less healthy than normal subjects of the same age (alter-
ations of sleeping pattern, greater emotional labil-
ity, more difficulties with sexual relationships, greater
sense of social isolation, poor concentration and mem-
ory difficulties)\textsuperscript{26,50}. Although methods evalu-
ating and monitoring physical and emotional well-be-
ing carry inherent limitations, recent developments
have provided more sensitive scoring systems, such as
the adult GHD assessment (QoL-AGHDA) score\textsuperscript{51}.
This is a questionnaire comprising 25 items based on
the symptoms most frequently reported by GHD
adults. Questions regarding energy, physical and men-
tal drive, concentration, memory, personal relation-
ships, social life, cognition and emotions are included
and a single score is obtained (Table 4). Initial placebo
controlled trials (which did not use the QoL-AGH-
DA score) have documented statistically significant
improvements in quality of life after the initiation of
GH replacement therapy\textsuperscript{1,7,52}. This effect of GH re-
placement therapy is seen within 3 to 6 months of treat-
ment and is sustained throughout the duration of GH
replacement\textsuperscript{1,8}. The speed of onset of improvement
before any expected increase in muscle strength and
cardiac performance and the fact that this occurs de-
spite only small increments in serum IGF-I levels sug-
gests a direct GH effect on the brain\textsuperscript{1,51}. In addition,
GH replacement therapy resulted in a significant de-
crease in the number of days of ‘sick leave’, the num-
ber of days in hospital and the number of visits to the
doctor\textsuperscript{53}. In current clinical practice, a 6-month course
of GH replacement should be undertaken to assess
clearly QoL benefits in GHD adults\textsuperscript{8}.

\textbf{Who’s to be treated}

All patients with documented severe GHD are el-
ligible for GH replacement, the goal being to correct
abnormalities associated with GHD\textsuperscript{13}. Lack of well-
being and abnormal body composition remain the
most common reasons to consider a trial of GH re-
placement therapy in adults, and they represent the
most useful clinical markers of GH efficacy during
replacement\textsuperscript{54}. Recently, GH has also been approved
by the FDA for use in human immunodeficiency virus
(HIV) associated wasting states in adults\textsuperscript{55}. Absolute
contraindications for GH replacement therapy are
active malignancy, benign intracranial hypertension
and proliferative or pre-proliferative diabetic retin-
opathy\textsuperscript{13}. Well controlled diabetes mellitus is not a
contraindication; however, as GH antagonizes insu-
lin effects, careful monitoring is required\textsuperscript{56}. Stable
background retinopathy should not lead to discon-
tinuation of GH replacement\textsuperscript{56}. Early pregnancy is not a
contraindication, but GH should be discontinued in
the second trimester as GH is produced by the pla-
centa\textsuperscript{13}.

\textbf{Optimal GH dose}

In the initial studies, a weight or surface area based
dosing regimen was employed\textsuperscript{6,57,58}. This was based on
experience gained from treatment of GHD children
and resulted in GH daily doses of approximately 25\mu g/
kg that were associated with supranormal levels of
serum IGF-I levels and high rates of side effects\textsuperscript{17}.
Adults with GHD are more susceptible than children
to side effects, especially at the initiation of therapy\textsuperscript{55}.
Subsequent studies have shown that GH replacement

\begin{table}[h]
\centering
\caption{Quality of life assessment of GH deficiency in adults (AGHDA score)}
\begin{tabular}{l}
1. I have to struggle to finish jobs. \\
2. I feel a strong need to sleep during the day \\
3. I often feel lonely even when I am with other people \\
4. I have to read things several times before they sink in \\
5. It is difficult for me to make friends \\
6. It takes a lot of effort for me to do simple tasks \\
7. I have difficulty controlling my emotions \\
8. I often lose track of what I want to say \\
9. I lack confidence \\
10. I have to push myself to do things \\
11. I often feel very tense \\
12. I feel as if I let people down \\
13. I find it hard to mix with people \\
14. I feel worn out even when I’ve not done anything \\
15. There are times when I feel very low \\
16. I avoid responsibilities if possible \\
17. I avoid mixing with people I don’t know well \\
18. I feel as if I am a burden to people \\
19. I often forget what people have said to me \\
20. I find it difficult to plan ahead \\
21. I am easily irritated by other people \\
22. I often feel too tired to do things I ought to do \\
23. I have to force myself to do all the things that need doing \\
24. I often have to force myself to stay awake \\
25. My memory lets me down.
\end{tabular}
\end{table}