



Joint Medical Group Secretariat

Headquarters Joint Medical Group

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Main Building, Whitehall
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Dear [REDACTED],

Thank you for your enquiry of 9 May 2019 in which you asked the following:

In 2010, the ministry completed an investigation on the death of approximately 300 babies in the Sovereign Bases in Cyprus (e.g. <https://www.northnorfolknews.co.uk/news/baby-deaths-investigation-is-concluded-1-741644>). Unfortunately, the investigation is not online, henceforth, I would like to request a copy of the investigation, to be used for the purposes of my research.

Your enquiry is being treated as a request for information under the Freedom of Information Act (FOIA) 2000. The Ministry of Defence (MOD) can confirm that it holds information within the scope of your enquiry, and we attach a copy of the report.

The names of individuals have been redacted in accordance with section 40(2) of the Act (Personal Information). This states that we are not obliged to provide information that is the personal information of another person if releasing would contravene any of the provisions in the Data Protection Act 1998 (DPA). In this instance we believe that the release of this information would contravene the first data protection principle and therefore section 40 (2) is engaged.

If you have any queries regarding the content of this letter, please contact this office in the first instance.

If you wish to complain about the handling of your request, or the content of this response, you can request an independent internal review by contacting the Information Rights Compliance team, Ground Floor, MOD Main Building, Whitehall, SW1A 2HB (e-mail CIO-FOI-IR@mod.uk). Please note that any request for an internal review should be made within 40 working days of the date of this response.

If you remain dissatisfied following an internal review, you may raise your complaint directly to the Information Commissioner under the provisions of Section 50 of the Freedom of Information Act. Please note that the Information Commissioner will not normally investigate your case until the MOD internal review process has been completed. The Information Commissioner can be contacted at: Information Commissioner's Office, Wycliffe House, Water Lane, Wilmslow,

Cheshire, SK9 5AF. Further details of the role and powers of the Information Commissioner can be found on the Commissioner's website at <https://ico.org.uk/>.

Yours sincerely,

Joint Medical Group Secretariat

Report on deaths of infants and children of military personnel in Cyprus 1960-1966

1 Introduction

"An RAF family serving in Cyprus in 1962 suffered a stillbirth. In the late 1980s they contacted the headquarters in Cyprus to enquire about the location of the grave so that they could visit. They did visit and apparently were struck by the large number of children's graves in the military cemetery. In 2001 they wrote to the Minister for the Armed Forces through their MP on the subject."

This report follows up on the query, examining death rates in relation to the questions raised.

2 Sources of Data

2.1 Deaths

There are two sources of data on the deaths that occurred in this period. The first, supplied to me by Colonel [REDACTED] and said by him to be "the extract of the Dhekelia Military Cemetery Burial Register showing all children's deaths between 1960 and 1966. Dhekelia Military Cemetery is the only military cemetery on the island and one would anticipate that all deaths occurring in the British Military community are buried there."

These data include identifying information including the plot in the cemetery and name of the child and military unit of the parent. The relevant data for this report are the ages at death and the date of death (but no date of birth). There are two records with neither age nor date of death and one with a date of death but no age at death. Colonel [REDACTED] assumed these were stillbirths and they are not included in this report. At this period of time, the number of stillbirths would be expected to be very high in any population but few would be accorded a formal burial plot. Colonel [REDACTED] could positively identify one of the three as a stillbirth from the Parliamentary correspondence. There is one duplicated record which I have deleted, the name and all data except the plot designation are identical; the plots are recorded as "2.6.19" and "2.C.19". This gives a total of 296 deaths of children (+ 3 stillbirths).

The second source is the cause of death of 280 of the 299 deaths as provided by the General Register Office, having matched them to the Dhekelia Cemetery Burial Register. It would seem that there are 16 missing records but death registration was apparently not mandatory for Armed Forces personnel serving overseas.

2.2 Births

The first set of data supplied on births to Col [REDACTED] was incorrect. An updated set has been provided to Group Captain [REDACTED] by [REDACTED] [REDACTED] of the IPS. This simply gives the number of live births registered in Cyprus in each year from 1960 to 1966.

3 Results

3.1 Overall Deaths

The total number of deaths (from the Burial register) by year of death is given in Table 1.

Year	Deaths
1960	35
1961	41
1962	55
1963	58
1964	39
1965	35
1966	33
Total	296

Table 1: year and number of deaths of children

The ages at death range from 1 hour to 15 years. The ages in completed years are given in Table 2. Most (89%) of the deaths are within the first year of life, and it is these that we will examine further.

Age	Deaths
0	262
1	7
2	9
3	1
5	3
6	4
8	3
9	2
11	1
12	2
13	1
15	1

Table 2: Age in years of children dying after birth

3.2 Infant Deaths

Infant deaths are defined as those occurring after a live birth but before the end of the first year of life. The infant mortality rate is normally expressed as the number of deaths, before the first birthday, divided by the number of live births, usually multiplied by 1000, to give a proportion per 1000. It is conventional to enumerate the deaths occurring during a calendar year and the births in that year. The consequence is that some deaths in one year occurred in those who were born in the previous calendar year, but this does not introduce notable errors unless the number of births is varying strongly from one year to the next. In principle, because of notable changes in numbers of births from year to year in Cyprus, it could make a difference here. Hence it could be argued that a more sophisticated approach is required (such as calculating survival curves based on exact dates of birth and dates of death), but it would make external comparison less easy to interpret. In addition the exact dates are not currently available. The simple approach taken here allows for basic comparisons to be made.

For those considered here who died in their first year of life (262), 161 (61%) died in their first month of life. Although this can seem a large percentage, it is similar to that in the UK at that time and it is still the case that most deaths in the first year of life occur in the first month. The latest data for England and Wales from 2008 shows that 68% of deaths in the first year of life occur in the first month (or rather 28 days to be exact). A careful survey was done in 1958 of births and then there were 2811 deaths in the first 4 weeks of life, with the majority in the first week and most of those in the first week being on the first day of life.

Table 3 shows the year of death for all those dying in their first year of life. It also shows the number of births and the infant mortality rate per 1000 for each year.

Year	Deaths	Births	Rate
1960	31	1516	20.4
1961	35	1363	25.7
1962	50	1809	27.6
1963	54	1645	32.8
1964	36	922	39.0
1965	28	941	29.8
1966	28	1073	26.1
Total	262	9269	28.3

Table 3: Year, number of infant (<1 year old) deaths, number of live births and infant mortality rate

The rate in 1960 seems unusually low while that in 1964 seems quite high. It seems likely that the denominator for some years may be wrong such that the rate is either over-

estimated for 1961 onwards or under-estimated for 1960, or both. Some further discussion of 1964 is given later.

Flu epidemics and other childhood illnesses can vary from year to year and so a high rate in 1964 may be understandable. In addition considerable variation may be expected just by chance. The 95% confidence interval for the 1964 rate of 39 is from 27 to 54. The overall results show neither statistically significant variation from one year to another (they are all compatible with an overall rate of 28.3, which itself has a 95% confidence interval from 25 to 32), nor any trend over time.

The infant mortality rate in England and Wales varied from about 19 to 22 in that period while in Scotland it was from 23 to 26. This comparison is given in Table 4.

Year	E & W	Scotland	Cyprus
1960	21.8	26.4	20.4
1961	21.4	25.8	25.7
1962	21.7	26.5	27.6
1963	21.1	25.6	32.8
1964	19.9	24.0	39.0
1965	19.0	23.1	29.8
1966	19.0	23.2	26.1

Table 4: Infant mortality rates in England & Wales, Scotland and Cyprus

The pattern of deaths over time is not unusual. The overall rates are a bit higher than in the British Isles, but uncertainty in the data is a contributory factor, and while a higher rate than in England and Wales is seen in the overall period compared, it is not dramatically higher, and is only slightly higher than that in Scotland.

As noted above, deaths on the first day of life are relatively very frequent.

3.3 Neonatal and post-neonatal deaths

The infant mortality rate is divided into two main components – neonatal (0-28 days) and post-neonatal (29 days - <1 year). It is particularly the neonatal mortality rate that has fallen dramatically in the last 50 years. Post-neonatal rates fell when cot deaths were reduced by changing the advised sleeping position for infants. Table 5 gives the neonatal and post-neonatal rates by year for Cyprus.

In these data, as noted, exact dates are not available, and for 4 children, their age at death is stated to be 1 month. These have been counted as occurring at 30 days and hence beyond the 28 day cut-off for neonatal deaths.

Year	Neonatal Deaths	Post-neonatal deaths	Births	Neonatal Death Rate	Post-Neonatal Death Rate
1960	20	11	1516	13.2	7.3
1961	20	15	1363	14.7	11.0
1962	35	15	1809	19.3	8.3
1963	31	23	1645	18.8	14.0
1964	27	9	922	29.3	9.8
1965	13	15	941	13.8	15.9
1966	15	13	1073	14.0	12.1
Total	161	101	9269	17.4	10.9

Table 5: Cyprus - Neonatal and post-neonatal deaths by year

It can be seen that there tends to be more deaths in the first 28 days than in the remainder of the year. This is particularly marked in 1964, and it may be noted that the number of births in 1964 showed a steep fall from 1963. Some of the deaths, especially in the early part of the year may have been to births occurring in 1963. These changes in the denominator affect the stability of the mortality rates as was noted at the start of section 3.2 above. There is certainly no unusual pattern of deaths in the neonatal period.

It is conventional to use live births as the denominator for both rates, though strictly, neonatal deaths should be subtracted from live births as the denominator for post-neonatal deaths. This correction makes little difference unless the neonatal mortality rate is very high indeed (over 100 at least).

The statistical variation from year to year increases with the sub-division of the data so that smaller counts are examined.

In Table 6 the rates from Cyprus are set alongside the England & Wales rates.

Year	Neonatal Death Rate/100		Post-Neonatal Death Rate/1000	
	Cyprus	E & W	Cyprus	E & W
1960	13.2	18.2	7.3	8.2
1961	14.7	17.9	11.0	7.9
1962	19.3	17.9	8.3	8.6
1963	18.8	16.8	14.0	8.8
1964	29.3	16.4	9.8	7.6
1965	13.8	15.9	15.9	7.2
1966	14.0	15.2	12.1	8.0
Total	17.4		10.9	

Table 6: Neonatal and post-neonatal deaths by year for Cyprus and England & Wales.

4 Conclusions

It is quite understandable that someone with a perspective of the 21st century would be surprised by the number of children in a graveyard associated with the military in Cyprus.

In most populations the death rate per year in the first year of life is higher than at any stage until age 60 or sometimes higher. The death rates during a working life are typically one tenth or less than the infant mortality rate. In a military cemetery in Cyprus there will be very few people aged over 60, while in the UK they would be a large proportion. Hence the impression on viewing a cemetery would naturally make someone question the large number of graves of children.

The detailed examination of the data from Cyprus shows that there is no unusual feature of the data. If there were particularly poor care around birth, the pattern would show a very high neonatal mortality rate compared with the overall infant mortality rate. Similarly poor care in infancy would show a high post-neonatal rate in comparison with the neonatal rate.

There is some evidence that the rates are a little higher than might be seen in civilian hospitals in the British isles at that time, but the variation across regions (not shown here) would show even larger differences.

My overall conclusion, based on the data supplied to me, are that the mortality rates are not notably out of line with what might be expected in the conditions existing in Cyprus in the 1960's. Infant mortality in nearly all industrialised countries has shown remarkable improvement over the last 50 years (as well as in the 100 years before that). Nearly all the improvement in life expectancy during the twentieth century was a result of improvements in infant mortality. Such improvements have not yet been seen in every country in the world and some still have rates that are 20 times those existing here.

Professor SJW Evans, London School of Hygiene and Tropical Medicine. 23/9/10