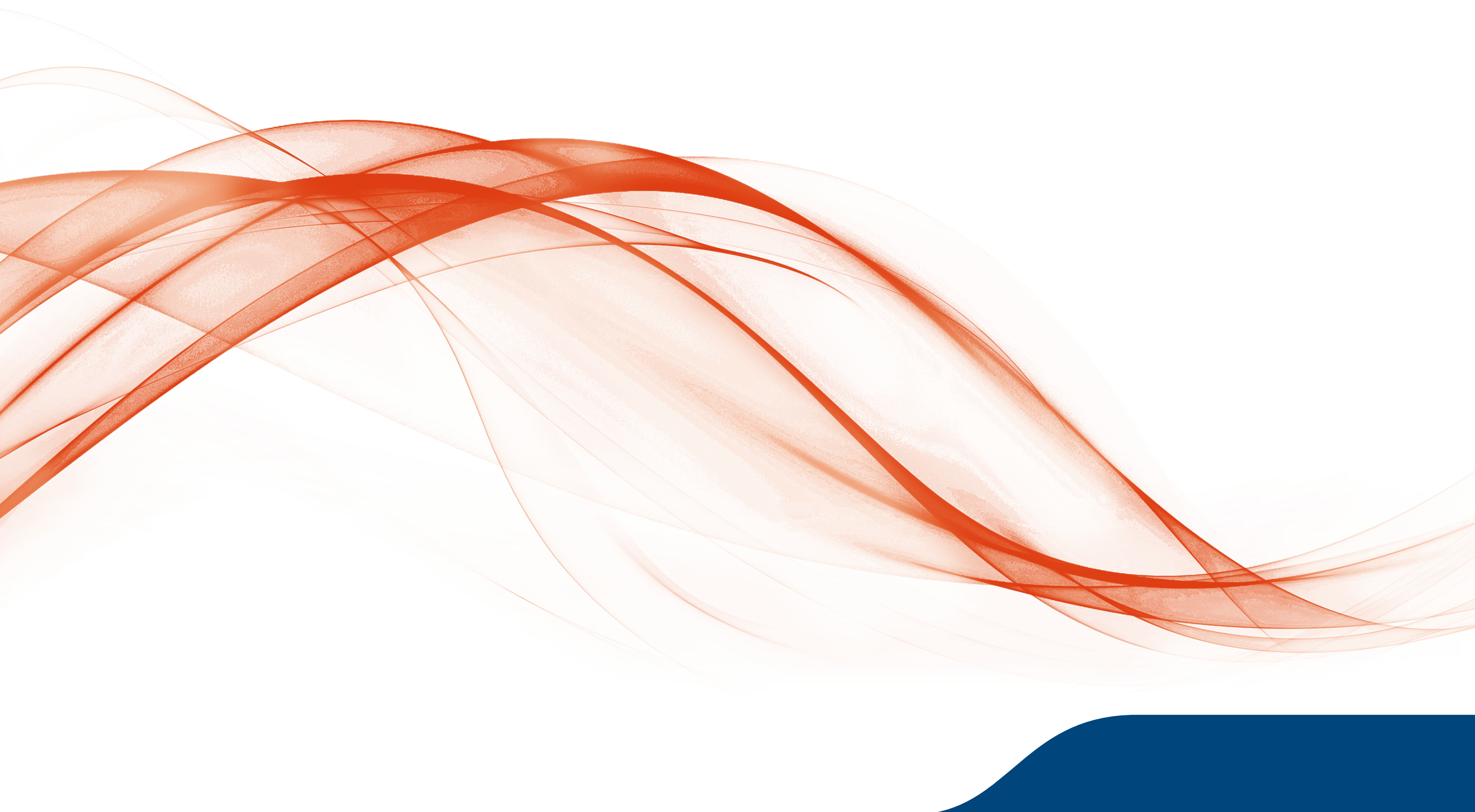


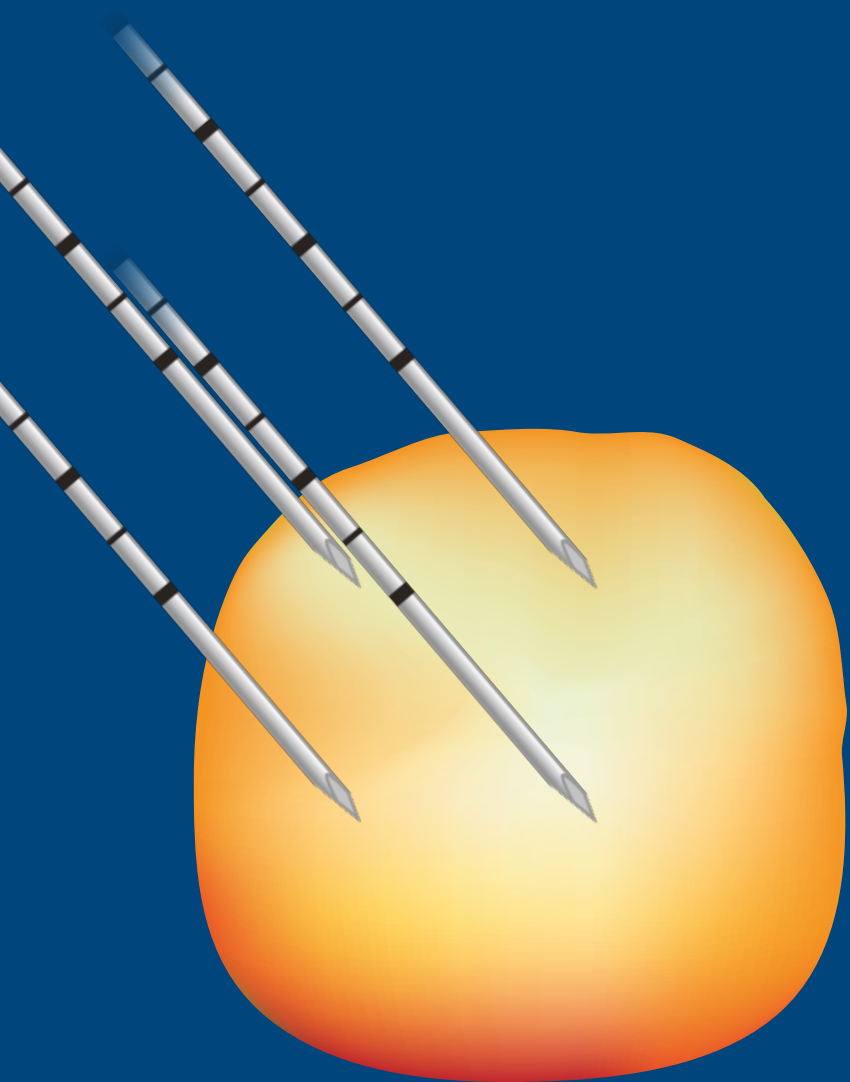


# **CRYOABLATION**

## Treatment Planning



## CREATING ICE



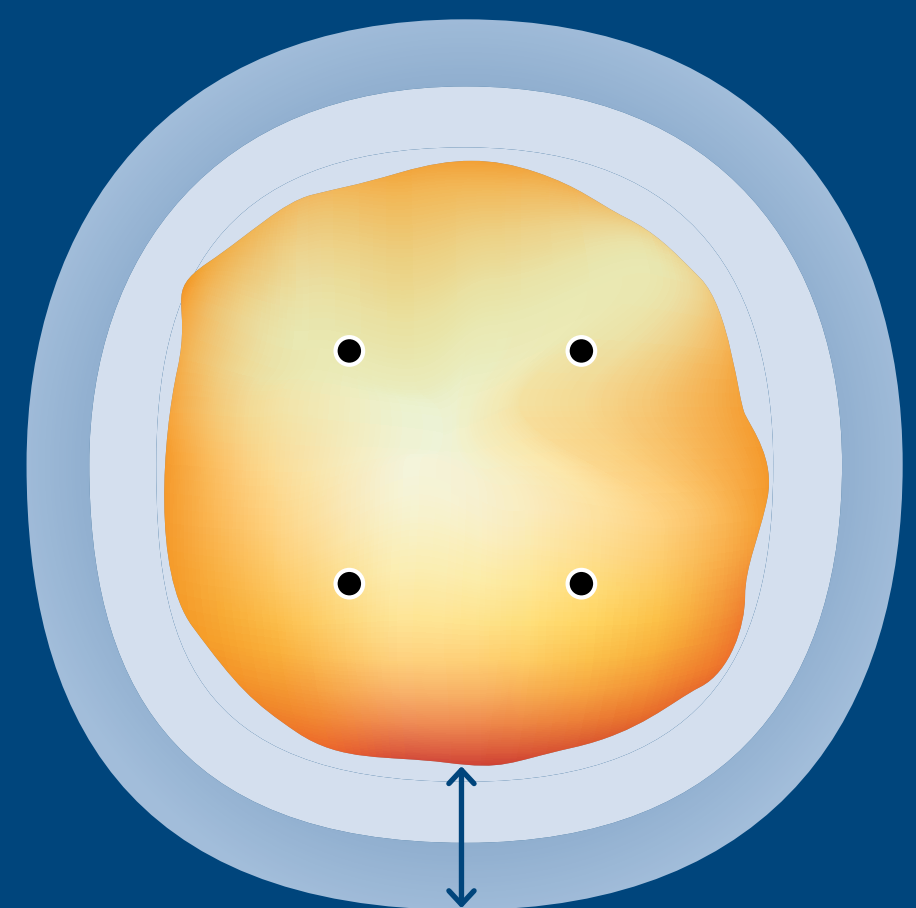
Iceball dimensions presented in this guide are provided to assist clinicians in selecting the cryoablation needle(s) and needle placement to appropriately ablate the target area. To optimize appropriate margins, needles should be placed to create lethal ice beyond the perimeter of the target tissue 5-10mm depending on tissue type.

To optimize tumor coverage and provide appropriate margins, use of multiple needles is recommended. Multiple needles placed in an adjacent configuration will typically create a large, coalesced iceball.

In clinical use, patient anatomy, tissue and tumor properties affect needle placement. Needle type, number of needles placed, tissue and tumor characteristics, surrounding vasculature and treatment duration affect iceball size.

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 either 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.

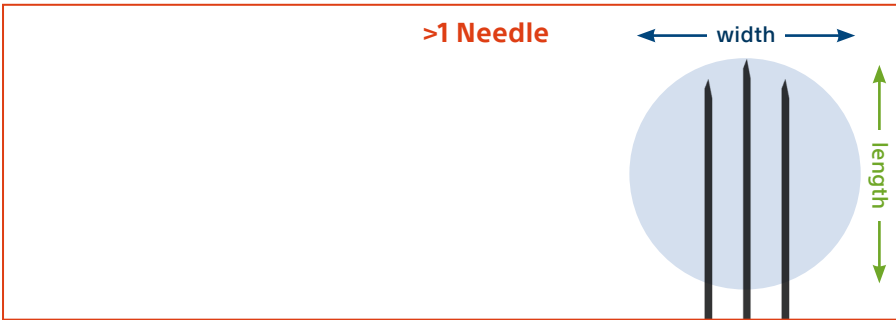
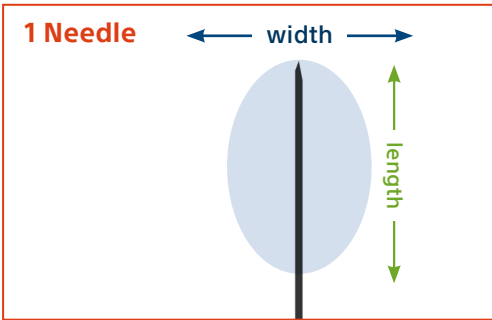


**Extend ice  
5-10mm beyond  
tumor edge**



# CRYOABLATION ISOTHERM DATA

## 37°C



Side view (width ±3mm x length ±4mm)  
Single-needle treatment

Top view/ Projection in 2D (width ±4mm and length ±4mm)  
Multiple-needle treatment

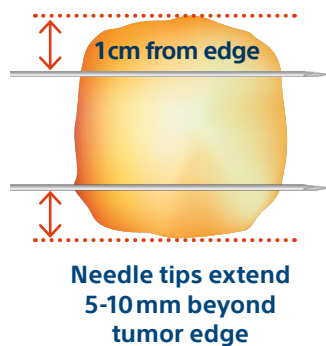
### NEEDLE PLANNING GUIDE

- Choose needle type and number of needles to surround the tumor with lethal ice based on application, tumor location and tumor size

**NOTE:**  
0°C is the visible edge of the iceball and is not lethal

- Multiple needles placed in an adjacent configuration will typically create a large, coalesced iceball

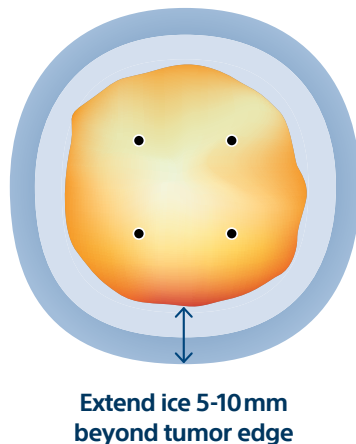
**NOTE:**  
Needles spaced too far apart risk areas of non-lethal ice



- Place needles no further than 1cm from the tumor's edge
- Extend the needle tip beyond the distal edge of the tumor to ensure appropriate coverage with lethal ice

**NOTE:**  
-20°C ice extends less than 5mm beyond the needle tip

- Use imaging to confirm iceball completely engulfs the tumor with a 5-10mm margin depending on tissue type



### IceSeed™ 1.5 Family

Optimal spacing: 1.0 cm

IceSeed™ 1.5 Straight Needle: FPRPR3201  
IceSeed™ 1.5 90° Needle: FPRPR3202

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

### IceSphere™ 1.5 Family

Optimal spacing: 1.0–1.5 cm

IceSphere™ 1.5 Straight Needle: FPRPR3558  
IceSphere™ 1.5 90° S Needle: FPRPR3560  
IceSphere™ 1.5 90° Needle: FPRPR3561  
IceSphere™ 1.5 CX 90° Needle\*: FPRPR3573

\*Track Ablation:  
Radial width 2.1–2.5mm; Length 14mm

Shaft Length: 510cm / 17.5cm  
Shaft Diameter: 1.5mm / 17G

### IceRod™ 1.5 CX Family

Optimal spacing: 1.0–1.5 cm

IceRod™ 1.5 PLUS 90° Needle: FPRPR3508  
IceRod™ 1.5 iThaw Needle: FPRPR4009  
IceRod™ 1.5 90° CX Needle\*: FPRPR3533

\*Track Ablation:  
Radial width 2.3mm; Length 30mm

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

### IcePearl™ 2.1 CX Family

Optimal spacing: 1.0–1.5 cm

IcePearl™ 2.1 CX Straight Needle\*: FPRPR3603  
IcePearl™ 2.1 CX 90° Needle\*: FPRPR3601  
IcePearl™ 2.1 CX L 90° Needle\*: FPRPR3617

\*Track Ablation:  
Radial width 2.1mm; Length 13mm

Shaft Length: 17.5cm / L23cm  
Shaft Diameter: 2.1mm / 14G

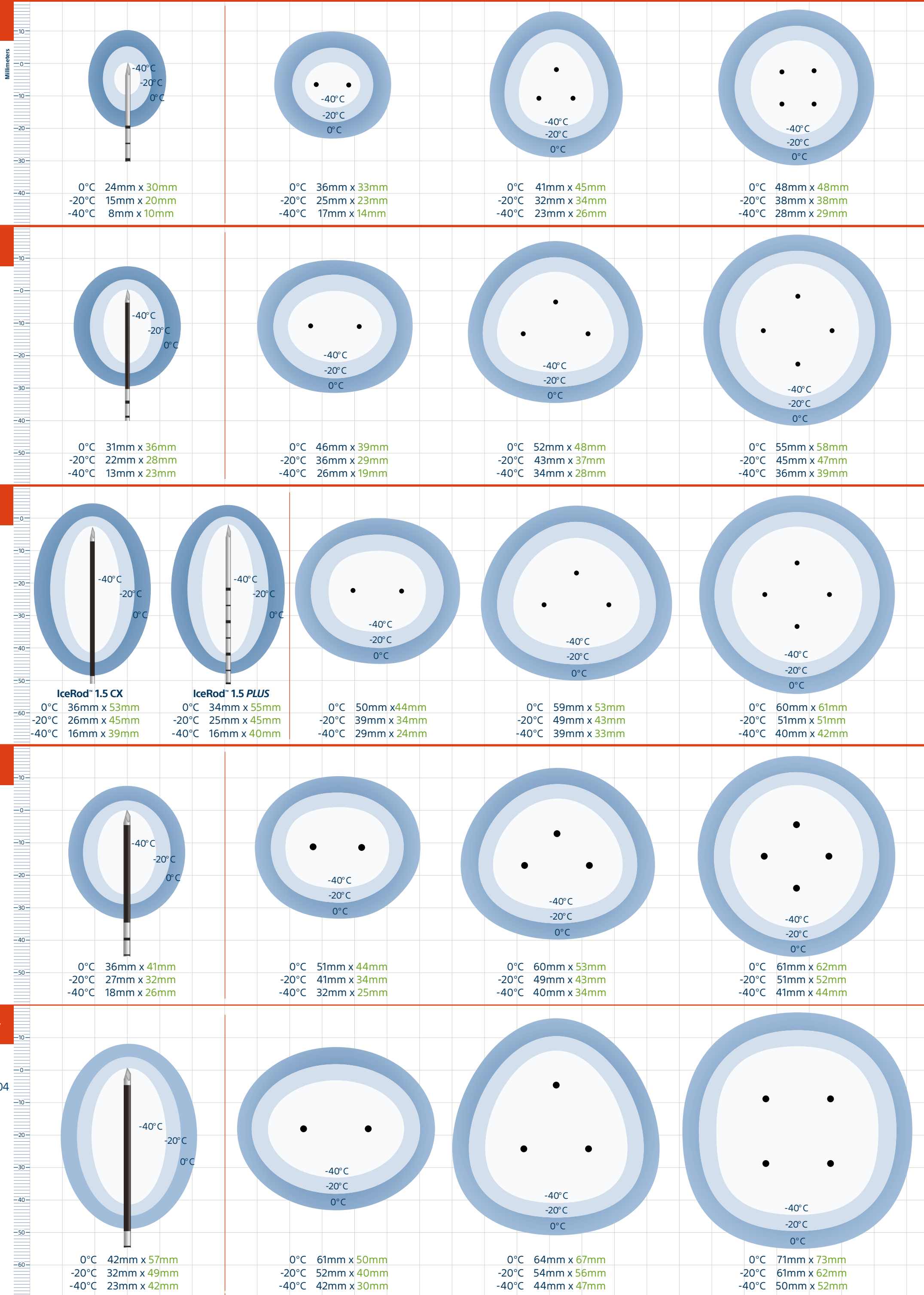
### IceFORCE™ 2.1 CX Family

Optimal spacing: 1.5–2.0 cm

IceFORCE™ 2.1 CX Straight Needle\*: FPRPR3604  
IceFORCE™ 2.1 CX 90° Needle\*: FPRPR3602  
IceFORCE™ 2.1 CX L 90° Needle\*: FPRPR3618

\*Track Ablation:  
Radial width 2.5mm; Length 29mm

Shaft Length: 17.5cm / L23cm  
Shaft Diameter: 2.1mm / 14G



# ORDERING INFORMATION

## CRYOABLATION PORTFOLIO OF NEEDLES

The following chart lists 90° and straight needles.  
Please contact your representative or customer service for  
MRI compatible needles, needle kits and cryoablation systems.

Cryoablation Needles	REF	Shaft Length / Gauge	Track Ablation Radial Width / Length
IceSeed™ 1.5 90°	FPRPR3202	17.5cm / 17G	
IceSeed™ 1.5 Straight	FPRPR3201	17.5cm / 17G	
IceSphere™ 1.5 90°	FPRPR3560	17.5cm / 17G	
IceSphere™ 1.5 S 90°	FPRPR3561	10cm / 17G	
IceSphere™ 1.5 CX 90°	FPRPR3573	17.5cm / 17G	1.7mm / 14mm
IceSphere™ 1.5 Straight	FPRPR3558	17.5cm / 17G	
IceRod™ 1.5 PLUS 90°	FPRPR3508	17.5cm / 17G	
IceRod™ 1.5 CX 90°	FPRPR3533	17.5cm / 17G	2.3mm / 30mm
IceRod™ 1.5 i-Thaw® Straight	FPRPR4009	17.5cm / 17G	
IcePearl™ 2.1 CX 90°	FPRPR3601	17.5cm / 14G	2.1mm / 13mm
IcePearl™ 2.1 CX L 90°	FPRPR3617	23cm / 14G	2.1mm / 13mm
IcePearl™ 2.1 CX Straight	FPRPR3603	17.5cm / 14G	2.1mm / 13mm
IceFORCE™ 2.1 CX 90°	FPRPR3602	17.5cm / 14G	2.5mm / 29mm
IceFORCE™ 2.1 CX L 90°	FPRPR3618	23cm / 14G	2.5mm / 29mm
IceFORCE™ 2.1 CX Straight	FPRPR3604	17.5cm / 14G	2.5mm / 29mm





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