektionsrisker relaterade till katetern (steril kateter, ingen återanvändning, aseptisk insättningsmetod).

• Katetern bör avlägsnas omedelbart om ballongen spricker.

• Om kvinnan upplever problem med tömning av urinblåsan bör katetern tas bort.

• Om en allergisk reaktion inträffar bör katetern tas bort omedelbart och behandling och

övervakning skall ske tills patienten är återställd.

• Om fostrets välbefinnande inte kan säkerställas skall ballongkatetern tas bort och ytterligare övervakning av fostret och eventuell åtgärd görs enligt klinisk rutin.

• Kraftig vaginal blödning, vilket är extremt ovanligt, är en indikation för borttagning av katetern och

lämplig övervakning av fostret och kvinnan bör ske.

• Ballongens rätta position bör rutinmässigt kontrolleras efter införandet och vid felaktigt läge bör ballongen tömmas och sedan skall katetern föras in på nytt.

• I händelse av avvikande fosterläge eller bjudning bör katetern tas bort.

BIVERKNINGAR:

Ett flertal biverkningar har beskrivits i samband med användning av ballongkatetrar.

Somliga är förknippade med patienttillstånd, andra med ingreppet eller produkten.

Följande biverkningar har beskrivits under perioden *från införande till uttagande* av en ballongkateter som används för förlossningsinduktion (se Varningar):

Relaterade till patienten:

• Smärta, obehag

• Överstimulering

• Påverkad hjärtfrekvens hos fostret eller minskade fosterrörelser

• Vaginal blödning

• Oavsiktlig (foster)vattenavgång

Relaterade till ingreppet:

• Felaktigt läge av katetern

• Trauma i vagina eller cervix (blödning)

• (Oavsiktlig) vattenavgång

• I mycket sällsynta fall: vasovagal reaktion

Relaterade till produkten:

• Läckage och brusten eller tömd ballong.

Följande biverkningar har undersökts, men inträffade inte under perioden från insättning till

uttagande av en ballongkateter i samband med förlossningsinduktion:

• Infektion/feber under förlossning: Frekvent händelse vid induktion av förlossning. Samband med användning av katetern är inte fastställt.

• Placentaavlossning: Inget kausalt samband fastställt. Kvinnor som har en lågt sittande placenta bör inte induceras med en ballongkateter.

• Navelsträngsprolaps: Endast kvinnor med intakta hinnor och ett fixerat/ruckbart fosterhuvud ska induceras med ballongkateter för att minimera risken för navelsträngsprolaps.

• Fosterdöd: Inget kausalt samband fastställt. Endast kvinnor med lågriskgraviditet bör induceras med ballongkateter inom ramen för OPTION studien.

• Mödradöd: Inget kausalt samband fastställt. Endast kvinnor med lågriskgraviditet bör induceras med ballongkateter inom ramen för OPTION studien.

• Genital sårbildning: Inget kausalt samband fastställt. Endast kvinnor med lågriskgraviditet bör induceras med ballongkateter inom ramen för OPTION studien.

RÅD TILL PATIENTEN:

• Be patienten att omedelbart informera den behandlande läkaren, förlossningsavdelningen eller vårdpersonalen om hon märker av något onormalt eller något som inte fungerar. Till exempel:

- Om något känns annorlunda än när hon skickades hem
- När sammandragningarna startar
- Vid vattenavgång
- Om ballongkatetern ramlar ut
- Om det sker en plötslig förändring eller minskning av fosterrörelserna
- Vid vaginal blödning eller blödning genom katetern
- Vid kontinuerlig buksmärta
- Vid feber
- Om kvinnan känner sig osäker på något eller har ytterligare frågor

• Se till att hålla det lokala området omsorgsfullt rent. Rengör underlivet och runt ändtarmen morgon och kväll med rinnande vatten/handdusch.

FÖRVARAS SVALT, TORRT OCH MÖRKT.

ANVÄND INTE PRODUKTEN OM DEN STERILA FÖRPACKNINGEN ÄR SKADAD ELLER

BRUTEN.

FÅR INTE OMSTERILISERAS.

KASSERA PRODUKTEN EFTER ANVÄNDNING.

Appendix 3: Relevance and Assessment of published Literature

Table 1: Relevance and Assessment of Literature published before first CE-marking on comparable Products

Table 1a: Silicone comparable catheters (studies published before first CE-marking)

Study	Design	Outcome	Assessment of data (Jadad score, level of evidence assessment)	Relevance of data	Comparability criteria: devices, context of use
10) Nacey JN, Tulloch AG and Ferguson AF. (1985). **Catheter-induced urethritis: a comparison between latex and silicone catheters in a prospective clinical trial**. *Br J Urol, 57*(3), 325-8.	**Controlled randomized prospective study** to compare the incidence of urethritis, following catheterization with either latex or silicone catheters **100 male patients** (50 with a latex catheter, **50 with a silicone catheter**) **Follow-up: 6 months**	The incidence of urethritis in the patients catheterized with latex catheters was 22%, compared with 2% in patients catheterized with silicone catheters; the difference is statistically significant.	Jadad score: 2 Level II --------- Clinical relevance: D2: 1 A2: 1 P1: 2 Clinical and method-logical relevance: T1: 1 O2: 0 F2: 0 S2: 0 Total: 5	Data on infection and encrustation complications, and effect of catheter material	Device: 18Fr latex, **18Fr silicone** Foley catheter (manufactured by different companies) Technical equivalence: - *Similar design*: Foley catheter - *Similar specifications*: 18F - *Similar conditions of use*: 20 mL sterile water to inflate the balloon; catheter connected to a closed system drainage - *Similar principles of operation*: bladder drainage Biological equivalence: - *Similar material in contact with the same human tissues*: latex or silicone Clinical equivalence: - *Same site in the body*: urinary bladder, urethra - *Similar population*: >18 years old
11) Ferrie BG, Groome J, Sethia B and Kirk D. (1986). **Comparison of silicone and latex catheters in the development of urethral stricture after cardiac surgery**. Br J Urol, 58(5), 549-50.	**Follow-up and comparative study** Male patients who underwent coronary surgery, with urinary catheter: **- 117 men:** **- silicone urinary catheter** **Follow-up: 12-28 months** - 100 men: - latex urinary catheter Follow-up: 15-24 months.	The overall incidence of urethral stricture in the group with latex catheters was 5.2% when followed up for between 15 and 24 months compared with 0% in those with silicone catheters followed-up for between 12 and 28 months; This difference did not reach statistical significance.	Jadad score: 0 Level V	Indications for use and data on complications and outcomes of short-term urethral catheterization in men undergoing cardiac bypass surgery	Device: 14Fr latex and **12Fr silicone** urethral catheters Technical equivalence: - Similar specifications: diameter: 12Fr - Similar principles of operation: bladder drainage Biological equivalence: - Similar duration of contact: 12 to 48 hours - Similar material in contact with the same human tissues: latex or silicone Clinical equivalence: - Same clinical condition: urethral stricture incidence study in patients undergoing coronary artery bypass grafting - Same site in the body: urinary bladder, urethra - Similar population: Men - Similar relevant clinical performance: 0% of incidence of urethral stricture in patients with silicone catheters followed-up for between 12 and 28 months.

Table 1b: Unspecified material: comparable catheters (studies published before first CE-marking)

Study	Design	Outcome	Assessment of data (Jadad score, level of evidence assessment)	Relevance of data	Comparability criteria: devices, context of use
12) Walker EM, Bera S and Faiz M. (1995). **Does catheter traction reduce post-transurethral resection of the prostate blood loss?** *Br J Urol, 75*(5), 614-7.	**RCT** **115 patients**	Catheter traction reduced post-operative bleeding while applied, but had no further effect after the removal of traction.	Jadad score: 1 Level I --------- Clinical relevance: D2: 1 A1: 2 P1: 2 Clinical and methodological relevance: T1: 1 O1: 1 F2: 0 S2: 0 Total: 7	Catheter's related technique on how to reduce post op bleeding	Device: 3-way Foley Simplastic catheter, 22Fr; Balloon: 30 or 75ml (filled max 80ml) Technical equivalence: - *Similar design*: 3-way Foley catheter - *Similar specifications*: 22Fr, 30 or 75ml (filled max 80ml) balloon - *Similar conditions of use*: balloon was filled to approximatively twice the volume of the resected prostate; Continuous post-operative irrigation with saline; 1.36 kg of traction (group who received traction) - *Similar principles of operation*: post TURP Clinical equivalence: - *Same clinical condition*: patients undergoing TURP - *Same site in the body: prostate, urethra, urinary bladder*
13) Mayersak JS and Viviano CJ. (1994). Transurethral insertion of a vaginal contraceptive suppository into the urinary bladder. Wis Med J, 93(1), 13-5.	**2 case reports**	Reduce acidity and toxicity of intravaginal contraceptive Reduction in urinary bladder for several weeks following accidental insertion	Jadad score: 0 Level IV	Usage of 3-way catheter in bladder intoxication.	Device: 3-way Foley catheter Material: unspecified Indication: continuous bladder irrigation with alkaline solution
14) Mayersak JS and Viviano CJ. (1993). Severe chemical cystitis from the transurethral intravesical insertion of a vaginal contraceptive suppository: a report of 3 cases and proposed method of management. J Urol, 149(4), 835-7.	**Case report** **3 patients**	Reduce acidity and toxicity of intravaginal contraceptive Reduction in urinary bladder for several weeks following accidental insertion	Jadad score: 0 Level IV	Usage of 3-way catheter in bladder intoxication.	Device: 3-way Foley catheter Material: unspecified Indication: continuous bladder irrigation with alkaline solution

Study	Design	Outcome	Assessment of data (Jadad score, level of evidence assessment)	Relevance of data	Comparability criteria: devices, context of use
15) Goswami AK, Mahajan RK, Nath R and Sharma SK. (1993). How safe is 1% alum irrigation in controlling intractable vesical hemorrhage? J Urol, 149(2), 264-7.	**Prospective open study** **12 patients**	Protocol seems efficient in controlling hematuria	Jadad score: 0 Level III --------- Clinical relevance: D2: 1 A1: 2 P1: 2 Clinical and methodological relevance: T1: 1 O1: 1 F2: 0 S2: 0 Total: 7	Usage of 3-way catheter in bladder irrigation.	Device: 3-way Foley catheter Technical equivalence: - Similar specifications and properties: - Similar design: 3-way Foley catheter - Similar conditions of use: After clot evacuation, continuous normal saline irrigation of the bladder was begun and continued for 24 hours - Similar principles of operation: continuous bladder irrigation with saline solution added with Alum1% during hematuria Biological equivalence: - Similar duration of contact: 24 hours Clinical equivalence: - Same intended use: to manage hematuria of vesical origin - Same site in the body: bladder Similar population: men and women; Average patient age was 54 years (range 34 to 80 years). Similar severity of disease: 10 cases of transitional cell carcinoma and 2 of radiation cystitis.
16) Wise GJ, Kozinn PJ and Goldberg P. (1982). Amphotericin B as a urologic irrigant in the management of noninvasive candiduria. J Urol, 128(1), 82-4.	**Cohort series** **40 patients** Local anticandida treatment applied using a bladder catheter	Protocol seems efficient	Jadad score: 0 Level III	Usage of 3-way catheter in bladder irrigation with pharmaceutical product.	Device: 3-way indwelling urethral catheter or urethral catheter and suprapubic tube Material: unspecified Indication: bladder irrigation with Amphotericin B

Table 2: Relevance and Assessment of Literature published After first CE-marking on comparable Products

***Table 2a: <u>Silicone</u> comparable catheters* (studies published after first CE-marking)**

Table 2a1: Clinical studies: Silicone comparable catheters

Study	Design	Outcome	Assessment of data (Jadad score, level of evidence assessment)	Relevance of data	Comparability criteria: devices, context of use
17) Balogh Z, Jones F, D'amours S, Parr M and Sugrue M. (2004). **Continuous intra-abdominal pressure measurement technique**. *Am J Surg, 188*(6), 679-84.	**Prospective study** **25 patients** **Follow-up: 6 months**	Continuous intrabdominal pressure can be accurately measured via the irrigation port of a 3-way urinarycatheter in intensive care unit	Jadad score: 0 Level IV	Usage of 3-way urinary catheter in abdominal pressure measurement.	Device: 18Fr 3-way Foley catheters (Lubri-Sil, Bard, Covington, USA) Material: silicone
18) Erickson BA, Navai N, Patil M, Chang A and Gonzalez CM. (2008). **A prospective, randomized trial evaluating the use of hydrogel coated latex versus all silicone urethral catheters after urethral reconstructive surgery**. *J Urol, 179*(1), 203-6.	**Randomized Clinical Trial** **85 male patients** 42: latex catheter **43: silicone catheter** **Median follow-up was 20 months (range 10 to 36).**	No difference was found in the rate of stricture recurrence or operative complication at intermediate term follow-up The newer generations of urethral catheters generate lower urethral inflammation than traditional all-latex catheters. No difference regarding catheter type	Jadad score: 1 Level II --------- Clinical relevance: D2: 1 A2: 1 P1: 2 Clinical and methodological relevance: T1: 1 O1: 1 F1: 1 S1: 1 Total: 8	Randomization was achieved unless there were concerns about latex sensitivity, in which case an all-silicone catheter was used.	Device: 16 or 18Fr urinary catheters: - Latex based Bardex® Lubricath® Foley catheter - a **100% silicone Kendall-Dover® catheter** <u>Technical equivalence</u>: - *Similar specifications and properties*: 16 or 18Fr - *Similar design*: Balloon catheter <u>Biological equivalence</u>: - *Similar material in contact with the same human tissues*: Silicone & Hydrogel coated Latex catheters - *Similar duration of contact*: 2 to 3 weeks. <u>Clinical equivalence</u>: - *Same intended use*: Urethral healing and bladder draining after urethral reconstructive surgery for urethral stricture disease - *Same site in the body*: urinary bladder, urethra - *Similar population*: Men; mean age: 43 (17-75) years (silicone catheter), 40 (20-75) years (latex caterter) - *Similar severity of disease*: urethral stricture disease - *Similar users*: surgeon.

Table 2a2: Review articles, reports, guidelines: Silicone comparable catheters

Study	Design	Outcome	Assessment of data (Jadad score, level of evidence assessment)	Relevance of data	Comparability criteria: devices, context of use
19) Parker D, Callan L, Harwood J, Thompson DL, Wilde M and Gray M. (2009). **Nursing interventions to reduce the risk of catheter-associated urinary tract infection. Part 1: Catheter selection**. *J Wound Ostomy Continence Nurs, 36*(1), 23-34.	Evidence-based **report** on catheter selection for prevention of urinary tract infection	There is insufficient evidence to determine whether selection of a catheter influences urinary tract infection	Jadad score: 0 Level III	There is insufficient evidence to determine whether selection of latex catheter or all-silicone catheter influences catheter-Associated urinary Tract Infection (CAUTI) risk.	Device: urinary catheters Material: Silicone, **latex, hydrogel coated latex, silicone coated latex**, Indication: short-term or long-term catheterization Urinary drainage after surgery (short-term catheterization) Urinary drainage for retention or incontinence.

Table 2b: Unspecified material comparable catheters (studies published after first CE-marking)

Table 2b1: Laboratory tests: unspecified material, comparable catheters

Study	Design	Outcome	Assessment of data (Jadad score, level of evidence assessment)	Relevance of data	Comparability criteria: devices, context of use
20) Cortes Gonzalez JR, Ortiz Lara GE, Arratia Maqueo JA and Gomez Guerra LS. (2007). **[Continous bladder irrigation with amikacin as adjuvant treatment for emphysematous cystitis]**. *Arch Esp Urol, 60*(10), 1.218-1.220.	**Evaluation study** of continuous of bladder irrigation with Amikacin in bladder tumor	Described protocol appeared efficient	Jadad score: 0 Level IV	Example of intravesical irrigation using a 3-way catheter	Device: 3-way Foley catheter Material: unspecified Indication: continuous bladder irrigation with Amikacin

Table 2b2: Review articles, reports, guidelines: unspecified material, comparable catheters

Study	Design	Outcome	Assessment of data (Jadad score, level of evidence assessment)	Relevance of data	Comparability criteria: devices, context of use
21) Curtis J and Klykken P. (2008). **A comparative assessment of three common catheter materials**. *Dow Corning Corporation, Form No. 52-1116-01, 8 pp*.	**Review** of risks associated with the properties of the catheters and their chemical nature	Allergy, Urinary Tract Infection, Encrustation & Blockage Silicone Foley catheters has less potential for bacterial migration compared to Latex catheters	Jadad score: 0 Level III	Data on catheter selection and catheterization complications	Device: urinary catheters Material: Silicone, PVC, Latex for urinary catheters Indication: all indications for urinary catheters

Table 2c: Other silicone devices / other catheter uses (studies published after first CE-marking)

Study	Design	Outcome	Assessment of data (Jadad score, level of evidence assessment)	Relevance of data	Comparability criteria: devices, context of use
22) Ariani N, Visser A, Van Oort RP, Kusdhany L, Rahardjo TB, Krom BP, Van Der Mei HC and Vissink A. (2013). **Current state of craniofacial prosthetic rehabilitation**. *Int J Prosthodont, 26*(1), 57-67.	**Clinical study**	Restore maxillofacial defects and improve quality of life	Jadad score: 1 Level III	Example of medical application of silicone elastomer.	Device craniofacial prosthesis Material: Silicone elastomer Indication: esthetic rehabilitation
23) Koyama S, Sasaki K, Hanawa S and Sato N. (2011). **The potential of cohesive silicone for facial prosthetic use: a material property study and a clinical report**. *J Prosthodont, 20*(4), 299-304.	**Clinical study**	Sufficient adhesion of the cohesive silicone	Jadad score: 1 Level III	Example of medical application of silicone elastomer.	Device craniofacial prosthesis Material: Silicone elastomer Indication: Prosthetic reconstruction for a facial defect
24) Ernst A, Majid A, Feller-Kopman D, Guerrero J, Boiselle P, Loring SH, O'donnell C, Decamp M, Herth FJ, Gangadharan S and Ashiku S. (2007). **Airway stabilization with silicone stents for treating adult tracheobronchomalacia: a prospective observational study**. *Chest, 132*(2), 609-16.	**Prospective observational study** **75 patients**	silicone stents for treating adult tracheobronchomalacia	Jadad score: 0 Level V	Example of medical application of Silicone elastomer	Device: Silicone stents Material: Silicone elastomer Indication: Airway stabilization with stents to relieve respiratory symptoms
25) Almeyda R, Shahzad A and Bleach N. (2007). Silicone Foley catheters outperform latex Foley catheters for post-nasal packing: an in-vitro study. Clin Otolaryngol, 32(6), 480-3.	**Comparative study**	Silicone Foley catheters for post-nasal packing	Jadad score: 0 Level V	Example of medical application of Silicone	Device: Foley catheters Material: Silicone Indication: Post-nasal packing
26) Joo SP, Kim TS, Moon KS, Kwak HJ, Lee JK, Kim JH and Kim SH. (2006). Arterial suturing followed by clip reinforcement with circumferential wrapping for blister-like aneurysms of the internal carotid artery. Surg Neurol, 66(4), 424-8; discussion 428-9.	**2 cases report**	Useful treatment option for fragile aneurysms in cases where other options, such as direct clips or encircling clips, may be impossible.	Jadad score: 0 Level IV	Example of medical application of Silicone in cardiology	Device: Silastic sheet Material: Silicone Indication: Aneurysm

Table 3: Summary and Appraisal of Studies published Before first CE-marking on Coloplast Products

Study	Design	Outcome	Assessment of data (Jadad score, level of evidence assessment)	Relevance of data	Comparability criteria: devices, context of use
27) Nathan MS and Wickham JEA. (1996). **TVP: A cheaper and effective alternative to TURP**. *Minim Invasive Ther Allied Technol*, *5*(3), 292-296.	**Comparative and retrospective study** **40 men** **Follow-up: up to 12 weeks**	The mean operative time was 44.4rnin for the TURP group in comparison to 41.8 min for the TVP group due mainly to the longer haemostasis time.	Jadad score: 0 Level III --------- Clinical relevance: D1: 2 A1: 2 P1: 2 Clinical and methodological relevance: T1: 1 O1: 1 F1: 1 S1: 1 Total: 10	Comparative study of TURP and transurethral electrovaporization of the prostate (TVP) procedures, in terms of hemostasis time, duration of hospital and various post-operative complications	Device: **3-way 20Fr Porges catheter** Technical data: - *Design*: 3-way catheter - *Specifications*: 20Fr - *Principles of operation*: post TURP or post TUV Biological data: - *Duration of contact*: up to 44 hours Clinical data: - *Clinical condition*: Men requiring TURP - *Site in the body*: prostate, urethra, urinary bladder - *Population*: men

Table 4: Summary and Appraisal of Studies published After first CE-marking on Coloplast Products

Study	Design	Outcome	Assessment of data (Jadad score, level of evidence assessment)	Relevance of data	Comparability criteria: devices, context of use
28) Carneiro A, Wroclawski ML, Peixoto GA, Cha JD, Moran NKS, Chen FK, Satkunas HN, Campos JRA, Garcia A, Monga M and Lemos GC. (2020). **Same sized three-way indwelling urinary catheters from various manufacturers present different irrigation and drainage properties**. *Ther Adv Urol, 12*, 1756287219889496.	**In vitro comparative study**	Both irrigation and drainage flows in 20Fr, 22Fr and 24Fr X-Flow Coloplast catheters were greater than their equivalent calibre of 20Fr, 22Fr and 24Fr Gold Silicone Coated Rusch or 20Fr, 22Fr and 24Fr 100% Silicone Rusch indwelling urinary catheter.	Not relevant	In vitro comparative study of three-way silicone catheters (20 to 24Fr) used for clinical treatment of patients with macroscopic haematuria showing that different catheters with the same external calibre have significantly disparate irrigation and drainage lumen calibres	Device: **3-way indwelling urinary catheters**. - Material: silicone - Size: 20, 22 or 24Fr - Gold Silicone Coated Rusch - 100% Silicone Rusch - **X-Flow Coloplast**

Appendix 4: Risk analysis and mitigations

RMF prostatic catheters vs studied ir