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HQIP
Healthcare Quality Improvement Partnership

Suicide by female nurses: a brief report

National Confidential Inquiry
into Suicide and Safety in Mental Health

2020

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The Healthcare Quality Improvement Partnership (HQIP) is led by a consortium of the Academy of Medical Royal Colleges, the Royal College of Nursing and National Voices. HQIP's aim is to promote quality improvement, and it hosts the contract to manage and develop the Clinical Outcome Review Programmes, one of which is the Mental Health Clinical Outcome Review Programme, funded by NHS England, NHS Wales, the Health and Social Care Division of the Scottish Government, the Northern Ireland Department of Health, and the States of Jersey and Guernsey. The programmes, which encompass confidential enquiries, are designed to help assess the quality of healthcare, and stimulate improvement in safety and effectiveness by systematically enabling clinicians, managers and policy makers to learn from adverse events and other relevant data. More details can be found at: www.hqip.org.uk/clinical-outcome-review-programmes/

SUMMARY

Why did we carry out the study?

A report by the Office for National Statistics (ONS) in 2017 identified female nurses as having a risk of suicide 23% above the risk in women in other occupations. There have been no national studies to identify factors associated with suicide specifically in this group, on which prevention could be based.

This was a brief study requested by NHSE, based on basic quantitative analysis of our existing NCISH database. We aimed to examine suicide by nurses, with a focus on female nurses, by carrying out:

(1) An examination of ONS data on female nurses who died by suicide during a six-year period;
(2) A detailed analysis of female nurse suicides using the National Confidential Inquiry into Suicide and Safety in Mental Health (NCISH) database of people who died by suicide within 12 months of mental health service contact, including comparison with other female patients.

What did we do?

We used national mortality data from ONS to identify female nurses who had died by suicide between January 1st 2011 and December 31st 2016. We included a wide range of roles, both qualified and non-qualified nurse occupations (inclusion criteria detailed below), though our figures are mainly trained nurses (82%). These data are derived from the mortality data provided by ONS. We recorded information about these nurses; including age, coroners' conclusion at inquest, method of death, and where they lived. We used the NCISH suicide database to examine those who had been in contact with mental health services in the year before they died, including the services they were receiving. We compared female nurses of working age with women in other occupations to identify factors that could be important in suicide prevention. This study was based on our existing database of all suicides nationally, with detailed information on people who had contact with mental health services before they died. Our data collection was not therefore designed to address any specific hypothesis about nurses. The findings from this analysis are expected to lead to more detailed study.

What were the main findings?

General population

- We identified 281 nurses who died by suicide over the six-year study period; of these 204 (73%) were female - these were the main focus of the study;
- Female nurses were older than other women who died by suicide; nearly half were aged 45-54 years (N=87, 43%);
- The most common method of suicide for female nurses was self-poisoning (42%);
- More than half (60%) of female nurses who died were not in contact with mental health services.

Patient population

- 102 nurses who died were identified as patients: of these 81 (79%) were female, their clinical histories were examined further;
- Their age distribution was similar to that of nurses in the general population who die by suicide, 40% being aged 45-54 years;
- Female nurses who were patients were similar to female patients in other occupations. The main primary diagnoses were affective disorders (59%), followed by personality disorders (19%). Overall 41% had a history of alcohol misuse and 20% reported a history of drug misuse. Nearly two thirds of female nurses had a history of self-harm (64%);
- Self-poisoning accounted for 48% of the deaths by female nurses. The main drugs taken were psychotropics (33%), opiates (31%), and paracetamol (19%);
- Although prevalence of experiencing adverse life events within 3 months of death was similar across the groups, female nurses were reported to have more workplace problems (18%);
- There were few differences in the care received by the female nurses and by women in other occupations, though it was less common for nurses to have had a previous short psychiatric admission of 7 days or fewer, and they were more often prescribed SSRIs/SNRIs.

Key messages

(1) We have examined a 6-year national series of suicides by female nurses, providing information not previously available on this group. However, our database was not established for this purpose and we can draw only preliminary conclusions. More detailed studies should help identify priorities for prevention;

(2) More than half of the nurses who died were not in contact with mental health services. We need to improve access to mental health care in nurses, as in many groups. Similar concerns have previously been raised for doctors, who now have a dedicated mental health service;

(3) Self-poisoning rates among female nurses were high; the drugs most commonly used were psychotropics, opiates, and paracetamol. Further study of self-poisoning among female nurses is needed to inform prevention measures;

(4) Suicide is complex, and this complexity needs further exploration in female nurses, including examining the specific effects of workplace, financial, and personal problems;

(5) Some indicators of suicide risk in female nurses, such as depression and substance misuse, are common to most groups who are at risk. They show the importance of comprehensive, needs-based clinical care in improving prevention.

BACKGROUND

Suicide by female nurses

The National Suicide Prevention Strategy (NSPS) for England identified female nurses as an occupational group at increased risk of suicide.[1] Recent analysis of data from the Office for National Statistics (ONS) reported a high rate of suicide in female nurses with a standardised mortality ratio (SMR) of 123, indicating a suicide risk 23% higher than in women in other occupations.[2] The SMR for male nurses was 112 but this was not significantly high with this sample size. ONS outlined three reasons to explain why the risk of suicide varies across diverse occupations and why certain occupations are associated with a greater risk of suicide.[2] Firstly, job-related features including low resources and high demands heighten risk. Secondly, certain occupations may attract people who are already vulnerable and at high risk of suicide. Lastly, occupations that increase the access to, or knowledge of, methods of suicide exacerbates the risk.

There is a significant lack of research examining reasons for increased suicide risk in nurses. A review of the available literature in 2015[3] found only nine articles published since 1999 that examined factors associated with suicide, suicidal behaviour, or suicidal ideation among nurses. Mental health diagnosis, knowledge and access to methods, alcohol misuse, and relationship and occupational problems were all associated with suicide by nurses. We found just one UK study examining suicide by female nurses that reported similar factors; this was published in 2002.[4]

Much of the research into suicide by nurses has not looked specifically at women. In the UK, nurses are the largest group of health care workers with around 550,000 nurses registered to work in England; 88% of those are female.[5]

NHS England requested a rapid-response study be carried out between January 2019 and March 2019. The time constraints meant that only basic quantitative analysis could be undertaken using our existing NCISH database and related ONS data. We aimed to establish preliminary data about women who die by suicide while employed as nurses, by carrying out:

(1) An examination of National ONS data on female nurses who died by suicide during a six-year period 2011-16;
(2) A detailed analysis of female nurse suicides using the National Confidential Inquiry into Suicide and Safety in Mental Health (NCISH) database of people who died by suicide within 12 months of mental health service contact, including comparison with other female patients.

METHOD

Data sources

The study collected data about nurses aged 18-65 who died by suicide (including probable suicide) in England between January 1st 2011 and December 31st 2016. We limited our sample to a working age-range (18-65 years) in order to capture a similar sample to that reported by ONS (20-64 years). We investigated suicides by nurses over a 6-year period, extending the ONS study by one year, but numbers are still low. We identified suicides and probable suicides (deaths assigned an undetermined conclusion at coroners' inquest) from general population mortality data obtained by NCISH from ONS. Deaths for which a suicide (ICD-10 codes X60-X84) or undetermined conclusion (ICD-10 codes Y10-Y34 (excluding Y33.9), Y87 and Y87.2) were received at coroner's inquest were included. We refer to these deaths as suicides in the remainder of this document.

We used the NCISH database to identify those nurses who had been in contact with mental health services in the 12 months prior to their death, i.e. patient suicides.

Analysis and statistical considerations

Data were analysed using STATA 15; we present frequencies and percentages. Subgroup analysis was undertaken where sufficient numbers were reached to ensure robust findings. Proportion differences between groups were examined using chi-squared test of association, with statistical significance reported at $p<0.05$ and $p<0.01$. Despite some low p values within this report, the number of cases with any individual variable was not high.

General population data

We examined UK mortality data between 1 January 2011 and 31 December 2016. We included all adults of working age (18-65 years) with a known occupation. Where an occupation was recorded as unknown or occupational information was missing the case was excluded from analysis. We received notification of 23,134 deaths by suicide by people aged 18-65 years. 2,901 (13%) cases were excluded from analysis due to missing occupation data. The majority of individuals excluded from analysis were male (78%), had a conclusion of suicide (72%), and died by hanging (51%).

We included a wide range of roles, both qualified and non-qualified nurse occupations (inclusion criteria detailed below), though our figures are mainly trained nurses (82%), and significance of key variables did not change when we analysed just qualified nurses. These data are derived from the mortality data provided by ONS, and our inclusion criteria is consistent with published ONS figures. Occupation is recorded at registration of death, and is subject to variation in occupational detail supplied.

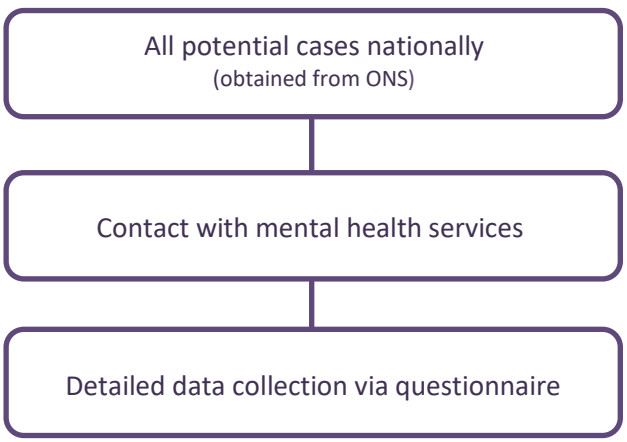
Coding nurses using ONS occupation

Inclusion criteria for medical nurses: nurse | mental health nurse | psychiatric nurse | staff nurse | charge nurse | district nurse | chief nurse | midwife | sister | matron | student/trainee nurse | healthcare assistant | health care assistant | HCA | nurse assistant | nursing auxiliary | auxiliary | health visitor

Excluded: nursery nurse | nursery assistant | nursery worker | nurseryman | horticultural nursery worker | dental nurse | veterinary nurse | sister of | husband of | widower of | unemployed | retired | former

Patient population

The NCISH database is a national consecutive case series of all patients who die by suicide within a year of contact with specialist mental health services. Clinical data are collected via a questionnaire completed by the clinician responsible for the care of the patient prior to their death. A full description of the NCISH method of data collection is provided on our website and in previous national reports.[6]



RESULTS

Suicide by female nurses: general population

Between January 1st 2011 and December 31st 2016, we received notifications of 20,233 deaths by suicide of people aged 18-65, including 18,117 (90%) people with a recorded occupation. Of these, 281 (1.6%) were employed as a nurse - of whom 204 (73%) were female - and 17,836 were employed in other occupations (3,474, 19% female). This corresponds to an average of 47 nurse suicides per year with numbers fluctuating and no recent increase (Table 1). Table 2 shows key features of female nurses dying by suicide compared with women employed in other occupations in the six-year period (2011-2016)

Table 1: General population suicide: numbers by year and occupation (2011-2016)

	2011	2012	2013	2014	2015	2016
Nurses	51	39	47	56	46	42
Other employed	2,892	3,169	3,044	2,885	3,002	2,844
Total	2,943	3,208	3,091	2,941	3,048	2,889

Table 2: Characteristics of general population suicides in female nurses v. women in other occupations (2011 – 2016)

	Female nurses N=204		Women in other occupations N=3,474	
	N	**%**	**N**	**%**
Conclusion				
Open	49	24	830	24
Suicide	155	76	2,644	76
Method of suicide				
Hanging/strangulation	80	39	1,576	45
Self-poisoning**	85	42	1,040	30
Jumping/multiple injuries*	10	5	370	11
Drowning	6	3	145	4
Gas inhalation	<3	-	47	1
Firearms	<3	-	4	1
Cutting/stabbing	7	4	59	2

*p<0.05 **p<0.01, chi-squared test of association

The highest number of suicide deaths by female nurses occurred in the months of October (25, 12%) and January (24, 12%), the latter reflecting similar findings in the general population. There was a higher proportion of female nurses dying by self-poisoning than women in other occupations (42% v. 30%) (Table 2). The age distribution can be seen in figure 1. Female nurses who died by suicide were older, specifically more likely to be aged 45-54 years compared to women in other occupations (43% v. 30%), and less likely to be aged 18-34 (17% v. 28%).

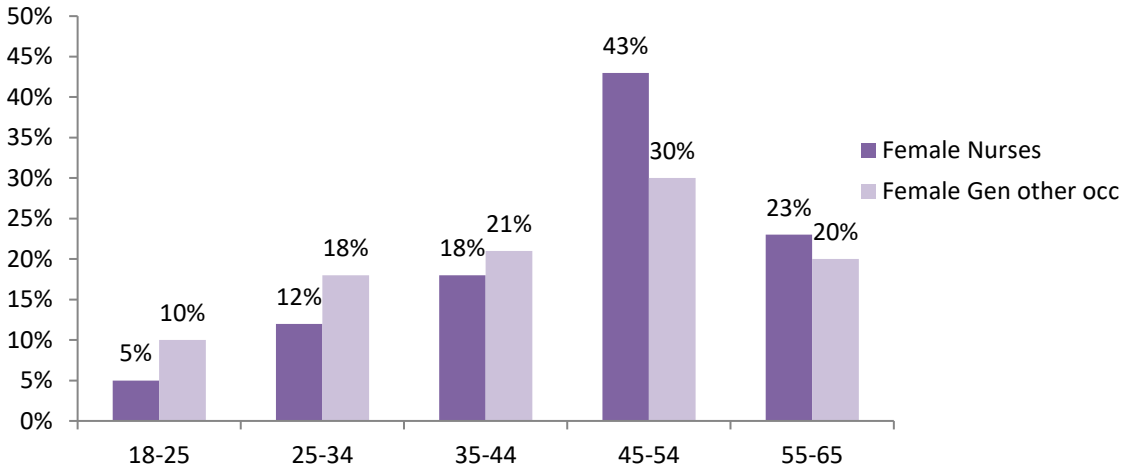


Figure 1: Female nurse vs female employed suicides by age group (2011-2016)

Suicide by female nurses: patients

During 2011-2016, we identified 6,250 people aged 18-65 who died by suicide and were in contact with mental health services in the year before death, 31% of general population suicides of the same age. These will be referred to as patient suicides. Of these, 4,592 were employed including 102 individuals employed as a nurse; 81 (79%) of these nurses were women. The rate of contact with mental health services in the year before death was similar for female nurses and women in other occupations (40% vs. 38%).

Table 3 displays the main social, clinical and behavioural features of female patients who were employed as nurses, in comparison with women in other occupations in the six-year period. The age distribution of nurses was similar to that of nurses in the general population who die by suicide, 40% being aged 45-54 years. Many characteristics were similar for female nurses and women in other occupations in the patient group; the most common primary diagnoses were affective disorder, followed by personality disorder. The majority of female nurses were not currently married, and around half had a co-morbid condition. A history of self-harm was common in both female nurses and women in other occupations.

The NCISH questionnaire asks that clinicians record any life events that they were aware of in the three months prior to the death of their patient. Clinicians reported that female patients employed as nurses had more often experienced problems in the workplace than women in other occupations (18% vs. 6%). Financial problems were also more commonly reported among female nurses, though this did not reach significance (19% vs. 11%). No further details on the nature of problematic life events were available.

It was less common for female nurses to have had a previous psychiatric admission of fewer than 7 days (13% v. 27%), and they were more likely than women in other occupations to have been prescribed SSRI/SNRIs (70% vs. 58%). A higher proportion of female nurses died by self-poisoning (48% v. 30%), and fewer died by jumping/multiple injuries or drowning. Psychotropics and opiates account for two thirds of self-poisoning deaths by women (figure 2). Of those who died by self-poisoning, nurses were more likely than women in other occupations to have used paracetamol (19% v. 10%), and/or opiates (31% vs. 24%), though the difference between groups in opiate use did not reach significance.

Table 3: Features of female patients who died by suicide by occupation (2011-2016)

	Female nurse suicides N=81		**Female other occupations N=1,307**	
Patient characteristics	N	%	N	%
Demographic features				
Age: median (range)	49 (23-65)		45(18-65)	
Not currently married	51	65	864	69
Living alone	38	49	532	43
Black & minority ethnic group	5	6	103	8
Clinical features				
Primary diagnosis:				
Schizophrenia & other delusional disorders	4	5	147	11
Affective disorder	47	59	642	50
Alcohol dependence/misuse	<3	-	53	4
Drug dependence/misuse	<3	-	31	2
Personality disorder	15	19	215	17
Eating disorder	<3	-	56	4
Any secondary diagnosis	43	54	643	50
Physical illness at time of death	25	32	285	23
Duration of illness (<12 months)	18	23	225	18
Receiving SSRI/SNRI *	54	70	687	58

*p<0.05, chi-squared test of association

Table 3 (continued): Features of female patients who died by suicide by occupation (2011-2016)

	Female nurse suicides N=81		Female other occupations N=1,307	
Patient characteristics	N	%	N	%
Behavioural features				
History of self-harm	51	64	913	73
History of alcohol misuse	33	41	476	38
History of drug misuse	16	20	299	24
Priority groups				
In-patient at time of death	4	5	97	7
Died within 3 months of discharge	10	13	198	17
Under the care of crisis teams	9	13	200	17
Non-adherent with medication	6	8	132	11
Missed last appointment	22	29	278	23
Life events				
Any adverse life event <3 months	36	49	521	45
Problems in the workplace**	13	18	69	6
Financial problems	14	19	132	11
Last admission				
Detained under MHA	9	12	176	15
Subject to a CTO at time of discharge	<3	-	12	67
Last admission <7 days duration*	5	13	167	27
Re-admission within 3 months	8	20	112	17
Patient-initiated discharge	<3	-	66	11
Last contact with services				
Last contact within 1 week before death	41	51	673	52
Short-term risk: low or none	56	77	925	81
Long-term risk: low or none	35	53	597	54
Method of suicide				
Hanging/strangulation	28	35	573	44
Self-poisoning**	39	48	389	30
Jumping/multiple injuries**	<3	-	178	14
Drowning*	<3	-	60	5
Gas inhalation	<3	-	18	1
Firearms	<3	-	<3	-
Cutting/stabbing	4	5	28	2

*p<0.05, **p<0.01, chi-squared test of association;

MHA=Mental Health Act; CTO=Community Treatment Order

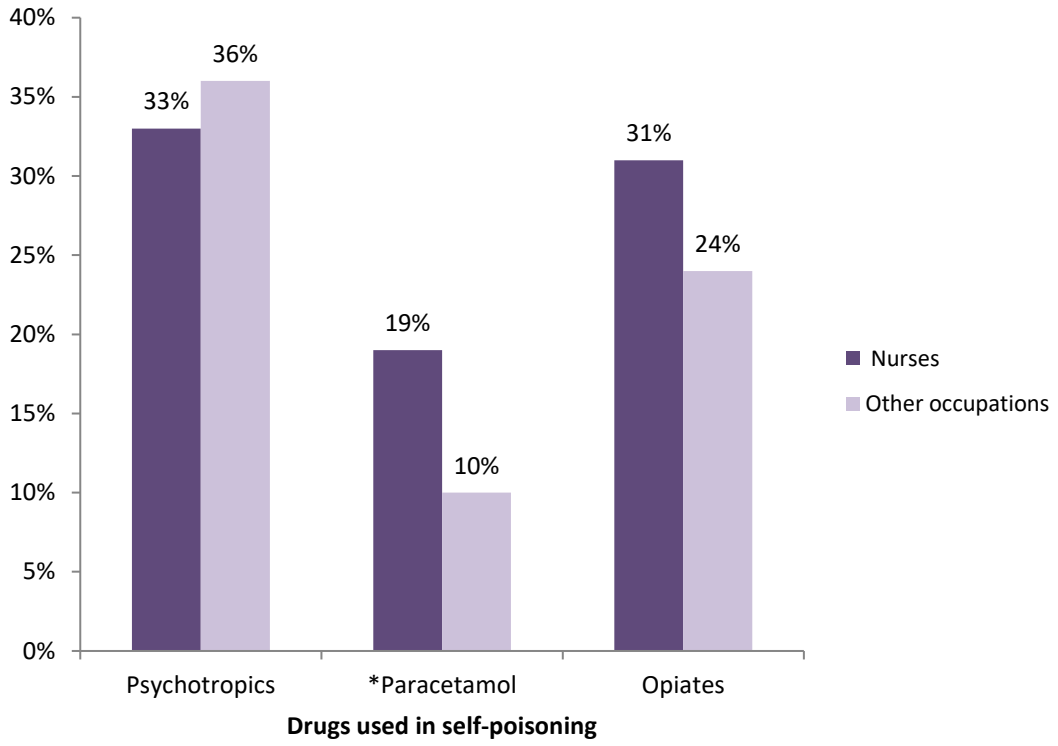


Figure 2: Patient suicides: main substances used in deaths by self-poisoning in women

* p<0.05, chi-squared test of association

Suicide by male nurses

Like female nurses, male nurses who died by suicide were older than men in other occupations, and specifically more likely to be aged 45-54 (42% v. 29%). There were a higher proportion of male nurses dying by self-poisoning compared with men in other occupations (22% v. 12%). However, male nurses were less likely to die by self-poisoning than female nurses (22% v. 42%).

The rate of contact with services was similar to that of men in the general population (27% v. 24%), but lower than the rate of service contact for female nurses (40%). Similar to female nurses, the most common primary diagnoses for male nurses were affective disorders (60%). 76% of male nurses had a history of self-harm, compared with 64% of female nurses. Male nurses who died by suicide were more likely to have a physical illness at the time of death than men in other occupations (38% v. 19%); a higher proportion than in female nurses (32%).

SUMMARY OF FINDINGS

Characteristics of female nurses

This study examined a six-year national sample of female nurses who died by suicide; to our knowledge this is the largest study in a relatively under-researched field. There were 281 nurses of working age who died by suicide between January 1st 2011 and December 31st 2016 identified in the general population; 73% (204) were women. Of these, 102 nurses were patients, 79% (81) of them women. Female nurses had similar rates of contact with mental health services to women in other occupations (40% vs. 38%).

The characteristics of female nurses who died by suicide within 12 months of mental health service contact were broadly similar to women in other occupations, though we noted some differences. The main primary diagnoses were affective disorders (59%), followed by personality disorders (19%). 41% had a history of alcohol misuse and 20% reported a history of drug misuse. The prevalence of a history of self-harm was lower in female nurses (64% v. 73%) than women in other occupations, though still a majority. While clinician-reported adverse life events were common among all the women, 18% of nurses reported problems in the workplace compared with 6% of women in other occupations, though we have no further details.

Self-poisoning, the most common method of death among women, accounted for around half of the deaths by patient nurses (48%). The main drugs used were psychotropics (33%), opiates (31%), and paracetamol (19%).

Further detailed study is required to examine the differences between the care received by female nurses and by women in other occupations. It was less common for nurses to have had a previous short psychiatric admission of 7 days or fewer (13% vs. 27%), and they were more often prescribed SSRIs/SNRIs.

What this study can't tell us

- Occupation is recorded at registration of death, and is subject to variation in detail recorded. There may be inaccuracies in this data; we may have therefore inadvertently excluded some people who were working as nurses. We removed individuals from analysis where it was clear that they were not currently employed and 13% of individuals were excluded due to no occupation data being available;
- Our study compared nurses with all other occupations in a clinical case series. Therefore we were unable to compare female nurses who died by suicide with female nurses who did not die;
- The nature of our study means we cannot establish cause and effect. Further work in this area is warranted. This might include more detailed data collection, particularly for nurses who were not patients, or a qualitative study speaking with women working as nurses and facing job-specific pressures.
- These are preliminary findings from a brief study based on quantitative analysis of existing data from ONS and NCISH. A more detailed qualitative approach is needed to understand the complex nature of suicide by women working as nurses.

Key messages

(1) We have examined a 6-year national series of suicides by female nurses, providing information not previously available on this group. However, our database was not established for this purpose and we can draw only preliminary conclusions. More detailed studies should help identify priorities for prevention;

(2) More than half of the nurses who died were not in contact with mental health services. We need to improve access to mental health care in nurses, as in many groups. Similar concerns have previously been raised for doctors, who now have a dedicated mental health service;

(3) Self-poisoning rates among female nurses were high; the drugs most commonly used were psychotropics, opiates, and paracetamol. Further study of self-poisoning among female nurses is needed to inform prevention measures;

(4) Suicide is complex, and this complexity needs further exploration in female nurses, including examining the specific effects of workplace, financial, and personal problems;

(5) Some indicators of suicide risk in female nurses, such as depression and substance misuse, are common to most groups who are at risk. They show the importance of comprehensive, needs-based clinical care in improving prevention.

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