

L3 Lead Examiner Report 2001

January 2020

**L3 Qualification in Applied
Human Biology**

**Unit 3 – Human Biology and
Health Issues (21327L)**

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A grade boundary is where we set the level of achievement required to obtain a certain grade for the externally assessed unit. We set grade boundaries for each grade, at Distinction, Merit and Pass.

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When we set grade boundaries, we look at the performance of every learner who took the external assessment. When we can see the full picture of performance, our experts are then able to decide where best to place the grade boundaries – this means that they decide what the lowest possible mark is for a particular grade.

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Each external assessment we set asks different questions and may assess different parts of the unit content outlined in the specification. It would be unfair to learners if we set the same grade boundaries for each assessment, because then it would not take accessibility into account.

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Unit 3 – Human Biology and Health Issues (21327L)

Grade	Unclassified	Level 3			
		N	P	M	D
Boundary Mark	0	9	19	30	41

Introduction

In general, learners performed well especially considering that this was the first sitting of unit 3.

Although learners will not be aware of the topic of the article prior to the examination they will be able to develop the skills required to provide well developed and structured responses to the tasks and draw their knowledge and understanding from the unit into their responses.

Introduction to the Overall Performance of the Unit

Areas where candidates performed well were:

- Question 1 – discussing the reliability of sources and references in the article
- Question 2 – discussing implications from the scientific issues
- Question 3 – identifying different organisations or individuals from the article
- Question 5 – selecting an appropriate format and tone for the target audience
- Question 5 – discussing the benefits and concerns surrounding genetically modified crops

Areas where candidates did not perform as well were:

- Question 1 – identifying and explaining evidence from the article to discuss the validity of the judgements being made
- Question 2 – linking different impact areas
- Question 3 – explaining the sphere of influence of identified organisations or individuals
- Question 4 – expanding upon the areas of further research or development that were identified from the articles

Individual Questions

Question 1.

Discuss how the article uses scientific information to present the pre-implantation genetic diagnosis (PGD) issue.

(12 marks)

The learners were able to critique the article and highlight key points that indicate that the article is valid and areas which could suggest that the article was not fully reliable.

The learners could have developed their interpretation and analysis but working methodically through the article making reference to the key areas, including the figures.

Some learners did not demonstrate that they understood the meaning of validity within a scientific context. Those that did often started by stating what validity and reliability meant. Most who answered well mentioned the number of references, if the references had been peer reviewed, the date of the references and possible reputation of the authors of the references and figures.

There were some very elegant responses which focused on the evidence and the nature of it, as well as using the references. Higher scoring learners recognised that a synopsis of many studies showing agreement could assess reliability. Some learners misunderstood the focus of the question and discussed about how article could have been improved.

The response below shows understanding of scientific articles and references and have made comments on the positive and negative aspects of the article. The presentation of the issues surrounding pre-implantation genetic diagnosis (PGD) is discussed, consistently supported throughout by the consideration of how the article has interpreted and analysed the scientific information to support the conclusions/judgements being made and the validity and reliability of data. The response displays a well-developed and logical discussion that clearly considers a wide range of different aspects. This response was placed at the bottom of band 4 and awarded 10 marks. Had the learner included more detail, for example that peer review is not always infallible, or more discussion on the analysis of the figures then this response could have achieved top of band 4.

1 Discuss how the article uses scientific information to present the pre-implantation genetic diagnosis (PGD) issue.

In your answer, you should consider:

- how the article has interpreted and analysed scientific information to support the conclusions/judgements being made
- validity and reliability.

The article is written with the intention ⁽¹²⁾ 10_{as} to provide information to general public. If any scientific experiments are used in the article, they are explained in a simple manner with tables to present findings. Along with the results being shown through tables and graphs, the article shows no biased opinion with ethical or cost issues and explains the issues as well as the benefits clearly.

The article uses a different sources to ~~create~~ find information they need to write it. If we take a look at the bibliography presented at the rear of the article, there is a trend of ~~more~~ the majority of findings are from websites ~~the~~ online, and most importantly, most are not written

by trusted sources like a doctors paper or a research paper. This is a big issue as the articles sources are not reliable and therefore test the reliability of the article itself. Another issue with the sources listed is specifically number 9: The source is from the telegraph newspaper written and updated in 2012, 6 years before it was cited by the author for his article, This takes away the validity of the source as it is outdated at the time of citing. Furthermore, the headline for this newspaper story is '107 million human embryos created for IVF, thrown away.' while the article takes an unbiased approach to this issue, citing sources from a biased story on the matter affects the reliability of the information within the article.

The article presents very important information and issues surrounding IVF/PGD but explains them through techniques that are better suited to the public's general population. For example, there are many issues affecting IVF/PGD that could be explained through scientific manners, but the article uses issues surrounding the

cost and ethics with religious opinion. This is a good technique by the author as it presents information in a way that allows the reader to develop their own views on the matter.

The article uses sources from all over the world with references 3 and 11 being papers from the USA, reference 4 being a ~~paper~~ ^{article} from a scientist based in Jerusalem. This article is for the UK population and results of graphs and research being based and conducted on UK citizens. Therefore using information from different countries who have different views on the matter, different amounts of funding and even equipment completely contradicts the validity of this article and heavily tests the reliability of it.

The response below shows a partially developed discussion that considers some different aspects. The presentation of the issues surrounding pre-implantation genetic diagnosis (PGD) is discussed, mostly supported by a consideration of how the article has interpreted and analysed the scientific information to support the conclusions/judgements being made and the validity and reliability of data. Therefore this response was considered to be a band 3 response and awarded 8 marks.

1 Discuss how the article uses scientific information to present the pre-implantation genetic diagnosis (PGD) issue.

In your answer, you should consider:

- how the article has interpreted and analysed scientific information to support the conclusions/judgements being made
- validity and reliability.

(12) **8** Ta

The article presented shows a variety of different aspects relating to Pre-implantation genetic diagnosis (PGD). It uses a wide range of sources/references such as the NHS and individuals who have added influence to this health issue.

* a positive correlation occurred as ~~age then~~ maternal age increased so did the chances of having an embryo with abnormalities

Page 1:

Figure 2 shows a bar chart relating to a study which aimed to see if there was any possible correlation between the maternal age of a mother and whether the embryo will have abnormalities within its genetic structure causing a genetic disease. This figure shown doesn't have great validity/reliability due to many factors. One of these being that there was limited information given about what abnormalities were caused in these embryos, meaning that some genetic diseases may occur more frequently compared to others which occurred. This would then further affect the ~~overall~~ conclusions given because as age increases, some genetic diseases may be more prone to occur which therefore affects the data being analysed (wrong/false conclusions being made). With this information not being present, it reduces ~~the~~ the level of scientific evidence being given. Also, information about ~~the~~

how the study was completed wasn't present within this article. Information such as sample size ~~the~~ should be stated to allow the reader to understand the study. Due to sample size not being specified makes this figure/experiment less valid/reliable ~~the~~ because ~~the~~ if the experiment ~~having~~ ^{had} a small sample, it limits the data given. Whereas if a larger sample occurred, more data would be collected which means that calculations such as the mean ~~and Standard Deviation~~ wouldn't be affected as much due to anomalies not altering the data as much. Also, information about the date the experiment was conducted wasn't available. This negatively affects the source ~~the~~ because if the research was conducted years before this article, the process ~~used~~/equipment used to collect the data may be less reliable compared to more modern approaches.

Page 3

Page 3 includes a figure which shows a bar chart of results from a survey of questions which related to what ~~the~~ PIED treatment should be used for. The large sample size of 1,211 people makes this data more representative of the public, therefore it's more valid/reliable of getting data to show society's opinion surrounding this health issue. However, this study was conducted in 2002. Because this study was completed ~~long~~ this long ago, it doesn't represent the society's views on PIED ~~in today's~~ today. ~~therefore~~

The response below gives a partially supported discussion on the validity of the article. There is some confusion about what the terms validity and reliability mean. There is some coherence in the response, and this was placed in band 2, with 5 marks.

1 Discuss how the article uses scientific information to present the pre-implantation genetic diagnosis (PGD) issue.

In your answer, you should consider:

- how the article has interpreted and analysed scientific information to support the conclusions/judgements being made
- validity and reliability.

(12) **5** Task

On page 1 the article gives us a background and information about what PGD is this is useful information as it helps you to understand what PGD is used for before making an assumption whether its right or not. However none of the graphs used were referenced or shown ~~any~~ information as to ^{where} they came from.

This ~~the~~ means the graphs are unreliable as they may have come from anywhere or anyone and that they are not trusted unless we know who carried out these studies.

Figure 2 is arguable an irrelevant piece of information as it does not directly address the PGD issue ~~or~~ ^{it} somewhat suggest why it may be used in older women, this has nothing to do with the issues faced with PGD.

On the second page it addresses the cost of the treatment this starts to suggest one of the issues faced with the use of PGD. In the article it states that it costs £8000 per cycle. This information found from a website called Genetic Disorders UK although the name sounds convincing there is no indication as to specifically who wrote this and whether they have any qualifications to back this information.

Figure 3 is confusing ~~with~~ the titles of the table can be confusing and misleading and there is certainly a better way of representing such data.

On the third page it goes on to talk about the controversy of PGD uses and the public's opinion on this. They used a graph to show the results of a survey the graph doesn't show 100% of responses and should have had a dashed foot people who are neutral or have no opinion on the matter to make it more reliable and trustworthy.

In this article all references were discounted for suggesting a consistent reliability in the information. However the references are not so reliable not one of the sources had a dasher with a qualification to show

reliability other than reference 3 with Dr
Jon King. This reduces the ~~scientific~~
^{value} ~~route~~ of the article as the information
given is arguable.

Sources such as 1 and 6 suggest may be
written by the NHS. The NHS is a reliable
source as they provide information on many
different conditions and is based on medically
correct information provided by health care
providers and experts.

Reference 11 seems to be reported in a journal
this may suggest the information will have been
peer reviewed by other scientists suggesting
figure 4 may be reliable.

Reference 2 is a quote from the HFEA which
is the organisation that licenses the use of
PCD suggesting a potential bias view yet
more reliable information.

Figure 4 ~~contains~~ ^{has} no information on the sample of
people used on this survey. This data
suggests an unreliable study as it could have
been a study ~~with a small~~ ^{on a} sample group
on a similar age ~~and~~ ^{and} have be carried out
on only over 1000 people to be more reliable
it should be on a wider population and show
what sample they used

(Total for Activity 1 = 12 marks)

5

3

Question 2.

Discuss the key factors affecting the pre-implantation genetic diagnosis (PGD) issue.

(16 marks)

Learners were not always clear about identifying the implications of the issue (PGD) and some were less able to fully explain the impact by linking the implications to relevant economic, social, ethical and environmental factors. Weaker learners simply described material from the article; they demonstrated limited understanding of the issues or impacts, and their discussions often lacked structure. This paper aims to test understanding of content in articles, alongside specific biology knowledge, these errors demonstrated a lack of scientific literacy among some of the learners. Some learners approached the task rather mechanistically by listing the factor as a sub-heading, thus indicating a lack of ability to synthesise the information across all the factors. The learners could have benefitted by using short quotes and statistics from the article to support their ideas throughout their response.

High scoring candidates demonstrated comprehensive knowledge and understanding of the scientific issue and structured their discussions by selecting and using relevant material from the article. They produced coherent and logical accounts and discussed links to and between the factors. The response below has selected relevant information and developed a discussion that draws a good range of links to and between ethical, social, environmental and economic impacts. In the response shown below the learner has achieved 13 marks out of the 16 available.

2 Discuss the key factors affecting the pre-implantation genetic diagnosis (PGD) issue.

The main key factor affecting pre-implantation genetic diagnosis (PGD) is the cost of the treatment. PGD is available privately at a cost of £8,000 per cycle, and with some couples needing multiple cycles, it is a cost that can come as an issue for some families. The treatment costs alot as it requires multiple, highly trained specialists in the field who use top of the line equipment to carry the treatment out. However, this treatment is also available on the NHS if the cost is too much privately. The NHS have strict guidelines that they follow however. If a couple already have a child with the genetic disorder they are trying to avoid with the new embryo, the NHS will not allow PGD to take place to avoid being used as a tool.

When connecting in to the cost factor of PGD, the treatment is never 100% effective and sometimes crucial diagnosis of diseases are missed. The issue that families or couples have with this is that they are paying £8,000 average

per cycle for doctors, technicians, specialists and equipment, yet they are not promised 100% effective treatment.

Another ~~issue~~ factor affecting PGD is the ethical ~~aspects~~ complications surrounding PGD. There is a very strong argument that PGD ~~causing~~ causes termination of human life with a reported 1.7 million embryos 'thrown away', it is clear to see why people may not like the idea of PGD. However, the counter argument to this claim of 'human life' destruction is the very grey area surrounding what human 'life' classifies as. Some people believe that ~~human~~ 'life' begins at the point of conception, therefore will be the people against PGD, however there is an argument that life begins when the fetus develops functioning limbs, brain, heart etc.

A further issue is the 'eugenics movement'. This movement belongs to a philosophy that the human race can be greatly improved by selecting traits of the baby before it has even begun to develop, so that when it is born, it has these desired traits, such as

beauty or even as far as intelligence of the baby being changed. This is an ~~issue~~ issue called 'designer babies' and is now a crime in the UK, but with more families going to private doctors, it is a crime that can be ignored with enough money.

A very good factor affecting PGD use is how many genetic diseases it can detect and allow diagnosis of. It is reported that using PGD can help detect nearly 100 different diseases, and with a near 100% efficiency it is a figure that many couples love to hear as it means it is near-impossible for their baby to develop a genetic disease while in development.

In the response below the discussion shows sustained and logical connections made to the article through the selection of relevant aspects to support answer and demonstrates good, rather than comprehensive, knowledge and understanding of the key factors affecting the issues surrounding pre-implantation genetic diagnosis (PGD). This response was considered to be a level 3 response and was awarded 10 marks.

2 Discuss the key factors affecting the pre-implantation genetic diagnosis (PGD) issue.

(16) 10ask2

As many embryos are removed, only those without the genetic make-up for the disease are selected for IVF treatment. This could mean that there are only a few and as it isn't 100% successful, it may not work.

This leads onto the following issue that if the couple ~~there~~ already has a child, they can't receive the treatment through the NHS, therefore they have to go privately which costs about £8,000 per cycle. So if the treatment doesn't work, it may end up costing the couple several thousands of pounds just to have a child who is healthy. The cost is due to highly skilled technicians and precise medical equipment to be required.

Another key factor is the issue stating how as a woman gets older, she is more likely to have a child with chromosomal defect due to decrease

egg quality. The graph following it shows the % of abnormal embryos rates increasing from 39% at the age lower than 30, to up to 84% at the age above 42. This shows that as women get older, they are less likely to develop a child without a genetic disorder and due to a decrease in egg quality, as women age, the effectiveness of treatments such as IVF will decrease and multiple tries might be required for it to work, which will cost alot if done privately.

Multiple requirements must be met if a couple would like to undergo the PGT cycle. For example, they must be under 40, in a stable relationship, the women's hormone levels are within range to suggest her ovaries will respond to treatment and the PGT team agrees that the couple is suitable, etc. In response to this, according to the NHS, there were approximately 5,000 people eligible in the UK and although from 2004 to 2011

The number of ART cycles completed and have increased from 95 to 435. It suggests that even though the numbers are increasing, the overall number of ART treatments and cycles represents a very small part of the population and requirements aren't always easy to meet.

There are also many controversies against ART as it is said that they can control the genetic makeup of the baby, even up to physical features such as eye and hair colour, making people believe the process manipulates human reproduction.

The final key factor is the concern of what happens to the embryos that aren't chosen. Daily Telegraph stated that between August 1991 & December 2012, more than 3.5 million human embryos have been produced through IVF. But nearly 1.7 million had been discarded and a further 23,480 were discarded after being taken out of storage. This can be seen as destruction to human life and opposed by religious organisations.

(Total for Activity 2 = 16 marks) **10**

This response was a borderline response between band 1 and band 2 and was awarded 5 marks and it was considered to demonstrate adequate knowledge and understanding of the key factors affecting the issues surrounding pre-implantation genetic diagnosis (PGD).

2 Discuss the key factors affecting the pre-implantation genetic diagnosis (PGD) issue.

(10) 5 Task2

There are many factors that affect the PGD issue such as if the couple do not meet all the criteria the NHS require, they will not be eligible for PGD. As the ~~the~~ number of couples going for PGD has increased every year, ~~there~~ there are still couples that want PGD but aren't eligible, therefore they may have to pay £8000 for private treatment.

Another key factor is that is it is PGD a good thing? Even though it can be seen as trying to give the child to ^{get the} best possibility of a long healthy life, ~~but~~ so ~~the~~ to help ~~to~~ prevent a child being born without genetic/chromosomal defects. But for the embryos that aren't normal, it would be a hard decision because it depends on the view of the couple. They may think no matter what defect the child may have, they deserve a life or if they discard an embryo this could be seen as destroying human

Life. It all depends on what view the couple shares.

Another factor is do they really want the PGD or do they want it to happen naturally? Couples may not want to interfere with the birthing process.

As the PGD advances, it can be used in different ways that could be negative. Depending on the views of the couple, they may disagree with the concept of 'Designer-babies'. Another factor to consider is ~~it~~ How beneficial it will be? Although it's a lengthy and potentially expensive procedure, it may benefit a child's life.

Question 3.

Explain how different organisations/ individuals influence the pre-implantation genetic diagnosis (PGD) issue.

(10 marks)

Most learners identified some organisations, many identifying the NHS, Daily telegraph, religious groups and Dr John Zhang. Some learners tended to work through the article and then the references and made a comprehensive list of the organisations and individuals, but this did not provide the required explanation.

Unfortunately this question was the weakest as in many cases the learners did not demonstrate an understanding of the roles of these organisations and individual and how they might exert influence on the issue of pre-implantation genetic diagnosis (PGD). Many learners were not clear about how the various organisations could influence the development of ideas on the issue by, for example, carrying out research or by influencing political policy worldwide.

The response below identifies organisations and individuals and provides an attempt at explaining how they may influence the PGD, occasionally supported through some linkage and application to the article and was considered to be a band 2 response and was awarded 7 marks.

3 Explain how different organisations/individuals influence the pre-implantation genetic diagnosis (PGD) issue.

In your answer, you should consider:

- research
- health initiatives.

(10) **7** Task

One Organisation that influences the pre-implantation genetic diagnosis (PGD) issue is the NHS commissioning board Clinical reference group for genetics. This is because it provides information about what PGD is and also provides statistics within the article, of the representativeness of PGD in the UK (figure 3). However the ~~source~~ source was published in 2013, meaning it could be outdated. Therefore it could be argued the PGD issue could now be better or worse compared to 2013.

Another organisation that influences the PGD issue is The Human Fertilisation and Embryology Authority. This is because it provides information about almost 400 genetic conditions that can be detected by PGD. This therefore has a positive influence on the PGD issue. This is also a reliable source of information because it was last updated in 2018 which also makes it more reliable.

One individual that influences the PGD issue is Dr John Zang. This is because they give information about how PGD is carried out. However this individual can be unreliable, this is because there is no proof this individual is a doctor e.g. no PhD also their information is sourced from New York, USA, this therefore may not be relevant to the UK. It can also be argued it is outdated as it was published in 2015. Therefore, this lowers reliability meaning it has a negative impact on the PGD issue. This is similar for references ^{8, 10 and 11} ~~mentioned~~ in the article.

Furthermore, another organisation that influences the PGD issue is The Genetic Disorders Partnership Network UK. This is because it gives information about the cost of PGD. This is a reliable source as it is relevant to the UK, and published in the UK, so is close. Therefore, this has a positive influence on the PGD issue.

Moreover, an organisation that influences the PGD issue is the Telegraph Media Group LTD. This is because the newspaper published statistics collect by the

(Total for Activity 3 = 10 marks) **7**

HFEA between 1991 and 2012. This is therefore reliable as it is longitudinal (over several years). However, the article is ~~extremely~~ outdated because now more/less embryos^{are} created through IVF. Therefore this has both a positive and negative influence on the PGD issue.

Finally, another organisation that influences the PGD issue is the Fertility Hospital Angeles Tijuana. This is because they state factors which may affect a woman's egg quality. Although the source is unclear, making it more reliable, as the information is from a hospital in Mexico, due to epigenetics, this may not be relevant to the UK. Therefore, this can have a negative influence on the PGD issue.

The response below identifies the NHS, groups Churches together and identifies John Hopkins university without giving any individuals. The reference to its influence is very basic. There is little explanation and the knowledge shown is only just adequate for top of band 1 and was awarded 3 marks.

3 Explain how different organisations/individuals influence the pre-implantation genetic diagnosis (PGD) issue.

In your answer, you should consider:

- research
- health initiatives.

NHS
church
gov

(10) 3 Task

The NHS conducts research into improving PGD and making it cheaper and more accessible to the general population, in 2011 5000 people were eligible for PGD but only 435 people used it, this demonstrates that the NHS needs to encourage more people to use PGD through health initiatives.

Churches & Religions affect the PGD issue by opposing it, this would make religious people less likely to opt in for PGD as it goes against their religion beliefs.

A public questionnaire by John Hopkins University researched people's opinions on PGD and found that it had a 60% approval rate which is the majority but not decisive however this research may be outdated as it was carried out in 2002.

Question 4.

Suggest potential areas for further development and/or research of the pre-implantation genetic diagnosis (PGD) issue.

(6 marks)

There were some excellent and creative suggestions for further research such as advancing technology to support and improve the success rate of PGD and IVF to reduce the ethical issues of the use of discarded foetuses.

Many learners had not only carefully read the article but had also used their own knowledge and understanding. More able candidates synthesised the suggestions for improvement from the article and used evidence to explain why these improvements were necessary. Unfortunately, some learners misread the question and described how article's style could have been improved. In the response below the learner has presented a range of well synthesised areas for possible development and has used evidence from the article as well as their own knowledge to support the decisions. It was placed at the top of band 2 with 4 marks.

- 4 Suggest potential areas for further development and/or research of the pre-implantation genetic diagnosis (PGD) issue.

(6) 4 Tasl

With advancing technology PGD could potential be developed along the path of also reducing the ethical issues associated with PGD. The ethical issue of discarding ~~ea~~ embryos with the genetic fault is strongly disapproved of so potential, in the wake of developing treatments for these genetic diseases there could be a way to eliminate the faulty gene which would potential leave a healthy cell.

This idea could also involve combining embryos to create a healthy embryo but with the reduced waste of only faulty genes. Both of these ideas are quite futuristic and would ~~not~~ need ambitious pharmaceutical companies to invest into these areas of development.

Another potential area of development could be developing a treatment for the mother during the pregnancy that would prevent the child from having the disease.

~~However~~ This idea would also largely

reduce the interference with the embryos making the ethical issues less of a factor.

These suggestions would be expensive and would likely involve decades of research making them likely to be less successful in anyone wanting to invest.

In the response below the learner has demonstrated isolated elements of knowledge of the health issue and provided limited identification of areas for further development and/or research

The response in band 1 and was awarded 2 marks.

- 4 Suggest potential areas for further development and/or research of the pre-implantation genetic diagnosis (PGD) issue.

(6) 2 Task

There could be a questionnaire on the census to figure out the public's view as a whole on PGD which could lead to new laws being passed e.g. Storage of unimplanted healthy embryos instead of them being discarded.

More indepth research can be carried out ~~at~~ about miscarriage rates and quality of life for babies born through PGD.

Better regulations will allow more families that need PGD will have access to it.

Question 5.

A recent headline in a national newspaper said:

PGD: order your Einstein baby from the genetic menu

You have been asked to write a letter to the editor of this national newspaper to raise awareness of the benefits and limitations of pre-implantation genetic diagnosis (PGD).

When writing your letter, you must consider:

- who is likely to read your letter
- what you would like the reader to learn from your letter.

(16 marks)

This question gave the more able learners a chance to show the understanding of the issue and to write in an appropriate style. Some succeeded well and showed awareness of their audience and wrote with appropriate tone, authority and terminology. Others adopted a very scientific approach which ignored the fact that the target audience may not have medical and scientific knowledge and understanding. Good responses provided an introduction, a balanced discussion of the limitations as well as the benefits with a clear conclusion.

The example below is a very good response that synthesises information from the article to present a balanced discussion. It was placed at the top of band 4 and awarded 14 marks.

5 A recent headline in a national newspaper said:

PGD: order your Einstein baby from the genetic menu

You have been asked to write a letter to the editor of this national newspaper to raise awareness of the benefits and limitations of pre-implantation genetic diagnosis (PGD).

When writing your letter, you must consider:

- who is likely to read your letter
- what you would like the reader to learn from your letter.

(16) 14ask

My personal address

Address of individual (editor)

Dear Sir/Madam

Dear Sir / Madam,

I am writing ~~in~~ a letter to you regarding ~~your~~ the article regarding PGD treatment with the headline "Order your Einstein baby from the genetic menu". I have concerns that the article written is biased towards ~~the~~ one side of this problematic issue and believe that your article should be open to all viewpoints/aspects within this topic of interest.

PGD is a treatment which has been developed and used for IVF patients who will benefit from checking the "genetic build" of their child before it is implanted back into the mothers womb. This process can help immensely for the mother as this process allows the mother to decrease the chances of abortion ~~further would~~ due to genetic diseases. ~~Then~~ Healthy genetical embryos are inserted to the mothers womb. By the reduction of abortions, this then further reduces financial strains on the NHS by a reduction ~~to the~~ of procedures and possibly mental health treatment (mental health problems

Could occur due to the trauma of the abortion process). By encouraging a healthy genetical child means that their offspring will also have the advantage of being produced to decrease the chances of getting ~~long~~ genetic illnesses/diseases. Therefore, once this treatment has been done on an individual, it may further reduce costs for their offspring (due to the genetical ~~being~~ structure of their mother/father being genetically modified against certain genetic diseases). ~~Do you agree~~ With this information, do you ~~not~~ agree that ~~that~~ by going through this treatment could greatly ~~improve~~ ~~can~~ affect the mother's process through birth and then further help the child's life?

However, PGO has been an issue due to many factors. One specific factor being that individuals wanting to genetically modify their embryo so that it has certain characteristics and traits. This problematic ethical issue has many opinions about whether or not this is okay. Also, embryos which are created and then further tested to be found with a genetic disease are then disregarded (not needed). Again, this poses another ethical issue. Also, this process can only be * (1.7 million embryos were disregarded).

* ~~created~~ ^{example} by some families who meet correct requirements, ~~that~~ include "the woman must be under 40 years of age for the treatment, there are no concerns about the welfare of any child involved using the treatment" Due to the ~~high~~ highly skilled and precise equipment needed for this process, high amounts of money is needed. This means that if the treatment is going through the NHS, it will put further strain on funding in other areas of our national health.

Overall, PEGD poses many ethical factors ~~about~~ regarding the process and the child. But if this process is done for ~~the~~ reasons such as reducing genetic diseases, it could potentially improve lives. Therefore, further action must be taken into the treatments regulations and the primary reason the individuals are doing this process is for the right reasons.

Kind regards,

The response below was considered to be a borderline response between band 2 and band 3 and was awarded 8 marks. The learner has summarised the key information and evidence from the article, but could have given more depth and support from the article using quotes or numerical data.

5 A recent headline in a national newspaper said:

PGD: order your Einstein baby from the genetic menu

You have been asked to write a letter to the editor of this national newspaper to raise awareness of the benefits and limitations of pre-implantation genetic diagnosis (PGD).

When writing your letter, you must consider:

- who is likely to read your letter
- what you would like the reader to learn from your letter.

(16) 8 Task

Dear Sir/Madam

I am writing to raise awareness of the benefits and limitations of pre-implantation genetic diagnosis (PGD).

Firstly, I will cover a few of the benefits PGD has been licensed by the human fertilisation and embryology Authority to detect almost 400 genetic conditions such as Huntington's disease, Tay Sachs etc. This shows that it has been approved and can detect several conditions and use treatments such as IVF to avoid it developing into the embryo.

The process of IVF is quite simple to understand and it requires only the embryos that don't have the specific

disease to be used. It has been said that PND reduces the risk of the child producing the disease and has an extremely high success rate.

In addition to the benefits, many requirements are needed to be met. Although it may be difficult, it is good as it increases the likely hood of success rates. Plus it ensures that the child will be raised well, in a secure environment and in a stable relationship.

It is but in contrast to that, there are some limitations to PND.

Although the success rates are extremely high of identifying genetic disease and chromosomal abnormalities, it is not 100% accurate, therefore prenatal diagnosis is advised because the fetus does develop an abnormality, if this is the case then the money that was spent for IVF will have been wasted.

Following that, the cost for the treatment

is £8,000 per cycle outside the NHS, this is a complication for many as most people may not be able to afford it, and even so, they might only be able to afford one cycle, so if it fails, they will have to pay an incredible amount just to have a healthy baby.

In addition to that, as the maternal age of a woman increases, the changes of them developing an abnormal embryo increases. This is due to the decrease in egg quality. This is an issue as they have now closed off anyone above the age of 40 going through the treatment. This stops someone women having the opportunity to have a baby after the age of 40.

Finally, there are many controversial fears and debates of the manipulation of human development, due to the possibility that they can manipulate physical features

To fit a wanted draft.

So in conclusion, although there are many pros and cons to AGO I believe that more research needs to be done to find alternatives for those that we don't have £8000 to spare and for research to be done to clear up the controversies.

I want people to be more aware that although it is highly successful, it isn't 100% and it is worth looking at alternatives first.

Yours sincerely

The example below is at the middle of band 2 with 6 marks. The learner has attempted to give some of the main points, but these are vague and not supported by relevant evidence. They have not selected appropriate material from the article. The learner shows little awareness of the audience and does not use appropriate scientific terminology throughout the response. On this occasion the points are too brief and have not been supported by evidence. This response shows some structure and coherence but is too vague in places.

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(16) 6 Task

Dear Editor,

It is extremely important ~~the~~ that people are correctly educated upon of reading about PGD.

PGD is a very controversial topic and needs to be expressed in ~~the~~ a suitable manner. ~~There are lots of benefits~~ and I don't think that heading is suitable as it creates a wrong image on what PGD should be used for. PGD can save lives, it can allow children to live a long healthy life. It has been proven to detect 400 different chromosomal disorders such as Huntington's disease and Tay Sachs etc. It can save lives! It is important that you mention the benefits to raise awareness of PGD.

By detecting 400 disorders, this can help families live without the worry of defects of their child, the child will get what they deserve and live a ~~great~~ normal life.

From a survey from 1991 to 2012, 1.4 million embryos have been hopeful implants and has allowed couples to start a family through IVF, so it is so important people understand the capabilities of PGD. To have PGD may cost £8000 privately but if ~~they~~ the couple meet the criteria ~~for~~ that the NHS require, they are able to get funding to help financially with the procedure. I would like you to learn from this letter and understand the benefits of PGD so people don't have to suffer if they are carriers for potential defects. Remember ~~the~~ PGD can better lives.

Thanks

Sincerely

Summary

Question 1:

- The key focus of this question is the validity of the judgements being made by the article, so candidates must identify what the conclusions are and whether these are justified and supported
- Whilst candidates need to be clear about validity and reliability, they must be taught to be able to recognise and articulate the evidence for this within the article
- The question requires a discussion so positives and negatives must be drawn out
- Candidates should try to avoid reliance on generic statements such as the number and currency of references

Question 2:

- Learners should clearly establish the scientific issue/issues before examining evidence from the article for the implication areas
- Responses that simply take an implication-by-implication approach are unlikely to show links to and between implication areas
- Although a high number of marks are allocated to this question learners must be careful to proportionate their time so that they do not spend too long on this question

Question 3:

- Candidates must provide more depth than simply provide a list of organisations/individuals mentioned in the article
- Responses need to consider how wide and deep the organisation or individual's sphere of influence is in respect of the scientific issue.
- Consideration of a range of different organisations or individuals will allow candidates to discuss different viewpoints and motivations

Question 4:

- Identification of areas for further research or development within articles is a good starting point, but learners must be able to extrapolate from this within their own suggestions and ideas

Question 5:

- Candidates need to respond to the format of the evidence required by the question eg a report would generally be expected to have a title, introduction /background, discussion and conclusion / recommendation
- Responses need to consider their target audience. Some key considerations are who is the audience, what is relevant to the audience, what is the level of understanding of the issue, what should be the tone they should be addressed in, and should the evidence be advising or informing.
- Candidates must be careful to proportionate their time so that they have enough

time on this question.

The specification and/or sample assessment materials (SAMs) are located on the BTEC First qualification webpage located at the link below

<https://qualifications.pearson.com/en/qualifications/btec-firsts.html>

For more information on Pearson qualifications, please visit

<http://qualifications.pearson.com/en/home.html>

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