INSTRUCTION FOR USE

RisoR

Everolimus Eluting Coronary Stent System

1. Device Description:-

The Everolimus Eluting Coronary Stent System Comprise of following Components-

•A balloon expandable L605 Cobalt Chromium Coronary Stent

•A stent coating that consist of a blend of anti-proliferative drug and polymers

1. Anti-Proliferative drug Everolimus (derivative of Rapamycin)

2. Biocompatible, bio-degradable co-polymer coating which act as drug reservoir and drug release platform

•A rapid exchange stent delivery system balloon catheter

•The stent is pre mounted on balloon catheter & placed between two Gold radio opaque markers bend.

1.1 Device Components Description:

1.1.1 Available Stent Length & Diameters.

Available Stent Length & diameter are shown in below table.

Available Stent Diameter (mm)	Available Stent Length (mm)																	
	8	12	15	16	18	20	22	24	26	28	30	32	34	36	38	40	44	48
	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-	-	-	-	-
2.00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-
2.25	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2.50	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2.75	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3.00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3.50	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4.00	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4.50	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	-

Table

1.1.2	Stent Material	Electropolised L605 Cobalt Chromium alloy, Laser cut from seamless tubing in a hybrid design pattern.
1.1.3	Stent delivery System	Name of Delivery system: Expedient Rx SDS Balloon Dilatation catheter. Stent delivery balloon working length, nominally 1.0 mm longer then the stent length. Mounted stent length & location is defined by two gold swaged radiopaque markers under the balloon catheter. Two proximal delivery system shaft markers (90 cm & 100 cm proximal to distal tip) indicate the relative position of the delivery system to the end of brachial or femoral guiding catheter.
1.1.4	Delivery system usable length	145 cm
1.1.5	Guidewire Lumen	Start at the distal tip of the balloon catheter & end approximalty 25 cm from distal tip of the balloon catheter.
1.1.6	Guidewire rapid exchange (Rx)port	Start at the distal tip of the balloon catheter emerges approximately 25 cm from distal tip of the balloon catheter
1.1.7	Shaft outer profile	Proximal 2.1F Distal 2.6F
1.1.8	Stent dilatation/balloon inflation pressure	Nominal Pressure 08 atm, Rated Burst pressure:16 atm •RBP 16 atm for all diameter with length 48 mm
1.1.9	Guide catheter compatibility	5F(Min I.D. 0.056"/1.42mm
1.1.10	Guide wire compatibility	0.014"(0.36 mm)

1.1.12 In-Vitro Information is as per the following table:

Table - Stent compliance Chart:

Inflation Pressure	Stent Diameter Ø mm						
(atm/bar)	2.00	2.25	2.50	2.75	3.00	3.50	4.00
6.00	1.80	2.10	2.35	2.62	2.83	3.42	3.80
•8.00	2.00	2.25	2.48	2.74	3.04	3.52	4.02
10.00	2.15	2.45	2.60	2.81	3.12	3.62	4.10
12.00	2.20	2.53	2.70	2.95	3.24	3.85	4.25
14.00	2.25	2.60	2.80	3.05	3.38	4.00	4.35
•16.00	2.32	2.70	2.90	3.15	3.50	4.08	4.49
18.00	2.37	2.75	3.00	3.20	3.60	4.13	4.69
20.00	2.42	2.77	3.05	3.27	3.65	4.22	4.72
22.00	2.45	2.80	3.08	3.32	3.68	4.30	4.75

Grey Background: Nominal Pressure, Black background: RBP (Rated Burst Pressure)

•NP 8 atm for all diameter.

•RBP 16 atm for all diameter.

1.2 Drug Component Description:

The drug component is coated on the stent. This coating is consist of a blend of Everolimus drug (the active ingredient), and biodegradable polymer (the inactive ingredient).

1.2.1 Everolimus

Everolimus is a derivative of Rapamycin (sirolimus), and works similarly to Rapamycin as an mTOR (mammalian target of rapamycin) inhibitor. It is currently used as an immunosuppressant to prevent rejection of organ transplants.

The Everolimus chemical name is 40-O-(2-hydroxyethyl)-rapamycin, and its chemical structure is provided in Figure 1 .The molecular formula of everolimus is C53H83NO14 and its molecular weight is 958.24.

Everolimus is a white to off-white powder and is insoluble in water, but freely soluble in benzyl Alcohol, chloroform, acetone, and acetonitrile and has a melting temp. of approximately 107-113°C. It is currently used as an immunosuppressant to prevent rejection of organ transplants. Everolimus belongs to a class of therapeutic agent known as macrocyclic lactones Macrolides. It's a cytostatic drug and an immunosuppressant. It inhibits cell motility Suppression of m-TOR mediated 56k1 and 4E-BPI pathways. It inhibits T-lymphocyte Activation and proliferation occurring in response to antigen and cytokine. It also Inhibits antibody production.it demonstrates antiprolifrative activities.

The drug content on Everolimus Eluting Coronary Stent range between 18µg to 254µg.

1.2.2 Polymers

The inactive ingredients of the coating consists of a blend of Lactide and Glycoside based biodegradable polymers.

1. These polymer controlled the drug release kinetic and they degrade as the drug is released from the stent.

2. Intended purpose of the Device:

The Everolimus-Eluting Coronary Stent System is intended to treat a narrowed blood vessel (coronary artery) caused by coronary artery disease.

These systems consist of a cobalt-chromium alloy metal stent covered with the drug Everolimus and a bioresorbable polymer (PEA) coating and a catheter delivery system. A physician inserts the stent's delivery balloon catheter into a blood vessel in the patient's arm or groin.

3. Indications for Use:

The Everolimus Eluting Coronary Stent System is indicated for improving coronary luminal diameter in patients with symptomatic ischemic heart disease due to de novo & n-stent restonotics lesions (Lengths≤48 mm) in native coronary arteries with reference vessel diameter of 2.00 mm To 4.5 mm in patient eligible for percutaneous transluminal coronary Angioplasty (PTCA) and stenting procedures.

4. Intended use: Cardiologists or doctors who qualified, specialized and trained in the cardiology/or vascular medical procedure. Product is recommended to use by qualified medical/paramedical staff.

2. How to supply:

This device is sterilized with ethylene oxide (ETO) gas and non-pyrogenic.
It is intended for single use only Do not Restrilized.
Do not use the device if the package is opened or damaged.

Contents:-One (1) Everolimus Eluting Coronary Stent System Housed in a protective circular Hoop tray, one (1) Instruction for use, Two (2) Stent implant card.

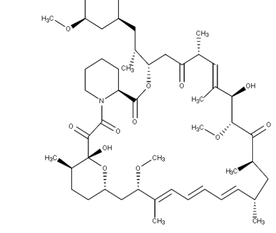
Storage: - Store Between 5-25°c temp. in a dry dark cool place. Protect from light.

3. Contraindication:-

Everolimus Eluting stent system is contraindicated in following patient types:-
Patient with hypersensitive of allergic to aspirin, heprin, clopidogrel, ticklopidine, Drug or any analogue or derivative, cobalt, chromium, nickle, molybdenum, tungatun or any contrast media.
Patients in whom anti-platelet and/or anti-coagulant therapy are contraindicated.
Patient judge to have a lesion that prevents complete inflation of an angioplasty balloon.
Transplant Patients.

4. Warnings:-

Judicious patient selection is necessary during use of this device since it carries the associates risk of subacute thrombosis, Vascular complication and/or Bleeding events Safety and effectiveness of stenting saphenous vein grafts has not been established.



Never try to straighten a kink hypo tube. Striating of kinked metal may result in a breakage shaft.

5. Precaution :

5.1 General Precautions

Only physicians who have received adequate training should perform implantation on of the stent.

Stent Placement should only be performed at hospitals where emergency coronary artery bypass graft surgery (CABG) is readily available.

Subsequent blockage may require repeat dilatation of the arterial segment contain the stent. The Long Term outcome following repeat dilatation of the endothelial zed Stents is not well characterized.

5.2 Stent Handling Precaution:

•Do not use if the package is opened or damaged.

•Use the device before "Use By" Date as specified on the product Label.

•For single patient use only. Do not Reuse, reprocess or re sterilize. Reuse reprocessing or resterilize may compromise the structural integrity of the device and/or lead to device failure in patient injury, illness or death.

•Reuse, reprocessing or reserialization may also create a risk of contamination of the device and/or cause patient infection or cross-infection, including ,but not limited to the transmission of infectious diseases from one patient to another. Contamination of the device may lead to injury, illness or death of the patients.

•Remove the protective stylet from the guidewire and lumen and discard.

•Do not the remove the stent from the delivery system as removal may damage the stent and/or lead to stent embolization.

•The stent should not be removed for use in conjunction with other dilatation catheter.

•Special care must be taken not to handle or in any way disturb the stent position on the delivery device. This is especially important during catheter remove from the packaging, placement of the guidewire advantage through the rotating haemostatic valve adaptor and guiding catheter hub.

•Do not manipulate, touch or handle the stent with fingers or contact with liquid prior to the preparation and delivery as this may result in coating damage, contamination or dislodgment of the stent from the delivery balloon catheter.

•Do not expose or wipe the device with organic solvent such as alcohol or detergents.

•Use only the appropriate balloon inflation media. Do not use any gaseous medium to inflate the balloon as this may cause uneven expansion and difficulty in deployment of the stent.

•When back loading catheter on the guidewire, provide adequate support to shaft segments.

•Do not use if the device is found kinked?

5.3 Stent placement Precautions

•Do Not Prepare or pre-inflate the balloon prior to stent deployment, other than directed.

•Do not induced vacuum (negative pressure) on the deliver balloon catheter before reaching the target lesion.

•Implantation of a stent may lead to dislocation of the vassal distal and/or proximal to the stented portion and may cause acute closure of the vessel requiring additional intervention (e.g. CABG, further dilatation or placement of additional stents.

•Do not exceed rated burst pressure as indicated on labelling. Use of pressure higher than those specified on the product label may result in a ruptured balloon and potential intimal damage and dissection.

•Guiding catheter used must have lumen sizes that are suitable to accommodate the introduction of Polymed stent.

•Stent retrieval method (use of additional wires, snares or forceps) may result in additional trauma to the coronary vasculature and/or the vascular access site. Complication may include bleeding, hematoma or pseudo aneurysm.

•To avoid the possibility of dissimilar metal corrosion, do not implant the stent of different material in tandem overlap or contact if possible.

•When treating multiple lesion the distal lesion should be initially stented, followed by stenting of the proximal lesion. Stenting in this order obviates the need to cross the proximal stent in placement of the distal stent and reduces the changes of dislodging the proximal stent.

5.4 stent/system removal precautions

•Should any unusual resistance be felt at any time during either lesion access or removal of the stent delivery system pre-stent implantation, the entire system must be remove as a signal unit.

•When the removing the the delivery system as a single unit, do not retract the delivery system into the guiding catheter.

•Advanced the guide wire into coronary anatomy as far distally as safely possible .tighten the rotating haemostatic valve to secure the stent deliver system as a signal unit.

•Failure to follow these steps and/or applying excessive for the stent delivery system can potentially result in loss or damaged to the stent and/or stent delivery system components.

5.5 Post implant precautions

•Great care must be exercised when crossing a newly deployed stent with other device such as another stent deliver system an intravascular ultrasound (IVUS) catheter a, coronary guidewire or balloon catheter to avoid disrupting the stent geometry and stent coating.

5.6 Magnetic Resonance Imaging (MRI) Statement:

Non-Clinical testing has demonstrate the everolimus eluting coronary stent system " single (max. 4.5x40 mm) and overlapped (max.2x4.5x40mm (max.79 mm length) is MR conditional.it can be scanned safely under the following condition:

•Static magnetic field of 1.5 tesla and 3 tesla only.

•Spatial gradient field of 33T/m and less

•Spatial gradient field product of 96 t2/m and less

•Theoretically estimated maximum whole body averaged (WBA) Specific absorption rate (SAR)of <2w/kg at 1.5 tesla, overlapped (max.2x4.5x40 mm(max.79 mm length) <2w/kg at 3 tesla, overlapped (max.2x4.5x40 mm (max. 79 mm length) for 15 minutes MR scanning.

MR image quality is compromised if the area of interested is in the same area or relatively close to the position of the device. Therefore, it may be necessary to optimize MR imaging parameter for the presence of this implant.

5.7 Drug interaction

While no specific clinical data are available, drug, like, tacrolimus, that act through the same binding protein (FKBP) may interfere with the efficiency of Everolimus.

Drug interaction studied have not been performed. Everolimus is metabolized by CYP3A4 (strong inhibitors of CYP3A4iketoconazol) might cause increased Everolimus exposure to levels associated with systemic effects, especially if multiply stents are deployed. Systematic exposure of Everolimus should also be taken into consideration if the patient is treated concomitantly with systemic immunosuppressive therapy.

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6. Adverse effect :

Undesirable effects/adverse events (alphabetical order) that may be associated with the implantation of a coronary stent in native coronary arteries but are not limited to.

•Abrupt stent closure •Acute myocardial infarction •Allergic reaction •Aneurysm •Angina •Arrhythmias, including ventricular fibrillation (VF)and ventricular tachycardia (VT) •Arteriovenous fistula •Cardio tamponade •Coronary Artery occlusion •Cardiogenic shock •Death •Dissection •Drug reaction to antiplates agents •Emboli, distal (air, tissue or thrombotic emboli) •Embolization, stent •Emergency coronary Artery bypass graft surgery (CABG) •Failure to deliver the stent at the intended site •Fever •Fistulization •Heart failure •Hematoma •Haemorrhage •Hypotension/hypertension •Incomplete stent apposition •Infection, including infection •Myocardial infraction •Myocardial ischemia •Perforation or rupture •Pericardial effusion •Prolong angina •Renal failure •Respiratory failure •Restenosis of stented segment •Rupture of native and bypass graft •Shock/pulmonary edema •Spasm •Stent comparison •Stent migration •Stroke/cerebrovascular/TIA •Stent thrombosis •Ventricular fibrillation •Vessel perforation •Vessel spasm •Vessel trauma requiring surgical repair •Potential adverse events •Abnormal lever function test •Anemia •Arthralgias •Diarrhea •Hypercholesterolemia •Hypersensitivity, including anaphylactic type reaction •Hypertriglyceridemia •Hypokalaemia •Infection •Interstitial lung disease •Leukopenia •Lymphoma and other malignancies •thrombocytopenia

There may be other potential adverse events that are unforeseen at this time.

7. Recommended Drug Regimen:

Antiplatelet or anticoagulant therapy is recommended as per institutional practices for coronary stenting.

8. Individualization of treatment:

The risk and benefits should be considered for each patient before use of everolimus eluting coronary stent. Patient selection factor should include a judgment regarding risk of antiplatelet therapy. Special consideration should be given to those patients with recently active gastritis or peptic ulcers disease.

Pre-morbid condition that increase the risk of a poor initial result or the risk of emergency referral for bypass surgery (diabetes mellitus, renal failure and severe obesity), should be reviewed.

A review of the vessel location, reference vessel size, lesion length, qualitative target lesion characteristics and the amount of myocardium in jeopardy from acute or subacute thrombosis must also be considered.

Thrombosis following stent implantation is affected by several baseline angiographic and procedural factors. These include vessel diameter less than 3 mm, intra procedural thrombus and dissection following stent implantation.in patient's undergone stenting the persistence of thrombus or dissection should be considered a marker for subsequent thrombotic occlusion. These patient should be monitored very carefully during the first month after stent implantation.

9. Used the special population:

The safety and effectiveness of the Everolimus eluting coronary stent has not been established in the following patient's population:

Patient with unresolved vessel thrombus at the lesion site

Patient with coronary artery reference vessel diameter <2.00 mm

Patients with unprotected lesion located in the left main coronary artery

Patients with brachytherapy treatment of the target lesion

Pregnant patient: there are no adequate and well controlled studies in pregnant women or men intending to father children effective contraception should be be initiated before implanting everolimus eluting coronary stent and for 12 week after implantation. The everolimus eluting coronary stent should be used during pregnancy only if the potential benefits out weights the potential risk to the embryo or fetus.

Lactation: it is not known whether everolimus is distributed in human breast milk because similar drug are known to be excreted in human milk, and because of the risk of adverse reaction in nursing infants, a decision should be made whether to discontinue nurshin or implant the stent, taking into account the importance of the stent to the mother.

10. Clinical use information:

10.1 Inspection prior to use

Carefully inspect the sterile package before opening.

Do not use if the package has been damaged or opened

The product should be used after the use by date.

If the sterile package appears intact, carefully remove the system from the package and inspect for bend, kinks and other damage.

Tear open the sterile pouch to carefully remove the product and pass on or drop the contents into the sterile field using aseptic technique.

Verify that the stent is located between the radiopaque markers.

Do not use if any defects are noted.

10.2 Material Required:

Appropriate guiding catheter(S)

2-3 syringe(10-20 cc)

1000µ/500cc,normal heparinised saline(HepNS)

0.014"(0.36mm)diameter guidewire,175 cm minimum length

Rotating haemostatic valve with an appropriate internal diameter

Contrast diluted 1:1 with normal saline

Inflation device

Three-way stopcock

Torque device

Guidewire introducer

10.3 Preparation

10.3.1 Guidewire lumen flush

Remove the protective stylet from the guidewire lumen and discard.

Flush the guidewire with HepNS until the flush exit the guidewire exit port approximately 25 cm distal to catheter distal tip.

Caution: Avoid manipulation of stent during flushing of guidewire lumen, as this may disrupt the placement of the stent on the balloon.

10.3.2 Delivery system preparation

Prepare an inflation device with diluted contrast medium

Attach inflation device to stopcock; Attached to hub (balloon inflation port)

Caution: do not apply negative or positive pressure to balloon at this time.

Open the stopcock to stent delivery system.

Leave inflation device on neutral.

Purge the inflation device of all air.

10.3.3 Delivery Procedure

Prepare vascular access site according to standard practice.

Prepare lesion site according to standard practice.predilate the lesion with the PTCA catheter.

Maintain neutral pressure on inflation dsevice.open rotating haemostatic valve as widely as possible.

Backload delivery system onto proximal portion of guidewire while maintaining guidewire position across target lesion.

Advanced the stent delivery system over guidewire to target lesion use radiopaque balloon markers to position stent across lesion .perform angiography to confirm stent position.

Note: should unusual resistance be felt at any time during the either lesion access or removal of the stent delivery system before stent implantation, the entire system should be removed. See stent system removal precaution, section 6.4 for specific stent delivery removal instruction.

10.3.4 Deployment procedure

Caution: Refer to product label for in vitro stent inner diameter and RBP.

Before deployment reconfirm the correct position of the stent relative to target lesion via radiopaque balloon markers.

Attach the inflation device (only partially filled with contrast media) to a stopcock (three way minimum) and apply negative pressure to purge the balloon of air.

Turn the stopcock to the off position to the catheter and purge the inflation device of air. Close the side port of the stopcock.

Under fluoroscopic visualization, inflate the balloon to deploy the stent but do not exceed the labelled rated burst pressure. Optimal expansion require the stent to be in full contact with the artery wall, with the stent internal diameter matching the size of the reference vessel diameter. Stent wall contact should be verified through routine angiography or intravascular ultrasound.

Deflate the balloon by pulling a vacuume with the inflation device. Make sure the balloon is fully deflated before any attempted movement of the catheter.

Confirm adequate stent expansion by angiographic injection through the guiding catheter.

10.3.5 Further dilatation of the stented segments

All effort should be taken to ensure that the stent is not under dilated.

If the deployed stent size is still inadequate with respect to vessel diameter,

Or if full contact with the vessel wall is not achieved, a larger balloon may be used to expand the stent farther. If the initial angiographic result are suboptimal, the stent may be further expanded using a low profile, high pressure, and non-compliant balloon catheter .if this is required, the stented segment should be recrossed carefully with a prolapsed guidewire to avoid dislodging the stent.

Note: post dilatation is recommended for stent length >40 mm

Caution: do not dilate the stent beyond the following limits.

Nominal stent diameter	dilatation limits
2.00 mm-2.25 mm	3.00 mm
2.50 mm-3.00 mm	4.00 mm
3.50 mm-4.50 mm	5.00 mm

10.3.6 Removal procedure

Ensure that the balloon is fully deflated

While maintaining guide wire position and negative pressure on the inflation device, withdraw the stent delivery system.

Note: should unusual resistance be felt at any time during either lesion access or removal of the stent delivery system before stent implantation the entire system should be removed. See stent system removal precaution section 6.4 for specific stent delivery system removal instruction.

11. Antiplatelet regimen:

Physician should use the information from the current drug eluting stent literature, guidelines and specific needs of individual patients to determine the specific antiplatelet/and anticoagulation regime to be used for their patients in general practice.

Current guidelines for DAPT discontinuation should be followed and are recommended. The decision to interrupt or discontinue DAPT is the responsibility of the treating physician, taking into consideration the individual patients condition.in case an unanticipated interruption or discontinuation of DAPT is required any time after 1 month following DES coronary stent implantation, data from published literature show low stent thrombosis rates and no obsrd increased risk for stent thrombosis.

It is very important that the patients is compliant with the post procedure antiplatelet recommendation, premature discontinuation of prescribed antiplatelet medication could result in a higher risk of thrombosis, myocardial infraction or death. Prior to PCI, if a surgical or dental procedure is anticipated that require early discontinuation of antiplatelet therapy, the intervention list and patient should carefully consider whether a drug eluting stent and its associated recommended antiplatelet therapy is the appropriate PCI choice. Following PCI should a surgical or dental procedure be recommended, risk and benefits of the procedure should be weighed against the possible risk associated with premature discontinuation of antiplatelet therapy.

Patients who required premature discontinuation of antiplatelet therapy secondary to significant bleeding, should be monitored carefully for cardiac events and, once stabilized, have their antiplatelet therapy restarted as soon as possible per the discretion of their treating physician.

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	Cautions		Manufactured by
	See Instructions for use		Non Pyrogenic
REF	Product reference/Art. No.	5°C 25°C	Storage Condition
	For single use only		Keep Away from Sunlight
	Do not Resterilize		Keep Dry
	Do not use if packaging or product has been damaged or contaminated	MD	Medical Device
LOT	Batch Number		Stent length
	Date of Manufacturing		Stent diameter
	Use by / Expiry date		
STERILE EO	Sterilised by Ethylene Oxide		
	Single sterile barrier system with protective packaging inside		

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Rev: 00-24/12