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1 **Improving nutritional care quality in the orthopedic ward of a Septic**
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3 **Nutritional Risk Score: a pilot study**

4

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32

33 **Abstract**

34 **Background:** Septic Surgery Center (SSC) patients are at a particularly high risk of protein-
35 energy malnutrition (PEM), with a prevalence of 35%–85% found in various studies. Previous
36 collaboration between our hospital's SSC and its Clinical Nutrition Team (CNT) only
37 focussed on patients with severe PEM.

38 **Objective:** This study aimed to determine whether it was possible to improve the quality of
39 nutritional care in septic surgery patients with help of a nutritional policy using the Nutritional
40 Risk Score (NRS).

41 **Methods:** Nutritional practices in the SSC were observed over three separate periods: in the
42 three months leading up to the implementation baseline, 6 months after implementation of
43 preventive nutritional practices, and at 3 years. The nutritional-care quality indicator was the
44 percentage of patients whose nutritional care, as prescribed by the SSC, was adapted to their
45 specific requirements. We determined the septic surgery team's NRS completion rate and
46 calculated the nutritional policy's impact on SSC length of stay. Data before (T_0) and after
47 (T_1+T_2) implementation of the nutritional policy were compared.

48 **Results:** Ninety-eight patients were included. The nutritional-care quality indicator improved
49 from 26% to 81% between T_0 and T_2 . During the T_1 and T_2 audits, septic surgery nurses
50 calculated NRS for 100% and 97% of patients, respectively. Excluding patients with severe
51 PEM, SSC length of stay was significantly reduced by 23 days ($p=0.005$).

52 **Conclusion:** These findings showed that implementing a nutritional policy in an SSC is
53 possible with the help of an algorithm including an easy-to-use tool like the NRS.

54

55

56 **Introduction**

57 The prevalence of protein-energy malnutrition (PEM) was found to be over 30% in surgical
58 patients in several European hospitals ¹⁻⁷. Orthopedic septic surgery patients constitute a
59 specific population, suffering from chronically infected lesions of their locomotor systems,
60 such as infected total joint arthroplasties, pressure ulcers, bedsores or diabetic feet, which can
61 even lead to foot amputation. These patients often present with multiple comorbidities, mainly
62 diabetes mellitus, arteriosclerosis and chronic renal insufficiency with or without
63 hemodialysis.

64 Orthopedic septic surgery patients are particularly at risk nutritionally, as shown by the high,
65 35%–85% prevalence of PEM found in various studies ⁸⁻¹⁰. They frequently suffer loss of
66 appetite, hydro-electrolytic and micronutrient loss, and infection-related inflammatory states
67 leading to an accelerated catabolic process ^{11, 12}. Prolonged immobilization is often required to
68 improve wound-healing, which itself leads to a decrease of the fat-free mass. PEM can have
69 disastrous consequences for these patients. Particularly in the elderly, poor nutritional status
70 has been associated with impaired wound healing ^{9, 13, 14} and the development or recurrence of
71 pressure ulcers ¹⁵⁻¹⁸. Secondary infections are often-seen complications ¹⁹, leading to more
72 frequent and longer hospital admissions with an increased risk of mortality ^{20, 21}. Furthermore,
73 PEM leads to decreased quality of life and higher costs and home health care needs ²².

74 Nutritional assessment has thus now been integrated into infected wound-care protocols ^{23, 24}.
75 The Nutritional Risk Score (NRS) is a screening tool, recommended by the European Society
76 of Parenteral and Enteral Nutrition (ESPEN) ²⁵, which identifies patients who are nutritionally
77 at risk and likely to benefit from nutritional support ²⁶. The NRS can identify patients who are
78 undernourished or at nutritional risk because of disease and/or treatment; it considers
79 impaired nutritional state, severity of disease, and age ²⁶ to indicate the need for nutritional
80 counselling and support.

81 Our institution's Septic Surgery Center (SSC) is a 35-bed unit; orthopedic patients represent
82 more than 40% of all cases. They suffer from post-operative wounds or chronically infected
83 wounds of the locomotor system, like pressure ulcers and bedsores, diabetic feet, amputation,
84 or other specialized care needs. About 40% of them are ≥ 65 years old and often present
85 significant comorbidities. The average SSC length of stay is therefore about three times
86 longer than the overall average length of stay (8.8 days) in our institution. Despite this, prior
87 to the present study, collaboration between the SSC and our institution's Clinical Nutrition
88 Team (CNT) focused solely on patients with severe PEM. The SSC admits about 700 patients
89 annually, but less than 5% were spontaneously referred to the CNT for specific adapted
90 nutritional care. Most recommendations concerned specific diets (e.g., for diabetics) or
91 specific micro-nutrients (e.g., calcium, vitamin D) ²⁷; PEM was rarely considered. Indeed,
92 nutritional care was not considered a priority. Any nutritional intervention, but particularly
93 tube feeding, was considered a supplementary weight on patients already suffering from
94 chronic pathologies. In this population, being overweight frequently hides PEM and is often
95 associated with comorbidities like diabetes mellitus and terminal renal insufficiency that leads
96 to hemodialysis ^{28,29}. To improve nutritional care, the SSC began screening all patients with
97 the NRS ²⁶.

98 This study aimed to determine whether it was possible to improve the quality of nutritional
99 care in septic surgery patients nutritionally at risk of or suffering from moderate or severe
100 PEM by implementing a preventive nutritional policy using the NRS ²⁶.

101

102 **Materials and Methods**

103 Three prospective audits were carried out in the SSC. Nutritional practices were observed by
104 one of the two study nutritionists (a physician and a dietitian) up to the baseline (T₀, the three
105 months before the implementation of preventive nutritional practices), at 1 month (T₁, until 5
106 months after implementation), and at 2 years 7 months (T₂, until 2 years 10 months after
107 implementation).

108 **Patients**

109 Patients aged 18–90 years old were eligible for inclusion if they suffered from chronically
110 infected wounds of the locomotor system such as pressure ulcers, bedsores, diabetic feet,
111 amputation, or other. All patients were well-informed about the study and able to understand
112 its aims; patients with overt dementia or other psychiatric and addictive disorders were
113 excluded. The study protocol was approved by the Lausanne University Hospital Institutional
114 Ethics Committee, and all participants gave their informed written consent.
115 Additional recorded data included age, sex, type of wound, and comorbidities. The Charlson
116 Comorbidity Index was determined for every patient ³⁰.

117

118 **Nutritional status assessment**

119 During each audit, a study nutritionist performed a post-admission nutritional assessment of
120 all septic surgery patients, independently of any request by the SSC. Collected and measured
121 data included food intake, usual weight, actual weight, weight loss in the last three months,
122 height, body mass index (BMI), arm muscle circumference (AMC), and fat-free mass (FFM)
123 measured using bioelectrical impedance analysis.

124 Body weight was measured using an electronic chair-scale or hoist. In hemodialysis patients,
125 body weight was recorded after dialysis (dry-weight). In cases of amputation, amputated limb

126 weight was measured after surgery, subtracted from usual weight, and then BMI was adapted
127 according to the percentage of body weight represented by the limb ³¹.
128 Anthropometric values of AMC and FFM were measured on the non-dominant side if this
129 was appropriate according to the pathology (e.g., amputation, dialysis-fistula) and within 2 h
130 of dialysis ³². Reference data for AMC and FFM were sex- and age-matched and the level
131 defined as an abnormally low value was $\leq 5^{\text{th}}$ percentile ^{33, 34}. PEM was defined as either
132 absent, moderate, or severe (Table 1). The prevalence of moderate and severe PEM in septic
133 surgery patients was calculated. The sensitivity and specificity of NRS were determined using
134 the criteria for present PEM (moderate + severe) as the gold standard.

135

136 **Implementation and assessment of preventive nutritional practices**

137 The implementation of preventive nutritional interventions included the following steps:

- 138 1) At baseline, a 3-month audit observed the usual nutritional practices in the SSC prior
139 to the intervention. No nutritional interventions were proposed unless patients with
140 severe PEM were referred to the CNT by the study nutritionist.
- 141 2) The septic surgery team and the CNT then defined a nutrition management pathway
142 (Figure 1), including preventive measures, screening, treatment, and criteria for
143 referral to the CNT. Preventive measures were defined: mealtimes were protected to
144 provide patients with an environment that would encourage them to eat (in particular,
145 there was no wound care at mealtimes); food consistency was adapted for impaired
146 chewing and swallowing; patients were prepared for meals, i.e., comfortably installed
147 for eating, assisted by a septic surgery nurse if necessary. The pathway screened
148 patients nutritionally at risk ($\text{NRS} \geq 3$) weekly, referring them to the CNT for
149 nutritional assessment and a personalized intervention if appropriate. According to the
150 patient's clinical status and plan for surgical treatment, the CNT proposed a treatment
151 in the form of dietetic care (food fortification and between-meal snacks) or nutritional

- 152 support (oral nutritional supplementation or tube feeding if oral nutritional
153 supplementation failed).
- 154 3) To raise awareness of malnutrition and motivate the septic surgery team, the first
155 audit's results and a particularly complicated case study involving a patient with
156 severe PEM were presented and discussed³⁵. Septic surgery nurses and physicians
157 were taught about the consequences of PEM, and nurses were trained to use the
158 nutrition management pathway and specifically the NRS²⁶.
- 159 4) Six months after implementation of this strategy, a second audit (T₁) was performed
160 and its new results were presented to the team. Again, the only intervention by the
161 study nutritionist was to notify the CNT, during weekly meetings, of non-referred
162 patients with an NRS ≥ 3 .
- 163 5) Three years after implementation, a third audit (T₂) was performed and feedback was
164 given to the septic surgery team. Again, the study nutritionist notified the CNT, during
165 weekly meetings, of non-referred patients with an NRS ≥ 3 .

166

167 **Outcome measures**

168 *Major outcome*

169 Measurement of the quality of nutritional care was the major outcome. The nutritional care
170 quality indicator used for each audit was defined as the percentage of patients who had
171 received adequate nutritional care by septic surgery staff. Adequate nutritional care by septic
172 surgery staff was defined as the number of patients whose nutritional care was adapted to
173 their specific nutritional requirements and the number of patients with an NRS < 3 who
174 received no nutritional treatment. Inadequate prescriptions by septic surgery staff were
175 defined as nutritional care prescriptions which were modified, stopped, or had to be
176 prescribed by the CNT. Septic surgery staff defined the need for nutritional care according to

177 an NRS ≥ 3 or to a nutritional assessment by the CNT (moderate/severe PEM). Nutritional
178 care was given in the form of dietetic care or nutritional support, including oral nutritional
179 supplements or tube feeding.

180

181 *Secondary outcomes*

182 Concerning nutritional screening, the NRS completion rate by the septic surgery team was
183 determined at T₁ and T₂. The CNT referral rate for patients at nutritional risk was determined
184 using the number of patients with an NRS ≥ 3 who were referred to the CNT by septic surgery
185 staff. The subjective CNT referral rate was determined using the number of patients with an
186 NRS < 3 who were referred to the CNT following a decision by septic surgery staff,
187 according to the subjective criteria of PEM.

188 SSC length of stay, overall hospital length of stay, and discharge destination (home,
189 rehabilitation center, another hospital, nursing home, palliative care, or death) were obtained
190 from the computerized patient hospital record after patients had been discharged by an
191 orthopedic surgeon.

192

193 **Statistical analysis**

194 Statistical analyses were performed using Stata 14.1 software (College Station, TX). Anova
195 tests were used to compare continuous data, and Fisher's exact test was used for categorical
196 data. Continuous data were presented as mean \pm standard deviations. Categorical data
197 concerning SSC length of stay were compared before (T₀) and after (T₁+T₂) implementation
198 of the nutritional policy, based on linear regression after adjusting for type of wound. The
199 same analysis was performed after exclusion of patients with severe PEM, as their treatment
200 was managed in a similar way before and after the new policy. The difference in SSC length
201 of stay attributable to the use of the NRS, before and after implementation of the nutritional

202 policy, was calculated based on linear regression, adjusted for the type of wound and after
203 exclusion of patients with severe PEM. A p -value of < 0.05 was considered statistically
204 significant.

205

206 **Results**

207 **Patient characteristics**

208 Across the three 3-month audit periods, 116 patients were eligible for the study. Eighteen
209 (16%) refused to participate. The general characteristics of the 98 patients included are shown
210 in Table 2 and were not significantly different between the 3 audits: 57 (58%) were diabetic,
211 all suffering from type-2 diabetes mellitus; 12 (12%) were undergoing hemodialysis. The
212 Charlson Comorbidity Index ≥ 3 , representing a one-year risk of death from a comorbid
213 disease, was 59%³⁰.

214

215 **Nutritional status**

216 Table 3 shows nutritional parameters at inclusion in the study. There was no significant
217 difference between the 3 audits. The prevalence rates of moderate and severe PEM across all
218 participants were 25% and 19%, respectively. The mean BMI was 26.1 ± 4.9 kg/m²; more
219 than half of patients had a BMI ≥ 25 ; 33% had a BMI of 25–30; 22% had a BMI > 30 . With
220 regards to the NRS, most patients scored 1 point for disease severity, so the final score was
221 actually determined by age and impaired nutritional status.

222

223 **Outcome**

224 *Quality of nutritional care*

225 Of 98 study participants, 60 (62%) needed nutritional care according to their NRS and the
226 CNT. Twenty-six patients (43.3%) were provided with dietetic care, 29 (48.3%) with oral
227 nutritional supplements, and 5 (8.3%) with tube feeding (details in Table 4). Septic surgery
228 staff started 30 nutritional regimens before referring patients to the CNT; the CNT stopped
229 six. Among the other 24 prescriptions (8 for dietetic care, 12 for oral nutritional supplements,

230 4 for tube feedings), the CNT adapted nine. In all, the CNT began 18 nutritional support and
231 18 dietetic care regimens. All patients with severe PEM received nutritional care.
232 In total, 52% of the prescriptions (51/98) written by septic surgery staff were inadequate.
233 Nevertheless, the nutritional care-quality indicator improved from 26% to 81% between T₀
234 and T₂, respectively (Figure 2).

235

236 *NRS completion rate*

237 Forty-six (47%) of the 98 patients were classified as nutritionally at risk (Table 3). The
238 sensitivity and specificity of the NRS to screen patients with moderate and severe PEM in our
239 study population were 67% and 69%, respectively. During the T₁ and T₂ audit periods, septic
240 surgery nurses calculated the NRS in 100% and 97% of patients, respectively.

241

242 *CNT referral rates*

243 The rate at which patients at nutritional risk were referred to the CNT rose from 16% to 63%
244 and 82%, at T₀, T₁, and T₂, respectively. Patients not referred to CNT with BMI \geq 25
245 increased from 42% to 68%, respectively before and after implementation of the nutritional
246 policy. The subjective CNT referral rate for patients not at nutritional risk changed from 25%
247 to 40% and 5% at T₀, T₁ and T₂, respectively. Despite an NRS $<$ 3, half of these 12 patients
248 suffered from moderate or severe PEM.

249

250 *Hospital length of stay and discharge destination*

251 Although not statistically significant ($p = 0.06$), a 19-day reduction of overall hospital length
252 of stay was observed in our study population, when comparing before and after
253 implementation of the nutritional policy. SSC length of stay was significantly reduced by 17
254 days ($p = 0.039$) when comparing before and after implementation of the nutritional policy.

255 After exclusion of patients with severe PEM, SSC length of stay was even more significantly
256 reduced, by 23 days ($p = 0.005$).

257 The SSC length of stay was not influenced by sex, age, or BMI, but was influenced by the
258 type of wound: patients with pressure ulcers/bedsores and major amputation had longer mean
259 SSC length of stay. A significant positive relationship was found between NRS and SSC
260 length of stay at T_0 ($p = 0.002$). This relationship was even more significant after the
261 exclusion of patients with severe PEM, all of whom had received nutritional care
262 ($p = 0.0001$). No relationship was found between NRS and SSC length of stay after
263 implementation of the nutritional policy ($p = 0.9$). The difference in the effect of NRS on SSC
264 length of stay before and after implementation of the nutritional policy, adjusted to the type of
265 wound and after exclusion of patients with severe PEM was found to be significant
266 ($p = 0.001$). Figure 3 displays the model-predicted SSC length of stay after adjustment for the
267 type of wound.

268 Discharge destination did not change significantly, although more patients were released
269 home after implementation of the nutritional policy than before (66% and 55%, respectively).

270 The hospitalization costs of an orthopedic patient in our SSC are about EUR 1,000 per day.

271 After implementation of the nutritional policy, patients remained in the SSC 17 days less than
272 before, representing a saving of about EUR 17,000 per patient.

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280 **Discussion**

281 The present study showed that the NRS is an effective tool for guiding nutritional
282 interventions on septic surgery patients at nutritional risk or with moderate and severe PEM.
283 The SSC's nutritional care quality indicator improved from 26% to 81%. Our results showed
284 that after the implementation of its new nutritional policy, the Lausanne University Hospital's
285 Septic Surgery Center more adequately identified and treated its patients at nutritional risk or
286 suffering from PEM.

287 Our orthopedic patients had a high, 44% prevalence of moderate or severe PEM, which is
288 consistent with literature⁸⁻¹⁰. This is one of the first studies showing that the NRS is a useful,
289 routine, nutritional screening tool for such patients. It allowed the identification of patients at
290 nutritional risk, despite high BMI values (mean 26.1 kg/m²). It is important to point out that
291 being overweight is no protection from undernutrition. Excess fat mass reduces the sensitivity
292 of using BMI to detect nutritional depletion³⁶ and this can lead to unrecognized PEM. The
293 present study showed this with an increase from 42% to 68% of patients with a BMI \geq 25 who
294 were not referred. Thus, subjective nutritional assessment alone is of limited value in
295 overweight and obese patients, and the implementation of a simple, objective nutritional
296 screening tool is necessary to get around these difficulties. In contrast, the NRS has a
297 limitation in undernourished patients: it does not identify chronic PEM effectively enough
298 (67% sensitivity) when weight and/or appetite decrease slowly and significantly over several
299 years. This appeared to be a particular problem among our study patients, who were suffering
300 from chronic diseases leading to repeated hospitalizations. In the present study, this limitation
301 was balanced by the increased awareness of or sensitivity to severe PEM among septic
302 surgery staff after the first feedback session. Feedback reports are a recognized method³⁵ of
303 improving adherence to nutritional guidelines. Our study allowed the septic surgery team to
304 consider patients' nutritional states in previous hospitalizations in their screening.

305 This study also showed that it was possible to use the NRS in the post-operative period of
306 orthopedic septic surgery, although septic surgery staff did encounter some difficulties in
307 completing the NRS. Strict bedrest was always prescribed to improve wound-healing, and this
308 made it necessary, and time consuming, to weigh patients using a hoist. After discussion with
309 SSC physicians, patients were allowed to be carefully lifted once weekly to be weighed.
310 Interestingly, this new practice did not induce wound complications.

311 The present study also shows that using the NRS may influence outcome. SSC length of stay
312 decreased significantly by 17 days compared to before implementation of the nutritional
313 policy. This dramatic improvement cannot be explained by a change of wound care protocols,
314 nor by any institutional policy for length of stay reduction. Indeed, overall, length of stay in
315 Lausanne University Hospital did not decrease during the study period. However, because of
316 the present study's small number of patients and its particular design, its results need to be
317 confirmed by further investigations. The shorter length of stay in the SSC almost certainly
318 allowed savings on hospitalization costs for our study population.

319 However, the NRS alone does not seem to be sufficient for determining all the modalities of
320 nutritional treatments. The implementation of a preventive nutritional policy will require an
321 algorithm defining the screening protocol, the modalities of nutritional care, and coordination
322 between the SSC and the CNT. This coordination was particularly important to avoid
323 overnutrition: five nutritional support regimen had to be stopped by the CNT at T₁ and one at
324 T₂. This problem mainly occurred because septic surgery staff started nutritional care before
325 receiving a proposal from the CNT. Feedback sessions appeared to be useful for improving
326 this issue. The algorithm will not be able to ignore basic nutritional care, 43% of which was
327 by dietetic care and 48% by oral nutritional supplements. There was no significant increase in
328 the number of tube feedings started (8% of our study population). Finally, the CNT experts
329 were on hand to guarantee the quality of nutritional care in daily practice, to manage certain

330 complicated nutritional situations, like refeeding-syndrome, and to continue training septic
331 surgery staff.

332

333 **Conclusion**

334 The present study showed that it was possible to implement a nutritional policy in an SSC,
335 with the help of a tool like the NRS, and to reduce the mistakes made in subjective
336 evaluations. Using an algorithm improved the identification of patients nutritionally at risk or
337 malnourished, and it provided the opportunity to start nutritional care while controlling
338 metabolic risks with the help of the CNT. The algorithm also enabled the CNT to use its
339 expertise in improving treatments in complex situations rather than consuming valuable time
340 on basic screening. The NRS showed itself to be useful in our study population, but other
341 methods can be used in nutritional policies ^{37, 38}; the most important thing is to have a strategy
342 that can be used in daily clinical practice ³⁹. The present study set a milestone for the
343 implementation of an institutional nutritional policy which is currently underway.

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- 464

465 **Figure legends**

466

467 **Figure 1**

468 Nutritional management pathway

469 NRS, Nutritional Risk Score; SSC, Septic Surgery Center; CNT, Clinical Nutrition Team

470 * *Eats as usual* is defined as usual food intake before onset of illness

471

472 **Figure 2**

473 Nutritional care prescription

474

475

476 **Figure 3**

477 Predictive margins of an NRS at inclusion, before and after implementation of a preventive

478 nutritional policy, with 95% CIs.

479

480

481 **Tables**

482

483 **Table 1**

484

Criteria of protein-energy malnutrition (PEM)

	Weight loss	BMI	AMC	FFM
Absent	< 10 %	$\geq 17 \text{ kg/m}^2$	> 5 th percentile	> 5 th percentile
Moderate	< 10% AND ^A	< 17 kg/m ²	$\leq 5^{\text{th}}$ percentile	$\leq 5^{\text{th}}$ percentile
	10%–20 %	-	-	-
Severe	10%–20 % AND	< 17 kg/m ²	$\leq 5^{\text{th}}$ percentile	$\leq 5^{\text{th}}$ percentile
	^A > 20%	-	-	-

485

486 BMI, body mass index; AMC, arm muscle circumference; FFM, fat-free mass

487 ^A and at least one of the three criteria (BMI, AMC, FFM)

488

489

490 **Table 2**

491

General patient characteristics

	T ₀ n = 31	T ₁ n = 36	T ₂ n = 31
Age (years) ^A	70.5 ± 14.7	66.9 ± 11.4	69.6 ± 12.6
Male/Female (n)	20/11	23/13	25/6
Type of wound			
Pressure ulcers or bedsores	3 (10%)	5 (14%)	3 (10%)
Diabetic feet	6 (19%)	6 (17%)	10 (32%)
Minor amputation ^B	5 (16%)	14 (39%)	9 (29%)
Major amputation ^B	2 (6%)	0 (0%)	1 (3%)
Other	15 (49%)	11 (30%)	8 (26%)
Comorbidity			
Diabetes mellitus	15 (48%)	21 (58%)	21 (68%)
Hemodialysis	4 (13%)	5 (14%)	3 (10%)
Charlson Comorbidity Index ^B	3 ± 2	3 ± 2	4 ± 3

492

493 ^A Data are expressed as mean ± standard deviation494 ^B Minor amputation means below the ankle; major amputation means above the ankle

495

496 **Table 3**

497

Nutritional parameters at inclusion

	T ₀ n = 31	T ₁ n = 36	T ₂ n = 31
Weight (kg) ^A	71.9 ± 19.2	75.8 ± 16.6	78.5 ± 17.1
Weight loss (%) ^{A, B}	8.2 ± 8.1	4.7 ± 7.8	3.2 ± 8.5
BMI (kg/m ²) ^A	25.4 ± 5.5	26.7 ± 5.2	25.9 ± 4.0
NRS ≥ 3	19 (61%)	16 (44%)	11 (35%)
Protein-energy malnutrition			
Absent	14 (45%)	22 (61%)	19 (61%)
Moderate	9 (29%)	7 (19%)	8 (26%)
Severe	8 (26%)	7 (19%)	4 (13%)

498

499 BMI, body mass index; NRS, Nutritional Risk Score

500 ^A Data are expressed as mean ± standard deviation501 ^B Weight loss does not include weight of amputated extremity

502

503 **Table 4**

504

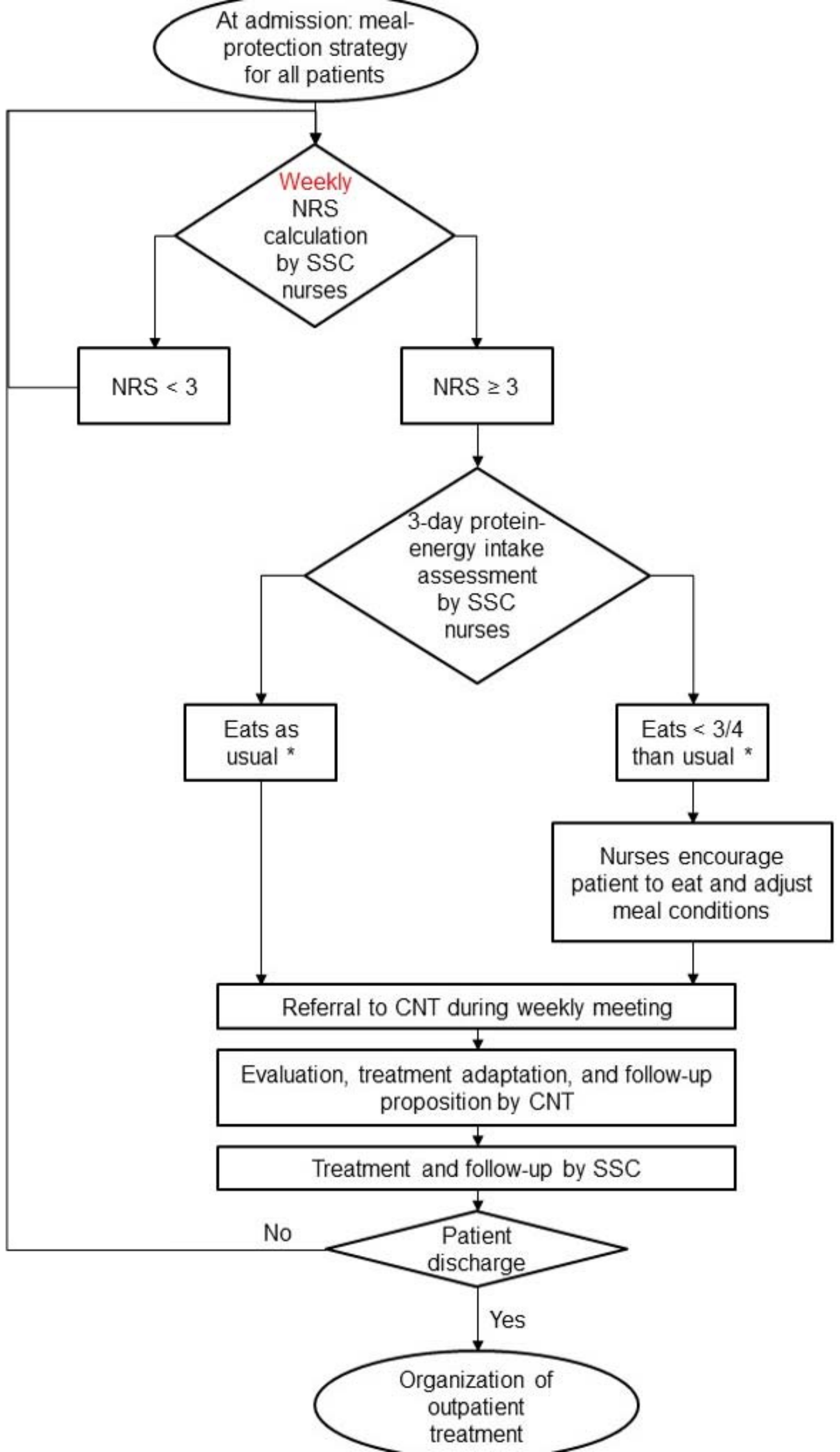
Provided nutritional care

	T ₀ n = 31	T ₁ n = 36	T ₂ n = 31
Patients in need of nutritional care	23	21	16
according to NRS and CNT			
Adequate prescriptions by SSC	-	4/21 (19%)	11/16 (69%)
Dietetic care	-	4	4
Oral Nutritional Supplement	-	-	5
Tube feeding	-	-	2
SSC prescription adapted by CNT	-	9/21 (43%)	0/11 (0%)
Dietetic care	-	-	-
Oral Nutritional Supplement	-	7	-
Tube feeding	-	2	-
Prescription by CNT	23/23 (100%)	8/21 (38%)	5/16 (31%)
Dietetic care	5	8	5
Oral Nutritional Supplement	17	-	-
Tube feeding	1	-	-
SSC prescription stopped by CNT	-	5	1

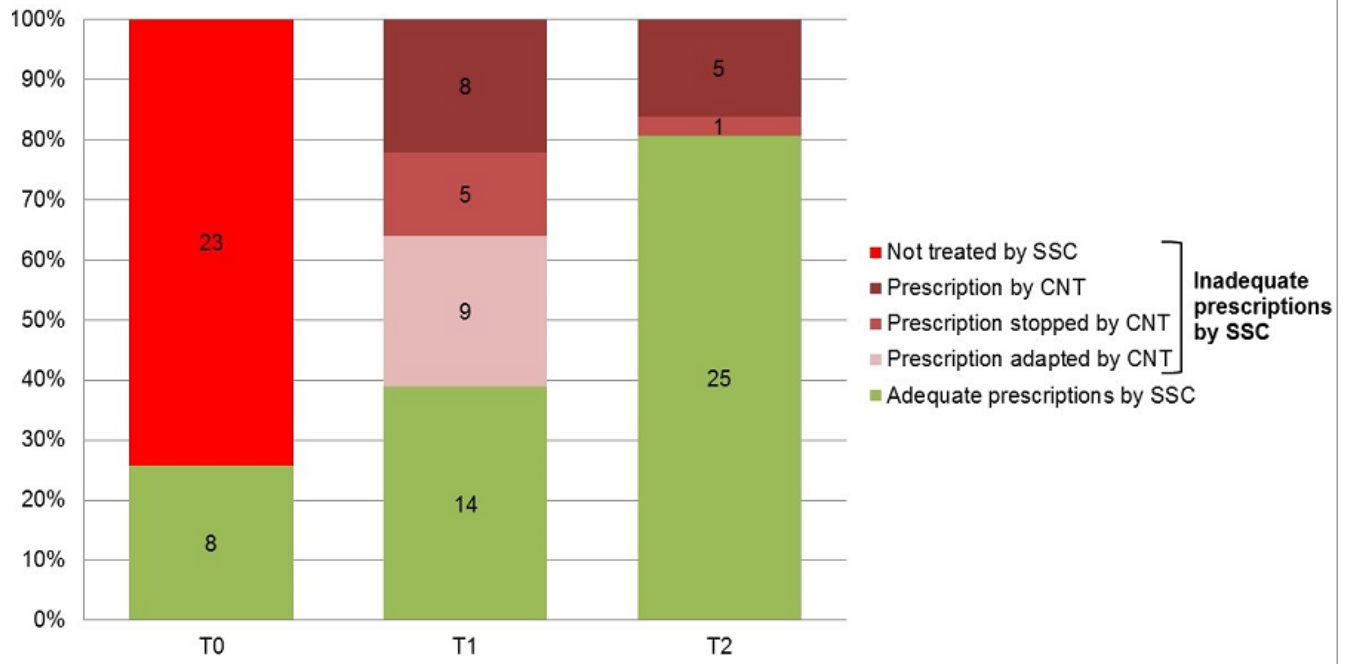
505

506 NRS, Nutritional Risk Score; CNT, Clinical Nutrition Team; SSC, Septic Surgery Center

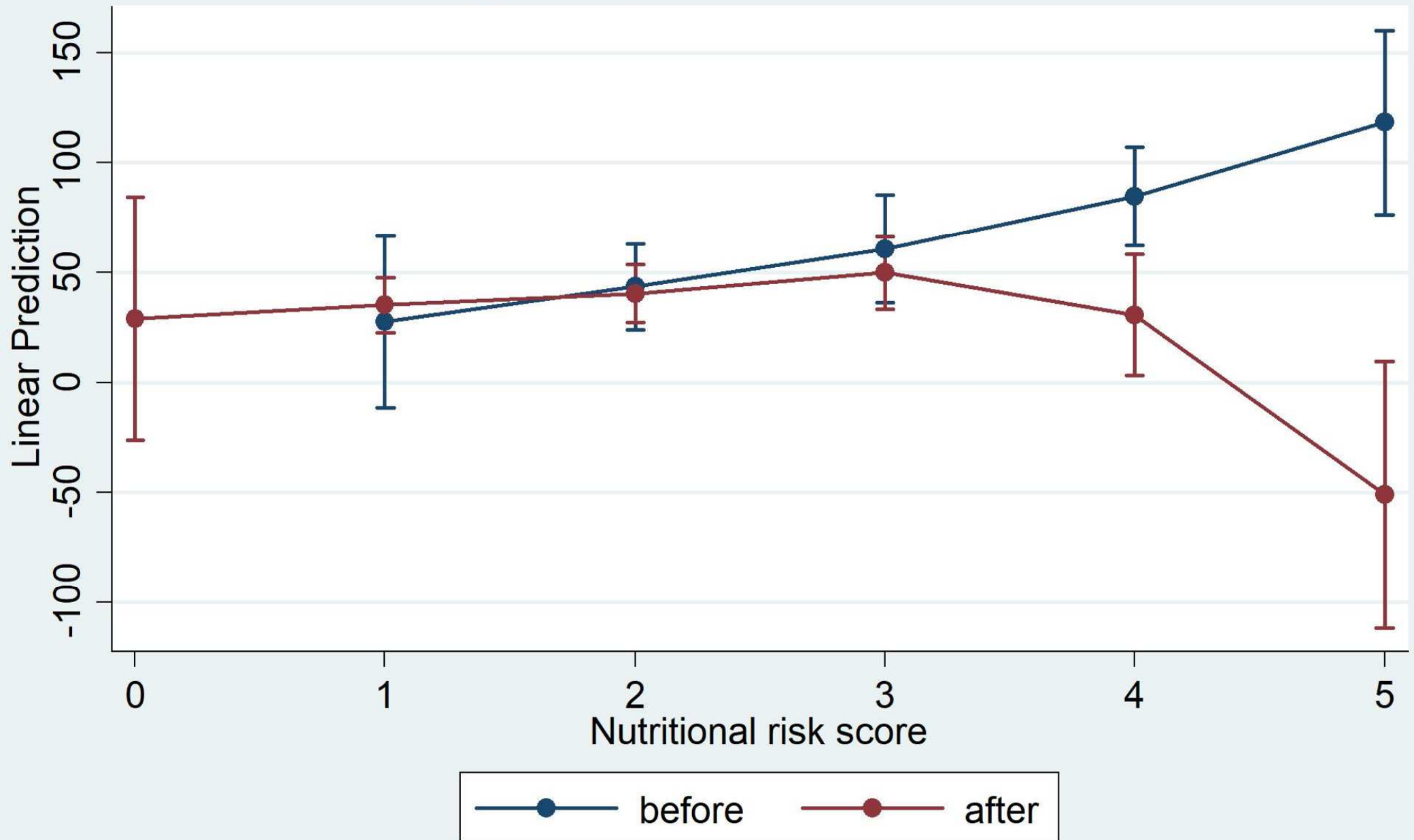
507



Nutritional care quality indicator



Model-predicted Length of Stay (days) in Septic Surgery Centre with 95%CI according to NRS, before and after intervention



Severe PEM excluded (n = 78)