Pt-Global app: from paper-based to digital screening, assessment and monitoring of malnutrition

Harriët Jager-Wittenaar, PhD, RD
Professor of Clinical Malnutrition and Healthy Ageing
Research Group Healthy Ageing, Allied Health Care and Nursing

https://www.youtube.com/watch?v=N7bXOQod5nc
Patient-Generated Subjective Global Assessment

- Assessment of nutritional status
- Assessment of risk factors for malnutrition

- Disease & Nutritional requirements
- Metabolic stress
- Physical exam
- Weight
- Food Intake
- Symptoms
- Activities & Functioning

**PG-SGA**

**Numerical PG-SGA score**
- point score from all Boxes and Work sheets
- Triaging for intervention

**PG-SGA Category:** Box 1-4 + Work sheet 4 (physical exam)
- PG-SGA-A = Well nourished
- PG-SGA-B = Moderately malnourished / suspected malnutrition
- PG-SGA-C = Severely malnourished

Use of PG-SGA allows to monitor nutritional status across chain of care

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**Application of PG-SGA**

- Developed and validated first within oncology setting:
  - Ottery FD, Nutrition 1996
  - Bauer et al, Eur J Clin Nutr 2002
  - Isenring, Eur J Clin Nutr 2003

- Applied / validated in other populations:
  - Older people (Marshall 2015; Kim 2013; Sheard 2013)
  - Abdominal surgery (Huang 2014)
  - HIV (Mokori et al., 2011)
  - Nephrology (Campbell 2013; Oliveira 2010; Desbrow 2005)

Full Bibliography: [www.pt-global.org](http://www.pt-global.org)
PG-SGA SF: practical and feasible

Mean: 2 min and 36 sec
SD: 1 min and 8 sec
min.: 0.49; max. 5.00

N=19

Positive effects of training in PG-SGA

N=36 untrained health care professionals

Sealy et al., poster ESPEN 2015
To be published
Validity

PG-SGA covers all domains of definition of malnutrition
Content validity of methods to assess malnutrition in cancer patients

PG-SGA (SF) covers all domains of definition of malnutrition

A) Nutrient balance
B) Body shape, body area and body composition
C) Body function

Sealy et al. ESPEN poster 2014
Submitted

PG-SGA Short Form & Full version validated instruments

- Predicts / related to:
  - Hospital readmission (Bauer et al., 2002)
  - Chemotherapy toxicity (Vigano et al., 2014)
  - Body composition (Vigano et al., 2014)
  - Handgrip strength (Vigano et al., 2014)
  - QoL (Isenring et al., 2003; Vigano 2014)
PG-SGA Short Form & full version predict survival

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PG-SGA Short Form

- PG-SGA SF: 0 – 1 pt
- PG-SGA SF: 2 – 8 pt
- PG-SGA SF: ≥9 pt

Vigano et al., JAND 2014

PG-SGA full version

Persson et al., Clin Nutr 1999;18(2):71-77

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PG-SGA Short Form & full version predict length of stay

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PG-SGA

MUST

NRS-2002

Guerra et al. JAND 2015
**Moderate agreement**
PG-SGA SF vs. MUST or SNAQ

<table>
<thead>
<tr>
<th></th>
<th>MUST Low risk</th>
<th>MUST Medium risk</th>
<th>MUST High risk</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>PG-SGA SF Low risk</td>
<td>50</td>
<td>2</td>
<td>1</td>
<td>53</td>
</tr>
<tr>
<td>PG-SGA SF Medium risk</td>
<td>12</td>
<td>3</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td>PG-SGA SF High risk</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>66</td>
<td>7</td>
<td>8</td>
<td>81</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>SNAQ Low risk</th>
<th>SNAQ Medium risk</th>
<th>SNAQ High risk</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>PG-SGA SF Low risk</td>
<td>48</td>
<td>3</td>
<td>2</td>
<td>53</td>
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<tr>
<td>PG-SGA SF Medium risk</td>
<td>12</td>
<td>2</td>
<td>5</td>
<td>19</td>
</tr>
<tr>
<td>PG-SGA SF High risk</td>
<td>5</td>
<td>0</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>66</td>
<td>7</td>
<td>8</td>
<td>81</td>
</tr>
</tbody>
</table>

Figure 1. Agreement between PG-SGA SF and MUST
Figure 2. Agreement between PG-SGA SF and SNAQ

N=81

PG-SGA SF vs. MUST: $\kappa=0.452$, ICC=0.448; $p<0.001$
PG-SGA SF vs. SNAQ: $\kappa=0.395$, ICC=0.395; $p<0.001$

Angerman et al., poster ESPEN 2015

**PG-SGA SF sensitive to identifying future malnutrition risk**

<table>
<thead>
<tr>
<th></th>
<th>PG-SGA SF (≥ 4 pts)</th>
<th>PG-SGA SF (≥ 9 pts)</th>
<th>MUST (≥2 pts)</th>
<th>SNAQ (≥3 pts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>1.00</td>
<td>0.78</td>
<td>0.33</td>
<td>0.44</td>
</tr>
<tr>
<td>Specificity</td>
<td>0.90</td>
<td>1.00</td>
<td>0.90</td>
<td>0.90</td>
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<tr>
<td>Positive predictive value</td>
<td>0.90</td>
<td>1.00</td>
<td>0.75</td>
<td>0.80</td>
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<tr>
<td>Negative predictive value</td>
<td>1.00</td>
<td>0.83</td>
<td>0.60</td>
<td>0.64</td>
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</tbody>
</table>

N=19
Innovation in nutritional care
Pt-Global app


- Available on the App Store, Google play, Windows Phone Store
Patient
Patient characteristics

78 years
183 cm

Gender
Man Woman

Weight history
In summary of my current and recent weight:

six months ago I weighed about: 85.0 kg
One month ago I weighed about: 80.0 kg
I currently weigh about: 75.0 kg

During the past two weeks my weight has:

Increased
Unchanged
Decreased
Over the past month, I would generally rate my activity as:

- Normal with no limitations
- Not my normal self, but able to be up and about with fairly normal activities
- Not feeling up to most things, but in bed or chair less than half the day
- Able to do little activity and spend most of the day in bed or chair
- Pretty much bedridden, rarely out of bed

Fever
- No fever
- >37.2°C and <38.3°C
- ≥38.3°C and <38.8°C
- ≥38.8°C

Fever duration
- No fever
- <72 hours
- 72 hours
- >72 hours

Corticosteroids
- Yes

<table>
<thead>
<tr>
<th>Corticosteroid</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
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<tbody>
<tr>
<td>Prednisone (mg)</td>
<td>10</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>Cortisone (mg)</td>
<td>50</td>
<td>100</td>
<td>150</td>
</tr>
<tr>
<td>Hydrocortisone (mg)</td>
<td>40</td>
<td>80</td>
<td>120</td>
</tr>
<tr>
<td>Prednisolone (mg)</td>
<td>10</td>
<td>20</td>
<td>30</td>
</tr>
<tr>
<td>Methylprednisolone (mg)</td>
<td>8</td>
<td>16</td>
<td>24</td>
</tr>
<tr>
<td>Dexamethasone (mg)</td>
<td>1.5</td>
<td>3</td>
<td>4.5</td>
</tr>
</tbody>
</table>
Multilingual

Multiple PG-SGA translations
Visitors 10 June 2014 – 16 Oct 2015

123 countries
Take home messages

- PG-SGA = screening + assessment + monitoring
  → facilitates consistent scoring in chain of care
- PG-SGA is valid and reliable
- PG-SGA covers all domains of definition of malnutrition
- PG-SGA facilitates patient-centric & proactive nutritional care

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Contact us!

www.pt-global.org
info@pt-global.org

Thank you!