NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Draft guidance consultation

Ripretinib for treating advanced gastrointestinal stromal tumours after 3 or more treatments [ID6496]

The Department of Health and Social Care has asked the National Institute for Health and Care Excellence (NICE) to produce guidance on using ripretinib in the NHS in England. The evaluation committee has considered the evidence submitted by the company and the views of non-company stakeholders, clinical experts and patient experts.

This document has been prepared for consultation with the stakeholders. It summarises the evidence and views that have been considered, and sets out the recommendations made by the committee. NICE invites comments from the stakeholders for this evaluation and the public. This document should be read along with the evidence (see the committee papers).

The evaluation committee is interested in receiving comments on the following:

- Has all of the relevant evidence been taken into account?
- Are the summaries of clinical and cost effectiveness reasonable interpretations of the evidence?
- Are the recommendations sound and a suitable basis for guidance to the NHS?
- Are there any aspects of the recommendations that need particular consideration to ensure we avoid unlawful discrimination against any group of people on the grounds of age, disability, gender reassignment, pregnancy and maternity, race, religion or belief, sex or sexual orientation?

Issue date: October 2025

Note that this document is not NICE's final guidance on ripretinib. The recommendations in section 1 may change after consultation.

After consultation:

- The evaluation committee will meet again to consider the evidence, this evaluation consultation document and comments from the stakeholders.
- At that meeting, the committee will also consider comments made by people who are not stakeholders.
- After considering these comments, the committee will prepare the final draft guidance.
- Subject to any appeal by stakeholders, the final draft guidance may be used as the basis for NICE's guidance on using ripretinib in the NHS in England.

For further details, see NICE's manual on health technology evaluation.

The key dates for this evaluation are:

- Closing date for comments: 3rd December 2025
- Second evaluation committee meeting: 7th January 2026
- Details of the evaluation committee are given in section 4

1 Recommendations

1.1 Ripretinib should not be used for treating advanced gastrointestinal stromal tumour (GIST) in adults after 3 or more kinase inhibitors, including imatinib.

1.2 This recommendation is not intended to affect treatment with ripretinib that was started in the NHS before this guidance was published. People having treatment outside this recommendation may continue without change to the funding arrangements in place for them before this guidance was published, until they and their NHS healthcare professional consider it appropriate to stop.

What this means in practice

Ripretinib is not required to be funded and should not be used routinely in the NHS in England for the condition and population in the recommendations.

This is because the available evidence does not suggest ripretinib is value for money in this population.

Why the committee made these recommendations

Usual treatment for advanced GIST, after people have tried the tyrosine kinase inhibitors imatinib, sunitinib and regorafenib, is best supportive care.

Clinical trial evidence shows that ripretinib plus best supportive care increases the time before the cancer gets worse and increases how long people live compared with placebo plus best supportive care.

But there are uncertainties with the economic model. These include how it adjusted for people in the trial having ripretinib twice daily and how long people are expected to live in the long term.

Even when considering the condition's severity, the most likely cost-effectiveness estimates were above the range that NICE considers an acceptable use of NHS resources. So ripretinib should not be used.

2 Information about ripretinib

Marketing authorisation indication

2.1 Ripretinib (Qinlock, Deciphera Pharmaceuticals) is indicated for 'the treatment of adult patients with advanced gastrointestinal stromal tumour (GIST) who have received prior treatment with three or more kinase inhibitors, including imatinib'.

Dosage in the marketing authorisation

2.2 The dosage schedule is available in the summary of product characteristics for ripretinib.

Price

2.3 The list price of ripretinib is £18,400 per 30-day supply (excluding VAT; company submission). This is based on a 150-mg dose once daily (3 50-mg tablets).

2.4 The company has a commercial arrangement, which would have applied if ripretinib had been recommended.

Carbon Reduction Plan

2.5 Information on the Carbon Reduction Plan for UK carbon emissions for Deciphera Pharmaceuticals will be included here when guidance is published.

3 Committee discussion

The evaluation committee considered evidence submitted by Deciphera Pharmaceuticals, a review of this submission by the external assessment group

(EAG), and responses from stakeholders. See the committee papers for full details of the evidence.

The condition

Gastrointestinal stromal tumour and the treatment pathway

3.1 Gastrointestinal stromal tumour (GIST) is a rare cancer that affects life expectancy and quality of life. Metastatic or unresectable GIST is treated with tyrosine kinase inhibitors (TKIs). The committee heard from the patient group that side effects of treatment can include nausea, diarrhoea, skin rashes and sore hands and feet. TKIs can also damage kidney and liver function. TKIs are used in the following sequence:

- imatinib at first-line for unresectable or metastatic GIST (see the NICE technology appraisal guidance on imatinib for the treatment of unresectable and/or metastatic gastro-intestinal stromal tumours)
- sunitinib at second-line if GIST progresses or the person cannot tolerate imatinib (see the NICE technology appraisal guidance on sunitinib for the treatment of gastrointestinal stromal tumours)
- regorafenib at third-line if there is further progression or GIST does not respond to imatinib and sunitinib (see the NICE technology appraisal guidance on regorafenib for previously treated unresectable or metastatic gastrointestinal stromal tumours).

There are no fourth-line treatment options for people if their cancer progresses or if they cannot tolerate the available options, other than best supportive care. Because of the limited treatment options, each option is used until the maximum clinical benefit is gained before moving to the next line of treatment. A patient expert noted that these treatments can be effective for more common GIST mutations. But treatment options are limited when GIST no longer responds to current treatments. A clinical expert noted that treatment resistance can happen when secondary mutations, such as exon 17 and exon 18, develop after treatment with targeted TKIs. Third-line treatment with regorafenib can be continued after

disease progression. But, when treatment stops working because the GIST has mutated, the only option is best supportive care or, if available, treatment on a clinical trial. A patient expert explained that this can be difficult to cope with mentally because clinical trials have uncertain outcomes. A clinical expert explained that because sunitinib and regorafenib have cardiovascular side effects, people with existing cardiovascular disease can find them difficult to tolerate. Although treatments can be tried again, this is not usually effective. The clinical experts stated that the cancer usually progresses within weeks of starting the retreatment, especially if the person has an exon 17 or exon 18 mutation. A clinical expert explained that people having later lines of treatment for GIST are now generally fitter than they used to be at the same stage in the treatment pathway. This is because of:

- earlier diagnosis
- increasing knowledge about available treatments and
- improvements in managing treatment side effects.

The committee concluded that there is an unmet need for an effective treatment option after imatinib, sunitinib and regorafenib, especially for advanced GIST with exon 17 or exon 18 mutations.

Ripretinib dosing

3.2 Patient experts stated that the side effects of ripretinib were manageable compared with the side effects from some of the other TKIs. They also highlighted that people reported having a better quality of life on ripretinib compared with regorafenib. The clinical experts stated there appeared to be no dose-limiting toxicity associated with ripretinib, unlike imatinib where the increased dose provides extra benefits but is more toxic. This is because small changes in the serum concentration of imatinib can have negative adverse effects. They also noted that healthcare professionals would like the option to consider twice-daily dosage of ripretinib to maximise treatment options. The committee concluded that twice-daily

dosage was not in the marketing authorisation for ripretinib and so only the once-daily dosage could be appraised in this evaluation. But it acknowledged that escalating to twice-daily dosage was something that healthcare professionals would like to offer in practice.

Clinical effectiveness

INVICTUS trial

3.3 The clinical-effectiveness evidence for ripretinib came from INVICTUS, an international, multicentre, randomised, double-blind, placebo-controlled phase 3 trial. It compared the efficacy of 150 mg of ripretinib once daily plus best supportive care (n=85; ripretinib group) and placebo plus best supportive care (n=44; placebo group). The trial included adults who had:

- a histologically confirmed diagnosis of GIST
- at least 1 measurable lesion
- a European Oncology Group (ECOG) performance status of 0 to 2 and
- tried imatinib, sunitinib, and regorafenib and either:
  - their disease progressed or
  - they did not tolerate the treatment despite dose modifications.

Treatment with ripretinib was continued until disease progression or unacceptable toxicity. At disease progression, people having 150 mg of ripretinib once daily could:

- continue having their current dosage
- increase the dosage to 150 mg twice daily, or
- stop having ripretinib.

If their disease got worse, people having placebo could cross over to 150 mg of ripretinib once daily or stop taking part in the study. If they stayed in the study and had a second disease progression after crossing over to ripretinib could continue at their current dosage, increase it to twice daily or stop having ripretinib.

Clinical-effectiveness results

3.4 At the May 2019 data cut the median progression-free survival (PFS) in the intention-to-treat population was 6.3 months for the ripretinib group and 1.0 months for the placebo group. PFS was statistically significantly longer in the ripretinib group than in the placebo group (hazard ratio 0.15, 95% confidence interval [CI] 0.09 to 0.25, p<0.0001). Similar PFS was reported in March 2020 and January 2021. PFS was also assessed for the 29 people randomised to placebo who crossed over to 150 mg of ripretinib once daily. The unadjusted analyses showed that the median PFS was 4.6 months in this group. At the August 2020 data cut, unadjusted analyses showed that PFS in the 43 people who increased their dosage to 150 mg of ripretinib twice daily was 3.7 months after the increase.

The unadjusted analyses in the intention-to-treat population showed that overall survival (OS) was 15.1 months for the ripretinib group compared with 6.6 months for the placebo group. The hazard ratio for ripretinib versus placebo was 0.36 (95% CI 0.21 to 0.62, p not reported). Median OS in the 29 people who crossed over from placebo to ripretinib was 11.6 months compared with 1.8 months in people who did not cross over. The unadjusted data showed that at the August 2020 data cut, the median OS for the 43 people who increased their dosage to twice daily was 18.4 months. For the people who did not increase their dosage, it was 14.2 months. In response to clarification, the company had provided summary OS data for the latest data cut (May 2022). But the company considered that the hazard ratio is confidential, so it cannot be presented here. The committee noted that 43 out of the 85 people (51%) originally randomised to ripretinib once daily had increased their dosage to twice daily following disease progression. Of 44 people randomised to placebo, 29 (66%) crossed over to have ripretinib once daily at their first disease progression. The company stated that it allowed people whose disease had progressed to increase dosage because there were no treatment

options at this point in the pathway (see section 3.1). The committee considered the extent of OS benefit was very uncertain. This was because of the small number of people taking part in the trial and the high number of people who had either crossed over or increased their dosage while having ripretinib. But the committee concluded that these results showed better PFS and OS for people having ripretinib plus best supportive care compared with people having placebo plus best supportive care.

Adjusting OS for dose escalation after disease progression

3.5 The committee recalled that at the August 2020 INVICTUS data cut, 43 of the 85 people randomised to 150 mg of ripretinib had increased their dosage from once to twice a day after disease progression. The company noted that its unadjusted analyses of dose escalation (see section 3.4) was uncertain. This is because it had not adjusted for possible predictive or prognostic factors that could have biased results. The company's submission said that at the time of progression 51% of people who increased their dosage had an ECOG score of 0. This was compared with 18% who stayed on a once-daily dosage, who had an ECOG score of 0. It noted that a lower ECOG score had been associated with longer survival in people with advanced GIST. So, the imbalance in ECOG status could have contributed to a perceived benefit in people having twice-daily dosing compared with those who did not. Because the impact of dose escalation on OS estimates was unclear, the company carried out a series of post hoc analyses. The analyses assessed whether increasing the dose of ripretinib after progression from once to twice daily would affect OS. Each of the analyses gave different results, which could have been subject to bias, and there was no clear trend to the data. The committee concluded that the OS should be adjusted to account for some people having had twice-daily dosing in INVICTUS (see section 3.7).

Company's modelling approach

Economic model

3.6 The company presented a partitioned survival approach with 4 health states:

- progression-free
- progressed disease (on treatment with ripretinib)
- progressed disease (off treatment with ripretinib [best supportive care]) and
- death.

This approach was used to capture the effects of continued treatment after disease progression by dividing the progressed disease health state into on treatment and off treatment. The committee concluded that the model was appropriate for decision making.

Adjusting for increasing dosage

3.7 Clinical-effectiveness parameters in the company's model were based on INVICTUS data from January 2021, which was extrapolated to inform health state occupancy. When their disease progressed, people in INVICTUS could either stay on 150 mg of ripretinib once daily or increase to twice daily (see section 3.5). The company base case had originally adjusted the data to account for people crossing over from placebo to having ripretinib. But it had not adjusted the data to account for the effects of twice-daily dosing on OS estimates in this base case. The company had considered adjusting OS data for increasing dosage in the ripretinib group in its scenario analyses. The EAG thought that the company's scenario analyses that applied the 2-stage adjustment was the only appropriate analyses supporting a causal interpretation of the effect of increasing dosage. For this analysis, the company had noted the generalised gamma distribution for the complex model was the best fitting adjustment. The company revised its base case before the committee meeting to include the 2-stage adjustment. This was applied using a

complex model (and the generalised gamma distribution to identify the time ratio). The complex model used a range of parametric distributions to obtain time ratios. The first stage estimated the effect of people switching to twice-daily dosage rather than continuing with once-daily dosage. The second stage applied these time ratios to estimate counterfactual OS, as though treatment had continued without increasing the dosage. The EAG agreed that the complex model using the generalised gamma distribution had the best statistical fit for estimating counterfactual OS. The committee recognised there was large uncertainty surrounding the impact of increasing dosage on OS estimates. But it concluded the complex 2-stage estimation was the most appropriate adjustment for taking account of the effect of increasing dosage on OS in INVICTUS.

Recensoring data

3.8 Because the INVICTUS data had included censoring for people who had increased their dosage, recensoring can be used to adjust the data for people who increased their dosage and for people who did not. Technical Support Document 24 recommends presenting results with and without recensoring for 2-stage adjustment analysts. The company felt that applying recensoring could introduce uncertainty to the long-term extrapolations. This is because survival follow up for people having ripretinib was much shorter with recensoring and there was a drop in the number of people at risk compared with not including recensoring. Technical Support Document 24 describes that recensoring aims to break the dependence between treatment received, counterfactual censoring time and prognosis, which may bias the adjusted data. The EAG noted that applying the adjustment for increasing dosage with or without recensoring was the biggest driver of the cost-effectiveness estimates. Parametric survival models were fitted to each counterfactual dataset for extrapolation. The EAG noted that none of the extrapolated models that were fitted without recensoring provided a satisfactory fit to capture the timing of the first hazard increase in the 2-stage adjusted data. But fitting the log-logistic model with recensoring more closely aligned with the

smoothed empirical hazard. So it preferred to extrapolate the counterfactual OS in this way. The company preferred the log-normal model, without recensoring. The committee felt there was considerable uncertainty in interpreting the OS because of the number of adjustments required for the data. But, it noted that fitting either the log-logistic or log-normal models resulted in minimal differences in the cost-effectiveness estimates. It considered extrapolations with and without recensoring impacted the cost-effectiveness estimates. It concluded that the EAG's preferred approach, which included recensoring within the 2-stage adjusted complex model and extrapolated using the log-logistic model, was more aligned with the empirical hazard and so was the most appropriate analysis.

Plausibility of OS predictions generated by the economic model

3.9 The company had sought clinical opinion on the plausibility and validity of the survival probability produced by the OS modelling it used in its economic model. In its submission it stated that published estimates of the 10-year survival rates for people starting first and second lines of treatment ranged from 10% to 23%. But it noted that after progressing on imatinib, the disease can progress quickly. Treatment with sunitinib and regorafenib could only provide 6 to 9 months of benefit before the disease gets worse. For people who had second line sunitinib, 10-year survival was about 10%. Estimates from the clinical advisers consulted by the company for the projected 10-year survival for ripretinib ranged from 1% to 8%. The consensus opinion of the clinical advisers was considered by the company as confidential, so cannot be presented here. The EAG said that its OS modelling had better external validity. This was because its extrapolation (recensoring and using the log-logistic extrapolation) projected a 10-year survival that was closer to the consensus opinion of the clinical advisers. The clinical experts at the meeting explained that in recent years treatment options earlier in the pathway have changed and now include more surgery, precision medicine and better management of side effects. Because of this, survival estimates are now better (around

4% to 6%). The committee noted that using the company's approach seemed to give implausible OS estimates in the ripretinib arm in the post-progression, off treatment state. The clinical expert responded that because people in INVICTUS were having treatment abroad, they may have had off-label treatment with other drugs, such as immunotherapies. So, this may have had a stabilising effect. The EAG stated that their clinical advisers had said they would expect no residual effect after stopping treatment, and the EAG's preferred analysis (using recensoring) showed less modelled survival gain after progression compared with the company's modelled survival (without recensoring). The committee recognised that people in current clinical practice who have treatment at this point in the pathway may be different to the people in the trial. But the OS estimates in the economic model were based on the population in INVICTUS, in which people had exhausted all other options and had progressed after having regorafenib. It highlighted that the decision modifier (and other model inputs) are based on the INVICTUS population, which is a sicker population than would be expected to have ripretinib in current clinical practice. The committee acknowledged the uncertainty generated through different clinical expectations of survival as the treatment pathway improves. The committee concluded it preferred to consider the INVICTUS trial data when extrapolating OS to 10 years in the economic model.

Including a later data cut of INVICTUS OS data in the economic model

3.10 The company's economic model was informed by the January 2021 data cut of INVICTUS. But there was a later data cut of INVICTUS from May 2022. The company explained that the original model was built before the 2022 data became available. But, it felt that the 2022 data was less robust than the 2021 data. The statistical analyses of outcomes for PFS and health-related quality of life data showed the data was mature. So the company argued that including the 2022 data for OS in the economic model would cause heterogenous clinical inputs and increase the risk of bias created by collecting data from an open-label setting. Although the

company had provided OS estimates for this data cut, it had not done any analyses to incorporate the data into the model. The EAG noted that the 2022 data could provide additional information to inform long-term OS predictions and provide more reliable estimates. It considered longer-term data would help to reduce the impact of information loss caused by recensoring (see section 3.8). At the committee meeting the company explained it had considered the feasibility and impact of the final OS data. The company reiterated that it had made a proactive decision not to include the additional 16 months of OS data. This was because it considered the 2021 data to be sufficiently mature and the hazard ratio for OS was similar with few people at risk during the additional 16 months. The committee recognised the challenges of producing robust evidence in a small population. It noted that a bigger trial could have compared people who had the increased dose with those who did not. But it noted that this would have taken time and been expensive to carry out. It concluded that for its decision making it would find additional data from the May 2022 data cut of INVICTUS helpful or sufficient justification from the company explaining why the data was assessed as poor quality. The committee noted it would be useful if additional data included information on the numbers of people with disease progression in INVICTUS, including:

- the numbers of people in the placebo arm of INVICTUS who had not progressed by the 2021 data cut, but may have progressed and with cross over status unknown by the 2022 data cut
- the numbers of people in the ripretinib arm of INVICTUS who had not progressed at the time of the 2021 data cut but may have progressed by the time of the 2022 data cut and whose dose escalation status was unknown.

Source of utility values

3.11 In NICE technology appraisal on ripretinib for treating advanced GIST after 3 or more treatments (from here TA881) the company base case analysis used utility values from INVICTUS as a single data source. But,

the EAG had preferred to use a utility value from the GRID trial that was used in the NICE technology appraisal guidance on regorafenib for previously treated unresectable or metastatic gastrointestinal stromal tumours. The EAG explained that the company had updated its model structure for this appraisal (since TA881) to include continued treatment after disease progression (see section 3.6). So the EAG's original concern in applying the utility sources from the GRID trial was no longer relevant. In this appraisal both the company and EAG had used the utility values from INVICTUS in their base cases. The committee noted that including utility values from the GRID study had a minimal impact on the cost-effectiveness estimates. It concluded that using utility values from data collected from INVICTUS was appropriate.

Severity

3.12 The committee considered the severity of the condition (the future health lost by people living with the condition having standard care in the NHS). The committee may apply a greater weight to quality-adjusted life years (QALYs), called a severity modifier, if technologies are indicated for conditions with a high degree of severity. The company provided absolute and proportional QALY shortfall estimates in line with NICE's health technology evaluations manual. The company and the EAG agreed that a decision modifier of 1.7 was appropriate. This was based on the characteristics of people in INVICTUS and the mean estimate of QALYs for people in the best supportive care arm of the economic model. The committee noted that the INVICTUS trial completed in 2022. It recalled that the clinical experts had explained that survival outcomes for people needing a fourth-line treatment for GIST in clinical practice have improved (see section 3.1 and section 3.9). So ripretinib may be used in clinical practice differently to how it was in the trial because:

- regorafenib may not be given if testing has suggested that there is a mutation that means it will not be effective

- In INVICTUS people may have had treatment beyond progression before a fourth-line treatment, but if ripretinib was routinely available in clinical practice some people may switch to a fourth-line treatment immediately after progression.

  So generalisability to the population that would have ripretinib in NHS clinical practice is uncertain. The economic model inputs were based on INVICTUS data and the assessment of severity was based on the INVICTUS population. So, in the absence of other available information the committee concluded that it could accept that the severity weight of 1.7 applied to the QALYs was appropriate.

Cost-effectiveness estimates

Acceptable ICER

3.13 NICE's manual on health technology evaluations notes that, above a most plausible incremental cost-effectiveness ratio (ICER) of £20,000 per QALY gained, judgements about the acceptability of a technology as an effective use of NHS resources will take into account the degree of certainty around the ICER. The committee will be more cautious about recommending a technology if it is less certain about the ICERs presented. But it will also take into account other aspects including uncaptured health benefits. The committee recognise the challenges of producing robust evidence in a small population. The committee also noted the high level of uncertainty around:

- using the January 2021 data cut of INVICTUS for the OS estimates applied in the model, when a May 2022 data cut is available (see section 3.10)
- the impact on the overall survival from adjusting the trial data, for cross-over and increased doses (see section 3.7 and section 3.8; the committee noted that this was a big driver in the cost-effectiveness estimates)

- the expected magnitude of the OS benefit caused by uncertainties in the adjustments to the trial data and improvements in the treatment pathway, likely extending people's survival in clinical practice (see section 3.9).

So, the committee concluded that an acceptable ICER would be towards the lower end of the range NICE considers a cost-effective use of NHS resources (£20,000 to £30,000 per QALY gained).

Company and EAG cost-effectiveness estimates

3.14 The company's revised base case analysis used the 2-stage complex model with generalised gamma but without recensoring, applying the log-normal extrapolation. The company's deterministic analysis produced an ICER of £29,350 per QALY gained. The EAG also used the 2-stage complex model with generalised gamma, but included recensoring and applied the log-logistic extrapolation to adjust for increasing dosage. The EAG's deterministic analysis produced an ICER of £44,964 per QALY gained. Both the company's and EAG's base case ICERs applied a QALY weighting of 1.7.

Committee's preferred assumptions

3.15 For the cost-effectiveness analysis, the committee's preferred assumptions were in line with the EAG's base case. That is, the 2-stage adjustment with complex generalised gamma with recensoring and a log-logistic extrapolation (see section 3.7). Taking into account the committee's preferred assumptions, the ICER of £44,964 per QALY gained was higher than the range considered an acceptable use of NHS resources.

Other factors

Equality

3.16 The committee discussed potential equality issues raised by stakeholders but did not identify any equality issues, and no issues that could be addressed in a NICE technology appraisal.

Uncaptured benefits

3.17 The committee considered whether there were any uncaptured benefits of ripretinib. It did not identify, and the company did not highlight any additional benefits of ripretinib that were not captured in the economic modelling. So, the committee concluded that all additional benefits of ripretinib had already been taken into account.

Conclusion

Recommendation

The clinical-effectiveness evidence showed that ripretinib plus best supportive care improved key outcomes in people with advanced GIST who have had 3 or more kinase inhibitors, including imatinib. The committee concluded that the ICER that included its preferred assumptions was above the range that NICE considers an acceptable use of NHS resources (see section 3.15). So, ripretinib should not be used for advanced GIST in adults who have had 3 or more kinase inhibitors, including imatinib. Recognising the uncertainty with OS the committee requested the company provide more information about the INVICTUS follow-up data from May 2022 (see section 3.10).

4 Evaluation committee members and NICE project team

Evaluation committee members

The 4 technology appraisal committees are standing advisory committees of NICE.

This topic was considered by committee D.

Committee members are asked to declare any interests in the technology being evaluated. If it is considered there is a conflict of interest, the member is excluded from participating further in that evaluation.

The minutes of each evaluation committee meeting, which include the names of the members who attended and their declarations of interests, are posted on the NICE website.

Chair

Raju Reddy

Interim Chair, technology appraisal committee D

NICE project team

Each evaluation is assigned to a team consisting of 1 or more health technology analysts (who act as technical leads for the evaluation), a technical adviser, a project manager and an associate director or a principal technical adviser.

Victoria Gillis-Elliott

Technical lead

Joanna Richardson

Technical adviser

Kate Moore

Project manager

Elizabeth Bell

Principal technical adviser

ISBN: [to be added at publication]