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| --- |
| PrincipleTo divide a red blood cell (RBC) unit into smaller portions so that portions of the unit can remain at 4°C while other portions are transfused. Small volume transfusions may be required for neonatal recipients, to decrease donor exposure or to prevent circulatory overload.9.1 |
|  | Scope and Related Policies |
|  | 2.1 | Administration of red cells should be completed within four hours from time of removal from temperature controlled environment.9.2 If this is not possible; the unit may be divided prior to infusion. |
|  | 2.2 | Some patients (e.g. congestive heart failure patients or children) cannot tolerate the transfusion of donor red cells at the usual rate of transfusion. Rapid increases in blood volume are poorly tolerated by patients with compromised cardiac or pulmonary status and/or chronic anemia with expanded plasma volume.9.1 |
|  | 2.3 | All blood product requests should be reviewed for appropriateness by the technologist. Requests not meeting criteria should be referred to a Medical Chief or designate for review. See QCA.020 – Medical Director Consultation Protocol.  |
|  | 2.4 | All blood products shall be inspected for abnormal appearance before use and the visual inspection must be documented. If an obvious abnormality is detected, the unit must not be issued and the blood supplier shall be consulted regarding the final disposition of the product. Any such consultation must be documented.9.2 |
| Specimens – N/A |  |
| Materials |
|  | **Equipment:** Crimper or heat sealer or sterile connection device  Laminar flow hood or biological safety cabinet, if  available or designated clean area**Supplies:** Clean gloves Transfer pack and set Crossmatched RBC component Welding wafers Scissors Metal clips |
|  |
|  |
|  |
|  |
|  |
| Quality Control |
|  | 5.1 | Storage and shelf life: |
|  |  | Closed systemSterile connection device (SCD) used | Store at 1-6°C up to unit expiry date |
|  |  | Open system | Store at 1-6°C for 24 hours after preparation See Procedural Notes 8.1 |
|  |  |  |
|  | 5.2 | Manipulation of blood products should be performed in a clean environment designated only for this purpose. Ideally a biological safety cabinet or laminar flow hood should be used. |
|  | 5.3 | Policies, processes and procedures shall be established for the use of the laminar flow hoods including: 9.2* Approved uses
* Instructions for use
* Decontamination after each use
 |
|  | 5.4 | Policies, processes and procedures shall be established for the use of the SCD including: 9.2* Approved uses
* Process for approval for non-conforming uses
* Instructions for use
* Testing protocols for sterile weld integrity
* Random sterility checks of blood components processed with a SCD
 |

5.5 Documentation of SCD use shall include: 9.2

* Blood component tracking
* Tube weld quality control
* Lot numbers of disposables
* Random sterility checks

 5.6 Manufacturer’s instructions must be followed on all equipment.

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| Procedure |
|  | * 1. Assemble materials in the designated component preparation area. See Quality Control 5.2.
 |
|  | * 1. Visually inspect the unit. See IM.003 – Visual Inspection of Blood, Blood Components and Fractionated Products.
 |
|  | * 1. Mix the donor unit thoroughly by inverting the donor bag.
 |
|  | * 1. Put on clean gloves.
 |
|  | * 1. Using aseptic technique, loosen (but do not remove) the cap from the spike of the transfer pack tubing.
 |
|  | * 1. Remove the white protective cap from either of the ports on the donor bag by grasping the tab and pulling firmly.
 |
|  | * 1. Remove the cap from the spike on the transfer pack tubing and insert the spike into the port of the donor unit using a twisting motion.

**Note**: An unopened port must be available for use in administration of the blood component to the patient. |
|  | * 1. Allow blood to flow into the transfer pack by gravity.

If an exact amount is desired for transfusion (e.g. for neonate), place the empty bag on a scale and tare (‘zero the scale’). Allow the desired amount of red cells to drain into the bag. Ensure the final volume will include enough blood for the administration tubing. |
|  | * 1. When the desired amount of product has filled the transfer pack, squeeze the transfer pack gently to push air from the pack into the tubing.
 |
|  | * 1. Seal tubing with at least three seals close to each bag using hand sealing clips and crimper. If using a heat sealer, follow the manufacturer’s directions to seal tubing.

**Note:** Do not cut the tubing until the transfer bag is labeled. |
|  |
| * 1. Determine the volume of red cells in each container. The formula for conversion of gram to mL is: *mL = g – x ÷ 1.07*

 g = total weight of bag, segments and red cells x = weight of empty transfer pack. See Table 1 for Calculated Conversion of g to mL. |
|  | * 1. Prepare the labels for the transfer and second bag with the following modified product information: 9.2

|  |  |
| --- | --- |
| * Product name (e.g. red blood cells divided)
* Name of facility preparing component
* Unique numeric or alphanumeric identification of component.
* The divided units may have a suffix added to the number that indicates that the unit has been divided.

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| Example: Unit number 5897446 is divided into two parts. The two numbers created are 5897446-1 and 5897446-2. |

* ABO/Rh of component
* Approximate volume of component
* Date and Time of expiry of component according to open or closed system. See Procedural Notes 8.1
* Storage temperature
 |
| Label the unit being issued with the following recipient information:9.1 * Recipient’s family and given name(s)
* Recipient’s identification number(s)
* ABO/Rh group of recipient
* Date and time of issue
 |

See Procedural Notes 8.2 and attach a component label to washed RBC bag |
|  | * 1. Record the volume of blood in each bag onto the label of the container, if required. See Procedural Notes 8.2.
 |
|  | * 1. Cut the tubing, leaving a double seal on each bag.
 |
|  | * 1. Store the bags at 1-6°C until issue.
 |
|  | * 1. Issue unit. If there is no computer system, write the patient and product information in the Blood Products Issue/Transfusion record. Document “DIV” in the modifier column. Refer to IM.004
 |
| Reporting N/A |
| Procedural Notes |
|  | 8.1 | The expiry of divided units (open system) is 24 hours unless the original unit’s normal outdating date is midnight of the day it is divided. If the original unit was to outdate at midnight, all portions of the unit will outdate at midnight also. |
|  | 8.2 | When labeling units, the following criteria should be met:* Whenever possible, place the label onto the label on the transfer bag
* Only labels with approved adhesive must be used on blood bags
* Do not use scotch tape, masking tape or other adhesives that are not approved
* Do not use felt pen on bag labels; use pen only
 |
| References |
|  | 9.1 | Fung MK editor. Technical Manual 18th edition. Bethesda MD AABB Press; 2014:224, 575-576. |
|  | 9.2 | Standards for Hospital Transfusion Services ver 3. Canadian Society for Transfusion Medicine; 2011: 5.8.4.1; 5.7.3.1; 3.3.5.1 3.3.4.1 3.3.4.2 5.7.2.1; 5.5.1.1   |

#  Revision History

|  |  |
| --- | --- |
| **Revision Date** | **Summary of Revision** |
| September 1, 2014 | * Revised name of manual
* Revised wording of Principle 1.0
* Added 5.3, 5.4, 5.5
* Moved procedural notes 8.2 and 8.3 into Procedure section 6.0
* Updated all references to include the most recent version/edition and adjusted the page numbers cited as necessary
 |

**Table 1 Conversion of Grams to Milliliters**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **g** | **mL** | **g** | **mL** | **g** | **mL** | **g** | **mL** | **g** | **mL** |
| 300 | 234 | 350 | 280 | 400 | 327 | 450 | 374 | 500 | 421 |
| 301 | 235 | 351 | 281 | 401 | 328 | 451 | 375 | 501 | 421 |
| 302 | 236 | 352 | 282 | 402 | 329 | 452 | 376 | 502 | 422 |
| 303 | 236 | 353 | 283 | 403 | 330 | 453 | 377 | 503 | 423 |
| 304 | 237 | 354 | 284 | 404 | 331 | 454 | 378 | 504 | 424 |
| 305 | 238 | 355 | 285 | 405 | 332 | 455 | 379 | 505 | 425 |
| 306 | 239 | 356 | 286 | 406 | 333 | 456 | 379 | 506 | 426 |
| 307 | 240 | 357 | 287 | 407 | 334 | 457 | 380 | 507 | 427 |
| 308 | 241 | 358 | 288 | 408 | 335 | 458 | 381 | 508 | 428 |
| 309 | 242 | 359 | 289 | 409 | 336 | 459 | 382 | 509 | 429 |
| 310 | 243 | 360 | 290 | 410 | 336 | 460 | 383 | 510 | 430 |
| 311 | 244 | 361 | 291 | 411 | 337 | 461 | 384 | 511 | 431 |
| 312 | 245 | 362 | 292 | 412 | 338 | 462 | 385 | 512 | 432 |
| 313 | 246 | 363 | 293 | 413 | 339 | 463 | 386 | 513 | 433 |
| 314 | 247 | 364 | 293 | 414 | 340 | 464 | 387 | 514 | 434 |
| 315 | 248 | 365 | 294 | 415 | 341 | 465 | 388 | 515 | 435 |
| 316 | 249 | 366 | 295 | 416 | 342 | 466 | 389 | 516 | 436 |
| 317 | 250 | 367 | 296 | 417 | 343 | 467 | 390 | 517 | 436 |
| 318 | 250 | 368 | 297 | 418 | 344 | 468 | 391 | 518 | 437 |
| 319 | 251 | 369 | 298 | 419 | 345 | 469 | 392 | 519 | 438 |
| 320 | 252 | 370 | 299 | 420 | 346 | 470 | 393 | 520 | 439 |
| 321 | 253 | 371 | 300 | 421 | 347 | 471 | 393 | 521 | 440 |
| 322 | 254 | 372 | 301 | 422 | 348 | 472 | 394 | 522 | 441 |
| 323 | 255 | 373 | 302 | 423 | 349 | 473 | 395 | 523 | 442 |
| 324 | 256 | 374 | 303 | 424 | 350 | 474 | 396 | 524 | 443 |
| 325 | 257 | 375 | 304 | 425 | 350 | 475 | 397 | 525 | 444 |
| 326 | 258 | 376 | 305 | 426 | 351 | 476 | 398 | 526 | 445 |
| 327 | 259 | 377 | 306 | 427 | 352 | 477 | 399 | 527 | 446 |
| 328 | 260 | 378 | 307 | 428 | 353 | 478 | 400 | 528 | 447 |
| 329 | 261 | 379 | 307 | 429 | 354 | 479 | 401 | 529 | 448 |
| 330 | 262 | 380 | 308 | 430 | 355 | 480 | 402 | 530 | 449 |
| 331 | 263 | 381 | 309 | 431 | 356 | 481 | 403 | 531 | 450 |
| 332 | 264 | 382 | 310 | 432 | 357 | 482 | 404 | 532 | 450 |
| 333 | 264 | 383 | 311 | 433 | 358 | 483 | 405 | 533 | 451 |
| 334 | 265 | 384 | 312 | 434 | 359 | 484 | 406 | 534 | 452 |
| 335 | 266 | 385 | 313 | 435 | 360 | 485 | 407 | 535 | 453 |
| 336 | 267 | 386 | 314 | 436 | 361 | 486 | 407 | 536 | 454 |
| 337 | 268 | 387 | 315 | 437 | 362 | 487 | 408 | 537 | 455 |
| 338 | 269 | 388 | 316 | 438 | 363 | 488 | 409 | 538 | 456 |
| 339 | 270 | 389 | 317 | 439 | 364 | 489 | 410 | 539 | 457 |
| 340 | 271 | 390 | 318 | 440 | 364 | 490 | 411 | 540 | 458 |
| 341 | 272 | 391 | 319 | 441 | 365 | 491 | 412 | 541 | 459 |
| 342 | 273 | 392 | 320 | 442 | 366 | 492 | 413 | 542 | 460 |
| 343 | 274 | 393 | 321 | 443 | 367 | 493 | 414 | 543 | 461 |
| 344 | 275 | 394 | 321 | 444 | 368 | 494 | 415 | 544 | 462 |
| 345 | 276 | 395 | 322 | 445 | 369 | 495 | 416 | 545 | 463 |
| 346 | 277 | 396 | 323 | 446 | 370 | 496 | 417 | 546 | 464 |
| 347 | 278 | 397 | 324 | 447 | 371 | 497 | 418 | 547 | 464 |
| 348 | 279 | 398 | 325 | 448 | 372 | 498 | 419 | 548 | 465 |
| 349 | 279 | 399 | 326 | 449 | 373 | 499 | 420 | 549 | 466 |