Consensus on Science
We did not identify any evidence to address the important outcomes of infection rate, pain, malfunction and cosmetic outcome.

Egg white (I) vs milk (C)
For the critical outcome of viability we identified very low quality of evidence (downgraded for risk of bias, indirectness and imprecision) from 2 randomized studies (Khademi, 2008, 25; Ahangari, 2013, 244) with 10 extracted teeth in each study, showing benefit in 1 study (Khademi, 2008, 25) (MD 91.80 95% CI 90.53 – 93.07 for cell viability after 1 h immersion; MD 90.00 95% CI 87.87 – 92.13 for cell viability after 2 h immersion) and not showing any benefit in the other study (Ahangari, 2013, 244) (MD -4.03 95% CI -10.39 – 2.33 for cell viability after 1 h immersion; MD 15.74 95% CI -9.76 – 41.24 after 3 h immersion).

Ricetral (I) vs milk (C)
For the critical outcome of viability we identified very low quality of evidence (downgraded for risk of bias, indirectness and imprecision) from 1 randomized study (Rajendran, 2011, 217) with 20 extracted teeth, showing benefit (MD 44.3 95% CI 12.82 – 75.78 for cell viability after 45 min immersion).

Coconut water (I) vs milk (C)
For the critical outcome of viability we identified very low quality of evidence (downgraded for risk of bias, indirectness and imprecision) from 1 randomized study (Gopikrishna, 2008, e 61) with 30 extracted teeth, showing benefit (MD 339.4 95% CI 331.65 – 347.15 for cell viability after 45 min immersion).

Lactobacillus reuteri solution (I) vs milk (C)
For the critical outcome of viability we identified very low quality of evidence (downgraded for risk of bias, indirectness and imprecision) from 1 observational study (Caglar, 2010, 383) with 12 extracted teeth, but the MD for cell viability was not estimable (median difference: 116000).

Saliva and thereafter HBSS (I) vs saliva and thereafter milk (C)
For the critical outcome of viability we identified very low quality of evidence (downgraded for risk of bias, indirectness and imprecision) from 1 observational study (Lekic, 1998, 137) with 10 extracted teeth. The study found a lower MD for cell viability (MD 1% lower) after 30 min and a higher MD (MD 2.4% higher) after 60 min, but the CI was not estimable.

Saliva (I) vs saliva and thereafter milk (C)
For the critical outcome of viability we identified very low quality of evidence (downgraded for risk of bias, indirectness and imprecision) from 1 observational study (Lekic, 1998, 137) with 10 extracted teeth. The study found a lower MD for cell viability (MD 8.4% lower after 30 min, and 2% lower after 60 min), but the CI was not estimable.
Eagle’s medium (aMEM) (I) vs. saliva and thereafter milk (C)
For the critical outcome of viability we identified very low quality of evidence (downgraded for risk of bias, indirectness and imprecision) from 1 observational study (Lekic, 1998, 137) with 10 extracted teeth. The study found a higher MD for cell viability (MD 5% higher after 30 min, and 12.5% higher after 60 min), but the CI was not estimable.

EGCG (Epigallocatechin-3-gallate) (I) vs milk (C)
For the critical outcome of viability we identified very low quality of evidence (downgraded for risk of bias, indirectness and imprecision) from 1 randomized study (Chen, 2012, 158) with 20 extracted teeth, not showing benefit (MD 0.1 95% CI -0.09 – 0.28 for cell viability after 2 h immersion).

Tap water (I) vs milk (C)
For the critical outcome of viability we identified very low quality of evidence (downgraded for risk of bias, indirectness and imprecision) from 1 observational study (Pileggi, 2002, 186), but the MD for cell viability was not estimable (mean percentage of 45.17 ± 12.03 SD for intervention group vs. mean percentage of 90.59 ± 3.77 SD for control group).

Propolis 10% (I) vs milk (C)
For the critical outcome of viability we identified very low quality of evidence (downgraded for risk of bias, indirectness and imprecision) from 1 randomized study (Ahangari, 2013, 244) with 10 extracted teeth, showing benefit (MD 14.73 95% CI 9.53 – 19.93 for cell viability after 1 h immersion; MD 45.33 95% CI 21.73 – 68.93 for cell viability after 3 h immersion).

Propolis 50% (I) vs milk (C)
For the critical outcome of viability we identified very low quality of evidence (downgraded for risk of bias, indirectness and imprecision) from 2 randomized studies (Martin, 2004, 85; Ahangari, 2013, 244) with 24 and 10 extracted teeth, showing benefit (MD 1192290 95% CI 720274.12 – 1664305.28 for cell viability after 45 min immersion; MD 13.96 95% CI 4.9 – 23.02 for cell viability after 1 h immersion; MD 29.36 95% CI 2.37 – 56.35 for cell viability after 3 h immersion).

Propolis 100% (I) vs milk (C)
For the critical outcome of viability we identified very low quality of evidence (downgraded for risk of bias, indirectness and imprecision) from 1 randomized study (Martin, 2004, 85) with 24 extracted teeth, showing benefit (MD 1077710 95% CI 266920.68 – 1888499.32 for cell viability after 45 min immersion).

PBS (Phosphate Buffered Saline) (I) vs milk (C)
For the critical outcome of viability we identified very low quality of evidence (downgraded for risk of bias, indirectness and imprecision) from 1 randomized study (Doyle, 1998, 221) with 10 extracted teeth, not showing benefit after 30 minutes of dry time (MD 8.31 95% CI -0.09 – 16.71 for cell viability after 15 min immersion), but showing benefit after 60 minutes (MD 8.76 95% CI 4.03 – 13.49 for cell viability after 15 min immersion) and 90 minutes dry time (MD -5.17 95% CI -9.93 – -0.41 for cell viability after 15 min immersion).

**Saline (I) vs milk (C)**

For the critical outcome of viability we identified very low quality of evidence (downgraded for risk of bias, indirectness and imprecision) from 1 randomized study with 24 extracted teeth (Martin, 2004, 85) showing no benefit after 45 min immersion (MD -143540 95% CI -210604.01 – -76475.99 for cell viability after 45 min immersion).

We identified very low quality of evidence (downgraded for indirectness and imprecision) from 1 observational study (Patil, 1994, 1) with 24 teeth benefit was not shown after 2 h immersion (MD -161000 95% CI -362186.91 – 40186.91 for cell viability after 2 h immersion). We identified very low quality of evidence (downgraded for indirectness and imprecision) from two other observational studies (Caglar, 2002, 383; Pileggi, 2002, 186), from which the MD for cell viability was not estimable (median difference: 376000; mean percentage of 77.8 ± 2.92 SD for intervention group vs mean percentage of 90.59 ± 3.77 SD for control group).

For the critical outcome of viability (periodontal healing) we identified very low quality of evidence (downgraded for risk of bias and imprecision) from 1 observational study (Werder, 2011, 312) with 25 avulsed teeth not showing benefit (RR 0.99 95% CI 0.48-2.04).

For the critical outcome of success of replantation (replacement resorption and extraction due to replacement resorption) we identified very low quality of evidence (downgraded for risk of bias, imprecision) from 1 observational study (Werder, 2011, 312) with 25 avulsed teeth not showing benefit (RR 1.07 95% CI 0.33-3.46 and RR 0.89 95% CI 0.09-8.50, respectively).

**HBSS (Hank’s Balanced Salt Solution) (I) vs milk (C)**

For the critical outcome of viability we identified very low quality of evidence (downgraded for risk of bias, indirectness and imprecision) from 4 randomized studies (Gopikrisha, 2008, e61; Rajendran, 2011, 217; Khademi, 2008, 25; Ahangari, 2013, 244) including 10 to 30 extracted teeth, showing benefit (MD 261.13 95% CI 249.7 – 272.56 for cell viability after 45 min immersion; MD 64.2 95% CI 32.59 – 95.81 for cell viability after 45 min immersion; MD 93.4 95% CI 91.81 – 94.99 for cell viability after 1 h immersion; MD 89.8 95% CI 87.95 – 91.65 for cell viability after 2 h immersion; MD 25.59 95% CI 1.13 – 50.05 for cell viability after 3 h immersion). We identified very low quality of evidence (downgraded for risk of bias, indirectness and imprecision) from three studies (Martin, 2004, 85; Ahangari, 2013, 244; Chen, 2013, 158) do not show benefit (MD 22090 95% CI -64812.53 – 108992.53 for cell viability after 45 min immersion).
immersion; MD 0.85 95% CI -9.31 – 7.61; MD 0.05 95% CI -0.16 – 0.25). We identified very low quality of evidence (downgraded for indirectness and imprecision) from one study, from which the MD for cell viability was not estimable (mean percentage of 87.04 ± 5.7 SD for intervention group vs. mean percentage of 90.59 ± 3.77 SD for control group ) (Pileggi, 2002, 186).

**Another’s saliva (I) vs storage in the patient’s mouth (C)**
For the critical outcome of viability (pulpal healing) we identified very low quality of evidence (downgraded for risk of bias and imprecision) from 1 observational study (Andreasen, 1995, 59) with 10 avulsed teeth, not showing benefit (RR 1 95% CI 0.08 – 11.93).

**Saline (I) vs saliva (C)**
For the critical outcome of viability (pulpal and periodontal ligament healing) we identified very low quality of evidence (downgraded for risk of bias, imprecision) from 2 observational studies (Andreasen, 1995, 59; Andreasen, 1995, 76) with 24 and 66 avulsed teeth, not showing benefit (RR 0.6 95% CI 0.18 – 1.97 for pulpal healing and RR 0.67 95% CI 0.21 – 2.15 for periodontal ligament healing).

**Storage in another person’s mouth (I) vs storage in the patient’s mouth (C)**
For the critical outcome of viability (periodontal ligament healing) we identified very low quality of evidence (downgraded for risk of bias and imprecision) from 1 observational study (Andreasen, 1995, 76) with 18 avulsed teeth, not showing benefit (RR 1 95% CI 0.27 – 3.96).

**Dentosafe Box® vs milk**
For the critical outcome of viability (periodontal healing) we identified very low quality of evidence (downgraded for risk of bias and imprecision) from 1 observational study (Werder, 2011, 212) with 24 avulsed teeth not showing benefit (RR 1.33 95% CI 0.74-2.40).

For the critical outcome of success of replantation (replacement resorption and extraction due to replacement resorption) we identified very low quality of evidence (downgraded for risk of bias and imprecision) from 1 observational study (Werder, 2011, 212) with 24 avulsed teeth not showing benefit (RR 0.40 95% CI 0.06-2.87 and RR 1.00 95% CI 0.11-9.44, respectively).

Table with temporary storage solutions, in order of preference*, including the composition.

<table>
<thead>
<tr>
<th>Temporary storage solution</th>
<th>Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hank’s Balanced Salt Solution (HBSS)</td>
<td>group of salts rich in bicarbonate ions: 0.14 g/L CaCl₂, 0.40 g/L KCl, 0.06 g/L KH₂PO₄, 0.10 g/L MgCl₂·6H₂O, 0.10 g/L MgSO₄·7H₂O, 8.00 g/L NaCl, 0.35 g/L NaHCO₃, 0.048 g/L Na₂HPO₄, 1.00 g/L glucose, 0.01 g/L phenol</td>
</tr>
</tbody>
</table>
Propolis: a resinous mixture that honey bees collect from tree buds, sap flows, or other botanical sources.

Egg white:

Coconut water: a clear liquid from young green coconuts.

Ricetral: sodium chloride, sodium citrate, potassium chloride, extruded rice.

Whole milk:

Saline: sodium chloride: 9.0 g/L NaCl; home-made saline: dissolving approximately half a teaspoon of table salt into 240ml of clean tap water.

Phosphate Buffered Saline (PBS): a water-based salt solution containing sodium phosphate, sodium chloride: 8.0 g/L NaCl, 0.2 g/L KCl, 1.44 g/L Na$_2$HPO$_4$, 0.24 g/L KH$_2$PO$_4$.

*Based on the evidence alone it was not possible to decide which solution will result in the greatest tooth survival. The order of preference proposed in this table is based on the evidence evaluated, availability and feasibility.

**Treatment Recommendations**
We suggest the use of Hank's Balanced Salt Solution, propolis, egg white, coconut water, or ricetral in comparison with whole milk, as a temporary storage solution for an avulsed tooth that cannot be immediately re-implanted (weak recommendation, very low quality of evidence).

We suggest the use of whole milk in comparison with saline as a temporary storage solution for an avulsed tooth if none of the above solutions are available (weak recommendation, very low quality of evidence).

There is insufficient evidence for or against temporary storage of an avulsed tooth in saliva compared to alternative solutions.

**Values and Preferences**
No treatment recommendation on the use of Phosphate Buffered Saline (PBS) as a storage solution was formulated, since in the available study PBS was used following a dry time from 60 to 90 minutes, which is not representative of a typical situation. However this could be relevant for settings where it is not possible to immediately store the tooth in a storage solution.

**Knowledge Gaps**
There is a lack of observational studies with avulsed teeth (instead of extracted teeth), measuring tooth viability (not cell viability) and success of replantation.
In a future PICO question re-implanting the tooth in the mouth (in dental socket) versus storage in a temporary storage medium could be compared. Is training in dental re-implantation for first aid providers feasible and effective?