Standard Operating Procedure
Contrast Concentration Conversion Process

SITE APPLICABILITY:

All Lower Mainland Medical Imaging (LMMI) sites in Fraser Health (FH), Providence Healthcare (PHC), Provincial Health Services Authority (PHSA), and Vancouver Coastal Health (VCH)

PURPOSE:

To assist Medical Imaging staff to calculate the different volumes of intravascular contrast recommended when converting from one concentration to another while maintaining the same iodine dose.

SCOPE:

This volume conversion chart can be used by all staff who have met the organizational requirements for administering intravenous contrast.

RESPONSIBILITIES:

Ensure the department has site leadership and or organizational approval to switch to the new contrast media.

PROCEDURE:

Conversion from one intravenous contrast concentration to another involves a calculation. For simplicity, a standard contrast dose of 100 mLs is used in the example calculations included below.

Step 1. Determine the contrast concentration that you will be switching to.

Step 2. Calculate the iodine dose by multiplying the original contrast media dose (mLs) by the original contrast media concentration, measured in mg of Iodine per mL (mgI/mL).

- Omnipaque 300 and Optiray 300 = 300 mgI/mL
- Omnipaque 350 = 350 mgI/mL
- Visipaque 320 = 320 mgI/mL
- Isovue 370 and Optiray 370 = 370 mgI/mL

Step 3. Calculate the new contrast media dose (mLs) by dividing the original iodine dose by the new contrast media concentration.

Step 4. Use the conversion factor to calculate volume (mLs) of new contrast media

Step 1	Step 2	Step 3	Step 4
Contrast Conversion (from / to)	**Iodine Dose** (# of mL x Contrast Concentration (mgI/mL))	**New Contrast Dose** Iodine Dose (mgI) / New Contrast Concentration (mgI/mL)	**Conversion Factor**
300 to 320	100 mL x 300 mgI/mL = **30000 mgI** (30g)	30000 mgI / 320 mgI/mL = 93.7 mL	**0.94**
300 to 350		30000 mgI / 350 mgI/mL = 85.7 mL	**0.86**
300 to 370		30000 mgI / 370 mgI/mL = 81.1 mL	**0.81**
320 to 300	100 mL x 320 mgI/mL = **32000 mgI** (32g)	32000 mgI / 300 mgI/mL = 106.7 mL	**1.07**
320 to 350		32000 mgI / 350 mgI/mL = 91.4 mL	**0.91**
320 to 370		32000 mgI / 370 mgI/mL = 86.4 mL	**0.86**
350 to 370	100 mL x 350 mgI/mL = **35000 mgI** (35g)	35000 mgI / 370 mgI/mL = 94.6 mL	**0.95**
350 to 320		35000 mgI / 320 mgI/mL = 109.4 mL	**1.09**
350 to 300		35000 mgI / 300 mgI/mL = 116.7 mL	**1.17**
370 to 350	100 mL x 370 mgI/mL = **37000 mgI** (37g)	37000 mgI / 350 mgI/mL = 105.7 mL	**1.06**
370 to 320		37000 mgI / 320 mgI/mL = 115.6 mL	**1.16**
370 to 300		37000 mgI / 300 mgI/mL = 123.3 mL	**1.23**

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Contrast Conversion Chart – 300 Concentration

300 Concentration (mLs)	320 Concentration (mLs) (Factor = 0.94)	350 Concentration (mLs) (Factor = 0.86)	370 Concentration (mLs) (Factor = 0.81)
5	5	4	4
10	9	9	8
15	14	13	12
20	19	17	16
25	24	22	20
30	28	26	24
35	33	30	28
40	38	34	32
45	42	39	36
50	47	43	41
55	52	47	45
60	56	52	49
65	61	56	53
70	66	60	57
75	71	65	61
80	75	69	65
85	80	73	69
90	85	77	73
95	89	82	77
100	94	86	81
105	99	90	85
110	103	95	89
115	108	99	93
120	113	103	97
125	118	108	101
130	122	112	105
135	127	116	109
140	132	120	113
145	136	125	117
150	141	129	122
155	146	133	126
160	150	138	130
165	155	142	134
170	160	146	138
175	165	151	142
180	169	155	146
185	174	159	150
190	179	163	154
195	183	168	158
200	188	172	162

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Contrast Conversion Chart – 320 Concentration

300 Concentration (mLs) (Factor = 1.07)	320 Concentration (mLs)	350 Concentration (mLs) (Factor = 0.91)	370 Concentration (mLs) (Factor = 0.86)
5	5	5	4
11	10	9	9
16	15	14	13
21	20	18	17
27	25	23	22
32	30	27	26
37	35	32	30
43	40	37	35
48	45	41	39
53	50	46	43
59	55	50	48
64	60	55	52
69	65	59	56
75	70	64	61
80	75	69	65
85	80	73	69
91	85	78	74
96	90	82	78
101	95	87	82
107	100	91	86
112	105	96	91
117	110	101	95
123	115	105	99
128	120	110	104
133	125	114	108
139	130	119	112
144	135	123	117
149	140	128	121
155	145	133	125
160	150	137	130
165	155	142	134
171	160	146	138
176	165	151	143
181	170	155	147
187	175	160	151
192	180	165	156
197	185	169	160
203	190	174	164
208	195	178	169
213	200	183	173

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Contrast Conversion Chart – 350 Concentration

300 Concentration (mLs) (Factor = 1.17)	320 Concentration (mLs) (Factor = 1.09)	350 Concentration (mLs)	370 Concentration (mLs) (Factor = 0.95)
6	5	5	5
12	11	10	10
18	16	15	14
23	22	20	19
29	27	25	24
35	33	30	29
41	38	35	33
47	44	40	38
53	49	45	43
59	55	50	48
64	60	55	52
70	65	60	57
76	71	65	62
82	76	70	67
88	82	75	71
94	87	80	76
99	93	85	81
105	98	90	86
111	104	95	90
117	109	100	95
123	114	105	100
129	120	110	105
135	125	115	109
140	131	120	114
146	136	125	119
152	142	130	124
158	147	135	128
162	153	140	133
170	158	145	138
176	164	150	143
181	169	155	147
187	174	160	152
193	180	165	157
199	185	170	162
205	191	175	166
211	196	180	171
216	202	185	176
222	207	190	181
228	213	195	185
234	218	200	190

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Contrast Conversion Chart – 370 Concentration

300 Concentration (mLs) (Factor = 1.23)	320 Concentration (mLs) (Factor = 1.16)	350 Concentration (mLs) (Factor = 1.06)	370 Concentration (mLs)
6	6	5	5
12	12	11	10
18	17	16	15
25	23	21	20
31	29	27	25
37	35	32	30
43	41	37	35
49	46	42	40
55	52	48	45
62	58	53	50
68	64	58	55
74	70	64	60
80	75	69	65
86	81	74	70
92	87	80	75
98	93	85	80
105	99	90	85
111	104	95	90
117	110	101	95
123	116	106	100
129	122	111	105
135	128	117	110
141	133	122	115
148	139	127	120
154	145	133	125
160	151	138	130
166	157	143	135
172	162	148	140
178	168	154	145
185	174	159	150
191	180	164	155
197	186	170	160
203	191	175	165
209	197	180	170
215	203	186	175
221	209	191	180
228	215	196	185
234	220	201	190
240	226	207	195
246	232	212	200

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GENERAL REQUIREMENTS:

Use as a general reference guide.

REFERENCES/ASSOCIATED DOCUMENTS:

Bracco Diagnostics Inc. Isovue® Imaging Bulk Package. Bracco website. https://imaging.bracco.com/sites/braccoimaging.com/files/technica_sheet_pdf/us-en-2022-04-27-spc-isovue-imaging-bulk-package.pdf Published February 2022. Accessed Aug 17, 2022

General Healthcare Inc. Omnipaque Imaging Bulk Package (2.3). https://www.gehealthcare.ca/-/jssmedia/global/products/files/contrast-media/omnipaque-ibp-onc.pdf?rev=1d650acec8024978a160843356419b55&hash=D1D5D8B1F5BD677FC2773B21FDD8424B Published February 2022. Accessed Aug 17, 2022.

General Healthcare Inc. Visipaque Package Insert. https://www.accessdata.fda.gov/drugsatfda_docs/label/2003/20351slr013_visipaque_lbl.pdf Published 2003. Accessed Aug. 18, 2022

Guerbet LLC. Optiray® Full Prescriber Information. Guerbet website. https://www.guerbet.com/en-us/products-solutions/contrast-agents/optiray-ioversol-injection Published September 2021. Accessed Aug 17, 2022.

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Approved By: *(committee or position)*	MIEC	CT MPL	IR MPL
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Owners: *(committee or position)*	CT Regional Practice Lead CT Medical Practice Lead IR Regional Practice Lead		

Revision History:	**Version**	**Date**	**Description/ Key Changes**	**Revised By** (Name and Position)
	1.0	17-OCT-2022	Initial release	Sean West CT RPL