

Acuity scale stratifies infusions by RN time required

CentraCare Health's acuity scale for oncology outpatient infusion room

LEVEL	NONCHEMOTHERAPY-RELATED ACTIVITIES	IV AND SUBCUTANEOUS CHEMOTHERAPY-RELATED TREATMENTS
Level I: less than 30 minutes Nursing time: 20 minutes	Laboratory tests, nurse assessment, IV access and/or removal, central line access, dressing change, coordination of care, arranging blood transfusions, laboratory-only port draw (performed by nurse), ambulatory infusion pump paperwork or discontinuing ambulatory pump	Darbepoetin-alpha, B12, enoxaparin, filgrastim, flu vaccine pneumovax, fulvestrant, goserelin, l-asparaginase, leuprolide, leuprolide, octreotide, oprelvekin, and pegfilgrastim
Level II: 30–90 minutes Nursing time: 45 minutes	Port, line troubleshooting; hydration with or without assessment; administration of IV medication, including pain, antibiotic, and antiemetics; phlebotomy	Subcutaneous cytarabine because of side-effect management Subcutaneous alemtuzumab because of side-effect management Subcutaneous interferon alfa-2b, recombinant for injection side-effect management Subcutaneous azacitidine because of side-effect management Second or subsequent infusion of 5-fluorouracil, albumin-1 litaxel, bevacizumab, bleomycin, bortezomib, cetuximab, phamide, decitabine, oxaliplatin, epirubicin, etoposide, fil gemcitabine, topotecan, interferon alpha IV, interleukin, injection, methotrexate, vincristine, panitumumab, carboc etrexed, sodium ferric gluconate, temsirolimus, trastuzumab vinblastine, or zoledronic acid
Level III: 1–2 hours Nursing time: 60 minutes	Patient and family education (cycle 1, day 1 chemotherapy)	Second or subsequent infusion of immunoglobulin IV, iron d pamidronate First infusion of bevacizumab, cetuximab, or trastuzumab Weekly paclitaxel and platinum VP-16 One to two chemotherapy drugs in one treatment Arsenic trioxide, carmustine, cladribine, dacarbazine, daun cetaxel, doxorubicin, doxorubicin liposome, epirubicin h irinotecan, mechlorethamine, mitomycin, mitoxantrone, Protocols AC—doxorubicin and cyclophosphamide CMF—cyclophosphamide, methotrexate, and 5-fluorouracil FAC—5-fluorouracil, doxorubicin, and cyclophosphamide FEC—5-fluorouracil, epirubicin, and cyclophosphamide TAC—docetaxel, doxorubicin, and cyclophosphamide
Level IV: 2–4 hours Nursing time: 90 minutes	–	Three-hour paclitaxel Second or subsequent infusion of rituximab or platinum Three to four chemotherapy drugs in one treatment Protocols ABVD—doxorubicin, bleomycin, vinblastine sulfate, and d FOLFOD—5-fluorouracil, eloxatin, and leucovorin FOLFIRI—5-fluorouracil, leucovorin, and irinotecan BEP—bleomycin and platinum VP-16 RCHOP—rituximab, doxorubicin, cyclophosphamide, and PAC—paclitaxel, doxorubicin, and cyclophosphamide Ibritumumab, tixetax, cladribine, and platinum with and w
Level V: more than 4 hours Nursing time: 180 minutes	–	Intraperitoneal chemotherapy First infusion of alemtuzumab IV, gemtuzumab, ibritumom or mesna, iron dextran, paclitaxel, rituximab, sodium fer or tixetan

Acuity scale development process

- Map out duration of all regularly administered treatments and the nurse time required using evidence-based guidelines and literature
- Validate nurse time required for specific treatment regimens by conducting time studies
- Collect data on patients seen in the infusion center and their acuity using the new tool across several months
- Calculate appropriate daily workload for a single nurse (16 to 24 acuity points) based on data on patient acuity collected using the new tool



CASE EXAMPLE

CentraCare Health

- Six-hospital system based in St. Cloud, Minnesota

- ▶ In response to complaints from infusion center nursing staff about inequitable patient assignments amidst growing volumes, CentraCare Health assembled a task force to develop an acuity scale
- ▶ Used evidence-based guidelines, literature, and time studies to develop acuity scale proportional to nurse time required for specific treatment regimens, then calculated appropriate acuity points per nurse per day
- ▶ Employ three-step process to balance staffing supply and demand daily; create rough nurse schedule every month, refine two days in advance based on acuity, assign nurses to patients on day of treatment
- ▶ Managed to accommodate increase in patient volumes without increasing staff levels, while also decreasing staff overtime and increasing staff engagement

Acuity scale stratifies infusions by RN time... (cont.)

LEVEL	NONCHEMOTHERAPY-RELATED ACTIVITIES	IV AND SUBCUTANEOUS CHEMOTHERAPY-RELATED TREATMENTS
Level I: less than 30 minutes Nursing time: 20 minutes	Laboratory tests, nurse assessment, IV access and/or removal, central line access, dressing change, coordination of care, arranging blood transfusions, laboratory-only port draw (performed by nurse), ambulatory infusion pump paperwork or discontinuing ambulatory pump	Darbepoetin-alpha, B12, enoxaparin, filgrastim, flu vaccine pneumovac, fulvestrant, goserelin, l-asparaginase, leuprolide, leuprolide, octreotide, oprelvekin, and pegfilgrastim
Level II: 30–90 minutes Nursing time: 45 minutes	Port, line troubleshooting; hydration with or without assessment; administration of IV medication, including pain, antibiotic, and antiemetics; phlebotomy	Subcutaneous cytarabine because of side-effect management Subcutaneous alemtuzumab because of side-effect management Subcutaneous interferon alfa-2b, recombinant for injection because of side-effect management Subcutaneous azacitidine because of side-effect management Second or subsequent infusion of 5-fluorouracil, albumin-bound paclitaxel, bevacizumab, bleomycin, bortezomib, cetuximab, cyclophosphamide, dactaribine, oxaliplatin, eprubicin, etoposide, fludarabine, gemcitabine, topotecan, Interferon alpha IV, interleukin, iron sucrose injection, methotrexate, vincristine, panitumumab, carboplatin, premetexed, sodium ferric gluconate, temsirolimus, trastuzumab, whin ro, vinblastine, or zoledronic acid
Level III: 1–2 hours Nursing time: 60 minutes	Patient and family education (cycle 1, day 1 chemotherapy)	Second or subsequent infusion of immunoglobulin IV, iron dextran, or pamidronate First infusion of bevacizumab, cetuximab, or trastuzumab Weekly paclitaxel and platinum VP-16 One to two chemotherapy drugs in one treatment Arsenic trioxide, carmustine, cladribine, dacarbazine, daunorubicin, docetaxel, doxorubicin, doxorubicin liposome, eprubicin hydrochloride, irinotecan, mechlorethamine, mitomycin, mitoxantrone, vonorebicine Protocols AC—doxorubicin and cyclophosphamide CMF—cyclophosphamide, methotrexate, and 5-fluorouracil FAC—5-fluorouracil, doxorubicin, and cyclophosphamide FEC—5-fluorouracil, eprubicin, and cyclophosphamide TAC—docetaxel, doxorubicin, and cyclophosphamide
Level IV: 2–4 hours Nursing time: 90 minutes	–	Three-hour paclitaxel Second or subsequent infusion of rituximab or platinum Three to four chemotherapy drugs in one treatment Protocols ABVD—doxorubicin, bleomycin, vinblastine sulfate, and dacarbazine FOLFOX—5-fluorouracil, eloxatin, and leucovorin FOLFIRI—5-fluorouracil, leucovorin, and irinotecan BEP—bleomycin and platinum VP-16 RCHOP—rituximab, doxorubicin, cyclophosphamide, and vincristine PAC—paclitaxel, doxorubicin, and cyclophosphamide Ibritumomab, tiuxetan, cladribine, and platinum with and without VP-16
Level V: more than 4 hours Nursing time: 180 minutes	–	Intraperitoneal chemotherapy First infusion of alemtuzumab IV, gemtuzumab, ibritumomab, ifosfamide or mesna, iron dextran, paclitaxel, rituximab, sodium ferric gluconate, or tiuxetan

Source: DeLisle J, "Designing an Acuity Tool for an Ambulatory Oncology Setting," *Clinical Journal of Oncology Nursing*, 13, no. 1 (2009): 45-50; CentraCare Health, St. Cloud, MN; Oncology Roundtable interviews and analysis