The science of contrast media

GE HealthCare

VISIPAQUE™ (IODIXANOL) INJECTION

IMPORTANT SAFETY INFORMATION ABOUT VISIPAQUE

WARNING: NOT FOR INTRATHECAL USE

Inadvertent intrathecal administration may cause death, convulsions/seizures, cerebral hemorrhage, coma, paralysis, arachnoiditis, acute renal failure, cardiac arrest, rhabdomyolysis, hyperthermia, and brain edema.

Please see additional Important Safety Information, including Boxed Warning, here, and full Prescribing Information, here.

PRODUCT INDICATIONS AND USE — VISIPAQUE (IODIXANOL)

Intra-Arterial Procedures
Adult and pediatric patients 12 years of age and older: Intra-arterial digital subtraction angiography (270 and 320 mg iodine/mL); angiocardiography (left ventriculography and selective coronary arteriography), peripheral arteriography, visceral arteriography, and cerebral arteriography (320 mg iodine/mL). **Pediatric patients less than 12 years of age:** Angiocardiography, cerebral arteriography, and visceral arteriography (320 mg iodine/mL)

Intravenous Procedures
Adult and pediatric patients 12 years of age and older: Computed tomography (CT) imaging of the head and body (270 and 320 mg iodine/mL); excretory urography (270 and 320 mg iodine/mL); peripheral venography (270 mg iodine/mL); coronary computed tomography angiography (CCTA) to assist in the diagnostic evaluation of patients with suspected coronary artery disease (320 mg iodine/mL). **Pediatric patients less than 12 years of age:** CT imaging of the head and body (270 mg iodine/mL); excretory urography (270 mg iodine/mL)

IMPORTANT SAFETY INFORMATION ABOUT VISIPAQUE

WARNING: NOT FOR INTRATHECAL USE

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CONTRAINDICATION:
Visipaque injection is contraindicated for intrathecal use.

WARNINGS AND PRECAUTIONS:

- **Hypersensitivity Reactions:** Life-threatening or fatal reactions can occur. Most severe reactions develop shortly after the start of the injection, but reactions can occur up to hours later. Always have emergency equipment and trained personnel available.
- **Contrast Induced Acute Kidney Injury:** Acute injury including renal failure can occur. Minimize dose and maintain adequate hydration to minimize risk.
- **Cardiovascular Reactions:** Life-threatening or fatal cardiovascular reactions, including hypotension, shock, and cardiac arrest have occurred with the use of Visipaque. Most deaths occur during injection or five to ten minutes later, with cardiovascular disease as the main aggravating factor. Use the lowest necessary dose of Visipaque in patients with congestive heart failure.
- **Thromboembolic Events:** Serious, rarely fatal, thromboembolic events causing myocardial infarction and stroke can occur during angiocardiography procedures with both ionic and nonionic contrast agents.
- **Extravasation and Injection Site Reactions:** Extravasation of Visipaque injection may cause tissue necrosis and/or compartment syndrome, particularly in patients with severe arterial or venous disease. Ensure intravascular placement of catheters prior to injection.
- **Thyroid Storm in Patients With Hyperthyroidism:** Thyroid storm has occurred after the intravascular use of iodinated contrast agents in patients with hyperthyroidism, or with an autonomously functioning thyroid nodule.
- **Thyroid Dysfunction in Pediatric Patients 0 to 3 Years of Age:** Thyroid dysfunction characterized by hypothyroidism or transient thyroid suppression has been reported after both single exposure and multiple exposures to iodinated contrast media. Among patients 0 to 3 years of age exposed to iodinated contrast media, thyroid dysfunction has been reported in 1% to 15% depending on the age of the patient and the dose of the iodinated contrast agent. Monitor these patients for thyroid function abnormalities and treat as clinically needed.
- **Hypertensive Crisis in Patients With Pheochromocytoma:** Hypertensive crisis has occurred after the use of iodinated contrast agents in patients with pheochromocytoma. Inject the minimum amount of contrast necessary, assess the blood pressure throughout the procedure, and have measures for treatment of a hypertensive crisis readily available.
- **Sickle Cell Crisis in Patients With Sickle Cell Disease:** Iodinated contrast agents when administered intravascularly may promote sickling in individuals who are homozygous for sickle cell disease.
- **Severe Cutaneous Adverse Reactions:** Severe cutaneous adverse reactions (SCARs) may develop from one hour to several weeks after intravascular contrast agent administration. These reactions include Stevens-Johnson syndrome and toxic epidermal necrolysis (SJS/TEN), acute generalized exanthematous pustulosis (AGEP), and drug reaction with eosinophilia and systemic symptoms (DRESS). Avoid administering Visipaque to patients with a history of a SCAR to Visipaque.
- **Pediatric Use:** Pediatric patients at high risk of adverse reactions during and after administration of contrast agents include those with asthma, hypersensitivity to other medication and/or allergens, cyanotic and acyanotic heart disease, chronic heart failure, or a serum creatinine >1.5 mg/dL. Patients with immature renal function or dehydration may be at increased risk due to prolonged elimination of iodinated contrast agents.
- **Geriatric Use:** While no overall differences in safety or effectiveness were observed in patients >65 years, greater sensitivity regarding some older individuals cannot be ruled out.

ADVERSE REACTIONS:

- Serious, life-threatening, and fatal reactions, mostly of cardiovascular origin, have been associated with the administration of iodine-containing contrast agents, including Visipaque Injection.
- Most common adverse reactions (incidence greater than 0.5%) in adult patients after Visipaque injection: Discomfort, warmth, pain; Cardiovascular: angina. Gastrointestinal: diarrhea, nausea, vomiting. Nervous System: agitation, anxiety, insomnia, nervousness, dizziness, headache, migraine, unusual skin sensations, sensory disturbance, fainting, sensation of spinning. Skin: itchy rash, severe itching, hives. Special Senses: Smell, taste, and vision alteration. Pediatric patients experienced similar adverse reactions.

Please see the full Prescribing Information, including Boxed Warning, here, for additional important safety information.

To report SUSPECTED ADVERSE REACTIONS, contact GE HealthCare at 800 654 0118 (option 2, then option 1), or the FDA at 800 FDA 1088 or www.fda.gov/medwatch.

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VISIPAQUE™
(IODIXANOL) INJECTION

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The science of contrast media

Evolution of contrast media

Impact of osmolality

Utility of Visipaque

VISIPAQUE™
(IODIXANOL) INJECTION

Evolution of contrast media

Trends in tolerability | Changes in osmolality | Electrolyte enrichment

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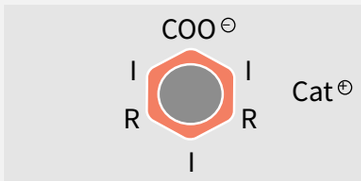
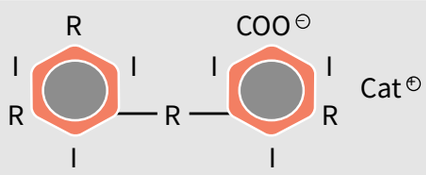
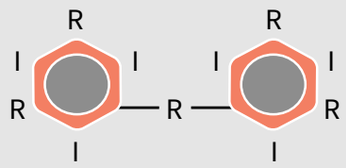
VISIPAQUE™
(IODIXANOL) INJECTION

The driving force of CM evolution has been tolerability[1,2]

While the basic form of x-ray CM is an iodinated benzene ring, agents differ in the structure of their side chains[3,4]

			Molecule	*Osmolality (mOsm/kg H_2O)*	*Iodine atoms/ particle in solution*
Ionic	**1950s** HOCM	**Monomer** diatrizoate iothalamate metrizoate		1270-2300	3/2
	1980s LOCM	**Dimer** ioxaglate		600	6/2
Non-ionic	**1980s** LOCM	**Monomer** iohexol iopamidol ioversol		521-915	3/1
	1990s IOCM	**Dimer** iodixanol		290	6/1

R (from “radical”) represent different side chains

Adapted from Aspelin P et al. 2006 + Jakobsen JA 2007.

Developments include:[2]

- removing the ionic carboxyl group and its counter ion
- masking the hydrophobic core by long hydrophilic side chains
- linking two masked benzene rings together

Please see Important Safety Information about Visipaque, including Boxed Warning, on page 2 and Full Prescribing Information given to you before this meeting.

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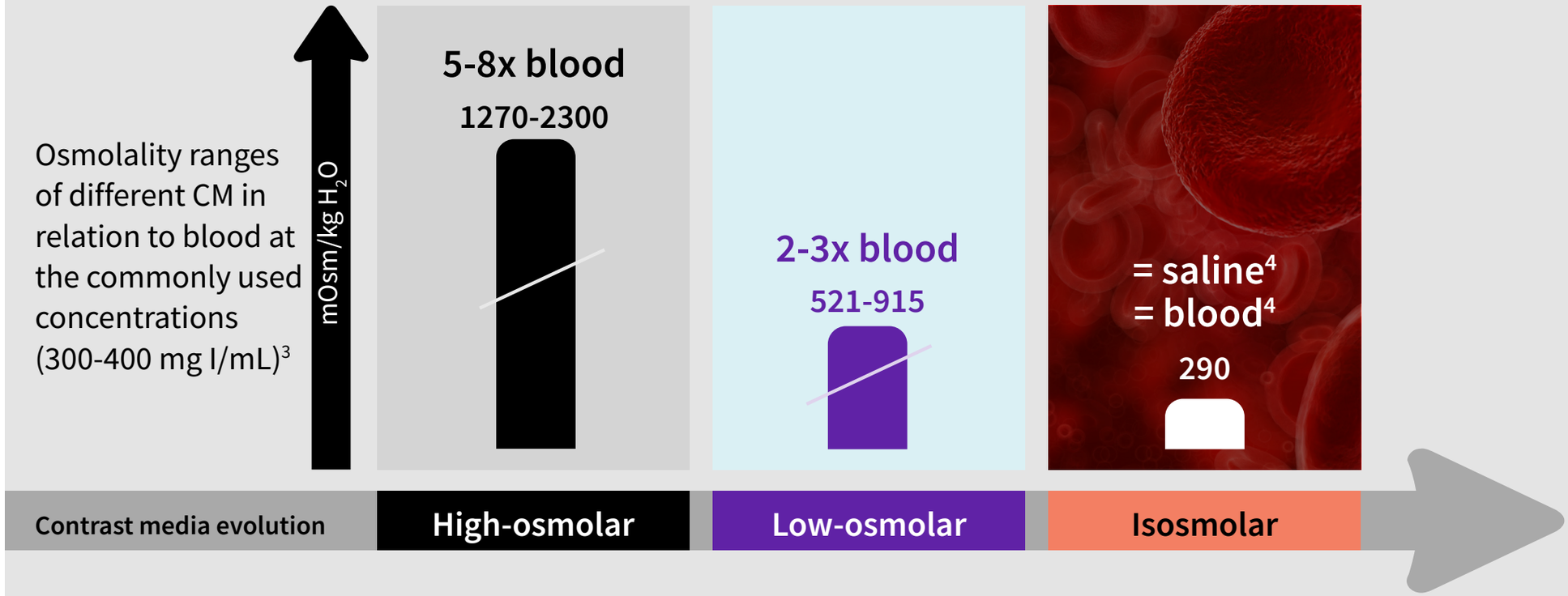
CM, contrast medium/media
HOCM, high osmolar CM
IOCM, isosmolar CM
LOCM, low-osmolar CM

1. Almén T. *Acta Radiol.* 1995; 36(Suppl.399):2–18.
2. Christiansen C. *Toxicology.* 2005;209(2):185–187.
3. Jakobsen JA. *Eur J Radiol.* 2007;62(Suppl.):s14–25.
4. Aspelin P. *Eur Radiol Suppl.* 2006;16(Suppl.4):D22–27.

VISIPAQUE™
(IODIXANOL) INJECTION

Visipaque is the only CM for intravascular use that is isosmolar to blood at all concentrations

Because much of their toxicity is related to osmolality, a major focus in the evolution of CM has been the reduction of osmolality[1,2]



IMPORTANT SAFETY INFORMATION ABOUT VISIPAQUE

WARNINGS AND PRECAUTIONS:

- **Extravasation and Injection Site Reactions:** Extravasation of Visipaque injection may cause tissue necrosis and/or compartment syndrome, particularly in patients with severe arterial or venous disease. Ensure intravascular placement of catheters prior to injection.
- **Thyroid Storm in Patients With Hyperthyroidism:** Thyroid storm has occurred after the intravascular use of iodinated contrast agents in patients with hyperthyroidism, or with an autonomously functioning thyroid nodule.

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GE HealthCare

CM, contrast medium/media

1. Jakobsen JA. *Eur J Radiol.* 2007;62(Suppl.):s14–25.
2. Pedersen HK. *Acta Radiol.* Suppl 1996;37(Suppl.405):1–31.
3. Davidson C et al. *Am J Cardiol.* 2006;98(Suppl.):42–58k.
4. Moritz ML. *Ped Nephrol* 2019;34(7):1299-1300.

VISIPAQUE™
(IODIXANOL) INJECTION

Iodixanol is made isosmolar and isotonic with the enrichment of key electrolytes

Aqueous solutions of iodixanol actually have a lower osmolality than blood[1]

The osmolality gap is filled by the addition of sodium and calcium[2]

NaCl | **$CaCl^2$**

The ratio between sodium and calcium in Visipaque is the same as the physiological ratio in blood

Concentration (mg I/mL)	Osmolality (mOsmol/kg water)	Viscosity (cP)	
		20°C	37°C
 320	290	26.6	11.8
 270	290	12.7	6.3

20˚C: Room temperature
37˚C: Warmed to body temperature

Adapted from Visipaque [prescribing information] 2020[3]

1. Eivindvik K, Sjøgren CE. *Acta Radiol.* 1995; 36(Suppl.399):32–38.
2. Almén T. *Acta Radiol*. 1995; 36(Suppl.399):2–18.
3. Visipaque [prescribing information]. Marlborough, MA: GE HealthCare; 2022.

IMPORTANT SAFETY INFORMATION

WARNINGS AND PRECAUTIONS:

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ADVERSE REACTIONS:

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VISIPAQUE™ (IODIXANOL) INJECTION

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Evolution of contrast media

Key message

Reduction in osmolality has been a key focus of several trends toward more tolerable contrast media[1,2]

1. Jakobsen JA. *Eur J Radiol*. 2007;62(Suppl.):s14–25.
2. Pedersen HK. *Acta Radiol*. Suppl 1996;37(Suppl.405):1–31.

VISIPAQUE™
(IODIXANOL) INJECTION

Impact of osmolality

Fluid shifts | Myocardial effects | Microcirculatory changes

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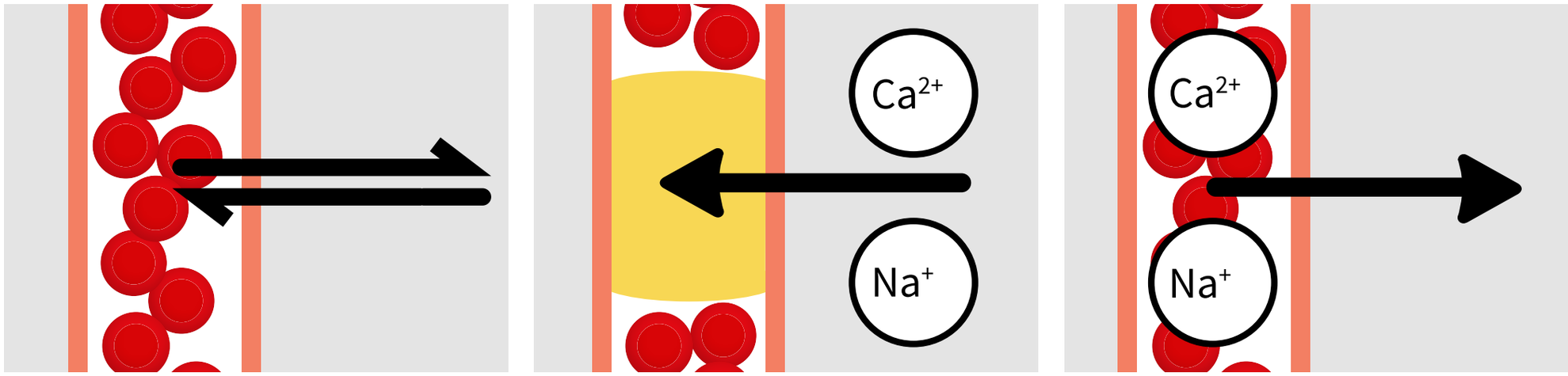
VISIPAQUE™
(IODIXANOL) INJECTION

How electrolyte composition might have important electrophysiological and hemodynamic effects

In vivo *studies suggest concentrations of key electrolytes in CM are generally lower than those present in blood*[1,2]



In the normal state, ionic equilibrium exists between blood in the artery and the surrounding interstitial fluid

When CM circulates, ionic flux occurs across interstitial space to re-equilibrate with CM in the artery

As blood washes through, ionic shift reverses to re-establish the original steady state equilibrium

Adapted from Pedersen HK. 1996. + Jynge P. 1996.

Many CM effects on the myocardium may be due to the imbalance between intracellular and extracellular electrolytes[1]

Low intracellular Ca^{2+} levels can diminish the force of ventricular contraction during systole, while low intracellular Na^{+} levels can interfere with normal depolarization[3]

IMPORTANT SAFETY INFORMATION

ADVERSE REACTIONS:

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GE HealthCare

CM, contrast medium/media

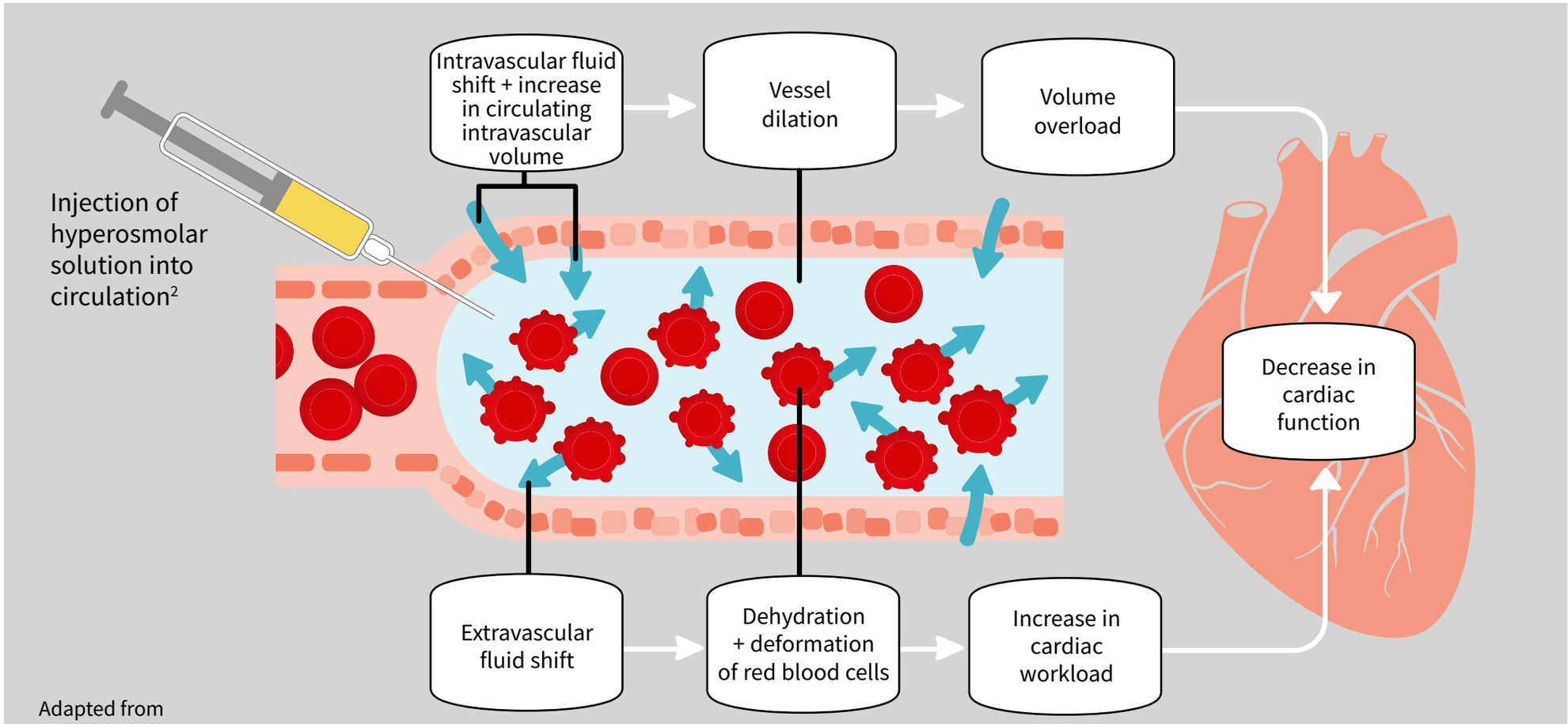
1. Pedersen HK. *Acta Radiol Suppl.* 1996;37(Suppl.405):1–31.
2. Jynge P. *Eur Radiol.* 1996; 6(Suppl.2):S8–S12.
3. Chai C-M et al. *Acad Radiol.* 2004;11(5):583–593.

VISIPAQUE™ (IODIXANOL) INJECTION

How osmolality might influence cardiac function

The osmolality of a CM is an important predictor of its cardiac effects;

the greater the osmolality, the more likely and pronounced the change *in vitro*[1]



Adapted from
Swanson DP et al. 1990.

IMPORTANT SAFETY INFORMATION

ADVERSE REACTIONS:

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GE HealthCare

CM, contrast medium/media

1. Spencer CM, Goa KL. *Drugs.* 1996; 52(6): 899–927.
2. Swanson DP et al. In: *Pharmaceuticals in Medical Imaging*. Collier MacMillan Publishers, London 1990.

VISIPAQUE™
(IODIXANOL) INJECTION

Visipaque may help to minimize impact on red blood cells[1,2]

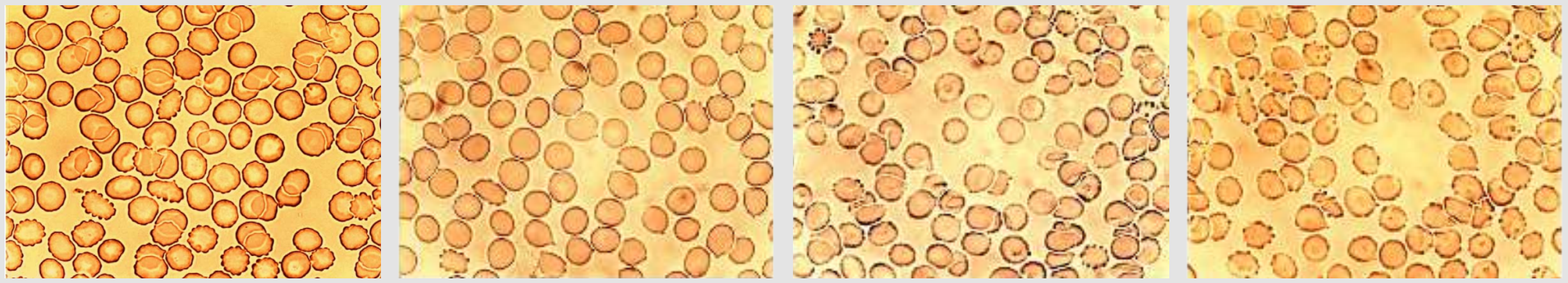
Fluid shift from red blood cells can drastically change cell morphology[3]

– this may affect capillary perfusion with a substantial rise in flow resistance[4,5]

– microcirculation disturbances may adversely affect tissue oxygen supply[4,5]

Percentage of normal erythrocytes following 5-minute incubation in vitro in 40% solutions[1]

56%	73%	21%	12%
Saline	Visipaque 320	Iohexol 350	Iopromide 370



Adapted from Jung F et al. 2008.
Images courtesy of Professor Jung, Centre for Biomaterial Development, GKSS Research Centre, Teltow, Germany

IMPORTANT SAFETY INFORMATION

WARNINGS AND PRECAUTIONS:

- **Hypertensive Crisis in Patients With Pheochromocytoma:** Hypertensive crisis has occurred after the use of iodinated contrast agents in patients with pheochromocytoma. Inject the minimum amount of contrast necessary, assess the blood pressure throughout the procedure, and have measures for treatment of a hypertensive crisis readily available.
- **Sickle Cell Crisis in Patients With Sickle Cell Disease:** Iodinated contrast agents when administered intravascularly may promote sickling in individuals who are homozygous for sickle cell disease.

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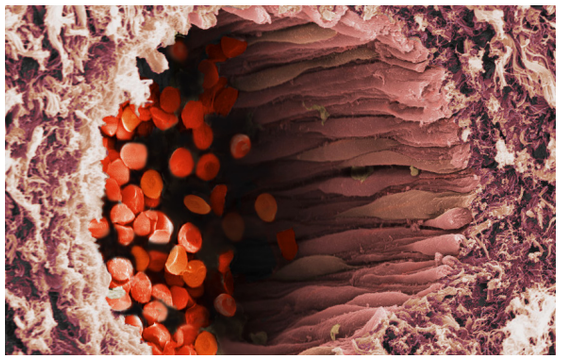
1. Jung F et al. *Clin Hemorheol Microcirc.* 2008;38(1):1–11.
2. Kerl JM et al. *Acta Radiol.* 2008; 49(3):337–343.
3. Gerk U et al. *Clin Hemorheol Microcirc.* 2014;58(1):171–174.
4. Mrowietz C et al. *Clin Hemorheol Microcirc.* 2012;50(1-2):35–47.
5. Jung F et al. *Clin Hemorheol Microcirc.* 2003;29(1):53–61.

VISIPAQUE™
(IODIXANOL) INJECTION

In vitro data suggest that Visipaque may help to minimize impact on endothelial cells[1-3]

The impact of CM on capillary endothelial cells may also affect the microcirculation:[1,2]



Buckling of endothelial cells
Reducing luminal area of the capillary
Potential to impede capillary blood flow

In addition, damage to endothelial cells may result in deterioration of their function[2]

Endothelial damage	In vitro *results*
Distortion of cells	Change in endothelial cell height compared to control after 1.5 minutes incubation:[1] iopromide: +95%, *P*=0.0065 | iodixanol: +12%, *P*=NS
Cell detachment	Number of dissolved cell contacts per 220 cells 5 minutes after exposure:[2] iomeprol: 41.7 | iodixanol: 18.4 | *P*=0.0018
Exposure of subendothelial matrix	Number of denuded subendothelial areas per 220 cells 5 minutes after exposure:[2] iomeprol: 3.07 | iodixanol: 2.36 | *P*=0.0353

IMPORTANT SAFETY INFORMATION

WARNINGS AND PRECAUTIONS:

- **Contrast Induced Acute Kidney Injury:** Acute injury including renal failure can occur. Minimize dose and maintain adequate hydration to minimize risk.
- **Severe Cutaneous Adverse Reactions:** Severe cutaneous adverse reactions (SCARs) may develop from one hour to several weeks after intravascular contrast agent administration. These reactions include Stevens-Johnson syndrome and toxic epidermal necrolysis (SJS/TEN), acute generalized exanthematous pustulosis (AGEP), and drug reaction with eosinophilia and systemic symptoms (DRESS). Avoid administering Visipaque to patients with a history of a SCAR to Visipaque.
- **Hypertensive Crisis in Patients With Pheochromocytoma:** Hypertensive crisis has occurred after the use of iodinated contrast agents in patients with pheochromocytoma. Inject the minimum amount of contrast necessary, assess the blood pressure throughout the procedure, and have measures for treatment of a hypertensive crisis readily available.

Please see additional Important Safety Information about Visipaque, including Boxed Warning, on page 2 and Full Prescribing Information given to you before this meeting.

GE HealthCare

CM, contrast medium/media
NS, not significant

1. Franke RP et al. *Microvasc Res.* 2008;76(2):110–113.
2. Franke RP et al. C*lin Hemorheol Microcirc.* 2011;48(1):41–56.
3. Barstad RM et al. *Acta Radiol.* 1996;37(6):954–961.

VISIPAQUE™
(IODIXANOL) INJECTION

Impact of osmolality

Key message

Both *in vivo* and *in vitro* data suggest an important connection between CM osmolality and cardiac function

CM, contrast medium/media

VISIPAQUE™
(IODIXANOL) INJECTION

Utility of Visipaque

Indicated in adult and pediatric populations

For both IA procedures

And IV procedures

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IA, intra-arterial
IV, intravenous

VISIPAQUE™
(IODIXANOL) INJECTION

Indications

Intra-arterial (IA) administration[1]

Visipaque is indicated for:

- Intra-arterial digital subtraction angiography for adult and pediatric patients 12 years of age and older with the 270 and 320 mg of iodine/mL doses
- Angiocardiography (left ventriculography and selective coronary arteriography), peripheral arteriography, visceral arteriography, and cerebral arteriography for adult and pediatric patients 12 years of age and older with the 320 mg iodine/mL dose
- Angiocardiography, cerebral arteriography, and visceral arteriography for pediatric patients less than 12 years of age with the 320 mg iodine/mL dose

Adult indications
(12 years and older)

Pediatric indications

IMPORTANT SAFETY INFORMATION

WARNING: NOT FOR INTRATHECAL USE

Inadvertent intrathecal administration may cause death, convulsions/seizures, cerebral hemorrhage, coma, paralysis, arachnoiditis, acute renal failure, cardiac arrest, rhabdomyolysis, hyperthermia, and brain edema.

CONTRAINDICATION:
Visipaque injection is contraindicated for intrathecal use.

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1. Visipaque [prescribing information]. Marlborough, MA: GE HealthCare; 2022.

VISIPAQUE™
(IODIXANOL) INJECTION

Indications

Intra-arterial (IA) administration[1]

Adult indications (12 years and older)	ARTERIOGRAPHY 270 mg l/mL	ARTERIOGRAPHY 320 mg l/mL	IA-DSA 270 mg l/mL	IA-DSA 320 mg l/mL	Maximum dose
Carotid arteries	n/a	10-14 mL	n/a	5-8 mL	Usually not to exceed 175 mL
Vertebral arteries	n/a	10-12 mL	n/a	5-8 mL	
Right coronary artery	n/a	3-8 mL	n/a	n/a	Usually not to exceed 200 mL
Left coronary artery	n/a	3-10 mL	n/a	n/a	
Left ventricle	n/a	20-45 mL	n/a	n/a	
Renal arteries	n/a	8-18 mL	10-25 mL	n/a	Usually not to exceed 250 mL
Aortography	n/a	30-70 mL	20-50 mL	10-50 mL	
Major branches of aorta	n/a	10-70 mL	5-30 mL	2-10 mL	
Peripheral arteriography	n/a	15-30 mL	n/a	3-15 mL	
Aortofemoral runoff	n/a	20-90 mL	n/a	6-15 mL	

IMPORTANT SAFETY INFORMATION

WARNINGS AND PRECAUTIONS:

- **Geriatric Use:** While no overall differences in safety or effectiveness were observed in patients >65 years, greater sensitivity regarding some older individuals cannot be ruled out.
- **Contrast Induced Acute Kidney Injury:** Acute injury including renal failure can occur. Minimize dose and maintain adequate hydration to minimize risk.

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IA, intra-arterial
DSA, digital subtraction angiography

1. Visipaque [prescribing information]. Marlborough, MA: GE HealthCare; 2022.

VISIPAQUE™
(IODIXANOL) INJECTION

Indications

Intra-arterial (IA) administration[1]

Pediatric indications	ARTERIOGRAPHY 270 mg l/mL	ARTERIOGRAPHY 320 mg l/mL	IA-DSA 270 mg l/mL	IA-DSA 320 mg l/mL	Maximum dose
Cerebral arteriography	n/a	1-2 mL/kg	n/a	n/a	Not to exceed 4 mL/kg
Angiocardiography	n/a	1-2 mL/kg	n/a	n/a	
Visceral arteriography	n/a	1-2 mL/kg	n/a	n/a	

IA, intra-arterial
DSA, digital subtraction angiography

1. Visipaque [prescribing information]. Marlborough, MA: GE HealthCare; 2022.

IMPORTANT SAFETY INFORMATION

WARNINGS AND PRECAUTIONS:

- **Pediatric Use:** Pediatric patients at high risk of adverse reactions during and after administration of contrast agents include those with asthma, hypersensitivity to other medication and/or allergens, cyanotic and acyanotic heart disease, chronic heart failure, or a serum creatinine >1.5 mg/dL. Patients with immature renal function or dehydration may be at increased risk due to prolonged elimination of iodinated contrast agents.

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VISIPAQUE™ (IODIXANOL) INJECTION

Indications

Intravenous (IV) administration[1]

Visipaque is indicated for:

- CT imaging head and body, and excretory urography for adult and pediatric patients 12 years of age and older, with the 270 and 320 mg of iodine/mL doses
- Peripheral venography for adult and pediatric patients 12 years of age and older with the 270 mg of iodine/mL dose
- Coronary computed tomography angiography to assist diagnostic evaluation of patients with suspected coronary artery disease for adult and pediatric patients 12 years of age and older with the 320 mg iodine/mL dose
- CT imaging of the head and body and excretory urography for pediatric patients less than 12 years of age with the 270 mg iodine/mL dose

Adult indications
(12 years and older)

Pediatric indications

IMPORTANT SAFETY INFORMATION

WARNING: NOT FOR INTRATHECAL USE

Inadvertent intrathecal administration may cause death, convulsions/seizures, cerebral hemorrhage, coma, paralysis, arachnoiditis, acute renal failure, cardiac arrest, rhabdomyolysis, hyperthermia, and brain edema.

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CT, computed tomography

1. Visipaque [prescribing information]. Marlborough, MA: GE HealthCare; 2022.

VISIPAQUE™
(IODIXANOL) INJECTION

Indications

Intravenous (IV) administration[1]

Adult indications

	270 mg l/mL	320 mg l/mL	Maximum dose
Computed tomography imaging, head or body	75-150 mL 100-150 mL	75-150 mL 100-150 mL	150 mL
Excretory urography	1 mL/kg	1 mL/kg	100 mL
Peripheral venography	50-150 mL	n/a	250 mL
Coronary computed tomography angiography	n/a	50-150 mL (4-7 mL per second)	150 mL

For pediatric patients 12-17 years, the recommended dose is 1-2 mL/kg

IMPORTANT SAFETY INFORMATION

WARNINGS AND PRECAUTIONS:

- **Geriatric Use:** While no overall differences in safety or effectiveness were observed in patients >65 years, greater sensitivity regarding some older individuals cannot be ruled out.
- **Contrast Induced Acute Kidney Injury:** Acute injury including renal failure can occur. Minimize dose and maintain adequate hydration to minimize risk.

Please see additional Important Safety Information about Visipaque, including Boxed Warning, on page 2 and Full Prescribing Information given to you before this meeting.

GE HealthCare

1. Visipaque [prescribing information]. Marlborough, MA: GE HealthCare; 2022.

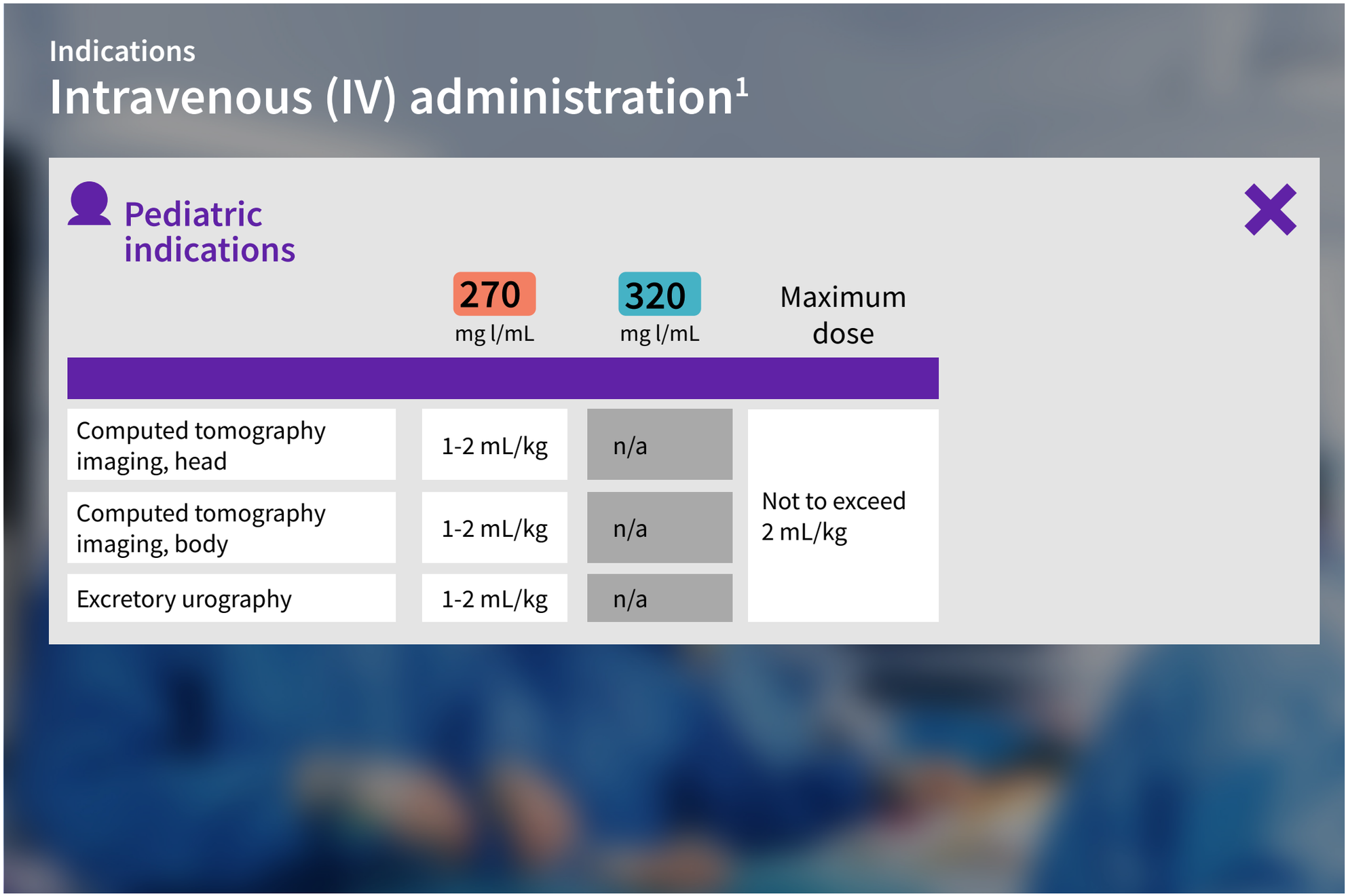
VISIPAQUE™
(IODIXANOL) INJECTION

Indications

Intravenous (IV) administration[1]

Pediatric indications

	270 mg l/mL	320 mg l/mL	Maximum dose
Computed tomography imaging, head	1-2 mL/kg	n/a	Not to exceed 2 mL/kg
Computed tomography imaging, body	1-2 mL/kg	n/a	
Excretory urography	1-2 mL/kg	n/a	



IMPORTANT SAFETY INFORMATION

WARNINGS AND PRECAUTIONS:

- **Pediatric Use:** Pediatric patients at high risk of adverse reactions during and after administration of contrast agents include those with asthma, hypersensitivity to other medication and/or allergens, cyanotic and acyanotic heart disease, chronic heart failure, or a serum creatinine >1.5 mg/dL. Patients with immature renal function or dehydration may be at increased risk due to prolonged elimination of iodinated contrast agents.

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GE HealthCare

1. Visipaque [prescribing information]. Marlborough, MA: GE HealthCare; 2022.

VISIPAQUE™
(IODIXANOL) INJECTION

Iodine guide

Iodine conversion guide[1]

Grams of iodine conversion

Concentration (mg I/mL)	50 mL	60 mL	70 mL	80 mL	90 mL	100 mL	110 mL	120 mL	130 mL	140 mL
270	13.5 g/L	16.2 g/L	18.9 g/L	21.6 g/L	24.3 g/L	27.0 g/L	29.7 g/L	32.4 g/L	35.1 g/L	37.8 g/L
320	16.0 g/L	19.2 g/L	22.4 g/L	25.6 g/L	28.8 g/L	32.0 g/L	35.2 g/L	38.4 g/L	41.6 g/L	44.8 g/L

Concentration (mg I/mL)	150 mL	160 mL	170 mL	180 mL	190 mL	200 mL	210 mL	220 mL	230 mL	240 mL	250 mL
270	40.5 g/L	43.2 g/L	45.9 g/L	48.6 g/L	51.3 g/L	54.0 g/L	56.7 g/L	59.4 g/L	62.1 g/L	64.8 g/L	67.5 g/L
320	48.0 g/L	51.2 g/L	54.4 g/L	57.6 g/L	60.8 g/L	64.0 g/L	67.2 g/L	70.4 g/L	73.6 g/L	76.8 g/L	80.0 g/L

For adults, the maximum recommended total dose of iodine is 80 grams. For the pediatric population, the maximum recommended total dose of iodine has not been established.

In patients less than 12 years of age, the maximum dose should not exceed 4 mL/kg for intra-arterial administrations and 2 mL/kg for intravenous administrations.

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1. Visipaque [prescribing information]. Marlborough, MA: GE HealthCare; 2022.

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VISIPAQUE™ (IODIXANOL) INJECTION

Prepared for **your patients**

Visipaque was designed

to minimize effects on red blood cells[1-3]

to be less irritating to vessel walls[1,4-6]

to have small effects on contractile force[1,7,8]

to minimize dysrhythmic potential[1,9]

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1. Almén T. *Acta Radiol.* 1995;36(Suppl.399):2–18.
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4. Franke RP et al. *Microvasc Res.* 2008;76(2):110–113.
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6. Barstad RM et al. *Acta Radiol.* 1996;37(6):954–961.
7. Christiansen C. *Toxicology.* 2005;209(2):185–187.
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IMPORTANT SAFETY INFORMATION

WARNINGS AND PRECAUTIONS:

- **Contrast Induced Acute Kidney Injury:** Acute injury including renal failure can occur. Minimize dose and maintain adequate hydration to minimize risk.
- **Cardiovascular Reactions:** Life-threatening or fatal cardiovascular reactions, including hypotension, shock, and cardiac arrest have occurred with the use of Visipaque. Most deaths occur during injection or five to ten minutes later, with cardiovascular disease as the main aggravating factor. Use the lowest necessary dose of Visipaque in patients with congestive heart failure.
- **Thromboembolic Events:** Serious, rarely fatal, thromboembolic events causing myocardial infarction and stroke can occur during angiocardiography procedures with both ionic and nonionic contrast agents.
- **Sickle Cell Crisis in Patients With Sickle Cell Disease:** Iodinated contrast agents when administered intravascularly may promote sickling in individuals who are homozygous for sickle cell disease.

Please see additional Important Safety Information about Visipaque, including Boxed Warning, on page 2 and Full Prescribing Information given to you before this meeting.

VISIPAQUE™
(IODIXANOL) INJECTION

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April 2024 JB00192US

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