The confidence to choose. The power to personalise. Change the fight against cancer.
**WHY CRYOABLATION?**

Cryoablation offers clinicians a number of unique advantages:

- Treatment zone visibility and control
- Reduced pain due to analgesic effect of ice
- Ability to treat multiple tumours in one session
- Ability to use ice in proximity to critical structures/vasculature
- Ability to use multiple probes to “sculpt” the shape of iceball and ablate larger tumours

Boston Scientific’s comprehensive cryoablation portfolio includes the narrowest gauge needles available today, allowing precise iceball shaping while minimising bleeding.

This guide has been developed to help you select the correct type and number of needles for each case.

---

**MENU**

**INDICATIONS**

- ICE CREATION
- RENAL CRYOABLATION
- MSK* CRYOABLATION
  *Musculoskeletal
- LUNG CRYOABLATION
- PROSTATE CRYOTHERAPY

**PRODUCT PORTFOLIO**

- CRYOABLATION SYSTEMS
- CRYOABLATION NEEDLES

The confidence to choose. The power to personalise. Change the fight against cancer.
Iceball dimensions presented in this guide are provided to assist clinicians in selecting the cryoablation needle(s) and placing the needles to appropriately ablate the target area.

- In clinical use, patient anatomy, tissue and tumour properties affect needle placement.
- The following aspects of the individual case affect iceball size:
  - Tissue and tumour characteristics
  - Surrounding vasculature
  - Treatment duration
- Intraoperative imaging is important to monitor iceball formation throughout the procedure and is key to a successful cryoablation.
- Isotherms represented in this guide were conducted in a laboratory setting in 37°C temperature-controlled gel. Isotherm measurements were made following two 10-minute freeze cycles separated by a 5-minute passive thaw on each needle type and size.

To optimise appropriate margins, needles should be placed to create lethal ice beyond the perimeter of the target tissue (5-10mm, depending on tissue type).

**Extend ice 5-10mm beyond tumour edge**

Needle tips extend 5-10mm beyond tumour edge
Place needles no further than 1cm from the tumour’s edge.
Oncologic outcomes of image-guided renal cryoablation for RCC are competitive with those of partial nephrectomy and are associated with a low complication rate.

Breen DJ et al. 2018

The median hospital stay of 1 day (range 0-8 days) was also notable... This compares favourably with a median PN stay of 4 days.9

Breen DJ et al. 2018

**RATIONALE AND ADVANTAGES**

- Comparable outcomes to resection/LPN with lower complication rate and shorter hospital stay1
- Over 15 years of published data2
- EuRECA Registry comprising over 800 patients (on-going)3
- Improved outcomes versus RFA2,4,5
- Suitable for use in traditionally ‘unablatable’ tumour locations:
  - Into the collecting system6,7
  - Near critical structures1
  - Effective in T1a and T1b tumours1,8

**TYPICAL PATIENT PRESENTATION**

- Stage 1 T1a tumours10-12
- T1b tumours (by advanced users)13
- Single lesion

- Useful where nephron preservation is imperative
  - e.g. solitary kidney, poor renal function, or genetic predisposition to multiple renal tumours)14,15
- Useful for central tumours
  - due to cryoablation’s collagen-preserving properties (limiting pelvicalyceal damage) and ability to retract tumours peripherally prior to ablation16,17
- Patients less suitable for surgery, elderly or comorbid patients10-12
- Patients with a single kidney (offers advantages in this scenario over other techniques)14
CRYOABLATION OF
RENAL TUMOURS

TECHNICAL CONSIDERATIONS

FREEZE-THAW PROTOCOL

- 10 min Freeze
- 7 min Passive Thaw
- 1 min Active Thaw
- 10 min Freeze

Typical freeze-thaw protocol for renal cryoablation as used by David Breen, Alex King et al, Southampton University Hospital, UK

PROCEDURAL CONSIDERATIONS

- Renal cryoablation may be performed using general anaesthesia or conscious sedation
- 90° needle handles are typically used
- Adjacent structures can be protected to avoid impact of freezing with:
  - Use of Multi-point Thermal Sensors (MTS)
  - Organ displacement:
    - Hydrodissection using saline and contrast
    - Dissection using CO₂
    - Balloons/gels, etc

CO₂ dissection to displace adjacent organs prior to renal ablation

90° needle placement

Images courtesy of University Hospital of Strasbourg, Strasbourg, France
CRYOABLATION OF
RENAL TUMOURS

NEEDLE SELECTION

TUMOUR SIZE

<2cm

2-3cm

3-4cm

>4cm

NEEDLE TYPE & QUANTITY

ICESPHERE™ 1.5 CX
x2 NEEDLES

ICEROD™ 1.5 CX
x3 NEEDLES

ICEROD™ 1.5 CX
x4 NEEDLES

ICEFORCE™ 2.1 CX
x3 NEEDLES
CRYOABLATION OF RENAL TUMOURS

ICESPHERE™ 1.5 CX

x2 NEEDLES

Actual Size ±5mm

-40°C
-20°C
0°C

0°C 46mm x 39mm
-20°C 36mm x 29mm
-40°C 26mm x 19mm

ICESPHERE™ 1.5 CX

Shaft Length: 17.5cm
Shaft Diameter: 1.5mm/17G

±3mm width ±4mm length

-40°C
-20°C
0°C

0°C 31mm x 36mm
-20°C 22mm x 28mm
-40°C 13mm x 23mm

Millimeters

Millimeters
ICEROD™ 1.5 CX

3 NEEDLES

Actual Size ±5mm

-40°C 36mm x 53mm
-20°C 26mm x 45mm
-40°C 16mm x 39mm

Shaft Length: 17.5cm
Shaft Diameter: 1.5mm/17G

±3mm width ±4mm length

0°C 59mm x 53mm
-20°C 49mm x 43mm
-40°C 39mm x 33mm
CRYOABLATION OF RENAL TUMOURS

ICEROD™ 1.5 CX

x4 NEEDLES

Actual Size ±5mm

-0°C: 60mm x 61mm
-20°C: 51mm x 51mm
-40°C: 40mm x 42mm

Shaft Length: 17.5cm
Shaft Diameter: 1.5mm/17G

±3mm width ±4mm length

-0°C: 36mm x 53mm
-20°C: 26mm x 45mm
-40°C: 16mm x 39mm
CRYOABLATION OF RENAL TUMOURS

**ICEFORCE™ 2.1 CX**

**x3 NEEDLES**

- Actual Size ±5mm
- 0°C: 64mm x 67mm
- -20°C: 54mm x 56mm
- -40°C: 44mm x 47mm

**ICEFORCE™ 2.1 CX**

- Shaft Length: 17.5cm
- Shaft Diameter: 2.1mm/14G
- ±3mm width
- ±4mm length
- 0°C: 42mm x 57mm
- -20°C: 32mm x 49mm
- -40°C: 23mm x 42mm
Cryoablation of 7cm Renal Tumour after Previous Contralateral Nephrectomy

Overview of renal cryoablation, including key clinical data

Cryoaablation of Exophytic Right Renal Tumour

Cryoablation of 7cm Renal Tumour after Previous Contralateral Nephrectomy

Cryoablation of Bilateral Renal Tumours

Cryoablation of 2.3cm RCC Following Previous Contralateral Partial Nephrectomy

Now, more than ever, renal percutaneous cryoablation is the treatment of choice for RCC

Explore the benefits of renal cryoablation from the perspective of different stake-holders

Click on any item to view or download a copy
Bone tumour cryoablation is a safe procedure with a very low rate of major complications.
Auloge P et al. 2019. University Hospital of Strasbourg, France

**RATIONALE AND ADVANTAGES**

Studies show that cryoablation of bone and soft tissue tumours:

- Improves quality of life and functional status\(^{19-21}\)
- Offers lower morbidity and faster recovery than surgery\(^{20}\)
- Reduces the use of pain medication, including opioids, and associated side effects\(^{20,21}\)
- Is a repeatable therapy that can be combined with stabilisation, fixation and reconstruction techniques\(^{20}\)
- Allows monitoring and modifications during procedure based on motor-evoked neural response\(^{22}\)
- In bone metastases, offers a palliative impact that is faster than radiation\(^{18,20}\)

**TYPICAL PATIENT PRESENTATION**

- Metastatic bone tumours: <8cm\(^{23}\)
  - Soft tissue tumours: No upper limit\(^{24}\)
- Single or multiple lesions

- No oven-effect. Ice propagates better in the bone
- Can be used under local anaesthesia
  - Ability to control response of nerves by interacting with the patient
- Safety and efficacy of the treatment can be improved by combining treatment with motor-evoked potentials
- Can be combined with cementoplasty

- Patients with non-operable lesions, or mutilating surgery (bones, vertebrae, soft-tissues)
- Patients who do not tolerate general anaesthesia

**TECHNICAL CONSIDERATIONS**
TECHNICAL CONSIDERATIONS

FREEZE THAW PROTOCOL

- **Freeze**: 10 min
- **Passive Thaw**: 9 min
- **Active Thaw**: 1 min
- **Freeze**: 10 min
- **Active Thaw**: Remove Needles

Typical freeze-thaw protocol for metastatic bone tumours as used by Doctor Julien Garnon, University Hospital of Strasbourg, Strasbourg, France

PROCEDURAL CONSIDERATIONS

- Cryoablation needles are compatible with use of any trocar
- Navigation during insertion of needles can be facilitated with the use of more rigid, 14G needles
- The number of needles is not limited, allowing for treatment of large lesions
- Cryoablation does not interfere with metallic prostheses
- Cryoablation of MSK tumours is compatible with cementoplasty
- For neurological safety, motor-evoked potentials can be monitored during cryoablation
CRYOABLATION OF MSK TUMOURS

NEEDLE SELECTION

TUMOUR SIZE

<2cm

2-3cm

3-4cm

>4cm

NEEDLE TYPE & QUANTITY

ICESPHERE™ 1.5 CX
x2 NEEDLES

ICEROD™ 1.5 CX
x3 NEEDLES

ICEFORCE™ 2.1 CX
x3 NEEDLES

ICEFORCE™ 2.1 CX
x3 NEEDLES
ICESPHERE™ 1.5 CX

x2 NEEDLES

Actual Size ±5mm

- 0°C 46mm x 39mm
- -20°C 36mm x 29mm
- -40°C 26mm x 19mm

ICESPHERE™ 1.5 CX

Shaft Length: 17.5cm
Shaft Diameter: 1.5mm/17G

±3mm width ±4mm length

- 0°C 31mm x 36mm
- -20°C 22mm x 28mm
- -40°C 13mm x 23mm
CRYOABLATION OF MSK TUMOURS

**ICEROD™ 1.5 CX**

- **x3 NEEDLES**
- Actual Size ±5mm

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</table>

**Shaft Length:** 17.5cm  
**Shaft Diameter:** 1.5mm/17G

±3mm width  ±4mm length
CRYOABLATION OF MSK TUMOURS

ICEFORCE™ 2.1 CX

x3 NEEDLES

Actual Size ±5mm

0°C  64mm x 67mm
-20°C  54mm x 56mm
-40°C  44mm x 47mm

ICEFORCE™ 2.1 CX

Shaft Length: 17.5cm
Shaft Diameter: 2.1mm/14G

±3mm width  ±4mm length

0°C  42mm x 57mm
-20°C  32mm x 49mm
-40°C  23mm x 42mm
Cryoanalgesia of 6.5cm Desmoid Tumour

Cryoanalgesia of Post-Amputation Neuroma

Cryoanalgesia of Scar Tissue Adhesion to Spinal Sympathetic Chain Following Radiation Therapy

Cryoablation of Large Rib Metastatic Bone Lesion

Cryoablation of Right Iliac Metastasis for Pain Palliation & Local Tumour Control

Cryoablation of Large Rib Metastasis Near the Brachial Plexus

Cryoablation of 6.5cm Desmoid Tumour

Cryoablation of Symptomatic Recurrent Neck Desmoid Tumour

Percutaneous Cryoablation of Breast Cancer Bone Metastasis

Overview of cryoablation for bone tumours, including key clinical data
**CRYOABLATION OF LUNG TUMOURS**

Cryoablation uniquely offers visibility of the ablation margin with cross-sectional imaging... which defines the ablation zone and allows for complete tumour ablation while avoiding adjacent normal tissues, and can be used along the pleura without procedural pain.

de Beare T et al. 2015

**RATIONALE AND ADVANTAGES**

Unique radiographic visibility of the ablation zone
- Provides real-time control over extent of ablation
- Facilitates intraprocedural adjustment to optimise treatment and to minimise damage near critical structures
- Delivers correlative image-pathologic ablation zone

Minimal pain associated with the procedure
- Ice is a natural analgesic
- Can be performed under conscious sedation

Versatile treatment
- Preserves respiratory function
- Offers repeatability for recurrence or new malignancies
- Places minimal limitations on future therapies

**TYPICAL PATIENT PRESENTATION**

- Single or multiple lesions (avoid bilateral treatment in the same session)
- Preferred treatment for tumours abutting the pleura
- Suitable for tumours located near the mediastinum or the peripheries
- No extrapulmonary metastases
- Able to tolerate procedure

**TECHNICAL CONSIDERATIONS**

*A patient fit enough for a needle biopsy of the thorax is generally considered fit enough to undergo ablation*
CRYOABLATION OF LUNG TUMOURS

TECHNICAL CONSIDERATIONS

FREEZE-THAW PROTOCOL

Studies suggest a triple freeze-thaw protocol of 3, 7, 10 minutes may be more efficient, more effective and reduce haemorrhage versus a double-freeze protocol.²⁸,³⁵ It is important to check the position of the needles before each freeze cycle as they may move during the thawing process.³⁶

NEEDLE TECHNIQUES

CHOPSTICK/BOOK-END
Two needles encase the tumour to stabilise it, avoiding the need to penetrate the tumour.

STICK-FREEZE
Stick-freeze (short initial freeze activation at reduced power) of a single needle inserted into the tumour ‘sticks’ the two together.

IATROGENIC (INDUCED) PNEUMOTHORAX
Gas (room air or CO₂) is introduced into the pleural space to isolate the tumour from critical structures.

RESOURCES

NEEDLE SELECTION

Typical freeze-thaw protocol as used by Prof Thierry de Baere, Gustave Roussy Cancer Institute, Villejuif, France.
CRYOABLATION OF LUNG TUMOURS

NEEDLE SELECTION

**TUMOUR SIZE**

- **<2cm**
- **2-3cm**
- **3-4cm**
- **>4cm**

**NEEDLE TYPE & QUANTITY**

- **ICESPHERE™ 1.5 CX** 
  
  - x2 NEEDLES

- **ICEROD™ 1.5 CX**
  
  - x3 NEEDLES

- **ICEROD™ 1.5 CX**
  
  - x4 NEEDLES

- **ICEFORCE™ 2.1 CX**
  
  - x3 NEEDLES
CRYOABLATION OF LUNG TUMOURS

**ICEROD™ 1.5 CX**

*x3 NEEDLES*

- Actual Size ±5mm

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<th>Diameter</th>
<th>Length</th>
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**ICEROD™ 1.5 CX**

- Shaft Length: 17.5cm
- Shaft Diameter: 1.5mm/17G

<table>
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<th>Temperature</th>
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<td>26mm x 45mm</td>
</tr>
<tr>
<td>-40°C</td>
<td>±5mm</td>
<td>16mm x 39mm</td>
</tr>
</tbody>
</table>
ICEROD™ 1.5 CX

x4 NEEDLES

Actual Size ±5mm

-0°C 60mm x 61mm
-20°C 51mm x 51mm
-40°C 40mm x 42mm

ICEROD™ 1.5 CX
Shaft Length: 17.5cm
Shaft Diameter: 1.5mm/17G

±3mm width ±4mm length

0°C 36mm x 53mm
-20°C 26mm x 45mm
-40°C 16mm x 39mm
CRYOABLATION OF LUNG TUMOURS

**ICEFORCE™ 2.1 CX**

*3 NEEDLES*

Actual Size ±5mm

- **0°C**: 64mm x 67mm
- **-20°C**: 54mm x 56mm
- **-40°C**: 44mm x 47mm

**ICEFORCE™ 2.1 CX**

Shaft Length: 17.5cm
Shaft Diameter: 2.1mm/14G

±3mm width ±4mm length

- **0°C**: 42mm x 57mm
- **-20°C**: 32mm x 49mm
- **-40°C**: 23mm x 42mm
CASE STUDIES

PROF THIERRY DE BAERE
GUSTAVE ROUSSY CANCER INSTITUTE, VILLEJUIF, FRANCE

- Cryoablation of mCRC in the Lung Located Adjacent to the Aorta
- Cryoablation of 32mm Soft Tissue Sarcoma Lung Metastasis Abutting the Pleura
- Cryoablation of Small Pulmonary Metastasis

DR CLAUDIO PUSCEDDU
INTERVENTIONAL RADIOLOGY ONCOLOGY DEPARTMENT, AOBROTZU, ITALY

- Cryoablation of 28mm NSCLC Abutting the Pericardium and the Mediastinum Anterior Space
- Cryoablation of 20mm NSCLC Close to the Pleura, Ground-Glass Opacity Surrounding the Tumour

GENERAL INFORMATION
Overview of lung cryoablation, including key clinical data

Click on any item to view or download a copy
**CRYOABLATION OF PROSTATE TUMOURS**

Prostate focal therapy offers men the opportunity to achieve oncological control while preserving sexual and urinary function.

_Tay KJ et al. 2017_

---

**RATIONALE AND ADVANTAGES**

- High disease control rates
- Low incontinence rates
- Preservation of erectile function
- Repeatable
- Fast recovery times
- Low morbidity
- Excellent outcomes in anterior lesions
- Life expectancy of >10 years

---

_The ease of accessibility via transperineal needles and established oncologic efficacy make cryotherapy more desirable [than other focal therapies] for cancers in anterior locations._

_Sivaraman A et al. 2016_

---

**TYPICAL PATIENT PRESENTATION**

- Clinical stage T1c–T2a
- For focal treatments: 50-60% of gland should be preserved

- Prostate-specific antigen <15ng/ml
- Gleason score ≤3 + 4
- Alternative to active surveillance

- Anterior lesions
- Selected lesions in the apex

- Low to intermediate-risk patients

---

TECHNICAL CONSIDERATIONS
CRYOABLATION OF PROSTATE TUMOURS

TECHNICAL CONSIDERATIONS

FREEZE-THAW PROTOCOL

Each 10-minute freeze cycle must include ≥3 minutes at <-40°C at the most lateral border of the tumour margin

PROCEDURAL CONSIDERATIONS

- Prostate cryotherapy is performed under ultrasound
- MRI/TRUS fusion-guided targeted biopsies should be performed
- Excellent option for anterior and selected apical tumours

FOCAL PROSTATE CRYOTHERAPY IN ANTERIOR LESIONS

- Excellent preservation of functional outcomes:41,58
  - 100% continence preservation
  - >80% preservation of erectile function
  - 0% rectal injury
- Established oncologic efficacy

VS

LIMITATIONS OF HIFU FOR ANTERIOR LESIONS

- Ultrasound waves dissipate over longer focal distances
- Intervening prostatic tissue undergoes oedema, pushing target tissue further away
- No evidence that treatment of apical tumours is incontinence free

HIFU: High-Intensity Focal Ultrasound
CRYOABLATION OF PROSTATE TUMOURS

NEEDLE SELECTION

PROSTATE LENGTH (LONGITUDINAL PLANE)

<2.5cm
ICESPHERE™ 1.5 CX

>2.5cm
ICEROD™ 1.5 CX

NEEDLE TYPE

NEEDLE SELECTION

TUMOUR SIZE (TRANSVERSAL PLANE)

<2cm
ICESPHERE™ 1.5 CX
X2

2-3cm
ICESPHERE™ 1.5 CX
X3

3-4cm
ICESPHERE™ 1.5 CX
X4

NEEDLE QUANTITY

NEEDLE SELECTION
CRYOABLATION OF PROSTATE TUMOURS

ICESPHERE™ 1.5 CX

x2 NEEDLES

Actual Size ±5mm

-40°C 0°C -20°C

Shaft Length: 17.5cm
Shaft Diameter: 1.5mm/17G

±3mm width ±4mm length

0°C 46mm x 39mm
-20°C 36mm x 29mm
-40°C 26mm x 19mm

0°C 31mm x 36mm
-20°C 22mm x 28mm
-40°C 13mm x 23mm

Each 10-minute freeze cycle must include ≥3 minutes at < -40°C at the most lateral border of the tumour margin
CRYOABLATION OF PROSTATE TUMOURS

ICEROD™ 1.5 CX
x2 NEEDLES

Actual Size ±5mm

-40°C 0°C -20°C

0°C 50mm x 44mm
-20°C 39mm x 34mm
-40°C 29mm x 24mm

ICEROD™ 1.5 CX
Shaft Length: 17.5cm
Shaft Diameter: 1.5mm/17G

±3mm width ±4mm length

-40°C -20°C 0°C

0°C 36mm x 53mm
-20°C 26mm x 45mm
-40°C 16mm x 39mm

Each 10-minute freeze cycle must include ≥3 minutes at ≤-40°C at the most lateral border of the tumour margin.
Each 10-minute freeze cycle must include ≥3 minutes at <-40 °C at the most lateral border of the tumour margin.
CRYOABLATION OF PROSTATE TUMOURS

**ICEROD™ 1.5 CX**

**x3 NEEDLES**

- Actual Size ±5mm
  - 0°C: 59mm x 53mm
  - -20°C: 49mm x 43mm
  - -40°C: 39mm x 33mm

**Shaft Length:** 17.5cm
**Shaft Diameter:** 1.5mm/17G

- ±3mm width
- ±4mm length

**ICEROD™ 1.5 CX**

- -40°C: 39mm x 33mm
- -20°C: 26mm x 45mm
- 0°C: 36mm x 53mm

Each 10-minute freeze cycle must include ≥3 minutes at <-40°C at the most lateral border of the tumour margin.
CRYOABLATION OF PROSTATE TUMOURS

ICESPHERE™ 1.5 CX
x4 NEEDLES

Actual Size ±5mm

0°C 55mm x 58mm
-20°C 45mm x 47mm
-40°C 36mm x 39mm

ICESPHERE™ 1.5 CX
Shaft Length: 17.5cm
Shaft Diameter: 1.5mm/17G

±3mm width ±4mm length

-40°C 31mm x 36mm
-20°C 22mm x 28mm
-40°C 13mm x 23mm

Each 10-minute freeze cycle must include ≥3 minutes at ≤-40°C at the most lateral border of the tumour margin
Each 10-minute freeze cycle must include ≥3 minutes at <=-40°C at the most lateral border of the tumour margin.
CRYOABLATION OF PROSTATE TUMOURS: RESOURCES

GENERAL INFORMATION
Overview of cryoablation for prostate cancer, including key clinical data

CASE STUDIES

TAIMUR T SHAH
CHARING CROSS HOSPITAL, IMPERIAL COLLEGE HEALTHCARE NHS TRUST AND IMPERIAL COLLEGE LONDON, UK

- Focal Cryotherapy of a Localised Intermediate-Risk Prostate Cancer in a 61-Year-Old Man
- Re-Treatment Focal Prostate Cryotherapy of Anterior Lesion
- Salvage Focal Prostate Cryotherapy of 1.2cc Anterior Lesion

Click on any item to view or download a copy
The ICEfx Cryoablation System is designed for interventional oncologists who want to offer their patients on-demand access to state-of-the-art ablation technology. ICEfx offers predictable, powerful performance with exceptional ease of technical operation.

- Manoeuvrable cart and console
- Intuitive touch-screen interface and set-up wizard
- Accommodates up to:
  - 8 needles on 4 channels
  - 2 Multi-Point Sensors
- CX needle technology
- Helium-free active thawing
- Cycle sequence programming
The Visual-ICE™ Cryoablation System provides powerful freezing performance and accommodates up to 20 needles for ultimate procedural flexibility.

- Intuitive interface with large touch-screen monitor, set-up wizard and icons to guide procedural actions.
- Accommodates up to:
  - 20 needles on 10 channels
  - 4 Multi-Point Sensors
- Enlarged, positionable timers allow procedural status monitoring from a distance
- Helium-enabled or helium-free thaw options available
- Software functions can be customised based on procedure and need for advanced functions
Boston Scientific offers a wide range of precisely engineered cryoablation needles that offer procedural versatility, maximum control and minimal bleeding. Our 1.5 needle range incorporates technology that allows impressive iceball volumes to be created on the finest gauge shaft available today.

- Straight or angled 90° configurations in a choice of lengths and diameters
- Three-facet sharp needle tip for easy percutaneous insertion and control
- Accurate shaft distance markers to optimise needle placement
- Lightweight handles to minimise torque on inserted needles, with colour-coding for ease of identification
- Unibody closed-tube design which minimises risk of gas leakage*

CX Cryoablation Needles feature:
- An integral heater to offer:
  - Cautery function for track ablation
  - Helium-free thaw options (i-Thaw™ and FastThaw™)
- Non-stick coating on distal shaft for ease of needle manoeuvre and removal
## Needle Types and Compatibility

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*For information on CX needle features, see page 39.
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